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Introduction to SGO Mistika
The all-in-one solution for top-of-the-range post-production

SGO Mistika provides a comprehensive set of integrated tools that covers all standard post-production needs:

- Multilayer SD / HD / 2K / 4K editing in real time
- Specialized conforming tools, for both video-tape and tapeless cameras, based on digital files
- Image restoration and elimination of grain & noise, including Motion Estimation techniques and a Paint tool
- Advanced color correction, with support for top-of-the-range control surfaces and 4K formats in real time
- Composing in true 3D settings and with 3D camera
- Finishing and presentation to the client
- Multimastering to all standard formats
- Planning for post-production projects
- Stereoscopic production

SGO Mistika’s standard system offers a dedicated interface for each of these tasks, thanks to its integrated design but can also evaluate them all interactively and constantly in their global contexts.

For example, a colorist can carry out all color correction of a large-scale project without needing to use any other tools than those for color correction, whilst at the same time viewing the effect this has on the overall composition being carried out by other users.

As another example, if an editor wishes to change an edit, the changes made will instantly be made in the composition and grading.

What’s more, the system can, at any time, receive new EDL’s and re-conform the montage, automatically resetting effects to new positions and durations.

Added to this, the system supports all the commonest formats on the market, and therefore Mistika is the perfect system to use in the production center, organizing and supplying material to other applications and integrating the results in the master. It accepts these formats: HDCAM-SR, RED R3D, Alexa .ari, Phantom .cine, SI2K/Cineform, DVCPro-HD, MXF, AAF, AVC-I, Apple Prores...; it can generate these file types: DPX, EXR, MXF, Quicktime .mov, AVI, DPX, etc - the list of profession formats that Mistika can support is endless.

Similarly, the fully integrated image restoration and noise-elimination tools permits the creation of specific versions in order to carry out more accurate motion tracking when employing effects, can improve the results of the chroma key tool and provide richer chromatic ranges for secondary color correction. By allowing collaboration between users of each tool, SGO Mistika can achieve results that are impossible on other systems.
With its open architecture, intuitive interface and capacity for upgrading the system, **SGO** is a cost-effective solution for whoever needs the flexibility to produce all kinds of job in any format: film, advertising, TV series, video-clips, documentaries and so on - a system that can adapt to any situation.

**SGO Mistika** is available Linux 32bit and 64bit systems. Owing to its features, stability and flexibility, Linux is the most used OS in high-end post-production.

### Any kind of job in all formats

**SGO Mistika** is totally configurable in terms of resolution, frame rate, aspect ratio, interlaced, and color spaces, supporting with total user transparency any jobs from standard to stereoscopic.

Jobs in any format can be done in the same **Node Graph**, in a non-destructive environment, where it is possible to modify and animate any parameter.

It provides maximum quality conversion between SD, HD, 2K and 4K formats in real time.

It has hardware support options to cover all the standard formats, such as PAL/NTSC SDI, HD SDI 4:2:2, HD Dual link RGB 4:4:4, 2K DVI realtime outputs, and optionally in 4K, and even stereo 3D dual HD SDI outputs.

### Fully open and integrable in any infrastructure

**SGO Mistika**’s open architecture allows it to integrate natively with networks and SAN storage solutions.

It can share all standard format files, without need to Import/Export, to collaborate with other open systems.

When the material derives from digital files, (such as film scanners, cameras which record to hard drives, etc), **SGO Mistika** can integrate with any DPX workflow, and thus can carry out render processes imitating the structure of the original files.

Hence, **SGO Mistika**’s render process creates a directory tree which is identical to the original, with the same file names, numbering and even replicating the original DPX headings. In this way, intermediate processes that either adapt themselves to the standard of each infrastructure, or that imitate structures required by less flexible systems, can be carried out.
Intuitive and integrated interface for immediate results

With SGO Mistika’s gesture recognition system, Scribe, the user has access to the commonest commands with simple movements of the optical pointer. SGO Mistika’s Node Graph acts as an open workspace in which the user can experiment, collaborate with other systems and create different version of the same project. The Node Graph is a working structure which is flexible in three dimensions:

- Horizontal: time.
- Vertical: unlimited audio/video tracks, organization of multiple version and structuring of effects stacks.
- Depth: nestable groups through which the user can navigate and improve the organization of the project. Each group gives access to another complete Node Graph.

While the traditional timeline of other systems is only efficient for perfectly planned projects, SGO Mistika’s Node Graph is designed to allow experimentation, improvisation, encouraging the user to try alternatives, collaborate, and re-use effects or previous sections, thus allowing the structuring of each project according to its particular requirements.

SGO Mistika also allows the commonest effects to be grouped in a non-destructive way in order to create complex patterns safely and smartly.

With the Graffiti tool, the user can even draw on Node Graph with the pointer in order to make complex projects easier to understand and facilitate communication with other users.

The scalability of the interface allows the user to work on a laptop for looking at screen rushes at one end of the scale and on two 2600x1560 monitors to work in 2K at a scale of 1:1, or to view complicated effect flows more comfortably.

Taking care of image quality

The top priority for SGO Mistika’s developers has been image quality.

For professionals in the production field, the real differences between different systems lie in the details and in the quality of the algorithms at the heart of the system, rather than in stunning accessories or overwhelming branding, despite what the Marketing departments might say!

Thus, the SGO Mistika teams have been continuously working and developing the product since 1993, paying particular attention to producing exclusive and top-quality algorithms: uncompressed processing, advanced dithering, 3D LUTS, real processing in 16 bits per channel, HDR support, support for resolutions of 8K and above, noise & grain elimination through Optical Flow (Motion Estimation) techniques, HD-SDI dual link RGB 10bit outputs, Pan&Scan based on Fourier mathematics with optical quality, etc.

The developers have always borne in mind the physical media from which the images are derived, be they negative, video or graphics, etc. Hence SGO Mistika provides genuine native support for multiple color spaces YUV, RGB linear and logarithm, HDR, XYZ, and specialized tools for transforming between the same.

Extreme features

Thanks to the hybrid CPU+GPU 64 bits processing system, all the basic post-production tasks can be carried out simultaneously in real time: advanced color correction for each layer, optical quality Pan&Scan, Composition in 3D environments with antialiasing and Motion Blur, Motion Estimation Timewarps, Fades and Wipes (even in 2K), Chroma Key, Channels & Booleans, Gaussian Focus and Blur, Titling, Paint, Relief, Morph & Warp, conversions between color spaces, etc, with many of these working simultaneously in real time in HD; the combined results can be transferred directly to tape without needing to carry out
render processes.

In contrast to other systems, *SGO Mistika* has few processes that cannot be carried out in real time; and even in these cases (such as image restoration, or grain reduction in 4K formats via *Optical Flow (Motion Estimation)*) processing by Hardware GPU is also available, resulting in reasonable processing times which can be generally used in real production.

When SGO’s Open Storage features (up to 5 Gigabytes/s for each workstation) are added to the equation, the system's features are stunning.

For example, a single 4K *SGO Mistika* workstation without associated render nodes allows the user to view DPX 4K 10bit images without compression, carry out a primary and secondary color correction, apply 3D LUT, carry out Pan & Scan, and even convert the result a HD for its previewing or mastering onto tape in real time.

Furthermore, *SGO Mistika* working in a SAN avoids slow transfers of material between "modules" or applications.

**Optimizing costs**

*SGO Mistika* technology is provided only on a bespoke basis, and the client pays only for what is required; thus it can be used in all types of configurations: from a laptop for field work and viewing film rushes, up to systems of 4K+ capacity with multiple disk arrays, multiple monitors and color correction surfaces; it also combines with low-cost "Assistant" systems to share storage and SDI video hardware.

Having the capacity to resolve all the usual task fields in post-production and DI, this technology is tremendously cost-effective, whatever the type of workload required week on week.

By eliminating dedicated Hardware, maintenance and updating costs are reduced, since *SGO Mistika* is based in workstations and standard Fiber Channel storage and in the GPU processor of NVIDIA cards.
Conventions used in this document
This section sets out the conventions used throughout this document.

References to files

References to the name of an existing file on system hard-disk, to a file extension, to the name of a directory, to the name of an executable file, or to the literal description of a file’s contents are shown in red italics. For example, `/MATERIAL` refers to the `/MATERIAL` directory.

References to keys

Key references use Caps and green italics surrounded by the symbols `<>`. For example: `<A>` refers to the key “a”. A combination of keys is shown separated by the symbol “+”. For example: `<Ctrl>+<A>` means pressing the keys “control” and “a” at the same time. Additional keys and mouse buttons are shown below:

- `<Ctrl>` = Control key.
- `<Shift>` = Shift key.
- `<Alt>` = Alt key.
- `<Space>` = Space bar.
- `<LeftClick>` = Click with the left mouse button.
- `<RightClick>` = Click with the right mouse button.
- `<CenterClick>` = Click with the middle mouse button.
- `<Drag>` = Drag with the mouse.

References to documents

References to other chapters within this documentation or to other documents is shown in blue and underlined.

For example, References to keys, refers to the previous chapter.

References to menus, panels and buttons

References to menu options, panels and panel buttons are shown in grey, and the menu or panel navigation route is shown with the symbol “->”

For example:

FX->Comp3D, refers to the `Comp3D` button in the `FX Panel`.

Some buttons have their name superimposed and others have an icon. All `Mistika` icons have an associated name (these names can be superimposed on the icons via the middle mouse button). These options are named in the same way in this document.

Mistika SGO has different types of buttons: command, drop down, state and multi state. Drop down and multi state buttons show all their options between square brackets and the selected option between normal brackets.

Example:

The different possibilities of the `Notes` button are referred to in `Edit->Notes[Create, Delete Stroke, Delete Note, Delete All Notes]`.

Example:
To create a note in the Node Graph, activate the Node Graph Editor->Dashboard->Edit->Edit->Notes->Create option.

When dealing with a state button (it may be on or off), the state is also indicated in brackets.

Example:

Edit->Setup->Flow Monitor(On).

References to literals

References to Mistika's interface parameters or to literals related to the application, are highlighted in blue-green italics.

For example, Primary refers to an option called "Primary" in the software interface.

Parameter Description

In descriptions of effect parameters, a short description of default values is shown. For example, the following value:

[25 (0 /100)]

The syntax should be interpreted as follows:

[Default (Minimum / Maximum)]

Square brackets "[]" show the start and end of the parameter description.

The first numbers – those outside the round brackets – show the default value (in this case, 25).

Some of the default values are animated. These default values use a colon ":" to separate the initial value from the final value.

For example, for the Grade parameter of a wipe: [0:100 (0 / 100.000)]

When values are separated by a semicolon ";", this indicates that the parameter has a set of associated values, and each default value is differentiated from the following one by this symbol (such as RGB values, and spatial coordinates).

For example, the description of the RGB parameters of the Solid effect values is: [0;0;0 (0 /100)]

The associated values in the description have a common valid range.

Round brackets "()" show the start and end of the range description valid for the parameter. The forward slash "/" separates the first number (the minimum) from the second (the maximum).
Basic concepts
C-1 Working environment

The basic concepts needed to understand Mistika’s working environment are described in the following sections, together with the use of its basic elements.

Software Installation

Mistika systems are usually delivered completely configured, but if it is necessary to reinstall the existing system or a new one, follow the steps below:

- Request the latest version of the installation DVD for Mistika from SGO. This DVD allows installation of the operating system, the Mistika software, and many recommended complements. This tool also carries out an automatic configuration of all the important parameters, and is the only recommended method for the installation of a system with Mistika.

- In the case of serious problems, a complete reinstallation can be carried out later. Before doing so, however, save the following configuration files:
  - All the files in the directory /usr/cvfs/config
  - To save work done in a later configuration, take note of the network configuration (address, IP etc), and of the edit points defined in /etc/fstab
  - The Mistika licensing file /var/flexlm/MistikaV5.dat

- Before installing the DVD, disconnect all the storage systems except the current system disks, otherwise the installer might suggest installing the operating system in the largest disk (usually the disk array), which would destroy all the existing information, were the user to accept this prompt by default.

- For systems using z800, first set the BIOS as indicated below (it is essential that these values are correctly set for the performance of the system). To do this, reboot and go to BIOS (F10->Setup). If the default language is not English, change it via F8 so that the names of the parameters coincide and set them so that they are as follows:
  - OS->RuntimePowerManagement DISABLE
  - OS->MWAIT-WavareOS DISABLE
  - OS->IdlePowerSavings NORMAL
  - HARDWARE->SATA PowerManagement DISABLE
  - HARDWARE->Intel Turbo boost technology ENABLE
  - HARDWARE->EnhancedIntelTurboBoost ENABLE

  Note: The EXACT name may vary depending on which version of the BIOS is employed and which languages re selected.

Once installed, recover the configuration files mentioned above (in the case of a reinstallation), and download the latest available upgrade at www.sgo.es

- Before requesting the Mistika licence, check that the operating system has at least an ethernet network card by, for example, running the following commands:

  su -
  ifconfig

  When this command is run, information regarding the eth0 interface should appear. If it does not, request the driver for the ethernet card from the hardware provider.

- For systems with only one interface monitor (usually "OnSet" systems), deactivate the option MistikaSetup->Interface->Dual Monitor.
Starting a session

To startup the system, remember that all the peripherals need to be started first; only once all pilot lights are stable (the disk array may take up to a minute) should the machine finally be started.

Once the system has been started up, the first step is to access the user account where Mistika was installed. To access an account, simply double-left-click on the required account icon (the user Mistika in the illustration). Next, if the account has an access password, this should be key in, followed by <Enter>. A working session will then be started in the selected account.

Finally, open Mistika Setup to choose a working preset, or open Mistika to begin the session.

Note: The account “root” refers to the system’s super user, and should only be used for system installation and administration.

Ending a session

Modern workstations can be shut down by pressing the start button. This automatically carries out the correct shutdown routine before switching off. Older systems require the manual selection of the "Shutdown System" from a menu. If there are any doubts, first refer to the hardware provider, since direct shutdown could cause system failure.

Once the workstation has been switched off, the disc arrays and other peripherals can also be powered down.

If the system does not respond and it is necessary to force the shutdown of Mistika, the following actions:

- On a Linux console, type:
  
  `killall -9 Mistika`

  Mistika normally saves the active environment with the name crash.env, and then closes.

- If this does not work, press <Ctrl>+<Alt>+<Backspace> to force restart of the graphics system, without needing to reboot the machine.

- In extreme cases, it may be necessary to force a shutdown of the system by holding the "Power" button for five seconds. However, this method may cause the loss recent open files, and should only be used as a last resort.

The desktop and its tools

Once the user is identified by the system, Mistika shows the interface of the operating system. This consists of a desktop where the tools are shown as icons.

The most important tools that appear in the user interface of Mistika are:

- Mistika Setup

  Mistika configuration, including the format of the image to be produced and the type of video format to be used in the next session

- Mistika

  Access to Mistika. Mistika can also be accessed by typing "Mistika" in a Linux console.
Accessing Mistika

*Mistika* is the heart of the system. It is the space within which both editing and composition take place. From within *Mistika*, the rest of the tools referred to here are accessed; thus it is the environment in which the user will usually work.

The desktop icon

![Mistika Icon](image)

Autodetection of Layout for the work resolution

*Mistika* automatically detects the maximum resolution of the graphics card and adjusts the "Layout" to this resolution.

The only variable that must be borne in mind whether to work with one or two monitors. In both cases, *Mistika* automatically adjusts the "Layout". To choose between one or two screens, go to *Mistika Setup->Interface->Two Monitors [On,Off]*.

*Mistika* requires at least one monitor at 1920x1080, although two 24" monitors at 1920x1200 is recommended.

Another typical configuration to increase the workspace is to use two 30" monitors at 2560x1600. This configuration offers the following advantages:

- It gives more space in the *TimeSpace*.
- It allows working with HD_1080 images at 1:1 in the *Visual Editor* and even 2K images at 1:1 the *Paint* tool.

However, the size of 30" monitors makes working in spaces using projectors difficult, so it is not recommended in these cases.
C-2 Selection of elements

A range of basic element selection operations exist in all Mistika’s tools. They are as follows:

- **Simple selection**
  
  Left click the element to highlight the element.

- **Multiple selection**
  
  Left click and drag to defines a selection area. Release the mouse button to select all the elements within the area.

- **Additive / subtractive selection**
  
  Allows the selection or de-selection of adjacent and non-adjacent elements in a selective way. This type of selection behaves differently according to in which Mistika panel it is done.
  
  - In the **Project** and **Media** tab, it is possible to select adjacent elements by clicking the first and then, holding <Shift>, clicking the last. All elements between will be selected. To select non-adjacent elements, click each element individually while holding <Ctrl>. Elements can be de-selected in the same way, by holding <Ctrl> and clicking.
  
  - In the **Node Graph**, the behavior is different. Here we use <Shift> to select or de-select individual elements
  
  - In the **Parameters** tab, <Shift> is also used for individually selecting parameters (hold <Shift> down and click in each parameter required to be added to the selection. This type of selection can be used to modify the value of various parameters at the same time, using <Drag>+<central button> for example). <Shift> is also used to add or remove keyframes in a selection in the curve of the parameters.

- **Undo selection**
  
  Simply click in an empty space of the corresponding panel.

- **Selection of effect clips in the Node Graph**
  
  When selecting effect clips bear in mind that they consist of two independent parts: the clip pastille and the range.
  
  By clicking only on the clip pastille and moving it upwards, the range remains in its position, and the original scope of the effect is thus increased; if, on the other hand, it is moved downwards, the scope covered by the effect will be reduced. This is very useful, as it permits placing the effect clip by dragging it to the lowest clip to fix the range there and then dragging it up to include all the clips possible.
  
  However, if we want to select both the clip and its range in order to move them together to a different location, remember to select an area that contains both before moving them: it is not sufficient simply to click and drag the clip.
  
  Another way to select both is to hold down <Shift>, click on the effect and click...
again on the lower line which specifies the range.
C-3 Data fields

All the numerical values and timecodes are modifiable in the following ways:

- Select either the whole number (by double-clicking on it) or only the digits to be modified (by highlighting them with the mouse) and then writing in the new value.

- Left click on the value and use the mouse-wheel to increase or decrease its value progressively.

- In the Parameters tab, simultaneously select numerous parameters by holding down <Shift> and then use the previous method to modify them all at the same time. This can also be done using the middle mouse button. This technique can be used, for example, to modify the X or Y position of various layers simultaneously.

- Left click on the value to be modified and drag the cursor up, down, left or right to increase or decrease the value. This mode is extremely useful for adjusting effects parameters, as the result of the modification is visible without having to release the mouse button. (This mode can be deactivated if viewing is slow owing to its complexity, in which case the effect will not be evaluated until the mouse button is released or the tablet pen is lifted).

A similar method is to press the <Up> and <Down> arrows while keeping the cursor in the field to be modified.

- The method described in the previous point can be used in combination with <Alt>, <Shift>, and <Ctrl> which modifies the first decimal place, the tens and the hundreds respectively instead of the unit value, thus acting as accelerators or decelerators when adjusting the parameters interactively:
  
  - <Ctrl> + <Shift>: thousands.
  - <Ctrl>: hundreds.
  - <Shift>: tens.
  - <Drag>: units.
  - <Alt>: decimals.
  - <Ctrl> + <Alt>: hundredths.
  - <Shift> + <Alt>: thousandths.

- By using the calculator (see Edit tab: Node Graph Editor->Dashboard->Edit).

The colors of the modifiable numerical values (on a black background) indicate the following:

- Grey: a default value, or one that has not been modified.

- Green: a value introduced by the user or a keyframe.

- Light blue: a value interpolated between two keyframes.
C-4 Mistika’s buttons

*Mistika* has four types of buttons:

- **Command buttons**
  
  These are the simplest buttons. Clicking them or using their related hotkeys, runs a command. For example: *Node Graph Editor-* > *Dashboard-* > *Edit-* > *Edit-* > *Join*.

- **Dropdown buttons**
  
  These have a square icon to the left side. When clicked, a list with various options drops down. The name superimposed in the button is always the same, regardless of the option selected. For example: *Node Graph Editor-* > *Dashboard-* > *Edit-* > *Edit-* > *Notes*[Create, Delete Stroke, Delete Note, Delete All Notes]

- **State buttons**
  
  These have two possible states activated by clicking them (or pressing the hotkeys). Generally they are green when activated and gray when not deactivated. For example: *Node Graph Editor-* > *Dashboard-* > *Edit-* > *Setup-* > *Show Rulers*[On,Off].

- **Multistate buttons**
  
  These are buttons in which different variables for the same parameter can be chosen. When clicked, a list with the possible variables appears. Once the variable is set, this is superimposed in the button. These buttons have the name of the parameter green and the name of the variable in white. For example: *Node Graph Editor-* > *Dashboard-* > *Edit-* > *Trim Mode*[Mode-*Local*, Mode-*Global*, Mode-*Select*].

All *Mistika* buttons have their name or an icon superimposed over them. All *Mistika* icons have an associated name (to see this associated name simply place the mouse cursor over the icon and click the central mouse button).

Similarly, right-clicking over a panel button shows the associated Hotkey, (until the mouse button is released).

Both methods show information about the button, but carry out no action.
**C-5 Keyboard Shortcuts (edition)**

*Mistika* possesses a series of keyboard shortcuts in order to make the operator’s workflow easier to negotiate. They can be seen by hovering the cursor over the buttons of the interface. The operator can personalize these shortcuts by editing them with the text editor file `hotkeys.cfg`, found here: `Mistika-ENV/etc/pixmap2/hotkeys.cfg`. It is recommendable to make a security copy of the original file should be default values be required at a subsequent stage.
C-6 Scribe (Gestural commands)

*Scribe* is a novel interface management technique based on the API for the development of data input devices.

It allows the running of *Mistika’s* different commands by means of strokes made with the mouse or graphic tablet.

Traditionally, the graphic tablet has been considered the best device for composition work, but it is slower than the mouse and keyboard for editing work. *Scribe* technology gives the tablet immediate access to a range of commands made by drawing strokes with the pen, so that the speed increases considerably when using the tablet, and thus it can be used for editing.

This technique also increases working speed with the mouse, for which reason the use of these commands is recommended in all cases.

**Activating Scribe**

*Scribe* is activated by holding down the *<Middle mouse button>* and drawing a line that is recognizable by the symbol library in *Mistika’s Node Graph*. With the *<Middle button>* depressed, the system will recognize the different strokes that are made on the tablet. Pressing any button or key at the same time as the *<middle button>* will deactivate symbol recognition.

**Using Scribe with the digitising tablet**

The first step is to assign the center mouse button to one of the pen buttons, using its graphic tablet driver. Next, press the button assigned as center, and draw the required symbol. This will execute the command associated with the symbol drawn.

**Using Scribe with the mouse**

Press the *<Middle mouse button>* and draw the required symbol. This will execute the command associated with the symbol drawn.

**Symbol library**

The symbols currently recognized by *Scribe* are as follows:

**Note:** The change of color in each symbol from black to green expresses the progression in time of the symbol, and shows the start and end of each symbol. The system has recognition tolerance that allows the user a certain margin of error. The library consists, in origin, of regular geometric forms, although they are illustrated below with less regular strokes for ease of understanding.
The audio-visual market offers a huge number of image formats. An introduction to their main characteristics and an explanation of their use within Mistika follows. Some knowledge of their features is key to achieving the most efficient and highest quality work in Mistika.

Preferred realtime formats: Mistika .JS y .DPX

Mistika is a high-performance system designed to work in real time, but the correct use of the file and storage system formats explained below in order to achieve the best results.

Mistika can work directly with many standard image formats (TIFF, .Targa, Cineon, DPX, AVI, Quicktime, MXF, MPEG4, etc.), without the need to convert them to Mistika’s native format (.js). To do so, simply double click in the Browser to create Mistika’s format linked to these media files.

However, many of these formats take time to process, and may be out of order (their frames may not be organized consecutively on the disks, which slows reading).

For this reason, when playout in real time is required for a sequence derived from another format or one which is not stored in the real time disks, it may be necessary to convert them to .js format via a render process, or by using .dpx as described below.

When video is captured, it is recommendable to store it in the .js format; when it is not necessary to maintain immediate compatibility with other applications it is also recommended to use this format since:

- Mistika’s .js format is pre-assigned to consecutive disk blocks and avoids fragmentation
- Mistika’s .js format is aligned to memory pages, improving performance
- Mistika’s .js format corresponds exactly to SDI video formats, so if the variant is correctly chosen information is not lost, it is not necessary to convert color spaces and the size of the file does not increase (and therefore neither does the related process time) unnecessarily.

In the case of needing to work with other applications, it is recommended to work in "DPX" format, since Mistika is also highly optimized to work in real time in this format (up to 4K if adequate storage is available). However, follow the following recommendations:

- For best results, DPX sequences should be arranged consecutively on the disks. To do this, they should come from an un-fragmented locations, and the files should be loaded in order via video capture, a render process, or by the command "rsync" (or similar).

This "rsync" command permits the rapid copying of numbered sequences in their numerical order, as the continuation of a previously interrupted copy. These capabilities distinguish it from a simple copy via the graphic interface of any OS. If possible, never use these systems for loading numbered files if they are needed to worked on in real time, nor allow other users to copy files this way to storage via the network, since in these cases, it is probable that an additional render process is required to obtain an optimized sequence.

The recommended syntax for the command is:

```
rsync -Pav SourcePath TargetPath
```

- Generally, the DPX format only provides real time performance in combination with the "Storenext SNFS" filesystem. Mistika uses the API of this filesystem to carry out high-performance specifically for this format, and it is not possible with other types of filesystem.

- The DPX format is only optimum for original RGB formats. It is not enough to convert
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YUV images to this format, as they may occupy up to twice the space and similarly decrease performance. For example, the standard HDCAM SRW Stereo format codifies two YUV 422 10bit streams, so its transcodification to DPX (RGB 444) produces a great increase in the size of the file and process times.

### Compression vs No compression

High-compression formats (MPEG, DVHDV, MPEG2, MPEG4, etc) are suitable for final distribution of images to the consumer, but in general, if it can be avoided, they should not be used to import images into a post-production system. These formats give rise to problems when carrying out color corrections, chroma keys, and other effects, since they provided very little information. **Mistika** provides tools to deal with these problems, but the best results will always be obtained from material that is uncompressed, or if compressed, with as little compression as possible.

In general, for video sources, the highest quality is obtained through SDI signal capture. However, it is a common mistake to associate the terms SDI and "uncompressed". While SDI signals do not use compression, the majority of VTRs use compression algorithms with a subsequent (greater or lesser) loss of quality for image storage, although later they employ uncompressed SDI signals for broadcast. Thus, in such cases, it it’s the compression ratio used in each VTR that determines the final image quality and the information available for post-production processing. For example, these ratios could range from the non-aggressive 2:1, as provided by Sony's SR range of VTRs, to the destructive ratios of 40:1 found in HDV devices.

If the highest possible quality is required, the following are the main ways of obtaining images that have not suffered information loss as a result of compression:

- In the case of using digital cameras, capture the signal directly from the camera during filming, ie before it is stored in the VTR. Certain cameras have SDI or SDI dual link outputs than can be used for this purpose. Generally, for this method, a system like **Mistika** is needed at the recording location. Low compression VTRs, such as HDCAM SR, are also an acceptable alternative.

- In the case of using film cameras, use a telecine and connect it to **Mistika** directly through the SDI output. A film scanner or a datacine can also be used to import .dpx or .cin images they produce. This method produces the highest quality images, although it is the slowest and most expensive.

Whether using compressed images or those derived from film, we are faced in post-production with problems of noise: electronic noise in the case of compressed video and grain in the case of film. **Mistika** is designed to deal with both cases, having a new Denoise effect, which employs **Optical Flow (Motion Estimation)** techniques to eliminate both kinds of noise wherever possible. However, it is not possible to fix problems in all shots using this technique, so it should not be seen as a substitute for using cameras and VTRs of the highest quality.

Users should be aware that although original noise or grain levels may be acceptable for the viewer, the efficiency of many tools is improved if applied to a version processed with the Denoise technique, such as motion tracking, chroma key, secondary vector selection in the color corrector, etc.)

Once inserted into post-production, it is recommended to work without applying any kind of compression. If, when completed, it is necessary to apply compression, it is unavailable in the Render module of the **Output** tab.
Color spaces

*SGO Mistika* allows the user to work in all the commonest post-production color spaces, and it is important to be familiar with this topic to achieve the best results.

Although the system supports a variety of file formats, from this point on, this manual will use *Mistika*’s native image format (".js") as a reference in the explanations that follow, as it is applicable to other file formats, depending on the color space employed.

The "js" image format of *Mistika* is an uncompressed image format which allows direct working and storage in the following color spaces:

- YUV 4:2:2 at 8 bits per channel. (2 bytes per pixel).
- YUV 4:2:2 a 10 bits per channel. (3 bytes per pixel, equivalent to RGB 4:4:4 linear at 8 bits).
- YUV 4:4:4 at 10 bits per canal (3 bytes per pixel)
- YUVA 4:4:4:4 at 10 bits per canal
- RGB 4:4:4 linear at 8 bits per channel. (3 bytes per channel).
- RGBA 4:4:4 linear at 8 bits per channel. (RGBA, 3 bytes per pixel, plus on extra byte for the alpha channel).
- RGB 4:4:4 linear at 10 bits per channel. (4 bytes per pixel).
- RGB 4:4:4 logarithmic at 10 bits per channel. (4 bytes per pixel).
- YUV 4:2:2 x 2 (8bit and 10bit): Stereo 3D format, equivalent to 2 8 bit or 10 bit YUV 4:2:2 channels. The frames for each eye are interleaved, which improves the performance of access to disk and both streams are maintained in a single file. In *Mistika* they appear as a single clip, although both streams can be extracted separately later.

In this manual, these complete names are not normally used, because of their length: they are abbreviated to YUV, YUV10, RGB, RGBA, RGB10, YUV422x2, YUV422_10x2 respectively.

The storage of native .js format can be done in two ways:

- *Mistika*.js is the default format for video capture (its variations are defined in *Mistika* Setup->Video I/O for each preset), although at the moment of capture it can be changed to another format in the VTR panel.
- Render sequences imported in others formats to *Mistika*’s .js format.

The characteristics of the native color spaces mentioned are described below. Detailed knowledge of them allows us to obtain the best image quality and to work with the system in the most efficient way.

### YUV 4:2:2

The YUV standard (also known as "Video in components") uses the color space that is the standard in all video systems, whether analogue or digital. Of all its variants widely used, the digital YUV format 4:2:2 is the one that generally gives the highest quality when bandwidth is limited, and for this reason it is the one most used in videos systems oriented towards post-production.

The name “YUV” refers to the separation of the video signals into one component, luminance (Y) and two color components (U and V). If the original signal is in the form of analogue RGB (as is produced by most CCDs found in video cameras and telecines), the YUV components are obtained by digitizing the analogue RGB signal in the following way:

- The Y luminance component is obtained from the sum of the luminance of the three RGB signals. As the luminance of the three colors are different, the following formula...
is used:
\[ Y = 0.299R + 0.587G + 0.114B \]

- The U and V components are obtained by subtracting the Y luminance from the B (blue) and R (red) signals respectively, for which reason they are also known as "Cb" and "Cr". The green component is implicit, as it can be obtained as the difference between the U and V signals and the Y signal.

\[ U = 0.493(B - Y) \]
\[ V = 0.877(R - Y) \]

The expression 4:2:2 is to be interpreted as meaning "to obtain double the number of luminance samples compared with those of the color components", as will be explained later.

Bearing in mind that video cameras (both SD and HD) and telecine systems use one or more analogue CCDs sensitive to the Red, Green and Blue colors, and thus the original RGB signals are analogue in origin, why has the YUV format been chosen as the standard digital video, rather than use RGB directly?

The answer is because in order to digitize and store all the information available in the original RGB analogue signals, a large bandwidth is required, which is not normally available in camera and VTR storage systems. Thus it is necessary to use a more efficient system, such as the YUV 4:2:2 format. The reason is that the human eye is much more sensitive to small changes of luminance than it is to small color tone changes, so that this format takes two luminance samples (Y) for each one of the color components (U and V), in order to make better use of the available bandwidth. Many high-end VTRs (such as Sony Betacam Digital and HDCAM, Panasonic D5 HD, etc.) record tapes in YUV 4:2:2 format.

Alternatively, some of these devices also have RGB input/output, although it should be remembered that in these cases it is converted from/into YUV which is what is actually stored on tape.

On the other hand, some high-end cameras and VTR do have the capability to record directly in RGB format without compression or with a relatively gentle compression; examples are HDCAM-SR, Redcode R3D, Arri raw D20 / D21 / Alexa, Phantom, SI2K, and the cine scanners.

Each format is studied in more detail below.

The digital YUV 4:2:2 format of 8 bits per channel contains two bytes for each pixel of the image:

- The first byte represents the luminance (Y), and provides a different sample for each pixel.
- The second byte is the color component U of the even pixels and V of the odd ones. To reconstruct the color of each pixel that of the adjacent pixel is taken as the missing color component.
- As a consequence of the above point, this format has half the chromatic resolution in the horizontal direction.
- This does not mean that two adjacent pixels will never be equal, as only one of the UV components is shared with another pixel, whereas the other color component and the luminance component will always be different.
- Since the color components are shared between alternate pixels, an important collateral effect is that the resolution of the working format used with YUV 4:2:2 should have an even number of pixels in each line. This should also be remembered when producing images in other formats that may be later imported into Mistika in YUV 4:2:2 format.

The 10 bits per channel YUV 4:2:2 format is stored in Mistika by means of an additional
byte, resulting in a total of 3 bytes per pixel.

As a rule, when using Mistika with video images captured via single SDI link, it is best to work in YUV format, as this YUV 8 bit format is the one stored on the tapes, so it makes no sense to convert to other formats unless necessary. For example, the conversion to YUV 10 bit or RGB implies a 50% increase in storage space and nearly double the render times, without gaining any more detail than on the original tape.

Note that this refers only to the transmission and storage of image, not their processing. In normal circumstances, Mistika will always process images at their highest quality format (RGB 4:4:4 at 16bit per channel or even HDR) in order to avoid the possible degeneration or information loss.

Similarly, clips of different formats can be mixed in the same composition (YUV, linear RGB, RGB 10 bits logarithmic, etc.), and Mistika will make the necessary conversions transparently, for the user to see. In either case, the final output depends on the following considerations:

° If the video output is activated, Mistika will convert the final result in the video output to the format selected in Mistika Setup->Video I/O.

° If a render process is being carried out, a choice can be made as to whether to store the images in YUV or RGB format. This will depend on the format required for the final product; for example, if we are considering a later transfer to HDCAM VTR, YUV8 is normally used, and if we need to transfer to dual link SRW HDCAM or deliver file sequences in RGB formats, then we use RGB10 format.

Illegal colors and out-of-range workflows

If images are being viewed on a computer graphics monitor, Mistika converts the result to RGB format (converting from YUV to RGB if necessary), since such monitors can only use RGB. This type of conversion is carried out internally without any user intervention, but it is necessary to bear them in mind because the two RGB/YUV versions may show visual differences, and some colors can only be represented in the YUV video output.

For example, images captured YUV that have information that is out-of-range for RGB can only be seen in their entirety in the YUV video output, eg, in RGB, maximum luminance can only be obtained for the color white (with RGB components at their maximum value), while in YUV format, both the "Y" luminance component and another color component may be at their maximum value, resulting in a color brightness displaying total luminosity and color saturation, which would be impossible in RGB. These kinds of situation are usually referred to as “illegal color” in RGB.

Another conflictive situation concerns out-of-range YUV signals. The standard YUV format (rule CCIR_709) reserves values less than 16 and greater than 234 (out of a total of 255) for the superimposition of super white and super black in televisions and for other control information. However, some HD cameras intended for film production usually use gamma curves that exceed these values in order the register more information (especially in the area of highlights).

In such cases, a loss of information will be noted if the image is captured in standard YUV or RGB formats. The solution to this issue is to activate Mistika Setup->Video I/O->Use Extended Range before capture in order to store out-of-range information too, and afterwards to activate the HDR mode in the color corrector in Mistika. Thus, out-of-range work can be done without problem, and with the help of Mistika’s vectorscope and waveform the user can decide to normalize the image or leave it out-of-range and transfer it to video as it is.
Linear RGB 4:4:4 8 bits

This format uses 3 bytes for each pixel (one byte for each channel of RGB color). Being linear means that, in contrast to a logarithmic format, the amplitude of the original signal is represented by a directly proportional value. For example, "200" represents 100 times the intensity of a value of "2".

The term 4:4:4 indicates that the same number of samples is taken from the 3 original RGB signals.

The use of this format is recommended in the following cases:

- This format is mostly used in graphics software applications because computer monitors function in linear RGB, and it is easier to devise algorithms that use this format (very few applications are capable of working with YUV or logarithmic RGB). For this reason, in general its use is recommended when the final objective is to export images to other software applications or multimedia production.

Linear RGBA 4:4:4:4 8 bits

This format is similar to the previous one, but it has an additional alpha channel to contain the composition mask, storing a total of 4 bytes per pixel. RGBA should be used in these cases:

- When importing images containing an alpha channel (typically .tga files).
- When wishing to render an effect while conserving the alpha channel in the final clip.

Note: The YUV format does not have an alpha channel, although an alternative method can be used: the mask can be stored in a separate YUV clip, and then the External Key effect used to associate both clips and produce an RGBA output to use in the composition.

Logarithmic RGB 4:4:4 10 bits

This format is not linear like the previous ones, as its stored values represent a logarithmic curve that is used to compress the information corresponding to shadows and bright lights. The logarithmic system allows simultaneous representation of luminance levels that are close in shadow and very different in lit areas, while maintaining the capacity of representing the midtones in a similar fashion to a linear format.

To store this format efficiently, 10 bits per channel have to be used, so that a total of 4 bytes per pixel are stored.

Note: The RGB 10 bit logarithm format can also be used to save images with linear gamma curves but in 10 bit, as the archive format is identical. The only difference is in how the images were originally codified (i.e., which gamma curve was used). In general, logarithmic gamma curves are maintained when the final version of the images will pass through a cine film projector, whilst it will be converted to linear when the final product will be video. In all cases, the format per se will not change, and for this reason when references is made to this, the only mode found will be RGB10.

Mistika can import RGB 10bit format from SDI dual link captures, DPX or Cineon files, and Tiff 16bit, which are normally generated in one of the following ways:

- With a film scanner: the emulsion of film negative has a wide dynamic range, and under certain conditions, details in areas of extreme illumination (lights and shadows) can be detected. High quality film scanners digitize in Cineon or DPX format which conserved these details.
- Via a high-definition video camera with a wide dynamic range: Sony F23, Arri D-20, Arri D21, Alexa, Red One, Red Epic, Phantom, Weisscam, etc.
Using 3D and effect applications. These applications can offer a greater dynamic range when rendering 10bit log formats such as DPX or Cineon. Generally, when working in film formats, 3D sequences for effects can be called up in these formats. For these purposes, *Mistika* can also import the 16bit Tiff format Tiff, although this is less efficient in terms of speed and disc space than DPX.

**Note:** given the large storage and processing requirements for these formats they should never be used indiscriminately, as there will be few cases in which they will give significantly better results than linear RGB 8 bits.

### HDR

It is also possible to work with "HDR" formats (.exr and .hdr) which are formats with a wide dynamic range (16bits per channel) and which can also handle out-of-range values (above 100% and even negative colors).

These out-of-range areas offer extra information that is not seen but which can be recovered when necessary, typically using the color corrector (*Color Grade* effect) in HDR mode.

**Note:** The majority of effects can also treat these images in transparent way, since they work in 16bit, but the *Color Grade* color corrector is especially designed to allow us to select the range we want to use.

*Mistika* works internally in 16bit format with HDR floating point. For example, a specific effect can darken an image, pushing the detail of the shadows towards negative values and avoiding the loss of this information. Thus a posterior effect (for example, glint) can recover this information without problem.

*Mistika* does not have its own specific file format for codifying more than 10bits per channel, since these formats are very specific to each device. Instead, Mistika supports natively the most well-known formats of this type such as .exr, .hdr, Tiff16bit, DPX12bit, R3D, J2K (JPEG2000) etc.

### XYZ

The XYZ color space allows a wider range of colors than RGB and YUV, being able to codify all the colors visible to the human eye. Thus it is useful for doing a master with all the available color information, from which diverse present and future formats can be derived. Furthermore, there is currently a strong tendency to use this space as reference in Digital Cinema.

To export to this format, we use the *RGB to XYZ* effect, and normally run a render to Tiff16 (for DCM) or J2K (for posterior encapsulating in DCP), the most common standard formats for this color space.

The default parameters of the XYZ effect meet the standards for digital cine (DCI) so we do not normally need to modify them. However, on some occasions, it may be desirable to calibrate a projection room to compensate for its differences from the standard. In these cases, a calibration test is run in the projection room to obtain the parameters that should be applied to the effect. Thus a very precise calibration for said room is achieved, while the images produced in this way will be valid for projection in said space.

### Transformations between linear and logarithmic colour spaces

In general, for the correct viewing of logarithmic images on a linear device, a LUT3D should be applied, as these LUT allow for the correct calibration of the different devices (monitors or digital projectors) involved through to the final positive.

When converting color spaces between linear and logarithmic, the following specialized tools are available:

- The *Cineon Correct/Export* effects uses the Kodak standard Cineon for converting
from logarithm*(1) space to linear and vice versa, with the ability to compress highlights into a linear range without losing detail (the parameter Softclip). This Softclip parameter protects the information of bright lighting when passed to a linear color space.

- The effects LogCorrect and LogExport offer inverse conversions from logarithmic to linear (LogCorrect) and from linear to logarithmic (LogExport), according to the mathematic "logarithm" function (and so without following the Cineon standard). Generally it is less efficient as it does not have the Softclip function, but will have to be used when the client or other related applications require this conversion formula.

These effects are recommended when temporary conversion from logarithmic to linear is required in order to compose images that have been produced in different color spaces (for example, linear 3D images) or to insert certain effects that work better in linear color space.

If exactly the same parameter values are used for two of these complementary effects, the final output will have the same gamma curves as the original.

(1): The main difference between both pairs of effects is that the effects LogCorrect and LogExport carry out a standard logarithmic conversion (the luma value elevated to the gamma function defined by its parameters), while Cineon Correct/Export use a more complex and specific formula created by Kodak and which describes more exactly the behavior of the cine negative (the standard Cineon cannot strictly be defined as a logarithmic function, although owing to its similarity, it is often colloquially described thus).

In general, when dealing with cine images, use of Cineon Correct/Export is recommended, since this also makes available the SoftClip function; LogCorrect and LogExport are only recommended when a standard logarithmic conversion is expressly requested by the client, or for compatibility with other applications that do not support the Cineon standard.

For the sake of simplicity in the following explanations, the term "logarithmic" will be used to refer equally to both types of conversion, although as mentioned they are not exactly alike.

Sometimes we may wish to change the color spaces and/or reduce the depth of bits of various clips, in order to unify clips of different color spaces, to compare different versions, to simulate deterioration processes during posterior conversion to other formats, or simply to achieve a posterize effect. To do so we can use the effect Scope. We can apply an effect of this type to the clips to be unified and choose the color space and depth of bits desired via the respective parameter.

For more information, see the chapters on the effects mentioned.
C-8 Global production workflow and two-way conforming

This new workflow also allows the integration of dailies with the offline processes. Now it is possible to work with them in parallel, while maintaining two-way communication between all the areas of post production.

*Mistika* Live cam also be used for realtime adjustments of the camera signal, production of dailies and VFX references. This combination allows the use of all *Mistika*'s tools in the phases of pre-production and during the shoot.

*Mistika* can read most RAW camera codecs. If these types of files are being used in an initial phase, it is possible to prepare the camera material according to the initial settings and simultaneously produce predefined versions (dailies, quality, offline) that allow timecode and sound track.

In the next stage, *Mistika* can be used for advanced color correction and other effects while the material is edited in parallel material. Finally, the new EDLs can be conformed against the contents of the *Node Graph* (.rnd files), where all the effects are reset to the new values and durations automatically.

Furthermore, this process maintains access to the original camera files and metadata until the end, thus providing the highest possible quality for mastering.

Additionally, the use of multi-layer groups means different versions are maintained, or changed to proxies in realtime when working with codecs that are difficult to process.

Thanks to the DCP output module, DCP packets can be exported at any point of the process, whether for viewing dailies of revising material printed in the lab.

### Example of global workflow

1. **Import and initial settings**

   As a first step, load all the rushes into *Mistika* by selecting them in the root directory and using the commands *Import All Sequences* or *Import All Movies* with the *Media* tab (*Node Graph Editor->Dashboard->Media*). This way, all the media in the current folder will be linked in one single operation. This operation creates link-type clip files (with *.lnk* extension) in the *DATA* directory of the project. It is recommendable to organize the material into subfolders within this folder.

   If there is material derived from tape, capture this too via the *VTR* tab (*Node Graph Editor->Dashboard->VTR->VTR Capture*).

   Carry out a primary color correction and other preliminary adjustments. For stereoscopic projects, we recommend setting the geometric alignment, balancing color and synchronizing both eyes via the *Stereo 3D* effect (*Node Graph Editor->Dashboard->Fx->Mistika->Stereo 3D*).

2. **Creating dailies and clips for offline editing**

   With the *Output* tab (*Node Graph Editor->Dashboard->Output*) create an new 2D media, or a version in "Side-By-Side" mode if the project is stereoscopic.

   To create clips intended for offline editing, *Mistika* supports the writing of timecode and audio in MXF-VC3 format.

   Activate the *Split to Segments* option (an MXF image file is created for each clip in
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Node Graph and the Audio In Movie button (an MXF file is created for each audio track).

The Virtual Slate tool can also be used to overwrite metadata of image files. It is possible to define specific availability of this data by editing the file $HOME/Mistika-ENV/shared/virtualslate/Layouts.xml.

All these render processes can be administered via the Render Batch Manager of Mistika.

Equally, DCP packets can be created to be shown in a projection room if necessary.

3a. Offline editing

Send the MXF files to the Avid workstation in order to begin the offline editing in parallel.

In Avid systems, the MXF files must be located in a directory with the complete and specific Avid address for the media folders. Next, use the "Media Tool" of Avid to import the clips. In Avid, the import of the media from "All Projects" and not just the current project must be activated. Then, from the import, Avid can use the MXF clips without needing transcodification, including timecodes and de audio tracks.

3b. Advanced setting and corrections

In Mistika, it is possible to continue fine-tuning initial settings and move onto more complex corrections. In this stage of the process, different operations can be carried out: precise stereoscopic adjustment, advanced color correction, noise correction, image restoration, visual effects and composition.

This whole process can be carried out in parallel and interactively. Each time an EDL is received, it is possible to conform it directly against the contents of the Node Graph in Mistika.

4. Conforming against render scripts (.rnd)

With the Conform tab, select the Mistika Clips conform mode (Node Graph Editor->Dashboard->Conform->Mistika Clips). This mode allows conforming against clips and scripts such as .clp, .lnk and .rnd.

Next, define the directory that will contain the render script (.rnd) in Mistika. The .rnd files are generated in all the processes of render or via the Write Script Only command. This kind of file is similar to an environment file (.env) since it will recreate each effect in its correct position and duration as defined by the new EDL.

When the .rnd files of the render of the initial settings (Step 1: Import and initial settings) are created, a copy of them can be saved automatically together with the original material being processed. This is done by activating the .rnd With Media button in the Output tab (Node Graph Editor->Dashboard->Output->Render). This makes it easier (in this stage) to carry out the process of conforming without worrying about finding the .rnd folder that corresponds to the new EDL.

It behaves as if .rnd files in Mistika were metadata from original camera material. So it is very useful when transporting discs with original material to other Mistika systems for re-conforming.

Different versions of render scripts for the same clip can be created at a later time. These versions can be conveniently renamed in order to track changes. Keeping the .
rnd files together with the rushes is a good way of being sure that the media in question can be conformed in any Mistika workstation.

The conform of the render scripts (.rnd) will load the media in groups whose contents are the original clip and the effects applied. If it is necessary to ungroup them, use the dedicated macro Trim & Ungroup (Node Graph Editor->Dashboard->Edit->Edit->Macros->Trim & Ungroup). This command defines the cuts in a render group, respecting the segment references by the EDL. The command Ungroup (Node Graph Editor->Dashboard->Edit->Edit->Ungroup) simply makes all the render script available in the Node Graph without reference to the EDL.

5. Preview and delivery

In any stage of the process, it is possible to create master formats and DCP packets to be reviewed in a projection room.

For more information, see the chapter DCP.
Mistika SETUP (mConfig)
D-1 Installing the Mistika system

To install a new system, use the *SGO Mistika* INSTALLATION TOOL, which is included in a start-up DVD and will install the Linux OS (Suse 11) along with all the required *SGO Mistika* software, including drivers for all the supported hardware, additional video codecs, plugins, tutorials, and a wide range of other complementary features.

Once installed, access the *SGO Mistika*’s user account to use the *Mistika Setup* tool in order to finish configuring the system, and from that moment on accessing the same point to prepare each different working session.

The specific hardware provided with “Turnkey” systems is constantly evolving (see the latest "Release Notes" for more details) or contact your nearest *SGO* office.
When it has started up, use the tool **Mistika Setup** to configure the system. The different configuration parameters of the application are specified here.

The tool can be started by:

- Typing **mConfig** into any Linux shell.
- From within **Mistika**, via the **Mistika Setup** button in the **Attributes** tab (Node Graph Editor->Dashboard->Edit->Attributes).
- Double clicking on the desktop icon.

Many of the configuration parameters of this tool must be specified before starting up **SGO Mistika**: if any are modified, it is necessary to exit and restart the application for the changes to be recognized.

There are other configuration parameters that typically require modification and can be changed from within **Mistika** without needing to close it; they are usually located in the **Setup** tab (Node Graph Editor->Dashboard->Edit->Setup).

Finally, certain configuration parameters are not usually modified, and by default are hidden, although they can be activated via the **General->Expert Mode** button, which makes them accessible the on next start-up of the **mConfig** application. (These parameters are intended for expert use and are hardly used; some are not detailed in this document. Their modification is only recommended after consultation with SGO’s technical department.)
D-3 General

This area allows modification of different general parameters of the application.

### General

<table>
<thead>
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<th>General</th>
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</thead>
</table>

#### Standard Preset

This option allows the simultaneous configuration of all other options, starting from a series of predefined configurations. By default, presets for different video formats, such as PAL, NTSC, 1080_24p, etc., are included, but the user can specify new presets in order to save sets of values which are often used, whether or not they have anything to do with standard video format.

**Delete Current Format...** deletes the active preset from the disk permanently and it disappears from the menu.

**Note:** The default presets installed by the system cannot be deleted.

The second option of this menu is **Create New Format...**. This option permits the creation of a new preset. When run, the system asks for the name of the new preset to be created. The current configuration data, indicated with an asterisk “*”, will be saved in a preset with this name. When a preset is selected, all the parameters marked with an * after their name will be changed to the new value defined by the selected preset. Parameters that do not have the symbol * after their name do not depend on the format, so they remain the same when changing from one preset to another.

The next option is **Delete Current Preset...** This allows deletion of the active preset.

To modify an existing preset, select the preset to be modified, change the values and press the **Save Preset** button.
**Important note:** If the values of a preset have been changed and then another one is selected, the system will show a message to this effect, asking whether the current preset should be saved before changing the next, since if we do not, any changes will be lost. If we exit by clicking OK without having clicked *Save Preset*, the changes made will not be saved with the current preset, although they will be in effect for the following work sessions in *Mistika*, until the presets are changed again.

---

**Autosave time (secs)**

**[300 (10 / 10.000)]**

This defines the frequency (in seconds) with which the system makes an automatic save of the environment (the archive has the same name, ending in *auto.env*). In this way, in the case of system failure, the last automatically generated backup can be reloaded.

**Note:** In certain systems the process of autosave can require the temporary disconnection of the video output, and in these cases the video monitor image will disappear for a short time. This is not of particular importance, as *Mistika* never allows this to happen during playback or video capture.

---

**Diagnostics at startup**

**[True (True / False)]**

If this is activated, when the window opens, a series of checks are run on the coherency of the configuration parameters. It can be deactivated to avoid error alerts appearing continually, if their solution is not an immediate priority.

---

**Execute diagnostics**

This runs a complete system check, including an analysis of the coherency of the configured parameters with the available hardware, and the existence of /capacity for writing in all the directories defined in the section FilePaths. Completed checks will appear on the system console, whilst indications of errors/problems found will be shown in the form of dialog boxes. An example of checked elements as they appear on the console is shown below:

```
mConfig checking system: License server is running
mConfig checking system: This machine does not have video board (or the DVS Video board driver is not loaded)
mConfig checking system: Nvidia driver is installed and ready to be used
testing path: PROJECTS PATH /MATERIAL/WORK
mConfig checking system: Path PROJECTS PATH /MATERIAL/WORK is ok
testing path: AUDIO PATH /MATERIAL/AUDIO
mConfig checking system: Path AUDIO PATH /MATERIAL/AUDIO is ok
testing path: MOVIES PATH /MATERIAL/MOVIES
mConfig checking system: Path MOVIES PATH /MATERIAL/MOVIES is ok
testing path: TMP PAINT PATH /usr/tmp
mConfig checking system: Path TMP PAINT PATH /usr/tmp is ok
testing path: REALTIME STORAGE PATH /MATERIAL/IMAGES
mConfig checking system: Path REALTIME STORAGE PATH /MATERIAL/IMAGES is ok
ret /dev/sda8 /MATERIAL xfs rw 0 0
mConfig checking system: There are 1 CPUs, ready to be used
mConfig: updating previous entry in .cshrc
mConfig checking system: Info: Double buffer is correctly configured
mConfig: Checking KDE...
mConfig: Diagnostics finished
```
mConfig: fssnameservers exists...
mConfig: snfs server: localhost
mConfig: snfssrv is localhost
mConfig: SNFS lic  # Expiration Date: 10/10/2008
mConfig: getDiskDev for /home/odin/Mistika-ENV/.Mistikarc ...

- Low Disk Space Warn

If this is activated, *Mistika* warns the user when the disk space is low.

- Version Manager

**[Mistika-ENV]**

From version 4 onwards, *Mistika* has this version control tool available - it shows a list of all the available versions, from which the user can choose the one to be employed in an upcoming *Mistika* session.

**Note for system administrators**: the following explanation is given in order to understand how upgrading functions:

All the software for *SGO Mistika* is initially found in the file *Mistika-ENV*.

Each time an update is installed, the installing process automatically makes a copy of the previous version with the name *Mistika-ENV.PreVersionNumber*. (or *PreviousInstallationDate* depending on the case).

This tool shows a list of the *Mistika-ENV.* type with all existing versions, and when one is selected, a link *Mistika-ENV* is created indicating the selected folder.

Previous versions are not named with their original name, since there will be no guarantee that the user has not carried out subsequent updates manually.

For example, when version 5 is installed, the previous version will be moved to a folder called *Mistika-ENV.PreV5*, irrespective of its current update status.

- Expert mode

**[False (True / False)]**

If this is activated, then the next time the tool is started up infrequently used parameters will also be loaded; it is recommended that they are only modified after consultation with *Mistika*’s technical department.

- User Settings

New user sets can be created directly in this menu or by importing them from a settings file. A user set include hotkeys, persistent buttons, and color panel preferences.
D-4 File Paths

Specifies the work directories that SGO Mistika will use. These fields can be written directly or can be selected graphically using the selection button accompanying each one (this latter method is recommended as it helps prevent errors).

**File Paths**

- **Teardrop file changer all default paths_**
- **Select project directory**
- **Project directory**

Allows the user to change all the paths and directories that Mistika uses by default.

**Project directory**

Default value: `/home/Mistika/WORK`.

**Range**: text field that indicates a folder in which the user has write permissions.

**Description**: folder that stores Mistika projects. New projects generated are stored here.
Keep tutorials project

**[False (True / False)]**

If this is activated, when changing the location of a project's (Projects Directory), a link to the project "tutorials", included with the *SGO Mistika* distribution package, will be created in the new location. It is recommendable to keep this, since future versions will try to install useful examples, specifically relating to updates, in this project.

Media Folder Directory

**Default Value:** `/MATERIAL`.

**Range:** text field that indicates a folder in which the user has write permissions and which has sufficient bandwidth to work in realtime in the required image format.

Directory which holds houses volume of mounted realtime storage, or a subdirectory of the same that stores material derived from images in *SGO Mistika* native uncompressed format (.js).

It is recommendable to use specifically dedicated partition to avoid the discs being fragmented.

Select DCP MOVIES Directory

**Default Value:** `/MATERIAL/DELIVERY/DI`.

**Range:** text field that indicates a folder in which the user has write permissions.

Directory where files and folders created by the export of DCP packets are stored. It also serves as an obsolete directory to make projects prior to *SGO Mistika* v6.5, in which Movie files make reference to this directory, compatible.

Change Global Presets Directory

**Default Value:** `/home/Mistika/Mistika-ENV/global_presets`

**Range:** text field that indicates a folder in which the user has write permissions.

**Description:** directory that stores FX-Presets. These files may be shared between various *SGO Mistika* users in a network. This link is available via Visual Editor->Canvas->Toggles->FX Presets.

Change Display Filters Directory

**Default Value:** `/home/Mistika/Mistika-ENV/shared/display_filters`

**Range:** text field that indicates a folder in which the user has write permissions.

**Description:** directory that stores Display Filters. These files may be shared between various *SGO Mistika* users in a network. This link is available via Visual Editor->Canvas->Toggles->FX Presets->Display Filters.
Change Render Setup Directory

**Default Value:** `C/MATERIAL/WORK`.

**Range:** text field that indicates a folder in which the user has write permissions.

**Description:** directory that stores Render Setup presets. These files may be shared between various SGO Mistika users in a network. This link is available via Dashboard->Output->Render.

### Predefined storage paths (Path Builder)

Path Builder is a tool that allows the user to define target directories for render processes of any type. Once defined here, these different types appear as available in the Output tab (Dashboard->Output->Render). These render targets allow the automatic construction of complex directory and name paths, using different useful information such as the name of the render, the file name of the original media, etc.

It is recommendable the filesystem chosen is "SNFS", since Mistika especially optimized for this type of filesystem, as it is the only one that offers realtime performance with DPX 2K formats and higher. When this is not possible (on laptops and training systems), use at least an "XFS" filesystem. Other types of filesystem offer performance that is much lower than those mentioned.

The window *Path Builder* contains documentation explaining its use.

### Path Builder - Manage storage paths

**Path List**

List of all the defined and created directory paths in use.
## File format

Options that allow the definition of the image format to be associated with the directory path:

**Xfs.dev**
Uncompressed `.js Mistika` clips.

**Movie.dev**
*Movie*-type clips, sequences of compressed images in a single file.

**Disk.dev**
*Image*-type clips, sequences of numerically ordered images.

**Sound.dev**
*Audio*-type clips, `.aiff` or `.wav` files.

## Symbolic Name

Data field that allows the definition of the names with which the path will be viewed in *Mistika*'s interface, within the *Target* menu (`Node Graph Editor->Dashboard->Output->Render`).

## Basic fields

This series of buttons allows the construction of a master model according to which created files will be named.

Each directory is represented by the name defined by the user (*Symbolic Name*) with an underscore `_` used as a separator. Direct editing is permitted in *Storage Path* following this syntax, although care is recommended for safety when using the buttons.

- **Base folder**: Button that opens a new system explorer window, in order to select the location of the directory.
- `[project]` *(Project Name)*
- `[renderName]` *(Render Name)*
- `[segmentIndex]` *(Render Segment Index)*. Render script number, defined by Edit Marks.
- `[tapeName]` *(Source clip name)*. Original name of the processed media file (if there are several, the name of the first to be evaluated is used).
- `[frameIndex%5]` *(Frame number with padding)*. Numbering of the frames with padding.
- `[frameIndex]` *(Frame number with no padding)*. Numbering of the frames without padding.
- `[ext]`. File extension.
Stereo 3D

- \(\text{[eye?labelLeft.labelRight]}(3D \text{ Stereo eye})\). Defines the eye assigned when chosen in Output.
- **Label for left eye:** Left as default, although this can be edited.
- **Label for right eye:** Right as default, although this can be edited.

Other fields

- / (barra), - (guión), _ (guión bajo). Punctuation marks used for improving reading of the fields defined in the file names to be processed.
- \([\text{envName}]\)(Environment Name). Mistika environment name.
- \([\text{resolutionX}]\). Horizontal resolution of the file to be exported.
- \([\text{resolutionY}]\). Vertical resolution of the file to be exported.

Storage Path

Data field containing the file model as defined by the user, in nominal syntax values.

- **Create new path**

  Creates a new directory path, once the model master is created. The new path appears in Path List.

- **Remove selected path**

  Removes the path selected in Path List.

- **Update changes to selected path**

  Applies changes to the path selected in Path List.

- **Close**

  Closes the Path Builder window.

**Example:** Each user needs to adapt a structure and organization for each working situation; an example of the construction of a path and where it will store a render is shown below.

**Storage Path:** In Base folder we choose the folder in which files are saved, /MATERIAL. Then with the buttons available in Path Builder, we construct the path which will be as follows:

/MATERIAL/[project]/[renderName]/[eye?Left:Right].[ext]

We define a **Symbolic Name** as my_path and the **File format** as Movie.dev.

We open the name test project and in the Output we chose render for Movies, an AVI format, and our path in Target -> my_path. We name the file to be rendered as myrender
and select in Stereo 3D Mode -> Left Eye Only. We chose the render in Foreground or Background and the where the file will be found (abbreviated for greater ease):

/MATERIAL
    /test
        /myrender
            /left.avi

This naming syntax allows us to have in a single personalized path, a target for each project, timeline, render name and even define which eye pertains to the file, without needing to create a relative path for each project.

### Cache files and proxies

- **Cache Eye**
  
  
  **[NO_STEREO (NO_STEREO / LEFT / RIGHT / BOTH)]**
  
  Indicates the image or eye to be rendered as the cache when working with stereo images.

- **Cache Base Folder**
  
  **Range:** text field indicating a directory in which the user has write permissions.
  
  **Description:** directory which stores the media created by the cache function.

- **Cache syntax**
  
  **Range:** text field indicating a syntax similar to Path Builder for defining cache folders.

- **Cache Device**
  
  **Range:** non-editable field in which the final result constructed with the previous fields for the cache directory is viewed.

- **Sequence Proxie dir**
  
  **Range:** text field indicating a directory in which the user has write permissions.
  
  **Description:** directory which stores the media created by the proxies of sequences of numbered image files.

- **VectorParin Temporal Directory**
  
  **Default value:** `/usr/tmp`.
  
  **Range:** text field indicating a directory in which the user has write permissions.
  
  Directory for storing the temporary files of the cache of the VectorPaint effect. For
HD or cine projects it is recommendable to redirect them to the fastest available storage. If the cache is activated (Visual Editor->Dashboard->Paint->Setup->Cache(Use)) the VectorPaint effect stores every modified frame here, so they do not need to be redrawn each time they are evaluated.

**Obsolete relative paths for backward compatibility**

Parameters that are necessary for reading environments from versions previous to Mistika version 6.5 (new environments created in versions posterior to version 6.5 will not use these paths). These parameters will define the realtime storage system for image files, indicating their location and the best way of accessing them.

### Audio Storage Path

**Default value:** `/MATERIAL`.

**Range:** text field indicating a directory in which the user has write permissions.

Directory where audio files are stored (.aiff and .wav files) in versions of Mistika prior to v6.5. These files are generated when capturing clips with audio or when rendering with audio.

### Rt.Storage Path

**Default value:** `/MATERIAL`.

**Range:** text field indicating a directory in which the user has write permissions and which has sufficient bandwidth to work in realtime with the required image format.

Directory (or subdirectory) in which the realtime storage volume is mounted, and which stores the image source material in native SGO Mistika uncompressed format (.js files).

It is recommended that a dedicated partition is used to avoid fragmentation of the discs.
D-5 Master Format

This area allows modification of the different parameters relating to the image format in which we wish the application to work, both internally and as output via the video card.

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<th>D-5 Master Format</th>
<th>Coders</th>
<th>Performance Options</th>
<th>Batch Manager</th>
<th>TETEM</th>
<th>Interface</th>
<th>License</th>
<th>SNAPS</th>
<th>Target</th>
<th>SDLUTS</th>
<th>Units</th>
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<tbody>
<tr>
<td>Master Formats</td>
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<td>Render Code *</td>
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<td>Render Res *</td>
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<td>(Project resolution. Define the resolution for the master delivery format. It can be different than resolution of the video format used for the reference display)</td>
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<td>Aspect Ratio *</td>
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<td>(Image aspect ratio. Used by effects creating geometric patterns. When changing render resolution it is set to XY (square pixels), but you can change it later)</td>
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<td>(only affects to YUV render, activate it for CCR-749. Deactivate it for CCR-401, in general, always activate it except for old SDTV formats)</td>
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<td>MTF Settings</td>
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<td>FPS for D5, conform, Audio sync, and Playbacks to SDI. It can be different than VideoFrameRate (change VideoFrameRate before this setting)</td>
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<td>Video board format (DVB Centaur and Axom. Also used to define the Playback Cache format, even without video board)</td>
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<tr>
<td>Video Resolution</td>
<td>PAL</td>
<td>NTSC</td>
<td>960x1280</td>
<td>1024x1080</td>
<td>1280x1080</td>
<td>1920x1080</td>
<td>1280x720</td>
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<td>Video Frame Rate</td>
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<td>29</td>
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<td>48</td>
<td>69</td>
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<td>Video Mode</td>
<td>Progressive</td>
<td>Interlaced</td>
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<td>Video Converter</td>
<td>SDI</td>
<td>HD-SDI</td>
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<td>(Note: All SDI modes require an Axon board, plus an optional license. QuadSDI modes require AxonHD and BreakoutBox option)</td>
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<td>Color space</td>
<td>YUV</td>
<td>RGB</td>
<td>4:4:4</td>
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<td>(Physical video signals mode. RGB444 requires RGB24 dual, 3G, or DV/HDMI 12-bit formats (ending in _12) are rarely used, typically for a few DLP projectors)</td>
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<td>Note:</td>
<td>Video mode: SMPTE274/270</td>
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</tr>
</tbody>
</table>

**SGO Mistika** can work with input images whose format differs from that defined in this section. What is defined here is the output format, i.e., the image format that ALL effects will produce, both in playback and when rendering (**Master Format**, in the upper section) and also the configuration of the output of the video board.

For example, if we have defined a format of HD 1920x1080 here, we can load 2K images, which will be processed and rendered in HD, even while using PAL or NTSC monitors to view the content of the video output. In this example, a render will always produce 1920x1080 images.

Take note that **SGO Mistika** has some effects that allow the loading of the whole image, even if it has a different size, but that it will always produce its output image in the format defined in this section: specifically, the effects **Framing**, **Color Grade** and **Comp3D** have
parameters for defining how this conversion should be carried out. The rest of the effects simply crop to the center of the image corresponding to the size defined in this section.

Furthermore, it must be remembered that the same environment can be opened in a different resolution in each session. So, to continue the previous example, in the next session we can select a de PAL preset (Render Format XY = 720x576) to open SGO Mistika and produce a render with PAL dimensions.

### Master Format

- **Render Size X**
  
  ![Image width in pixels. In the case of YUV images an even number is recommendable.]
  
- **Render Size Y**
  
  ![Image height in pixels.]
  
- **Frames per Second**
  
  ![Number of frames per second which defines the real-time production of the format of the image. 25 for PAL, 29.97 for NTSC, 24 for 24p, etc.]

  Decimal values can be introduced, and as well as specifying the velocity of the graphics monitor (given that the video output is defined by the format chosen in the section Video I/O) the correct value is also especially important to maintain synchronism between image and audio tracks.

  It is also possible to specify a speed that does not correspond to any video format. In these cases the playbacks should be observed in the graphics monitor, since the video output may not be able to run at that speed and one-frame jumps may be seen occasionally.

  However, it is very important to remember that Mistika is much more optimized for real-time in video output, and less so for playback to graphics monitors.

  **Note**: The Monitor Display will always try to reach the speed specified here, but the indicator will show the current speed at which the images have been processed (this indicator updates once a second).

  In some cases it will be observed that this number is slightly lower, but this does not necessarily mean that playback is not happening in real-time, but rather that, temporarily, it has been unable to calculate the number of frames necessary, since it always has a precalculated number of frames available to tolerate such situations (Ring Buffer parameter). In cases when real-time has actually not been achieved in the video output, an indicator called “LostSync” will appear until playback is halted.

- **Aspect Ratio**
  
  ![This is the aspect ratio desired for the output format (it is the ratio of the physical]
width divided by the height). It does not necessarily coincide with the result of dividing X by Y (although this is most common), given that certain formats are not based on square pixels. For example, the format PAL SDI is 720 pixels wide and 576 high, so the result of the division would be 720/576 = 1.25. However, the aspect ratio of the format PAL is 1.33, since the standard PAL defines that this must be the relation between the width and height of a standard video monitor (and so uses rectangular pixels, not square ones).

Generally, for complex cases of anamorphic images, or ones that require manual conversions of aspect ratio, do not modify this value. In these cases, it is recommendable to apply a Framing effect to modify the corresponding parameters.

**SGO Mistika** also uses this value to accurately warp the geometric patterns it is required to generate, such as squares, circles etc. Thus we can see that a circle generated in VectorPaint or with Wipe Circle does not appear perfectly round, but rather flattened at the sides, if viewed on a graphic monitor with square pixels. However, it will appear perfectly round on a video reference monitor if this has the aspect ratio defined here.

- **Notes**

Field which shows warnings about the current configuration of the format of the image when anomalies or dangerous situations are detected. To refresh this information, activate the command Execute diagnostics (Mistika Setup->General->General).

- **HD Color Space (709)**

If activated, this carries out the color correction of the step from CCIR-601 to CCIR-709 when doing 3:2 Pull Down renders. This option is only useful for HD versions.

- **NTSC Fields**

[False (True / False)]

If activated, the dominant, or first, field will be the odd number (NTSC standard). If not activated, the even number will be dominant (PAL and interlaced HDTV standard).

**SGO Mistika** allows the mixing of interlaced and non-interlaced (progressive) clips in the same composition, and you can always render with or without fields, so there is no configuration parameter to specify this aspect of the output format at this moment (in the case of captured clips, it is specified when they are captured). Thus, we do not decide here if the clips we are going to produce are going to be interlaced (done in the Output tab of the Node Graph Editor), but only define which will be the dominant field in the output format when the images are played back interlaced or when rendered by fields.

**Note**: this field can also be activated to invert the fields in the output to the interlaced stereo monitors (one eye per field), and these use the odd-numbered filed as the dominant eye. This can be done even in progressive format, and in this case it only affects the video output, which is what is needed.

- **Main Frame Rate**

[25 (numeric field within single inverted comma)]

Number of frames per second that define the playback in realtime of the image format: 25 for PAL, 29.97 for NTSC, 24 for 24p, etc.
Values with decimal points can be input, and also it is possible to define the playback speed of the graphics monitor (given that the video output is defined by the format selected in the central section central if this tab), and it is especially important to maintain synch between image and audio tacks.

Speeds that do not correspond to any video format can also be defined. In these cases, playback should be viewed in the graphics monitor, in the video output cannot reproduce at that speed, resulting in periodic skipping by one frame in the image.

However, it is important to remember that Mistika is far more optimized for realtime playback in the video output than playbacks to the graphics monitor.

**Note:** the Monitor Display will always try to reach the speed defined here, but the indicator will show the speed that it has actually achieved to process the images (this indicator is refreshed once per second).

In some cases, this number will be seen to drop although this does not necessarily mean that the playback is not happening in realtime, but rather that it has momentarily not been able to calculate the necessary number of frames, but it will always have a certain number of pre-calculated frames to deal with these situations (RingBuffer parameter). In cases which realtime has been lost in the output of video, another indicator "LostSync" will appear, and remains onscreen until playback is stopped.

### Video board format (DVS Centaurus and Atomix)

#### Use DVS Video Board

[True (True / False)]

If True, the SDI video card (DVS models) is controlled from SGO Mistika and audio is reproduced through its audio outputs.

If False, the SDI video card is not used. It must be deactivated for configurations without video board, or if problems that might be related to the video subsystem are observed, in order to carry out the relevant tests.

When deactivated:

- The audio is sent to the audio output of the mother board or equivalent output. If active, the audio is sent exclusively to the video board with its own audio outputs, since this is the only way of achieving an output synchronized with the image.
- If deactivated, the capture panel of SGO Mistika will try to use the port Firewire port to capture from a camera or DV type VTR.

**Nota:** if a DVS SDI video board has been installed in the Workstation slot for the first time, when Use Video Board is activated, it will be detected and we will be prompted to install the DVS driver automatically. This process can take more than an hour, as, being the first installation, it is usually necessary to compile all the kernel modules (depending on how the system has been installed).

#### Video Resolution

[PAL (PAL / NTSC / HD formats / 2K formats / 4K formats)]

Indicates with which video resolution the SDI video board is to be used, both for playback and video capture.
The resolution of this format does not necessarily coincide with that of the image selected (Render Format), although they will usually be the same.

For example, we can work with Render Format in HD dimensions but have the output of the video in PAL. In the case that they do not coincide, the parameters of the section Multimastering are used to carry out a conversion when the images are sent to the video output.

When capturing and dumping video, it is essential to correctly use exactly the same mode that appears in the VTR display. This is especially important in HD 1080 formats, since for playback, some VTRs may use a variant of the original mode which is different to that in which the tape was recorded. For example, if a tape that we know was recorded in 1080_25p is to be captured, and we see in the VTR the mode 1080_25i displayed, select this latter for this parameter (or reconfigure the VTR so that is does actually produce a 25p signal, if it is capable of doing so).

For similar cases, remember that SGO Mistika can capture images that were originally recorded in progressive mode, although an interlaced signal is used to capture them. In these cases, the interlaced mode can be activated for this parameter, but in the tab VTR Capture select the option No Interlaced (Node Graph Editor->Dashboard->VTR->VTR Capture->Fields Mode->No Interlaced).

Furthermore, high resolution formats (HD, 2K, 4K) may require additional licenses for the video board. If these are not available, Mistika’s console will show an error when opening the application in these modes, or alternatively, Mistika may open, but the video output will not work.

### Video Frame Rate

**[23 (23 / 24 / 25 / 29 / 30 / 47 / 48 / 50 / 59 / 60)]**

Indicates the video frame rate with which the SDI video board is to be used, both for playback and capture.

### Video Mode

**[Progressive (Progressive / Interlaced / Segmented)]**

Indicates the video mode that the SDI video board will use, both for playback and capture.

### Video Connector

**[SDI(SDI / QUADSDI / DVI_HDMI)]**

Indicates the video output mode to be used.

### Color Space

**[YUV_422 (YUV_422 / RGB_444)]**

Physical input and output signals of the video board. According to the option selected, the video board will use an SDI Single Link connection (for YUV_422) or (in the case of RGB_444) a HD SDI Dual Link, SDI3G or DVI/HDMI with its external connectors. Generally, use YUV_422 for most VTRs, except for models that can work with dual link.

Furthermore, in mode YUV_422, we indicate to the video board that it should use the two outputs to send YUV_422 (identical signal to both connectors), for example, to
send one to the VTR and the other to the reference monitor. On the other hand, if RGB_444 (Dual Link) is selected, we indicate that through input/output 1 a signal 422 is sent and through output 2 the remaining 022 signal.

As well as the VTR model Sony HDSR, it is also possible that we might wish to use the mode Dual Link to directly connect video cameras that can work in Dual Link mode (such as Arri D-20/ D-21, Sony F.23), and also as a direct connection to Telecines with dual link capacity.

With regard to the reference monitor, it is unusual to see better quality images in Dual Link mode (at least with the monitors available at the time of publication), so it is recommendable to use YUV_422 single link mode, or the DVI output of the DVS Centaurus card.

In the case of selecting a color space option different from that selected in Internal Video Storage (which is possible but not recommended in most cases), the video board itself will carry out the conversion, without requiring more resources.

**Note:** as well as the two SDI outputs, other outputs in the video board may be available (depending on the model):

- an output marked as "CVBS" for composite video
- a DVI output for monitors or projectors that support low frequency DVI. The DVI signal transmitted is identical in resolution and frame rate to those of the mode of video selected (24Hz, 25Hz, 30Hz etc), so this is high quality signal but does not work with the majority of low/mid range monitors and projectors, since these usually require a minimum of 60Hz (if a low/mid range DVI/HDMI display must be used as reference monitor "Blackmagic HDLink" SDI to DVI/HDMI converter (or similar) is required). Consult Mistika@sgo.es for more details.

- No analog audio output is currently supported with the SDI video board. If it is necessary to use analog speaker, an audio converter is required (for example, the Blackmagic HDLink converter above has an integrated de-embedder with analog audio outputs).

→ **Stereo Dual link**

**[False (True / False)]**

Activates multichannel output of the video board for viewing in stereo.

→ **Use 3Gb SDI speed**

**[False (True / False)]**

Activates the support for 3Gbit for SDI. This only works if the video board supports it (Atomix for key-in-hand *SGO Mistika* models) with the format being used.

This option allows us to work with only one SDI with formats that previously required two. However, this still requires both the video board and the processor/s through which the image passes to support said format.

→ **Notes**

Field which shows warnings about the current configuration of the format of the video board and indicates the standard setting closest to the current configuration.
Auto adjust settings

[True (True / False)]
If active, this automatically changes a number of variables when some video options change, to maintain coherence with the standard settings.

Restart DVS video board driver

Tries to unload and reload the video board driver: use only for troubleshooting.

Other Video Settings

Internal Video Storage

[YUV422 (YUV422 / YUV422_10 / RGB_8 / RGB_10 / RGBA_8)]

Note: the values 8 and 10 correspond to the number of bits per channel that are sent between Mistika and the video board, as SDI signals are always 10 bits.

This indicates which color space Mistika will use to send/receive images to/from the SDI video board. Generally, this should be in the same color space that the VTR uses (generally, YUV_422_8 for most VTRs except for models like Sony HDSR and Arri D20 / D21, and for image formats DPX10, R3D and others with high dynamic range, for which it is recommendable to use YUV422_10 for single link and RGB_10 if a Dual Link connection is available).

For similar reasons, it will generally coincide with the parameter Color Space described above, in the section Video board format. They will only differ when we wish to use the video board to carry out conversions between YUV and RGB (however, even in these cases it is recommendable to consult Mistika@sgo.es before carrying out this type of unusual combination, because they are only occasional usefulness).

On the other hand, when capturing images, the color space defined here is used for selecting the file format in which they are to be stored (RGB or YUV).

If Mistika needs to send an image that is in the same format as this parameter to the video board, this step will be automatic. In the case that it is in another color space, Mistika will carry out the conversion internally.

Sync Source

[SYNC_INTERNAL (SYNC_INTERNAL / SYNC_GENLOCK / SYNC_INPUT_1 / SYNC_INPUT_2)]

Indicates which sync source the video board will use. Generally, we only use the mode GENLOCK when a sync generator is connected to the Ref. connector of the video board. In other cases, we normally work in INTERNAL mode (the syncs are generated internally). Furthermore, when capturing video it may be necessary to select SYNC_INPUT_# mode when no sync generator is available, to avoid an invalid sync loop (this occurs if the VTR is trying to connect to the output of the video board while the video board is trying to connect to the output of the VTR, a situation which may occur depending on the configuration of the VTR).
→ **Mirror Left Eye**

**[False (True / False)]**
Activates a mirror effect for the left eye when working in Stereo option. Some 3D Stereo displays are based on mirrors or reflective glass which apply only to the image of one eye, so it must be inverted horizontally to neutralize the mirror effect.

→ **Use Embedded Audio**

**[False (True / False)]**
Activates or deactivates the video board sending or receiving embedded audio in the SDI signal. This affects both input signal (capture) and output (playout).

→ **Use SDI User Data**

**[False (True / False)]**
Provides support for cameras of non-standard speeds, such as Panasonic Varicam; this eliminates frames duplicated by the SDI signal. These cameras record duplicated frames to achieve non-standard speeds (since the mechanical speed of tape is always the same). SGO Mistika can use the SDI data to eliminate the duplicated frames automatically, and will also adjust the duration of the clip.

→ **Drop Frame**

**[False (True / False)]**
Activates/deactivates Drop Frame mode for NTSC format. Drop Frame type formats discard a timecode (not a frame) periodically, so that the timecodes always represent exactly 30fps, although the true frequency of the NTSC video is only 29.97fps.

To find out whether the video tape being captured is in Drop Frame format, simply look at the TC display; traditionally, a decimal point or semi colon is used as a separator in timecodes (rather than a colon); thus the VTR operator can easily confirm whether the tape is in drop frame mode.

→ **Edit Lag**

**[5 (0 / 20)]**
Sets the number of frames of lag that the VTR have. This value must be indicated by the VTR manufacturer. Digital VTRs usually have a lag of 5 frames; analog VTRs usually have a lag of 3 frames. In any case, this value must be correctly set for editing to be accurate. If when transferring to tape a number of frames of lag is repeatedly observed, adjusting this parameter by the same amount will correct the problem.

→ **Restart DVS video board driver**

Tries to unload and reload the video board driver: use only for troubleshooting.
## D-6 Codecs

Parameters for controlling the render processes applicable to some supported compression formats. These are typically the codecs MPEG2, Flash-FLV, and MPEG4, although in these render formats there is also a "Custom" identifier for using codecs installed by the user.

**Note:** Some user-installed codecs are not included with the Mistika distribution because they are subject to patents that exclude their use in certain cases. For example, the codec h264 is not usually included in Linux distributions, although the user can install it if the licence requirements can be met. Consult Mistika@sgo.es for more details about this kind of codec.

Metadata variables for R3D files are also included, which can be forces to be used to overwrite those provided in the file as default, which is the values used by the camera in filming.
**FFMPEG Codecs**

- **Video bitrate**

  Video bitrate that the render formats that have definable audio bitrate (usually FLV, MPEG2, MPEG4, and CUSTOM) will use. The higher the bitrate the better quality the image will have; the file will also be larger file.

  Note: If, when reducing this parameter, there is an observable reduction in image quality, consider reducing the output resolution instead of the bitrate, as the global result will improve considerably. It is also recommendable to try increasing the parameter before reducing the Bitrate.

  Note: For material recorded with poor quality or badly maintained cameras, the results from the available bitrate can be improved by applying a Denoise effect. On the other hand, for material deriving from graphics or animation systems, the opposite may be recommendable, and subtly adding noise or dithering, or even blur for images with hard edges, may be desirable. These techniques produce significant improvements in terms of making the best of the available bitrate.

- **Audio bitrate**

  Audio bitrate that the render formats that have definable audio bitrate (usually FLV, MPEG2, MPEG4, and CUSTOM) will use. The higher the bitrate the better quality the image will have; the file will also be larger file.

- **GOP Size**

  Distance between 2 keyframes in compressed formats that support GOP (usually FLV, MPEG2, MPEG4, and CUSTOM).

  A GOP Size set at 1 produces a file that is easily edited in other applications, because all the frames are a keyframe (compression only occurring between frames). Values other than 1 define the number of consecutive frames for which only significant differences from the previous frame will be represented, taking better advantage of the available bitrate but losing the possibility of navigating to (or close to) a specific frame in other applications. Very high values may cause the opposite effect to that desired, and worsen image quality. A value of 5 is usually a good starting point.

- **Install additional ffmpeg user codecs**

  Allows the installation of external codecs that are not provided by default in Mistika, as well as versions and profiles of existing codecs such as MOV and MXF. To carry out the installation, the codecs should be compressed in `.tar`, `.gz` or `.tgz`, and be valid for the version of Linux being used.

- **Uninstall ffmpeg user codecs**

  Restores the codecs library to its original parameters, eliminating codecs installed manually by the user.
**RED**

The following parameters define the default behaviour when importing R3D files. They can later be changed from within Mistika individually for each file, via the effect R3DParams (Node Graph Editor->Dashboard->Fx->Mistika->Color->R3DParams).

The variables that appear can be defined in the RED camera, and in Mistika we can decide if we want to use the value defined by the camera operator, force the variable to a standard value, or give it a value defined by the user.

RED cameras record sensor information in the most optimized way possible, independently of the values assigned by the operator for these settings. These values only influence the previsualization that the camera provides, but do not modify the data provided by the sensor which are saved independently in the R3D file. Thus values are only metadata that accompany the image file, and so can be changed later without losing information.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Name of the variable that defines a parameter provided by the metadata of the R3D file.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Current value for the selected variable. This can be changed to a value set by the user.</td>
</tr>
<tr>
<td>Description</td>
<td>Description of the variable and its possible values.</td>
</tr>
<tr>
<td>Force Value</td>
<td>If forced, all R3D clips will use this value by default. If not activated, the value defined by the camera operator will be used.</td>
</tr>
<tr>
<td>Forced</td>
<td>List of variables that are currently forced to a value.</td>
</tr>
<tr>
<td>Unforced</td>
<td>List of variables that are not forced to any value (and will therefore use the values defined by the camera operator).</td>
</tr>
</tbody>
</table>

- **Force all variables (R3D metadata will not be used at all)**
  Forces all variables to the values defined for them (or their recommended default values if they have not been changed by the user).

- **Do not force any variable (only R3D metadata will be used)**
  Does not force any value, using metadata of the R3D file for all of them.
Reduce factor

[2 (1 / 2 / 4/ 8)]

Factor of reduction of when carrying out a Debayer process, as compared with nominal resolution of the Bayer matrix.

RED cameras do not provide pixel map in their file format but rather the original image must be reconstructed from various premises; RED cameras use a Bayer matrix in their sensor, which is to say that each original pixel only provides one color component (red, green or blue). Also, part of the original detail is lost when compressed to the JPEG2000 format, and also as a result of the noise signal of the electronics of the camera itself. As a result of all of this, the image must be reconstructed from mathematical approximations, and ReduceFactor is the value that gives us the relation between the number of elements of the Bayer sensor and the number of RGB pixels of the final image.

The recommended factor is generally a value of 2 (an image shot in R3D-4K format in Bayer color space will produce a 2K image in the final space of the three color components per pixel).

It is sometimes possible to obtain a useful resolution by applying a value of 1 (at the cost of increasing render process time by 4 times), although normally this only produces additional noise. A way of comparing both versions is to compare the result in 4K with the 2K version rescaled to 4K (with maximum quality of 15Taps). This way we can compare and choose the version that gives the best quality.

A common error is to think it is necessary to use a value of 1 to obtain the highest quality, even if the final format is 4K or greater. In the majority of cases, there is no difference between using a value for ReduceFactor of 1 or 2, and in many cases the version resulting from a value of 2 will be of better quality, as it will have less noise than when the ReduceFactor=1. Noise reduction is especially important in 3D Stereo formats, where it must be considered over other aspects. A value of 1 must only be used rarely, in cases where it has been checked that it produces no increase in noise.

Values of 4 and 8 lose quality and are only recommended for versions in SD (PAL/NTSC) format and for dailies.

Optimize

This field shows recommendation according to selected values for different parameters in MistikaSetup.

Refresh optimization recommendations for R3D files

If we have changed parameters of MistikaSetup, the updates the recommendations.
D-7 Performance Options

This area allows the modification of different parameters related to render processes. Its window is shown below:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Cache Memory</td>
<td>2048 (0 / 8000)</td>
</tr>
<tr>
<td>Playout Ring Buffer</td>
<td>40 (10 / 128)</td>
</tr>
</tbody>
</table>

Max Cache Memory

The maximum amount of system cache memory to be used by the software. This amount of RAM is used to keep the latest images read by Mistika available for any purpose, avoiding the need to re-read them from disc whenever possible.

Another possible use is when sufficient reading speed is not available to view the format being used in realtime. If sufficient memory is available we can increase this value so that the whole shot being worked upon can fit into the cache, so that it can be viewed in realtime.

Furthermore, in cases of system instability, owing to lack of memory, this is one of the first parameters that should be reduced to the minimum.

Playout Ring Buffer

Number of frames stored in the buffer of the video output.

During video playback, the system tries to process the frames faster than realtime to have a security buffer to absorb I/O or processing peaks, up to this value, maintaining it at the same if possible. This allows for a buffer of images for maintaining realtime...
when otherwise it would not be possible, because of peaks in CPU or input/output to
disc.

If this value is too high, RAM will be wasted. If it is too low, realtime may be lost. The
default value is usually sufficient, although if unexplained Lost Sync errors are
observed it should be increased.

The number of available processed frames in this buffer is represented by the
character "+" at the top of the Node Graph monitor.

### Play Buffer Threshold

**[400 (25 / 128)]**

Mistika has a guaranteed playback mode called PlayBuffer (a Play icon with a B, in the
Shuttle of the Node Graph). In this mode, before starting playback the number of
frames defined in this field are processed, so that when playback starts, a security
buffer is available to help manage complex situations, or to carry out playback of
certain clips for which sufficient performance is not available in realtime.

**Note:** Material transferred to tape will always use this play mode (PlayBuffer).

**Note:** The default value is set automatically when opening mConfig for the first time,
depending on the amount of memory available; it may not coincide with the value
indicated in this manual.

### Hardware Rendering

**[True (True / False)]**

Activates or deactivates the acceleration of hardware (GPU) during render processes.

When active, most effects are processed directly in memory of the graphics card
using its GPU, which greatly accelerates the process. The amount of graphic memory
needed depends on the resolution of the image format, on the number of Inputs of the
most complex effect and on the resolution of the graphic mode of the interface
(adding together both monitors, if there are two), so the limits to which it is possible to
render by hardware depend on each different case.

**Note:** Many effects currently only work if this parameter is activated, so it should only
be deactivated for troubleshooting the graphics system under the guidance of the
technical support team.

### Hw. render in monitors

**[True (True / False)]**

Activates or deactivates the acceleration of hardware (GPU) in the evaluation of the
Node Graph monitors and render processes. It should only be deactivated for very old
graphics cards or if they originate manufacturers other than Nvidia, in cases of
observing that effects either produce incorrect results or do not work at all.

### Create Proxy Previews

**[False (True / False)]**

Indicates whether proxies should be created when capturing a video clip. If
deactivated, the proxies will have to be created each time they are required (and
they will not be saved to disc), thus consuming greater disc bandwidth, so it is recommendable to activate this option whenever sufficient disc space is available, and especially in the case of using shared storage between several systems.

### Low Res. Ratio

**[2 (2 / 4 / 8 / 16 / 32)]**

Factor of reduction of the preview images or Proxies in low resolution, and of playback in low resolution (Mistika Setup->Interface->Playback Resolution). For example, if we have PAL (720x576) and we set a value of 2, the proxies will have a resolution of 360x288.

Proxy versions may be obtained in various ways:

- Automatically when capturing video (MistikaSetup->VideoI/O->CreateProxyPreviews).
- During a render if Proxy Image (Node Graph Editor->Dashboard->Output->Render->Proxy Image) mode is activated.
- If a render is carried out to create proxies via the command Redo Proxy (Node Graph Editor->Dashboard->Output->Render->Redo Proxy).

These low resolution versions are used in the monitors and the Visual Editor if the Proxy in Monitor Display is active.

In these modes, when they are not saved to disc, they are produced on-the-fly in the RAM memory and are then discarded. Proxies allow more rapid access to disc or processing of images, but at the cost of temporary loss of image quality.

The creation of proxies is described in more detail in the chapter about the tab Output.

### Parallel CPU Cores

**[2 (2 / 64)]**

Number of system processor cores that we wish to use (this requires SGO Mistika licensing, according to the number of processors). It is recommendable to set the total number of cores of the workstation, although this can be reduced if we wish to reserve cores for other simultaneous applications.

### Encode Threads (j2k...)

**[24 (2 / 64)]**

Number of parallel render processes intended to process certain complex codecs (such as j2k and VC-3).

The most common use is for creating DCP. It is recommendable to set this value at the same as Parallel CPU Cores.

### Read from multiple disks

**[False (True / False)]**

Activates or deactivates the reading of sequences of files from different storage discs. It allows the doubling of I/O Threads, for sequences from different discs to be
read simultaneously. However, it should be deactivated if the sequences are in the same disc, as it slows the operation if configured to search on other discs.

---

**I/O Threads**

Indicates the number of parallel processes for decoding sequences of images of formats such as DPX and R3D. Normally this should coincide with **Pipe Units**. When there are 2 streams located in different discs, it is recommendable to double the number of **Pipe Units**.

---

**Pipe Units HighRes**

**[8 (1 / 16)]**

Indicates the number of consecutive images of a clip that are read or written in each simple read/write operation. It is used to optimize input/output to disc.

**Important note:** this parameter affects the reading of all images, not only those contained in the realtime storage buffer, but also those that have been referenced via links to other locations.

Its value especially affects those effects that use several clips at the same time, such as Mix & Wipes and others, and also the shared storage environments, so in these cases it is much better to read several frames of each clip in each disc operation. This reduces the seek time of the discs.

In the specific case of the DPX format, the value of SNFS->Threads is used to carry out its parallel reading, so this must be defined in the relevant section.

Furthermore it is recommendable to leave the value at the minimum (1) when dealing with especially large formats (such as 8K) whose buffers may use large quantities of memory, and also for smaller formats that, owing to the equipment in use, will not provide realtime processing under any circumstances, as this will free memory space and, also allow playback speed to be more or less constant, instead of by frame packets of the defined size.

---

**Pipe Units LowRes**

**[8 (1 / 32)]**

Has the same meaning as the previous section, with the difference that it is for reading proxies in **LowRes** mode.

---

**Render Units**

**[5 (1 / 16)]**

Indicates the number of frames that are processed simultaneously and in parallel during a render process. Generally, it is recommended to set a value similar to the number of CPUs available, to optimize the processing of formats that can be done on parallel, such as R3D. However, this uses more memory, so when working with very high resolution images, or little RAM is available it may be necessary to reduce this value.

This parameter does not affect Totem-type render nodes which have their own equivalent parameter **TOTEM->cluster Render Units**. It does affect Batch Render types.
Backload Buffers

[True (True / False)]

Allows the complete deactivation of all the image buffers. This should only be deactivated for extremely large formats that use too much RAM, given that it will impede realtime playback of the image.
D-8 Batch Manager

This group of options controls how render processes are carried out in the additional render nodes (Totem) and the management render queues (Batch Manager).

**Batch Manager**

- **Use Batch Manager**
  
  **[True (False / True)]**

  Activates the Batch Manager.

  **Note:** When activated, it allows exiting from an emerging window if permissions for other clients are not configured. A configuration request will appear, and a password is needed. **Mistika** is configured to carry out the rest of the required actions automatically.

- **Render when Idle**
  
  **[True (False / True)]**

  Allows the current machine to run as render node when no task is being processed.

- **Start Batch Manager on boot**
  
  **[True (False / True)]**

  Starts up the Batch Manager in the current machine when booting if it does not detect any other active render node.
- **Manage Batch Render Nodes**

  Opens a window that allows the management of the Batch Manager render clients. They can be activated or deactivated, without needing to stop the Batch Manager that is working at the time (as long as there is at least one always active).

- **Render Queues Path**

  Set the path where the Batch Manager can find the different directories with the render queues.

- **Queue for Cache jobs**

  Set the path where the Batch Manager can find the different directories with the cache render queues.

- **Batch Manager GUI**

  Launch the BatchManagerGUI application.

- **Autorefresh Node Stat.**

  If selected, the Batch Manager auto-update the situation of the render nodes when they succeed or fail, for example.

- **Render retry attempts**

  
  ![1 ( 1 / 32)]

  Sets a number or retry attempts for failed render processes.

- **Quarantine failing nodes**

  ![True (False / True)]

  Indicates if nodes that fail after all retried render attempts should be quarantined and temporarily deactivated.

- **Deactivate failed nodes**

  ![True (False / True)]

  Indicates if quarantined nodes are deactivated if another node successfully carries out the same render.
**Render Queues List**

List of all defined render queues with informative columns regarding priorities, pending (scripts `.rnd` script yet to be run), done and failed jobs, and those in progress.

**Queue folder name**

Name to be assigned to the render queue and the folder that contains the different scripts of the same queue.

**Priority**

Priority of the render queue as ascending numbers: the higher the number the higher the priority for the render queue. If render queues have the same number assigned, the Batch Manager will alternate between one and the other for render processes. It is always necessary to define a priority, even if there is only on render queue.

**Queue Management**

**Change priority for selected queue**

Allows redefining the render queue priority selected.

**Browse selected queue**

Opens the system browser of the render queue folder (it will have the same name as appears in *Render Queues List*).
**Browse DATA/RENDER folder**

Opens the system browser of the `/DATA/RENDER` folder of the last project opened (indicated in Node Graph Editor->Dashboard->Project->Current Project).

**Create new render queue folder**

Creates a new folder and its corresponding queue in the list with parameters defined for the name and priority.

**Remove selected queue folder**

Eliminates the selected render queue and its corresponding folder.

**Manage Queue content**

Allows the running of actions for recycling information contained in the folders indicated in the render queue list: delete files, file log, delete failed render scripts, delete pending render scripts, and rename failed render files with their original name.

**Batch Manager Status**

The Batch Manager Status indicates whether any active Batch Manager is working or not, and if so, it indicates messages regarding its status (if it is working correctly or not).

**START BatchManager**

Starts the BatchManager.

**STOP BatchManager**

Stops the BatchManager, if it is working.

**Manage render nodes**

Allows the same window as the Manage Batch Render Nodes to be opened in order to active render clients, their current status, to add or delete render clients.

**Close**

Closes the Batch Manager.

**Mode of use:** When a render script creation is run with the option *Write Script Only* of *Output*, copy the `.rnd` files of the different segments required to be rendered in one of the directories created here (if we have not already written here directly with the tool If Write Script, place it->Queue->name_of_queue *Output*). Once copied, the `Render Queues List` will update the new `.rnd` that we have copied as pending jobs. Once copied, click on **START BatchManager** and if the queue where the new `.rnd` scripts have been copied has high priority, the renders will start, and a progress bar will appear.

If a `.rnd` script fails, this will be renamed using the name `..unexpectedlyExited` (for example, a test file called test.rnd would become test.rnd..unexpectedlyExited), giving us information regarding failed renders. For more information, consult the log.
### Mail Notifications

- **Mail events**

  [None ( None / Node Fail / All Render Failures / All Failed and Successful Renders / Only Successful Renders)]

  Selects the type of event/s required for sending email notifications (the failure of a render node, failed renders, both failed and successful renders, or just successful renders).

- **email addr. for render reports**

  Field for writing the email address to which the reports/notifications are sent.

- **Render Errors**

  [One Mail per File ( One Mail per File /One Mail per Rendername Batch)]

  Allows the selection of whether notifications are sent for each individual failed render file or for each each common render block (contained in the same folder within /RENDER when they are created).

- **Render Success**

  [One Mail per File ( One Mail per File /One Mail per Rendername Batch)]

  Allows the selection of whether notifications are sent for each individual successful render file or for each each common render block (contained in the same folder within /RENDER when they are created).
D-9 TOTEM

Use Totem

**Default value:** False  
**Range:** True / False  
**Description:** Activates the manager of the distributed system. Once this parameter is activated, and the clients have been defined, it is recommendable to enter Mistika and check that the **Output** tab (**Node Graph Editor->Dashboard->Output->Totem**) shows the render clients that have been set.

Manage Render Nodes

This opens a window that allows the management of render clients (as they are defined in the file **Mistika-ENV/.clients**).

Cluster Render Units

**Default value:** 3.  
**Range:** from 1 to 25.  
**Description:** Number of consecutive frames sent to each render client when work is distributed. When a client finishes processing the first packet of frames, it receives an order to calculate a new packet of a size determined by this parameter.

Every time a client needs to read an original clip, all the frames necessary for the packet that is being processed with be read once, so that this parameter affects the optimization of disk read speed. In NFS configurations low values should be used (from 1 to 3), but it is advisable to increase it significantly when working with SAN configurations, to take advantage of the greater bandwidth available with such configurations when carrying out sequential readings.

However, if too high a value is used, it may result that when rendering a few frames, some customers will not receive packets of frames to calculate.

**Note:** When using the TOTEM render distributor, we recommend working in an SAN-type infrastructure, using Mistika’s native image formats, because this allows the pre-assigning of consecutive space for images and does not affect the real-time features. However, when using numbered file formats, we lose reproduction features, since
frames are not stored in their natural numerical order.

- Cores per node

  **Default value:** 8.

  **Range:** hardware dependent.

  **Description:** Indicates how many core processors (nuclei) there are in each render node.

- Default Instances

  A physical node can act as multiple virtual nodes, one per instance. Only increasing for non GPU render.

**Totem Manager**

This tool is for managing render clients, as specified in the file `Mistika-ENV/.clients`.

**Note:** if we wish the Mistika workstation itself to be another render client (which is recommended), it must be added as such in the file. If it is activated, it will be easier to control its participation in the process: if render with Totem is done in Foreground mode, the local workstation can also participate in the calculation; if done in Background mode it will not.

The window that appears contains one render client per line, together with the buttons for adding and deleting clients and useful information about the current state of the each client:
This area allows modification of the different parameters relating to the user interface configuration. The window is shown below:

**Interface**

- **Double Buffer**

  **[False (True / False)]**

  Activates/deactivates the use of double buffer in the graphics monitors of the interface. It is important to activate this parameter when the playbacks need to be seen in the graphics monitor instead of in the video output, if there is sufficient memory in the graphics card to maintain a double buffer.

  If it is not activated, during playbacks to the graphics monitor, the scan line may be visible, which might be annoying.

  When activated, the images are not drawn directly in the graphics monitor, but are drawn first in a virtual buffer, which is instantly seen as it coincides with the change in vertical synchronism of the monitor. Thanks to this, the playback to the graphics monitor will be cleaner and free from scan artifacts.
This parameter only affects playbacks made in the graphics monitor, and not to playbacks sent to the video output.

**Playback Resolution**

**[RES_HIGH (RES_HIGH , RES_DYNAMIC , RES_LOW)]**

Sets the default mode for playbacks in Node Graph, either in high resolution (RES_HIGH) or in low resolution proxy mode (RES_LOW). The mode RES_DYNAMIC effects playback in low resolution but toggles to high resolution when playback is stopped, which is useful for formats that cannot be processed in real time but which we want to set in full definition in pause mode.

**Note:** When switching to low resolution, firstly, the low resolution files that make up the proxies of the image are looked for, and if they are not available, high resolution images are read, and on-the-fly proxies are obtained, and then the rest of the effects are processed in low resolution.

**Live Video by default**

**[False (True / False)]**

Sets the SDI video output as default when opening Mistika.

**Two Monitors**

**[False (True / False)]**

Activates the two monitor layout. If activated, Mistika will use one monitor for the editing interface (Node Graph Editor) and the other for the composition interface (Visual Editor).

**Note:** In general only “side by side” monitors are supported. In special cases, a monitor may be configured on top of another, but it is recommendable to consult Mistika@sgo.es, since this requires a highly specialized X-Windows configuration (to allow the cursor to move from one screen to the other vertically rather than horizontally, and other details).

**Monitor Gamma**

**[1.0 (0,5 / 2)]**

Sets the gamma value of the graphics monitor. Common values are 1.7 to 1.0 for CRT and LCD, although generally this depends on each monitor and lighting conditions in the physical workspace.

In any case, this parameter only affects the interface and never the render of the images or the SDI reference output.

Once set, press the button Load New Gamma, which lies just below the number, for it to take effect.

**Manage Edit->Extras > Buttons**

Allows the addition of commands to mConfig via which personalized scripts can be run.
• **Rank Mode, British Style**

Rotates the color trackballs of the *Color Grade* effect to appear as they would for British colorists' standard use.

• **Change settings for Nvidia graphic boards**

Runs the Nvidia application, which allows us to configure other values of the graphics card, such as checking its temperature. Mistika make intensive use of render by hardware, so in cases of stability problems it is recommended to check that the operating temperature is not exceeded.

In the case of using video splitters for connecting a projector and a monitor simultaneously, it is recommended to power up the system with only the projector (or the device which is most complicated to synchronize), configure it in this panel, and finally, connect the splitter.

One typical use of this tool is when a second monitor is installed or disconnected but we do not want to reboot the system. The recommended method for these cases is to activate the following button:

- `Nvidia-settings->XServerDisplayConfiguration->Configure->TwinView`

In the case of wanting to change monitors for ones with a different resolution, the system will automatically try to adapt, although if it is not successful, use:

- `Nvidia-settings->XServerDisplayConfiguration->Resolution`

• **Edit Hotkeys**

Allows the personalization of Mistika's hotkeys. Take are when carrying this out, as the editing can replace either the originals or the previous ones.

• **Restore original hotkeys**

Restore the default hotkeys map file.

• **Checker missing media**

If Off, missing media will appear black. If On, there will be a checkerboard warning.

**Tablet Device options**

- **Tablet Max. Press**

  Maximum value for pressure on the graphics tablet.

- **Tablet Min. Press**

  Minimum value for pressure on the graphics tablet.
Min. Move Threshold

Minimum value below which the pen is considered not to be moving, to avoid vibrations.

Title Options

→ Use Unicode

[False (True / False)]

Defines whether Unicode is used as character codification. It should be activated if it is necessary to use non-western characters, such as in Asia alphabets.

→ Default Font

Editable text field which shows the route for the character type to be used by default in a working session in Mistika.

→ Use Input Method

[False (True / False)]

Activate this for characters which need input from multiple keyboards for creating a single symbol, for example when using various Asian languages.

→ Font Size Default

[10 (0 / 50)]

Defines the default size of the text in a working session in Mistika.

→ VirtualSlate font

Defines the font type that will be used in Virtual Slate function.

→ Open Fonts Folder

Open the font folder, where the user can install new fonts: /usr/share/fonts/mistika

Render Interface

→ Render to Video

[False (True / False)]

If active, the render produced by Mistika is also directly sent to the video output. This parameter must be deactivated carefully as the workstation needs to receive correct video synchrons (or at least the functioning of internal synchrons), or the render process will be interrupted or may not even begin. The main use is for monitoring the progress of a render from any location connected to the same video patch.
- **Render to Graphics**

  **[True (True / False)]**

  If active, the images produced during a render are shown in the graphics monitor. Otherwise, only a small window showing the progress of the render will be shown.

- **Default render name**

  **[True (True / False)]**

  Defines the default name that appears in the field *Auto Name* (Node Graph Editor->Dashboard->Output->Render->Render Name), to which will be added a numerical counter (this counter appears in the panel of the render as an informative title).

- **Save before render**

  **[True (True / False)]**

  If active, (recommended), *Mistika* saves the environment before starting a render process. It can be deactivated for very large environments if the time required for this operation becomes excessive.
D-11 License

Licence

° Lic. Expire warning

[10 (1 / 15)]

Number of days warning the system gives before expiry of a temporary user's licence is due.

The remaining parameters refer to obtaining a licence and are self-explanatory:

To request an SGO Mistika licence, install the software and then provide the following information to your system provider:

° Exact version of the software for which the licence is required.
° Workstation model and CPU number.
° Videoboard model (SD/HD) and its additional options.
° If Tangent Device correction surfaces are available.
° Maximum render resolution permitted.
° The LMdata codes and Mac Address, provided in this section of the mConfig.

Once the activation codes have been received, follow the instructions provided in this window to activate the software.

Note: Changes to the system hardware after the application for the licence may invalidate it.
Expiration

Data field that shows the expiry date of the licence.

LMData

Data field that shows the LMData code.

This field can be selected and copied to another application (such as an email) using the central mouse button.

Mac Addr.

Data field that shows the MAC address.

This field can be copied like the LMData.

Open License File

Allows the *MistikaV5.dat* file to be opened: this field contains the activation code for the licence. Thus it is possible to renew the licence via mConfig, without needing to replace the old archive.

The *MistikaV5.dat* file is found at: `/var/flexlm/MistikaV5.dat`.

Change License File

Allows the file that will create the licence to be changed without needing to rename or modify other licences.

Restart License Server

Allows reconnection with the licence server.

Online Mistika licence request

If the *Mistika* licence expires outside the period of technical support offered by SGO, a temporary licence can be requested online.
SNFS is a top-of-the-range SAN-type filesystem for storage infrastructures, integrated as an OEM product within *SGO Mistika*.

In general, the external storage provided by SGO is configured with this type of filesystem and each Turnkey-type SGO workstation delivered with external storage comes with a user’s licence.

High-speed connections between other workstations such as Linux/Windows/Apple and the shared storage of SNFS© requires additional user’s licence, such as a Switch Fibre Channel.

For this solution to function properly, it is necessary to use versions of *SGO Mistika* that have extensions allowing communication with SNFS. Before planning a new SAN, it is recommendable to send a full description of the requirements to Mistika@sgo.es to obtain all the information and recommendations that may be necessary.

The OEM SNFS© solution is supplied as optional software, and allows storage sharing with large bandwidth between all *SGO Mistika* stations, as well as with systems of other manufacturers, creating a SAN infrastructure.

In a SAN, all stations are directly connected to the same disks, thus avoiding file transfers across an Ethernet network, therefore providing real-time uncompressed access to all stations simultaneously.

The same SNFS© filesystem can be set-up simultaneously in Linux, Irix, Windows XP/Vista, Mac OS-X (X-San), stations etc., for which reason it is recommended to include all production stations of other systems that need to share files with large bandwidth in the SAN.

It is also recommendable to include a bridge system for exporting the contents of the SAN to the network stations that do not have direct access to the SAN.

If there is more than one station connected to the SAN stations *SGO Mistika* should not act as SNFS© metadata servers. It is recommendable to install a dedicated metadata server, usually through a Linux MDC system that manages the metadata of the filesystem (until that moment, *SGO Mistika* will act both as metadata server and client).

SNFS© software is currently provided on delivery with all *SGO Mistika* systems. To install it onto systems of other manufacturers follow the instructions of the software component and acquire the relevant additional licences.
<table>
<thead>
<tr>
<th><strong>SNFS©</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SNFS Server</strong></td>
</tr>
<tr>
<td>Identifies which metadata controller (MDC) is configured (if the SNFS© option is available). This parameter indicates the filesystem server and if it is accessible on the network (it can be the local machine when there are no other stations in the SAN). This parameter is purely informative and cannot be changed in this window. If you need to modify it, see the installation guide for SNFS©.</td>
</tr>
<tr>
<td><strong>Use SNFS Storage</strong></td>
</tr>
<tr>
<td><strong>[True (True / False)]</strong></td>
</tr>
<tr>
<td>Activates/Deactivates SNFS service. When activated, it carries out various checks, autoconfigures certain options on first use and informs of possible problems, and thus is a useful diagnostic tool when encountering problems with SNFS©-type storage.</td>
</tr>
<tr>
<td><strong>Important Note</strong>: Before deactivating this button, close all applications that may be using the SNFS©-type storage, otherwise they will become blocked and possibly obstruct the use of this button.</td>
</tr>
<tr>
<td><strong>SNFS Vers.</strong></td>
</tr>
<tr>
<td>Indicates which version of Quantum Storenext SNFS© filesystem is installed.</td>
</tr>
<tr>
<td>Version 3.1 posterior is required.</td>
</tr>
<tr>
<td><strong>SNFS preallocation</strong></td>
</tr>
<tr>
<td><strong>[True (True / False)]</strong></td>
</tr>
<tr>
<td>If active, before video capture or beginning a new render, <em>Mistika</em> communicates with SNFS© to create a new file optimized for real-time, forcing the assignation of new disk blocks for successive frames, with this blocks also aligned to disk stripes to maximize bandwidth and avoid disk fragmentation. If you are using SNFS©, we strongly recommend this parameter is always active. ndiscriminate increase of this value may take up an excessive amount of memory.</td>
</tr>
<tr>
<td><strong>SNFS Lic.</strong></td>
</tr>
<tr>
<td>SNFS© licence expiry date.</td>
</tr>
</tbody>
</table>

**SNFS© diagnostic and repair tools**

| **See SNFS labels of the available disks** |
| Displays all the SNFS© disks available. |

A SNFS© filesystem is usually made up a various, and if the connection with one fails, we can check using this option (the complete list of disks that appears will depend on each SAN infrastructure, and coincides with the contents of the files for defining such, as found in the folder /usr/cvfs/config).
Stop/Start SNFS services and mount/umount SNFS disks

Tries to mount all the SNFS©-type filesystems that are configured. This is useful for diagnostic and maintenance operations.

Before unmounting these filesystems close all applications that are in use.

Diagnose and repair an SNFS filesystem

Provides a list of SNFS© filesystems available, in order to select one for analysis. An autocheck/repair process is then carried out on said filesystem, which may take several minutes, depending on the number of files contained.

This is a useful tool if the storage system is observed to be functioning incorrectly, eg after a power down.

Before activating this tool, close all applications that are in use by the selected filesystem.
Two different types of Tangent Devices control surfaces can be connected and configured for color correction: the model **CP200** and the model **Elements**.

It always is recommendable to use the full set of devices of either surface, since this is the only way that the color corrector can be used in its entirety.

**Note:** If two or more **SGO Mistika** systems are on the same network but only one set of Tangent Devices control surfaces, activate the following options in only one of the systems at a time.

**Note:** If assignations inconsistent with the values defined below are set, common problems will arise when using DHCP systems in the same network.

**Note:** If neither of the control surfaces activates when opening **SGO Mistika**, the most probable cause is that an **SGO Mistika** licence that supports these devices is missing (this support is not included as an option in the most basic **SGO Mistika** systems).

### CP200

**Note:** the IP addresses mentioned below may be any as long as they are in the same segment of the network as the **SGO Mistika** station. These addresses will be automatically assigned to the control surfaces when starting the **SGO Mistika** application (to check their correct functioning, these addresses will be shown briefly in the displays of the devices when starting **SGO Mistika** and will appear in the color correction menus on their screens).
### Trackerballs (CP200-BK)

- **Use CP200-BK**
  
  `[False (True / False)]`
  
  Enables use of the CP200-BK.

- **IP Address**
  
  IP Assigned to the CP200-BK.

- **Identifier**
  
  Identifier of the CP200-BK. It is a number assigned by the manufacturer. It is obtained by turning on the CP200-BK.

### Knobs(CP200-K)

- **Use CP200-K**
  
  `[False (True / False)]`
  
  Enables use of the CP200-K.

- **IP Address**
  
  IP Assigned to the CP200-K.

- **Identifier**
  
  Identifier of the CP200-BK. It is a number assigned by the manufacturer. It is obtained by turning on the CP200-K.

### Transport & Selection (CP200-TS)

- **Use CP200-TS**
  
  `[False (True / False)]`
  
  Enables use of the CP200-TS.

- **IP Address**
  
  IP Assigned to the CP200-TS.

- **Identifier**
  
  Badge of the CP200-TS. It is a number assigned by the manufacturer. It is obtained by turning on the CP200-TS.
Common Network parameters

- **Net Mask**
  
  **[255.255.255.0]**
  
  Describes which subnetmask to use.

- **Gateway**
  
  IP address of the gateway. It is necessary to use this value if the control surfaces to be used are on a different subnet from that associated with the *SGO Mistika* workstation.

**TANGENT ELEMENT USB SURFACES**

- **Use Element Surface**
  
  **[False (True / False)]**
  
  Activates the use of the Elements model panels or surfaces.

- **Bt-1, Kb, Tk, Bt-2, Mf, Bt-3**
  
  Text fields in which the series number of each Element model panel should be introduced in the order indicated.

- **Restart Tangent Driver**
  
  Restarts the drivers or controllers of the Element panels.

**Other Settings**

- **Rank mode, British style**
  
  **[False (True / False)]**
  
  The color selection manipulators are rotated, in the style of Rank, and the trackballs of the control surfaces work consequentially.

- **Colourist mode**
  
  **[False (True / False)]**
  
  The color selection manipulators are rotated, in the style of Rank, and the trackballs of the control surfaces work consequentially.
Enable or disable the Precision Panels.

The Precision panels have two ethernet ports, but only the upper one is used with Mistika. The default ip's are 192.168.21.1, 192.168.21.2 and 192.168.21.3. To change the ip's press the Tools button when power on the panel until the Configuration menu appears (it usually take 30 sec). Then use the Joystick to go to IP Configuration and use the 4 knobs near to the joystick to change ips. Finally select Reboot and put the new Ips in the Ip's fields.
A 3DLUT (3-Dimensional Look-Up Table) is a file conversion between RGB values that allows previewing an image in the monitor or projector giving it an appearance as similar as possible to what it will have in its final exhibiting media. 

For example, it can show how movie files will look once filmed, developed, converted to positive and projected by a film projector.

As an example, depending on the distribution of SGO Mistika we can find one or more 3DLUT examples in which SGO Mistika (Node Graph Editor->Dashboard->Fx->LUT 3D) can be selected. However, these LUTs will not be calibrated to the monitor, but will be based on ideal sRGB monitors. To obtain an 3DLUT that takes into account the differences between our monitor and an ideal one, follow the steps described in this section. In addition, an optional calibration product (LightSpace CMS) is needed, as is a spectrometer compatible with the chosen calibration software.

**Note:** The 3DLUTS are stored in `$HOME/Mistika-ENV/etc/3DLUTS`.

### Calibration tools

- **Live video out**

  Enables the resending of a portion of the graphic environment to the external video output. This calibrates the viewing device connected to the SDI output through a spectrometer (see the tool Cinespace Monitor Create Profile). Mistika must be closed before activating it.

- **Stop video out**

  Disables the resending of a portion of the graphical environment to the external video output (activated by the previous button).

- **Create Cinespace Monitor Profile**

  If installed, this launches the optional application Cinespace (cineProfiler) which obtains the profile of a monitor or projector. This tool shows a pattern of images to be read by a spectrometer applied to the screen connected to the graphics card, or the screen connected to the external SDI video output if the option Live Video out is
activated.

In the case of using *Live Video* mode, we must subsequently move the window showing the pattern of colors so that it fills the video output.

The spectrometer must be connected to a USB port on the *SGO Mistika* workstation. If this is not possible because of the distance between computer and screen, use a networked laptop with the ports server software supplied by Cinespace.

When calibrating an LCD-type monitor, a elevated number of "Decoupling" errors may be observed in the statistics displayed by the application once the samples have been taken by the spectrometer. This indicates that the intensity applied to one color component also affects the others, which is normal in LCDs. It mostly means that these monitors can not be gauged by LUTs of one dimension, but require a 3D LUT.

During the spectrometer sampling process (which may take several hours) the lighting in the room must be kept to a minimum (something also recommended during color correction sessions). Remember that if lights are turned on in the room during this process, it can affect the measurements, the result thus far obtained must be discarded, and the process re-started.

It is generally recommended for calibration to pre-configure the screen to its *Factory Settings*, which is the least forced way of working. Remember that factors such as color temperature will be perfectly compensated by the 3DLUT, so there is no need to force the monitor to any customized values. For example, the monitor can be maintained in a factory setting of 6500º K, while the 3DLUT may convert it to 5400º K if it is the color temperature of the chosen Target. This is better than trying to force the monitor to a color temperature for which it is not optimized.

Also, if possible, preset the brightness and contrast controls to reasonable minimums that we plan to use during the color correction sessions.

### LightSpace CMS

#### LightSpace

These options provide connectivity between Light Illusion calibration tools: see the manufacturer's documentation for more details.

### Select Default 3D LUT

#### Select 3DLUT

Permits the selection of the 3DLUT that *SGO Mistika* loaded by default in the next session for use by *RGBCor*. It can also be selected from within *SGO Mistika*. 3DLUT files can be converted to *.ltx* format, which *SGO Mistika* can uses if they are not encrypted.

To select a LUT, simply put the 3DLUT in the file `$HOME/Mistika-ENV/etc/3DLUTS`.

**Note:** this field only affects the *RGBCor* effect and not the *3DLUTS* effect, which has its own selection fields for LUT.
D-16 Utils

The buttons in this section allow various external tools to be run, such as defining the values for the buttons Launch Script (Node Graph Editor->Dashboard->VTR->VTR Capture->Launch Script) and Script to run after the render (Node Graph Editor->Dashboard->Output->Render->Script to run after the render).

- **Defragment realtime directory (.js files)**

  This only applies to XFS and SNFS (SAN)-type filesystems. Enables the defragmentation of files in File Paths->Realtime Storage.

  Fragmentation occurs especially when the disks are 90% or more full and work continues on them. In these cases, Mistika may not be able to obtain consecutive disk space for new files generated, and so are distributed across various areas of the disks. This situation causes a significant reduction in the performance of real-time, as the reading heads and disk burning will have to continuously move from one place to another (seek time).

  This process defragments the files if there is enough space available.

  For it to function properly, it is necessary first to exit Mistika since the defragmentors refuse access to recently opened files for any application. Remember that to check whether a file is fragmented, there is the tool within Mistika, Node Graph Editor->Dashboard->Edit->Extras->Check Fragmentation.

  **Note**: If fragmentation levels are high, the defragmentation process can take many hours. It is important to make disk space available (disk occupation of less than 70% is recommended) before executing, or its progress will be inefficient.

  **Note**: There is a need to differentiate between fragmentation and segmentation.

  Segmentation is another problem with similar symptoms but different causes, and occurs when there is a numbered sequence in which frames are not arranged consecutively in the disks. In these cases, there may not necessarily be fragmentation, since each file can be complete in a consecutive sequence, but the disks cannot play them in real-time, because it requires continuous jumping from one head to another for each frame. This problem cannot be solved with the defragmentor, but instead the sequence must be copied again in the correct order. The best method is to defragment the file first and then render the sequence from Mistika.
In addition, this situation can be avoided by following these two rules, simple to implement but critical:

- Never have two different processes (disk copies, rendering processes, etc.) writing frames on the same disk partition at the same time, as the frames can become interspersed.

- If the progress window of a copy of files shows non-consecutive numbers, it is because in the original disk this already problem exists, because unfortunately no operating system takes this circumstance into account. If this situation arises, cancel the copy and perform it differently. The best way to copy is through a rendering process that reads the original disk and writes in the real-time storage (see File Paths->Predefined Paths For Rendered Sequences), and thus Mistika can perform the copy process much more quickly than the operating system, and also will process the frames in their numerical order. In addition, we can take advantage of the situation to implement post-production pre-processes that may be needed later.

A good alternative is to make a copy of the files in a Linux console with this line command:

```bash
rsync -Pav source destination
```

This command copies the sequences in order, as well as providing statistics and being much quicker than other commands, such as "cp".

If it is preferable to use graphics tools, certain ftp tools may be useful as they allow the ordering of the files list by name.

→ Open Mistika fonts folder

Opens a folder of files in the installation directory of Mistika fonts (/usr/share/fonts/Mistika). To install a new typeface, open this folder and drag within the file .ttf containing the corresponding TrueType font. For example, to import a typeface that we have in a Windows PC, simply find it in `c:\windows\fonts` and drag it to this folder. In the next SGO Mistika session, this will be available for the VectorPaint and Title effects.

### Dailies logo and burn TC

Controls of the aspect of the logo and timecode (TC) that are superimposed on the image when carrying out render with the option Virtual Slate (Node Graph Editor->Dashboard->Output->Render->Virtual Slate) activated.

→ TC Size Factor

\[3 \ (1 / 4)\]

Size factor of the TC to be superimposed.

→ TC Left Offset

\[50 \ (0 / 2050)\]

Horizontal position of the TC (calculated from the left)
### TC Bottom Offset

**[20 (0 / 2050)]**

Vertical position of the TC (calculated from the bottom)

### Logo Right Offset

**[20 (0 / 2050)]**

Horizontal position of the logo (calculated from the right)

### Logo Bottom Offset

**[20 (0 / 2050)]**

Vertical position of the logo (calculated from the bottom)

### Change Copr. Logo

Allows the changing of the company logo to be superimposed on the image.

### After Scripts Data

#### After script mail address

This provides the email address to be used with the after-script `mail_After`. This script can be activated with the buttons **Launch Script** (Node Graph Editor -> Dashboard -> VTR -> VTR Capture -> Launch Script) and **Script to run after the render** (Node Graph Editor -> Dashboard -> Output -> Render -> Script to run after the render).
The Interface
E-1 Starting up Mistika

To start *SGO Mistika*, simply double-click the following icon on the desktop:

![Mistika icon](image)

It is also possible to run the software by typing *Mistika* in any Linux terminal. This method recommended in cases of problems, since the messages that appear help with diagnosis. These messages indicate the possible lack of essential software, the lack of licence, etc.

If no SDI video board is available, deactivate the *Mistika Setup->Video I/O->Use Video Board*, otherwise *Mistika* will not be able to boot.

For correct boot-up of *Mistika*, it is also necessary for the user to have done a *login* via a KDE-type desktop (Gnome-type environments are not supported).

Finally, it is very important not to open inadvertently more than one *Mistika* at the same time, since the performance will be drastically reduced and boot-up may not even be possible. Other unnecessary applications should not be opened either (the Linux bar shows information regarding the number of applications open). In any case, when in *Mistika Setup->Video I/O->Use Video Board->On* mode, it is only possible to open one *Mistika* application at a time.
E-2 The interface structure

The main interface of *SGO Mistika* works with three modes which are complementary and interactive: the TimeSpace Editor, the Node Graph Editor and the Visual Editor.

There are four dependent submodes of the Visual Editor: the Tracking Editor, the Warper Editor, the Paint Editor and the Title Editor. The definition of parameters area (Parameters) and its animation curves editor (Curves) are shared by both modes (Node Graph Editor and Visual Editor).
The **Node Graph Editor** mode is used basically for working in the **Node Graph Editor**, to load clips and effects into it and carry out editing. The **Node Graph Editor** is where the project is constructed, and the **Visual Editor** mode provides access to parameters and manipulators that are used to compose and adjust effects assigned in the **Node Graph Editor**. By means of dedicated tools, the **Visual Editor** is the interface used for detailed work and polishing the project.

In all cases, both modes, **Node Graph Editor** and **Visual Editor**, are available simultaneously at all times to work on the project.

**SGO Mistika** works with a minimum resolution of 1920 x 1200 pixels and the use of two monitors is recommended in order to be able to take full advantage of the possible interaction between the two main modes. The activation of dual monitor use is done via **Mistika Setup** (Mistika Setup->Interface->Two Monitors).

It is also possible to use the following functions to deactivate evaluation of the mode that we are not using, and thus obtain better performance in the other mode:

- If work in the **Visual Editor** is finished and we want to deactivate it to obtain better performance in the **Node Graph Editor**, double-click in any empty area of the **Node Graph Editor**. Furthermore, this action sets (dedicates) the second monitor to showing the monitor of **Node Graph** in full resolution. This is fundamental if an SDI external video monitor is not available to show the contents.

- When we are in the **Node Graph Editor** and want to re-activate the **Visual Editor** to work on an effect, double-click on the effect. The **Visual Editor** is optimized for adjusting effects, not to launch playbacks in real time, although even in this mode we still have buttons for navigating from clip to clip synchronously with the monitor of the **Node Graph Editor**, and can even send playbacks from it to the external SDI output without needing to return to **Node Graph Editor** mode.
E-3 Node Graph Editor

Ref. Mistika: Node Graph Editor

This mode is used for constructing the edit and administrating the position and behavior of the clips applying specific tools. In other words, in Node Graph Editor, the whole of Mistika is organized.

One of the unique characteristics of Mistika is that the functioning of the Node Graph is different from other post-production programs. In Mistika, the Node Graph should not be thought of as a two-directional line in time, but rather as an infinite field in which the user can work as they wish, according to their own preferences.

The Node Graph Editor is composed of four complementary areas: TimeSpace, Node Graph Editor, Dashboard and Monitor Display.

In the Node Graph, the duration of all types of clips and the hierarchical organization image processes are arranged.

The Node Graph Editor is the node based compositor of Mistika.

The Dashboard is the main control panel that contains access to the majority of commands and tools in Mistika.

In the Monitor Display, the active monitors for evaluating images and effects are viewed. There is an internal mode for configuring its behavior.

Ref. Mistika: Node Graph Editor- >Node Graph

The Node Graph of SGO Mistika is the workspace in which editing and effects construction takes place, and is central to the organization of the project.
This Node Graph is considerably different to those of other systems. On the one hand, it uses standard and traditional concepts to carry out simple editing; on the other, it also has other characteristics that differentiate it:

- The same Node Graph allows both integrated editing and compositing.
- Mistika's Node Graph is designed as a flexible workspace, in which the user can freely experiment, carry out tests, and have different versions in the same Node Graph.
- It offers a time-animated compositing scheme: other systems are based on a connected node tree whose connections cannot be changed in time. In Mistika, however, an entry layer to an effect can, simultaneously, be an edit that varies with time, empty in places, an image layer in other places and even be formed by a complex composition at other times.
- Mistika's Node Graph can be seen as a three-dimensional workspace; in the horizontal direction, editing of clips is carried out; in the vertical direction, composition and effects are carried out; via nested group clips, navigation to other Node Graph environments can take place, with the same capabilities as those found at the first level.
- SGO Mistika's Node Graph provides a multitude of tools oriented towards the organization of audiovisual projects in which various different systems participate. Thus, the Node Graph is designed to exist at the center of production, as a system for sharing out work, receiving new versions of each piece, and provide a global vision of the evolution of all the pieces together. To do so, it possesses various organizational tools, such as exportable groups, notes and Graffiti on the Node Graph, user's marks, remote clips linked to other systems, and scripting capabilities for the automatization of processes.
- There is also additional support for stereoscopic work, where clips for both eyes can be grouped and treated together or separately at any time.
- Total support for combining clips with different resolutions, aspect ratios, and color spaces in the same Node Graph.
From an editor’s point of view, SGO Mistika’s Node Graph is more flexible than any other known GUI, since it has an infinite number of tracks which are not dedicated to a particular type of media: thus any type of clip can be placed in any track.

This makes possible, for example, the coexistence of multiple versions of the same edit in the same Node Graph since the vertical and horizontal dimensions are infinite.

From the compositor’s point of view, this kind of Node Graph provides a schematic representation of the accumulated process flow, which, unlike other compositing systems, allows the duration of all effects to be viewed at the same time. Other representation systems based on node trees do not show the process duration, and are only able to represent the hierarchical order of the processes in the same flow, since the node system is intrinsically one-dimensional.

Mistika’s workflow is based on effect clips that are nestable and infinitely accumulative and processed by GPU, in which any process can be related to any other, providing unprecedented flexibility and performance compared with other compositing systems, without ever needing to make an intermediate render.

Mistika provides a three-dimensional scheme (horizontal/vertical/nested grouping) that shows the duration of each process, the effect relationships, and even different versions at
the same time, in a much more complete and interactive way, since each process is represented as an additional clip, which can be edited in the same way as any other clip, changing its duration, copying it, dividing it, etc.

When effects clips are added together, or to image clips, they form vertical stacks, which can be collapsed to a single group that will contain all of them, to facilitate its organization in the Node Graph. This characteristic of the system will be explained in more detail later.

To view the result of editing or composition of an area of the Node Graph, the monitor bar (Monitor) is used, by placing it over the clip to be viewed. The Monitor will evaluate the process of the frame where its bar has been placed.

The creation of processes and image flows is done by adding clips to the Node Graph. Many effect clips have a range of action, specified by a dropdown, into which other image or effect clips should be introduced as inputs. These scopes define the links between the processes. These links can be seen in a vertical hierarchy scheme (similar to a directory explorer), with the help of interfaces and auxiliary monitoring options, explained later.

Once the flow has been defined, the parameter values for each process can be defined in Visual Editor mode to work in an interface that is better oriented towards compositing and effects, although the user can return to the Node Graph at any time, to make changes, as both modes (Visual Editor and Node Graph Editor) are interactively integrated and are complementary.

Elements of the timeSpace

A large number of different elements appear in the Node Graph, as described below.

Grid

Horizontal and vertical lines that divide the Node Graph into squares. The horizontal lines subdivide the project area into tracks. The vertical lines divide the space into units of time depending on the zoom factor of the Node Graph. The timecode values are shown at the bottom of the project area.

Cursor

This is represented by a single frame sized rectangle with a red vertical line down the middle. It appears if any part of the Node Graph is clicked. It is used as the default location for the following operations, such as adding a clip to the Node Graph or editing, etc.
Monitor

The *Monitor* mark is a vertical line with two small control boxes at the top and bottom that specify where the evaluation of the contents of the *Node Graph* starts and ends.

The beginning of the mark is called the monitor head, and is the direct manipulator of the monitor. To drag the monitor, left click and hold the monitor head and move the mark over the clips to be evaluated. The timecode of the current frame of the *Node Graph* is shown on the monitor head.

The monitor, by default, can only evaluate a limited number of tracks. This number is shown in the scope of the monitor mark, which begins in the head and ends in its Range manipulator.

If monitor evaluation needs to be interrupted while dragging a mark, it can temporarily be inhibited by `<Shift>` + left click.

When the monitor is evaluating only image clips, only the clip that it finds in the top track crossed by the monitor mark will be visible. This is because an image clip does not have a scope, and it cannot be associated with clips that are below it. This allows the definition of different versions by placing clips in different tracks, without the need to place one clip after another, as the monitor will read the clip of the top track, and when the clip is finished, it will then read the next clip below it.

To compose several image clips, it is necessary to apply composition effect clips, which have scopes that specify process flows.

When viewing a playback of the *Node Graph* material on the monitor, the contents of the area of the *Node Graph* being evaluated will be processed from left to right and from top to bottom.

When the monitor is in play mode, it advances from left to right (although physically what is seen in the interface is a still monitor and the *Node Graph* moving from right to left below it), and when it passes over an effect clip it activates the process of that clip and of the effect or image clips that are associated with and below it.

If real-time view is lost when the monitor is working, a “Lost Sync” message box will appear above the monitor head.

Play Marks

These restrict the monitor reproduction area when Play mode is activated. They are colored violet, and initially are hidden. To add or delete them, use the *Play Marks* commands in the *Quick Access* bar.
Edit Marks

Yellow in color, these specify the two editing points used in various editing operations. They carry out the function of selecting the area for Output operations. To add or delete them, use the Edit Marks commands in the Quick Access bar.

TC Mark

This is the timecode track marker of the Node Graph. The default value of the mark is the zero timecode (00:00:00:00), although this value can be modified to any other. The mark is light gray, and dragging its tail will move the timecode without altering the Node Graph contents.

There are several ways to insert and control the TC. By default, the numerical values (inserted by typing) will appear from left to right, returning to the start when the last code value is reached. If the value in a TC field (frames, seconds, or minutes) needs to be edited, simply double-click on this field to select it and edit it. Similarly, we can select the entire TC with a triple-click.

Finally, there are several useful keyboard shortcuts for controlling the TC:

- **Left/Right arrows**: to move through the timecode.
- **Up/Down arrows**: to increase/decrease values in a TC field (frames, seconds, or minutes) by one unit. To control a specific field, first position the cursor over this area.
- **+/± Buttons**: to increase/decrease the value in the frames field by one unit without previously needing to be positioned in this area.
- **Enter**: to navigate to the indicated TC.

User Marks

These indicate timecodes of interest created by the user; they can be added even during playback.

These marks can be global or local, and are added or deleted via the User Marks commands in the Edit tab of the Dashboard.

These are placed in the Node Graph at the position of the Monitor mark. If no clip is selected, the mark will appear on the Node Graph (global marks); if a clip is selected, it will be placed in the selected clip and is moved with it (local marks).

The global marks are shown in green throughout the vertical dimension of the Node Graph, and the local clip marks are created inside the clip container.

It is possible to jump from one user mark to another via the Prev/Next commands in the Quick Access bar.

Vumeters

The vumeters can be viewed via Edit->Setup. 2, 4, 8 or 16 channels can be viewed in realtime in the Node Graph. When options 8 or 16 are selected, different options can be selected for more comfortable viewing and analysis of these in the Node Graph.
Notes & Graffiti

This displays notes with texts and drawings that can be used as documentation on the Node Graph (see Notes).

Individual Clips

Before beginning the description of each type of clip, it is necessary to explain in detail the concepts of “cut”, “head”, “tail” and “position” of clips in a non-linear editing system.

In any editing system, the Out Point of an editing event is an exclusive timecode. This means that the timecode selected as output indicates a time value where the event is excluded from the editing, corresponding to the frame following the last frame of the event.

In a non-linear editing system represented by a Node Graph, each event is shown as a segment or clip.
Due to the read direction of the Node Graph (from left to right) these segments have a head and a tail.

The **Head** is at its left edge, and corresponds to the timecode In Point value of the event.

The **Tail** is at its right edge, but the timecode output value of the event is really the frame after the tail, since the Out Point of an event is, according to the timecode, an exclusive point.

Therefore, if the tail of a clip follows the head of a clip, both clips will have the same timecode, since the Out Point (expressed in timecode) is the same value as the In Point of the following clip. The coinciding of editing points is called a **Cut**.

An editing cut is shown in the Node Graph as the border that joins the tail and head of two different clips. These cuts can be adjusted, which will modify at the same time the tail and head of clips that are in the selected cut. Finally, it is important to note that Mistika’s Node Graph allows the placing of clips in infinite tracks; this should be borne in mind, since several cuts, heads and tails of clips that are in different tracks can be edited at the same time for some adjustment functions.

However, a cut (outside the definition to be used in this documentation) can be specified as the end of an image clip, and the start point of another clip in a lower position, or as the start of an image clip that obstructs the reading of another clip in a lower position. This also specifies a cut in the edit, although by using this term in this documentation we do not refer to this possible situation.

The interval between the head and tail of the same clip is called the **Duration**.

A clip, in addition to starting and finishing, is found in one of the Node Graph’s lines. The absolute location of the clip in the Node Graph, both vertically and horizontally, is called called **Position**.

This difference from the term **Head** should be borne in mind, since **Head** refers to the In Point of the clip in relation to its timecode and original duration. If the position of the clip is altered, the **Duration** of the clip is maintained without change. In other words, a clip can be “moved”, but its head and tail can only be “adjusted”, consequently changing the duration of the clip.

**Image clips:**

These are dark green clips, without scope. They represent the duration of a sequence of
images.

This clip can be of various types: subclips, master clips or link clips.

To view more details of a clip, such as for example the media to which it refers, the Attributes tab (Node Graph Editor->Dashboard->Edit->Attributes) can always be used.

If the clip extends beyond the duration of its media, the color of the excess segment of the duration will change to a darker green. In this excess, the first or last frame of the media will be viewed as a frozen frame, depending on whether the excess is respectively head or tail. When it is a subclip, the media is considered finished from the In Point and Out Point marks with which it was created.

It is also possible to view the clip as a strip of images by activating the option Show Strip Video (Node Graph Editor->Dashboard->Edit->Setup->Node Graph View->Show Strip Video).

Within an image clip, the following two elements can be distinguished:

- **Name of clip**
  
  This indicates the original name of the clip. The clip name can be modified in the Node Graph, for organizational purposes. This clip is associated with specified media.

  More information about a clip can be obtained via the Attributes tab (Node Graph Editor->Dashboard->Edit->Attributes).

- **Active frame**
  
  This appears when the zoom factor allows a proxy image of the active frame to be viewed within the clip. To view a different frame in the clip, simply right click and drag over the clip.

  At the bottom of the active frame mark, the frame number can be seen. This information can be viewed as timecode by activating the option Timecode (Node Graph Editor->Dashboard->Edit->Setup->Node Graph View->Time Code). For clips derived from capture with defined timecode, the original timecode will be seen. Clips derived from a render, a link or capture in Start Free mode do not conserve the original timecode.

  Right-clicking on the clip and dragging the mouse cursor shows another proxy image with the current frame, and this image can be sent to the active monitor via the option Select Monitor (Node Graph Editor->Dashboard->Edit->Setup->Node Graph Monitor->Select Monitor).

  Editing clips is non-destructive, and their original duration can be restored at any moment, since they can be shortened or extended from their head or tail as often as required.

  Changing the duration of a video clip by any editing technique allows more or less original material to be viewed, by increasing or reducing its duration, while maintaining its normal playback speed.

*Note:* In an image clip without media, a black and white chessboard pattern will be seen. This is to indicate that the clip has no image media. For more information on the scope of an effect, read the chapter Manipulation of an effect clip with scope.
Audio clips:

These are very pale green clips, without scope, although audio clips do not need to be associated with other clips to be evaluated. This means that all audio clips in the evaluation range of the active monitor will, in principle, be evaluated. This can be modified via the pan and mix tools in the Audio tab (Node Graph Editor->Dashboard->Audio->Router).

To view more details of an audio clip, such as the referenced media, go to the Attributes tab (Node Graph Editor->Dashboard->Edit->Attributes) can always be used.

If the clip extends beyond the duration of its media, the excess segment will change to a darker green, and in this excess no audio will be evaluated at all.

Audio clips are affected by the same editing operations as any other type of clip except for Reverse (Node Graph Editor->Dashboard->Edit->Commands->Reverse) and the operations of Timewarp.

It is also possible to view the clip as a waveform by activating the option Show Strip Audio (Node Graph Editor->Dashboard->Edit->Setup->Node Graph View->Show Strip Audio).

Audio clip view has the two following elements:

- **Name of clip**

  This indicates the referenced audio file name.

  More information about a clip can be obtained via the Attributes tab (Node Graph Editor->Dashboard->Edit->Attributes).

- **Active frame**

  When the zoom factor allows, the audio is viewed in a waveform in a proxy image within the clip.

  To view the waveform of another frame in the clip, right click and drag on it. In addition, the audio of the clip will be played, allowing the desired points to be found more easily.

  At the bottom of the active frame mark, the frame number can be seen. This information can be viewed as timecode by activating the option Time Code (Node Graph Editor->Dashboard->Edit->Setup->Node Graph View->Time Code). For clips derived from capture with defined timecode, the original timecode will be seen. Clips derived from a render, a link or capture in Start Free mode do not conserve the original timecode.

Changing the duration of an audio clip by any editing technique allows more or less original material to be heard by increasing or reducing its duration, while maintaining its normal playback speed.

Via the option Show Strip Audio (Node Graph Editor->Dashboard->Edit->Setup->Node Graph View->Show Strip Audio) the audio waveform of each frame will be shown on the clip. The vertical axis represents the wave amplitude, while the colors represent the frequency spectrum (basses, mid, high).
The parameters of audio clips can be animated in the Parameters tab:

There is one **Master** folder for controlling all audio tracks of the selected clip simultaneously. In addition, each audio track has a separate local folder **Track_n** for animating each audio track separately. Both types of folder have two parameters, and both parameters have a similar function (volume control). The difference is that **Fade** behaves in a linear fashion, while **Gain_Db** has logarithmic behavior.

The choice of using one or the other parameter will depend on the situation:

The human ear reacts in a “logarithmic” way to sound. If the volume is very high, we will only detect big volume variations, while if it is very low we will detect very small variations. Due to this, we recommend using **Gain_Db** in most cases; the **Fade** parameter, with its linear behavior, will be less effective.

However, a very common situation exists in which the linear scale (**Fade**) is preferable: when animating a cross fade between two audio clips, it is more convenient to work in linear scale, because we need to work with the concept of “percentage” so the transition is independent of the volume in each of the two clips.

**Note**: In the cases where a simple linear cross fade between two audio clips is required, remember that there is a simpler method than manually animating the curves: overlap the two audio clips in the **Node Graph** and the transition will automatically occur (explained in more detail below).

One case in which we want to animate both parameters simultaneously is a “Fade to black” (from sound to silence). In this case, **Gain_db** will provide the feeling of a more gradual fade than if we used **Fade** in a linear form, but it cannot ultimately result in total audio fade out. To achieve this, set the **Fade** parameter to zero.

In general, to set an appropriate constant level for each audio track, do not use these parameters. It is easier and more convenient to use the tools of the **Audio** tab (**Node Graph Editor->Dashboard->Audio**). In addition, use the **Gain_Db** parameter to set the correct volume at any moment, and the **Fade** parameter to animate the volume of one audio track in relation to others.

The animation parameters described for audio clips also exist for mixed audio/video clips.

The editing functions never affect parameter animations curves, which are cut when the length of clip is adjusted.
### Fade

**[100 (-100 / 100)]**

This controls the gain level (and therefore audio volume) in a linear scale, i.e., the value of this parameter modifies the wavelength proportionally. It is often used to animate fades between two or more audio tracks, and to eliminate completely the sound of a track by setting this value at zero.

### Gain_Db

**[0 (-60 / 6)]**

This controls the gain level (and therefore audio volume) in a logarithmic scale. It is the volume control method recommended in general, except for fades between different audio clips. By way of reference, we can say that an increase of 6 decibels produces an increase in audio wavelength of around double the original (in fact this would mean four times the power, although such issues fall outside the scope of this document).

### Audio mixes:

To carry out a linear audio mix between two audio clips, simply overlap them on the same Node Graph track. The mix happens automatically, having the length of the overlapped segment. This mix is done internally without using the parameters of audio animation described above, which are therefore available to other user settings.

When we align two audio clips on the same track on the Node Graph (without any overlapping) the system will automatically generate a small 10ms mix between the two audio clips. This automatic audio mix is designed to avoid the annoying clicks that typically result if the audio clips are not mixed in this way.

**Note:** The explanations in this section regarding audio clips are all applicable to mixed audio/visual clips, except for the display of the waveform of the clip.

### Mixed clips:

This is a two-colored clip: the top half is dark green and the bottom half is pale green.

This type of mixed clip contains an audio track within the image clip.

These clips can be mixed from their original capture, or combined later in the Node Graph with the command A/V Combine (Node Graph Editor->Dashboard->Edit->Edit->Commands->A/V Combine).

This command is useful, once an image and audio clip are synchronized, for combining them into a single mixed clip and editing it as if it were a single one. To combine clips, remember that they should have the same duration and be vertically aligned.

To view more details of a clip, such as the referenced media, go to the Attributes tab (Node Graph Editor->Dashboard->Edit->Attributes).
However, in the *Node Graph* only the proxy images are seen and not the waveform that corresponds to the audio. The editing done in the clip will affect the image and audio at the same time.

**Note:** Remember that the operations *Reverse* (Node Graph Editor->Dashboard->Edit->Commands->Reverse) and *Timewarp* will not affect the audio or its parameter curves.

If these limitations need to be avoided, the mixed clip should be divided into two separate clips, one for the image and another for the audio, via the command *A/V Break* (Node Graph Editor->Dashboard->Edit->Commands->A/V Break)

**Group clips**

Clips of the group type are a useful feature for collapsing an indefinite number of clips so as to view them as a single one, facilitating vertical navigation in the *Node Graph*. It is possible to navigate within the groups, and edit them internally without having to view any other part of the *Node Graph* around it.

A group can contain effects, images, audio clips or even other groups. Since groups can be saved individually as files, with the `.grp` extension, they are considered as an ideal means of transporting stacks of effects that may be reused in the same *Node Graph* or in any other project, or even between project workstations with centralized storage.

The reasons for collapsing clips into a group are usually the following:

- To simplify the representation of one part of the editing or a stack of effects on the *Node Graph* by visualizing them as a single clip.
- To isolate a set of effects for reuse and subsequent editing.
- To extend a clip by freezing its head or tail and preventing the remaining time being used.
- To increase or reduce the reproduction speed of its contents (*Timewarp Groups*).
- To create a flow pattern that can be edited and reused later, and applied to different clips on each occasion (*Template Groups*).
- To obtain a *Stereo Group* (group of two clips, one for each eye), managed automatically via *Monitor Display* (Node Graph Editor->Monitor Display->Record Monitor->Menu->Stereo Mode).

*Mistika*’s groups can exist in three different states: *Normal*, *Timewarp* and *Template*.

The three states are viewed within the *Node Graph* with a different clip color, and the behaviour of each with relation to edition functions also changes.

All three group states can be saved as a file with the `.grp` extension. To carry this out, select the group and apply the command *Creating Group* from the *Media* tab (Node Graph Editor->Dashboard->Media->Misc->Creating Group).

To undo a group and return to a view of the original clips, run the editing command *Ungroup* (Node Graph Editor->Dashboard->Edit->Edit->Commands->A/V Ungroup). The command will drop down all the clips contained in the group.
If the group has been moved on the Node Graph, and then ungrouped, its clips may superimpose clips in the lower tracks. To avoid superimposition of clips on others when ungrouped, reposition the clips below the group track, activating the function Auto Expand (Node Graph Editor->Dashboard->Edit->Setup->Edit->Expand).

The groups, like the clips described earlier, can be viewed as a proxy slideshow of images by activating the option Show Strip Video (Node Graph Editor->Dashboard->Edit->Setup->Node Graph View->Show Strip Video).

**Common Group characteristics:**

When viewing a group clip, two common elements are shown: the name and timecode of the active track (regardless of the whether this group contains other clips).

- **Name of clip**

  This indicates the default name of the group, which is extracted from the name of the group clips. The name of the group clip can be defined in the Attributes tab (Node Graph Editor->Dashboard->Edit->Attributes) making its identification within the Node Graph easier.

- **Active frame**

  When the zoom factor allows, a proxy image of the active frame is shown in the clip. To view another frame in the clip, right click and drag on it.

  The number of the active frame is shown at the bottom of its mark. This information can be viewed as a timecode by activating the option Timecode (Node Graph Editor->Dashboard->Edit->Setup->Node Graph View->Time Code).

  Right-click and dragging in a clip will show another proxy image with the current frame, and also this image can be sent to the active monitor by activating the option Select Monitor (Node Graph Editor->Dashboard->Edit->Setup->Node Graph Monitor->Select Monitor).

**Navigation:**

Every group can be navigated to view its contents, by changing the depth level of the Node Graph view.

To navigate a group, it is necessary to select it in the Node Graph and run the command Navigation In (Node Graph Editor->Quick Access->Navigation->Navigation In).

The following image shows a typical view when navigating a group:
The clips contained within the group are shown inside it, and it is possible to select a new group there and navigate to deeper levels. The number of navigation depth levels is unlimited.

Within a Normal group, the exterior duration, indicated by dotted vertical lines in magenta, can be viewed. However, we can locate clips outside these limits, working with unlimited space, when the Node Graph is set in the zero navigation level.

If the Normal group has its duration reduced (by moving its head or tail), vertical red dotted lines will be seen within the Normal group which indicate the range used in the previous navigating level.

Groups of other types will only show vertical red dotted lines when navigating inside them, as when editing a Timewarp or Template groups the total duration of the clips contained in them can always be used.

At the bottom of the Node Graph a message will be seen indicating the current level of navigation. In addition, as the navigation depth level is increased, the color of the line at the bottom of the Node Graph will darken, as a visual reminder of the navigational depth being used.

The active monitor mark will be shown in all the navigation levels.

To move to a higher level, thus “exiting” the group, run the command Navigation Out (Node Graph Editor->Quick Access->Navigation->Navigation Out).

However, if clips in the group have been edited, and the total duration of the contents has been modified, whether from the head or tail of the group, then Mistika will ask what should be done with these changes. When Navigation Out is pressed, and before taking any action, a dialog box will open showing the possible options, depending on the state of the group being edited.
**Group in Normal state:**

To create a *Normal* group, select one or more clips, and run the editing function **Group** (Node Graph Editor->Dashboard->Edit->Edit->Commands->Group).

A *Normal* group clip is bright green.

A *Normal* group is edited in a similar way to an image clip, although instead of referencing the media, it references the editing of the clips that it contains, including the processes organized as flows within it.

A *Normal* group clip, when its duration is changed by any editing technique, allows viewing of more or less of the material contained in it, maintaining its normal playback speed.

If a *Normal* group extends beyond of the duration of its contents, the segment with the excess duration will change to a deeper green. The first or last frame of the contents of the group will be shown frozen in this excess content, depending on whether the excess is respectively in the head or tail.

One consequence is that the technique of grouping a clip and then later extending it is the easiest way to achieve "frozen" first or last frames of the clip, avoiding the excess material that it might have.

**Saving changes when exiting a Normal group:**

When exiting a *Normal* group in which the total duration of its contents has been modified, a dialog box will open at the cursor position with the four possible actions shown below:

- **No actions**
  
  The view exits the navigation level without changing the duration of the group, while the modifications made inside the group from outside it, without having affected the total duration of the group or its remaining time, can be seen.

- **Adjust Trimming**
  
  The view exits the navigation level without changing the group duration, but the timecode is redefined. For example, if the group is extended later, it will then use the material contents that exceeded the group duration beforehand.

- **Reset Trimming**
  
  The view exits the navigation level and resets the duration of the group based on the new duration specified by the clips inside it.

  Remember that if the duration of the interior of the group is extended on the left side, the group duration will be redefined by extending the tail of the clip, and not the head.
Cancel

This cancels exiting the navigation level, without taking any action.

Groups in Timewarp state:

To change the state of the group Normal to Timewarp, run the function Timewarp (Node Graph Editor->Dashboard->Edit->Commands->Timewarp). To return to the normal group state, first ungroup and then regroup.

It is not possible to create a Timewarp group without starting from the Normal state.

A group clip in the Timewarp state is mid-green.

A Timewarp group is edited in a similar way to an image clip, but instead of referencing media, it references the editing of the clips that it contains, including flow processes.

Unlike a Normal group, when a Timewarp group clip has its duration changed with any editing technique, all the material inside it are shown, increasing or reducing its duration but modifying its playback speed.

Next to the group clip name, there is a number that indicates the percentage of the original duration that the altered duration of the Timewarp group has. This is useful for knowing the approximate playback speed of the Timewarp, provided that its parameters that are described below have not been altered.

A Timewarp group is the only type of group that has parameters.

→ Time-Time

[0 (0 / X)]

The internal frame number of the group that is viewed outside it.

→ Speed

[0 (0 / 100.000)]

Percentage parameter that scales playback speed.

→ Width

[0 (0 / 100.000)]

Amount of mixing between frames. This parameter is useful to smooth irregular speed changes, and when the playback speed is so low that a jump between different
images is visible. The greater the width value, the more frames are mixed together to obtain each new resulting frame.

The curve of the *Time-Time* parameter symbolizes the passage of time, which can be specified in a non-linear way. The curve can be modified with complete flexibility, as explained in the chapter *Parameters*.

Dropdown folder that contains the parameters that control the *Optical Flow* algorithm.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MinLevel</td>
<td>[1 (0 / 8)]</td>
<td>Factor that halves the resolution of the flow; the higher the value, the lower the resolution, accelerating the speed the effect is calculated.</td>
</tr>
<tr>
<td>Levels</td>
<td>[7 (1 / 8)]</td>
<td>Refines the direction of movement vectors.</td>
</tr>
<tr>
<td>Iterations</td>
<td>[25 (0 / 1.000)]</td>
<td>Revises movement in areas with little detail.</td>
</tr>
<tr>
<td>Smoothness</td>
<td>[10 (0 / 1.000)]</td>
<td>Smoothes the direction of crossed vectors, making them more parallel.</td>
</tr>
</tbody>
</table>

**Saving changes when exiting a Timewarp group:**

When exiting a *Timewarp* group in which the total duration of its contents has been modified, a dialog box will open at the cursor position with the four possible actions shown below:

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>No actions</td>
<td>Exits the navigation level without changing the group duration, while being able to see from outside the modifications made.</td>
</tr>
<tr>
<td>Reset Timewarp</td>
<td>Exits the navigation level and resets the group duration according to the new duration specified by the clips inside it. The modifications made inside the group will be shown outside it, and the total group duration will have been affected. Remember that if the duration of the interior of the group is extended on the left, the group duration will be redefined by extending the tail of the clip, and not the head. The <em>Timewarp</em> curve will be replaced with a default curve, with linear advance.</td>
</tr>
</tbody>
</table>
Adjust Curve

Exits the navigation level without changing the group duration, but its playback speed is changed, since the duration is maintained at the expense of scaling the curve of advance in time in X (Time-Time), so that all the contents of the group will be reproduced by it.

Cancel

Cancels, exiting the navigation level, without taking any action.

Group in Template state:

To create a group in Template state, it is necessary to group clips of the same duration that are aligned vertically together with, at least, a Dummy Clip effect. This type of group allows the creation of editable patterns to be able to re-use workflows and apply them to other clips in the future (for more information about the effect Dummy Clip, consult the chapter Dummy Clip).

It is also possible to convert a Normal group into a Template group if we add at least one Dummy Clip to a Normal group. In this case, when the group is refreshed, we can reconstruct the group in a Template (Rebuild Group).

The state Template cannot be transformed to Timewarp. To undo the group, use the command Ungroup (Node Graph Editor->Dashboard->Edit->Edit->Commands->Ungroup).

If the clips are not aligned, or do not have the same duration, or a Dummy Clip does not exist between the clips we want to group, what will be created by grouping them will be a Normal group.

A Template group is dark cyan, and is the only type of group that has a scope.

Saving changes when exiting a Template group:

When exiting a Template group in which the total duration of its contents has been modified, a dialog box will open at the cursor position with the three possible actions shown below:
No actions

Exits the navigation level without changing the total group duration, or changing the duration of the clips contained in it.

Realign

Exits the navigation level maintaining the group duration, but vertically aligning and redefining the duration of all the clips contained in it with the value of the original group duration. This option should be avoided when it is necessary to maintain different durations for each of the clip contents.

Cancel

Cancels, exiting the navigation level without taking any action.

Effect clips

Mistika’s effects are represented by clips. These clips can be processes of very different natures, or even system tools that do not directly affect the images of the clips associated with the effect.

Common characteristics of effects clips:

The effects clips in Mistika are color-coded according to their functions. Animations, 3D manipulations and image deformations are identified with reds. Color corrections and operations for extraction and correction of the alpha channel are identified with blues. Boolean operations and color space conversion operations are identified with purples. Image generators are identified with dark cyan. The Timewarp effect identified with mid-green. Transitions are identified with yellow. Spatial filters and image restoration operations are identified with pink. Effects that affect the behavior of image fields are identified with light cyan. Filters to manipulate stereoscopic images are identified with gray.

Many effects can work without the need to interact with another clip, generating synthetic images, such as the majority of the effects of the Generate family (Node Graph Editor->Dashboard->Fx->Mistika->Generate). For this reason, several of these effects cannot be associated with other clips by a process, and it is for this reason that they have no
The majority of the remaining effects must have a scope, which is a field with the same duration as the clip, which can be extended indefinitely to tracks below.

Manipulation of the scope of effects is explained in detail in the chapter, Manipulation of effect clips with scope.

To add an effect to the Node Graph, it is necessary to run the command of the effect from the FX tab in the Dashboard or via a keyboard shortcut or from the Scribe.

Depending on what is selected in the Node Graph, the effects will be added in one of the following ways:

- If one or more clips in different horizontal positions in the Node Graph have been selected additively (see "Selections" in the chapter Selection of elements), an effect clip whose length will be the same as that of one it has below will be created for each one of them. Its scope will be extended to cover the selected clip.

- If one or more vertically placed clips have been selected in a single area that covers them, an effect clip will be created whose length will be the same as that covered by the selected clips. Its scope will be extended to cover all the selected clips.

- If nothing is selected in the Node Graph, the effect will be placed in the current position of the Node Graph cursor and will have a length specified by the editing panel calculator. If this is inactive, the duration of the new effect clip will be 1s (one second).

The scope can be modified at any moment by left clicking and dragging it. In addition, the length of the effect can be also modified or any standard editing function can be applied as with any other type of clip.

In any view of the effect clips, three common elements can be seen:

- **Effect Name**
  
  This defines the name of the effect, which cannot be redefined.

- **Active Frame**
  
  At the bottom of the active frame mark, its frame number can be seen. This information can be viewed as timecode by activating the option TimeCode (Node Graph Editor->Dashboard->Edit->Setup->Node Graph View->Time Code). It should be remembered that the timecode of the clip of an effect will restart from zero.

  When the factor of zoom allows, a proxy image of the active frame within the clip can be viewed.

- **Evaluated proxy**

  A group clip with a proxy evaluation has a horizontal orange line at the top. For more information about this characteristic, consult the information about the group Attributes in the Edit tab.

Effects, unlike the other types of clips described above, cannot be viewed as a strip of proxy images (group it or render it if this feature is needed).
When a head or tail is adjusted, or the duration of an effect clip changed, the curves of its parameters will be scaled in X (if the effect has any parameters).

Effect clips can be freely copied, moved or deleted from the Node Graph, since they are processes that are only evaluated when the monitor passes over them or when rendering.

The effects are infinitely cumulative each over the other, forming vertical stacks of large proportions without need for an intermediate render at any time.

To use a naming convention, each effect clip within a flow will be called a Process, and each set of processes that result in one image that can be placed in the space and composed on a similar image will be called a Layer.

Both processes and layers of a composition can be accumulated indefinitely, with no other restriction than the amount of memory in the hardware where Mistika is installed.

Some effects (such as Comp3D) have the ability to add a set of parameters to each composite layer, and to assign composition parameters to each effect input. See the chapter Parameters.

The viewing and editing of the parameters of the effects and their animation curves is done from the Parameters tab which can be controlled by special compositing manipulators from the Visual Editor.

Order of effect inputs:

Effects that create a composition with several inputs always use the first input (the one at the top of the Node Graph) as the background (or first layer if there is no background), and the following inputs are the composited through the alpha channel until the bottom input is reached, which will represent the first plane.

Effects that allow the use of an external mask use the first input as the background (if it exists), those following as images to superimpose successively on the background, and the last as an external mask.
Manipulation of an effect clip with scope:

These types of effect clips, as with a group clip in Template state, have a scope of action, which is shown as a dropdown. If a clip with scope is selected, it will be drawn as a central semitransparent gradation, in order to see it better.

The scope is the system of process association within Mistika.

These associations between image clips, groups and effects create process flows, which should be defined by extending or reducing the scopes of the effects.

The scope of a clip can be extended downwards by any number of tracks, and will have the same horizontal size as the clip from which it was extended.

The scope cannot be in a track above the clip to which it belongs, although it can be on the same clip track.

To move a scope, its bottom edge can be selected and dragged to lower tracks.

When the effect clip is directly selected and then moved upwards, the bottom edge of the scope will not be selected, and it will remain in its place. In this case the clip can be moved vertically, extending and reducing the scope, as it has not been selected.

If the clip container is dragged below the track containing the bottom edge of the scope, they will both be pushed together towards the bottom edge of the scope and dropped at the spot where the downward movement stops; if dragging of the clip container is in the upwards direction without releasing the clip, the scope will stay in the lowest track in the clip drag path.

On the other hand, if both clip compositions are selected at the same time (by using a selection area, or by pressing the clip container and then the bottom edge of the scope while pressing <Shift>) the scope will move with the clip without changing its length.

Each clip within the scope of another effect is considered an Input of the effect above it. The frames of the tracks that do not contain any clip are not considered “empty inputs”, but rather are directly not considered as input. Many effects need several Inputs to work correctly, or to use certain project modes of the effect.

For example, a Wipe effect needs at least two inputs, to be able to mix both inputs together and connect them with a set of wipes. The top clip will be the first input, the next will be the second, and so successively for the third input, etc.

In this way, the process flow of a stack of effects is specified by the scopes, in the same Node Graph.

With the help of the flow monitoring option (Node Graph Editor->Dashboard->Edit->Setup->Node Graph Monitor->Flow Monitor), these flows can be viewed next to the monitor mark in a vertical hierarchical scheme similar to a directory explorer, making their definition easier.
Furthermore, the toggle *Eval Tree* is available to view the flows in a more specialized and complete way, and amongst other features, it permits navigating via groups and provides a visual icon in each node to help understand the contribution of each effect.

Once a flow is created, we can set the value of the parameters of each process more easily from the *Visual Editor*.

### The Alpha Channel

The Alpha channel is the image channel that normally contains the *Mask*, Matte or Key of an image. All of these terms can be used to designate either this channel or its contents, and in this manual will be used in this sense.

An image mask or Alpha channel is an image that specifies the intensity with which an effect is applied on each pixel of the original image. Pixels that have a zero alpha channel value are not affected, and the intensity of the effect will increase to 100%, which corresponds to the alpha channel pixels with the maximum value.

The alpha channel is used in many types of operation. In general, it can be said that it expresses the transparency of each pixel, although in many occasions effects use it for a different purpose.

Whether or not the clips are of RGB or YUV format, another clip in the *Node Graph* can be associated with it as an alpha channel (for example by using the *External Key* effect).

In addition, RGB clips can store this alpha channel within the clip itself together with other channels, by rendering to a RGBA clip. However, YUV cannot contain an alpha channel, so that it is necessary to associate it with a separate clip (by using the *External Key* effect). When a render in RGB format is specified with an alpha channel, a single RGBA clip will be generated, whereas if a YUV clip is rendered and the alpha channel is to be conserved, two render processes must be done - one to obtain the image clip and another to obtain a clip with the Alpha channel contents.

*Mistika* provides different effects that permit the generation of an alpha channel in the output from the contents of the input images. This type of effects is typically known as *Keying*. For example, the best known *Keying* function is the *Chroma Key* (in *Mistika* called *Color Key*) that generates a mask for the areas of an image that are in a certain range of colors.

Once the alpha channel is specified, it can be viewed in the *Record Monitor*, in the *Source Monitor* or in the *Visual Editor*, and we can work with effects that only affect this channel (for example *Blur*, *Color Grade*, etc), or else transform this channel into a gray scale (with the *Show Alpha* effect), and even process the mask as any image.
timeSpace tools

The Node Graph has a series of tools that give more information about its elements and modify their behavior.

Info Bar

Ref. Mistika: Node Graph Editor->Node Graph -> Info Bar

The information and commands area consists of a line containing messages that refer to the current version of Mistika, the current project, environment, confirmation and error messages.

- **Version**
  
  Indicates the currently running version of Mistika.

- **Project**

  Name of the current project.

- **Node Graph**

  Name of the currently open environment.

  **Note**: if no environment is open, the default name that will appear is Unnamed.

- **Video Settings**

  Information about the resolution of the current project (Res) and the type output signal (Video Out).

- **Message line**

  Message line generated by Mistika for information and errors.
Max

Maximizes the **Node Graph** area.

TC Slider

**Ref. Mistika: Node Graph Editor->Node Graph ->TC Slider**

The **TC Slider** control area has different tools to move within the **Node Graph**.

![TC Slider Image]

- **Global Ruler**

  This shows the total time, and contains a sliding bar that indicates, with its length, the timecode range of the **Node Graph** being viewed.

  The bar can also be moved to the left and right to scroll and view other areas of the **Node Graph**, or directly select another part of the ruler slider, jumping instantly to the selected timecode.

  **Note**: Displacement of **Node Graph** view can also be done by moving the mouse in any direction, while holding down the right button on the **Node Graph** background. If you wish to avoid monitor evaluation while dragging the **Node Graph** over complex evaluation areas, hold down `<Shift>` and the right button on the **Node Graph** background.

- **Ruler Range**

  This indicates the duration of the **Node Graph** segment being viewed.

- **Local Ruler**

  Activated via **Setup->Show Rulers** and located in the lower part of the **Node Graph**, just above the **Global Ruler**.

  It is used to show the local timecodes corresponding to the part of the **Node Graph** being viewed onscreen at greater amplification. It is an extension of the **Global Ruler**.

  **Note**: **Mistika’s Node Graph** can work in a negative area of time. This provides the flexibility to anchor the **Node Graph** timecodes with different video tapes, with the ability to move the Timecode mark to any position of the edit at any time.
Offset controls

Ref. Mistika: Node Graph  Editor->Node Graph

- Free horizontal and vertical offset

Displacement in Node Graph view can also be done by moving the mouse in any direction, while holding the right button down over the Node Graph background.

If, for ease of movement, monitor evaluation while dragging the Node Graph views is to be avoided, hold down <Shift> and the right button over the Node Graph background.

- Vertical offset bar

This is found on the right of the Node Graph, and permits navigation up or down in the Node Graph.

The hotkeys <Keypad Up> and <Keypad Down> are also available Node Graph offset up or down one track level (note that this refers to the cursor keys of the number pad of the keyboard, not those of the normal cursor used for the horizontal zoom). Also, the number pad should be deactivated via <Num Lock>.

Note: Placing the monitor mark over a clip and alternately clicking the keys <Keypad Up> and <Keypad Down> quickly compares one clip with another above or below it, for example, to compare an image clip with the resulting effect applied to it (for more elaborate comparisons it is more efficient to use the Snapshot toggle of the Visual Editor).

- Locking Tracks

The locks are buttons found at the left of the Node Graph and are only viewed in the tracks containing clips. When clicked, the editing of all clips in that track is blocked.

To unlock a track, press on the lock button again.

To lock all the tracks except one, hold down <Shift> while pressing the lock button of the selected track. This converts it into the Active track for editing operations, and it is marked with a red box, while other tracks are still darkened (see the image above). For example, when inserting clips from the Source Monitor, this method can be used to
force the inserted clips to be placed on the same track.

### Internal shuttle

By using the hotkeys `<Ctrl>+<Alt>+<LeftClick>` we can move the Node Graph right or left according to the drag direction.

The combination `<Alt>+<Shift>+<LeftClick>` works in a similar fashion, but faster. It is very useful for moving rapidly in the Node Graph.

If Tangent Devices or Precision Panels are in use, their Jog control can also be used to advance and retreat the Node Graph in a similar manner to the Jog function of a VTR, and can offer greater sensitivity and accuracy.

---

### Zoom Controls

Ref. Mistika: Node Graph Editor->Node Graph

The zoom controls are divided into two groups according to whether they affect vertical or horizontal viewing values.

The first group of Zoom Controls is a group of buttons located in the top right corner of the TimeSpace. It allows us to scale vertically the representation of the tracks within the Node Graph via a number of preset scales.

Each button represents a level preset scale. In modes with more zoom, image icons appear superimposed over the clips.

The second group of Zoom Controls is a horizontal group of buttons located next to the TC Slider.

It has five buttons, described below:

#### Locking X or Y scroll

This locks the X or Y offset of the Node Graph. When editing horizontally, it is often useful to block Y to prevent the Node Graph from changing its height, and thus losing sight of the current edit view while scrolling through the Node Graph with the right mouse button.

Furthermore, when working on an effect, it helps to lock X scroll, since when working on what occurs in a certain timecode it will avoid involuntary horizontal movements.
Zoom to selected

Adjusts the value zoom to the selection. The zoom is adjusted to display all the selected clips.

Zoom In

Increases the horizontal zoom value.

Dynamic Zoom

By clicking and dragging to the right, the zoom level in time is increased. In other words, reduces the amount of time displayed on the front end.

By moving in the opposite direction (left), the zoom level is reduced by increasing the amount of time displayed on the interface. Thus it is possible to view several hours of Node Graph simultaneously.

Zoom Out

Reduces the horizontal zoom value.

Note: the most convenient method for adjusting horizontal zoom is usually to use the mouse wheel, since it connected to the hotkeys <Up> and <Down>.

Quick Access

Ref. Mistika: Node Graph Editor->Node Graph ->Quick Access

The Quick Access buttons provide direct access to a series of frequently used commands and tools common to the different processes in Mistika.

History:

Commands for undoing (Undo) or redoing (Redo) changes.

- **Undo**

  Undoes the last editing function or selection made.

- **Redo**

  Redoes the last undone function.
Edit:

In this group are found the common functions of editing: Cut, Copy, Paste and Delete. These buttons are applicable to clips via direct selection with the mouse. They are not applicable to other types of selections such as those done with editing marks (Edit Marks).

- **Cut**
  Cuts the selected clips.

- **Copy**
  Copies the selected clips.

- **Paste**
  Pastes the copied clips at the cursor position in the Node Graph.

- **Delete**
  Removes the selected clips from the Node Graph.

Pack:

Horizontally locates selected clips, eliminating any empty space between them. Only clips in the same track can be relocated, and at least two clips must be selected.

- **Pack Left**
  This snaps the selected clips consecutively to the previous clip.

- **Pack Right**
  This snaps the selected clips consecutively to the subsequent clip.

Navigation:

Navigates one level in and out from the selected group in the Node Graph.

- **Navigation In**
  This moves the Node Graph navigation level in the selected group one level in.

- **Navigation Out**
  This moves the current Node Graph navigation level one level towards the top.

Align:

Vertically aligns the selected clips, to the right or left edge of the whole selection. Only clips that are in different tracks can be aligned to each other, and a minimum of two
clips must be selected.

- **Align In**

  This vertically aligns the selected clips to the left, and consequently all the selected clips will have the same *In Point*.

- **Align Out**

  This vertically aligns the selected clips to the right, and consequently all the selected clips will have the same *Out Point*.

### Prev/Next:

Relocates the *Node Graph* to the previous/next mark found.

The marks considered are editing marks, clip marks, user marks and play marks.

- **Next Mark**

  Moves the *Node Graph* forward to the next mark.

- **Prev Mark**

  Moves the *Node Graph* back to previous mark.

- **Prev Edit**

  Moves the *Node Graph* back to the previous cut.

  A cut is the first frame of the head of a clip, or the one following its tail, no matter which track it is in.

- **Next Edit**

  Moves the *Node Graph* back to the previous cut.

  A cut is the first frame of the head of a clip, or the one following its tail, no matter which track it is in.

### Edit Marks:

Sets editing marks that can be taken as references by means of their activation in the *Edit* tab (*Node Graph* Editor->Dashboard->Edit->Active).

- **Edit In**

  Sets the input point.

- **Edit Out**

  Sets the output point.
Edit In/Out

Sets the input and output points. If this command is applied to an active clip (selected by clicking with the mouse) the editing points will coincide with the head and tail of the clip. If at the moment of being applied there are no active clips, the editing points to be taken as references as follows: the tail of the clip immediately before and the head of the clip immediately after the position of the cursor. For this calculation, neither the vertical position of the cursor nor the clips are taken into account.

Remove Edit In

Eliminates the input point.

Remove Edit Out

Eliminates output point.

Shuttle:

These functions control the playback of the Monitor.

Go To Start

Positions the monitor at the Play In mark.

Prev Frame

Moves the Node Graph back to the previous frame.

Play Reverse

Activates reverse playback.

Stop/Shuttle

Dynamic control of playback speed of the Node Graph.

Play/Stop

Starts or stops the playback of the Node Graph.

Play Buffer

Activates the playback buffer.

Next Frame

Moves the Node Graph forward to the following frame.
Go To End

Positions the monitor at the *Play Out* mark.

**Note:** If when applying the commands *Go To Start* or *Go To End* there are no *Play Marks* present, the monitor locates in the first or last clip of *Node Graph*.

**Play:**

The group *Play* contains the three modes of playback in *Node Graph*. These modes behave according to the active references (*Edit Marks*, *Play Marks*, *Clip Select)*.

- **Single**

  Linear playback from the input mark to the output mark.

- **Swing**

  Continuous playback alternating between the modes *Play* and *Play Reverse*.

- **Loop**

  Continuous playback from the input mark to the output mark.

  If the marks are not active, the range is defined as the complete *Node Graph*.

**Play Marks:**

Sets playback marks that can be taken as references by means of their activation in the *Edit* tab (*Node Graph Editor-*Dashboard-*Edit-*Active)*.

- **Play In**

  Sets the input point.

- **Play Out**

  Sets output point.

- **Play In/Out**

  Sets the input and output points. If this command is applied to an active clip (selected by clicking with the mouse) the playback points will coincide with the head and tail of the clip. If at the moment of being applied there are no active clips, the playback points to be taken as references as follows: the tail of the clip immediately before and the head of the clip immediately after the position of the cursor. For this calculation neither the vertical position of the cursor nor the clips are taken into account.
Remove Play In

Eliminates the input point.

Remove Play Out

Eliminates the output point.

Save:

Save

Saves the changes, overwriting the active project with the same name.

Save As

Saves the changes in a new project which must be named. This will be the new active project.

Render:

Render Foreground

This creates the script render (.rnd file) and the resulting new clip, initiating the rendering task in Foreground.

The new clip will be created as a .clip file in the RENDER folder and a copy of the clip will be placed in the Node Graph, over the selected Range or clip from which it was generated.

Processes in Foreground have priority, inhibiting almost all interactivity with the interface until the rendering process is complete, in order to use all existing resources and finish the process in the shortest possible time.

This command is combined with the Auto Name tool of the Output tab of the Dashboard, which activates a numerical field that increases progressively as the render processes are run.

For more information, consult the section Render in the chapter Output.

Render Background

This creates the script render (.rnd file) and the resulting new clip, initiating the rendering task in Background.

The new clip will be created as a .clip file in the RENDER folder and a copy of the clip will be placed in the Node Graph, over the selected Range or clip from which it was generated.

Processes in Background have low priority and can maintain a high level of interactivity and continue working with the interface while the render is calculated in the background.
This command is combined with the *Auto Name* tool of the *Output* tab of the *Dashboard*, which activates a numerical field that increases progressively as the render processes are run.

For more information, consult the section Render in the chapter *Output*.

**Mute:**

- **Mute Audio**

  Deactivates the audio evaluation of all the monitor marks. Normally this is used in complex situations, to facilitate the construction of effects towers without their being evaluated ad hoc.

- **Mute Video**

  Deactivates the image evaluation of all the monitor marks.

**Overview**

Ref. Mistika: Node Graph Editor->Node Graph ->Overview

When activating the *Overview* command button, a whole view of the content of the *Node Graph* is seen in order to be able to navigate it quickly.

This window gives a complete view of all the clips contained in the *Node Graph*, and vertical lines that represent the positions of the editing marks and monitors. A red rectangle that specifies the limits of the current visible area is shown on the clips. It is a useful tool for rapidly locating clips and moving the display to a particular area of the *Node Graph*.

The area of the *Node Graph* that is viewed can be relocated via *Overview*, by simply dragging the red rectangle with the left mouse button.

When navigating within a group, the *Overview* window changes the navigation level to the contents of this group. The active monitor is the only one constantly in view during navigation, while the other monitors remain outside the group, so it possible to view changes made inside and outside the group at the same time. It is possible to open new monitors once inside a group. These monitors will be transferred to the previous level when
Dashboard

Ref. Mistika: Node Graph Editor->Dashboard

In the Dashboard area, the majority of commands and tools in Mistika are accessed. These commands are organized by categories according to their use.

Access to these categories is via the corresponding tabs, called Main Tabs.

The Main Tabs are horizontally aligned at the top of the Dashboard.

Some tabs (such as Edit or FX) contain subcategories grouped according to the function carried out by the commands in the main category. These subcategories also provide direct access, via Options Tabs.

Project

Ref. Mistika: Node Graph Editor->Dashboard->Project

The Project tab allows the selection of the desired Mistika project.

The creation and elimination of projects is administered from this tab. It also defines the parameters for carrying out security (or back-up) copies of the data.
The Interface

**Projects List**

This list contains all the projects in the root work directory, which is defined in *Mistika Setup* (Mistika Setup->FilePaths->Projects).

**Current Project**

The information box *Current Project* allows the current project to be viewed.

**Project Actions**

**Enter Project**

Defines the selected project as active.

*Mistika* uses the active project as the default location for all file loading and saving operations, although with the tabs *Import* and *Media*, the file system can be navigated in order to import or load files from any accessible directory.

By default, *Mistika* creates a project named *PDEFAULT* during installation. This project can always be deleted by the user if so desired.

**New Project**

Creates a new project and the subdirectory structure necessary to support it.

When a project is created, it is automatically made the active project.

**Delete Project**

Deletes the active project, with all its directories, contents and the media links.

When this button is pressed, it is necessary to confirm that deletion of the entire project is intended, as the metadata and source files that pertain to this project are deleted as well (the *js* files whose names begin with the project name).

**Backup Project**

Initiates the creation of a backup of the project.

**Backing-up projects**

A *Mistika* project is made up of two large groups of files: *Media* and *Metadata*.

Media files contain the image or audio source material in their respective formats, which the other Mistika files reference. Only video capture and *Mistika*’s render processes create new *Media* type files. Video media files are usually large, and so are often slow and expensive to backup in the traditional manner. To do so, there is a specialized method for security copies.

Metadata files are created by *Mistika* to describe *Media* files and save users’ projects. These *Metadata* files occupy little space and can be backed up to any systems (CD, DVD, USB drives) and can be compressed into a single backup file via the tool *Sequencer* (*Sequencer>*Backup) to copy them later to CD, DVD or USB disc.
There are, however, plenty of cases in which Mistika users decide not to create backups to video, and when the project is finished, to delete the video media files to free up space. This is possible if the original tapes are kept, since the Metadata files of the video Media can be used for restoration (recapturing the original video tapes and repeating the renders), although the reprocessing of all the video tapes and of all the clips would be extremely laborious.

For this reason Mistika allows the Media files used in a project to be transferred to video, in order to recapture it in the future more simply and automatically.

However, other files such as Metadata, audio and also used that has been used Media and which is not in a standard video format, cannot be stored in a video tape, so it is necessary to save them to other types of digital file storage, most typically by using the tool Sequencer (Sequencer->Backup).

This tool also allows the inclusion of all types of files related to the project (including any type of media, and even standard video media if we prefer not to backup to video but prefer to keep a copy in informative files).

### Backup of Media to video:

*Mistika* is a resolution-independent system. This specific aspect permits the mixing of different resolutions in the edit or composition.

To make a backup of the video media used in a project that includes material with different resolutions to tape, we will need to make one backup for each video format used, changing the resolution from Mistika’s configuration window to be able to transfer each resolution.

For example, if there is PAL and HDTV 1080 24p material in the same project, we need to configure Mistika to work in PAL, create the backup to video, transfer the Node Graph generated to PAL tape, and then exit the application, restart it, configure Mistika for HDTV 1080 24p, create the backup to video, and finally transfer the new Node Graph generated to a HDTV tape.

When restoring the project in the future, it is necessary to capture the corresponding files to be restored from each tape, changing the configuration for each resolution as described above.

After transferring the Media files, a backup of the project’s Metadata files should be made.

Remember that clips without media can be recaptured. This allows the project to be restored from the original tapes, without the need to transfer the media used in the project to video, so that we could make a tape backup of only the clips captured in Start Free mode, the clips originated by the import of file sequences, and the clips generated by render processes that, owing to their complexity, should be stored on tape to avoid the reprocessing time required.

We recommend making backups to digital video formats with little or no compression (Betacam Digital, HD-SR, D5 etc). In all cases, never use a VTRs with greater compression than the original tapes to make a backup.

Generally, tapes used for backups should have a continuous sync base recorded, without skips in the timecode track, although the backup can work in Assemble mode. However, remember that editing in Assemble requires a minimum pre-roll. It is best to record bars throughout all video tape to be used for backup, and then transfer the backup with Mistika’s VTR control in Insert mode.

**Note:** Before carrying out the first backup to video it is very important to configure properly the corrections of transfer and capture from the VTR control (Node Graph Editor->Dashboard->VTR->VTR Setup->VTR Setup->Edit Lag) so as not to no produce irreparable transfer errors when the material is restored.

Audio is not included in the transfer. To include audio in the backup copy use the backup for non-standard Media: Backup of Metadata and non standard media.
Backup to VTR and its restoration is carried out in several stages:

1. First the project should be prepared for the transfer of the clips to be recorded on video tape (delete test media and other unnecessary material, render non-standard formats to standard formats if it required that they be returned to video, etc).

2. Create the video backup via command *Backup Project*.

3. Carry out a transfer to video of the backup environment.

4. Back up the *Metadata*. It is very important not to carry out this step before the previous one (as you would not yet have the backup/restore files).

5. If the objective of the backup is to increase the available storage space after finishing a project (that is, when the backup is not simply for reasons of safety while working on it), delete the media of the transferred clips.

6. When we need to work again on this project, load its *Metadata* to the system and recapture the required clips (remember that in many cases it is not necessary to recapture them all).

To create the files necessary to carry out a backup of video media to tape, press the command *Backup Project* in the *Project* tab.

![Backup dialog]

The values to be defined are the following:

- **Backup name**
  
  Text box in which the name of the new backup should be entered.

- **Tape TC In**
  
  Establishes an In Point for the *Node Graph* transfer timecode to the VTR. This specified timecode will be the one respected by the file sequence during clip restore. Write a timecode that exists in the clip that allows sufficient pre-roll time with continuous timecode: 00:00:00:00 should, therefore, never be used as an In Point.

- **Perform**
  
  This action does not carry out the backup to video itself, but it creates a folder and a series of files in the *BACKUP* directory that will be needed for transfer, deletion of the media after the transfer and restoration of the backup when required.

- **Cancel**
  
  Returns to the *Project* tab.
The different files generated by the command Perform within the folder BACKUP should be used later by the user to transfer the Node Graph, delete the Media and restore the clips.

Via the tabs browsers Project or Media we can view the directories generated the backup process.

A folder with the name chosen for the backup will be seen under the BACKUP directory. Within this folder there will be three types of file:

- An .env file to load in the Node Graph.
- A .cln file to activate the delete of all media files used by the clips included in the backup.
- A file list .res to restore the backup, referring to each one of the clips included in the backup.

1. The file BackupToVTR.env should be loaded into the Node Graph.
2. Within the Node Graph, select all the clips via the command Select Invert (Node Graph Editor->Dashboard->Edit->Cursor->Select->Select Invert) and add the Play Marks ( (Node Graph Editor->Quick Access->Play Marks->Play In Out).
3. Insert the backup tape in the VTR connected to the workstation. From the VTR panel select the timecode sync with tape option Sync Node Graph -Tape (Node Graph Editor->VTR->VTR Play Out->Node Graph ->Sync Node Graph -Tape).
4. Run the insertion of video from the content of the Node Graph via the command Edit.
The backup to video is then carried out. When finished, visually check that it has been carried out correctly, and that the timecode contained in the tape are correct.

1. In the Node Graph Editor, select the Media tab from the Dashboard and locate it in the BACKUP directory.
2. Double-left-click on the file CleanupList.cln.
3. Confirm the deletion in the message (Ok).

Remember that this operation should be made after the transfer process. This operation cannot be undone.
1. In the Node Graph Editor, select the Media tab from the Dashboard and locate it in the BACKUP directory.

2. Select the .res files with the names of the clips whose media is to be restored.

3. From the VTR tab, run the command Capture Selected (Node Graph Editor->VTR->VTR Capture->Perform->Capture Selected).

Mistika's backup has the following advantages compared with traditional ones:

**Incremental Backups**

Since we can open the backup to be transferred to a video as if it were a standard environment, the Play Marks can be used to transfer only the areas that have changed or are new compared with the last backup.
The edit always sorts the clips by date (the newer clips at the beginning of the Node Graph), so that, if there is enough space on the tape, it is easy to make a new backup with only the latest clips created (although we recommend using a new name, and for the sake of clarity we should delete the .res files that have not been transferred to tape in the new backup when restoring it).

Furthermore, each new backup can be transferred to another timecode or tape (it is not necessary for it to be done immediately after the previous backup).

**Selective restore**

Since each clip is represented by its own restore file (.res), we can just select the clips that have been lost (or which have been deleted to save space) and recapture them selectively.
Another tool of the system permits restoring from the same clip new versions that are different. For example, having initially captured an NTSC copy of an HD 60i tape to be able to work with fewer resources, we might wish to recapture the original HD60i version later. In these cases we should first analyze whether the type of project that we are going to undertake is suited to this type of technique, since there are certain processes that cannot be carried out in an equivalent way with different video formats.

**Backup of Metadata and non-standard Media:**

This backup refers to the creation of a copy of the current project folder in a safe place, and also files related to the project (such as external audio and video media) that we want to save together, generally files that have not been transferred in a backup to video.

This copy can be done manually via operating system file manager, although to make it easier and to look for others files to the project there is an external tool *Sequencer.*

*Sequencer* has functions of Backup and functions of Restore.
This tool compresses all the selected files into a single backup file (.gz), which is also compatible with the widely used .zip format.

These tools are described in their own documentation and in the help program (Sequencer->Help).

Media

Ref. Mistika: Node Graph Editor->Dashboard->Media
The Media button displays the Mistika file browser. In previous versions, two separate browsers were used: one for importing material and another for managing media files already imported into a project. In the current version, these two browsers have been merged into one, providing greater versatility and flexibility.

### Interface panels

The Media panel is the interface for project management, navigation, selection, loading and saving clips and files.

For specific tasks, this panel interacts with different panels, especially with the Source Monitor, which is explained in detail later in this document. It is also used in conjunction with the window VTR Capture of the VTR tab.

The Media window is divided into different areas that can be enabled, disabled, and configured by the user:

- **Top Menu**

  ![Top Menu](image)

  It includes the most important Browser commands, such as Import, Refresh Directory, Save Project, etc. Some of these commands have a quick access for ease of use in the form of icons.

- **Filter Box**

  ![Filter Box](image)

  This controls the Browser’s filtering tools, including pre-defined lists of formats, types of clips, and a Setup in order to set more specific parameters.
Browsers

These are the fundamental elements of the Media panel, allowing navigation through the different directories and management of material. They include important tools such as viewing modes, the routes and history panel, information about the storage system, etc.

Bookmarks
These panels manage Bookmarks saved by the user, whether they are independent Directories or groups of directories.

**Properties**

![Properties](image)

Displays all information relating to the properties of the selected file.

**Directories structure:**

*Mistika* projects consist of standard directory structures, where files are organized so as to be visible in any operating system.

In addition, all *Mistika* metadata files are in plain text (ASCII) that can be interpreted by any text processor.

Other systems use encrypted databases, or require special applications to be able to share their projects. *Mistika’s* projects are totally transparent to other systems, and can share metadata without the need to acquire additional applications, allowing other developers to work with this data to create their own project routines. These characteristics make *Mistika* as the most open system of all software products in its category.

When creating a project, *Mistika* generates a standard directory structure, which can be partially redefined by the user:

The user must designate a unique directory to contain all the projects. Initially, *Mistika* creates the `/home/Mistika/WORK` directory as the project directory, but the user can modify it later in *Mistika Setup* (Mistika Setup->File Paths->Projects).

The user can modify this at any time if the directory has been moved, or if projects that exist elsewhere are required to boot with *Mistika*.

Within this projects directory (`WORK`), each project that is created generates a basic directory with the same name as the project, and all the subdirectories that it contains are
considered part of it.

In the design of this structure, the following tools provided by Mistika should be borne in mind:

The Browser distinguishes between each type of file by writing their names in different colored letters, as well as placing a distinctive icon to their left.

The Browser permits files to be sorted by different criteria: alphabetical order, type of file, date, input and output timecode, video tape source, media size on disk, length, format, etc.

This means that it is not necessary to design the subdirectory structure to organize the files on these lines, but that it should be used in a more abstract sense, to represent the meaning of each element of the environment (for example, directories could be created to divide the clips according the shooting location, and then subdivided again by the scene or effect to which they pertain).

It is not usually necessary to create subdirectories to store the subclips (.sub) that are generated in the Browser or the Node Graph, since the subclips have file names that begin with the same name as its master clip, displayed with a different color. It is therefore sufficient to sort the Browser by field name, and thus a very useful list will be obtained in which each master clip will be shown followed by its subclips in a different color.

When a new backup to video is created, Mistika generates a subdirectory for the new backup, in which the following files are saved:

- An environment (.env) containing all the clips of the project that coincide with the current resolution specified in Mistika’s configuration, which must be loaded in the Node Graph to be transferred to video with the VTR tab.
- A disk cleanup file (.cln) which, when double-clicked, runs a process to delete the media from all the clips included in the backup.
- A restore file (.res) for each clip of the project that contained media when the backup was created. These files are similar to normal clips, but their In/Out Points refer to the location of the clip in the video tape that will contain the backup.

Note: remember that in backups to video only clips captured on video and those derived from Mistika renders will be included. To backup other files, use the tool Sequencer (Sequencer->Backup).

All the project metadata that the user will use are stored in this directory, i.e.:

- All image and audio clips of the project (.clp - reference clips created when capturing or rendering). Remember that these files do not contain current images, but rather metadata for referencing the current image and audio files stored elsewhere.
- Linked clips - these are generated when image or audio sequences in external formats (.tga, .dpx, .wav, .tiff, .cineon, etc.) are imported. These clips have the .link extension. This type of clip is also created when importing a Mistika image source file (.js) that pertains to another project, in order to be able to indicate that its management in terms of backups, deletion, etc. does not in principal relate to the current project.
- Work carried out in Node Graph, both editing and compositions (.env files).
- The clips that are saved from within Mistika, such as subclips (.sub files) effects (.fx files) and groups (.grp files).
- The subdirectories created by the user to organize clips.

The RENDER folder is located within the DATA folder.
Each time a render is run, this folder is used to save both the scripts generated by this action (.rnd) and the clips resulting from the process (.clp). These files are organized in subfolders, each one containing the results of each render operation. (including all the segments that are put in order in the same operation).

The render scripts can be reloaded in Node Graph to repeat a render process, and its parameters or duration can be modified if necessary. The structure of a render script (.rnd files) is identical to that of a group (.grp files).

Within the DATA folder we can create as many subfolders as we wish, which can contain new levels of subfolders if desired. This allows us to create the structure that is best suited to the project in hand.

This directory is reserved for maintaining compatibility with versions of Mistika prior to version 6.5; it is obsolete with the new directory, file path and links structure.

This directory contains links to sequences of files or directories external to the project with other types of file that may come from:

- Render processes to numbered formats, with each sequence stored in a in a different subdirectory. This is the default storage location, although this will usually be reset in Mistika Setup.

  It may also contain references to remote image sequences (.tiff, .tga, .cineon, etc.) stored in numbered files that have been linked.

It may often be necessary to save a local copy of small user files such as EDL's, logos, or isolated images that need to be saved in a folder that pertains to the project's structure, in order to keep the work well-organized.

It is recommended to use this default folder in order to copy small files to be imported and even create the subfolders considered necessary.

When dealing with sequences of large files, the system allows importation via direct linking to sequences found in any directory that is accessible to the OS, and so they should not be placed here, but rather in locations that have sufficient storage and the appropriate features for the chosen format.

This directory stores:

- Files that the user can save voluntarily from different interfaces, such as tracking files (.trk), warping files (.msh) and vectorial shapes (.shp) amongst others.
- Groups (.grp) that have been saved manually.
- Compressed type groups (.grpz) that have been exported manually.

This directory contains the presets (.pcc and .pfx) generated via the tool FX Presets.

In the GLOBAL_PRESETS subdirectory, the presets to be kept for use in other Mistika projects are stored.

This directory stores files for the internal use of Mistika’s effects, such as Metadata generated by some effects and plugins (it is essential for the animated mesh of Warper, the vectors created in VectorPaint, and the texts in Title).

As the groups and environments saved so not contain this data, when copying them to another system, use the button Packaging Group to create a .grpz group which will contain this data.
Top Menu:

The upper menu of the Media panel is divided into 5 groups:

- **File**

  This includes the following commands:
  - *New Folder:* creates a new folder in the selected directory.
  - *New Timeline:* generates a new Node Graph.
  - *Save:* saves the current project.
  - *Save As:* saves the project with the name set by the user.

- **Edit**

  Incluye los siguientes comandos:
  - *Cut:* cuts the selected file/files.
  - *Copy:* copies the selected file/files.
  - *Paste:* pastes the contents of the clipboard.
  - *Delete:* file delete command.

  This command deletes a directory with all its contents, which will be viewed in a confirmation list. For this reason this tool has confirmation windows containing a description of the files to be deleted.

  Each type of file is differentiated in the deletion confirmation list, and the deletion of each type of file can be activated or deactivated.

  Clip links (.lnk), subclips (.sub), groups (.grp), renders (.rnd) or environments (.env) refer indirectly to the media being used.

  Image clips (.clp), as with the mixed audio and video clips generated in a capture, have different deletion options as they refer directly to a media file (the system will ask before deletion).

  The confirmation windows are divided in **Master Clips**, **Other files related with Mistika**, **Directories and files NOT related with Mistika**, **Linked Clips and their links to media**.

  **Master Clips:** Permanently deletes both the referenced media and the metadata of selected clips; it is impossible to recover the data in order to recreate the clip after this command is run.

  **High Res.** Deletes the image media of selected clips.

  **Low Res.** Deletes the media of the proxy assigned to selected clips.

  **Audio Media.** Deletes the audio media associated to selected clips.

  **Note:** It is not possible from within *Mistika* to delete only the metadata of a clip and keep the media on disk without reference. This prevents the user deleting files mistakenly, and avoids the existence of un-referenced media.
The *Low Res* delete option is very useful on critical occasions in order to free storage space, as is the deletion of media of clips, which can be recovered by *Metadata*, and the media recover or processed again in the workflow where the media derives from at a later time.

**Other files related with Mistika:** Deletes other types of file that are not media with the *.js* extension but pertain to the *Mistika* environment, eg, render groups (*.grp*), render scripts (*.rnd*), presets (*.pfx*) and output formats *Movie* and *Images*.

**Directories and files NOT related with Mistika:** Deletes folders and files that do not pertain to the *Mistika* environment, eg, directories where renders are stored.

**Linked Clips and their links to media:** Deletes files the with *.lnk* extension and the references to media they contain.

- **Refresh:** refresh the content of the selected *Browser*.

- **Find and Select:** Find and select in the *Node Graph* the selected material in the Browser. This command can be activated in the *Node Graph*, so works in the opposite direction, showing the media in its directory.

- **Relink:** Allows the relinking of files that have previously been imported that appear offline. To do so, select the clip in the *Node Graph* and click *Relink*. A window appears with the path defined for the clip selected in the *Node Graph* (the filepath is refreshed by clicking another clip in the *Node Graph*) and selecting the new folder via the *Browser*.

**Import**

Import commands only work for supported file formats. For more information, consult the chapter compatible Formats.

- **Import/Load:**

  Links the selected file by creating a link clip (*.lnk*) in the Project folder. This command can also be run by double-clicking any image or audio file.

  In *Mistika*, it is possible to create link clips that refer to image and audio files that are not necessarily found in the real-time storage of the workstation. In the link clip, the original location in the network is indicated (subsequently, the decision to make a render in order to bring it to real-time storage can be made).

  In the case of image files, a dialog box permits the following options:

  **Link single image only**

  Creates a clip for each image selected file.

  **Link as interlaced sequence**

  Creates an interlaced video clip for each sequence of the selection that is numbered consecutively.

  **Link as progressive sequence**

  Creates an progressive image clip for each sequence of the selection that is numbered consecutively.

  This method permits the selection of multiple files to be imported *en masse* (keeping <Shift> depressed during the selection). In this case, they must be the same format.

- **Import All Movies:**
Allows the linking of the Movie-type files in the current folder in a single operation without needing to select them. This operation creates link-type files (with the extension .lnk) in a new folder within the DATA directory of the project, and also incorporates them into the current edit. A window indicates the progress of the task.

**Note:** Before conforming an EDL against numbered files or Movies, it will usually be necessary to use these commands, since the conforms against these files is based on clips that have already been imported.

- **Import All Sequences:**

  Allows the linking of all existing image sequences in an external directory tree with just one click. To do so, select them (or the directory that contains them) and click this button.

  This operation creates links in a new folder within the DATA directory of the project, and also incorporates them into the current edit. A window appears indicating the progress of the task.

- **Import All Setup:**

  Allows the definition of how names and metadata are created, for obtaining the clip names and make the Conform easier. A generic file path is shown, and directory nodes, names and extensions desired for the new clips named can be created. Once defined, click **Ok** and import the files.

**Link Media As**

**[Progressive (Progressive / Interlaced)]**

Defines whether the media is progressive or interlaced.

**Organize**

**[All Links in One Folder (All Links in One Folder / Replicate the Folder Tree)]**

Allows either the organization of all the sequences to be created in the DATA directory in the same folder, or replicates the folder tree of the selected folder, with each sequence in its corresponding level in DATA.

- **Export**

  - **Export Copy Buffer** and **Create Packaging from Group**:

    In certain situations when working collaboratively, it may be necessary to transfer part of a job to another Mistika workstation that does not share storage with the current one in use, for example when working with rotoscopes done with small systems that then have to be taken to the main system.
To achieve this, group files group (.grp) can contain part of the contents (or even a complete environment). But these groups cannot always be transported as they are to other Mistika systems, since the metadata files associated with some effects and plugins (such as vectors drawn in VectorPaint, vectored texts in Title, and mesh animations in Warper) are found in separate .dat files in the project's PRIVATE directory.

The Creating Group button allows the user to resolve this problem as follows:

1. Save a group .grp (select the group, press Edit->Copy and then Browser->Creating Group).

2. The group will appear in the OUTPUT folder in the Browser. Next, select it and press Packaging Group.

3. Step 2 creates a compressed export group (.grpz file) which contains the original group and all the related .dat files. This file can be transported to another system, and then imported by double-clicking on it in the Browser.

Note: images and media files used in the group are not included; if required, they should be copied or recaptured separately in the new system. For more complex cases, use the tool Sequencer, which allows recompiling the project with the files media it use.

- **Source Monitor:**

  **Load in Source**

  Loads the selected clip in the Source Monitor.

  This function is implicit when selecting a clip, although certain types of file (.env, .grp and .rnd) with complex evaluation are not automatically loaded, in order to reduce loading times, as it is necessary to calculate the processes that they may contain. For these types of file, this function should be used, or double-left-click on it.

  **Save from Source**

  Saves the contents of the Source Monitor to a file in the Browser.

  The duration of the file generated will be defined by the value of the In/Out Points in the Source Monitor.

  The purpose of this function is to export a whole clip or part of one of any type in separate files, and facilitate distinguishing rapidly between project files, making possible their later reuse in the same or in any other project, and even from another workstation.

  The type of file created will vary according to the type of clip loaded in the Source Monitor.

  The types of file that can be saved in the Source Monitor in accordance with their type of clip contents are listed below:

  - A single image or audio clip or mixed clip (.clp): saved in a subclip file (.sub) in the Browser, in order to distinguish them by their name or to divide a clip into several parts. To load a single image or audio clip or a mixed clip in the Source Monitor, any clip can be selected in the Browser, or copy a clip from the Node Graph with the function Copy of the Edit tab.

    **Note:** the file name of the subclip will be set automatically, using two different criteria depending on its origin: if the clip comes from the Node
Graph with a modified name (which can be modified from the tab Attributes tab of Edit), this name will be repeated. If the clip comes from the Browser, a numerical extension will be added to the original name of the clip to be automatically incremented in order to avoid overwriting another subclip. Example: MyClip_001.sub.

- Various clips whose file type is irrelevant, an effect clip or a group clip: to load a group in the Source Monitor, first select a group clip or various clips of any type in the Node Graph, and then run the Copy function of the Edit tab. Then Save and a group file (.grp) will be saved in the OUTPUT folder of the current project, which will contain all the clips loaded to the Source Monitor. The name of the file must be specified by the user in the dialog box that appears.

- An importable image, audio or movie type file: saved in a link file (.lnk), containing a clip directly related to the selected file in the Browser and viewed in the Source Monitor. When an image file is selected from within a numbered sequence, the Source Monitor will load the entire sequence. The user can create a link to the entire sequence or to the selected frame only, and choose this option in the same dialog window that will ask for the name of the link.

Note: In principle, the link file name will be automatically proposed based on the original name of the selected file, although the user can modify this name or choose another.

Note: When the Source Monitor views a multiple selection in the Browser, a single link file will be created including the entire selection.

- **View**
  - **Home**: redirects the active Browser to the project folder.
  - **Folder Tree**: activates/deactivates the Folder Tree.
  - **Path Bookmarks**: activates/deactivates the Path Bookmarks.
  - **Selection Bookmarks**: activates/deactivates the Selection Bookmarks.
  - **Properties**: activates/deactivates the Properties panel.
  - **Split View**: divides the Browser into two independent panels.
  - **Detail View**: changes the file display mode to detailed mode.
  - **Icon View**: changes the file display mode to icon mode.
  - **Collapse Image Sequences**: collapses the image sequences into a single file.
Filter Box:

This set of tools and commands allows the user to filter the contents of the Browser in order to locate certain files more easily. The most basic filtering system is one that uses the file name as a search item. This is the default search mode, but there are many more options in Filter Settings:

Filter Settings

To select the fields to be used as filters:

- **Name**: Name given by Mistika to the file.
- **Tracks**: Image or audio tracks assigned for this clip. Only the clip files (.clip) will show data in this column. They will show if video is assigned to them (V), and the number of audio channels (A).
- **Length**: Length of the clip.
- **Start**: Timecode of the start of the clip, both for captured clips and imported DPX file sequences.
- **End**: Timecode of the end of the clip, both for captured clips and imported DPX file sequences.
- **TC Aux 1 and TC Aux 2**: Auxiliary timecode of the clip, as in the case of .R3D files.
- **Size**: specifies the space occupied on disk. Clips will show file size of their media, if they have any.
- **Date**: Date of creation or last modification of the file.
- **Tape**: Name of the tape which the clip originates from. Only recoverable clips, created via the VTR tab (Node Graph Editor->Dashboard->VTR), or from the importing of an EDL, will show data in this column.
- **Tape Header**: Internal name of the file that supports some formats (como .dpx). Its main function is to make easier the conforming of this type of file when the EDL shows that it was the internal name and not the name of the file.
- **Path**: File path.
• **File Name**: File name.

• **Format**: Format of the media.

• **Comment**: User comments on the clip, inputted in the capture panel.

Otras opciones:

- **Case Sensitive**: if active, the filter system will use the detection of capital letters.

- **Clear History**: clear the search history.

**Filter List**

A quick way to find a content type is to use the Filter List. This list includes the most common formats, including Mistika’s internal formats, and the following types of files:

- **All Files**: displays all kinds of files (both supported and unsupported).

- **All Supported Files**: displays files supported by Mistika.

- **Raw Camera Files**: displays only Raw files.

- **Movies**: displays only movie files.

- **Image Sequences**: displays only image sequences.

**Browsers:**

There are two types of Browser in Mistika:

- **Folder Tree**: displays the hierarchy of folders in an expandable tree. This is mainly manages the browsing of directories.

- **File Manager Browser**: displays the contents of the directory selected in the Folder Tree. This mainly manages the browsing and management of files.

**File Manager Browser**

The main Browser of Mistika has a number of unique features, in contrast to the Folder Tree:

- Browsing history: in the field where the active route is displayed, a list of routes previously visited may be seen as a dropdown, for faster access.

- Organizational System by Columns: the Browser organizes content in columns according to different kinds of information. These columns can be activated or deactivated: right-clicking on one of them to will display the list of options. There are two functionalities in this list worthy of note:

  - **AutoFit**: automatically adjusts the width of the Name column to the width of the longest name in that directory.
The Interface

Unlocked: locks the display of the column name so that it is always visible.

The remaining fields will be familiar:

- **Name:** Name given by Mistika to the file.
- **Tracks:** Image or audio tracks assigned for this clip. Only the clip files (.clip) will show data in this column. They will show if video is assigned to them (V), and the number of audio channels (A).
- **Length:** Length of the clip.
- **Start:** Timecode of the start of the clip, both for captured clips and imported DPX file sequences.
- **End:** Timecode of the end of the clip, both for captured clips and imported DPX file sequences.
- **TC Aux 1 and TC Aux 2:** Auxiliary timecode of the clip, as in the case of .R3D files.
- **Size:** specifies the space occupied on disk. Clips will show file size of their media, if they have any.
- **Date:** Date of creation or last modification of the file.
- **Tape:** Name of the tape which the clip originates from. Only recoverable clips, created via the VTR tab (Node Graph Editor->Dashboard->VTR), or from the importing of an EDL, will show data in this column.
- **Tape Header:** Internal name of the file that supports some formats (como .dpk). Its main function is to make easier the conforming of this type of file when the EDL shows that it was the internal name and not the name of the file.
- **Path:** File path.
- **File Name:** File name.
- **Format:** Format of the media.
- **Comment:** User comments on the clip, inputted in the capture panel.

Other options:
- **Case Sensitive:** if active, the filter system will use the detection of capital letters.
- **Clear History:** clear the search history.

- **Visualization Tools:** icons as a shortcut to different display modes include:
  - **Split View:** divides the Browser into two independent panels. A green border around its edge identifies the active panel. This is especially important because the tools of the upper menu are generic for all Browsers, so there needs to be a way of knowing which Browser is active and, therefore, which one the user will be working with.
  - **Detail View:** changes the file display mode to detailed mode.
  - **Icon View:** changes the file display mode to icon.
  - **Collapse Image Sequences:** collapses the image sequences into a single file.
- Interactive Zoom controls the display size of the various elements of the Browser.

- **Information elements:** along with visualization tools, there is a graphic representation of the general storage system, which in turn can be used as a progress bar when loading a particular directory. There is also a numeric field showing the number of folders and files in a given directory.

- **Contextual menu:** right-clicking on any file accesses a contextual menu containing the Browser’s most common tools.

**Bookmarks:**

Mistika allows the saving of paths of files and folders as **Bookmarks** for later use. Depending on whether it is a single path or a Selection of directories, **Bookmarks** are saved in the panels **Path Bookmarks** and **Selection Bookmarks** respectively.

Right-clicking accesses a number of functions relating to bookmarks:
- **Add Path/Selection:** adds a route or set of routes manually.
- **Edit Path/Selection:** allows the editing of a route or set of routes previously added to the Bookmarks panel. In both the previous case and this one, a floating window will open: here, the name of the Bookmark (**Description**), the routes contained in this Bookmark (**Location**), and the icon to be used as a graphic representation (**Choose an Icon**) can be set.

- **Hide Path/Selection:** hides the selected route / set of routes.
- **Remove Path:** deletes the selected route / set of routes.
- **Show Hidden Paths:** displays previously hidden routes / set of routes.
Properties:

The Properties panel displays the properties of the selected file. The Properties fields are:

- **File**
  - **Name**: filename.
  - **Path**: file path.
  - **Size**: file size.
  - **Created**: date the file was created.
  - **Modified**: last date the file was modified.

- **Clip**
  - **Image**: information about the properties of the image.
    - **Resolution**: XY resolution of the image.
    - **Aspect Ratio**: aspect ratio of the image.
    - **Codec**: image codec of the file. Sometimes this will also display information about the color space.
    - **Format**: image format.
    - **Audio**: information about the properties of the audio.
      - **Codec**: audio codec of the file.
      - **Sample rate**: audio sampling rate.
      - **Channels**: number of audio channels.
      - **Bit Depth**: audio bit depth.

- **Time**
  - **Length**: duration of the clip.
  - **Start**: start timecode of the clip, whether captured or imported sequences of DPX files.
  - **End**: end timecode of the clip, whether captured or imported sequences of DPX files.
  - **TC Aux 1 y TC Aux 2**: auxiliary timecode of the clip, as in the case of .R3D files.
  - **Tape Name**: name of the tape from which the clip is to be recaptured. Only files from recapturable clips created via the VTR tab (Node Graph Editor->Dashboard->VTR) or via the import of an EDL, will display data in this column.
  - **Tape Header**: internal name of the files that supports certain formats (eg. .dpx). Its main function is to facilitate the Conforming of this kind of file when the EDL displays the internal name and not the file.
  - **TimeCode**: the timecode of the clip.
- **FPS D**: shows the value of the denominator of the frames per second of the clip.
- **FPS N**: shows the value of the numerator of the frames per second of the clip.

**Using double-click with files:**

Most file types are capable of running functions when they are double-clicked in the Browser.

These have the `.clp`, `.cln`, `.grp`, `.env` extensions, and any kind of image or sound file can be imported into Mistika.

- When double-left-clicking on an image or audio clip file, or mixed clip (.clp), its information will be loaded in the Capture Panel. For more information, see the chapter VTR Capture.
- When double-clicking an image or audio file that is compatible with Mistika, a dialog box opens in order to create a linked clip indicating said file; the clip is then loaded into the Node Graph at the cursor's position in Node Graph.

**Compatible formats**

**Note:** Some of these formats may not be included in the basic version of Mistika and may require additional Mistika modules or licences respective and pertaining to said file format.

The following is a reference list of media formats that SGO Mistika is able to read and import.

- Audio Interchange (.aiff)
- Waveform Audio (.wav)
- Wave64 (.w64)
- Audio Interchange Compressed (.aifc)
- Text (.txt) (in the Title manipulator)
- EDL Text (.edl)
- Digital Picture Exchange: DPX 8bits /DPX 10bits / DPX 16 bits in all variants (.dpx)
- Cineon (.cin)
- Generic Picture (.pic)
- Bitmap (.bmp)
- Joint Photographic Experts Group (.jpg)
- QuickTime PICT Image (.pict)
- Targa (.tga)
- Vista Targa Bitmap (.vst)
- Flexible Image Transport (.fit)
- YUV Encoded (.yuv)
- RGB Bitmap (.rgb)
- Tagged Image File (.tif)
- Portable Network Graphic (.png)
- PIX Bitmap (.pix)
- Graphical Interchange Format (.gif)
- Photoshop Document (.psd)
- Maxwell Render (.mxi)
- JPEG 2000 (.j2k)
- Moving Picture Experts Group (.mpg)
- IRIX Movie (.mv)
- Audio Video Interleave (.avi)
- Material Exchange Format (.mxf)
- Quicktime (.mov)
- Redcode Media (.r3d)
- Ogg Vorbis Compressed Audio (.ogg)
- Ogg Vorbis Video (.ogv)
- High Dynamic-range (.vr2)
- Vision Research Phantom (.cine)
- ARRI RAW (.ari)
- Sony RAW (contained in .mxf)
- HDR High Dynamic Range (.hdr, .exr)
- Apple ProRes 444 (.mov)
- Apple ProRes 422 (.mov)
- WEISSCAM RAW (.fhg)
- CineForm 2D and Stereo (.mxf)
- AVC-Intra (contained in .mxf)
- MXF VC-3 in all its progressive and interlaced variants (.mxf)
- DV25 / DV50 / DV100 / DVCPro-HD (.mxf)
- Flash Video (.flv)
- Compressed Movies MPEG1, MPEG2, MPEG4, H264 (.mov, .avi, .mxf)
- Uncompressed Movies (.mov, .mxf, .avi)
- Canon Raw (.rmf)
- Embedded 48kHz Audio in movies (.mov, .mxf, .avi, .r3d).

**Note:** Timecode is supported for .mov, .mxf, .dpx, and .r3d formats and for numbered sequences.

**Note:** Long gop-type Movies can be read but playback must be from the first frame or they must be rendered to other formats, since otherwise the intraframes ("iframe") cannot locate a specific frame without reading the previous ones.

**Note:** Some formats contain Bayer matrixes which must be decodified with the Debayer
effect (they can be imported but not viewed correctly until this is done). This is the case of formats derived from Phantom and Weisscam cameras. Others have their own effects decodifiers, such as Arri D20/D21/Alexa (ArriParams) and RED cameras (R3DParams), Sony F65, F55, F5 (SonyRawParams) and Phantom (PhantomParams).

**Note:** This list may differ by the time of publication: please read the Release Notes for the latest available update.

### Conform

**Ref. Mistika: Node Graph Editor->Dashboard->Conform**

This tab allows the importing of EDL/AAF/XML files in order to conform Mistika environments.

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**Conforming EDLs**

When work is to be done on a long edit, there are two options:

We can capture all the raw material in Master quality and do the whole assembly online directly in Mistika. This requires ensuring sufficient storage as well as video or film equipment that can work in the same format as the Master. We can either create a preview edit offline (using compressed or Lo-Res images, relative to the Master) and later export its description files (EDL, AAF, XML) and request that Mistika automatically carries out the same edit in Hi-Res uncompressed. In this case, storage for all the raw material is not required, only for that selected during the offline edit.

The second option is by means of a "conform from EDL", a "conform from AAF file" or a "conform from XML File".

Conforming from files (not tape) is the typical case when dealing with sequences derived from a cine scanner (numbered sequences) or from a tapeless digital camera (usually MXF, .mov or R3D formats).

**Note:** To conform against files, it is highly recommendable that the EDL contains the name of the files within the comments field (this type of EDL is very common in offline systems, such as Avid and Final Cut). This avoids confusion caused by different clips having the same timecodes. Also, providing the name of the file within the EDL allows the conforming even of clips without the original timecode, since it is sufficient for the offline system to provide the file name and timecodes that relate to the start (beginning at 00:00:00:00).

**Note:** Before conforming, always check one critical question: the frame speed (fps) of the EDL must be the same as that of the current preset (in the mConfig->RenderOptions->fps field).

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**Conforming modes**

The Conform tab has three conforming modes: Tapes, Mistika Clips, AAF and XML accessed via the Options Tabs.

**Tapes:**

This is the EDL conform mode referencing images to be captured from video tapes.

**Note:** To complete this type of conform, it is necessary, as a second step, to capture the clips created by the conform, select the created folder and run Capture Selected in the VTR
tab (Node Graph Editor->Dashboard->VTR->VTR Capture->Capture Selected).

- EDL File

Opens a floating browser in order to explore directories to search for EDLs.

The following formats of EDL are supported:

- RED 16
- SONY 900
- SONY 910
- SONY 5000
- SONY 9000
- SONY 9000 PLUS
- SONY 9100
- CMX 340
- CMX 3600
- GVG 4
- GVG 4 PLUS
- GVG-SE

- Clip Name

Dialog box that names the folder to be created by the conform, and the clips that will be created within this folder.

- Extends Head/Tail

Boxes with timecodes that define the additional material to be captured for the clip. This remaining material is useful for obtaining additional media from the tapes in case of needing to adjust cuts owing to lack of accurate capture.

The clips created by the conform are viewed in the Node Graph according to the cuts defined in the EDL, but can be extended and will contain media according to the number of frames defined for the head and tail of all the clips.

- Stereo 3D Tapes

Establishes that the tapes to be captured have stereoscopic images recorded in Side By Side format.

This option is especially useful in order to take advantage of Mistika's automatic processing of stereoscopic images derived from tape via the effect Stereo3D.

- Perform

Command that runs the selected EDL.
Mistika Clips:

This is the EDL conform mode referencing images from films (for example .R3D, .mov, .mxf) or image sequences (for example .dpix).

Before starting this type of conform, it is necessary to import to the media files referenced by the EDL the current project. In fact, Mistika conforms against the metadata of link clips (.lnk) or render scripts (.rnd) instead of using the original media files. This is why it is necessary to generate these files via the import commands in the Media tab (Node Graph Editor->Dashboard->Media) before doing the conform. For more details, see the chapter File Commands.

A particularly powerful feature in Mistika is to conform against render scripts .rnd, since these files contain all the effects applied to the clips. This way it is possible to work on the effects and settings for clips before having the edit available (stereo settings, color corrections, etc), and then conform the EDL against the .rnd files received, so that the effects are automatically adjusted to their new positions and lengths.

- EDL File...
  
  Opens a floating browser in order to explore directories when looking for an EDL.

- EDL Name Rules
  
  The dropdown To search for clips specifies the influence of the name of the directory when looking for media referenced by the EDL.

  **Use the EDL Reel Names**

  Uses the tape names that appear in the EDL, choosing the files that contain these names as part of their pathname.

  **Do not use any names, only match by timecode**

  The pathname is not relevant in the name of the clips that appear in the EDL. Only the timecode is used as reference.

  **Use the EDL "FROM CLIP NAME:" statements**

  Uses the names of files that appear in the comments field of each line of the EDL (typically they appear in the EDL after "* FROM CLIPNAME"), choosing the files that contain these names as part of their pathname (the extensions of the files referenced in the EDL are ignored; for example, the EDL may contain .mov extensions while the media files may be .r3d).

- Tape/Clip names

  Limits the number of characters to be taken into account, since some offline systems add terms to the original name given by the cameras. Zero ("0") denotes no limit to
the number of characters.

**Root Path**

Opens a floating browser to be able to specify the directory that contains the *Mistika* files to be conformed (*.lnk*, *clp* and *rnd* files).

**Clips Prefix**

Data field for specifying whether the referenced clips have any kind of prefix. This is indicated for occasions when conforming based only on timecode, and is a last resort for distinguishing clips with similar timecodes, when the first part of their file name is different. For example, if we have clips such as Monday_XXX, Tuesday_XXX, we can write "Monday" in this field to restrict the conform to the clips that begin with that character sequence.

**Clips Extension**

Specifies the type of extension of the files that will be selected for conforming. The clips can be links to media files (*.lnk*), image and audio clips generated in *Mistika* (*clp*), or render scripts (*rnd*). (Remember that in *Mistika*, *rnd* files are stored in the same directory with the *clp* clips they produce, so we have to indicate which of the two types we wish to conform.)

If we need to obtain *.rnd* files (in order to conform the effects of *Mistika* already applied to the clips) it is not necessary to do a complete render process; simply use the command *WriteScriptOnly* in the *Output* panel.

**Use clips main TC / Use clips TC Aux 1 / Use clips TC Aux 2**

Specifies the origin of the timecode to be interpreted for the conform. We normally use the option *main TC*, although some files may contain various possibilities (as in the case of *r3d* files).

In the case of conforming numbered sequences (*dp, etc*), if the option *main TC* is selected, the timecode will be deduced from the number of the frame present in the name. If the activated option is *Use clips TC Aux 1*, the timecode will be extracted from the internal head of the file.

° Mistika Clips Time Code

**Match Mistika clips main TC / Match Mistika clips TC Aux 1 / Match Mistika clips TC Aux 2**

Defines the origin of the timecode to be interpreted for the conform. The option *main TC* is normally used, although some files may contain other possibilities (which is the case with *r3d* files).

In the case of conforming numbered sequences (*dp, etc*), if the option *main TC* is selected, the timecode is deduced from the number of the frame in the name. If the option *Use clips TC Aux 1*, is selected, the timecode is selected from the internal head of the file.

° Mistika Clips Tape Name

**Match Mistika clips Tape Name / Match Mistika clips Name from Header / Match**
either Mistika clips Tape Name or Mistika clips Name from Header

Defines the name that will referenced by the EDL Name Rules, since some file formats may contain an internal name that is different from the file name; so, depending on the name used in the EDL, this may be the Tape Name (of the file) or the Name from Header (internal).

- Perform

This command runs the conform of the selected EDL.

- EDL to load

This data field previews the content of the EDL.

**AAF:**

- AAF file

Opens a floating browser in order to explore directories when looking for AAF files. This type of file is similar to an EDL and in *Mistika’s* case, possesses the same functionality. The AAF file should only contain references to external .mxf files. It cannot include media files within the .aaf file itself.

This type of conform is mainly used with AAF files derived from Avid systems for conforming clips that have been directly captured by such systems, as the Avid systems are not capable of referencing their own media file names within an EDL.

However, when using Avid for editing file imported from other sources, these can be referenced in the comment field of an EDL, which is more convenient than the AAF system thanks to the possibility of previewing the EDL and modifying it with a simple text editor (at least, with the most common EDLs), which is not possible with AAF.

- AAF Matching Rules

The dropdown menu *To search for clips* defines the influence of the directory when looking for media referenced by the AAF.

**Use only Timecode**

The pathname of the clips that appear in the AAF is not taken into account as reference, only the timecode.

**Use only Original Media Name**

Sets the original media filename as appears in the AAF as reference.
Use only Transcodified Media Name
Sets the transcodified media filename as appear as in the AAF reference.

Use only Original Media Name and Timecode
Sets both the original media filename and timecode as references.

Use only Transcodified Media Name and Timecode
Sets both the transcodified media filename and timecode as references.

ClipName/TapeName Limit From Start
Sets the number of characters at the start from which the clip name is generated when conforming.

ClipName/TapeName Limit From End
Sets the number of characters at the end from which the clip name is generated when conforming.

Edition Name Limit From Start
Sets the number of characters at the start from which the clip name is generated when editing for conforming.

Edition Name Limit From End
Sets the number of characters at the end from which the clip name is generated when editing for conforming.

• Import Filters

Import Unsupported FXs
Inserts an empty effect in the location of the unsupported effect in order to inform the user of its existence in the conformed environment.

Import Audio in Clips
Imports the audio associated to the video clips when conforming.

Group Event
Groups the clip and the associated effect in a Mistika group.

Bring Multicamera
Simulates Avid’s multicamera mode, importing multcamera clips and showing the image that is visible at each moment in the conformed environment.

All Video Tracks
Conforms all clips independently from the video tracks in which they are found.
V1, V2, V3, V4, V5, V6, V7, V8

Selects the video tracks to be conformed.

- **Path and filters for source clip names**

**Root Path**

Opens a floating browser for specifying the directory that contains the Mistika files to be conformed (.lnk, .clp and .rnd files).

**Clips Prefix**

Data field for specifying whether the referenced clips have any kind of prefix. This is indicated for occasions when conforming based only on timecode, and is a last resort for distinguishing clips with similar timecodes, when the first part of their file name is different. For example, if we have clips such as Monday_XXX, Tuesday_XXX, we can write "Monday" in this field to restrict the conform to the clips that begin with that character sequence.

**Clips Extension**

Specifies the type of extension of the files that will be selected for conforming. The clips can be links to media files (.lnk), image and audio clips generated in Mistika (.clp), or render scripts (.rnd). (Remember that in Mistika, .rnd files are stored in the same directory with the .clp clips they produce, so we have to indicate which of the two types we wish to conform.)

If we need to obtain .rnd files (in order to conform the effects of Mistika already applied to the clips) it is not necessary to do a complete render process; simply use the command WriteScriptOnly in the Output panel.

The AAF module allows the selection of a second search path for conforming our environment, allowing different routes and file extensions, giving the user greater flexibility. The parameters of this second field are exactly the same as the first one, as explained above.

- **Mistika Clips Time Code**

**Match Mistika clips main TC / Match Mistika clips TC Aux 1 / Match Mistika clips TC Aux 2**

Defines the origin of the timecode to be interpreted by the conform. We normally use the option main TC, although some files may contain various possibilities (eg. .r3d files).

When conforming numbered sequences (.dpx, etc), if the option main TC is selected, the timecode is deduced from the frame number present in the name. If the activated option is Use clips TC Aux 1, the timecode is extracted from the internal header of the file.

- **Mistika Clips Tape Name**

**Match Mistika clips Tape Name / Match Mistika clips Name from Header / Match either Mistika clips Tape Name or Mistika clips Name from Header**
Defines the name that will be referenced by the AAF Matching Rules, since some file formats may contain an internal name internal that is different from the name of file; thus, depending on which name is used in the AAF, this may be the Tape Name (of the file) or the Name from Header (internal).

- **Perform**

  Command that runs the conform of the selected EDL. This type of conform creates an environment (.env) with the links to the media indicated according to the absolute routes indicated in Avid. Thus, in a second step, the user needs to link the media with the tool Relink and thus have it linked to the Mistika environment.

**XML:**

This is the mode for conforming XML files that reference film clips (for example .R3D, .mov, .mxf) or image sequences (eg .dpx).

Before starting this type of conform, it is necessary to import to the current project the media files referenced by the XML file. In fact, Mistika conforms against the metadata of link clips (.lnk) or render scripts (.rnd) rather than using the original media files. This is why it is necessary to generate this type of file via the import commands in Media (Node Graph Editor->Dashboard->Media) before carrying out the conform. For more information, see the chapter File Commands.

An especially powerful feature of Mistika is to conform against the render scripts .rnd, given that these files contain all the effects applied to the clips. In this way, we can work on effects and processes adjusting the clips before the edit is available (stereo adjustments, color correction, etc), and conform the XML files that we receive against the .rnd files so that the effects will be readjusted to the new positions and durations automatically.

- **XML File**

  Opens a floating browser for exploring directories to look for XML files.

- **XML Matching Rules**

  The dropdown To search for clips defines the influence of the name of the directory for finding the media referenced by the XML file.

  **Use only TimeCode**

  The pathname in the names of the clips that form the XML file is ignored, and only the timecode is taken as reference.

  **Use only ClipName**

  The names of the clips that form the XML file are used, choosing files that contain these names as part of their pathname.
**Use ClipName and TimeCode**

Only clips that coincide in name and timecode with that referenced by the XML file are used.

**ClipName/TapeName Limit From Start**

Sets the number of characters at the start from which the clip name is generated when conforming.

**ClipName/TapeName Limit From End**

Sets the number of characters at the end from which the clip name is generated when conforming.

**Edition Name Limit From Start**

Sets the number of characters at the start from which the clip name is generated when editing for conforming.

**Edition Name Limit From End**

Sets the number of characters at the end from which the clip name is generated when editing for conforming.

- **Path and filters for source clip names**

**Root Path**

Opens a floating browser for defining the directory that contains the files of Mistika for conforming (.lnk, .clp and .rnd files).

**Only use Mistika clips with prefix**

Data field where the user defines whether the clips referenced have any kind of prefix. This is indicated only when we confirm based on timecode, and acts as a last resort for distinguishing clips with similar timecodes, if and when the the first part of the names are definite. For example, if we have clips such as Monday_XXX, Tuesday_XXX, we can write "Monday" in this field to restrict the conform to the clips that begin with this sequence of characters.

**Clips Extension**

Defines the type of file extension to be selected for conform. The clips and be links to media files (.lnk), image and audio clips generated by Mistika (.clp) or render scripts (.rnd). (Remember that in Mistika .rnd files are stored in the same directory the .clp clips that are produced, so we must indicate which of the the two we wish to conform.)

If we need to obtain .rnd files (in order to conform the Mistika effects that have already been applied to the clips) it is not necessary to catty out a complete render: simply use the command **WriteScriptOnly** in the panel Output.
**Mistika Clips Time Code**

*Match Mistika clips main TC / Match Mistika clips TC Aux 1 / Match Mistika clips TC Aux 2*

Defines the origin of the timecode to be interpreted by the conform. We normally use the option *main TC*, although some files may contain various possibilities (eg. `.r3d` files).

When conforming numbered sequences (.dpx, etc), if the option *main TC* is selected, the timecode is deduced from the frame number present in the name. If the activated option is *Use clips TC Aux 1*, the timecode is extracted from the internal header of the file.

**Mistika Clips Tape Name**

*Match Mistika clips Tape Name / Match Mistika clips Name from Header / Match either Mistika clips Tape Name or Mistika clips Name from Header*

Defines the name that will be referenced by the XML Matching Rules, since some file formats may contain an internal name internal that is different from the name of file; thus, depending on which name is used in the XML, this may be the Tape Name (of the file) or the Name from Header (internal).

**Perform**

Command that runs the conform of the selected XML file.

---

Editing functions, such as copying, inserting, cutting or adjusting the duration of clips, do not in fact work with the original images and audio, since the clips are only references to the original material. For example, when making a copy of a clip, the new clip "indicates" the same material, but never copies the original material to disk and, in fact, the new copy of the clip keeps the same name. Similarly, cutting a clip does not physically divide the material that is being worked on. Thus, all editing functions are non-destructive, and any function therefore can be undone.

The only way to delete original material physically from within Mistika is with the deletion tools in the Browser, or by deleting the entire project via the Project tab.

For a process to generate a new material source, a render should be done (via the options
Render in the Output tab). This operation is not generally necessary for editing operations, since Mistika can play back and save the final edited version in real-time without needing to render. This render is only necessary when a combination of effects that cannot be maintained in real-time is applied.

The Edit tab of the Dashboard is only one part of the editing interface, and although it can be used with almost all the editing operations, remember that there are more dynamic editing methods.

The editing methods in Mistika are:

**Classic NLE Editing**

The Browser has two monitors: a preview monitor called Source Monitor and program monitor called Record Monitor. This allows both visual search of a new clip and the defining of its Input/Output points in the preview monitor, while in the program monitor the Input point is established in the Node Graph. Thus we can insert a clip in the edit via three-point editing. Edits can therefore be carried out in a traditional way without needing to use the Edit tab.

**Direct Editing**

The Node Graph allows the most basic editing operations to be done with the mouse cursor (duplicating clips, adjusting position and duration, etc.) without needing to use the Edit tab. If we wish to carry out these operations manually and interactively, use the Direct Editing of the Node Graph; if we wish to use references to specific timecodes or existing marks (monitor mark, editing marks, play marks, global or clip marks) then use the buttons of the Edit tab. Remember that many functions of the panel can be activated from Scribe.

**Advanced Editing (tab Edit)**

All other editing functions not contemplated in other methods are found in the Edit tab which provides the additional advanced tools that are described below.

**Classic NLE editing**

The classic NLE mode of editing is based on working with two editing monitors, defining two editing points in the Source Monitor, and a third editing point (or even a fourth) within the Node Graph in the active monitor. This system is very useful for starting any edit, adding image clips to the Node Graph with the Media tab (Node Graph Editor->Dashboard->Media). This is also especially convenient for editors used to classical non-linear editing systems.

To work in this mode, it is recommended to activate the Autosnap function (Node Graph Editor->Dashboard->Edit->Setup->Edit->Auto Snap) and the function to block vertical movement of the Node Graph (Node Graph Editor->Dashboard->Edit->Setup->Edit->Constrain Y) to make it behave like a classic editing Node Graph.

Via the Media tab (Node Graph Editor->Dashboard->Media) we have access to previously captured clips, by browsing the project folders to select any image or audio clip. When a clip is selected, it is viewed in the Source Monitor (for more details, read the chapter Source Monitor).

Within the Source Monitor, select the Input/Output of the clip. With the Input/Output set, it is possible to carry out editing using the position of the Monitor by defining Input/Output points in the Node Graph.

Subclips which are added in the Media tab using the command Creating Group (Node Graph Editor->Dashboard->Media->Misc->Creating Group) can also be created.
Three point editing:

Once the two editing points for the selected clip are defined in the Source Monitor, select with the active monitor the input point in the Node Graph, moving as required the Monitor mark with the Shuttle function of Quick Access, or moving the background of the Node Graph, selecting and dragging with the right button of the mouse.

After defining the third editing point via the position of the Monitor, run the required editing function via the editing button of the Source Monitor: Insert, Paste On Top or Overwrite.

The Paste On Top function is recommended for adding audio clips to the Node Graph, since audio clips can be read by the monitor without obstructing the evaluation of the image clips.

Four point editing:

Also, two points in the Node Graph can be specified instead of only working with one point specified by the Monitor. To do this, specify the positions of the editing marks, by placing the active monitor in the desired frame, and by pressing the corresponding hotkey (Input mark <I> and Output mark <O>) while the cursor over the Node Graph.

Note: the editing marks are only visible in the Node Graph in navigation level 0.

When an editing function from the Source Monitor, the clip will now be added to the Node Graph, but modifying the playback speed to adjust it to the duration specified by the editing marks in the Node Graph by a Timewarp group. Remember that the Timewarp Group will not affect audio reproduction.

Active track:

If there are several versions of the edit in different tracks of the Node Graph, we can select which of these is the active editing track. To do this, left click the lock button of the desired track, while holding down <Shift>. In this way, the editing of all the remaining tracks that have clips will be locked. The lock button of the active track will change to red. From this time, the editing functions of the Source Monitor will only be run in this track.

To turn off the active track, <Shift> + left click the lock button of the active track.

Direct editing

The method of direct editing on the Node Graph is the most flexible and interactive, although less precise for defining changes in the editing with mathematical accuracy. This method is accessible at any moment, as it is based on the direct selection of the clips on the Node Graph, by using the active frame of the clips. This method works very well with the Scribe system, which can activate advanced editing functions, thus enabling working without the need to view another panel and maximizing the visible area of the Node Graph.

This method is available at any time, by selecting the clips directly in the Node Graph and working with its active frame.

All the direct editing functions can be run both in a single clip and in a multiple selection, although for simplicity, the following documentation always refers to the selection of a single clip.

Clip position:

The definition of clip position in the Node Graph is the start of the clip in a edit. To change the position of any clip, or move it to another track, select the clip, left-click and drag it to the new position or desired track. When moving a clip, its duration is maintained, while its input and output relative to the edit in the Node Graph are modified.

The selected clip will appear semitransparent while dragged, thus making viewing the remaining clips contained in the Node Graph easier.
If the user wants to suspend temporarily the evaluation in the monitors while dragging a clip (for example when dealing with complex evaluations), press <Shift> before starting the drag operation.

Trimming:

The absolute Input Point of the clip, which may have been specified before in, for example, the Source Monitor, is the head of the clip in the Node Graph, whereas the end of the clip is called the tail. To adjust the head and tail of the clip, or both at the same time, direct editing trimming techniques are used.

First, indicate what is to be adjusted. If it is the head, select the clip and move the active frame of the clip to its head, by right-clicking and dragging the active frame to the left edge of the clip. When the active frame is in the head, and with the right mouse button still held down, left-click at the same time, to drag the head and expand or reduce the selected clip. This will affect the total duration of the clip.

To adjust the tail of the clip, use a similar procedure, but place the active monitor at the right edge with the right mouse button, before left-clicking to begin to adjust the tail. This will also change the total duration of the clip in the Node Graph.

These trimming functions can be applied to any type of clip. When adjusting image clips, it is usually best to send the image of the active frame of the selected clip to the active monitor, by using the Select Monitor (Node Graph Editor->Dashboard->Edit->Setup->Node Graph Monitor->Select Monitor).

Trimming functions only affect selected clips. When changing the duration of a clip, a gap may be generated between the edited clip and the previous/following one, or one may overlap the other. To avoid this, the clip can be adjusted in Global mode (by moving the position of later clips at the same time). This is achieved by holding <Ctrl> when trimming.

Note: When extending or reducing the clip from its head in Global mode, the adjustment will always push all the clips on the left of the edited clip to the left, since the duration of the total edit should be relative to the Node Graph timecode. So, when adjusting the head of the clip in this way, the timecode mark view, like the view of other marks and the grid from the bottom of the Node Graph will be moved simultaneously, the same as the affected clips.

Effect clips and the Timewarp groups contain parameters, which can be animated with the animation curves. When adjusting the duration of an effect clip, its animation curves will be adjusted to the new duration, and the keyframes that control the curves may be positioned at intervals of less than one frame. So that the duration adjustment does not alter the length of the animation curves, the clip can be modified in Keep mode, by holding down <Alt> as well as the mouse keys.

Local Trimming:

In an edit, the most usual transition between two clips is the cut. In the Node Graph, a cut is specified by the end of a clip and the start of the following clip. In this case, the tail of a clip is pasted to the head of the following clip.

To adjust the point that joins the tail of a clip with the head of the following one:

1. Select both adjacent clips.
2. Place the active frame in the cut position, by right-clicking on any clip and dragging the active frame to the clip join point.

3. Once the active frame is at this point, the respective active frames of the two adjacent clips will be shown, the tail of one and head of the other, as visual reference to help the trimming (remember that to view the active frames on the clips it is necessary to have sufficient zoom in the Node Graph view).

4. Next, while holding down the right mouse button, left-click as well, and when the mouse is moved, the position of the cut is moved interactively, adding frames to the tail or head of the clips, according to the direction of the mouse.

### Shifting:

If the duration of the clip is to be maintained, but the In and Out Points need to move simultaneously (and thus incorporating remaining material if it exists), position the active frame of the clip by right-clicking in any central frame of the clip, then left-click and move the cursor. The active frame of the clip will then be seen moving when the mouse is moved with both buttons held down, always showing the same image although in a different position, and maintaining the head and tail of the edited clip in their original positions.

### Note:
The `<SHIFT>` function cannot be applied to effect clips, or to Template or Timewarp groups.
Duplicating clips:

To duplicate clips:

1. First, select the clips to be copied.
2. Press `<Alt>` and then left-click on one of the selected clips.
3. Drag the cursor to the target copy position and release the mouse button at that point.

Advanced Editing

The Advanced Editing method permits precise adjustment of the head and tail of any clip, with selection commands, aligning, locking, etc., and advanced Node Graph functions specific to Mistika, such as grouping, inserting tracks between clips, activating proxies, and many other functions. The Advanced Editing commands are found in the Edit tab (Node Graph Editor->Dashboard->Edit), below the Node Graph, and can be combined or used with the panel timecode calculator. A large number of editing functions can thus be created by combining different panel commands, using a fairly simple syntax.

The majority of Advanced Editing commands are accessible from Scribe system symbols, allowing us to work with the Node Graph in fullscreen.

Edit:

Ref. Mistika: Node Graph Editor->Dashboard->Edit->Edit

The Edit tab shows (in the Dashboard) tools for editing clips in the Node Graph.

It also contains detailed information about clips being evaluated, access to tools external and global configuration parameters.

The Edit Panel, instead of having a button for every possible operation, has buttons that represent different basic editing concepts, which when combined through an editing syntax, specify more complex operations.

The buttons of the Active group establish the element of the Node Graph, defining the application as a specified function of advanced editing:

- **Clip Selection**: the clip selected with the mouse.
- **Edit Mark In**: the Edit In editing mark of the Node Graph.
**Edit Mark Out**: the *Edit Out* editing mark of the *Node Graph*.

**Node Graph Monitor**: the *Monitor* of the *Node Graph*.

**Play Mark In**: the *Play In* playback mark of the *Node Graph*.

**Play Mark Out**: the *Play Out* playback mark of the *Node Graph*.

These buttons operate with the calculator if *Use* is selected, allowing a relation between value and application range to be defined for the executed function.

For example, if we wish to move a clip selected via the *Set Position* button we have six options:

- In *Active* select the button *Edit Mark In* and run the command *Set Position*: the clip is moved to the mark *Edit In*, with the mark coinciding with its *Head*.
- In *Active* select the button *Edit Mark Out* and run the command *Set Position*: the clip is moved to the mark *Edit Out*, with the mark coinciding with its *Tail*.
- In *Active* select the button *Monitor* and run the command *Set Position*: the clip is moved to the mark *Edit Out*, with the mark coinciding with its *Head*.
- In *Active* select the button *Play Mark In* and run the command *Set Position*: the clip is moved to the mark *Play In*, with the mark coinciding with its *Head*.
- In *Active* select the button *Play Mark Out* and run the command *Set Position*: the clip is moved to the mark *Play Out*, with the mark coinciding with its *Tail*.
- Set a timecode value in the calculator (*Calc*) and activate *Use*: the clip is moved to this timecode in the *Node Graph*, with the mark coinciding with its *Head*.

Bear in mind that the buttons in adjustment modes for head and tail of clips (*Local*, *Global*, *Select*) only affect trimming and extending of clips. Other editing functions are independent to the adjustment mode activated.

Buttons that run advanced editing functions.

All these functions are non-destructive, and can be undone with the command *Undo*.

### Group

This groups the selected clips in the *Node Graph* in a *Normal* group clip.

**Note**: if the selected clips have the same duration, and there is a *Dummy Clip* between them, the group will be created in the *Template* state.

### Ungroup

This undoes the selected group, dropping all the clip’s contents from the current track of the group to tracks below it.

**Note**: The contents of the group may have a longer duration than that specified by the group clip. This is possible due to the fact that the groups can be edited after having been created. It is also important to note that a *.rnd* file can be loaded in the *Node Graph* as a *Normal* group clip, which when ungrouped can contain clips that are longer than the total of the flow with which it was created.
Timewarp

This changes the group selected to the *Timewarp* state. For more information, read the chapter *Groups in Timewarp state*.

Reverse

This reverses the playback direction of the selected clips.

**Note**: Audio clips are not affected by this function. Effect clips will have all their parameter curves reversed.

Join

This simplifies the view of the selected edits, joining clips that can be displayed as a single one, and changing the effects placed in different tracks to continuous tracks (transition mode).

This command is very useful for preparing an edit to be exported to an EDL. It is also useful for simplifying *Node Graph* views, removing cuts that divide a clip unnecessarily.

**Note**: This command cannot join two different clips, or a two parts of the same clip, that do not have correlative timecodes. We also do not recommend this command for simplifying transitions made with Template groups to transition mode. This function is recommended for clips of the family *Edit->Transitions*.

AV Break

This breaks up the selected mixed clip, transforming it into separate audio and video clips.

For more information on mixed clips, see the chapter *Mixed Clips*.

AV Combine

This combines an image clip with an audio clip, which should have the same duration and be aligned vertically, in a mixed clip.

For more information on mixed clips, see the chapter *Mixed Clips*.

Audio Break

This breaks the audio clip into distinct independent clips, one for each audio track that it has.

Audio Combine

This combines various independent audio clips that constitute separate tracks: these should be the same duration and be aligned vertically.
Stereo Break

This undoes the selected stereoscopic group, transforming it into two image clips, each one corresponding to one of the source cameras.

Stereo Combine

This combines two image clips derived from a stereoscopic group. These clips must be the same duration and be aligned vertically.

Lock

This locks the modifications that the editing functions can perform in the selected clips.

Note: Locked clips are indicated with a small gray padlock in their center.

Unlock

This unlocks the selected clips.

Hide

This hides the selected clips.

Reveal

This reverses the Hide attribute of the selected clips.

Note: Hidden clips are not evaluated either by the monitors or render processes. Bear in mind that when hiding a clip, the flow of a process pile might be stopped, making it necessary to stretch the field to the clip above to maintain the flow.

A hidden clip may be edited like any other clip, since its invisibility refers only to its evaluation, and not to editing functions.

Hidden clips are viewed in the same color as the background of the Node Graph, although they are visible thanks to the way that the clip is shown. Hidden clips are also visible in the navigation panel.

The dropdown Mix contains transitions via fades and the Page Turn effect.
Inputs

**Single input**: Some transitions (*Fade Up, Fade Down* and *Non Linear-M*) can work with one input, in which case the image combines with the background.

**Double input**: All transitions can combine two inputs.

**Multiple input**: The *Multiple Mix* transition can combine infinite layers.

Outputs

Single input (*Fade Up, Fade Down* and *Non Linear-M*)

**Image**: Combination of input with black (*Black*).

**Alpha**: Opaque mask.

Double input

**Image**: Combination of the two inputs according to the transition.

**Alpha**: Opaque mask.

Multiple input

**Image**: Combination of the multiple inputs according to the transition.

**Alpha**: Opaque mask.

► **Fade Up**

Pre-defined configuration corresponding an Input fade-up.

If this transition is applied to just one clip, it enters from black.

**Note**: Since it is pre-defined, this transition has no parameters.

► **Fade Down**

Pre-defined configuration corresponding an output fade-out.

If this transition is applied to just one clip, it goes to black.

**Note**: Since it is pre-defined, this transition has no parameters.

Creates a fade from a user-defined color to the original clip.

- **Red, Green, Blue**

  Selects the color from which the fade enters.
- Grade

**[100 (0 / 100)]**
Controls the animation of the curve. By default, the first frame is at 100, and the last frame is at 0.

Permite generar una transición desde un clip a un color. Creates a fade from the original clip to a user-defined color.

- Red, Green, Blue

Selects the color to which the fade enters.

- Grade

**[0 (0 / 100)]**
Controls the animation of the curve. By default, the first frame is at 0, and the last frame is at 100.

The Non Linear-M transition is the result of the superimposition of two inputs. The opacity of the first input decreases simultaneously as the opacity of the second input increases.

If this transition is applied only one clip, the superimposition combines with black *(Black)*.

- Blend

**[50 (0 / 100)]**
Sets a percentage value of the final state of the transition.

The Multiple Mix transition allows the combining of multiple inputs in order to assign to each one of them an opacity value. To control the layers independently, add the same number of folders as inputs via the command Add Folder *(Node Graph Editor->Dashboard->Parameters->Layer->Add Layer)*.

- Index

**[100 (0 / 10.000)]**
Sets the value of opacity of the image during the transition.

The Alpha Mix transition uses the luminance mask of the images in order to assign different values of opacity to different areas of the frame.

- Blend

**[50 (0 / 100)]**
Sets a percentage value of the final state of the transition.

- Clip

**[400 (0 / 100.000)]**
Sets the value of opacity of the mask generated.
ByLuma

[Yes (No / Yes)]
Option to activate the use of the luminance mask.

Creates a page-turning effect, switching from the output image to the input image.

Ang

[90 (-900.000 / 900.000)]
Sets the angle of the page.

Line

[0 (-10.000 / 10.000)]
Sets the position of the edge of the page.

Rad

[15 (0 / 10.000)]
Sets the curve (Radio) of the page.

Hilgt

[50 (0 / 10.000)]
Sets the intensity of reflection of light of the page.

Shadow

[0 (0 / 100)]
Sets the opacity of the shadow of the page.

Shift

[0 (-10.000 / 10.000)]
Sets the horizontal position of the image within the area of the page.
The Wipes dropdown button contains SMPTE wipes.

Starting with these basic wipes it is possible to obtain an infinite variety. Both types of effect can generate wipes with smooth edges.

<table>
<thead>
<tr>
<th>Inputs</th>
</tr>
</thead>
</table>

Can be used without input, with one input to assign it a mask as a wipe, or with two inputs (with optional alpha channel) to be used as a transition between them.

Without inputs:

- **Image**: Will contain the shape of the wipe as a black and white image.
- **Alpha**: Opaque mask

Single input:

- **Image**: No changes.
- **Alpha**: Mask with the shape of the wipe.

Double input:

- **Image**: Combination of the two inputs depending on the wipe.
- **Alpha**: Combination of the alpha channels of the two inputs depending on the wipe.

The parameters that control the wipes of the Wipes button are the same for all of them, except Wipe Circle. The two possible types of parameter set are described below.

Wipes of the band type are the same for all the wipes of the Wipes button (with the exception of the circle wipe), and are formed by means of different preset values.

Each Layer added to the effect in the Parameters tab represents a set of stripes with its own set of parameters. If several layers are used, the image area will only be white in areas where all the sets of stripes are superimposed.
Drop down folder containing the parameters of the default wipe.

Layers created later will be added after it, as an identical folder although identified by its number, which increases as they are created. The creation, duplication and deletion of layers is controlled from the commands tab located in the Folder tab of Parameters, accessible from the Node Graph Editor and the Visual Editor.

### Angle

**[270 (-900.000 / 900.000)]**

Sets the angle in degrees of the set of stripes.

### Soft

**[0 (0 / 100.000)]**

Softens the edges of the stripes. The higher the value, the softer the edges. A value of 0 represents a hard cut.

### Strip

**[200 (0 / 100.000)]**

Thickness of the stripes of the effect as a percentage of the image size.

### Phase

**[25 (-100.000 / 100.000)]**

Phase of the stripes. It is used to specify the starting position of the stripes before any move, or to animate its position.

### Grade

**[0:100 (0 / 100.000)]**

Controls the animation of the stripe patterns, normally used to specify progress of the wipe effect.

When animating Grade from 0 to 100 (or vie versa) the white area of the stripes increases or decreases. With a Grade value of 0 the stripes will no longer be visible, whereas at 100 there will be no black space between them.

The parameters that manage the Wipe Circle wipe are different from the other Wipes. In this wipe, all the white surfaces of each circle specified in each layer are added together.

Dropdown folder containing the parameters of the wipe created by default.

Layers created later will be added after this one as identical folders, although identified by its number, which increases as they are created. The creation, duplication and deletion of layers is controlled from the commands tab located in the Folder tab of Parameters, accessible from the Node Graph Editor and the Visual Editor.

### Rad

**[0:63 (0 / 300)]**
Sets the radius of the circle as a percentage of the horizontal size of the frame.

**Soft**

**[0 (0 / 300)]**

Sets the size of the softening of the edge of the circle as a percentage of the horizontal size of the frame.

This softening consists of a circular gradient that grows from the perimeter towards the center.

**CentX; CentY**

**[50; 50 (-400 / 500)]**

Sets the position of the center of the circle as a percentage of the image.

Wipes are normally used for transitions between split screen shots and effects, or simply to generate image patterns for other uses.

The default values produce stripe transitions of symmetrical growth, but by animating the *Phase* parameter from 0 to 50 at the same time as the *Grade* parameter from 0 to 100, it produces a sideward growth.

*Grade* can also be set as a constant, only using Phase to animate the position of the stripes without changing their thickness.

These wipes, with a single input, can be used for any effect with an *InAlpha* parameter to change a specific part of the image, for example to change color in just one part of the image.

The parameters of these effects are illustrated in the following images.

![Image of wipe parameters](image)

**Subtitle**

Mistika supports the standard subtitling files *.srt, .sub, .txt* and *.xml*, and applies them directly in the *Node Graph* as *Title* effects.

To import a subtitle file to a video clip, select the clip and click *Subtitle*. An import window appears where the desired file can be chosen. It is created on top of the video clip, and a series of *Title* effects can be selected with the duration of each subtitle segment defined.

If the subtitle file supports the settings for the letter size, color and font, these parameters are automatically configured in the *Title* effect created. If they are not defined by the file, the default values of *Title* will be used.
Information about the functioning of the *Title* effect in Mistika is explained in the chapter *Title*.

### Razor

Divides the selected clips in two at the active mark. If no mark is active, the clips are divided at its active frame.

**Note:** The active mark is specified in the marks panel. The active marks that interact with this function can be the active frame of the clip, the monitor mark, the play marks and the editing marks. To interact with the global marks or clip marks, move the active monitor to that mark (with the commands *Next*/*Prev* in *Quick Access*) and then divide the clip by using the monitor mark.

### Clone

Makes identical copies of the selected clips in the *Node Graph*, and leaves the copies selected so they can be moved immediately to another position on the *Node Graph*.

The number of copies to be generated can be indicated in the calculator, where the *Use* button should be on. If this button is off, only one copy will be made.

Remember the direct duplicating method by pressing `<Alt>` and then clicking on the clip to be copied, and dragging the copy to a new position.

**Note:** The position of the duplicate is exactly the same as the original, and we recommend moving the new copy immediately to another position in the *Node Graph*, to avoid their superimposition.

The calculator of the *Edit* tab allows numerical values to be read and applied to advanced editing functions, interacting with the buttons of the *Active* group.

![Calculator](image)

**Base**

Field that specifies the time format used by the calculator. The button to its right opens a dropdown list with all the existing time formats.

Mistika makes its internal calculations in floating point numbers, allowing the results of the calculation to be viewed in different time formats, which can be switched between existing ones at any moment during the calculation.
The default formats are:

**Float**
Permits floating point values.

**Note**: This value is shown in cyan to distinguish from the other values, since in multiplication and division operations, this type of value is automatically used.

**Frames**
Only permits integer numbers.

**TimeCode**
Provides values in Timecode format (HH:MM:SS:FF). The base of the Timecode depends on the number of frames per second (frame rate) as specified in Mistika Setup, so the same measure will give different values for the timecode in different Mistika sessions, if this value is changed.

<table>
<thead>
<tr>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Editable numerical field where the current value of the calculator is shown.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Button that activates the use of the calculator in the editing syntax.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematical functions of the calculator. The buttons are a little lighter in color than the other calculator buttons. The possible functions are:</td>
</tr>
<tr>
<td>/ : Divide.</td>
</tr>
<tr>
<td>* : Multiply.</td>
</tr>
<tr>
<td><strong>Note</strong>: These two functions permit a floating point value to be entered temporarily, whatever time format is being used.</td>
</tr>
<tr>
<td>- : Subtract.</td>
</tr>
<tr>
<td>+ : Add.</td>
</tr>
<tr>
<td><strong>Note</strong>: These two functions do not permit floating point values in operations expressed in time code format or by the number of frames, since they only permit adding of times to each other.</td>
</tr>
<tr>
<td>. : Adds a point to floating point number. If the time format of the calculator is frames, this button will not work. If the time format is frames per second, the button will add a semi-colon (:) specifying a timecode figure.</td>
</tr>
<tr>
<td>+/- : Inverts the sign of the current number.</td>
</tr>
<tr>
<td>AC : Deletes the contents of the calculator field.</td>
</tr>
<tr>
<td>= : Shows the result of the calculation being made.</td>
</tr>
</tbody>
</table>
Keypad

Buttons that function as the calculator numerical keys.

Get Position

Inserts into the calculator the horizontal position of the selected clip as timecode value (corresponding to the input point of the clip).

If instead selecting of a clip an active mark is activated (commands group Active) this will be the position value copied into the calculator.

**Note:** For this command to make use of the value in the calculator, the *Use* button must be active.

Set Position

Moves or pushes the clips selected in the time of the *Node Graph* to the value defined in the calculator.

If instead of selecting a clip an active mark is activated (commands group Active) this will be the position value copied into the calculator.

**Note:** For this command to make use of the value in the calculator, the *Use* button must be active. If the clip is to be linked to the active mark in order to move it, the *Use* button must be deactivated.

Get Duration

Pastes the value of the total duration of the selected clips into the calculator.

Set Duration

Modifies the duration of the selected clips to the value indicated in the calculator.

Move Left

This pushes the selected clip to its left, by the number of frames indicated in the calculator. If the calculator is not in use, the clip will only be pushed a single frame to the left.

Move Right

This pushes the selected clip to its right, by the number of frames indicated in the calculator. If the calculator is not in use, the clip will only be pushed a single frame to the right.

Shift Left

Moves the input and output points of the clip simultaneously in a negative direction (towards the start of the *Node Graph*) by the amount expressed in the calculator,
maintaining the head and tail of the clip in the same position of the Node Graph.

If the calculator is not activated or has a zero value, the selected clips will be shifted by one frame.

**Note:** this function is not affected by the selected mode of adjustment, nor can it be applied to effect clips, Template groups nor Timewarp groups.

---

### Shift Right

Moves the input and output points of the clip simultaneously in a positive direction (towards the end of the Node Graph) by the amount expressed in the calculator, maintaining the head and tail of the clip in the same position of the Node Graph.

If the calculator is not activated or has a zero value, the selected clips will be shifted by one frame.

**Note:** this function is not affected by the selected mode of adjustment, nor can it be applied to effect clips, Template groups nor Timewarp groups.

---

The adjustment functions that change the duration of selected clips can work in three modes as described below.

---

### Global

Activates the global adjustment mode.

In this mode, when the tail or head of a clip is adjusted, it will affect the total duration of the edit in the Node Graph. For example, if the clip is extended, either by its tail or by its head, the total time of the edit will be extended, due to the fact that in this mode the remaining clips existing in the trimming direction (and that are not locked) will be moved as well by the same amount of time as the clip trim or extension made by the adjustment.

**Note:** The clips will change position according to where they are in relation to the edge of the clip that is being adjusted. For example, all the clips in the Node Graph whose head is to the right of the extended clip head will also be moved to the right.

---

### Local

Activates the local adjustment mode.

In this mode the editing cuts are adjusted.

When adjusting the tail or head of a selected clip, only the heads and tails of clips that coincide with the head and tail timecodes of the selected clip will be affected, and the heads or tails of the adjacent clips, without altering the total duration of the edit in the Node Graph.

For example, if the selected clip is extended by its tail, the tail of clips that coincide vertically with this tail will also be extended, whereas all the heads of clips that are in the frame following the tail of the selected clip will be contracted, thus compensating the duration of the selected clip by making a contrary adjustment to the adjacent clips.

**Note:** This mode of adjustment is the best for adjusting cuts, and also for adjusting transitions in zigzag mode, by selecting in this case the effect that makes the transition. When the head or tail of the transition effect clip is modified, the head or
tail of the corresponding input clip will be adjusted at the same time, automatically compensating the necessary clip duration so that the flow of the transition works correctly.

- **Selected**

Activates the selection adjustment mode.

In this mode, only the selected clips are adjusted, without affecting the remaining clips, or the total duration of the edit.

These are adjustments that change the animation of the keyframes contained in the clips in the Node Graph when their duration is changed.

- **Stretch**

Maintains the absolute animation of the keyframes, and as such the original position within the new final duration of the clip.

- **Extend**

The animation of the keyframes changes proportionally to the new duration of the clip.

- **Ext Head**

Extends the heads of selected clips by the amount of time expressed in the calculator. If the calculator is not activated or has a zero value, the head of the selected clips will be extended by one frame.

This function can interact with the active mark, by adjusting the clip head to the frame where the mark is.

**Note**: the active mark is specified in the marks panel. The active marks that interact with this function can be the monitor mark, the play marks and the editing marks. To interact with the global marks or clip marks, move the active monitor to that mark (with the commands Next/Prev in Quick Access) and then adjust the clip by using the monitor mark.

If a pair of marks are activated (the two editing or play marks) when this function is run, both the head and tail will be adjusted to both active marks at the same time.

- **Trim Head**

Trims the selected clips by their heads by the amount of time expressed in the calculator. If the calculator is not activated or has a zero value, the head of the selected clips will be trimmed by one frame.

This function can interact with the active mark, by adjusting the clip head to the frame where the mark is.

**Note**: the active mark is specified in the marks panel. The active marks that interact with this function can be the monitor mark, the play marks and the editing marks. To interact with the global marks or clip marks, move the active monitor to that mark (with the commands Next/Prev in Quick Access) and then adjust the clip by using the monitor mark.
If a pair of marks are activated (the two editing or play marks) when this function is run, both the head and tail will be adjusted to both active marks at the same time.

Trim Tail

Trims the selected clips by their tails by the amount of time expressed in the calculator. If the calculator is not activated or has a zero value, the selected clips will be reduced by one frame.

This function can interact with the active mark, by adjusting the clip tail to the frame where the mark is.

**Note**: the active mark is specified in the marks panel. The active marks that interact with this function can be the monitor mark, the play marks and the editing marks. To interact with the global marks or clip marks, move the active monitor to that mark (with the commands Next/Prev in Quick Access) and then adjust the clip by using the monitor mark.

If a pair of marks are activated (the two editing or play marks) when this function is run, the head and tail will be adjusted to both active marks at the same time.

Ext Tail

Extends the selected clips by their tails by the amount of time expressed in the calculator. If the calculator is not activated or has zero value, the head of the selected clips will be extended by one frame.

This function can interact with the active mark, by adjusting the clip tail to the frame where the mark is.

**Note**: the active mark is specified in the marks panel. The active marks that interact with this function can be the monitor mark, the play marks and the editing marks. To interact with the global marks or clip marks, move the active monitor to that mark (with the commands Next/Prev in Quick Access) and then adjust the clip by using the monitor mark.

If a pair of marks are activated (the two editing or play marks) when this function is run, the head and tail will be adjusted to both active marks at the same time.

This numerical field defines the position of the timecode mark of the Node Graph (TC Mark). When this value is modified, the **Global Ruler** is updated.

If the mark is moved via direct selection with the mouse from the **Node Graph**, the new value of the timecode track will be seen in this box.

**All**

Selects all the clips in the **Node Graph**.

**Up**

This selects all the clips that are in the tracks above where the **Node Graph** cursor is positioned.
<table>
<thead>
<tr>
<th>Tool</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Down</td>
<td>This selects all the clips that are in the track below where the Node Graph cursor is positioned.</td>
</tr>
<tr>
<td>Left</td>
<td>This selects all the clips with a head to the left of where the Node Graph cursor is positioned.</td>
</tr>
<tr>
<td>Right</td>
<td>This selects all the clips with a head to the right of where the Node Graph cursor is positioned.</td>
</tr>
<tr>
<td>Unselect</td>
<td>Unselect all the clips of the Node Graph.</td>
</tr>
<tr>
<td>Invert</td>
<td>Inverts the current selection of clips.</td>
</tr>
<tr>
<td>Track</td>
<td>This selects all the clips that are in the same track in which the Node Graph cursor is positioned.</td>
</tr>
</tbody>
</table>

Tools for creating and deleting notes and drawings on the Node Graph. These notes are useful for annotating the Node Graph, leaving notes for other users, and generally assisting organization.

Notes are indicated with a yellow icon like a “Post-it”, and can be associated with text, Graffiti (a drawing) or both.

Occasionally, notes can cause excessive visual information. To avoid this, it is possible to hide them by deactivating Setup->Node Graph View->Show Graffiti). In this mode, the gray icon remains visible, while the associated text and Graffiti is only shown when a note is selected.

The notes can be moved in the Node Graph dragging them by their yellow icon.

When horizontal/vertical zoom of the Node Graph is changed, the Graffiti drawings are similarly scaled, since they form part of the Node Graph. Therefore, it is important to the notes at the in the level of zoom that will be most useful.

The notes are a kind of mark, and so it is possible to jump from one to another similar to other marks (via <Shift>+<Left> and <Shift>+<Right>).

Create

Creates a new note on the Node Graph. The background is darkened until it is completed, and the cursor can be used to write and draw on the Node Graph. Press Esc when finished.
Delete Stroke

Deletes the last stroke drawn in a note.

Delete Note

Deletes the selected note, including both text and its associated Graffiti. Select the note by clicking on the yellow icon.

Delete All Notes

Deletes all the notes in the Node Graph.

Via the commands of the dropdown button Group Layers it is possible to specify which of the layers included in a groups will be evaluated in the monitor. This layer is then termed the active layer.

When one of the layers is specified, the color of the group clip changes from green to blue. The tone of the color blue will vary according to the layer selected. Also, each time an active layer is defined, the group clip adopts it name and timecode.

Despite including in infinite number of layers, access to the layers that contain this type of group via the Group Layers commands is limited. Evaluation can only be assigned to the top four layers that are not darkened.

- Use Layer 1-4

  Specifies which of the first four layers is active.

- Use Prev Layer

  Specifies the layer immediately before the current one as active.

- Use Next Layer

  Specifies the layer immediately after the current one as active.

Note. Both the commands Use Prev Layer and Use Next Layer are cyclic. This means that if Layer 4 is active, and Use Next Layer is pressed, the new active layer will be Layer 1.

Thanks to these commands, it is possible to convert a normal group clip to multi-layer or multi-camera. These types of group are especially useful for:

- Multicamera editing
- For viewing quality control, maintaining reference versions within the group
- Maintaining multiple versions
- Using proxies. For Raw formats that cannot run in real time, it is recommended to do a render in order to generate Mistika formats, and include them in a group, together with the original clip. This way, we can shuttle at any time between the real time version and the original camera file.
Add Mark

Adds a User Mark. This mark can be local or global.

Delete Mark

Eliminates the active User Mark.

Delete All Marks

Eliminates all the User Mark global.

Note: For more information about the use of these marks, consult the chapter User Marks.

In global mode, the editing functions affect all the clips or those parts within the Range specified by the editing marks, regardless of whether they are selected or their vertical position in the Node Graph tracks.

Note: If the editing marks are not in the Node Graph, each function will use the time range specified by the selected clips.

The traditional editing functions in global mode are the following:

Global Cut

Moves to the clipboard all the clips or those parts of clips that are in the range specified by the editing marks. The editing marks will also be removed from the Node Graph.

Note: If the editing marks are not in the Node Graph, the function will use the time Range specified by the selected clips.

Global Copy

Copies to the clipboard all the clips or those parts of clips that are in the range specified by the editing marks. The editing marks will also be removed from the Node Graph.

Note: If the editing marks are not in the Node Graph, the function will use the time Range specified by the selected clips.

Global Paste

Replaces the clips or those parts of clips that are in the Range specified by the editing marks with the contents of the clipboard, pasting its contents but respecting the duration specified by the editing marks.

Note: When the clipboard contents are inserted depending on the range specified by the editing marks, the duration of the Range can differ from the total duration of the set of clips contained in the clipboard. In this case, the set of clips will be pasted to the Node Graph as a Timewarp group that will contain them, thus changing its playback speed in a linear fashion.

After running this Global function, the In mark will be placed in the timecode where the Out mark was, and the Out mark will be removed from the Node Graph.
If the editing marks are not specified in the Node Graph, the clipboard contents will be inserted at the mark of the active monitor, maintaining the original duration and playback speed of the set of clips in the clipboard.

### Paste Top

Paste the clipboard contents to the Node Graph, respecting the duration specified by the editing marks, to the first free track from the top.

**Note:** When the clipboard contents are inserted depending on the range specified by the editing marks, the duration of the range can differ from the total duration of the set of clips contained in the clipboard. In this case, the set of clips will be pasted to the Node Graph as a Timewarp group that will contain the set of clips, thus changing playback speed in a linear fashion.

After running this *Global* function, the *In* mark will be placed in the timecode where the *Out* mark was, and the *Out* mark will be removed from the Node Graph.

If the editing marks are not specified in the Node Graph, the clipboard contents will be inserted at the mark of the active monitor, maintaining the original duration and playback speed of the set of clips in the clipboard.

### Global Insert

Inserts the clipboard contents in the Node Graph, in the position and duration specified by the editing marks, and adds the necessary time in the Node Graph.

**Note:** When the clipboard contents are inserted depending on the Range specified by the editing marks, the duration of the Range can differ from the total duration of the set of clips contained in the clipboard. In this case, the set of clips will be pasted to the Node Graph as a Timewarp group that will contain them, thus changing playback speed in a linear fashion.

After running this *Global* function, the *In* mark will be placed in the timecode where the *Out* mark was, and the *Out* mark will be removed from the Node Graph.

**Note:** If the editing marks are not specified in the Node Graph, the clipboard contents will be inserted at the mark of the active monitor, maintaining the original duration and playback speed of the set of clips in the clipboard.

### Global Razor

Cuts in two all the clips at the active monitor mark, whether or not they are selected. The clips that do not coincide with the active monitor will not be cut.

### Remove Time

Removes all the clips or those parts within the range specified by the editing marks, and also the time within the range, thus bringing the editing marks of a frame together, which are also eliminated.

**Note:** The clips or the parts affected are removed from the Node Graph and placed in the clipboard, enabling other editing functions related with the clipboard to be used. If the editing marks are not in the Node Graph, each function will use the time range specified by the selected clips.
## Insert Time

Pushes all the clips or those parts that are in the Range specified by the editing marks to the Out Point, thus inserting “empty” time in the Range specified by the editing marks.

If the editing marks are not specified in the Node Graph, the Range will be inserted defined by the clips in the clipboard will be inserted at the active monitor mark.

## Unstrip

Strips the selected clips into clip fractions with duration of one frame each.

## Linearize

Orders all the clips used in an environment by the original timecode of each clip (from the original EDL). No information is lost because the effects clips are sorted at the beginning of the reel.

The main use is to be able to conform an EDL, apply the necessary postproduction processes in Mistika, and transfer a tape containing all the resulting clips, but so that they can be reconformed in another system using the original EDL. To learn more about the conforming process using this tool in Mistika, see annex Transfer with Original Timecode (Crash Record).

## Split Conform

Recreates every cut in the Node Graph in all other tracks

One important function of this tool is to cut a clip with information from an EDL.

To do this, it is necessary to load the video clip without cuts and the corresponding EDL into the Node Graph. We import the EDL generating an environment, and we include the clip cutting another track. Once aligned, the button Split Conform inserts the EDL cuts in the video clip.

In the case of having a clip with multiple scenes and no EDL, use the scene detector (Visual Editor->Dashboard->Detect Scenes) instead of this tool.

## Group Segments

Creates a group clip for each pile of clips of the same length and position selected in the Node Graph. A typical use is, when finishing a render by segments to group the original segments together with their renders in new, multilayer groups.

**Note:** If any of the selected clips is a Clip Dummy the state of the group created will be Template.

## Trim & Ungroup

When ungrouping via this macro, the cuts in a render group are specified respecting the segment originally referenced by the EDL. This is unlike the command Ungroup (Node Graph Editor->Dashboard->Edit->Edit->Ungroup) which simply makes the whole render script available in the Node Graph without cropping heads or tails. It is
usually used after a conforming operation.

- **Load RawParams**

Revises the metadata of the r3d and mxf files (Sony Raw), and .rmd file that may be associated, re-loading their values in the **R3DParams** and **SonyRaw Params** effects for selected clips (with effect of the type **Node Graph Editor->Dashboard->Fx->Mistika->Decode->R3DParams/SonyRaw Params**).

- **Go to Next Blip**

Checks the **TimeSpace** for "Blips", which are misalignments of between 1 and 3 frames within the same effects, which Mistika will consider as an editing error. The operator can this rapidly check the project in order to manually solve this kind of problem.

- **Go to Next Overlap**

Checks the **TimeSpace** for clips and effects that are superimposed which Mistika will consider as an editing error. The operator can this rapidly check the project in order to manually solve this kind of problem.

The cache function for clips in the **Node Graph** is a tool that allows clips to be rendered temporarily (intended to allow realtime playback without halting the work in progress), and is normally carried out in **Background** (low priority) for the workstation, using, if available, **Batch Manager** or **Totem**.

It is important to remember when using the cache function that it is a temporary function, ie, its use is focused on providing continuity for the work in progress without the need to stop to render or export certain clips which cannot be played back in realtime (for example when modifying effects or when there are many processes in a clip in a color correction). Furthermore, this helps when structuring the project, as it is not necessary to create folders, names or directories; the cache is organized almost automatically, and overwrites whenever possible, thus optimizing memory.

The cache will be identified as a letter "C" in a colored circle (indicating the status of the cache of the given clip). When the symbol appears over a clip, it indicates that the cache function is active. Then, depending on the color of the circle, it indicates that the cache is not created (red), that it is in process (yellow) or that it has been done (green).

To optimize memory, the position and parameters of the clip are taken into account, and so there exists the possibility of automatically activating the creation of new caches when changes are made to a clip. Furthermore, when doing the internal organization of these caches, they will be seen as relative to their position, overwriting previous caches that coincide with the position or clip in which they are to be newly created.

The resolution of the cache files will coincide with the output to video selected.
**Selected Cache On**

Activates the cache function for selected clips. When active, the letter "C" appears in a red circle indicating that this status (the circle becomes green when the cache has been made).

**Selected Cache Off**

Deactivates cache function for selected clips. The clip loses its cached status, but will remain until it is overwritten.

**Selected Invalidate**

Marks as invalid the caches of the selected clips. Thus, all clips that have a cache marked as made will return to the pending state.

**Selected Extract**

Extracts the caches from the selected clips as media clips. When selected, a warning that the clips will be overwritten if the cache is overwritten appears.

**Render Pending**

Starts the render of the clips with the cache function activated. The clips show their pending status with a yellow circle until the render is done, when the circle becomes green.

**Reload Cache**

Reloads the cache of selected clips, in the case that, after any change or overwrite, it has not refreshed correctly.

**Attributes:**

Ref. Mistika: Node Graph Editor->Dashboard->Edit->Attributes

The Attributes tab shows all the available information on the selected clip in the Node Graph. It also permits modifying some of the selected clip's values.
The Interface

The name of the clip. This name can be modified if this field is edited and confirmed with <Enter>.

Editing this field does not make any change to the stored clip name, thus avoiding inconsistencies with references to the same existing clip in other edits. Only the selected clip changes its name in the Node Graph, without affecting other copies of the same clip even in the same Node Graph. This can be useful to identify certain clips, especially group clips.

The definition of the Fields attribute is indicated at the moment of capture or render.

Interlaced

Indicates whether the clip has the interlaced attribute.

Progressive

Indicates whether the clip has the progressive.

Note: The state of fields of the clips must be defined by the user. This allows the incongruence that a clip, although it has fields, does not have the interlaced attribute, for example.

This group shows the timecode values of the input and output of the clip defined in the edit.

In

Position of the Node Graph where the head of the clip is situated. This value can be edited, moving the clip by its head without modifying its duration.

Out

Position of the Node Graph where the tail of the clip is located. This value can be edited, moving the clip by its tail without modifying its duration.

Duration

Duration of the clip in the Node Graph. This value can be edited, modifying the duration of the clip by its tail.

Head; Tail

Shows the number of remaining frames not being used by the clip in the Node Graph. The higher the value, the shorter the clip duration. Negative values are possible, shown in red, indicating repetition of the head or tail frame of the clip.

Clips can be edited from this numerical field, by modifying their head of tail.

Note: Timewarp group and effect clips do not have a fixed duration, so in these cases the field cannot be edited.
Folder that contains read-only fields with information regarding the media of the selected clip. Only image and audio clips can show information in the fields of this folder.

- **In; Out**

  If the material was captured with timecode information, this shows the start and end of capture timecodes relative to the original tape.

  This field is useful for working with lists of timecodes written in a previous preview, permitting the user to confirm that the used clip coincides with the timecodes one in the list.

  **Note:** Clips captured in *Start Free* mode, or generated by a render, will have a timecode that is restarted from zero. *Group* clips, link clips and effects do not have original timecodes either.

- **Duration**

  Shows the total duration of the clip media.

- **Tape Name**

  Number of audio tracks in the clip.

- **Audio Channels**

  Number of audio tracks in the clip.

- **Image File**

  Shows the name of the image media to which the clip refers.

- **Proxy File**

  Shows the name of the media to which the clip refers for the proxy image resolution.

- **Format**

  Shows information about format of the image.

- **Audio File**

  Shows the name of the sound media to which the clip refers.

  Editable numbered information field that shows the original comments of the clip that have been added.

  In addition to the user comments, comments generated automatically by Mistika can exist. Such is the case of clips coming from conforming an EDL against a numbered sequence. Mistika uses this field to store the original information of the EDL line corresponding to the clip.

  Editing this field has no effect on the stored clip comments, avoiding inconsistencies with the references to the same existing clip in other environments. Only the selected clip
changes its comments in the **Node Graph**, without affecting other copies of the same clip even in the same **Node Graph**.

**Extras:**

**Ref. Mistika: Node Graph Editor->Dashboard->Edit->Extras**

The **Extras** tabs facilitates access to scripts for automization of tasks.

These scripts can be created or modified via **Mistika Setup** (Mistika Setup->General->General->Edit Mistika <App. Panel> Buttons. Available in Expert mode only)

In addition to being able to launch external applications is also possible to set parameters for such applications, as seen in the default scripts included with the delivered Mistika package.

**Note:** External applications run in their own window and not in Mistika’s panels, so that they may be hidden by them. In this case, remember that the Linux bar can be used for access of to manage different desktops.

**Setup:**

**Ref. Mistika: Node Graph Editor->Dashboard->Edit->Setup**

This tab is part of the configuration of Mistika. It contains those configuration values that can be changed without needing to reboot the application for them to take effect.

The rest of the configuration values are set via Mistika Setup and it is necessary to restart Mistika to apply these changes.

The commands and configuration values of the panel are grouped according to their functionality.

**Controls that affect the view of the **Node Graph**:**

- **Show Grid**
  
  Shows the vertical lines that divide the space into units of time depending on the zoom factor.

- **Show Rulers**
  
  Activates viewing of the local ruler of the **Timecode**.
• **Time Code**

Activates viewing in timecode format of time values corresponding to the *Monitor*, to the marks of the *Node Graph* and the active frames of the clips, instead of showing the whole number of the frame.

• **Show Strip Audio**

Shows audio clips in waveform.

• **Show Strip Video**

Activates viewing of image and audio clips in image strip mode. When active, this parameter improves the view of the *Node Graph*, but at the possible cost of losing speed of interface redraw.

This speed is optimal if a proxy version of the clips has been generated (*Node Graph Editor*->*Dashboard*->*Output*->*Render*->*Proxy Image*).

• **Show Graffiti**

Activates permanent viewing of notes made with the *Graffiti* tool of the *Edit* tab.

• **Saturation**

Numerical field that allows the definition of the saturation value of the icons of the elements in the *Node Graph Editor* and in the *Visual Editor* for the user's greater visual comfort.

• **Groups TC source (Left Eye; Right Eye)**

Determines which if the two image sequences of the stereo pair defines the timecode value, if they are different. This value is taken into account when creating new media via a render by generating a render script via *Output* (*Node Graph Editor*->*Dashboard*->*Output*).

• **Show Overlaps**

When activated, this button shows clips that are overlapped *TimeSpace* as semitransparent red, so the operator can easily view this kind of editing problem.

• **Scroll and Zoom as separate Undo events**

When this button is activated, Mistika registers and stores the operator's actions, except those related to viewing the *TimeSpace* (such as Scroll and Zoom), so that when actions are undone, these latter ones are ignored.
Options that affect the behavior of the monitor.

▶ Flow Monitor

Activates a schematic view of the process flow in the frame that the monitors are evaluating.

▶ Raise Monitor

Activates an ordering mode for panels that brings area of Monitor Display corresponding to the monitor selected to the front. To select a monitor, click on its mark in the Node Graph.

▶ Select Monitor

Sends the image of the active frame of the selected clip to the active monitor (typically by right clicking and dragging). If the active monitor is in Live mode, this frame will be viewed directly in the external video monitor. This option is ideal when working with the direct editing method.

▶ Auto Save

Activates automatic saving of the Node Graph. The time interval is defined in the parameter Autosave Time in Mistika Setup->General->Autosave Time (secs). The auto-saved environment will have the name of the active Node Graph, with the addition of the ending ".auto".

Options for the creation mode of caches.

▶ Autobatch Just Modified

Activates the automatic creation of caches when changes are made to any clip with the cache function activated. Thus, each time a clip is exited (either moving to another clip or unselecting the current clip), if the cache function is active where changes have been made, it will move from the list of pending cache renders. If it is not active, this must be done manually via the Edit tab with the option Render Pending.

▶ Render

Changes the mode of render to produce the caches of the clips:

Render Caches in Foreground: starts the creation of caches in high priority, in the case that it is not necessary to use the system until all the caches are ready and to accelerate the process, or as a way of evaluating the correct functioning of said process.

Render Caches using Totem in Foreground: starts the creation of caches in high priority using Totem, in the case that it is not necessary to use the system until all the caches are ready and to accelerate the process, or as a way of evaluating the correct functioning of said process.

Render Caches using Totem in Background: starts the creation of caches in low priority (Background) using Totem, to enable normal work to continue while they are being created.
Batch the Cache Renders: starts the creation of caches, which will be sent to the de render queue of caches in the Batch Manager.

Options that affect clip movement in the Node Graph.

- Constrains X; Constrains Y

Options that block the movement of all the clips in the horizontal or vertical axis (these functions are also accessible from the right-hand side of the Node Graph panel).

- Auto Snap

Activates automatically repositioning by snapping a clip that is being placed near another clip, depending on the distance threshold specified by the Magnet Snap parameter in Mistika Setup->General->Magnet Snap (pixels).

- Auto Expand

Modifies the behaviour of the Edit->Ungroup function, so that as well as ungrouping clips, the necessary number of tracks for the group contents to be positioned in the Node Graph without upsetting their flow are also added.

- Auto Sync Editor to Timeline

Modifies the behavior of the Edit->Ungroup function which, as well as ungrouping clips, adds the number of tracks necessary so that the contents of the group are positioned in the Node Graph without upsetting its flow.

- Mark Offset

Parameter for on-the-fly mark creation, based on a time offset to compensate for the user’s reaction delay (user marks are inserted via a button in the Editing panel, and are specified on-the-fly during playback).

- Length considered an Edit Blip

Adjusts the number of frames that Mistika will consider as an editing "Blip", a vertical misalignment in a clip in relation to an effects stack. Mistika will treat this as an editing problem, but will never correct it automatically unless indicated by the operator. The default value for the number of frames is 3.

Options that affect the adding of effects in Transition mode. In this mode, each effect is applied to the join between two selected adjacent clips, as specified by the following values:

- Align: Left, Center, Right

Three possible alignment modes for added transition clip, with respect to the cut that joins two adjacent clips.
**Duration**

Numerical field that specifies the default duration of a transition added to two adjacent clips.

**General interface view options.**

- **Hide Texts**

  Hides the text of the button names. The name of any button can be seen by clicking it with the center mouse button. This can be deactivated whilst learning how to use Mistika in order to memorize each button's function. However, it is recommended to activate it later, as the constant involuntary reading of button texts can become tiring after many hours of use.

- **Text Shadows**

  Option for adding shadows to the texts in the interface for ease of reading by the user.

- **Text Saturation**

  Sets the saturation value of the texts and the color *trackballs* in the interface.

- **Text Opacity**

  Sets the transparency values of the texts in the interface.

- **Background Luma**

  Sets the value of background brightness of the interface.

- **Numbers of Vumeters to Show**

  Indicates the number of vumeters to be seen in the Node Graph, with up to 16 channels simultaneously.

- **Auto Key State**

  Defines the behavior of the button or the function of the *Auto key* of the *Visual Editor*. It can be in classic mode, which will deactivate the *Auto Key* each time an effect or clip changes (*Auto Off*); it is also possible to link the state of *Auto Key* to the selected object, maintaining each object in the state found in *Auto Key* (*Auto Key state per Object*); the final possibility is to maintain the state independently from the selected objects or clips (*Auto Key keeps state*).

- **GUI Magnify Filter**

  Allows the setting of the mode in which Mistika treats an image when zooming over it to view effects. This configuration only affects the interface, not the material, render or video output. There are 2 modes:
Nearest:
When zooming on an image larger square pixels are produced: ie, the original size of the pixels is increased. This mode is recommended for analyzing images pixel by pixel.

Interpolate:
In this mode Mistika generates new interpolated pixels between adjacent ones, giving a better zoom quality, although less faithful to the original pixels. This mode is recommended for large images.

FX
Ref. Mistika: Node Graph Editor->Dashboard->FX
Information about the functioning of the effects in Mistika are explained in detail in the chapter Mistika FX.

Curves
Ref. Mistika: Node Graph Editor->Dashboard->Curves

This panel shows and edits the parameter values of any effect clip, Timewarp group or audio clip selected in the Node Graph.

All the parameters of clips in Mistika can be animated in time using editable animation curves in the Keyframe Graph area.

To set many of Mistika's effect parameters, manipulators can be used that interactively specify several parameters at the same time.

Curves
In the Curves area, the curves of the visible exported parameters are viewed and edited.

The curves are viewed on a provisional grid, and are composed of different elements, which can be directly edited.

A horizontal ruler marked in frames appears in the top margin of the grid, where a vertical guide or dial moves to indicate the current frame. This guide corresponds to the current frame defined by Current Frame, the active frame of the clip and to the Keyframe Slider of the Visual Editor mode.
Note: a frame after the last one (after last) can be selected with the dial of this panel. This box specifies a value in the clip Out Point timecode, thus enabling parameter animation to be sustained up to the second field of a video sequence.

To navigate within the curve views, drag them with the right mouse button.

The components of a curve are:

**Control point (Keyframe)**

Control points can have or not have tangents, and can be of different classes. These points can be manipulated directly or in blocks.

**Curves**

Interpolation between keyframes calculates intermediate values to draw curves. Any number of control points can added to these curves.

**Direct editing method:**

The selected curve is shown in cyan, and its control points in green. The tangents to the points are drawn in white. The points or curves that are not selected are drawn in white.

To modify the position of a point or its tangent, select it with the left mouse button.

To select a curve, double-click on one of the curve control points. After selecting it drag it with the left mouse button.

A selection block can be created to specify a multiple selection, by drawing a rectangular area that selects all the points within it. To specify a block, left click the mouse on the background and draw the rectangle by dragging the cursor over the control points to be selected. This multiple selection can be moved to another position.

To add a control point to a curve, left click the button on the curve while holding down <Alt>. This technique can also be used to draw a freehand animation curve, since until
<Alt> is released more control points can be added at the positions where the left button is clicked.

To remove a control point, left click the point to be removed while holding <Ctrl> down.

Viewing options:

This window has a series of commands for adjusting the viewing of the curve with in order to be able to carry out evaluation and editing of the animation conveniently and accurately.

- Max
  
  Expands the Parameters area to full screen. To return it to its normal size, press this button again.

- Zoom X
  
  Zooms the view of the curves in the horizontal axis.

- Zoom Y
  
  Zooms the view of the curves in the vertical axis.

- Zoom Reset
  
  Resets the zoom to view all the curves of the effect.

- Zoom Fit
  
  Resets the zoom to view the selected curve to the maximum possible size.

- Zoom In
  
  Increase the zoom step by step.

- Zoom Out
  
  Reduce the zoom step by step.

Curves Tabs

The area Curves Tabs is composed of five subpanels grouped according to their functions.
Points:

A subpanel that has functions for specifying the type of control point.

- **Smooth**
  Specifies the selected point as a smooth interpolation control point.

- **Sharp**
  Specifies the selected point as a hard interpolation control point.

- **Smooth Tangents**
  Specifies the selected point as a connected tangents control point. The input and output tangents are connected, therefore when one is moved the other is as well. Tangents are very useful for creating animations of complex parameters.

- **Sharp Tangents**
  Specifies the selected point as an independent tangents control point. The input and output tangents are independent, and therefore they can be specified separately. Tangents are very useful for creating animations of complex parameters.

- **Constant**
  Establishes that the curve from the selected point to the following control point is a constant value. If, after the point marked as a constant, there are no control points, the constant value extends to the end of the curve.

Curve:

A subpanel that has the functions that affect the whole selected curve.

- **Hide**
  Hides the selected curve.

**Note:** the curve can be selected by clicking in the parameter name in the Value section, or several curves can be selected at the same time from a folder. When the
curve is hidden, the name and the value of the parameter will be shown as semitransparent.

→ **Reveal**

Reveals the selected curves that are hidden.

→ **Reverse**

Reverses the selected curve in the horizontal axis.

→ **Flip**

Flips the selected curve in the vertical axis.

→ **Fit**

Fits the duration of the curve to the total duration of the effect.

**Note**: the duration of the curve is calculated from the first to the last control point.

→ **Filter**

Filters the selected curve, by smoothing sudden differences between frames.

**Note**: This filter adds a control point in each frame of the curve.

→ **Flat Tang**

Resets the selected control point tangents to flat values. This way, flat tangents that represent acceleration or deceleration of the animation of a parameter are specified.

**Note**: For this command to function, the selected control points must have tangents before applying the command.

**Block:**

A subpanel that has functions that affect the control points selection block.

→ **Duplicate**

Duplicates the control points selected by the selection block, and moves them to the dial.
The Interface

- **Move**
  Moves the control points selected by the selection block to the dial.

**Time:**
Transport functions of the panel dial.

- **Go To Head**
  Positions the dial in the head of the clip.

- **Go To Tail**
  Positions the dial in the tail frame of the clip.

- **Previous Frame**
  Moves the dial to the previous frame.

- **Next Frame**
  Moves the dial to the next frame.

- **Previous CP**
  Moves the dial to the previously found control point.

- **Next CP**
  Moves the dial to the next control point found.

**Scale:**
A subpanel that has functions for scaling curves.
For these functions to work optimally, a selection block must first be defined.
After specifying the selection block, press one of the **Scale** buttons and drag the cursor while holding down the left mouse button, and moving it in either of the two possible directions.
- **ScaleH / ScaleV**

  Moves the selected control points in the horizontal and vertical axes.

- **ScaleL(eft) / ScaleR(ight) / Scale U(p) / ScaleD(own)**

  Modify the size of the selection, taking as the center of the scale the margin in the opposite direction to that of selection block.

  For example, using *ScaleR*, if scaling is done towards the right, the distance between the control points towards the right increases. If scaling is done towards the left, the distance between the control points is reduced, and they will meet in the in the margin where scale axis is found. If the scale axis is exceeded, the positions of the control points are inverted.

- **Scale0**

  Carries out a vertical scaling of the selection, taking zero as the scale center, ignoring the lower margin of the selection block. If the scaling axis is exceeded, the relative positions of the control points are inverted.

**VTR**

**Mistika Ref: Node Graph  Editor->Dashboard->VTR**

This tab operates in two work modes: **Capture** and **Play Out**.

**VTR Capture** allows control of the VTR connected to the workstation intended for the capture or recapture of media clips selected in the **Browser** or to create new image and audio clips, and is also essential for the restoration of a backup.

**VTR Play Out** provides remote access to the VTR connected to the workstation in order to transfer the edit in the **Node Graph** to video.

The effects can be run in real time and can be played back in the process of transfer to video, taking full advantage of the performance of the system.
The **VTR Capture** tab gives control of the VTR connected to the workstation, to capture or recapture media clips selected in the Browser, or create new image and audio clips, which are also essential for restoring a backup.

The capture format of a clip is specified by the format of the project. This format must be specified via the dropdown button *Standard Preset* in **Mistika Setup (Mistika Setup->General->General->Standard Preset)*.

**Note:** Sometimes, when working in NTSC at 29.97 fps, it is necessary to compensate the differences between the value of the time code and current time of production via the use of "drop frames". In this case, before capturing the clips, the option *Drop Frame* in **Mistika Setup (Mistika Setup->VIDEO I/O->VIDEO I/O->Drop Frame)* must be activated.

**Mistika** supports the control and capture via firewire. To do so the option *Use Video board* in **Mistika Setup (Mistika Setup->VIDEO I/O->VIDEO I/O->Use Video board)* must be activated.

Via the VTR Capture buttons, it’s possible to specify or modify the attributes of the image and audio clips.

These data can create a new image or audio clip in different ways:

- Defining the characteristics of the clip and capturing it in free mode (*Free*), marking the start and end of the capture on-the-fly.
- Defining the characteristics of the clip and capturing it according to its input and output points.
- Defining the characteristics of the clip in order to capture it later in accumulative mode (*Batch*).
- Modifying the characteristics of a clip and overwriting it.

To load the information of a clip in the capture panel, the *.clp* file to be edited must be selected in the **Browser**.

When definition of the new values for the clip is completed, press the Login or Capture button of the capture panel, which then overwrites the information of the clip.

The buttons of the panel are grouped according to their functionality.

The buttons of this are grouped according to their functionality. Each group of buttons is described in detail below:
Tracks:

An area with the fields that specify the characteristics of the clip.

- **VTR Timecode**
  
  VTR timecode value of the current frame of the tape in the VTR.

- **Go To In**
  
  Moves the video tape to the timecode specified as In Point.

- **Go To Out**
  
  Moves the video tape to the timecode specified as Out Point.

- **Tape In**
  
  Numerical field that indicates the In Point timecode of the editing operation to be run on the video tape.

- **Tape Out**
  
  A numerical field that indicates the Out Point timecode of the editing operation to be run on the video tape.

- **Rewind**
  
  Rapidly rewinds the tape in the VTR.

- **Play Back**
  
  Plays back the tape in the VTR in the reverse direction.

- **Prev Frame**
  
  Goes back one frame in the tape in the VTR.
The Interface

- **Stop**
  Stops the playback of the tape contained in the VTR.

- **Pause**
  Pauses the playback of the tape in the VTR, stopping the tape at the current frame.

- **Next Frame**
  Advances one frame in the tape in the VTR.

- **Play**
  Starts the playback of the tape in the VTR.

- **Forward**
  Rapidly advances the tape in the VTR.

- **Mark In**
  Sets the input point in the VTR.

- **Mark Out**
  Sets the output point in the VTR.

- **Shuttle**
  Dynamic transport control of the tape contained in the VTR. It consists of a dial that, after selecting it with the left button, accelerates or decreases playback speed: clockwise advances and counter-clockwise goes back.
  
  **Note**: An alternative method to toggle between Shuttle and Jog mode (advance frame by frame) is to double-click on the dial.

- **Jog**
  Button that indicates and activates or deactivates Jog mode for the tape. Another method for alternating between Shuttle and Jog mode (advance frame by frame) is to double-click on the dial.
  
  **Note**: The functions Jog & Shuttle also are available from the optional Tangent Devices.

- **Eject**
  Ejects the tape in the VTR.
Control of clips:

Area where the fields that define the characteristics of the clip are found.

<table>
<thead>
<tr>
<th>Time Codes</th>
<th>In Point</th>
<th>Duration</th>
<th>Keep</th>
<th>Out Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clip Name</td>
<td>00:00:00</td>
<td>00:00:00</td>
<td></td>
<td>00:00:00</td>
</tr>
<tr>
<td>Tape Name</td>
<td>0000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Time Codes:

- **In Point**
  
  Specifies the current timecode of the VTR as the start value of the clip capture.

- **Duration**
  
  Sets the duration of the clip to be captured. This value is related to the **Out Point** in such a way that the modification of one affects the other.

- **Keep**
  
  Activates a mode that keeps the specified duration unaltered. In this mode, if the In Point value is changed, the Out Point value will also be altered, or vice-versa, thus maintaining a constant length.

- **Out Point**
  
  Specifies the current timecode of the VTR as the Out Point of the clip capture.

- **Tape Name**
  
  The name of the tape corresponding to the clip capture timecode.

  **Note**: It is very important to identify correctly the original tapes with this field, since a tape identification error can make the recapture of a clip difficult, or even prevent the correct export of an EDL.

- **Clip Name**
  
  Field that specifies the clip name. **Mistika** does not allow two clips of the same project to have the same name, although it allows the overwriting of the clip.
This field must be completed, although Mistika automatically increases the number of the last name, automating this task.

Note: For the automatic numerical increment to work correctly, any name should be defined, and then an underscore (_) added with any figure (for example: MyClip_005). When one of the capture functions (Capture, Start Free, or Capture Selection) is run, this number will be increased automatically (in the example, the new name would be MyClip_006). The initial zeros of the number will be respected, although none are obligatory. If the name contains numbers before the underscore, these will not be increased (For example: MyClip6_3 will be increased to MyClip6_4).

- **Video, A2, A4, A8**

Buttons that specify the number of media tracks that the clip should have when captured.

**Note:** The audio indicators specify the number of tracks that the audio media will have, and not the channels required in a stereo pair. A2 means stereo audio, A4 is quadrophonic audio and A8 is multitrack audio type ADAT; each type of audio creates different types of audio file.

- **Fields Mode**

Indicates in the attributes of the clip that this has Interlaced or No Interlaced fields.

**Note:** The interlaced state of the clips should be specified by the user. This allows for the possible incongruence that a clip, while having fields, might not have the interlaced attribute, and vice-versa.

- **Stereo3D**

Indicates in the attributes of the clip whether the left channel (L), right channel (R) or both channels of the stereoscopic stereo is to be captured.

- **Target Folder**

Field that indicates the last folder selected in the Browser, which will receive the clips created by the capture commands.

By default, the target folder of the active project is DATA, although the user can (and should) create the subfolders needed for better organization of the material, and then select one of these folders in the Browser to specify it as the new target.

**Note:** for the destination folders created by the user to be recognized by VTR Capture, they must always be created in the DATA subdirectory and selected directly in the Browser before beginning capture. The RENDER folder cannot be selected as a destination folder.

- **Available time**

Estimated capture time available in the storage, expressed in hours, minutes and seconds (HMS).
Status

Name of the current command running in the VTR.

Comments:

Comments

Field where comments about a clip can be added. This information can be viewed in the Comments column in the Browser.

Format:

Type of File

Dropdown menu that allows selection of the file type of the image format to which the input signal will be converted. This information can be viewed in the Format column from the Browser.

Note: This function of Mistika allows signal input and the format of the captured clip to be dissociated, with the aim of avoiding later conversions to others formats (and the resulting consumption of resources).

Video Target

This dropdown allows the selection the destination directory of the video media. These directories are named as defined in Mistika Setup (Mistika Setup->File Paths->Predefined paths for rendered sequences).

Audio Target

This dropdown allows the selection the destination directory of the audio media. These directories are named as defined in Mistika Setup (Mistika Setup->File Paths->Predefined paths for rendered sequences).

Perform:

Capture

Runs the clip capture specified in the clip creation area of the capture panel.

Abort Capture

Cancels the capture command in process.

Note: When canceled, the clip in the capture process cannot be partially stored, and its media is automatically deleted in its entirety.

Start Free

Free capture button (Free mode). Remember that this mode creates a new clip
without timecode values.

This button instantly starts the capture of the media shown in the clip creation area when pressed. If the clip name coincides with another project clip, the capture will not begin, since the user should respond first if the existing clip should be overwritten. For this reason we recommend following the automatic naming criteria described above (add suffix _number).

To finish on-the-fly capture, press *Start Free* again.

**Note**: Depending on the amount of free time in storage, there may be a delay between giving the command and its execution. This is due to the fact that before starting capture, *Mistika* needs to reserve all the free time on disk, in order subsequently to specify on-the-fly the end of the capture and defines a real duration for the new clip. The more free time is available, the longer this delay will be.

<table>
<thead>
<tr>
<th>Stop Free</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stops the on-the-fly capture.</td>
</tr>
</tbody>
</table>

**Batch Capture:**

<table>
<thead>
<tr>
<th>Create Clip</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creates a new clip without media in the target folder, saving the capture data in a new <em>.clp</em> file, which can be captured later.</td>
</tr>
</tbody>
</table>

**Note**: This command also activates the automatic numerical increase of the clip name, and can specify new In and Out Points of capture without needing to create a new name for each new clip.

<table>
<thead>
<tr>
<th>Capture Selected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Runs the capture or recapture of files and folders selected in the <em>Browser</em>.</td>
</tr>
</tbody>
</table>

The types of file that have capture data are the *.clp* (original clips) and the *.res* (Backup restore files). Other types of file are ignored in the capture.

Selection of clips in the *Browser* can be multiple, or single or several subfolders can even be selected for the capture or recapture all the clips contained in them. However, their capture order does not correspond to the selection or sort orders of the Browser, but to the ascending order of the tape and input timecode.

If clips of different types of tape exist in the selection, the VTR control will request the necessary tapes in alphanumerical order.

This method permits, for example, setting up of several EDLs in the same capture session. Simply select the folders that contain the clips generated by the EDL import.

The same method of folder selection can be used to restore the media of a backup.

This capture mode is commonly called *Batch Digitize*.

<table>
<thead>
<tr>
<th>Abort Captures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancels the capture command in process.</td>
</tr>
</tbody>
</table>
Skip Capture

Cancels the current clip capture and jumps to the next.

This command is very useful in cases where the capture being processed contains a timecode range that does not exist on the tape or which does not have sufficient margin to make the starting pre-roll, and can delay this problematic capture until later, continuing with the following event.

**Note:** This command button can only be used during the capture process in batch mode (**Batch Digitize**).

After Capture:

Launch Script

When the capture session is finished, this permits the running of a programming script for the automation of tasks.

The intention is to provide users with a means of detecting the end of a capture session, without their needing to be present, by informing that the capture has finished or by running other pending tasks when it ends.

The configuration is simple. First add the name/s of the scripts to be run at the end of a capture session in the file: `$HOME/Mistika-ENV/etc/setup/CaptureEndScript.cfg`

The script must be in the directory: `$HOME/Mistika-ENV/bin/scripts`

The script must have run permission.

In order that a specific script is run at the end of the capture session, simply select it from the dropdown which shows the names of the configured scripts.

One example of this is to have a script called "SendMail", which sends a mail to an e-mail address informing of the end of the capture session and whether it was carried out correctly or if it produced errors.

The creation of the script is beyond the scope of this manual, and the creation of scripts that may be useful for workflows or for operators lies in the territory of system administrators.

Last Captured Clips:

Captured

Indicates the last captured clip. This is useful for knowing the progress of the capture.

Capture by firewire

The type of capture is controlled via the option **Use Video Board** in **Mistika Setup** (**Mistika Setup->Video I/O->Use Video Board**).

If this parameter is activated, control of the video board will be activated (DVS models) from **SGO Mistika**, and the audio will be sent exclusively via the video board that has its own audio outputs, since this is the only way of synchronizing output with the image.

If **Use Video Board** is deactivated, **SGO Mistika**'s capture panel will try to use a **Firewire** port
to capture from a camera or DV-type VTR. In this case, the audio is reproduced exclusively via the audio output of the motherboard, and not the SDI board.

Once use of the SDI is deactivated, the VTR can be connected via the firewire port, and the capture module should be operated remotely. In the case that Mistika cannot connect with the device, a warning message will be displayed.

After Mistika connects to the VTR device, follow the procedure described in previous sections of this chapter. For example, a capture list can be defined and captured automatically.

The clips captured will be of movie-type, with the codec DV25 and .avi.

**Troubleshooting video capture and playout problems**

- If when carrying out a transfer we observe that it is not exactly synchronized, check the value of the Edit Lag variable (found in the VTR tab and in the I/O options of Mistika Setup). This value must be set at that recommended by the manufacturer of the VTR, although we also can find it manually by increasing and decreasing the number of frames by which it is out of phase.

- The timecode observed in the VTR and that which we see in the VTR Capture must always be identical. If any difference is seen between them, check that the VTR is configured to be paused in Still mode and not in Stop mode.

- If the VTR is not connected, the capture interface will appear deactivated (except for the on-the-fly capture options without timecodes or Free mode). If this occurs, check that,
  - The VTR is in Remote mode (refer to the documentation of the VTR)
  - The remote cable is correctly connected between the VTR and the video board.
  - In cases of capture, check that the VTR has a tape inserted and is ready to record, and not in "write protect" mode.

- If when trying to capture, the VTR moves to different positions but the capture does not start, works randomly, or only responds to some remote control commands of remote control, check:
  - If capturing is normally correct but there are problems in certain cases, the most probable cause is that the In Point of the clip to be captured does not have sufficient time on the tape in order to make the pre-roll (5 seconds as default value, as well as the Head value that should be added when setting up and EDL). Also check that the timecodes of the tape before the In Point are continuous and that they are in the format specified in Mistika Setup->Video I/O->Format).
  - Check that Mistika Setup->Video I/O->Format contains exactly the same format as that which appears in the display of VTR. A common error is to configure Mistika to the same format as the one in which the tape is recorded, without checking the VTR display, and it is usual that if the VTR does not support the same format, it will autocconfigure to the closest (for example, if we insert a 24p or 25p tape in a VTR that only supports 25i); thus it is this last one to which Mistika should be configured (once the capture is complete, change it to the correct value to work with the clips).
  - A common case is that of tapes that have been recorded with timecode jumps at each camera stop/start (many cameras avoid this problem if configured correctly, although many camera operators seem to ignore it). In this case, the timecode jumps will at least be ascending up, so it is possible to capture...
the clips if at least sufficient pre-roll has been left before each clip.

° If descending timecode jumps are observed (a typical case of tapes recycled by inexperienced operators) then the VTR will move backwards and forwards trying to find the In Point. The last resort in this case is to make the VTR remote by hand to go into the clip to be captured and then order the capture, so that the VTR will not collide with the invalid timecodes. In this way it will be able to find the In Point, if sufficient pre-roll is available.

° If capture starts well but stops halfway (and the storage is definitely not full), check the error messages of the VTR Panel and of the system console. This is usually due to the fact that the storage system has problems or that it cannot write at the necessary speed for the format. The available speed can be checked with Mistika Setup->Utils->Test.js disk speed.

Another possible cause of the same problem is that the storage is very fragmented (due to continuously working at the limit of its capacity, which greatly increases the fragmentation of the disks). In general, storage can be defragmented by running Mistika Setup->Utils->Defragment realtime directory.

° Stability problems in the signals, including a system crash in extreme cases:

° If working with an external sync signal, the cable of the sync signal should be connected to a reliable source of generated sync. If on the other hand we are working with internal sync, it is a good idea to disconnect the sync cable from the workstation (this type of contradiction can produce problems).

° To discard external sync signal as the cause of a problem, is recommended to do a test capture changing to internal sync.

### VTR Play Out

Mistika Ref: Node Graph Editor->Dashboard->VTR->VTR Play Out

The **VTR Play Out** tool allows control of the VTR connected to the workstation, to transfer the **Node Graph** to video tape. The effects that can be run in real-time can be reproduced in the video transfer process, taking full advantage of the performance of the system.

If real-time is lost during reproduction, a Lost Sync message will appear on the bar of the **Node Graph monitor**, stopping the editing run in the VTR.
Tracks:

Group of buttons that control the tape transport in the VTR.

- VTR Timecode

  Timecode value of the current frame of the tape in the VTR.

- Go To In

  Moves the video tape to the timecode specified as In Point.

- Go To Out

  Moves the video tape to the timecode specified as Out Point.

- Tape In

  Numerical field that shows the In Point timecode of the editing operation to be run on the video tape.

- Tape Out

  Numerical field that shows the Out Point timecode of the editing operation to be run on the video tape.

- Rewind

  Rewinds the tape in the VTR rapidly.

- Play Back

  Plays the tape in the VTR in the reverse direction.

- Prev Frame

  Goes back one frame in the tape.

- Stop

  Stops playing the tape in the VTR.

- Pause

  Pauses playing of the tape in the VTR at the current frame.

- Next Frame

  Advances one frame in the tape.
The Interface

> **Play**

Starts playing the tape in the VTR.

> **Forward**

Advances the tape in the VTR rapidly.

> **Mark In**

Sets the input point in the VTR.

> **Mark Out**

Sets the output point in the VTR.

> **Shuttle**

Dynamic control of the tape transport in the VTR. Consists of a dial which when turned (after selecting it with the left button), accelerates the playing speed: clockwise to advance and anticlockwise to go back.

**Note:** Another way to toggle between Shuttle and Jog mode (advance frame by frame) is by double-clicking on the dial.

> **Jog**

Button that indicates and activates or deactivates Jog mode for the tape. Another method for alternating between Shuttle and Jog mode (advance frame by frame) is double-clicking on the dial.

**Note:** The functions Jog & Shuttle also are available from the optional Tangent Devices.

> **Eject**

Ejects the tape in the VTR.

**Time Line:**

Group of buttons that show the Range of the *Node Graph* to be inserted in the videotape.

> **Start / End**

Values of the *Play Marks*, whose numerical fields can be edited. These values can also be redefined by moving the *Play Marks* in the *Node Graph*.

The duration of the range shown by the *Play Marks* will always be equal to that shown for the videotape. Therefore, the modification of one or other range will reciprocally modify their in-points, maintaining a common duration.
Set VTR TC in Node Graph

Copies the current timecode value of the VTR to the timecode mark of the Node Graph. This function is very useful for equalizing the current timecode of the VTR with the timecode mark of the Node Graph and comfortably transferring it with the option Sync Node Graph -Tape.

Sync Node Graph -Tape

Anchors the Node Graph timecode to that of the VTR.

This mode makes the Node Graph timecode "parallel" to the video tape, thus avoiding the need to specify In and Out Points in the VTR, since the In and Out Points are specified in the Node Graph, by the Play Marks.

Tape Positions:

Group of buttons that show the videotape range where the contents of the Node Graph will be inserted.

In Point

Makes the current timecode of the VTR the In Point value.

Out Point

Makes the current timecode of the VTR the Out Point value.

Tape transfer mode:

Group of buttons that show the videotape tracks to be replaced by the Node Graph contents. The Assemble mode can also be selected, provided that the other insertion tracks are turned off. Similarly, turn off the Assemble mode before switching video or audio mode.

Video

Specifies that the track of the videotape is replaced by the image clips of the edit Range selected in the Node Graph. This insertion mode requires the videotape to have a sync base with a continuous timecode.

A 1, 2, 3, 4, 5, 6, 7, 8

Specifies the audio tracks of the tape which are to be replaced by the audio tracks of the edit range selected in the Node Graph. This insertion mode requires the videotape to have a sync base with a continuous timecode.

Note: Video formats have different numbers of audio tracks. Any track can be specified for insertion, provided that it has access to it. The workstation can also have different types of audio output, each one with different number of audio tracks.
This function is rarely used, for which reason most users will keep it deactivated. It defines forced recording of the original timecodes with which the clips to be transferred were captured. In order to use this mode, activate the *Assemble* mode.

The TC tool works in combination with the editing tool *Linearize* (Node Graph Editor- >Dashboard->Edit-> Macros-> Linearize), which puts the clips in chronological order according to the original timecode of each clip. In the transfer to video process, a black image is inserted into the tape with cautious preroll and postroll times and between the clips. This allows later recapture in SGO Mistika or in any other system. The preroll and postroll time is defined in the menu of Setup (Node Graph Editor->Dashboard->VTR->VTR Setup) in the *Pre Handle* and *Post Handle* boxes where a numerical value that sets the number of seconds of space there will be before and after each clip is inserted.

This recording method is known as "Crash Mode Record", and requires the connection of an extra BNC-BNC cable to the TC-In connector of the VTR, to be able to force the recording of the external timecode. With respect to the other end of this cable, for DVS Centaurus videocards, use the Out 7/8 Audio connector, the prior reconfiguration of a Jumper of the card labeled for this purpose, which allows us to send the timecode via that cable rather than using the last two audio channels.

For more detail on this transfer mode, see the annex Transfer with Original Timecode (Crash Record).

**Assemble**

Specifies *Assemble* as the editing mode. Remember that to activate *Assemble* mode, all the video and audio insertion buttons should be turned off.

**Note:** *Assemble* mode, apart from recording video and audio, records the sync track. When recording synchronism, the end of recording, or Out Point, will have a discontinuous synchronism, and for this reason we only recommend working in this mode in the case of wanting to continue recording to a tape without sync to transfer the duration of the *Node Graph*.

There are some other occasions in which this recording mode can be useful (although in general we advise avoiding it as much as possible):

- in urgent situations, when it is not possible to wait until the whole tape is recorded with the timecode base before starting the transfer
- to save recording head costs. In certain VTRs, the recording head costs are extremely high, and users sometimes consider that working in assemble mode can be justified by the saving in the cost of heads required by prior recording of timecodes in the whole tape
- some old VTR models only support transfer in *Assemble* mode

A disadvantage of this mode is that recording in *Assemble* mode does not generate timecodes beyond the Out Point, so the tape will not have continuous timecodes in later recordings. For this reason it should be avoided except for reasons that can be fully justified.
Perform:

Group of buttons that run the editing functions on the VTR.

- **Play Rec**
  
  Direct recording command, without preroll. This command can be used to start a virgin tape.

- **Preview**
  
  Makes an editing simulation on the tape, using the specified editing ranges.

- **Edit**
  
  Runs the editing of the tape according to the mode *Insert* or *Assemble* defined.

- **Cancel**
  
  Cancels the editing function being processed.

**Note**: The tape in the VTR can be protected against recording (Rec *inhibit*). In this case, the editing functions of the VTR will all function as *Preview*, without in fact recording to the tape. The recording inhibition should either be removed with the tape protection button, or by deactivating the inhibition function in the current VTR.

To work in *Assemble* mode, it is essential that the tape has the number of seconds of sync base recorded to make the preroll, necessary for reading and continuing a synchronism base. It is also very important to configure the physical VTR so that the timecode recorded by *Assemble* continues the previous timecode (*Regen timecode option*).

**VTR Setup**

Mistika Ref: Node Graph Editor->Dashboard->VTR->VTR Setup

- **Preroll**
  
  Sets a time margin previous to the In Point for accurate capture or transfer to video. Most tape based VTRs recommend a value of around seven seconds to stabilize the mechanics of tape drag before having "Frame Accurate” precision. Consult the VTR’s documentation for more information.

- **Edit Lag**
  
  Sets the number of frames that the video internal buffer stores in the transfer process. This value varies with each VTR, and the manufacturer must provide its exact value for accurate transfer. If video transfer is constantly out of phase, adjust this value by the same number of frames. The default value is usually 7, which is appropriate for Digital Betacam and many other models. The intermediation of video matrixes, external converters, etc. may also affect this value.
Pre Handle

Sets the behavior of the TC transfer mode (VTR->Play Out->Tracks->TC).

Sets a prudent number of seconds previous to the In Point in which Mistika inserts a black image on the tape between each two clips, to provide sufficient preroll time between timecode jumps.

Post Handle

Sets the behavior of the TC transfer mode (VTR->Play Out->Tracks->TC).

Defines a prudent number of seconds after the Out Point in which Mistika inserts a black image on the tape between each two clips, to provide sufficient preroll time between timecode jumps.

Max Free

Sets the maximum duration of each segment of a captured clip in Free mode. When this duration is exceeded, Mistika will automatically start to write a new file.

Note: Mistika keeps in reserve the maximum space necessary before beginning each capture, although the unused part is later free up. If very large values are set, other applications working from the same storage may be led to believe that there is little space on disk and so Mistika stops the capture and frees the rest of the reserved space.

Free with TC

When this option is activate, an internal timecode in the clip captured in Free mode is generated (only for certain VTRs that support the appropriate VITC).

Audio

Ref. Mistika: Node Graph Editor->Dashboard->Audio

The Audio tab of Mistika contains tools for redirecting audio clips in the Node Graph to the audio outputs of the workstation and controlling their levels. It works in the manner of traditional audio routers and mixers, with a track mixer, support for groups, panning settings, audio VU meters etc.

Mistika supports audio formats up to 24bit.

Each Mistika clip may contain up to 16 audio tracks as well as the image channels. It is usual for clips with audio to have 2 audio tracks, it is possible to have clips just with audio derived from captures or from audio files.
By default, Mistika runs playback of all the audio tracks in the clips contained within the area marked by the frame of the monitor. So when there are various clips with sound stacked we use the tool Router to redirect the audio tracks of each clip to the inputs of the Mixer, which is the que tool that definitively mixes the signals and sends them to the physical audio outputs de audio available.

To work with reference to the audio wave form, activate the option Show Strip Audio (Node Graph Editor->Dashboard->Edit->Setup->Node Graph View->Show Strip Audio). Also, increase the zoom of the Node Graph in order to view the wave form over the audio clips. This method only works over pure audio clips, so if we are dealing with a mixed clip (image and audio) we need to apply the edit command Edit->A/V Break to obtain the audio clip separately.

We can also activate the option Audio Wave of the Monitor Display (Node Graph Editor->Monitor Display->Record Monitor->Menu->Audio Wave) to view in detail the wave form of up to 16 audio tracks corresponding to the segment of audio of the current frame.

The Mixer allows the defining of levels for each of the 8 inputs in order to mix them before sending them to the audio output, as well as the the master level of the output.

The buttons on the left of the Mixer control the input channels assigned via the Router. Each of these channels has:

- **Level**
  
  A vertical slider for setting the channel volume.

- **Mute**
  
  If the M button is depressed, the channel is muted.

- **Solo**
  
  If the S button is depressed, this will be the only channel sent to the output, muting all the other channels.

- **Pan**
  
  This dial allows the balance of the audio channel to be set.

On the right of the window there is a vertical slider for controlling global gain for each physical output channel.
The mixer controls cannot be animated. If we wish to animate the gain of an audio track, we must do it directly over the audio clip. To do so, select the clip and open the Parameters tab.

The sliders of the audio channels defined in Router as pertaining to the same group (A, B, C, or D) will move together.

- **Mute All**
  Silences the global output of the mix.

- **Reset**
  Resets the parameters of the mixer to default values.

**Router**

The controls of the tool Router allow the redirecting of up to 16 audio tracks that each clip may possess to any of the 8 available inputs of the mixer.

To work with the Router first select the clip with audio in the Node Graph.

Generally, if there is only clip with audio in a segment of the Node Graph, we do not need to use the Router. But when there are various audio clips in different tracks, they would all be heard simultaneously when running playback or rendering; it is therefore necessary to use the Router to correctly assign the tracks to the Mixer tool. We then use the Mixer to control the mixing levels and send the definitive audio to the output.

There are also available four color-coded groups (A, B, C, and D), for moving the gain parameters of audio channels simultaneously. All the channels that we define in the Router as pertaining to a group will be synchronized in the Mixer (when one is moved, the others in the group will move to the same degree).

As well as being able to modify the gain parameters before redirecting them, Router can also apply the functions Mute and Pan.
Setup

In this tab, the following audio configuration options are seen.

- Sample Rate

These buttons allow a new value of frequency of the audio clip to be assigned, also permitting the creation of a personalized value. DVS video boards only support 48Khz formats, so another sample rate can only be selected is `mConfig->VideoIO->UseVideoBoard` is inactive.

- File

Allows the application of changes (`Apply`), saving (`Save`) of changes made to Audio configuration.

Previous values can be loaded (`Load`), as can default values (`Get Default`), and new defaults saved (`Set Default`).

- Audio Channel Number

Its main function is to define the number of input (`Input Audio Channels`) and output (`Output Audio Channels`) channels to be used. The `Output Audio Channels` button also defines the number of channels to be created when rendering audio. For example, if it is set at 8 while only 2 audio tracks are present, the resulting render will be a clip whose first 2 tracks contain the sound of the clip and the other 6 will be created, but with no value.

DVS CentaurusII and Atomix cards have 8 AES/EBU channels or audio embedded in the SDI signal. When no video board is available, only two channels are available (line connectors from the motherboard of the computer).

**Note**: If a DVS audio card is available it will always be sent exclusively to this, since this is of much higher quality and it is necessary to synchronize the sound and image. However, for special situations, it may be possible to force the use of the audio of the motherboard despite a DVS video board being available, including the following line in the file `.cshrc` (doing logout/login afterwards).

```
setenv USE_PC_AUDIO 1
```
Defeat Audio Processing

When activated, this function overrides any Mistika process regarding the audio of the project. Formats such as Dolby E can only be captured and reproduced in the Mistika environment if this option is activated. (Mistika cannot codify or decodify them, they can be captured and transferred transparently.)

Tools

This tab contains tools for creating a new audio file by modifying its frequency and speed parameters and for creating a audio file for each channel contained.

![Tools Tab](image)

**Note:** This only works with audio clips derived from individual audio files, not from mixed clips with embedded audio.

**Change Audio Ratio:**

The Change Audio Ratio function allows the creation of a new audio file with a different frequency from the original file.

- **Dest Name**

  Field for naming the new file to be created. The extension .aiff (or .AIFF) can be specified. If not specified, Mistika adds the extension .wav.

- **Ratio Dest**

  **[48000 (32000/44100/48000)]**

  Tab that sets the frequency of the new clip to be created.

- **Change Ratio**

  Processes the selected clip and creates the new audio file using the origin folder as the target folder.
Change Audio Speed:

The Change Audio Speed function allows the creation of a new audio file with a different speed from the original file.

- **Dest Name**
  
  Field for naming the new file to be created. The extension `.aiff` (or `.AIFF`) can be specified. If not specified, Mistika adds the extension `.wav`.

- **Get Video Duration**
  
  Takes the duration of the video clip. The right-hand field shows the duration in frames; this can be edited or redefined directly.

- **Set Audio Duration**
  
  Creates the new audio file with the specified length. The target folder will be the origin folder of the original audio.

Split Audio Channels:

The Split Audio Channels function allows the creation of a new audio file for each channel contained in the original file.

- **Dest Base Name**
  
  Field for giving a base name the new files to be created. If nothing is specified, the original file name will be used.

- **Split Channels**
  
  Creates one audio file per channel, naming them according to the base name and the standard 5.1, although it is possible to create audio files with clips with fewer than 6 channels.

**Note**: For example, an audio file with 6 channels called test.wav will generate 6 audio files in the same folder as the original with the following names:

- Channel 1 -> Ltest.wav
- Channel 2 -> Rtest.wav
- Channel 3 -> Ctest.wav
- Channel 4 -> LFEtest.wav
- Channel 5 -> LStest.wav
- Channel 6 -> RStest.wav
Change Audio Bitrate:

The function Change Audio Bitrate allows the creation of a new audio file with a different bitrate from the original file.

**Dest Base Name**

Field for naming the new new file to be created. The extension can be specified as .aiff (or .AIFF). If nothing is specified, Mistika creates a .wav.

**Status:**

Indicates the Mistika's state in terms of audio operation, indicating READY no audio file is being and PROCESSING while a new file with specified parameters is being created.

**Cancel**

Cancels the task being performed on the audio file at that moment.

Optimizing volume for best audio quality

The sequence of audio production usually means that material passes through several audio interfaces, each one with its corresponding volume or gain controls. If an abnormally high or low volume is encountered, the interface causing the problem must be found, and the sound must not be adjusted using the audio controls that are closest to hand.

For example, an audio track might come out of a VTR, pass through a sound desk, arrive at a Mistika workstation, and then be controlled by Mistika's audio Mixer. Once processed, it may then go on a similar journey via the same or different interfaces. This does not even take into account the treatment the sound may have received before arriving at this stage of the process.

So, if digital (or at least balanced) signal is not available for the whole of the audio's route, the minimum requisite is that all gain and volume controls of the interfaces are set at optimum levels, but neither very high nor very low. Setting a high level in the current interface does not compensate for a low level in the previous interface, so both should be kept at optimum levels. Both cases might produce a similar volume, but the first case will result in loss of audio resolution, and noise will have increased.

The audio panel contains a series of VU meters, and efforts should be made to see that the highest levels are only reached in peaks of sound, and that they enter the red zone as little as possible to avoid audio saturation. The same process should be applied to the other VU meters in the other audio systems involved.

As well as the audio tools included in the system, remember that other systems with specialized audio processing tools can be connected to create a collaborative a network, since Mistika uses standard references to audio files found in any open file system and can be shared with no difficulty.
The Output tab gives control of the output modes (delivery) of the Mistika project. This tab is divided into five groups: Render, Export EDL, Export EDL2, DCP and Totem.

The commands of the group Render allow the processing of a selected item selected (a clip, group or effect) or a complete area of the Node Graph located between the Edit Marks. It is also used to obtain clips in Mistika native format (.js) derived from clips with source material in others formats (tga, tiff, cineon, etc.) and vice versa.

The Export EDL tab contains commands for the export of EDL files.

The Export EDL 2 tab performs a function similar to Export EDL; however, the differ in their capabilities.

The group DCP contains the fields necessary for preparing export in Digital Cinema Package format.

Totem provides control over the "cluster render" equipment (Totem) for distributed render.

From this tab, the Render scripts (files with extension .rnd) and process instructions are created that can be run immediately or left for later use, and that when processed will create clips with new media. These new clips will always be placed in the RENDER folder of the current project.

Many of Mistika’s effects can be evaluated by the active monitor in real-time, without the need to store the result of its evaluation on disk.

However, many very complex processes, or even the accumulation of many simple ones, cannot be evaluated in real-time by the monitor.

In this case, it is better to create a new clip that has media with the result of this evaluation and read the result of a processed flow directly from disk. The procedure that generates this new media file is called a Render process.

A render process is also required in order to export to certain file formats that have been requested.

Mistika’s render, besides being able to create new media, automatically stores the orders used for its creation. These orders are called Render Scripts, and have an identical
structure to a group of clips. Mistika’s scripts are stored with the .rnd extension, in the DATA/RENDER folder of the current project, together with the clips generated by the render of these scripts.

Both render scripts (.rnd) and generated clips (.clp) are stored in independent folders within the RENDER directory of the current project. In the case that these files are generated via the Split To Segments mode, all the clips generated from the multiple selections are stored in the same folder.

Newly-generated clips inherit the timecode selected in Split To Segments options. Furthermore, new clips will have the name of the render file and will be stored in the same RENDER folder, with the .clp extension (note that what is stored is the .clp with its metadata and not media files in themselves, since these are stored in destinations specified in Mistika Setup (Mistika Setup->File Paths).

To define the segment of the Node Graph to be processed, there are two options:

- Selecting the clip to be processed. If the selected clip is the last clip of an effects flow, the result of the flow in the whole duration of the selected clip will be processed. If the selected clip is a group, all the contents of the flow within it will be evaluated.

  **Note:** It is not possible to process a multiple selection directly, although in this case the render process offers the option of putting editing marks to group the entire selection automatically.

- Defining a range of the Node Graph with the editing marks. This method specifies the render of several flows at the same time without the need to group them first.

  **Note:** If there are editing marks in the Node Graph and at the same time clips that are selected, Mistika will not know which of the two methods is to be used, in which case a dialog box will ask for this to be selected.

**Channels:**

- **Image**

  Activates the evaluation and storage of the image track for the created clip (channels RGB or YUV). If off, only audio render will be possible.

- **Audio**

  Activates the storage in a new audio media the result of the mix of the audio tracks included in the render.

  In this case, the clip generated will have in its data details the resulting audio tracks, just as they are evaluated when using active monitor.

  **Note:** the number of audio tracks will correspond to the audio output configuration defined in Output Audio Channels (Node Graph Editor->Dashboard->Audio->Setup->Audio Channel Number->Output Audio Channels).

  The new audio media created will be stored:

  - in the directory defined in Mistika Setup with extension .aiff, if the Audio In Movie button is off;
  - within the image media file itself as an associated audio stream, if the button Audio In Movie is on (except for .mxf, files, as explained in the following section).
Audio In Movie

This causes the audio to be stored within the clip instead of separately. This is only available for Movie family formats.

To maintain compatibility of files, the configuration value must be present in Output Audio Channels (Node Graph Editor->Dashboard->Audio->Setup->Audio Channel Number->Output Audio Channels) since many applications can only read files Movie type files with two audio channels.

In the specific case of Flash .flv format, it is necessary to define the sample rate at 44Khz in the Audio->Setup panel. To do so, deactivate MistikaSetup->VideoIO->UseVideoBoard

Not all Movie formats support audio.

Mistika supports audio embedded for Quicktime.

Media in MXF format generated by Mistika are stored in order to maintain compatibility with Editing systems. When exporting in this format, an MXF image file is created with timecode on one side, and both MXF audio files and tracks that have been configured by another and stored in the same render destination. As MXF audio files have the same identifier at their head as the MXF image files, when loaded in an Editing system, they should be related.

Audio With Movie

Causes the audio to be stored in the same directory as the image clip, but in a separate .aiff file. This is only available for formats in the Movie family format.

.rnd With Media

Stores a copy of the render script generated in the same directory as the original media. This makes possible conforming processes in other Mistika systems at a later time, since this way the work and processes applied are stored together with the original media, and do not depend on the project. Thus, when arriving at a new system all the media can be directly linked and conformed against the .rnd scripts (note: effects which require additional files (Morph, Paint, Title) also require the project to be available, since they store additional data in the PRIVATE folder).

For more details about the use of this button, consult Example of a global workflow.

Export to Nuke: .nk With Media

Allows the exporting of basic geometric corrections (in the folder Balance Geometry, modified with the tool Match Geometry) of the Stereo3D effect carried out on stereo images as the equivalent set of nodes for Nuke, that can be opened without difficulty and modified using that software.

Setup:

The Setup panel in the tab Output gives the user the option of saving common export presets. Clicking in the first field shows a list of different presets created (as DEFAULT, because as no preset will be defined).

Each time one of these presets is loaded, the other fields in the Output tab will automatically load the parameters defined in this preset.
Save

Saves the options selected in any given moment in the preset defined in the list of presets.

Save As

Saves the options selected in any given moment in the preset defined in the list of presets with the option of renaming.

Delete

Eliminates the selected preset.

Full Res Image:

Specifies the high resolution image format for the media of the new clip generated. These image formats are divided into three families, with the additional option of not selecting any of them:

- Mistika

  *Mistika’s*.js format is an especially designed image format for working without compression and in real time. Its use is similar to that of Movie-type files, but as well as greater speed, it allows high-quality formats (RGB 10bit) and stereo pairs (2xYUV422) which is not possible with traditional formats like Movie.

The file formats are selected via the dropdown button Format:

- YUV (4:2:2) in 8 bits (*YUV422 8b*), as well as it double stream variant (if Stereo3D is active)
- YUV (4:2:2) in 10 bits (*YUV422 10b*), as well as it double stream variant (if Stereo3D is active)
- RGB (4:4:4) in 8 bits (*RGB 8b*)
- RGB (4:4:4) in 10 bits (*RGB 10b*)
- RGB (4:4:4:4) in 8 bits with alpha channel (*RGBA 8b*)

**Note:** Some other formats are also quick, but if we do not need to maintain compatibility with other applications it is recommendable to use *Mistika’s*.js format, since:

- In *Mistika’s*.js format, data is aligned with memory pages and can be transferred quickly via the system buses.
- This format is also preassigned in consecutive disk blocks, which also improves performance and avoids fragmentation of the disks.
- In the case of needing similar speed but with a format that is more compatible with other systems, use DPX, since this format can offer similar performance to *Mistika* if and when it is used with a “SNFS” type filesystem and that care is
taken not to write other sequences while renders are being done (simultaneous copying processes should not be carried out, but this is not a problem if the render is to .js format).

For more information on the variations of this format (YUV, RGB, etc) see the section on color spaces in the chapter Basic Concepts.

The dropdown Target allows the selection of the directory where the files are saved, with the defined destinations shown in Mistika Setup->File Paths.

The option Default.Mistika_Media establishes that material created will be stored in MATERIAL/Mistika_MEDIA/[project]/Mistika_JS/. This default value can be modified in Mistika Setup (Mistika Setup->File Paths-).

### Movie

Movie type files are sequences of images stored in a single .file which could include audio and timecodes (in the case of .mov and .mxf files).

The formats of Movie files supported for writing are selected via the dropdown Format:

- AVI RGB Uncompressed 10 Bit (Avi RGB)
- AVI RGB Uncompressed 10 Bit with alpha channel (Avi RGBA)
- AVI DV25 (Avi DV25)
- AVI DVCPro50 (Avi DV50)
- AVI UYVY Uncompressed (Avi UYVY)
- AVI MPEG-1 (AVI Mpeg1)
- AVI MPEG-2 (AVI Mpeg2)
- AVI MPEG-4 (AVI Mpeg4)
- AVI Custom Settings (Avi Custom)
- MPEG Transport Stream Custom Settings (MPEG .ts Custom)
- Quicktime RGB Uncompressed 10 Bit (Mov RGB)
- Quicktime UYVY Uncompressed (Mov UYVY)
- Quicktime DV25 (Mov DV25)
- Quicktime MPEG-4 (Mov Mpeg4)
- Quicktime Prores 444 with Alpha
- Quicktime Prores Proxy
- Quicktime Prores LT
- Quicktime ProRes
- Quicktime ProRes HQ
- Quicktime ProRes 444
- Flash Video Custom Settings (FLV Custom)
- Quicktime Custom Settings (Mov Custom)
- MXF Custom Settings (MXF Custom)
MXF VC-3 Low Resolution
MXF VC-3 Hi Resolution
XAVC (especially recommended for UHD)

This type of format is constantly being developed so it is possible that the list may have changed since the publication of this document; please see "Release Notes" for the latest updates.

**Note:** Mistika supports writing timecode and audio both in the format MXF and in Quicktime.

To specify personalized configurations (Custom Settings) edit the file `Movie.dev` in `Mistika-ENV/etc/devices/Movie.dev`.

Remember that most Movie type formats imply compression and loss of quality (except those marked *Uncompressed*), so they should not be used for later post-production processes.

The dropdown **Target** allows the selection of the directory where the files are saved.

The option *Default.Mistika_Media* establishes that material created will be stored in `MATERIAL/Mistika_MEDIA/[project]/MOVIES/`. This default value can be modified in *Mistika Setup* (Mistika Setup->File Paths).

### Images

This type of file provides numerically ordered image sequences.

The formats of image files supported for writing are selected via dropdown **Format**:

- DPX RGB 10b
- DPX RGB 8b
- DPX RGBA 8b
- Cineon RGB 10b
- J2K 2k@24 RGB 12b
- J2K 2k@24S RGB 12b
- J2K 2k@48 RGB 12b
- J2K 2k@48S RGB 12b
- J2K 2k@60 RGB 12b
- J2K 2k@60S RGB 12b
- J2K 4k@24 RGB 12b
- J2K RGB 12b
- TIFF RGB 8b
- TIFF RGBA 8b
- TIFF RGB 16b
- TIFF RGBA 16b
- TGA raw RGB 8b
• TGA raw RGBA 8b
• TGA rle RGB 8b
• TGA rle RGBA 8b
• SGI RGB 8b
• SGI RGBA 8b
• JFIF(jpg) RGB 8b
• BMP(win) RGB 8b
• BMP(win) RGBA 8b
• PNG RGB 8b
• PNG RGBA 8b
• Photoshop RGB 8b
• Photoshop RGBA 8b
• Alias pix RGB 8b
• GIF RGB 8b
• SoftImage RGB 8b
• SoftImage RGBA 8b
• RAW YUV422  8b
• EXR RGB Half
• EXR RGBA Half

**Note:** Mistika can read many other numbered formats not cited in this list, which only refers to the supported formats for writing in a render.

The dropdown **Target** allows the selection of the directory where the files are saved.

The option *Default.Mistika_Media* establishes that material created will be stored in `MATERIAL/Mistika_MEDIA/[project]/SEQUENCES/`. This default value can be modified in *Mistika Setup* (Mistika Setup->File Paths-).

**None**

This button prevents the render of the high resolution version. It will only process proxy resolution and/or audio.

Regardless of the chosen format, the dropdown **Target** allows the selection of different directories for saving generated media.

These files should be previously defined in *Mistika Setup*, via *Path Builder* (Mistika Setup->File Paths). For more information about how to create buttons, see the chapter on Mistika Setup (mConfig).

**Proxy Image:**

Specifies the low resolution image format of the media for the proxies of the new clip generated.

Low resolution has the same image formats as high resolution and also the *None* option. The size of the low resolution is specified in *Mistika Setup->Render Format->Low Res. Ratio*. 
The proxies are used when RecordMonitor is in Proxy or Dynamic mode (if they have not been created, they are done so on-the-fly in RAM during playback).

**Sound File:**

The dropdown button **Target** allows the selection of different directories for saving audio media generated by export processes (if the function **Audio** is active).

These folders must be previously defined in **Mistika Setup**, via the **Path Builder** (Mistika Setup->File Paths). For more information on how to create he buttons, see Mistika Setup (mConfig).

**Render Resolution and Framing:**

When the **Active** button is active, this dropdown menu allows the configuration of the output resolution via similar parameters to those of the **Framing** tab in Visual Editor.

This parameter is especially useful when needing to create different resolutions for deliveries other than the resolution of the project. Thanks to this menu, it is possible to do so directly in the **Output** tab without needing to reconfigure these values, applying new effects in the **Node Graph** or **Visual Editor**.

**Mistika** always produces images in the working format (mConfig->RenderFormat) before they pass through this output filter, so generally these options should not be used in order to increase resolution, but rather to produce smaller versions.

For more information on the use of these parameters, see the chapter dedicated to the Framing tab.

**Render Fields Mode:**

- **Progressive**

  Activates the processing in progressive sweep format (render by frames).

  This option must be activated if the resulting clip is to be used in progressive formats such as HD24p, cine formats or multimedia formats for viewing in RGB graphics monitors.

- **Interlaced**

  Activates render in interlaced sweep format (render by fields). This option is recommended for processing images that come from interlaced video formats (PAL/NTSC 1080_25i, 1080_30i, etc).

  It is also possible to evaluate processes that evolve by fields on clips that non-interlaced clips (such as type-face movement, to enable their reading on video), if and when the final viewing mode is a monitor or interlaced.

  This mode should not be used unnecessarily, as render times reach nearly double that of when it is deactivated.

  In any case, render by fields should only be used if the result is to be transferred to video in an interlaced format, whether the original clips are interlaced or not.
Render 3:2 Pulldown Mode:

Pulldown allows two-directional conversion between video clips interlaced at 30fps or 29.97fps and cine or HD format clips at 24p (24fps progressive or 23.97fps progressive).

Note: In order to simplify the explanation, on occasions reference is made to "NTSC" and "cine", although the same is applicable to other formats of similar structure in terms of frame rate and interlaced / progressive format).

Sequences derived from standard cine and HD 24p formats have 24 frames per second in progressive (not interlaced). To convert them to PAL (or HD 25fps) formats no modification is usually made in the duration, since 24fps is a very similar value to the 25 frames per second of PAL video signal and normally there is no perceptible change playing them back a frame per second quicker.

In these cases, it is usually enough to apply a de-interlace effect to convert them from PAL to cine or from interlaced to convert them from cine to PAL, and similarly the corresponding audio conversions. For more information about the interlace/de-interlace effects, consult the information about the Fields group of effects (Node Graph Editor->Dashboard->Fx->Mistika->Fields).

However, the formats NTSC and HD60i, for example, use 30 interlaced frames per second (and so 60 fields per second).

If a cine sequence (24fps) needs to be converted to NTSC, this sequence at 24fps must be stretched to last 6 frames more per second (30 frames in total). This cannot simply be done by repeating some frames, as it will be too visually obvious. This conversion is usually done via a process called "3:2 Pulldown".

The "pulldown" consists of dividing each original progressive frame into two fields (one with odd-numbered lines and one with even-numbered lines) in order to obtain 48 fields per second (2x24fps). These resulting 48 fields need to cover the 60 fields per second corresponding to an NTSC second. This is done by repeating a field when necessary (first at three frames, that two frames later, then after three frames again, and so on, alternating the field that is repeated between odd and even, from which process the names "3:2" and "2:3" come.)

This system achieves an acceptable visual effect for playback, but must be applied at the end of the post-production, otherwise the material that undergoes this process can cause problems in editing and post production:

- When a 3:2 Pulldown is carried out, NTSC or HD_30i frames may be generated in which each field pertains to a different original frame, and if this coincides with a change of shot (which should be always avoided, although material received is not always as may be desired) there will then be two fields with very different information in the same frame, which will produce an undesirable flash effect when viewed. This can also occur if an offline edit is to be made for later editing of a film reel, since if we have material that has undergone a 3:2 Pulldown process, the cut points may be ambiguous in the frames that have one field of each shot. Another problem related to the same case is when applying effects, since in those frames with fields of different shots it is not normally desirable to apply the same effect to both fields.

- The quality of effects can suffer, since the original images do not have fields, and if a 3:2 pulldown process has been applied and the clip is marked as being interlaced, Mistika is forced to work with fields when it should be working with frames.

- In addition, render times with the frame process are twice as fast as with the field process.

- If there are several clips that have undergone a 3:2 pulldown process and they have to be combined in the same effect, there is a risk of their becoming
desynchronized, ie, that they are placed in such a way that the fields added to each of these clips do not coincide in time.

For all of this, it is best to apply the option *Pulldown Remove* before working with NTSC or HD60i material that derives from a telecine, or that has undergone a 3:2 Pulldown. It is recommended to carry out this conversion even if it is required that the material is delivered at 30fps (and to carry out this process again as a last step).

On the other hand, if a 3:2 Pulldown has been undone, we can obtain more faithful playbacks by changing the playback speed to 24 fps. This can be modified via Mistika *Setup* selecting 24fps format (*Mistika Setup->General->Standard Preset*) and observing playback in an un-interlaced monitor.

While the clip is not modified or edited, the 3:2 Pulldown process is 100% reversible via the button *Pulldown Remove* (equivalent to the 2:3 Pulldown process).

*Render 3:2 Pulldown Mode* defines the Pulldown and field discrimination.

- **Pulldown Insert**

  Carries out a 3:2 Pulldown to a cine clip, adding fields to the sequence so that it coincides with the duration that it must have in NTSC.

- **Pulldown Remove**

  Carries out the reverse process to an NTSC clip, eliminating the fields that were inserted during a prior 3:2 Pulldown.

  To eliminate the Pulldown correctly, it is necessary to locate the active monitor mark active in the first frame without fields that the sequence has.

- **Only Even Frames**

  For the creation of the new clip, only even-numbered images will be considered. Thus the resulting new clip will have half the duration of the one processed.

- **Only Odd Frames**

  For the creation of the new clip, only odd-numbered images will be considered. Thus the resulting new clip will have half the duration of the one processed.

Processing only alternate frames may be done for various reasons:

One is to create versions of clips at half the frame rate, to be used in high-speed cameras. For example, we can work with masters at 48fps and produce versions at 24fps for offline systems. These cases are detected by Mistika when conforming, so the EDL can be done at half the speed, to be able to work in the offline system in standard formats.

Another use may be to separate interleaved streams in a stereo clip.

If none of these buttons is active, all the frames of the clips are processed.

*Render Segments Mode:*

- **Segments Mode**

  This dropdown allows the selection of the amount of render media or render clips that result from clips to be processed derived from a multiple selection.
As One Segment. Specifies that all types of clips are included in a single render.

Split To Segments. Specifies that one render is generated for each clip selected. This command can be applied both to the image track and the audio track. In this mode, all the clips generated from the multiple selection will be stored in the same folder.

First seg. index

Specifies the initial nominal numeric value nominal of the segment of clips generated via the Split To Segments mode.

This value allows, for example, the precise replacement of segments of a render that were later modified. To do so, specify the same numeric value used before, in the first frame of the segment to be replaced.

Split To Segments options:

Tape Name Sources

Use source clip tape name

Names the clip files (.clp) or render scripts (.rnd) with the original file name.

Use source clip tape name from Header

Names the clip files (.clp) or render scripts (.rnd) with the internal file name.

Use timeline name

Names the clip files (.clp) or render scripts (.rnd) with the name defined for the environment.

Use render name

Names the clip files (.clp) or render scripts (.rnd) with the name defined in the render field User Name.

Time Code Sources

Use source clip Time Code

Defines the timecode as the same as that of the original media. In the case of numbered sequences this will be the internal timecode.

Use source clip Time Code Aux1

Defines the timecode as that of TC Aux 1 when this is defined. In the case of numbered sequences, the frame numbers are obtained by converting the timecode to whole frame numbers according to the current fps.

Use source clip Time Code Aux2

Defines the timecode as that of TC Aux 2 when this is defined. This normally only supports .red files.
Use timeline Time Code

Defines the timecode based on the TC of the Node Graph. A specific case that requires this render mode is that of the playback of JPEG2000 (.rnd) files for the subsequent production of DCP packets, since generally these require a start position of 00:00:00:01

- Preferred source clip

Auto

Takes previous values deriving from the file that has produced and geometric deformation in the effect Stereo3D. If none is specified, the left is taken default by default.

Preferred Left

Takes previous values deriving from the file that corresponds to the left image of the stereo pair.

Preferred Right

Takes previous values deriving from the file that corresponds to the right image of the stereo pair.

Filter Source Clips

Filter that ignore any clip in Mistika's native format (.js). The most common use of this option is for using the name and TC of clips imported from tapeless formats (.r3d, .ari, etc). If the media to be processed is multilayer and contains more than one version of the same clip (generally a clip RAW and a clip in .js working as a proxy), by selecting this option, Mistika will process the information of the original clip in RAW.

Sequence Render Options:

- Delete Sequence Before Render

Activates the deleting, before the render, of all the media contained in the folder to be overwritten, although all the contained files are to be overwritten.

- First Frame Index

Defines the numeric value of the first frame of the sequence of images to be rendered.

Render Stereo 3D Mode:

- Stereo 3D Mode

This dropdown button allows definition of which type stereoscopic clip will be processed according to the viewing mode.

No Stereo 3D
The resulting processed clip will not be stereoscopic.

**Left Eye Only**

The resulting processed clip will correspond to the image to be interpreted by the viewer's left eye.

**Right Eye Only**

The resulting processed clip will correspond to the image to be interpreted by the viewer's right eye.

**Dual YUV422**

The result will be a single clip whose content will correspond to a stereoscopic pair (left and right eye). This format allows render to be done for both eyes at the same time, and also optimizes the storage to disk, as both eyes are stored in consecutive blocks (as they will later be read). This requires *Mistika* .js YUV422 archives to be selected as render format.

**Anaglyph**

The resulting processed clip will correspond to the viewing mode for color anaglyph glasses, red for the left eye and cyan for the right eye.

**Line Interlaced**

The information from the stereoscopic pair will be shared in interlaced vertical lines within the same frame.

**Note:** Do not confuse the term Line Interlaced with Field Interlaced. The Line Interlaced process can be applied to a clip with interlaced fields as well as to an un-interlaced one.

**Side By Side**

The resulting processed clip will correspond to the viewing mode that scales to half the resolution of the stereoscopic pair, to locate both images side by side.

**Note:** Many devices recognize this mode, in order be activated automatically by their own system.

---

**Render Name:**

Specifies the render name script (.*rnd*), which will also be the name of the new clip (.*clp*).

**Auto Name**

The practical purpose of the *Auto Name* button is to be able to launch render processes from the *Node Graph* with the same name as the previous one but ending in a new number to avoid the need to open the render modules to write it. This use can makes the work of carrying out many render processes much easier. It also helps avoid errors of overwriting files.

When the *Auto Name* button is active, two boxes are enabled: a text field and a
text field

In this box, the name of the render script is defined.

numerical field

This field is increased by one with each render process with the same name that is done. Thus, it automatically avoids the problem of the names of successive render processes coinciding, which would produce jumps in the numerical sequence.

User Name

When this button is active, a text field is enabled in which the name of the render script can be defined manually by the user.

This command also offers another practical use: replacing the previous render of a clip by carrying out another with the same name. To do so, select a clip or group from the Node Graph and run the Get Clip Name command to copy the name of the clip selected in the User Name text field.

This command also has another practical use: the substitution of the previous render of a clip when a new one with same name is produced. When a clip or group is selected from Node Graph, the name is copied in the User Name text field.

Via this tool, it is possible to run the processing of a sequence time and time again, overwriting the previous render, thus avoiding accumulation of multiple versions in disk space. The new render maintains the name and replaces the previous one in the same disk space.

Also, errors when writing names are thus avoided. It is common that a user has to produce successive versions of a clip that is being used in another Node Graph by another user. For the render of each new version to be updated automatically in the second Node Graph it is essential that they have exactly the same name, so that this tool can make the process easier and help avoid errors.

Note: Mistika allows to clips to be overwritten, updating all the instances of their media in the Node Graph by overwriting them. If a name of clip already used is specified, a window will open with an overwriting warning. In these cases take care never to use a name that is also that of a clip necessary for the render, since Mistika will destroy it media file before starting the new render processes.

Virtual Slate:

During the render process, Mistika allows the creation of superimposed metadata information (Virtual Slate) that can be used as reference in other post-production processes.

When Burnon Virt. Slate is activated, the fields that specify the information that will be seen superimposed on the image are activated.

The information superimposed on the image is specified in the file Mistika-ENV/shared/VirtualSlate/Layouts.xml and can be edited by the user in order to change its position and appearance to include/exclude specific metadata fields.

Clip_w_TC. The information superimposed corresponds to the name of the clip and and
current timecode.

*TC_Only.* The information superimposed corresponds only to the current timecode.

<table>
<thead>
<tr>
<th>During</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>First frame.</em> The information only appears in the first frame of the sequence.</td>
</tr>
<tr>
<td><em>First 5 frames.</em> The information only appears in the first five frames of the sequence.</td>
</tr>
<tr>
<td><em>All frames.</em> The information appears in the whole sequence.</td>
</tr>
</tbody>
</table>

**Do Render:**

- **Foreground**

  Creates the render script (*.rnd*) and the resulting new clip, staring the render task in the *Foreground*.

  The new clip is created as a file *clp* in the *RENDER*, folder and, depending on the format, a copy of the clip will be placed in the *Node Graph*, in the range or selected clip from which it was generated.

  The render in the *Foreground* is run at high priority, and practically all interactivity with the interface is inhibited until the render process is ended, using all the existing resources and finishing the process in the minimum time.

  *Foreground* rendering also has the advantage that the images being created can be seen in a window (if the option *Mistika Setup->Render Options->Render To Graphics* is activated).

- **Background**

  Creates the render script (*.rnd*) and the resulting new clip, and starts the render task in the *Background*.

  The new clip is created as a file *clp* in the *RENDER* folder and, depending on the format, a copy of the clip will be placed in the *Node Graph*, in the range or selected clip from which it was generated.

  The render in the *Background* is run at low priority, and a high level of interactivity can be maintained, which permits users to continue working with the interface while the render is calculated in the background.

- **Write Script Only**

  Creates and saves the render script (*.rnd*) but without creating the new clip or starting the render process.

  **Note:** this script can be run later from a command line (see explanation below) or from another workstation. However, remember that all the format and target parameters defined when creating the script will be used, not those specified at the start of the render.

  Render scripts can also be opened as if they were normal environments, since they contain the same information as well as the render parameters. In fact, this can serve
as a last resource if the original environment has been lost due to errors when saving or a system crash.

### Redo Proxy

Reevaluates the proxies of the selected image. This function allows the creation of new proxies in order to select multiple image clips.

**Note:** It may be the case that an image clip possesses media for its proxy resolution that does not correspond to its high-res media, owing, for example, to only overwriting the high-res with a new render, or by changing the proxy size from Mistika Setup. This function allows the user to refresh the proxy resolution.

Remember that Mistika allows the capture of images without generating low res proxies ad hoc (this is optional), in which case, the user can generate them subsequently using this option. Generating these proxies helps playbacks of effect in low res (although more disk space is used), and if these proxies do not exist, they need to be created ad hoc during playbacks in this mode, which may slow them down significantly, especially when they are large images, such as those derived from cine or HDTV formats.

It is also convenient to generate them when storage is shared with other workstations, in order not to produce excessive and unnecessary traffic. It is also possible to define a disk with a different target to that which contains the high res. images in order to store the proxies via Mistika Setup (Mistika Setup->File Paths->File Paths->Sequence Proxies Dir), for example to define a local disk local for them and thus not interfere with other stations that need to read high res images in real time.

In the same workstation, one Foreground render and another in the Background can simultaneously be run, but no more.

In any case, bear in mind that render processes consume a great deal of graphics card resources (if Mistika Setup->Render Options->Performance Options->Hardware Rendering is activated, which is the most common), and if use of these resources reaches capacity, incorrect images may be produced, or even stopped. Extremely complex cases for the hardware being used can cause problems (shown as black or strange images, or even the original images with no changes at all), in which case the following measures are recommended:

- Reduce to minimum (1) the value of Render Units in Mistika Setup (Mistika Setup->Render Options->Performance Options->Render Units).
- If this is not sufficient, exit Mistika and run the render from a command line, as explained below.
- If this still does not resolve the problem, it is probable that the system does not have an Nvidia graphics card with sufficient memory, so the Hardware Rendering mode in Mistika Setup (Mistika Setup->Render Options->Performance Options->Hardware Rendering) should be deactivated.

The render process opens a progress window that is described below:
Priority

Process priority, which can be Foreground or Background.

Name

Name of the generated clip.

Length

Total number of frames to be processed.

Done

Percentage of the current process completed.

Elapsed

Time elapsed since the start of the process.

Remaining

Estimated time remaining to finish the process.

Note: this time is estimated in proportions of the elapsed time, so that the estimated time may be incorrect if the process varies in complexity.

Progress Bar

Indicates graphically the percentage of the current process completed in relation to the total number of frames to be processed.

Cancel

Button to stop the render process.

Note: this button stops the render, but does not remove the clip that was being produced, in case it is required. The media of the new clip will be viewed correctly up to the frame where the render was canceled. However, for formats .js or "movie" the
clip will occupy the same amount of space as if it were complete. If this occupies more space than is desirable, run another render to extract the useful part and delete the original.

**Script to run after the render:**

This dropdown button is the option that provides Mistika the possibility at the end of render to execute the previously configured script.

The idea is to provide users with the means to detect the conclusion of render, with no need for their physical presence, since they are informed that render has finished, or equally to be able to run other tasks that are pending its conclusion (some examples of use are given later).

The configuration is simple. First add into the file: 

```
$HOME/Mistika-ENV/etc/setup/RenderEndScript.cfg
```

the names of the scripts to be sent when the render has finished.

Then the script itself must be in the directory: 

```
$HOME/Mistika-ENV/bin/scripts
```

The script must have run permission.

To run a specific script at the end of a capture session, simply select it from the dropdown that shows the names of the configured scripts.

When the render is finished, it will automatically name the script, with two parameters `[Status]` and `[Name]`, that have been specified for use.

Below are described some of the scripts that are provided with the software. As well as the function they have, they also serve as examples for users with programming know-how.

- **mail_After**

  A simple tool that sends a mail to the user when the render has finished, informing them of the result. The email address is configures in Mistika Setup (Mistika Setup->Utils->After Scripts Data->After script mail addr.).

- **matchOrigStruct_after**

  Modifies the directory structure and names of the files produced by the render to mimic the structure of the original directories and the names and numbering of the original files. This is only useful for render processes to numbered formats (typically to DPX).

  The main use for this tool is to allow the integration with other applications or workflows. This way, Mistika can be used to process the images from a directory tree and obtain an identical tree, so that other applications or workflows can continue working in a transparent manner with the new tree, without causing interference.

  From this point on, the depth of directories also defined Mistika Setup (Mistika Setup->Utils->After Scripts Data->matchOrigStruct nodes) will be replicated.

  Render mode Segments By TC must also be activated, since if not, only one clip without timecodes can be obtained.

  It is recommendable that both the original structure and the new files generated by the render process share the same disk. If not, the script need to move the rendered files physically to the others disks, with the consequent additional processing time.
Flush Mistika Image Cache:

*Mistika* keeps a cache in RAM with the last images read from disk, to avoid having to read them again if they are needed. However, occasionally it might be desirable to *Flush Mistika Image Cache* to force Mistake to read them again.

For example, during a background render, the clip that is being rendered can be worked on, although the process has not finished. However, if the monitor is passed over areas that are still not calculated, incorrect frames can remain in the cache when trying to view it and this button must be clicked to refresh them.

In general, if the media of clips that are being used in the *Node Graph* is externally modified, it may be necessary to use *Flush Mistika Image Cache* to refresh the changes. This is the case, for example, if the media of a clip is modified from another *Mistika* workstation with shared storage, or if the *.tga* files referenced by a remote clip are modified from another application.

Syntax for render script definition:

Within the text field of the command User Name it is possible to define more specifically certain variables when processing a clip or group.

By means of these definitions, the destination, the names and the numbering of files numbered images (*Images*) is possible.

To do so, there is a special syntax:

*Clipname*:StartNumber:Basename%0digits.extension

The section :StartNumber is optional, and can be used to defines an initial frame number.

%0digits defines the position of the number of the frame and its "lead zeros", that is, it defines how many digits the frame numbers should have.

Given the complexity of this syntax it is easy to make mistakes, so it is recommendable to use the predefined targets in *Mistika Setup* (Mistika Setup->File Paths) instead of writing the targets in this field using the syntax. In any case, an example of use follows:

If we write as the clip name: *Clipname:20000*: /ROLLS/roll1/shotname%06d.dpx

files called *Clipname.rnd* and a clip called *Clipname.clp* will be created, as normal, but also:

- The numbering of obtained frames begins at 20000.
- The images are stored in the folder: /ROLLS/roll1.
- The images are called: shotname020000.dpx, shotname020001.dpx, shotname020002.dpx, etc.

If the creation of proxies (*Proxy Image*), is also requested, these files will be located in the same place with the prefix "L_": L_shotname020000.dpx, L_shotname020001.dpx, L_shotname020002.dpx, etc.

Unlike normal renders, the target folder is not deleted before doing the render (unless it is empty), since this could be problematic. In these cases a warning message will appear.

A folder will not be created if it does not already exist. It is the user's responsibility to create and manage it.
Running render from a command-line Shell:

*Mistika* allows the render script to be run in the background from any Unix-Shell. Enter these commands to run a render from a console:

*Mistika –r RenderScript*

"RenderScript" is the name of the render script, but without the extension .rnd.

**Note:** before beginning the render, be sure that *Mistika* configured to work in the same project in which the script was generated. This can be done via the commands of the Project tab (Node Graph Editor->Dashboard->Project) or by modifying the content of the file Mistika-ENV/Mistika_PRJ. Otherwise, the script will not be found and the process will end, showing an error to that effect.

Remember that all the parameters related to the target format (image format and size) will be those defined at the moment of creating the script, and not those that exist when running the command.

However, the location of the source images will be those defined in *Mistika Setup* (Mistika Setup->File Paths) when the render is run. This allows the render to be done on another workstation that has the source images somewhere else, or even repeat a render after making a backup, deleting the clips and restoring the backup in another *Mistika* station with other storage paths.

Render files are stored in the RENDER subdirectory of the current project, and are always created when a render is started. To create this file without doing a render and to be able to run it later with the command explained, use the option Write Script Only (Node Graph Editor->Dashboard->Output->Render->Do Render->Write Script Only).

If several render processes have to run consecutively, a unix script that contains all the commands can be written.

For example, if the render scripts render1.rnd, render2.rnd and render3.rnd; have been saved and the three renders need to be run consecutively:

1. First use a text editor to write a new script:
   
   *kate MyScript*

2. Include the following lines in the file:

   *Mistika –r render1*
   
   *Mistika –r render2*
   
   *Mistika –r render3*

3. Save the script and convert it to an executable file with:

   *chmod a+x MyScript*

4. Finally run the script:

   */MyScript*

Progress information will be displayed in the console, including the current frame and the time taken for each packet of frames. The size of these packets is defined in *Mistika Setup* (Mistika Setup->Render Options->Performance Options->Render Units).

Export EDL

EDL (Edit Decision List) is a file format for the interchange of edits between different applications.

It consists of a long list of clip In Point and Out Point timecodes, which specify an edit. Information can be extracted from this list in order to recapture used clips, and also In Point
and Out Point in relation to the **Node Graph**.

The timecodes of the original tapes of each clip are used to recapture the media of each clip in any other system, and the information regarding the order of clips and other attributes of the clips, such as variations of speed and transitions, will be used to recreate the edit in another system.

**Mistika** is an Online editing system, which means that the material being worked on can be definitive, and not just a low quality reference. However, it also allows an EDL to be exported and used in any other system, or in another **Mistika** workstation.

In the case of needing to import an EDL derived from another system in order to conform an edit, proceed via the **Conform** tab and the **Browser**, as explained in detail in the chapter **Conforming EDLs**.

**Mistika** can generate an EDL from the current contents of the **Node Graph**. This EDL will include the basic transitions, such as linear fades. Complex effects will not be included in the EDL information.

Before creating the EDL, prepare the part of the **Node Graph** to be exported, eliminating the effects that cannot be included and simplifying the **Node Graph** with the function **Join** (Node Graph Editor->Dashboard->Edit->Commands->Join) by applying it to the clips that have been unnecessarily divided, and changing the zigzag transitions to transition mode. Then select the clips that make up the edit to be included in the EDL and add the editing marks to the selection. These are the characteristics that differentiate it from the following tab, Export EDL2; so, although it may not be possible to export information relating to the audio or the transitions, it is not necessary to simplify it, as **Mistika** automatically analyzes the timeline in order to generate the appropriate EDL, without needing to eliminate the effect that are not included in the exported EDL.

After preparing the **Node Graph**, select a name for the exported `.edl` file, choose a standard EDL format, specify a start timecode for the edit created in the EDL, indicate the type of media to be included in the EDL, and finally generate the file.

### Commands:

- **Name**

  Alphanumerical field where the name of the `.edl` file will be entered.

- **Format List**

  The **Format** dropdown menu specifies the type of format in which the EDL is to be generated. The button to its right opens a dropdown list with all the EDL formats that Mistika can export.

  The export format most generally supported by editing systems is CMX340, and is the
most recommended format for both export and import. To export edits that have multiple simultaneous audio tracks, we recommend using the GVG-SE format.

The following EDL formats are supported:

- RED 16
- SONY 900
- SONY 910
- SONY 5000
- SONY 9000
- SONY 9000 PLUS
- SONY 9100
- CMX 340
- CMX 3600
- GVG 4
- GVG 4 PLUS
- GVG-SE

→ Time Code In

The *TC In* field defines an initial timecode value within the edit contained in the EDL.

→ Config

In this group the references included in the EDL are specified.

*Video.* Indicates if references to images are to be included in the EDL.

*Audio.* Indicates if references to audio are to be included in the EDL.

*FROM Statements.* Allows the use of a commentary field of the EDL, in order to indicates the name of the original file and other useful metadata. With this, other systems can conform an EDL against image files without needing to resort to video tape.

→ Generate and Save

Generates the EDL file, and saves it in the *OUTPUT* directory of the current project, with the specified name, but always with the file extension `.edl`.

→ EDL Created

Field where the EDL created in the selected format will be shown, also it also the error messages that may be generated in the export process.

**Note:** if the range of the *Node Graph* contains any clips that cannot be exported, the process will be interrupted, indicating the export error in the *EDL created* field, and automatically selecting the unexportable clip on the *Node Graph*.
Export EDL2

This second EDL export tab is characterized by the combination of a series of different functions and behaves to the previous one.

The main difference is in its ability to analyze automatically which image clips correspond to the information of the EDL to be exported; so it does not need (as the previous model does) the timeline to be completely free of effects. Mistika analyzes and exports only the information of the clip which the effects indicate.

However, owing to its transitory nature for a system composed of both models, this tab does not support the export of information from the audio tracks or transitions (which is conserved from the previous model).

A number of options for naming clips and the timecode has been added, coinciding with those found in the tab Render for the export of new media. An option for creating CDLs is also included in this tab.

Commands_2:

- **Name**

  Alphanumeric field for defining the name of the .edl file to be generated.

- **Tape Name Source**

  **Use source clip tape name**

  Names the files indicated in the EDL with the original name of the file.

  **Use source clip tape name from Header**

  Names the files indicated in the EDL with the internal name of the file.
 CLIP NAME Source

**No CLIP NAME statements**

Will not indicate the EDL files as a commented field of each line of the EDL.

**Use source clip tape name**

Names the files indicated in the EDL with the original name of the file, after the commented field " * FROM CLIPNAME ".

**Use source clip tape name from Header**

Names the files indicated in the EDL with the internal name of the file, after the commented field " * FROM CLIPNAME ".

 Time Code Source

**Use source clip Time Code**

Defines the timecode as the same as that of the original media. In cases of numbered sequences, this will be the internal timecode.

**Use source clip Time Code Aux1**

Defines the timecode by taking the TC Aux 1 if this is defined. In cases of numbered sequences, the frame numbers are obtained by converting the timecode to a whole number of frames, according to the current fps speed.

**Use source clip Time Code Aux2**

Defines the timecode as the by taking the TC Aux 2 if this is defined. Normally, only .red files are supported.

**Use timeline Time Code**

Defines the timecode by taking the timecode of the Node Graph.

 Preferred source clip

**Auto**

Takes the previous values derived from the file that has correction as geometric deformations in the effect Stereo3D. If none is specified, it takes the left one by default.

**Preferred Left**

Takes the previous values derived from the file corresponding to the left image of the stereo pair.

**Preferred Right**
Takes the previous values derived from the file corresponding to the right image of the stereo pair.

Filter Source Clips

Filter that ignores any clip Mistika's native .js format. The most common use of this option is for using the name and timecode of clips imported from tapeless formats (.r3d, .ari, etc). If the group to be processed is multilayer and contains more than one version of the same clip (which will generally be a clip in RAW and another in .js format working as a proxy), by selecting this option Mistika processes the information of the original clip in RAW.

Create CDL

Creates the .ccc files (CDL, ie Color Decision List). These files are similar to an EDL, but also have precise information about the primary corrections of each clip. Thus Mistika can grade material and transfer the information to VFX system; these can then reapply the correction and also have the access to the original files.

**No export ASC lines**

Will not export any associated color value as CDL.

**Export Color Grade as ASC lines**

Activates the export of the CDL. Creates a .ccc file for each file indicated in the EDL that has this CDL export activated. Also, this information will be contained within the EDL itself.

Create SDL

Saves Stereo3D data in the .edl file. The data is related with the parameters HIT and Floating Windows, because both of them are common parameters in other softwares. The rest of the parameters are specific only to Mistika, so they are not saved in the .edl file.

**No export ASC lines**

Will not export any associated Stereo value as SDL.

**Export Color Grade as ASC lines**

Activates the export of the SDL in the .edl file.

Format List

The dropdown Format defines the formats in which the EDL will be generated. The button at the right opens a dropdown list with all the EDL formats that Mistika can export.

The export format most generally supported by editing systems is the CMX340, and this is the most recommendable format for both export and import. If edits with simultaneous multiple audio tracks are to be exported, the format GVG-SE is recommendable.
The supported EDL formats are:

- RED 16
- SONY 900
- SONY 910
- SONY 5000
- SONY 9000
- SONY 9000 PLUS
- SONY 9100
- CMX 340
- CMX 3600
- GVG 4
- GVG 4 PLUS
- GVG-SE

**Export EDL**

Generates the EDL file, saving it in the **OUTPUT** directory of the active project, under the defined name, with the file extension **.edl**.

---

**DCP**

The Digital Cinema Package (DCP) module of *Mistika* is found in this tab.

The main function of this tool is to create DCPs for their use in projecting material, dailies, tests and general post-production.

This module can function independently of the **Node Graph**. It is for this reason that it is not necessary to specify any environment in particular if the contents of the DCP have already been prepared.

The DCPs generated by *Mistika* can be shown in projections rooms with homologous DCP projectors.

The supported formats and image resolutions are:

- 2K 24 fps
- 2K 48 fps
- 4K 24 fps
- 2K Stereo 3D (24S, 48S and 60S)

The audio formats supported are WAVE (**.wav**) and AIFF (**.aiff**) at 24 bits per sample and 48 kHz.

If the material contained in the DCP derives from *Mistika*, it is recommendable to prepare this material in the following way:
Specify the color space: Given that the color space in the DCPs is XYZ, as a first step, convert the material to be exported using the **Convert** effect (Node Graph Editor->Dashboard->Fx->Mistika->Color->Convert).

Specify the image format and padding: Image clips must be in JPEG 2000 format (.j2k) before they can be used by the DCP module. Therefore it is recommendable to process the clips converted to XYZ directly in this format (Node Graph Editor->Dashboard->Output->Render->Full Res Image->Images).

The supported .j2k are:

- 2k scope 2048x858
- 2k flat 1998x1080
- 2k full container 2048x1080
- 4k scope 4096x1716
- 4k flat 3996x2160
- 4k full container 4096x2160

Stereo3D formats require the selection of one of the j2k presets terminating in S (stereo); three options are available: 24S for 24fps projects, 48S for 48fps projects and 60S for 60fps projects.

The DCP module requires the sequenced numbering ("padding") of the .j2k files always to start with 1 (one). For example: **NAME.000001.j2k, NAME.000002.j2k, NAME.000003.j2k**, etc.

To do this, it is recommendable to align the first frame of the clip with the Timecode Mark in order to make the timecode of the TimeSpace coincide with that of the clip to be exported. To do this, activate **Use timeline name and TC** in the group of options Split To Segments options (Node Graph Editor->Dashboard->Output->Render).

Prepare the audio files: One audio channel will always be included per channel, and must have the same duration as the image. For example, for a 5.1 configuration, five separate audio channels must be assigned.

To do this, use the tool **Router** in the **Audio** tab (Node Graph Editor->Dashboard->Audio). Via this tool, it is possible to select each audio channel independently and export them as mono audio tracks.

Finally, with the image and sounds files prepared, specify their location in the fields **Video Paths** and **audio Paths** of this module.

When we generate a DCP packet, a new directory will be created in `/MATERIAL/MOVIES/DCP/PROJECT_NAME/DCP_LONG_NAME`. In **PROJECT_NAME** will be the name of the current project; **DCP_LONG_NAME** is the name of the DCP created. For a DCI compatible delivery disc, the use should copy the folder **DCP_LONG_NAME** to the root directory of a disc with ext3 format.

Subtitle files: When adding subtitle files to the DCP, be aware that they may derive from sources based on two different standards. In the tab **MXF Creation** it is possible to choose between the standards INTEROP and SMPTE. In the first case, the subtitles must be in xml and the image files in png; in the case of SMPTE, xml is used with the subtitles font (.ttf).

DCP creation Mode: The tab **DCP** contains 4 panels that allow the creation of the packet in a logical, ordered way. The panels are ordered from left to right, with the aim of moving step by step, starting with the panel **DCP Name** on the left, and ending with **KDM Creation** on the right, for an encrypted DCP.
DCP Name:

The pulldown fields of the panel DCP Name are a series of options for the correct naming of a DCP packet according to the syntax defined by the “Digital Cinema Naming Convention”, created by the production studios and the Inter-Society Digital Cinema Forum.

- **Name**
  
  Specifies the name of the DCP file.

- **Content**
  
  Specifies the type of content of the packet:
  
  - **FTR** (Feature)
  - **TLR** (Trailer)
  - **RTG** (Rating Tag)
  - **TSR** (Teaser)
  - **POL** (Policy Trailer)
  - **PSA** (Public Service Announcement)
  - **ADV** (Advertisement)
  - **SHR** (Short)
  - **XSN** (Transitional)
  - **TST** (Test)

- **Content Version**
  
  Specifies the version of the contents of the packet.

- **Content Type (2D / 3D)**
  
  Specifies whether the contents of the packet is 2D or 3D.

- **Ratio**
  
  Specifies the aspect ratio of the contents of the packet.
  
  - **F - Flat** (1.85:1)
  - **S - Scope** (2.39:1)
  - **F - Full Container** (1.90:1)
- **Language**
  Specifies the language of the audio of the contents of the packet.

- **Subtitles**
  Specifies the language of the subtitles of the contents of the packet.

- **Territory**
  Specifies the geographical area where the contents will be shown.

- **Ratings**
  Specifies the type of audience classification of the contents of the packet.
  - **AE** (Exempt from classification)
  - **G** (General audiences)
  - **M** (Recommended for mature audiences)
  - **M5** (Viewers over 15)
  - **PG** (Parents Strongly Cautioned)
  - **R** (Restricted)

- **Audio**
  Specifies the audio system for which the contents of the packet is intended.
  - **51** (5.1). *(Note: the similarity of the nomenclature should not be confused with standard Dolby 5.1. This number refers to the separate channels without recoding.)*
  - **20** (Stereo)
  - **XX** (un-specified)

- **Resolution**
  Specifies the image resolution of the contents of the packet.
  - **2K** (2048x858, 1998x1080, 2048x1080; according to the aspect ratio)
  - **4K** (4096x1716, 3996x2160, 4096x2160; according to the aspect ratio)
  - **48** (2K at 48 fps)

  *(Note: In order to export a packet in Stereo 3D format with 2K resolution, the option 48 must be selected.)*

- **Studio**
  Specifies the studio where the content of DCP was created. The list of studios can be
modified in the file de *Mistika-ENV/config/listStudios.cfg* with any text editor.

- **Year**

  Specifies the year the DCP packet was created.

- **Month**

  Specifies the month the DCP packet was created.

- **Day**

  Specifies the day the DCP packet was created.

- **Facilities**

  Specifies the company or facility where the content of DCP was created. The list of companies can be modified in the file *Mistika-ENV/config/listFacilities.cfg* with any text editor.

- **3D Specs**

  Specifies whether the content of the packet has ghostbusting.
  - *i3D-gb* (with ghostbusting, to be shown in theaters with Dolby 3D)
  - *i3D-ngb* (without ghostbusting, to be shown in theaters with Real D)
  - *i3D* (the content has been corrected, so ghostbusting is not relevant)

- **DCP Types**

  Specifies whether the DCP contains the whole of the material or just a part of the material as part of a set of complementary DCPs.
  - *OV* (Original Version)
  - *VF* (Version File)

- **File Version**

  Specifies the number of the version of the DCP file.

- **Set DCP Folder Name**

  Creates the DCP folder with the name based on the parameters defined, following the syntax established by the "Digital Cinema Naming Convention".
MXF Creation:

The MXF Creation panel allows us to select the media that the DCP being created will contain. This process is the complicated: it is only done once per version (of media and/or audio), and to do so, the following two steps are separate, so the same media can be used with different metadata.

To activate the selection of the media of each of the groups, select the corresponding button (VIDEO, AUDIO or SUBs).

- **VIDEO**

  **Central Eye Path**
  Path for the main image. When dealing with stereo pairs, this will correspond to the left eye.

  **Right Eye Path**
  Path for the image of the right eye, when dealing with stereo contents.

- **AUDIO**

  **Left Audio Path**
  Path for the left audio channel.

  **Right Audio Path**
  Path for the right audio channel.

  **Left S Audio Path**
  Path for the secondary left audio channel.

  **Right S Audio Path**
  Path for the secondary right audio channel.

  **Central S Audio Path**
  Path for the central audio channel.

  **LFE Left S Audio Path**
Path for the LFE (Low Frequency Effects) audio channel.

Subs

Route path to the subtitle files. The xml file must be in the same directory as the png (image files of the subtitles) or text (.ttf).

Generate MXFs

DCP Type

Indicates the DCI standard that will be used for the creation of the DCP (INTEROP or SMPTE).

Crypt MXFs

Encrypts the MXFs so they can only be used with a decrypting password specific to each projector.

Generate MXFs

Starts the process of generating the media of the DCP (MXFs).

Framerate

Allows the selection of the framerate of the resulting MXF. It is highly advisable to bear this in mind before rendering J2K to avoid possible bitrate problems.

Add to reel num.

Adds specified media to the selected reel.

Reset Fields

Resets the fields of the routes marked for the media.

XML Creation:

The XML Creation tab is where the user creates the necessary DCP metadata files (XMLs).
Select Reel

Selects the reel to which the DCP is to be added.

Load Video MXF

Loads the path of the video media defined in the previous panel.

Load Audio MXF

Loads the path of the audio media defined in the previous panel.

Load Subs MXF

Loads the path of the subtitles defined in the previous panel.

Specify XML name

Names the XML data files contained in the DCP.

Certs list

Load certificates for digital signatures of the XML files.

Generate XMLs

Creates the XMLs of the DCP.

KDM Creation:

Panel for creating the information file necessary for projectors to playback the media if encrypted.
Validate from

Year
Year from which the de-encrypting of the DCP will be valid.

Month
Month from which the de-encrypting of the DCP will be valid.

Day
Day from which the de-encrypting of the DCP will be valid.

Hour
Hour from which the de-encrypting of the DCP will be valid.

Minute
Minute from which the de-encrypting of the DCP will be valid.

Validate to

Year
Year from which the de-encrypting of the DCP will be invalid.

Month
Month from which the de-encrypting of the DCP will be invalid.

Day
Day from which the de-encrypting of the DCP will be invalid.

Hour
Hour from which the de-encrypting of the DCP will be invalid.

Minute
Minute from which the de-encrypting of the DCP will be invalid.

Dest Name KDM
Name of the KDM. It is named automatically according to the parameters previously defined, although this is editable.

Certs list
Loads certificates for digital signature.
Pem Certificate

Loads the certificates specific to the projector for which the DCP is intended.

Generate KDM

Generates the KDM de-encrypting file.

Totem

*Mistika* supports the Totem render distribution system.

This system allows the use of render nodes that pertain to the same clip during an interactive session. Its configuration is described in a separate section in mConfig.

Overlay Burn

Information relating to the clip (Framerate, Timecode, Tails, etc) that appear in the video output when working on said clip are configured in this panel. The viewing of these elements is via *Source Monitor* or *Record Monitor*, while their visual configuration is set via these options.

![Overlay Burn Panel](Image)

Commands:

- **Global Options**
  
  **Font Name**
  
  Allows the selection of the font to be used in the viewing.
  
  **Font Size**
  
  Selects the font size.
  
  **Draw Shadows in Live**
  
  Adds a shadow to the font to aid its visibility.

- **Edit Options**
  
  **Edit Field**
  
  Allows the selection of the information field to be viewed. Any change made to one of these elements is maintained although another is selected for editing.
  
  **Active**
Activates/deactivates the viewing of the chosen field.

- **Cursor**

  **Cursor Line**
  Positions the information field on the specified line.

  **Cursor Column**
  Positions the information field in the specified column.

- **Screen Name**
  The user can edit the content of the information of a field to be shown in the video output in this panel. The required field must first be selected in **Edit Field**.

- **Show Path Options**

  **Show From Level**
  Shows the path of the clip from the specified Level.

  **Show Level**
  Shows the folder of the clip from the specified Level.

  **None**
  Disable the view of the clip path.

  **Level**
  Indicate the level used for showing the clip path.

- **Save**

  Allows a specific configuration set by the user to be saved.

  **Reset**
  Resets the configuration to its initial values.
Monitor Display

Ref. Mistika: Node Graph Editor->Monitor Display

Monitor Display is the area where the evaluation of the Monitor in the Node Graph is viewed and is composed of two evaluation windows: Source Monitor and Record Monitor.

By default these windows are found superimposed, and the corresponding tab must be selected to activate them. However, it is possible to view both windows at the same time by applying the command Move Win in the options menu of both windows.

The button to close the application is found in Monitor Display: Exit Mistika. If the environment has not been saved, the system prompts the user to save the current environment.

Access

Depending on the Main Tab selected in the Dashboard, the Monitor Display may not be visible. However, it is possible to position it in front of the other panels by clicking the mouse cursor on the Monitor bar of the Node Graph. For this to happen, the option Raise Monitor (Node Graph Editor->Dashboard->Edit->Setup->Node Graph Monitor->Raise Monitor) must be activated.
Source Monitor

Ref. Mistika: Node Graph Editor->Monitor Display->Source Monitor

The Source Monitor is used to view the content of the clips within a context of specific operations specific:

**Clipboard.**

View the content of the clipboard. The clipboard is a temporary memory able to store elements of any type. For example, to copy a selection of clips from the Node Graph, via editing commands (Copy, Cut, Global Cut, Global Copy, Remove Time, etc.).

**Media tab**

View a file from the Media tab.

When selecting an importable image file, this creates a clip (.ink) which is loaded into the Source Monitor, making it possible to view image files in external formats.

**Edit tab**

The Source Monitor is also used to specify In and Out Points for running editing commands on the Node Graph, since the Source Monitor has editing commands in its top bar, instead of the simple playback commands found in normal monitors.

These editing commands permit the definition of In and Out Points, which can be used for different purposes:

- Create a subclip (.sub) with the intention of distinguishing between different segments of a clip by means of a specific name, or to divide a clip into various subclips.

- Add the range specified by the In and Out Points of the Source Monitor to the Node Graph, by using the different editing functions that can be run from the
The editing buttons of the Source Monitor are described below:

**Timecode command:**

- **Timecode In**
  
  Numerical field that can be edited, and which specifies the timecode value of the In Point of the Source Monitor.

- **TC**
  
  Numeric field that shows the value of the current timecode.

- **Timecode Out**
  
  Numerical field that can be edited, and which specifies the timecode value of the Out Point of the Source Monitor.

**Overwrite / Insert / Paste On Top:**

Editing button that adds the contents of the Source Monitor to the Node Graph via different editing functions.

- **Overwrite**
  
  Overwrites the Node Graph with the contents of the Source Monitor, replacing the Node Graph clips as from the timecode specified by the active monitor, for the duration specified in the Source Monitor by its Out Point.

  If the Node Graph has activated editing marks, the range of duration specified by the In and Out Points of the Source Monitor will overwrite the Node Graph, but adjusting its speed of playback to the duration specified by the editing marks, creating a Timewarp group. (Remember that the Timewarp will not affect audio playout). This is called "Four-Point Editing".

- **Insert**
  
  Inserts the contents of the Source Monitor in the Node Graph, adding the necessary time and pushing the Node Graph clips to the right, from the timecode specified by the active monitor for the duration specified in the Source Monitor by its Out Point.

  If the Node Graph has activated editing marks, the range of duration specified by the In and Out Points of the Source Monitor will be inserted in the Node Graph, pushing the remaining clips up to the output mark, and modifying the playout speed of the inserted clips to adjust it to the duration specified by the editing marks, by creating a Timewarp group. Remember that the Timewarp does not affect audio reproduction.
Paste On Top

Adds the contents of the Source Monitor to the Node Graph, from the position of the active monitor and in the first free track that it finds, starting from the top. This process does not modify the positions of the clips in the Node Graph, but due to the way that the monitor is evaluated (starting with the top track) the result is similar to overwriting. For more information on monitor performance, read the chapter Monitor Evaluation.

If the Node Graph has editing marks, the range of duration specified by the In and Out Points of the Source Monitor will be added to the Node Graph, but modifying its payout speed to adjust it to the duration specified by the Node Graph editing marks, by creating a Timewarp group. Remember that the Timewarp does not affect audio reproduction.

For more information on the editing methods that can be used from the Source Monitor, read the chapter Classic NLE Editing.

Editing marks:

Commands that define the editing points of the Source Monitor in the position of its active frame.

- **Edit In**
  
  Sets or redefines the input point in the active frame.

- **Remove Edit In**
  
  Eliminates the input point.
  
  If the input point is not defined, the start point of the content of the Source Monitor will be considered as the input point.

- **Set Edit Out**
  
  Sets or resets the input point in the active frame.

- **Remove Edit Out**
  
  Eliminates the input point.
  
  If the input point is not defined, the end of the content of the Source Monitor will be considered as the input point.

Playback controls:

Starts or stops the playout of the contents evaluated by the Source Monitor.

- **Play**
  
  Playout in the normal direction.
Play Backwards

Playout in the reverse direction.

Stop

Stops playout.

Slider:

Below the editing functions is the active frame control slider. The width of the slider represents the total duration of the contents of the **Source Monitor**. Within this Range, the following elements can be accessed:

![Slider Diagram]

- **Active frame**

  A light grey rhombus, which can be directly manipulated, by selecting and dragging it with the left mouse button.

  This frame can also be edited by using the monitor *Jog* function. To do this, left click the monitor image, and drag the cursor to the left or right. The monitor mark moves slowly along the slider, frame by frame.

- **In Point**

  Yellow triangle that visually specifies the In Point, which can be directly manipulated by selecting and dragging it with the left mouse button.

- **Active range**

  Light blue segment, that indicates the duration of the range of the contents of the **Source Monitor** that will be used in an editing function, or the creation of a subclip.

- **Out Point**

  Yellow triangle that visually specifies the Out Point, which can be directly manipulated by selecting and dragging it with the left mouse button.

Menu / Maximize:

- **Menu**

  The *Menu* button shows the options menu of the **Display Monitor**.
Maximize

When the Maximize button is activated, the window of the Display Monitor occupies the whole computer screen. Exit this mode by double clicking the window.

Record Monitor

Ref. Mistika: Node Graph Editor->Monitor Display->Record Monitor

Permits viewing the evaluated clips in the Monitor of the Node Graph. A monitor allows evaluation of all the types of clip of the Node Graph, whether they are image, audio, group or effect. For more information about the evaluation of the Monitor, read the chapter Monitor.

Commands

In the upper area of the window, a group of buttons with a series of playback and offset controls can be found:

- **Begin**

  Moves the Monitor to the first frame of the Node Graph.

- **Previous Frame**

  Moves the Monitor back to the previous frame.

- **Play Backwards**

  Activates reverse playback.
Stop / Shuttle

Stops the current playback. Dynamic control of playback speed.

Play / Stop

Activates forward playback.

Play Buffer

Activates playback of the information stored in the buffer.

Next Frame

Moves the Monitor forward to the following frame.

End

Moves the Monitor to the last frame of the Node Graph.

Previous Edit

Moves the Monitor to the previous editing point.

Next Edit

Moves the Monitor to the next editing point.

Menu

Menu shows the menu of options of the Display Monitor.

Maximize

When Maximize is active, the window of the Display Monitor occupies the whole of the computer screen. To exit this mode, simply double click in the window.

Stop / Shuttle

Permits the viewing of evaluated images with a Shuttle-type control in its top bar.

In addition to the Shuttle control, it is possible to move the monitor mark from the panel, in Jog mode. To do this, left click the monitor image, and drag the cursor to the left or right. The monitor mark will move slowly to the width of the Node Graph, frame by frame. This movement is restricted to the area of the Node Graph that is shown on the screen at a given moment.

Remember that the monitor mark can be moved manually, and the Node Graph can also be moved below the monitor mark, in both cases causing evaluation of the image in the monitor panel.
Option menu

To view the menu of options of the Monitor Display, click Menu. The buttons of the panel are grouped according to their functionality.

Resolution button

Controls the evaluation monitor resolution.

- Proxy

   Evaluation in low resolution (Proxy).
Dynamic

Evaluation in dynamic mode, switching automatically between high resolution for image clips, and low resolution for effect and group clips.

Full

Evaluation in high resolution.

Burn button

This dropdown button allows the viewing of extra information in the display.

- **Tape Name**

  Shows the name of the clip being viewed in the monitor (the name of the archive).

- **Header TapeName**

  Shows the internal name of the clip. This name may not always coincide with the Tape Name (the real name of the archive).
<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Record TC</td>
<td>Shows the Node Graph timecode in the monitor image.</td>
</tr>
<tr>
<td>Record Frames</td>
<td>Shows the playing time of the Node Graph composed on the image in the monitor in Frames.</td>
</tr>
<tr>
<td>Source TC</td>
<td>Shows the original clip timecode in the Monitor Display image.</td>
</tr>
<tr>
<td>Media Name</td>
<td>Shows the name of the media that the clip being shown in the monitor references.</td>
</tr>
<tr>
<td>Absolute Path</td>
<td>Shows the absolute route of the clip being shown in the monitor.</td>
</tr>
<tr>
<td>ClipName</td>
<td>Shows the name of the link that Mistika uses to reference the clip being shown in the monitor.</td>
</tr>
<tr>
<td>Frame rate</td>
<td>Shows the frame rate at which the monitor is reproducing new frames at each moment in the monitor image. This value is also always shown at the side of the head of the monitor cursor. Note: Depending of the system's performance, the ratio of frames per second can be slower than real-time. The will monitor always try to run at the speed determined by the configuration tool, but if it cannot because of the complexity of the effects being evaluated, it will run more slowly (and will show the message &quot;Lost Sync&quot;), but it will never run faster than this speed. Moreover, output in Live Video (SDI) mode is always quicker and more stable than the interface graphics monitor. In general, all Mistika's specifications with regard to real-time processes refer to LiveVideo output mode. On the other hand, during playback in Live Video mode, the f.p.s. value may begin corresponding to that of the current real-time format, but may later lose units during short time lapses, but subsequently recovering without displaying the “Lost Sync” message in the monitor head. This means that during this time lapse not all the frames corresponding to real time have been processed, but that thanks to the output buffer they have all been played back and so the playback has happened in real time with its exact duration (if this is not the case, the “Lost Sync” will appear). This indicates to the user that the system is operating at close to real-time capacity before a problem arises.</td>
</tr>
</tbody>
</table>
- **Ring Buffer**
  
  Shows the number of frames stored in the buffer of the video output, and which *Mistika* will use as a buffer in order to maintain a smooth playback.

- **Duration Frames**
  
  Duration of the clip being shown in the monitor in frames.

- **Duration Timecode**
  
  Duration of the clip being shown in the monitor in timecode.

- **Head Frames**
  
  Duration of the head of the clip being shown in the monitor in frames.

- **Tail Frames**
  
  Duration of the tail of the clip being shown in the monitor in frames.
Interlaced Display

- **Interlaced Still**

  Specifies that the evaluation mode of the monitor that is stopped should be done in a single field, and not in the whole frame.

  This option is especially useful when the monitor evaluation is sent to the video output, avoiding the flickering between fields that is generated when the monitor is stopped on an interlaced clip.

- **FX Interlaced Play**

  Sets the mode of evaluation of effects in the monitor when in play as by fields, i.e. that the first field is the first to be evaluated, then the second and the resulting evaluation of both fields is interlaced again before being sent to the video output or graphics monitor.

  It is important to bear in mind that activating this option doubles the processing requirements. Also, it only makes sense to activate it when working with interlaced material and the image is being taken from the video output.
Show Alpha

Shows the alpha channel in place of the color channels.

When *Show Alpha* is activate, a wipe can be specified between the viewing of the alpha channel and the other image color channels. The border of the wipe is defined by pressing `<Ctrl>` and dragging on the monitor image with the left mouse button.

For this option to work, the clip being evaluated should have an alpha channel, as occurs in the following cases:

- The clip is of type RGBA (if, when importing a sequence or making a render, the RGBA format was chosen)
- The clip is an effect that has RGBA output with alpha channel. For example, an alpha channel could be associated with a normal clip by using the *External Key* effect.

The following example, imported one from a graphics source, consists of a red circle with an alpha channel covering part of the circle. The left monitor shows the color, and in the right monitor *Show Alpha* has been activated and dragged with the right mouse button over the image to show part of the alpha channel (the white area).

Audio Wave

- **Audio Wave**

  Activates the audio evaluation representation as a waveform.

  The waveform of an audio clip will only be visible in the monitor panel and not in the video output, and provided that the monitor is only evaluating audio clips, and no other type of clip at the same time. Also, it is only seen when scrubbing and audio clip, and not during playback.

Live Video

- **Live Video**

  If activated, this sends the monitor evaluation to the video output. In other cases, it is shown in the monitor panel in the interface.

  To avoid loss of functions the evaluated image will only be shown in one of these two
places at a time. If it is necessary to see them in both the interface and the video monitor at the same time, this can be done in *Visual Editor* mode.

### Stereo Mode

*Activates stereoscopic viewing of the image.*

This button only appears when has been activated before opening *Mistika*. Activating it causes *Mistika* to separate the clips contained in a Stereo group, to apply the effects that are applied to the group to both clips separately and to send the result to the corresponding SDI output.

This viewing mode also works together with editing command *Stereo Combine* (Node Graph Editor->Dashboard->Edit->Edit->Commands->Stereo combine). For more information, consult the command *Stereo Combine*.

### Ratio Cor.

*Corrects the proportions of the monitor image in the graphic interface for NTSC formats (rectangular pixels) and PAL PLUS (images that should be viewed in aspect ratio 16/9 but have been recorded in anamorphic PAL 4:3).*

When the evaluation is not sent to the video output, the images are shown in the monitor panel within the computer screen. In these cases, if working in NTSC format, the images will appear deformed, since the NTSC standard signal is formed by rectangular pixels, whereas in the graphics monitor of the computer these pixels are seen as square. This option stretches the image, making an aspect correction to view it with the correct proportions in the computer graphics monitor.

Correction of aspect proportions is also available for the “PAL PLUS” format by activating it in the Mistika configuration tool. This option will correct in the computer screen the aspect ratio of images that should be seen in 16/9 but have been recorded in PAL, and so have an anamorphic 4:3 aspect ratio.

These corrections only affect the interface and not the external SDI video monitor, which can only show the Aspect Ratios that can be configured via its own controls.

In the case of needing to correct from Mistika, is recommended to use the *Framing* tab in the *Dashboard* of the *Visual Editor*. They can also be combined with the *Mistika Setup->Multimastering* for cases which there are also hay a format conversion of different resolutions).

### Save Image

*Exports the active frame to an image in *.vst* format.*
Follow Dial

- **Follow Dial**

  Synchronizes the movement of the monitor with the dial of the **Parameters** tab and at the same time with the movement of the **Keyframe Slider** of the **Visual Editor**.

Center Monitor

- **Center Monitor**

  Centers the mark in the **Node Graph** view, and changes the monitor mark into a vertical evaluation fixed line, which evaluates from the top track to the bottom. In this mode, the monitor mark has no header or end of Range.

  Its main use is to enable working in a traditional editing manner, in jobs which only require horizontal editing, color correcting or simple effects.

Safe Area / Grid

- **Safe Area**

  Controls for viewing reference guides in the image of the monitor.

  The lines drawn by these options will only be visible in the monitor panel, and not in the video output.

- **Grid**

  Buttons that activate the viewing of a safety area that can be specified by the user, changing the percentage value in numerical fields shown beside the X and Y buttons.
<table>
<thead>
<tr>
<th>Grid X; Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buttons that activate the viewing of a grid that divides the monitor horizontally and vertically. The grid can be specified by the user, changing the percentage value in numerical fields beside the X and Y buttons.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Zoom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enlarges or reduces the view of the image evaluated in the panel.</td>
</tr>
<tr>
<td>Zoom In</td>
</tr>
<tr>
<td>Enlarges the view of the image evaluated in the panel. As well as the mouse wheel (the usual zoom method in most panels considered) the hotkey <code>&lt;Up&gt;</code> can also be used.</td>
</tr>
<tr>
<td>Zoom Out</td>
</tr>
<tr>
<td>Reduces the view of the image evaluated in the panel. As well as the mouse wheel (the usual zoom method in most panels considered) the hotkey <code>&lt;Down&gt;</code> can also be used.</td>
</tr>
</tbody>
</table>

To reposition the image view, right click on it while dragging the cursor.

**Note:** This enlargement, reduction or repositioning is only visible in the monitor panel in the interface, and not in the video output.

Bear in mind that this zoom amplifies only pixels that have already been processed, ie. if the original image has a greater resolution than the working format (MistikaSetup RenderFormat), non-visible details will not be recovered by this type of enlargement. This is a common conceptual error which should be understood in order to be avoided.

For example, if we have a PAL (720x576) preset and a 2K (2048x1556) image has been imported which has been reduced to PAL size (for example via the Comp3D or Framing) effect, the zoom of the monitor panel cannot carry out a quality rescale filter or show more detail than the original resolution (both of which can only be achieved through the parameters of the current rescaling effect); rather, the monitor zoom can only enlarge the pixels to which the effect has been applied, shown as larger squares.

<table>
<thead>
<tr>
<th>Zoom Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restores only the center of the image evaluated in the panel.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Zoom Reset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restores the default value of the zoom factor and the center position of the image</td>
</tr>
</tbody>
</table>
evaluated in the panel.

- **Hide**

Hides the options panel of the monitor, making the evaluated image totally visible.

- **Move Win**

Permits the repositioning of the active display window (Source or Record) to another part of the interface: left-click, drag and release in the area desired. A permanently activated autosnap function means it is possible to return the window by dragging it to its original position.

### Node Graph Editor

The **Node Graph Editor** is the main tool for composition of **Mistika**. As its name indicates, it is based on nodes and the interaction between themselves via links and effects.

![Node Graph Editor](image)

When compositing, we will generally deal with two types of workflow: one based on layers and the other based on nodes. While layers offer greater control when working with animation and Motion Graphics, when compositing, a node-based system is much faster and accurate.

A node editor allows us to organize the various elements of the final image independently, link and interact with them as we wish, without being concerned that one node may affect others, as would happen with a layer-based system.

A node editor also offers us a very graphic and clear perspective of our composition, reducing the possibility of repeating graphic elements when using multiple inputs and outputs for each of the nodes.
The **Node Graph Editor** of **Mistika** is made up of two elements: **Workspace** and **Toolbar**.

- **Workspace**: this is the main work area of the editor. It offers total flexibility for positioning, moving, selecting, linking and eliminating nodes as we wish.

- **Toolbar**: this is a tool set associated to the **Node Graph Editor** (for more information see Node Graph -> Node Graph Editor -> Toolbar).

**Types of nodes**

**Mistika** has three major types of node:

- **Source Nodes**

These exist in their own right, as a source of content to which we apply the different effects of **Mistika**. They can be video clips, such as **Solid, Fractal, Circle, Title**... (all which pertain to FX->Mistika FX->Generate, except **Stripe**).
These are the majority of nodes, and as their name states, the carry out some kind of effect on the content nodes being used (for more information about the different effects see FX->Mistika FX).

**Multi-input Nodes:**

Within FX Nodes there is a wide variety of multi-input nodes, with Comp3D standing out as being the main composition nodes for Mistika. The particularity of these nodes is that they allow multiple simultaneous connections, which may present problems with regard to the order of the inputs. In order to resolve this situation, this type of node automatically creates inputs each time nodes are linked to them. An example is shown below:

This example shows 3 nodes connected to a Comp3D in the desired order. If we later discover that the order is incorrect for whatever reason, we can disconnect the three nodes from the Comp3D, Mistika automatically creates the three inputs in the Comp3D node so that when we connect again, we can do so in the order required without causing a change in the order of the inputs in Comp3D itself.
Connect Nodes

These are found in **FX->Mistika FX->Compose**, and are used to manually connect one node to others at the same time, since by default in **Mistika**, nodes do not have various outputs, and so they have to be created using this type of link.

**Toolbar**

The **Node Graph Editor** incorporates a tool bar for carrying out basic operation with nodes.

**Organization of nodes**

These buttons carry out operations for organizing the node tree.

- **Graph Reload**
  Refreshes the node tree when changes have not been processed visually.

- **Center View**
  Positions the node tree in the center of the **Workspace**.
The Interface

Reset Layout

Organizes the nodes automatically in the *Workspace*.

Reset Subtree

Works like *Reset Layout*, but organizing the nodes preceding the selected node.

Set Root Node

Allows the user to indicate which node is in the uppermost position in the composition.

Display Links

If activated, allows the viewing of links as a node that can be manipulated, or as a normal link, if deactivated.

Basic operations with nodes

These buttons carry out basic operation with nodes:

From left to right the buttons will cut, copy, paste and delete the selected nodes.

Groups of nodes

With these buttons we can carry out operations with grouped nodes simultaneously:

Grouping and Ungrouping

Group

Allows the grouping of selected nodes into a single node in order to organize the composition. To view the content of the group click over any node in the group while holding down *CTRL+SHIFT*.

Ungroup

Ungroups previously created groups of nodes.
**Timewarp**

Allows the editing of the speed of the nodes contained in the group. This editing is carried out in the *Visual Editor*.

**Reverse**

Reverses the direction of playback of the selected clips.

**Time and Trim**

With these commands we can change the duration and trim the selected clip.

| Length: 25 | Trim | Tail |

**Length**

The number of frames of a clip is established automatically when it is imported to the Node Graph Editor, but this number can be increased or decreased manually using this field. If we increase the number of frames, the video clip will be reproduced more slowly; fewer frames increases the speed.

**Trim**

With this command we establish where changes in the number of frames will happen, either at the *Head* or *Tail* of the clip.

**Viewing nodes**

With these commands we can select viewing different options of the node tree.

| Root on | Top | Icons | All |

**Root on**

Selects from four possibilities the position of the output icon of the link of each of the nodes: left, right, top and bottom. The default position is at the top of the node.
Icons

Allows the previewing of the content of a node by means of an image inserted into the node itself. This is not a realtime preview, so a video clip cannot be played in this mode; the first frame of the clip will be seen.

We can select the preview to be only in the Source Nodes, or in all.

Zoom

With these four buttons we can select the level of zoom desired in the Workspace, and center the view in the selected node tree.

Keyboard commands

In the Node Graph Editor we can carry out certain operations from the keyboard:

<CTRL+SHIFT>: allows us to develop a previously created group and view its content.

<CTRL+ALT>: allows us to rotate a node tree in the direction we wish, using the selected node as the axis.

<CTRL>: allows us to move the selected node together with its subtree.

<ALT>: allows us to duplicate the selected node/s. If the command is run over the output icon of the node, a Link is generated (see Link).

<SHIFT>: allows us to select various nodes manually.

<DEL>: allows us to eliminate the selected node/s.

Basic functions

The basic general function of the Node Graph Editor is as follows:

A video clip is imported to our project. This clip appears as a content node in the Workspace of the editor. The duration of the clip establishes the duration of the composition, although this can be changed manually in Frames (Node Graph Editor -> Toolbar->Frame). If the node does not appear in the Workspace, click Graph Reload (Node Graph Editor -> Toolbar->Graph Reload)

From here we can connect effects and link nodes in two ways: automatically or manually.

The automatic mode consists of selecting the source to which the new node which we insert into the Node Graph Editor is to be connected. By this method, the new node connects automatically to the selected node. If we select several nodes at the same time
and then add a new node, all the selected nodes will connect to the new node, although it is not a multi-input node, and it will affect only the last node connected (ie the highest number in the input icon). If the selection is complex, and we select a node which is already connected at the same time as a second independent node, the new node will only connect to the free node, ignoring the connected node. If we wish to link the already connected node to the newly created node, we need to use Connect or manually create a link with <ALT>.

The manual mode consists of inserting the nodes in the composer without having previously selected any element. The nodes will then appear in the editor independently, allowing them to be connected manually. To do so, simply click and drag the gray circle on the left of each node to the node to which we want to connect it.

This operation can obviously NOT be done between Source Nodes, as the material would overlap. If we wish to combine different clips and material, we have to use nodes that allow multiple input, of which the best example is effect Comp3D (FX->Mistika->FX->Compose->Comp 3D), which allows us to compose these graphic elements in a 3D environment (see Comp 3D).
E-4 Visual Editor

Ref. Mistika: Visual Editor

This mode is used to compose layers and to work interactively with all types of effects. In other words, all the material organized and derived from the Node Graph Editor is finished and polished in the Visual Editor. The Visual Editor is the means of expression for the VFX artist.

To access this mode, double left click on an effect clip.

The Visual Editor is formed by three complementary areas: Canvas, Dashboard and Parameters.

The Canvas is the area where the result of the processes applied to the selected effect clip, and allows us to work on it via interactive manipulators.

The Dashboard is the main control panel which has the interfaces that interact with the visual manipulators, such as the management of motion trackers, the color correction spheres, the composing manipulators in 3D, etc. Depending on the type of effect applied, the permitted manipulation modes will appear active, and those not allowed will appear semitransparent, and cannot be selected.

In the Parameters area, the values of parameters of any selected clip or group can be viewed and edited.

The Back button allows the activation or return to the Node Graph Editor mode.

In double monitor configurations, there will be the panels corresponding to the Node Graph Editor mode in one monitor and that corresponding to the Visual Editor mode in the other. To avoid waiting time due to double evaluation, the Visual Editor should not be activated when we are working in the Node Graph Editor. In these cases, as well as the modes buttons (and their associated hotkeys), we can use the following method to indicate to Mistika that we want alternate the evaluation between modes:
**Node Graph Editor:** double click on the background of the Node Graph.

**Visual Editor:** double click on the effect to be worked on.

---

**Canvas**

Ref. Mistika: Visual Editor->Canvas

The **Canvas** has an image area with an evaluation zone and inactivate zones. A manipulator can be placed in any part of the image area, but only the result of the effect will be viewed.

Note: the evaluation zone coincides with the image aspect ratio specified in **Mistika Setup**. If the resolution configured in **Mistika Setup** cannot be viewed because it exceeds the size of the **Visual Editor**, the default zoom value by will be automatically specified so that the entire evaluated image will be viewed. For example, in the case of HDTV, the default image zoom is ½; the image can be enlarged at any time to see the true resolution.

Below the area of the image are the tools specific to **Canvas**.

---

**Toggles**

Ref. Mistika: Visual Editor->Canvas->Toggles

The **Toggles** set of buttons contains a series of controls for the visual evaluation and manipulation of the clip.

---

**FX Presets**

Ref. Mistika: Visual Editor->Canvas->Toggles->FX Presets

The purpose of this panel is to make saving and the application of predefined effects (**presets**) easier.
This panel interacts with the Visual Editor, by keeping the active clip as a preset, or loading a previously stored preset, replacing the selected clip or adding it on top of the specified clip.

The panel consists of a browser similar to Media. It also contains, a special group of buttons with the special save and load commands.

Its function is to make it easier to apply user-defined effects.

For example, one recurring task is to apply the same color correction to different clips. In this case, the panel offers the same functionality as the "color note" system in telecines. The panel has ten memories into which the user can load predefined effects to be applied on the viewed image with a simple keyboard shortcut (the ten numerical keys) replacing the effect by selecting or adding the new effect over the existing ones.

The panel has 10 memories \((PR0-PR9)\) which the user can load with predefined effects for their later retrieval to apply these effects to the viewed image, re-employing the selected effect or adding the new effect to the existing ones.

The browser can navigate through any directory, but its start directory is the \(\text{/PRESETS}\) subdirectory of the current project.

**Commands:**

- **Navigation commands**

**Recover Snapshot**

Assigns the icon image of the preset for the Snapshot tool.

**Set Destination Folder**

Sets the directory where the presets are saved. To do so, it is necessary to locate it in the desired directory (via the browser) before defining the command.
Max

Expands *FX Presets* to fullscreen. To return the panel to its normal size, press this button again.

HideCtrls

Hides the group of buttons which has the commands special of the panel. To un-hide the group of buttons, press the keyboard shortcut of this command.

Creation commands

<table>
<thead>
<tr>
<th>Create</th>
<th>Cr/auto</th>
<th>Replace</th>
<th>On Top</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Create

Saves a copy of the viewed effect in the explored directory, opening a dialog box in which the user specifies the name of the preset created. Also, the name will be preceded by three automatically created numbers.

**Note:** The *Eval Tree* evaluation level is saved, not the manipulation level. If the selected effect is a color corrector, the extension of the saved preset is `.pcc` whereas for other effects, including groups and templates, the extension is `.pfx`. In both cases, the file saves the current viewed image as an icon from the created preset, to make identification of the saved effect easier.

Cr. Auto

Saves a copy of the viewed effect in the explored directory, generating a name of three automatically created numbers

Replace

Replaces the selected effect as *Eval Tree* evaluation level with the effect selected from the panel explorer.

On Top

Adds the selected in the panel explorer on top of the highest clip of the stack of effects evaluated by the Tree.

**Note:** the user can also access the *Replace* and *On Top* commands directly way, by double clicking on the desired preset icon.

If the clip selected in the evaluation level of the *Eval Tree* is an effect, the preset selected in the explorer by double clicking replaces this effect. However, if it is an image clip or a group, the preset will be added on top of the highest clip of the evaluated stack of effects.
Assignation commands

The PR buttons are described next: these are 10 memories for quick access to presets. The 10 memories are numbered 0 to 9.

**Def**
Loads the preset selected in the browser in the selected memory, and remains assigned permanently for later Mistika sessions working in the same environment. On the Control Surfaces it is assigned with to Alt+Number.

**Def Temp**
Loads the preset selected in the browser in the selected memory temporarily (it does not remain associated to the environment), and will only work during the current Mistika session. On the Control Surfaces it is assigned with to Mode+Number.

**Use**
Replaces the clip selected in the evaluation level of the Eval Tree with the preset selected in the explorer.

**On Top**
Adds the preset selected in the explorer on to highest clip of the evaluated stack of effects.
This panel shows the flow of the current frame as a vertical schematic similar to a directory tree. An evaluation level and an independent level of manipulation can be selected from this flow.

**Note:** Bear in mind that if the same flow contains clips of different durations, the flow representation will vary when moving the active frame, so that certain branches in the tree will appear and disappear.

In this tool, clips are represented in a simplified version with an icon for each clip that conforms to the evaluation stack, thus helping to identify each process.

The evaluation level appears with the flow line highlighted in purple. This level must be defined by double-left-clicking the branch of the process to be evaluated.

The manipulation level appears with the flow line highlighted in green. This level must be defined by single-left-clicking on the branch of the process that is to be manipulated. The indicated branch of the process is a clip, which is selected for editing either from the manipulators or from its parameters viewed in the area **Parameters**.

**Note:** Within the **Eval Tree** tool, it is not possible change the associations in a process flow. It is necessary to manipulate the effects clips and their environments from the **Node Graph Editor**.
If the effect selected by the manipulation level is an effect with multiple definable inputs (for example Comp3D) an additional input indicator will be seen, in the form of a green triangle.

Group clips can be a-collapsed within the Eval Tree, allowing them to be navigated, keeping the evaluation outside the group. Each group has a symbol on its right-hand side which a-collapses its contents.

**Note:** Given that the groups can be edited, the Keyframe Slider only shows the duration of the edited group and not the total duration of the clips it contains.

If the flow size is greater than the panel, it is possible to slide the view, right-clicking and dragging on the panel. To control other aspects of the view, this panel also has a small button panel at the bottom whose commands are as follows:

- **Width Fit**
  
  Modifies the width of the panel to the total content of the tree being viewed.

- **Width More**
  
  Increases the width of the panel.

- **Width Less**
  
  Reduces the width of the panel.

- **Show Alpha**
  
  Shows the alpha channel of the icons of the clips.

**Storyboard**

To activate this toggle, select one of the viewing modes: SB Split (one or several images will appear below the canvas) or SB Full (maximized to fullscreen). This does not appear by default, as the command SB Off will be active.

The Storyboard allows navigation through the different shots contained within the Node Graph without needing to exit the Visual Editor.
Note: Storyboard can ignore Mistika effects that are not strictly Color Grade color correctors by using the option Colourist Mode in Mistika Setup (Mistika Setup->Tangent Devices->Colourist Mode).

For this tool to work correctly, it is recommendable to organize the Node Graph with adjacent clips which have only one Color Grade corrector.

Storyboard consists of a limitless image strip, which grows according to the number of edits detected in the Node Graph. It can grow horizontally and, if there is more than one row, vertically.

Each clip is represented by a reference frame (Poster Frame), which shows the last frame viewed by the Visual Editor, or, if this is absent, the first frame of each clip.

The viewing tools SB Less and SB More are used to navigate through the Storyboard, and they allow the addition and removal of new viewing rows, automatically positioning the poster frames in the lower rows according to their order in the Node Graph (from left to right and from top to bottom). These rows correspond in size to those selected for the poster frames (from SB Z1 to SB Z4, from smaller to larger, respectively).

To move the image strip and see more distant edits, use the right mouse button, or the secondary button in other devices; this can be done for either horizontal or vertical navigation according to the viewing mode set for the Storyboard.
Scroll Active and Scroll Selected fix the position of the active selector and the Select respectively, so the storyboard is the one that moves, not the selectors.

Lock Offset locks the relative position of the clip in use (white frame) and the selected clip (red frame) for ease of navigation for correction of clips between alternating shots, such as dialogue sequences. In combination with Lock Head, the user can permanently keep the relative position between the shot in use and HeadB; or set HeadB in a reference shot and lock the relative position between the clip in use (white frame) and the selected clip (red frame), and be able to return at any time to the clip assigned as HeadB.

Lock Head locks the position of HeadB as selected clip (red frame).

The Autosnapshot function generates snapshots automatically when we move the selector in the Storyboard. Basically it joins the Select Prev/Next function in Bring and Snapshot Selected in the Snapshot menu.

Create All Icons generates all the images of the Storyboard and save them in .rgb format in PRIVATE folder inside the Project directory. This command allows to speed up the movement in the storyboard, which loads instantly when the icons are created. With Flush Icons we can eliminate these images.

To skip to the next color corrector, use the commands Next Edit / Prev Edit of the Node Graph Shuttle, skip to another clip directly using the Storyboard, selecting the poster frame within the image strip, while holding <Shift> clicking the desired image.

Another main function of Storyboard is as a shortcut to run the command Bring, by double-clicking any poster frame which brings the selected correction to the clip being viewed and edited in the Visual Editor.

The commands Snapshot Selected and Bring->HeadB to Selected can also be run directly in the Storyboard. Hold <Ctrl> and click a poster frame, which takes a snapshot of the frame being viewed in this poster frame (this can also be done with the Snapshot toggle, selecting the poster frame and the command Snapshot Selected). To set HeadB, hold <Alt> and double-click the poster frame where we want HeadB to be set.

Scopes

With these Toggles it is possible to activate up to four monitors in order to evaluate an image via vectorscope-type graphics, waveform monitors or RGB, YUV and Luma histograms.

In the case of the evaluation of a stereo clip, the active Scope differentiates the signal from each eye with the colors red an cyan.
Modes

This dropdown button defines the type of monitor the evaluation of the image will use.

**Vectorscope**

Vectorscope mode which shows a statistic of colors present in the image. In the center of the circle are the unsaturated colors, and around the edge are the saturated colors. Vectorscope has orientative boxes that represent the position of the primary and secondary colors in their maximum saturation.

**Wform RGB**

RGB waveform mode showing brightness levels in three columns corresponding to each channel, Red, Green and Blue.

**Wform RGB Overlap**

RGB + Luma waveform mode, superimposing the luminance graphic to the brightness level of the three channels separately: Red, Green & Blue.

**Wform YUV**
YUV waveform mode showing brightness levels in three columns corresponding to each component, Luminance (Y), Red minus Luminance (R-Y=U) and Blue minus Luminance (B-Y=V).

**Wform Luma**

Classic waveform mode showing brightness levels.

**Histo RGB**

RGB histogram mode which shows the statistic of number of pixels according to their value for each channel: Red, Green and Blue.

**Histo YUV**

YUV histogram mode which shows the statistic of number of pixels according to their value for each component: Luminance (Y), Red minus Luminance (R-Y=U) and Blue minus Luminance (B-Y=V).

**Histo Luma**

Histogram mode which shows the statistic of the number of pixels according to their Luminance value.

**Stereo Channel**

Dropdown button that sets whether the evaluation graphics of the monitor correspond to *Left Eye*, *Right Eye* or to both eyes of a stereoscopic image (*Both Eyes*).

**Brightness**

Graphic brightness control. This button should be clicked and dragged to the edges: to the left reduces brightness, to the right increases it.

It is also possible to control graphic brightness by left-clicking on the graphic and dragging to the edges.

**Zoom**

Controls the degree of zoom of the scopes, allowing the visualization of values above 1024 or below 0 (if *NP* is active). This very useful for controlling superwhites/superblacks, and for workflows with HDR material.

**Positive and Negative values**

Allows the visualization of values below 0.

**Scope Size**

Controls the size and the quality of the scope.
Quality

Switches between *Best* quality and *Fast* quality (*Fast* quality requires fewer resources).

Move

Once the graphic view is enlarged, this repositions it by right-clicking and dragging

Snapshot

*Snapshot* is a useful tool for comparing color corrections of different clips, helping balance colors in different shots.

To create a snapshot, simply run *Snapshot Current* from its dedicated interface or select a poster frame from within the image strip of the *Storyboard*, via the command *Snapshot Selected*. These commands save an image in a memory that can be viewed in the full or split screen.

To see the snapshot in fullscreen, run *Show Snapshot* (it will mark at the foot of the Snapshot image indicate that a capture is being viewed).

If we wish to share the *Snapshot* with the clip active in *Storyboard* on a split screen, use one of the three following modes: *Show Split* (the last viewing configuration used), *Preset Split Wipe* (a generic split screen view) and *Preset Split SBS* (*Side By Side* viewing in order to have both images whole). To modify the dividing line of the *Snapshot*, use the *Wipe Position* and *Wipe Angle* tools (with the tool *Draw Outline* we can view the edge that indicates which image is the snapshot). The relative sizes of the two images being compared can also be modified with *Snap Position*, *Snap Zoom* (for the memorized image) and *Live Position* and *Live Zoom* (for the image being worked upon).

It is also possible to control this dividing line and change its angle of rotation via the Tangent Devices control panels. For more information, see Annex 3: Mistika Tangent Devices.

Depth Graph

The *Depth Graph* toggle invokes the stereoscopic evaluation tool of the *Stereo3D Editor*.

For more information, consult the section *Depth Graph* in *Stereo 3D*. 
Keyframe Graph

The Keyframe Graph toggle invokes the curve animation editing tool of the area Parameters.

For more information, consult the section Keyframe Graph of the Node Graph Editor.

Zoom Controls

Ref. Mistika: Visual Editor->Canvas->Zoom Controls

- **Zoom In**
  
  Enlarges the view of the evaluated image in the Canvas.

- **Zoom Out**
  
  Reduces the view of the evaluated image in the Canvas.
  
  The most convenient method for adjusting horizontal zoom is usually the mouse wheel, since it is linked to the hotkeys **<Up>** and **<Down>**.
  
  **Panning:** Once the image is zoomed, reposition it by left clicking the mouse on the image and holding down **<Alt>** and **<Ctrl>** whilst dragging the cursor.
  
  **Note:** The enlargement, reduction or repositioning of the image is only visible in the Canvas, and not in the video output.

- **Zoom Center**
  
  Repositions the evaluation area of the Canvas in its central position, independently of value the of zoom or the position defined with the right mouse button.

- **Zoom Reset**
  
  Restores the default zoom factor and centers the evaluated image in the panel.

Display Filters Shortcuts

- **T1, T2, T3, T4**
  
  Allows the combining of and switching between the use of various Display Filters previously created and selected for each shortcut in the Visual Editor->Display Filters.
Keyframe Slider

Ref. Mistika: Visual Editor->Canvas->Keyframe Slider

The Keyframe Slider is a offset control for the duration of the effect selected. The ruler represents the totality of the duration of the clip and is especially useful for evaluating the position of the keyframes in an animation.

This slider has a manipulator with the number of the active frame of the effect. This manipulator should be left clicked, and then dragged horizontally to move the manipulator frame by frame, left-click at the sides of the manipulator.

The Keyframe Slider controls offer the possibility of carrying out dynamic color corrections (using all the manipulators of Color Grade) without needing to use the Curves tool or defines the values in Parameters.

Dynamic color correction is defined by one input point and one output point. These points generate a correction range represented by a green bar. The duration of this correction range can modified by moving the input and output points selecting them with <Ctrl>+<LeftClick>.

- **Key In**
  Sets the input keyframe for the color correction. It is represented by a green triangle.

- **Key Out**
  Sets the output keyframe for the color correction. It is represented by a red triangle.

- **Neutral Key**
  Inserts a keyframe in the current frame with the default values of the color corrector.
  **Note:** The aim of this command is to remove the values applied to the input or output point of the dynamic correction. To do this, it is only necessary to position it in any previous or later frame in range of the dynamic correction.

- **Delete Key**
  Eliminates the keyframe found in the current frame within the range of the dynamic correction.

- **AutoKey**
  Activates the no-animation mode of parameters.
  If activated, this mode establishes that any modification carried out from the fields of values will displace the curve in its totality.
  If deactivated, a keyframe is automatically inserted in the active frame each time we modify a value.
After Last

Specifies the active frame to be located in the frame after the end of the effect (the clip Out Point). This allows parameters to be edited with the manipulators in a frame after the last one, thus making it possible to maintain a parameter animated up to the second field of a video sequence.

Feedback

Activates constant updating of the evaluation. When this option is turned off, the image is only evaluated when a manipulator is released or the dragging of a value from the Parameters area is stopped, but it will not be evaluated during modification.

If deactivated, the Keyframe Slider will also cease to update the image until a frame is released.

When the effects are complex, it is advisable to deactivate this option, to avoid delays due to constant evaluation during the modifications.

Quick Access

Ref. Mistika: Visual Editor->Canvas->Quick Access

The Quick Access button bar provides direct access to a series of frequently used commands and tools that are common to the different working modes in Mistika.

These commands are divided into groups according to their functions.

Timeline Shuttle

These functions allow control of the offset of the Node Graph below Monitor, without needing to exit the Visual Editor.

Prev Edit

Moves the selection in the Node Graph to the previous cut found in the range of the monitor, updating the duration of the Keyframe Slider to the new selection.

A cut is the first frame of the head of a clip or the one following its tail, regardless of the track it is found in.

Play Reverse

Activates playback of the Monitor of the Node Graph in reverse. Only the active monitor of the Node Graph will carry out the evaluation and not the Visual Editor.
Stop

Stops the progress of the Monitor of the Node Graph. When topped, the selection of the Visual Editor is updated to the top clip superior of the last evaluated pile.

Play

Activates playback of the Monitor of the Node Graph. Only the active monitor of the Node Graph will carry out the evaluation and not the Visual Editor.

Next Edit

Moves the selection in the Node Graph to the next cut found within the range of the monitor, updating the duration of the Keyframe Slider to the new selection.

A cut is the first frame of the head of a clip or the one following its tail, regardless of the track it is found in.

Play Buffer

Activates playback of the information stored in the buffer.

Bring

The Bring commands interact with the toggle Storyboard, making especially possible the navigation and propagation of color corrections within a previously conformed Node Graph.

The color correctors and effects of Mistika are capable of keeping a record of changes, which can be recalled via the Bring Older / Bring Newer commands. The color corrector that has created the history will possess on its poster frame two numbers separated by a slash. The first number indicates the current memory being viewed, while the second number indicates the total quantity of memories that the current effect has.

To create memories, bring previous or later corrections, new or old, use the commands Bring, which are described below.
Select Prev

Selects (with a red mark) the next poster frame, following the read order of the Storyboard.

Select Next

Selects (with a red mark) the previous poster frame, following the read order of the Storyboard.

Bring Prev

Brings the correction of the previous clip to the clip active in the Storyboard.

Bring Next

Brings the correction of the next clip to the clip active in the Storyboard.

Bring Original

Brings the correction that the clip initially had when defined as active in the Storyboard, restoring the previous values to the navigation.

Bring Modified

Brings the last correction that was modified in the clip active in the Storyboard.

Bring FX

Brings the effect or color correction selected in the Storyboard to the active clip.

Note: the selected clip, indicated with a single click, is marked with a red frame, while the active clip is marked with a white frame.

Bring Ok

Saves in a memory the color correction present in the clip active in the Storyboard. Each time this command is used successive numerically identified memories are saved.

Swap Playheads

Swaps HeadB and the clip in use (white frame), allowing the alternate correction of both clips. The default keyboard shortcut is `<keypad".>`

HeadB to Selected

Defines the selected clip (red square) as HeadB.
Go to Selected

Changes the selected clip (red frame) to clip in use (white frame), as well as moving the Monitor of the Node Graph to this clip (positioning it over the frame viewed in the Frame Poster).

Delete Current H

Deletes the memorized correction in use, renumbering the remaining memories.

Lock Selection

Locks the relative position of the clip in use (white frame) and the selected clip (red frame) for ease of navigation for correction of clips between alternating shots, such as dialogue sequences.

In combination with Lock Head, the user can permanently keep the relative position between the shot in use and HeadB; or set HeadB in a reference shot and lock the relative position between the clip in use (white frame) and the selected clip (red frame), and be able to return at any time to the clip assigned as HeadB.

Lock Head

Locks the position of HeadB as selected clip (red frame).

Bring Preview

This functionality allows the previewing of a color correction in the active shot while we have the button pressed. When the button is released the preview will disappear. For ease of use there is a shortcut in the Storyboard accessed by mouse or pen: if we click and hold in the shot with the color correction we wish to view, we will see the active shot with the correction applied to it. When we release, the preview disappears. If we want to apply a preview to the shot, simply follow the previous procedure to preview, and while maintaining the shot clicked drag the mouse or pen up.

Bring Older

Navigation mode that recovers a memory previously defined in the corrector. The direction is towards the first saved memory (Older).

Bring Newer

Navigation mode that recovers a memory previously defined in the corrector. The direction is towards the last saved memory (Newer).

Bring H1, H2, H3, H4, H5, H6, H7, H8, H9, H10

Navigation mode that recuperates a memory previously saved in the corrector according to its numbering, with H1 representing the first (or oldest) and H10 the last (or newest).
The functions in Gang act directly on the Storyboard tool, enabling navigation through, and organization, comparison and propagation of color corrections within a previously conformed Node Graph. It is also essential in its interaction with the Propagate tool.

The use of Gang is focused on the grouping of shots, principally for color correction (although it can also be used with any kind of clip), making it easier to compare, propagate and navigate between the selection of shots that have been classified. It is possible to create gangs (groups of shots under the same indicative name) as required, with their classification appearing in the Storyboard with Gang superimposed over the thumbnail of the shot.

The same shot may have more than one Gang indicator; if so, the different names will appear over the thumbnail in the Storyboard.

### Gang

In this first tab it is possible to choose the desired gang from a dropdown list that shows all the gangs that have been created.

### New Gang / Delete Gang

Allows the creation of new gangs and the elimination of those selected in first tab. When creating a new gang, a window with a write-field will appear for name the gang.

### Solo

Activates only the mode of the selected gang. When using this mode, the Storyboard will show only the shots associated to this Gang, and the navigation functions will obey this shot restriction. On the other hand, the functions related to the Node Graph, such as Play are not subject to Solo mode.

### Add / Remove

When adding or eliminating any shot to or from a Gang, there are three modes for grouping this shot shown in the Storyboard under the given gang. To add or eliminate it, left-click on it in the Storyboard while holding down <Ctrl>+<Shift>.

**Add / Remove from gang only for the edited layer**

Adds or removes from the gang only the layer of the shot being edited.

**Add / Remove from gang all effects of the current stack**

Adds or removes from the gang all the layers of the current stack of effects of the
shot.

*Add / Remove from gang all effects of the current stack of the same type as the edited effect*

Adds or removes from the gang all the layers of the current stack of effects of the shot that are the same type as that being edited.

**Composer Shuttle**

Functions for playback and evaluation of the *Visual Editor*.

![Composer Shuttle](image)

- **Go To Start**
  
  Moves the *Visual Editor* back to the first frame of the selected clip.

- **Prev Key**
  
  Moves the evaluation back to the first frame with a keyframe.

- **Play Backwards**
  
  Activates playback of the *Visual Editor* in reverse for the duration of the clip selected.

- **Stop**
  
  Stops playback of the *Visual Editor* in the duration of the clip selected.

- **Play**
  
  Activates playback of the *Visual Editor* in the duration of the clip selected.

- **Next Key**
  
  Moves the evaluation forward to the next frame with a keyframe.

- **Go To End**
  
  Moves the *Visual Editor* forward to the last frame of the selected clip.

- **Play All**
  
  Activates playback without pausing at the end of the clip that is loaded into the
**Visual Editor.** When stopped manually, the current clip is loaded.

- **Loop**

  Activates continuous looped playback of the selected clip. This button is especially useful when used in conjunction with *Mistika Live* to enable on-set viewing. When activated, the *Mistika Live* input can be refreshed continuously in the *Visual Editor*.

- **Full Screen**

  Display the image of the *Visual Editor* to full screen.

**Options**

These affect these viewing mode the evaluated images.

- **View**

  Sets the channels of the image viewed in the evaluation of the Visual Editor.

  **RGB**
  
  Shows the RGB channels of the image.

  **R**
  
  Shows the red channel of the image.

  **G**
  
  Shows the green channel of the image.

  **B**
  
  Shows the blue channel of the image.

  **Alpha**
  
  Shows the alpha channel alpha in grayscale.
**RGBxA**

Shows the alpha channel multiplied by the channels of the image.

This option does not affect how the image is composed although it allows us to evaluate visually how the image would be when pre-multiplied by its alpha channel and composed on a black background. This evaluation is especially useful in effects which have the parameter "Premultiply" activated.

**Res**

Controls the evaluation resolution of the Visual Editor, which allows us to choose between better image quality or more interactivity when making changes.

**Proxy**

Sets the evaluation of the Visual Editor in low resolution (resolution Proxy).

**Dynamic**

Sets the evaluation in dynamic mode, automatically switching between low resolution during the editing of a parameter and returning to high resolution when releasing its manipulator or stopping dragging the value from Parameters.

This also activates the switch to low resolution while dragging the Time Slider.

**Full**

Sets the evaluation of the Visual Editor in high resolution.

**Interlaced**

Sets the evaluation done in the resolution to only one field, and not to the entire frame.

**Note**: This option is especially useful in the case of the evaluation from the monitor being sent to the video output, avoiding the flicker between fields generated when the monitor is stopped on an interlaced clip.

**Live**

Sends the evaluation of the Visual Editor to the video output.

**Parameters**

Ref. Mistika: Visual Editor->Parameters

This area shows and edits the values of parameters of any effect clip, Timewarp group or audio clip selected from the toggle Eval Tree or derived from a selection made in the Node Graph.

For more information, consult the chapter Parameters of the Node Graph Editor.
Dashboard

Ref. Mistika: Visual Editor->Dashboard

The Dashboard area contains various interactive manipulation interfaces whose application modifies the parameters of effects and the behavior of clips. It also contains evaluation tools and submodes pertaining to some effects.

Depending on the effect parameters selected, different manipulation modes will be available. The tabs (Manipulators Tab) that are not available for the selected effect will deactivate, and only those available will be shown.

The manipulation modes of the Dashboard are organized according to their functions and are accessed via the Manipulators Tab:

Set Color

Specifies the color values for different manipulators in effects with color parameters. They can also be specified by selecting an image color.

Pick Key

Specifies ranges of tolerance and transparency (softness) of the mask being edited, which can be specified in the image or from a manipulator in the graphical histogram.

Framing

In effects that possess cut (Crop) parameters, the values of these parameters are defined via manipulators on the image assigned to each side of the frame. This tab also contains tools to assist the user in the calculation of standard letterbox-type aspects and masks.

Stereo3D

Tab with manipulators dedicated to work on stereoscopic images. To use these tools, it is necessary activate the stereo mode (Use Stereo Mode) in the Quick Access bar.

2D
In effects with XY position parameters, this specifies the two-dimensional position by using a cross-hair image manipulator that can be dragged over the image.

**Comp3D**

This is used exclusively by the *Comp3D* effect and specifies the three-dimensional position and rotation of each layer by using manipulators on the image, as well as camera views, lights, and other functionalities associated with this effect.

**RGBCorrect**

Specifies the values of an RGB color correction with a manipulation interface based on knobs, balls and rings that emulate the behavior of a telecine interface.

**Color Grade**

Specifies the values of an RGB color correction via a manipulation interface based on knobs, balls and rings structured in successive layers or nodes called vectors.

**Open FX**

Enables the viewing of *Open FX* plugins directly in the *Visual Editor*.

**Shapes**

Interface for generating and modifying vectorial forms (*Shapes*) that modify the alpha channel of the selected clip.

**Paint**

Access to the submode *Paint Editor*. This tool contains manipulators that pertain to the effect *VectorPaint*.

**Title**

Access to the submode *Title Editor*. This tool contains commands that pertain to the effect *Title*.

**Warper**

Access to the submode *Warper Editor*. This tool contains manipulators that pertain to the effect *Warper*.

**Tracking**

Access to the submode *Tracking Editor*. This tool extracts information about movement of an image to be applied to two-dimensional parameters of any effect. This mode is always accessible independently of a clip of an image or type of effect selected.

**Set Color**

Ref. Mistika: Visual Editor->Dashboard->Set Color

This manipulator is accessible from all the effects with color parameters, and is shown in *Red*, *Green* and *Blue*, as also in *Hue*, *Saturation* and *Lightness*.

Some effects have more than one set of color parameters. To work correctly with these
effects, it is necessary to choose explicitly one of their folders with color parameters, by selecting the folder from the folder list with the left mouse button. On the other hand, if the selected effect has only one set of color values, the manipulator will always work with this set without having to select it.

The manipulators of this mode are viewed in the Dashboard.

The color selector will initially show the color values that the parameter being edited has at that moment:

The Sliders viewed in the manipulator show the value of the color component at each moment.

The user can specify the active color with the following different procedures:

- **Pick Color**
  
  Select the current color from an image pixel. To use this button, press and drag it with the left mouse button, and without releasing it until the pixel whose color we wish to obtain as been reached.

- **WYSWYG (What You See Is What You Get)**
  
  Specifies that the background of each unedited slider changes its color interactively, which helps the user to position the slider on the color waned.

- **RGB Sliders**
  
  Controls that specify a color by its percentage red, green and blue. The value of each channel is shown at the right of each slider, expressed as an editable 8 bit numerical value (256 levels).

- **HSL sliders**
  
  Controls that specify a color by its percentage tone, saturation and value.

- **Color Wheel**
  
  color wheel that specifies the saturation (radius vector) and the hue (vector angle), together with a vertical slider that controls the color value.
Color Store

Library where the user can save or load colors. To save the active color, click on an open library cell. To load a color to the library, click on one of the saved colors.

The library also has two small buttons:

**Delete**

Eliminates the selected color.

**Pack**

Orders the boxes of colors used.

The **Set Color** manipulators can be used for different purposes:

- Specify a color.
- In certain effects, specify levels of black and white, or carry out a white balance (for more information, see the chapter Color Grade).

**Note:** For the **Color Key** effect, select the crop colors in the image with successive left mouse button clicks on the image, without needing to use the sliders or the **Pick Color** button.

**Pick Key**

**Ref. Mistika: Visual Editor->Dashboard->Pick Key**

This specifies the values of the **Toler** and **Soft** parameters for the selected effect.

These parameters specify the transparency/opacity values of the generated mask, generating a decreasing slope of opacity between the values specified by the **Toler** and **Soft** parameters, which is interpreted as the hardness or softness of a specified mask.

The user can choose either of the two following methods to specify these parameters.

From the Histogram panel
This Histogram represents the number of pixels (Y axis) in the image for each possible tonal value used by the effect (X axis), and has two marks to manipulate the range of values to be used to create the mask. All the pixels with tonal values to the right of the Soft mark will produce a totally transparent mask, while values to the left of the Toler mark will produce a totally opaque mask. Values between the two marks specify the values for semi-transparency, decreasing from left to right.

**From the image**

Where values can be directly selected on the image, click first on one of the two buttons on the panel (buttons Pick Transparent and Pick Solid) and then select any value on the Visual Editor image by left clicking and dragging, which selects the average value of the pixels included in the block.

**Framing**

Ref. Mistika: Visual Editor->Dashboard->Framing

This tab contains the parameters for rescale and crop (functions also known as "Pan & Scan") if the clip to be corrected has a different resolution to that of the job, these parameters allow reframing of the material for the correction.

The tools of the Framing tab defines the values of the parameters of the folders Crop, Offset and Scale

These functions can scale the original resolution, thus avoiding use of an additional effect for this task.

**Canvas**

In the Canvas, this manipulator has four dotted lines drawn on the image that represent the position of each cut margin of the effect.

These manipulators can be individually specified by dragging them with the left mouse button. The crop can also be transformed using the corners and the rectangle can even be moved by left clicking in the center.

**Dashboard**

In this manipulation mode, the Dashboard has a button panel to assist the user with the crop expressed according to aspect relation of values expressed in current pixels.
Rescale:

- **Rescale Apply**
  Activates/deactivates the rescale and crop function.

- **Quality**
  **[Bilinear (Nearest/Bilinear/3 Taps/Bicubic/5 to 15 Taps)]**
  In the dropdown parameter list, the available qualities are ordered from lowest to highest from top to bottom. It is recommendable to specify the lowest quality that gives visible improvements, as the higher the quality specified, the more calculation time required.

Auto Resize:

- **Fit X; Fit Y**
  Automatic rescale commands that adjust the original resolution of the image to values defined by the horizontal or vertical resolution of the Mistika project, maintaining the aspect ratio.

Set Crop:

This group contains buttons that apply preconfigurations for cuts that are adjusted to norms used in the audiovisual industry.

The text field **Apply Custom** allows the application of value defined by the user.

Source Size:

- **Source Size X**
  Shows the horizontal resolution of the original image.

- **Source Size Y**
  Shows the vertical resolution of the original image.

- **Source Ratio**
  Shows the value of relation of the aspect ratio of the original image

**Note:** These numerical fields are not editable.

Result Size:

- **Result Size X**
  Shows the horizontal resolution of the resulting output image.
The Interface

- **Result Size Y**
  Shows the vertical resolution of the resulting output image.

- **Result Ratio**
  Shows the value of relation of the aspect ratio of the resulting output image.

  **Note:** These numerical fields are not editable.

**User Crop in Pixels:**

- **Left; Right; Up; Down**
  Sets cropping for an image form its four margins, drawing in black the exterior area to be cropped and cropping the alpha channel.

- **Lock Ratio**
  If this state button is active, the XY relation of the aspect ratio is maintained.

- **Reset**
  Command that restores the crop to its original values.

**User Resize and Offset in Pixels:**

- **Scale X; Y**
  Defines the rescale value in pixels of the output image.

- **Offset X; Y**
  Specifies a two-dimensional offset output image, expressed in percentage units.

- **Lock Result Ratio**
  If this state button is active, when rescaling a image, the XY relation of the "aspect ratio" is maintained according to the value shown in the box **Result Ratio**.

- **Lock Current Ratio**
  If this state button is active, when rescaling a image, the XY relation of the "aspect ratio" is maintained according to the values set in **Scale X** and **Scale Y**.

- **Reset**
  Command which restores the rescaling to its original values.
Stereo3D

Ref. Mistika: Visual Editor->Dashboard->Stereo3D

This set of manipulators is especially designed for stereoscopic effects.

This *Manipulator Tab* is activated by selecting the group *Stereo3D*.

For a detailed description of this panel, read the chapter on Stereo3D.

2D

Ref. Mistika: Visual Editor->Dashboard->2D

In effects with XY position parameters, this specifies the two-dimensional position by using an image manipulator that can be dragged over the image.

Some effects have more than one set of two-dimensional position parameters. To work with these effects correctly, one of its folders with two-dimensional parameters must be explicitly chosen, by selecting the folder from the folder list with the left mouse button.

However, if the selected effect only has one set of two-dimensional values, the manipulator will always work with it without needing it to be selected.

The manipulator appears on the image as a cross that specifies the two-dimensional position. This manipulator can also be placed in the inactive area of the Visual Editor.

Comp3D

Ref. Mistika: Visual Editor->Dashboard->Comp3D

This specifies a three-dimensional position for the all components of the *Comp3D* effect.
This manipulation mode has manipulation options and different types of manipulators that are controlled from the Canvas and from the Dashboard.

**Canvas Manipulators**

The types of visual manipulator shown below correspond to each object type existing in three-dimensional space, and are as follows:

- **Layer**
  
  Manipulates a selected layer. The layer can be moved, rotated or scaled in one or all its axes from its manipulator.

  **Note:** A layer is effect input that can be manipulated. The input specified as the background (if it exists) cannot be manipulated. Thus, if Options->Background of the Comp3D effect is activated, the first input will be the background, which cannot be altered.

  It is also important to remember that the successive inputs added to the range of this effect require Folder->Add Folder to be run to add a new parameter folder to the Comp3D effect, before they can be changes with the manipulators. For more information see the chapter Comp3D.

- **Axis**
  
  Manipulates the selected global axis. All the layers can be changed at the same time with this manipulator in relation to this axis: moving, rotating or scaling the manipulator in one or all its axes.

  **Note:** the effect has two global axes that can be selected. The transformations of these axes move all the layers of the effect at the same time, but not the lights nor the camera. For more information see the chapter Comp3D.

- **Light**
  
  Manipulates the selected light. For each type of light there is a manipulator different. The Directional light can be rotated, the Point light can be positioned and the Spot light can be positioned and rotated.

  **Note:** The lights cannot be scaled. However, the target of the Spot type light can be moved away from its origin with scaling. For this type of light, the position of the
target is specified in the manipulator by the end of the arrow. For more information on the behavior of each type of light, see the chapter Comp3D.

**Camera**

Manipulates the camera. The camera position and rotation in X and Y can be changed with this manipulator.

*Note:* The camera manipulator is visible except in the view from its own camera. The manipulator shows the rotation in its Z axis, and also the visual field of the camera, but these parameters cannot be modified with the manipulator. Their values can, however, be modified dynamically in the the **Parameters** tab. The camera cannot be scaled, but the camera target can be moved away from its origin with the scaling. The position of the camera target is specified in its manipulator by the rectangular plane of the pyramid. For more information on the behavior of the camera, see the chapter Comp3D.

**Floor**

Guide grid that represents a floor, situated at the level of the bottom line of the image as it appears by default.

**Global Axis / Transform Axis**

All the manipulators have one element in common: the transform axis of the object. This axis responds to direct manipulation orders.

Direct manipulation can be done by selecting the axis directly with the left mouse button, and dragging it in any direction.

Depending on the keys pressed, manipulation can accomplish move, rotate and scale as detailed below:

**Move**

Left-click directly on the axis, and drag it to a new position. The movement of the axis will be relative to the projection of the current view.

**Rotate**

Left-click on the axis while holding down `<Alt>` and drag the cursor in any direction. The movement of the cursor will rotate the selected object depending on the direction moved, emulating a spherical rotation in all the axes.

**Scale based on the horizontal movement of the mouse**

Right-click on the axis while holding down `<Ctrl>` and drag the cursor horizontally. The object will be enlarged in all its axes by dragging the cursor to the right, and reduced by dragging to the left. This method of scaling is the easiest and most intuitive to use.

**Scale by defining a scaling radius**

Left-click on the axis while holding down `<Ctrl>` and drag the cursor towards the center or the edge of the object. The object will be scaled in all its axes depending on the distance of the cursor from the center of the object.
This method of scaling is somewhat less intuitive until the user is accustomed to it, although it is much more flexible, since the scaling is done in relation to the distance of the cursor from the center (local axes) of the object: This allows the user:

- To make very fine adjustments, clicking on a point away from the center of the object (represented by the local axes) and dragging it. The object will move very slowly.
- To make more aggressive adjustments (large changes with little cursor movement), clicking on a point near the center and dragging it, either towards or away from the center.

For example, this method is very useful when "navigating" in an image with a high Zoom factor, and that therefore needs both fine and rough adjustment at different moments.

On the other hand, both scaling modes can be combined with `<Shift>` to force restrictions to certain axes, as described in the *Axis Constraint* section.

**Note:** if one of the manipulation buttons is activated, direct manipulation will be inhibited.

This axis is composed of lines and arcs:

- The red line represents the horizontal axis (X) of the object.
- The green line represents the vertical axis (Y) of the object.
- The blue line represents the depth axis (Z) of the object.
- The red arc represents the plane opposite the horizontal axis (-X) of the object.
- The green arc represents the plane opposite the vertical axis (-Y) of the object.
- The blue arc represents the plane opposite the depth axis (-Z) of the object.

These lines and arc can be activated to restrict the direct transformation of an object to one of its axes or planes, pressing the combination of move, rotate or scale, the `<Shift>` key being accurately used to select the axis or arc to be restricted.
of the current view, except when a constrain function is activated.

- **Rotate**

  Rotation manipulation mode. Movement of the cursor will rotate the selected object depending on the direction in which it is moved, simulating a spherical rotation in all the axes, except when a constrain function is activated.

- **Size**

  Size manipulation mode. The object will be scaled in all its axes depending on the distance of the cursor from the center of the object, except when a constrain function is activated.

- **Pivot**

  Pivot point manipulation mode. The pivot point is a three-dimensional coordinate relative to the layer, which is taken as the center of the layer in order to make changes to sizes and rotations.

**Manip Cam / View:**

When a view is edited (group View), direct editing keys can also be used. A view reacts differently to an axis, and its manipulation options also vary:

- **Free Transform**

  `<LeftClick>` directly on the image, and drag it to a new position. This transformation moves the position of the view, and its objective at the same time, in a similar way to a lateral camera travel.

- **Orbit**

  `<LeftClick>` on the image while holding down `<Alt>` and drag the cursor in any direction. This transformation rotates the camera around the objective.

- **Dolly**

  `<LeftClick>` on the image while holding down `<Ctrl>` and drag the cursor up or down. This transformation moves the camera nearer to or further from the objective.

- **Rotate**

  `<LeftClick>` on the image while holding down `<Alt>` and `<Shift>` at the same time, and drag the cursor in any direction. This transformation rotates the target around the camera, in a similar way to a camera header movement.

**Note:** if one of the manipulation buttons mode is activated, direct manipulation is inhibited.
**Axis Constrain:**

Buttons that specify a transformation restriction in the selected axis.

- **X; Y; Z; YZ; XZ; XY**

  Restrict the defined transformation by the manipulation mode to the axis/axes activated.

**View:**

Dropdown whose controls defines the active viewing angle.

- **Camera**

  Camera view. This is the view evaluated when a render is run.

  **Note:** the other views are guides only, and are not considered in the evaluation of a render.

- **Persp**

  Auxiliary view that can be edited. Its default value shows a panoramic view of the three-dimensional environment.

- **Front; Back; Left; Right; Top; Bottom**

  Auxiliary editable views. Its default values correspond to the view direction of its name.

  **Note:** Editing the view can disorder all views, and any can be returned to its default values with the **View Reset** function.

- **View Reset**

  Returns the view to its default value.

  **Note:** Camera is the only view that can be animated. When this function is used, a keyframe with the default values will be added to the current frame.

All the views can be edited via the **Manip Cam/View** manipulators. The buttons of the **Axis Constrain** group do not influence the editing of a view.

- **Free Transform**

  Movement manipulation mode. Movement of the view will be lateral to the projection of the current view, simulating a lateral camera travel.

- **Rotate**

  Rotation manipulation mode. Movement of the cursor will rotate the view depending on the direction in which it is moved, simulating a camera header movement.
Dolly

Approximation manipulation mode. Movement of the view will be perpendicular to the projection of the current view, simulating a dolly camera travel.

**Note:** this movement moves the camera position towards the target. If the camera overshoots it, it will invert its direction.

Orbit

Orbit manipulation mode. Movement of the cursor will rotate the view depending on the direction in which it is moved, simulating an orbital travel around the camera objective.

**Note:** to change the orbit center, the target must be edited. For more information, see the chapter Comp3D.

Display:

This controls the appearance of different types of manipulators on the image.

- **Layers**
  Activates view of the layer manipulators.

- **Axis**
  Activates view of the global axes manipulators.

- **Lights**
  Activates view of the lights manipulators.

- **Camera**
  Activates view of the camera manipulators.

- **Floor**
  Activates view of the floor grids.

- **Background**
  Activates view of the input specified as background.

  **Note:** this function is only a viewing control, and does not modify the effect parameters. The background can only be shown in the **Camera** view.

- **Hide Arcs**
  Hides arc manipulators view in all object axes.
Note: when the position of a arc interferes with the selection of an axis, this function helps to select the axis, as the arcs are hidden.

- Hide All

Hides view of all manipulators and elements of the 3D environment, showing only the images.

Aspect:

Command for restoring size.

- Resize 1:1

Command that applies values of Size necessary to return it to its original size the selected layer, since by default the Comp3D effect (with background) rescales the resolution of each file to the work resolution as specified in Mistika Setup.

Selection:

Object selection mode.

- Auto Select

Direct selection mode. With this mode, the user can select an object by left clicking the mouse directly on its manipulator.

Note: objects are often superimposed in three-dimensional space, making direct selection difficult. In these cases, we recommend selecting the desired object from the folder list of the Parameters tab.

Color Grade

Ref. Mistika: Visual Editor->Dashboard->Color Grade

This set of manipulators is especially designed for RGB color correction effects.

The Manipulator Tab is activated when selecting the color corrector Color Grade.

For a detailed description of this panel, see the chapter Color Grade.
The Interface

Open FX

Ref. Mistika: Visual Editor->Dashboard->Open FX

This tab does not have options, but is a manipulation mode for viewing Open FX plugins in the Visual Editor.

The OpenFX tab is only activated when selecting an Open FXPlugin effect.

For more information on Open FX manipulators, see the relevant documents accompanying the purchased plugins or the manufacturers’ websites.

Multilayer

These manipulators allow the user to interact with EXR or Stereo3D in Spatial Key using advanced effects (Spatial Key is also integrated within Color Grade; see Spatial Key for more details)

There are two groups of manipulators:

Spatial Key:

- **Pick object ID**
  Allows interactive selection of the object we wish to mask in the Canvas by using its ID.

- **Pick Position**
  Allows interactive selection of the object/s we wish to mask in the Canvas by using its position in the XYZ axes.

- **Pick Depth**
  Allows interactive selection of the object/s we wish to mask in the Canvas by using its position in the Z axis.

- **Pick Direction**
  Allows interactive selection of the areas of light incidence in an EXR scene by using the reflection of its diffuse component.
Layer Tools

- **Reload Layer Lists**

  Reloads the information layers of the EXR file being used, if they have not loaded automatically.

- **Reload layer Lists - Stereo**

  Reloads the information layers of the Stereo3D clip being used, if they have not loaded automatically.

Basic Function

The use of these automatic selection tools in Multilayer is the same for all. Starting with an EXR or Stereo3D file, we choose the desired selection mode. Then, in the Canvas, click on the object we want to choose from within the image. Mistika automatically selects the correct information layer to be able to carry out the required selection. Finally, we can fine-tune the resulting mask with the parameters of the Spatial Key effect, also found within the effect Color Grade.

Shapes

Ref. Mistika: Visual Editor->Dashboard->Shapes

This panel allows the creation and editing of animated vectorials (Shapes) which only affect the alpha channel of the selected clip.
When the manipulation mode *Shapes* is activated, a special button panel with commands for creating modifying, animating editing and setting attributes of shapes is seen. Also, in the tab *Parameters*, the parameters corresponding to the selected shape are seen; these can be defined in terms of position, rotation, and global size. These parameters can be edited like any effect parameter, and can even apply tracking coordinates. Furthermore, it is possible to use de offset or horizontal offset when working with stereo images, thus avoiding the need to create a vectorial shape for each image.

**Note:** When creating shapes on an image with an original size different from the work resolution in *Mistika Setup*, the image will be viewed as adjusted to be able to draw shapes in any part of the original image. When viewed in a different resolution to that of the current work, the word "Scaled" will be superimposed on the *Canvas*.

---

### Create

**Create Shape**

When active, this mode indicates that a new shape is being created (rather than a pre-existing one being edited).

To create a new shape, simply click this button and then left-click on *Canvas* to create the first point of the shape. When left-clicking a new control point is created, although while the button is held down, this control point can be dragged to the desired position. Only when the left mouse button is released will the control point defined in position. Consecutive clicks create the control points necessary to make the desired shape; double-clicking exits the creation mode, finalizes the shape, and returns to modification mode.

It is also possible to exit creation mode by clicking in an area that is not involved in the creation or edition of shapes (eg, on the *Keyframe Slider*).

**Note:** from Version 7, Mistika will create each shape or set of shapes in the vector in which we are working at any given time; thus we can create different layers of shapes, each related to a vector. These cannot subsequently be redirected to a different vector, but should rather be copied into the desired vector.

---

### Insert Point

When active, this mode inserts control points on any vectorial line, permitting the editing of a pre-existent shape.
Points Softness

*Softness* consists of a pair of tangents called *Radials* in each control point of the selected shape. These define a gradient of opacity towards the exterior and interior of a shape.

*Softness* has exterior and interior limits, viewed as cyan-colored lines that join the ends of the radial tangents.

The radial tangents can be edited like any other tangent or via the *Width* and *Offset* manipulators.

- **Width**

  *Knob*-type button: softness can easily be set with this button by dragging to the edges, increasing/decreasing the length of the radial tangents of the selected control points, proportionally to both the internal and external radials.

- **Offset**

  *Knob*-type button: softness can easily be positioned towards the interior or exterior of the shape with this button by dragging to the edges, increasing/decreasing the length of the radial tangents of the selected control points, inversely proportional to both the internal and external radials.
**Points Mode**

Default creation modes that define the shape to be created or to modify one already created (i.e., previously selected).

- **Smooth**
  
  The shape created to be formed by B-Splines. Since tangents have less control than Bezier splines, manipulation and work with B-Splines is easier. Furthermore, the precision of B-Splines is usually sufficient when adjusting a shape.

- **Sharp**
  
  Eliminates the tangents of the selected control points. If dealing with a shape, this is transformed into a polygon.

- **Connected Tang**
  
  The shape created will be formed by Bezier splines, whose nodes can be edited communally.

- **Independent Tang**
  
  The shape created will be formed by Bezier splines, whose nodes can be edited independently.

**Points Reset**

Dropdown that allows the return to default values for the tangents or radials of a control point.

- **Tangents**
  
  Assigns default values to the tangents of the selected control points, without changing the radials.

- **Radials**
  
  Assigns default values to the radials of the selected control points, without changing
the radials.

- **Radials Angle**
  
  Assigns default values only to the angles of the control points, without changing the tangents or the length of the radials of the selected control points.

- **Reset All**
  
  Returns default values of the tangents or radials of a control point.

### Shape Priority

This tab allows each shape of a specified layer or vector to be moved or have its priority changed. The shapes will have a numerical identification, showing the depth or order of the shape (this is especially important when carrying out boolean operations) in a given vector.

- **Move Up**
  
  Assigns a higher priority to the selected shape. The remaining shapes will automatically be reassigned.

- **Move Down**
  
  Assigns a lower priority to the selected shape. The remaining shapes will automatically be reassigned.

### Animation

Commands for controlling the animation of shapes.

- **Auto Key**
  
  Automatic local keyframe creation mode with each modification of the shape control point position.

- **Add Key**
  
  Adds a local keyframe to all the control points of the selected shape.

  **Note**: even if only one control point of a shape is selected, a local keyframe is added to all its control points.

- **Prev**
  
  Moves the **Keyframe Slider** back to the previous local keyframe of the selected shape.

- **Next**
  
  Moves the **Keyframe Slider** forward to the next local keyframe of the selected shape.
Delete Key

Deletes the keyframe in the current frame of the selected shape.

Edit

Commands for editing shapes used to delete and move shapes from one effect to another.

Delete

Deletes the selected control points.

Note: to delete a shape completely, first select all the points of the shape by double-clicking or using a multiple selection rectangle.

Cut All

Moves all the shapes of the selected clip to the memory, or clipboard.

Copy All

Copies in the memory all the shapes of the selected clip.

Cut Selected

Moves the selected shapes to the memory.

Copy Selected

Copies all the selected shapes in the memory.

Paste

Pastes a copy of the shapes in the memory in the selected clip.

Effect Input Alpha

Dropdown button that modifies the behaviour of the alpha channel of the edited clip.

Keep

Keeps all the original information of the alpha channel of the edited clip.

Invert

Inverts the original values of the alpha channel of the edited clip.

Clear

Eliminates all the original information of the alpha channel of the edited clip, leaving a
totally transparent mask.

### Fill

Eliminates all the original information of the alpha channel of the edited clip, leaving a totally opaque mask.

### Shape Combine

Shapes added to the current clip will be applied on the alpha channel through one of the four following application modes. The following image of a DVD player is an example to show the operation of each mode:

The idea is to trim the DVD player, and also the screen of the player. To do this, one green mask and one black mask will be extracted. Both masks need to be improved, to do which, for each one, a shape with its different application modes is used.

<table>
<thead>
<tr>
<th>Original</th>
<th>Green Mask</th>
<th>Black Mask</th>
</tr>
</thead>
</table>

### Add

Adds the area of shape to the original mask.

Therefore, this is ideal for improving the filling of the shape of the player, since the original silhouette of the extracted green mask has gaps that can be filled with shapes.

### Intersect

Restricts the area of the mask to the intersection between the area of the shape and the shape of the original mask.

Therefore, it is ideal for eliminating everything that it is not part of the shape of the
player, since the original silhouette of the extracted green mask includes a-required objects, such as the revolving base, cables and hands. Simply eliminate from the mask the a-required objects by tracing around the object that is to be preserved..

Add Inverted

Adds opacity to the original mask outside the area of defined shape.

Therefore it is ideal for adding opacity to anything outside the area of the player screen, since the extracted black mask includes shadows that are not part of the screen and must be eliminated. Everything that is outside the new shape can be defined as opaque by simply tracing around the area of the screen.

Subtract

Reduces opacity of the original mask within the area of the shape defined.

Therefore, it is ideal for eliminating the applied tracking crosses applied within the screen that have been left opaque in the mask extracted by black. This way, holes can be made in the mask, adding shapes that defines transparent zones within the mask.
Default Shape Softness Width

Numerical field where the value *Softness* is defined.

- **Default Softness**

  Defines the default value of the gradient of opacity of the visible shape, once created.

**Shape Parameters**

When a Shape is created in a node or effect, a series of parameters related to the selected Shape is automatically activated.

- **Position X**

  Moves the Shape in the X-axis.

- **Position Y**

  Moves the Shape in the Y-axis.

- **Rotation Z**

  Allows the Shape to be rotated.

- **Size X**

  Scales the Shape in the X-axis.

- **Size Y**

  Scales the Shape in the Y-axis.

- **Pivot X**

  Moves the Pivot in the X-axis.
- **Pivot Y**

  Moves the Pivot in the Y-axis.

- **Offset X Left/Right**

  Offset values added between the position of the window in the left and right images in stereo images.

- **Opacity**

  Controls the opacity of the Shape, or, in other words, the opacity of the alpha channel generated by a given Shape.

---

**Detect scenes**

Ref. Mistika: Visual Editor->Dashboard->Detect Scenes

Manipulation mode for the automatic detection of scenes. This allows the division of clips into several parts according to the detection of cuts indicating scene changes.

![Detect Scenes](image1.png)

The commonest situation that may require the use of this tool is when a media clip is available but no EDL defining the cuts is available:

- when video has been captured in Start Free mode
- when the material is derived from a Telecine or scanner without EDL, for example, a scan of a complete film intended for restoration in which the original EDL is not available.

The detection is very accurate and is based on Optical Flow (Motion Estimation) techniques, i.e., it follows all the scenes details to find the change of scene.

- **Run Scene Detection**

  This button runs the detection process for the selected clip.

  When it is finished, the scene detection graphic appears: the horizontal axis shows time, and for each frame a vertical grey mark represents the percentage of elements that have disappeared with respect to the previous frame.

  Clearly, the first frame after a change of scene will have this value much higher than the normal intra-scene frames, since the tracking process will possibly barely find
differences within the scene.

The user should then drag the orange horizontal threshold mark to define the limits of the scene. All the vertical marks that are above this threshold mark indicate a cut in the frame, and will be shown red for clarity.

**Important**: Occasionally frames may have significant changes of lighting, flashes, or moments of darkness that may incorrectly be considered as cut points depending on the threshold values specified.

To check how this affects the cut in the clip, the user can drag the Keyframe Slider of the Visual Editor to view the frame in question. The cursor of the Keyframe Slider is represented synchronously in the graphic detected scenes by means of a gray vertical bar.

Once the adjacent frames have been viewed, if the user decides that a no cut need be made, simply drag the threshold mark upwards, until corresponding mark leaves the frame in question completely at the bottom (and vice versa).

---

**Cut Detected Scenes**

This button causes the selected clip to be cut in all the frames with red showing in the scene detector (orange marks that are above the threshold bar).

Once in the Node Graph, this action can undone via the command Undo (Node Graph Editor->Node Graph ->Quick Access->History->Undo). It is also possible to rejoin erroneously cut segments with the command Join (Node Graph Editor->Dashboard->Edit->Edit->Commands->Join).

**Note**: The process Run Scene Detection can take a considerable amount of time, but the resulting information is maintained in the scene detection panel until Run Scene Detection is run again. This allows the user to change the threshold and re-cut without having to recalculate the scene detection.

The following example shows a clip before cutting (above) and a copy of the same clip after cutting with Cut Detected Scenes.
Paint

Ref. Mistika: Visual Editor->Dashboard->Paint

This *Manipulator Tab* allows access to the submode *Paint Editor*.

*Paint Editor* is an interface especially designed to work with the *VectorPaint* effect. Thus this tab is activated when applying this effect in the *Node Graph*.

For a detailed description of this submode, read the section Paint Editor of the *VectorPaint* effect.

Title

Ref. Mistika: Visual Editor->Dashboard->Title

This *Manipulator Tab* allows access to the submode *Title Editor*.

*Title Editor* is an interface especially designed to work with the *Title* effect. Thus this tab is activated when applying this effect in the *Node Graph*.
For a detailed description of this submode, read the section Title Editor of the Title effect.

**Warper**

**Ref. Mistika: Visual Editor->Dashboard->Warper**

This Manipulator Tab allows access to the submode Warper Editor.

Warper Editor is an interface especially designed to work with the Warper effect. Thus this tab is activated when applying this effect in the Node Graph.
For a detailed description of this submode, read the section Warper Editor of the **Warper** effect.

**Tracking**

Ref. Mistika: Visual Editor->Dashboard->Tracking

This **Manipulator Tab** allows access to the submode **Tracking Editor**.

**Tracking Editor**

Motion Tracking manipulation mode, that allows the moving of a pixel pattern selected via an image sequence, creating animation curves that can be used to stabilize the movement of an image, to compose new layers in movement or to apply the path obtained to any
effect with two-dimensional positioning parameters.

This mode has two types of control:

Manipulators that appear superimposed on the image in the area of the Canvas and manipulators that are controlled via the Dashboard of the Tracking Editor.

**Canvas:**

These manipulators can be used to specify the pattern to be tracked, specify a search area, view the path of the tracked movement, modify the position of this path, visually specify a offset between the search pattern and the path obtained and view segments that join several tracked points.

The manipulator that specifies the search pattern is called "tracker".

The tracker is a rectangular area, shown as a dotted blue line, which can be positioned in any part of the screen, by left-clicking inside it dragging it to any other position. The size of the tracker can also be changed via its size manipulators (the small squares found in the top right and bottom left corners).

The tracker contains the pattern or set of pixels that the tool will try to recognize in the images that compose the sequence. The tracker content is commonly called "tracking point".

The criteria used for choosing a good search pattern must follow certain principles:

- The pattern should be present in the entire range of frames where the search will be run (for example, do not select a pattern that will not be visible in subsequent frames due to disappearing from shot or of being hidden).

- The pattern should be an area of the image that can be clearly distinguished (for example, part of a smooth wall is not a good tracking point, since one part of a smooth wall can be identical to another; a nail in the wall is a good tracking point).

- The smaller the pattern, the faster the search.

- Lines are not good tracking points, since their parts may be identical and the tracker may slip.

- If the sampled area is confusing or has insufficient contrast, the tracking result can be improved by applying a previous color correction, to provide the maximum contrast in the details to be tracked and eliminate unnecessary information.

- If there is noise in the image, before doing motion tracking, the Denoise (Node Graph Editor->Dashboard->Fx->Mistika->Denoise) effect can be applied to improve the quality of the patterns to be tracked.

- It may also be useful to try the Channels (Node Graph Editor->Dashboard->Fx->Mistika->Boolean->Channels) effect to eliminate the channels with most noise, since in many occasions noise comes more from some channels.
than other.

The following image is an example of search pattern selection and of the path obtained.

The *Path* consists of the linear union of the positions where the search pattern is found in each frame of the sequence. These straight lines are linear interpolations between the positions of each frame tracked by the process. These segments can be clearly distinguished in the path as they are drawn alternately in light blue and orange.

The path obtained by the tracker will be applied to the original center of the tracker, called *Target*, which is shown as an orange circle at the center of the tracker.

The user can add any number of required trackers at any time, which will be identified by a number or name accompanied by a letter T, and will appear at the bottom of each tracker rectangle.

To optimize the search pattern, a search zone can be specified. This zone is a second rectangular area, similar to the tracker, but with the size manipulators in the opposite corners.
This zone specifies the search zone of the next frame, and it can be moved by left clicking on it, although bear in mind that the tracker may be inside it and it is not necessary to press on the tracker itself. When the tracker is moved, the search zone moves with it, maintaining its relative position. The Search Zone accelerates the tracking process, since it restricts the search to a small part of the image, and not the entire image, as occurs if this zone is not specified.

The smaller the search zone, the faster the tracking, but bear in mind that this should predict the zone where the search pattern will be found in the next frame. For this reason, in the second image of the previous example, the search zone is moved to anticipate the path direction shown by the tracker.

The search area prevents the tracker confusing between two similar patterns found in the same frame.

The tracker Target is by default centered in the search pattern, although the latter can later be moved outside the Target by pressing <Alt> at the same time as the tracker is selected and dragged with the left mouse button.

A blue line is shown between the Target and the search pattern which indicates the tracker offset.

The purpose of the Offset is to momentarily select another search pattern, but continue the original path. This is useful when the chosen search pattern is temporarily hidden by a figure, which is when another nearby pattern can be chosen and the movement of the new pattern applied to the original Target, completing the path of the first pattern selected.

It is also possible to move the tracker and its path together, by selecting the tracker and pressing <Ctrl> This method is also valid to achieve the purpose as the offset.
A single tracking point will only provide two-dimensional movement information. If rotation information is needed, it is necessary to work with a minimum of two trackers, since the angle that determines the line joining these two points will be the rotation angle obtained.

The same occurs if zoom or size information is needed. The zoom size or value is obtained from the length of the line joining two trackers. This line is shown in yellow.

It is possible to add all the tracking points required, although only two tracking points are needed to extract rotation or zoom. When working with more than two trackers, the rotation or zoom value will be calculated as the average of all the join lines that exist.

When using many tracking points, the join lines form a shape which can be saved as an animated vectorial shape that can then be loaded and used in the VectorPaint effect, in which the shape can be modified and perfected, specifying tangents for each point, defining attributes, etc. This process is useful for the creation of animated masks based on tracking points.

When working with the CornerPin effect, there should be four tracking points, which can be shown with their names at their corresponding corners. The foreground layer of the effect will be deformed according to the square formed by the lines joining the four tracking points. It is often convenient to specify the tracking points in the frame with the largest possible
The composing area is. In the following example, the tracking points were specified in the last frame, and then dragged back in time.

![Image of tracking points](image1)

The tracking search speed is much faster than real-time. Even viewing the sequence in the interface monitor can reduce the tracking speed. For this reason, a mode exists in which the sequence progress is not visible, thus utilizing the full speed of the tracking process.

To take advantage of all the tracking performance, it is important to select in the **Eval Tree** for the evaluation of the original image without additional processes, since if images of other effects are tracked they will also have to be evaluated, and this will slow down the search of the tracking points.

To avoid this delay, it is always advisable as the first step to double-click in the **Eval Tree** on the clip to be tracked, and then to select the effect with a single click and apply the tracking obtained.

Many effects, such as Comp3D, have many folders where the tracking coordinates can be applied. To do this, first select one of the parameter folders by specifying the target of the tracking coordinates, and then apply the tracking result.

![Image of tracking interface](image2)

All paths obtained by a tracker can be corrected, and even manually modified.

The tracking interface slider is used to select the current frame. Moving a tracker immediately updates the current point of the path, specifying a new position for the selected frames.

In frames with no specified positions, the tracker will move through the segments (linear interpolation) that join the specified positions (frame position). When applying tracking to the parameters of an effect, only the specified positions will create keyframes in the curves formed by the two-dimensional coordinates. The type of interpolation of these keyframes can be specified in the **Parameters** area.
Dashboard:

The Dashboard of the Tracking Editor contains many functions, modes and viewing controls. To the right of the Slider is the Back button to exit the Tracker Editor and return to Visual Editor mode. No information is lost when exiting, since the position and trajectory of the trackers is remembered for the following time this panel is accessed, but we need to exit when we wish to work on others effects.

In the lower part is the message line (Message). This field gives us information about the functions run from the panel or keyboard shortcuts.

This group brings together definable values numerical box or from the buttons Set In and Go To which copy the value of the current frame defined by the Keyframe Slider. These values define a range of time within a sequence, in which the search pattern is done.

The definition of this range works similarly to that of input and output points in a non-linear editor.

The numerical fields From and To show the first and last frame of the search range. These fields are editable and the values can be specified manually.

- **Set**

  Defines the value of the input or output point of the range taking as a reference the active frame in the Slider.

- **Go To**

  Moves the Keyframe Slider to the frame defined in the numerical fields From or To.

Buttons for managing the trackers.

- **Add Tracker**

  Adds a new Tracker manipulator.
Hide Tracker

Hides the path of the selected tracker, and is ignored by the commands of the Go Forward button.

Remove Tracker

Removes the selected Tracker manipulator.

Reveal Tracker

Undoes the Hide function of the selected tracker.

Restores the values of the time range to the default, previously defined in Tracking Ranges, allowing the tracker to act over the whole duration duration of the clip or until the user decides to stop the analysis.

Mode that uses the tracker Search Zone instead of using the entire image.

Group of buttons that defines the application mode of the animation curves obtained by tracking.

Position

Mode that applies the tracking result to the XY position parameters.

These coordinates are applicable to all effects that possess two-dimensional parameters (position in X and Y), such as Comp3D, Title, Vector Paint, Noise, Fractal, Circle, Wave, Radial Blur, Twirl, Bump, Refract (Distort), Flare.

If there is more than one tracking point, the movement coordinate will be the average of all the tracking point positions.

The most usual use of this mode is to animate the position of an image layer so that it moves in the same way as an element in another image, although its uses are very varied.

Rotation

Mode that applies the tracking result to the rotation coordinates.

This information about rotation is applicable to all effects that possess a rotation parameter in Z, angle or cycle, such as Comp3D, Noise, Stripe, Radial Blur, Twirl, Liquid Bump, Refract, Brush Stroke, Kaleido.

For this mode to work correctly, there must be a minimum of two tracking points. If there are more than two points, the rotation information will be the average of all the angles specified by the tracker join lines.

This is normally used to animate the rotation of a layer by making it coincide with the rotation of an object present in the image.
→ **Size**

Mode that applies the tracking result to the scale parameters. This information is applicable to the *Comp3D* effect.

For this mode to work correctly, there must be a minimum of two tracking points. If there are more than two points, the scale information will be the average of all the lengths specified by the tracker join lines.

It is normally used to animate the scale of a layer by making it coincide with the change of scale of an object present in the image.

→ **Corner Pin**

Mode that applies the coordinates of four tracking points as the result of the position of the corners of a rectangle. This mode is used to fit in movement one image layer in an area of another image defined by four points.

Group of buttons that work on the path of the selected tracker.

→ **Cut**

Moves the path of the selected tracker to the clipboard.

→ **Copy**

Copies the path of the selected tracker to the clipboard.

→ **Paste**

Pastes a copy of the path in the clipboard into the selected tracker.

→ **Remove**

Deletes the path of the selected tracker.

→ **Load**

Opens the selected points and paths of a tracking file (*.trk*) and adds them to the current tracking.

→ **Save**

Saves the selected points and paths as a tracking file (*.trk*).

This group of buttons contains those that run tracking of the search pattern during the sequence.

→ **Go Forward**

Runs the tracking of the search patterns in the direction of the frames after the current one.
<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Go Backward</td>
<td>Runs the tracking of the search patterns in the direction of the frames before the current one.</td>
</tr>
<tr>
<td>Go Both</td>
<td>Runs the tracking of the search patterns in the direction of the frames before and after the current one.</td>
</tr>
<tr>
<td>Stop</td>
<td>Stops the tracking of the search patterns.</td>
</tr>
<tr>
<td>Remove Point</td>
<td>Removes the tracker position in the current frame.</td>
</tr>
<tr>
<td>Remove Range</td>
<td>Removes the tracker positions in the range specified by From and To.</td>
</tr>
<tr>
<td>Remove Forward</td>
<td>Removes the tracker positions from the current frame to the end of the sequence.</td>
</tr>
<tr>
<td>Remove Backward</td>
<td>Removes the tracker positions from the beginning of the sequence of the current frame.</td>
</tr>
<tr>
<td>Move</td>
<td>Applies the tracking information positively (copies the animation curve to the selected parameter as it has been calculated).</td>
</tr>
<tr>
<td>Stabilize</td>
<td>Applies the tracking information negatively.</td>
</tr>
</tbody>
</table>

The applied movement is the inverse of that extracted from the sequence, and thus stabilizes the movement of the original sequence, leaving the tracked search pattern fixed at the center of the screen.

This process is very useful for stabilizing a sequence and holding it steady while working with other effects such as VectorPaint or Warper, and the later returning to apply the tracking coordinates positively and thus recover the original image movement.
Smooth

Applies the tracking information to cancel only small abrupt movements in the selected search pattern, thus smoothing them out.

This application command is ideal for removing small camera shakes, without removing the selected movements.

Shape Mode

Activates the masks to be used to define tracking areas. Instead of using the usual tracking points, the masks establish the areas where the tracking will be applied, ignoring any outside the mask in question.

Enable Tracking

Activates tracking within the selected mask.

Populate On Start

Activates a search for tracking points when starting movement analysis. When a mask is used to define a tracking zone, Mistika will automatically movement points throughout the clip in order to carry to said tracking.

Enable Pruning

Activates the deletion of tracking points that are outside the specified area of the mask, so that points that lose their movement reference and could thus ruin the tracking are automatically eliminated.

Populate Now

This functions in the same way as Populate On Start, except that Mistika runs the analysis when tracking begins, so that the user can see the movement points and choose those that are unnecessary from the start.

Go Backward

Runs the tracking of the search patterns inside the shape in the direction of the frames after the current one.

Go Forward

Runs the tracking of the search patterns inside the shape in the direction of the frames before the current one.

Go Both

Runs the tracking of the search patterns inside the shape in the direction of the frames before and after the current one.
- Reset Shapes

Reset all the shape trackings to default values.

- Move

Mode that applies the tracking result to the XY position parameters of the shape.

- Rotate

Mode that applies the tracking result to the rotation coordinates of the shape.

- Size

Mode that applies the tracking result to the scale parameters of the shape.

- Size XY

Mode that applies the tracking result to the XY scale parameters of the shape.

- Round

Optimize the search and the application of the tracking for rounded elements.

- Fine

Enable a mode of analysis and application of the tracking more accurate than the normal one. This mode is designed for big tracking areas, and it uses a big resolution for the search patterns, so it is slower. Any mask with an area of less than 10% of the image uses by default this tracking mode.

- History

This is the tracker progress tolerance value.

Small values specify that the search pattern is the one originally selected in the frame in which tracking began. Large values specify that the search pattern is continually updated with the current content in the following frames. Intermediate values cover a tolerance range that mixes the original pattern with the image of the pattern found in each frame.

For points that change their appearance during a sequence, a high History value (such as the corner of a rectangle for example) is recommended; for points that do not change their appearance much during a sequence, low values are better, thus achieving a more exact result.

- Safe Area

Specifies the percentage of the image area total where tracking will take place. Outside this area, the tracker applies extrapolation values. In this way, collision of the tracker with the image margins is avoided, keeping the linear path of the tracker when
it goes out of frame.

→ **Silent Tracking**

Search mode which, by hiding playback of the frames that appear in the sequence, allows tracking to be run faster.

→ **Track**

This dropdown button selects if the tracking mode will work on the original high resolution images (*Track Full Res*) or over a proxy (*Track Proxy*).

→ **Track Eye**

This dropdown button allows the selection of which of the images that compose the stereo pair the tracking will work on (*Left* or *Right*) or when not a clip of stereo images *No Stereo*.

→ **Scrub**

This dropdown button selects if the viewing mode in the *Keyframe Slider* will evaluate the original high resolution images (*Scrub Full Res*) or will evaluate a proxy (*Scrub Proxy*).

Control buttons for viewing tracker components.

→ **Show Trajectory**

Activates the viewing of the trajectories of the trackers.

→ **Show Shape**

Activates viewing of the tracker join lines.

**Display Filters**

This *Manipulator Tab* allows access to the *Display Filters*.

*Display Filters* work like presets that can be created from different effects that we insert into the *Node Graph*, and they can be saved in relation to a specific environment or a preset or specific configuration (from mConfig).
• Displays Filters for Current Timeline

Allows the creation, selection and manipulation of filters we create in relation to the current environment.

• Display Filters for mConfig Preset

Allows the creation, selection and manipulation of filters we create according to the configuration preset in mConfig, and which therefore are available for a project or various complete projects, not just for a specific environment. The folder in which the filters we create in this section are found is accessed via mConfig->FilePaths->Display Filters.

• Create Display Filters

This button allows us to create a new Display Filter.

Note: To create a new Display Filter, select the last effect of the stack of effects that is to be converted into a Display Filter and then click Create and and a name. The stack of effects will disappear, and a new Display Filter with the same result will be created; this will be accessible from this tab of Display Filters or from Visual Editor->FxPresets.

• Filter

In this column, we select the filters we want to use.

• Apply On

The selected filters may be applied to different outputs:

GUI:
The filter is applied to the Visual Editor.

Live:
The filter is applied to the video output.

Scope:
The filter is applied to the different Scopes accessible via Visual Editor.

Render:
The filter is processed when the selected clip is rendered.

• Eye

This allows us to select to which eye in a stereo clip the selected filter is applied (Left, Right, Both).
- **Comment**

  Allows the addition of a description or indications that may help identify the selected filter.

- **Active**

  Allows the selected filter to be muted.

- **Toggle**

  This tool allows us to compare quickly up to 4 filters (\(T_1, T_2, T_3, T_4\)), that we can alternate between from the Visual Editor.
This chapter includes information about the functioning of the effects in Mistika, with practical examples and tutorials.

**Compose**

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Compose

The *Compose* group includes composing effects and tools.

**Comp3D**

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Compose->Comp3D

*Comp3D* is *Mistika*’s main composition effect. It permits composition in a three-dimensional multi-layer space, unlimited inputs respecting their alpha channels, specifying animations for the camera, different light types, and three-dimensional deformations for each layer.

This effect has specialized manipulators, described in the chapter *Visual Editor*.

**I/O**

**Inputs**

**Multi-input:** A background as first layer (with optional alpha channel), and an unlimited number of inputs (with image and optional alpha channel). The use of the first input as background is optional, and it is possible to replace it with a transparent alpha channel black background, via the parameter *Backgr*.

**Image:** Background image (optional) composed with the other inputs repositioned in
the three-dimensional scene.

**Alpha**: The addition of the masks repositioned in the three-dimensional scene.

### Parameters

#### Options:

Folder that contains parameters for controlling evaluation options:

- **Quality**

  **[Bilinear (Nearest / Bilinear / Bicubic)]**

  Defines the quality of the rescale filter.

  In the parameter's dropdown there is a list of available qualities, from lowest to highest quality downwards. It is recommendable to define the lowest quality that obtains the best visible results, because the higher the quality, the greater calculation time required.

- **Result Size as**

  **[Input (Input / Project)]**

  Defines the output resolution of the effect. **Input** sets the output resolution as the same as the original resolution of the clip. **Project** sets the output resolution as the same as the current resolution of the work in hand (mConfig->RenderFormat).

  **Input** is especially useful when a clip has a higher resolution than the project and this resolution is desired for later application to other effects capable of working in its full resolution and extracting greater detail than the working resolution.

- **Samples**

  **[x1 (x1,x2,x3,x4,x8,x15,x24,x66)]**

  Number of samples of render processes. High values set a higher number of samples, notably improving the resulting image quality and the Antialiasing, which is very visible in the details of an image, the edges of composite layers and in layers that have been reduced in distance or size. This parameter interacts with the parameter Shutter.

- **Shutter**

  **[0 (0 / 360)]**

  Controls the shutter angle of the virtual camera, simulating the Motion blur produced by an object in movement filmed on photographic film.

  Simulating the behavior of a film camera shutter, this parameter creates render samples in the positions between frames as a real shutter would show. If the value is at its maximum (360) the shutter is completely open, and the motion blur will cover the whole movement between two frames. If the value is 180, the length of the blur will be half of the movement between frames, and if the value zero (the Default value) there will be no blur, and all samples will be in the same position. Since the blur is created by the offset of the samples, it is necessary that the parameter Samples is not at x1, as there would not be samples for the Shutter to work correctly; high
values are recommended.

**Background:**

Folder that contains the different options for the background image.

- **Background**

  **[Solid (Input1 / Solid)]**
  
  Defines whether the first input of the effect is used as background. In this case, the background will not function as a layer, since it cannot be manipulated, because it is set as a two-dimensional background of a three-dimensional composition. If the value is set as *Solid*, the first input of the effect will be the first manipulable layer, and have a solid background definable via the usual parameters.

- **Red; Green; Blue, Alpha**

  **[0; 0; 0; 0 (0 / 100)]**
  
  Defines RGBA value of the solid color.

**Shadow:**

Folder that contains the parameters that generate a shadow projected by all layers on the background (this effect needs the **Background** option in the **On** position).

This shadow is a two-dimensional projection of the total off the masks of the layers repositioned, with parameters of two-dimensional offset, focus, opacity and color.

- **OffsetX; Y**

  **[2; -1 (-100/100)]**
  
  Specifies two-dimensional offset of the projected shadow.

- **Intensity**

  **[0 (0/100)]**
  
  Specifies opacity as a percentage of the shadow.

- **BlurType**

  **[Box (Box, Gauss)]**
  
  Specifies the type of blurring applicable to the shadow.

- **BlurRad**

  **[0 (0/100)]**
  
  Specifies the quantity of blur applicable to the shadow.
Spread

[0 (0/200)]
Extends the opacity of the shadow from its interior. This parameter acts together with BlurRad.

Red; Green; Blue

[0;0;0 (0/100)]
Specifies the color of the shadow.

Camera:
Dropdown folder that contains folders with parameters that control the camera.

Position X; Y; Z

[0; 0; 500 (-1.000.000 / 1.000.000)]
Three-dimensional coordinates of the camera position.

This parameter can also be changed through its manipulators.

With the camera in orbit view mode, the manipulator specifies a circular movement of the position coordinate around the target coordinate, simulating an orbital movement that keeps the lens pointed towards the point specified by the target. In dolly camera view mode, the manipulator moves the coordinate along a straight line joining the target to the position, thus simulating a forward or backward camera travel.

With the manipulator in move camera view mode, it moves both coordinates at the same time, simulating a camera travel in the plane perpendicular to the view.

Target X; Y; Z

[0; 0; 0 (-1.000.000 / 1.000.000)]
Three-dimensional coordinates of the point towards which the camera lens is pointed.

The position of the objective is specified by the three-dimensional alignment of the camera, thus permitting for example that the camera is kept pointed at a particular layer by copying its position parameters to the target.

With the camera manipulator in rotation mode, it specifies a circular movement of the target coordinate around the position coordinate, simulating a panning movement of the camera objective.

Camera Roll

[0 (-1.000.000 / 1.000.000)]
Specifies a rotation angle of the camera on its depth axis, determining the inclination of the horizon.
**Camera FOV**

**[22.6 (0 / 180)]**

Specifies the Field Of View of the camera.

This field is measured in degrees with higher values representing wide-angle lenses and lower ones zoom lenses.

**Camera InterOcular**

**[0 (0 / 100.000)]**

This attribute is applicable to stereoscopic images. It modifies the values of interaxial separation of the stereoscopic image. The higher the value of Camera *InterOcular*, the more exaggerated will be the stereoscopic effect.

**Ambient:**

**Ambient R; G; B**

**[33; 33; 33 (0 / 100)]**

Specifies a color for ambient lighting that will affect all the layers, regardless of their position or alignment. Specifying minimum lighting of any color for all three-dimensional scenes avoids totally darkening the polygons not affected by the lights. The default value complements the default light to maintain the layers of the three-dimensional composition illuminated so that their original colors or brightness do not change.

**Light_1:**

Folder containing the parameters of light created by default. Lights created later are added subsequently, as an identical folder with its own automatically incremented number. The creation, copying, and deletion of lights is controlled from the command tab located in Mistika->Node Graph Editor->Mistika->Main Tabs->Parameters->Folder.

**Position X; Y; Z**

**[0; 0; 200 (-1.000.000 / 1.000.000)]**

Three-dimensional coordinates of the light position.

**Target X; Y; Z**

**[0; 0; 100 (-1.000.000 / 1.000.000)]**

Three-dimensional coordinates towards which the camera objective is pointed.

This parameter does not affect lights specified by the *type* parameter with its value set to 1.

**Color R; G; B**

**[100 (0 / 100)]**

color of the light. The default color is white.
Intensity

[67 (0 / 1.000.000)]
Intensity of the light, in percentage values. The RGB value of the color is multiplied by this parameter.

Type

[Directional (Directional / Point / Spot)]
Type of light. The three types are:

**Directional**: Directional light. This type of light produces parallel rays in the direction specified by the straight line joining the Position and Target coordinates, as the real information provided by the three-dimensional coordinates is of little relevance. The intensity of this type of light does not decay with distance: the values of the Decay, Spread and Falloff parameters are ignored.

**Point**: Point light. This type of light is created from an emission point in three-dimensional space specified by the Position coordinate, emitting spherically-shaped light: the Target coordinate and the Spread and Falloff parameters are ignored. The light intensity decays with distance according to the value specified by the Decay parameter.

**Spot**: Spotlight. This type of light is created from a point in three-dimensional space specified by the Position coordinate, emitting spherically-shaped light, although limited by a cone oriented towards the position specified by the Target coordinate. The appearance of the cone is specified by the Spread and Falloff parameters. The light intensity is maintained constant in the range of distance specified by the Target coordinate, and after that, it begins to decay with distance depending on the value specified by the Decay parameter.

Cutoff

[90 (0 / 90)]
Specifies a cutoff limit of the light cone for lights of type 2.

Exponent

[32 (0, 128)]
Specifies the light intensity concentration in the center of the cone for lights of type 2.

Decay

[0 (0 / 2)]
Specifies a decay exponent of the light intensity depending on distance.

Depending on the distance between the layers and the positions of type 1 and 2 lights, the light intensity drops, affected exponentially by this parameter, whose default is 0 (zero), inhibiting the distance decay. A value of 1 indicates decay proportional to the distance, and a value of 2 indicates decay proportional to the square of the distance, emulating in the later case the behavior of a real light. This
parameter also permits decimal values for setting intermediate values.

**Axis_1:**

Folder containing the information of a first transformation axis which affects the second transformation axis and all the layers and ambient lights of the three-dimensional scene, via position, rotation, size and pivot coordinates.

- **Position X; Y; Z**
  
  \[0; 0; 0 (-1.000.000 / 1.000.000)\]

  Three-dimensional position coordinates.

- **Rotation X; Y; Z**
  
  \[0; 0; 0 (-1.000.000 / 1.000.000)\]

  Three-dimensional rotation coordinates.

- **Size X; Y; Z**
  
  \[100; 100; 100 (0 / 1.000.000)\]

  Sizes as percentage values.

- **Pivot X; Y; Z**
  
  \[0; 0; 0 (-1.000.000 / 1.000.000)\]

  Specifies an offset of the rotation and scaling pivot, which by default is centered.

**Axis_2:**

Folder containing the information of a second transformation axis which affects all the layers and ambient lights of a three-dimensional scene, by position, rotations, size and pivot coordinates.

- **Position X; Y; Z**
  
  \[0; 0; 0 (-1.000.000 / 1.000.000)\]

  Three-dimensional position coordinates.

- **Rotation X; Y; Z**
  
  \[0; 0; 0 (-1.000.000 / 1.000.000)\]

  Three-dimensional rotation coordinates.

- **Size X; Y; Z**
  
  \[100; 100; 100 (0 / 1.000.000)\]

  Sizes as percentage values.
Pivot X; Y; Z

\[0; 0; 0 (-1.000.000 / 1.000.000)\]
Specifies a offset of the rotation and scaling pivot, which by default is centered.

Layer_1:
Dropdown folder containing the parameters of the layer created by default. Layers created later will be added here as an identical folder, recognizable by its incremental number.

If control layer transformation is needed, the number of layers should correspond to the inputs of the effect, bearing in mind the Backgr and Disp Enable (displacement map layer) parameters of each layer, as they may require inputs in addition to those specified by the number of layers of the effect. The creation, copying and deletion of layers is controlled from the command tab located in Mistika->Node Graph Editor->Mistika->MainTabs->Parameters Panel->Folder.

Note: If the number of inputs is greater than the number of layer controls created within the effect, the last layer transforms all the inputs at the same time, as if it were a single input with all the images pre-composed in it.

Folder containing the information for transformation of the layer, with its position, rotation, size and pivot coordinates.

Position X; Y; Z

\[0; 0; 0 (-1.000.000 / 1.000.000)\]
Three-dimensional position coordinates.

Rotation X; Y; Z

\[0; 0; 0 (-1.000.000 / 1.000.000)\]
Three-dimensional rotation coordinates.

Size X; Y; Z

\[100; 100; 100 (0 / 1.000.000)\]
Sizes as percentage values.

Pivot X; Y; Z

\[0; 0; 0 (-1.000.000 / 1.000.000)\]
Specifies a offset of the rotation and scaling pivot, which by default is centered.

Parameter folder specifying attributes, which affect the behavior of the layer in a three-dimensional scene.

Attributes Subdiv

\[3 (1 / 7)\]
Specifies the polygonal subdivision index that constitutes the layer.

A high index increases the number of polygons that make up the layer, achieving greater detail in deformation effects. The repositioning of the polygons make the three-dimensional deformations visible, therefore, the more polygonal subdivisions in the layer, the better reproduction quality of these deformations, although the increased complexity of the process should be noted.

**Attributes** 

**DispMap**

*[Off (Off / On)]*

Specifies the luminance of the input according to the current corresponding layer as its displacement map. The default setting of this parameter is 0, without assigning any displacement map.

A displacement map is an image which, based on the luminance values of its pixels, moves the polygons that conform a three-dimensional object in depth. In this effect, the objects are the layers, made up of polygons, which can be displaced in the depth, or Z, axis.

**Attributes** 

**Blending**

*[Normal (Normal / Premultiplied / Blending Modes)]*

Specified the mode in which the layer is blended with respect to the one behind it.

*Normal*. Specifies the composition mode in the layer as normal for occlusion. The resulting color is the original color of the layer; this mode ignores the hidden color.

*Premultiplied*. Specifies the composition mode in the layer as without multiplication of the alpha channel.

This is recommendable for images or sequences derived from 3D or graphics that have been created over a black background, which do not need to be multiplied by their alpha channel before being added to the composition since this has been done previously in the previous program.

*Blending Modes*. Specifies modes of composition in the layer according to variants widely used in other image composition systems. These modes are: *Darken, Multiply, Color Burn, Linear Burn, Lighten, Screen, Color Dodge, Linear Dodge, Overlay, Soft Light, Hard Light, Vivid Light, Linear Light, Pin Light, Difference, Exclusion, Hue, Saturation, Color* and *Luminosity*.

**Attributes** 

**Specular**

*[0 (0 / 1.000.000)]*

Specifies the specularity of the surface of the layer.

The higher the value of this parameter, the more the brightness produced by the lights of a three-dimensional scene will be reflected.

**Attributes** 

**Gloss**

*[20 (1 / 1.000.000)]*

Specifies the gloss of the surface of the layer.
The higher this value, the more the intensity of the gloss produced by the scene lights will be concentrated.

Attributes Blend

[100 (0 / 100)]

Specifies the composition opacity of the layer in a three-dimensional scene, respecting its transparency values specified in the optional alpha channel.

Dropdown folder that contains the three dimensional deformation parameters of the layer. These deformations are processed in the same order as they appear in the effect.

Folder containing the parameters that specify the offset of the polygons of the layer in the Z axis.

Ampl

[10 (-100.000 / 100.000)]

Specifies the amplitude range of the displacement map, permitting negative values to interpret the map inversely. Its units reflect the distance of the maximum offset in the local coordinate Z of the edited layer. This parameter will not reflect changes if the displacement map if this is not activated by the DispMap parameter.

Zero

[50 (-100.000 / 100.000)]

Specifies the value of the offset range in its position in the original plane of the layer. If this parameter is set at 100, the white value of the displacement map is specified at the original position of the plane of the layer, thus only displacing the polygons that are affected by lower values, with 0 being equivalent to black. The parameter accepts values outside the range of the displacement map (0 to 100) by the use of extrapolation.

BlurR

[1 (0 / 100.000)]

Specifies a reduction of detail in the displacement map using a blur filter calculated in 32 bits.

Normally, a displacement map contains details that sharply displace the polygons of a layer. On the one hand, this produces the original contrast of the input specified as the displacement map, and on the other by the 256 maximum luminance levels of the video images. To smooth this contrast, a blur is used, but with 32 bits, to generate in this way more than 4 billion levels interpolated by the filter.

Folder containing the parameters that specify a cylindrical three-dimensional deformation for the X and Y axes of the layer, that make spherical or toroidal deformations possible when combined.

CilAng

[0 (-100 / 100)]

Specifies the vertical cylindrical deformation by a percentage value. The deformation
can be negative, inverting the cylinder face.

- **CilCuad**

  
  
  \[0 (0 / 100)]
  
  Specifies gradually the formation of four right-angles in the vertical deformation, changing the appearance of the cylinder outline into a square.

- **TorAng**

  
  
  \[0 (-100 / 100)]
  
  Specifies the horizontal cylindrical deformation by a percentage value. The deformation can be negative, inverting the cylinder face.

- **TorCuad**

  
  
  \[0 (0 / 100)]
  
  Specifies gradually the formation of four right-angles in the horizontal deformation, changing the appearance of the cylinder outline into a square.

- **TorRad**

  
  
  \[0 (-100.000 / 100.000)]
  
  Sets a radius for the deformation obtained by the \textit{TorAng} parameter. The setting of this radius permits spherical or toroidal deformations to be achieved.

Folder containing the parameters that specify three-dimensional deformation in the form of horizontal or vertical waves.

- **X-Ampl**

  
  
  \[0 (0 / 100.000)]
  
  Specifies the offset amplitude for the waves in the horizontal axis of the layer.

- **X-Shift**

  
  
  \[0 (0 / 100.000)]
  
  Specifies a offset of the wave position in the horizontal axis of the layer.

- **X-Num**

  
  
  \[2 (0 / 100.000)]
  
  Specifies the number of waves in the horizontal axis of the layer.

- **Y-Ampl**

  
  
  \[0 (0 / 100.000)]
Specifies the offset amplitude of the waves in the vertical axis of the layer.

- **Y-Shift**
  
  \[0 (0 / 100.000)]
  
  Specifies a offset of the wave position in the vertical axis of the layer.

- **Y-Num**
  
  \[2 (0 / 100.000)]
  
  Specifies the number of waves in the vertical axis of the layer.

Folder containing parameters that allow the surface of the layer to be cropped at the four sides of a frame.

- **Left**
  
  \[0, (0 / 100)]
  
  Left edge as a percentage of the image width.

- **Right**
  
  \[100 (0 / 100)]
  
  Right edge as a percentage of the image width.

- **Up**
  
  \[100 (0 / 100)]
  
  Top edge as a percentage of the image height.

- **Down**
  
  \[0 (0 / 100)]
  
  Bottom edge as a percentage of the image height.

Folder that contains parameters that deform the layer by repositioning its four corners. This function permits CornerPin tracking in any layer from the Motion Tracker.

Positioning of the corners of this effect can be made in Tracker mode. After the tracking has been applied to the effect, the offset parameters of each corner can optionally be adjusted.

**Note**: this distortion is two-dimensional, within the original plane of the layer without three-dimensional deformations. The distortion is applied equally to color, its mask and displacement map if available.

- **UpLeft-X; Y**
  
  \[0; 100 (-10.000 / 10.000)]
  
  Position of the top left corner.
The units of this effect are not always expressed in percentage values.
The rotations are expressed in degrees, as with a camera shutter.

In the case of Position Y, a value of 200 is equivalent to placing a layer exactly above its original position, this value being the equivalent to the distance specified by a value of 100 in Y.

The Position Z parameter behaves in a similar way to the previous one: specifying a value of 200 moves forward a distance equivalent to a value of 100 in Y.

However, in the case of Position X, a value of 266 is equivalent to placing a layer exactly to the right of its original position, this value being the equivalent to the distance specified by a value of 100 in X.

This is because the values of Size are percentages, but in order to respect the appearance specified in Mistika Setup->Render Format->Aspect Ratio, the anamorphism is respected without converting the position units into percentages.

The values of Crop are also specified as percentages, although the Crop of this effect not only crops the surface of the layer, but also resets its edges, which is taken into consideration when the deformations are applied. If no deformations are applied, Crop will behave like the other effects of the system. But cylindrical deformations are made by joining the opposite edges, and in this case Crop resets the edges of the rectangle of the layer. Thus, if a layer has been deformed to a spherical shape and the values of Crop are modified, the edges will be reset without changing its spherical shape since these are joined by the deformation, but the image area that is enclosed in the deformation of the layer will be reset.

The following example shows that crop has removed the black bands in the foreground image, but when a cylindrical deformation is applied, the new borders have been joined to form the cylinder.
With respect to rescaling and repositioning images that do not need composition (basically, conversion of formats), \textit{Fx->Mistika->Framing} is often the most suitable, since it gives greater quality, speed and has a specialized manipulator to help with cropping, scaling and positioning calculations.

For tracking and stabilizing, the use of \textit{Comp3D}, is recommended, preferably applying the tracking coordinates in \textit{Axis 1}, leaving the later deformations in the hierarchy of the effect without change: for example, the layers in the Z axis could be moved to simulate the parallax of a camera, thus scaling the tracking coordinates.

Displacement maps are images in which only the luminance information is important. In accordance with the luminance of the image pixels, the polygons that constitute the plane of the layer will be displaced in the depth axis of the object. If the offset needs fine detail, the polygons that constitute the layer must be increased, by using the \textit{Subdiv} parameter. In the example, any image can be used as a solid white displacement map.

Excess detail in the displacement map can be softened with the \textit{Blur} parameter. Also, negative values of the \textit{Ampl} parameter can be specified, reversing the offset direction. Displacement maps are applied before the other three-dimensional deformations, and they can be combined with cylindrical or wave deformations simultaneously.

The animations of positions of composed layers in this effect are made by specifying keyframes. Between these keyframes are the intermediate positions, which are calculated by interpolations. Several samples can be taken from any position by increasing the \textit{Samples} parameter, improving the quality of the result of the effect. But a frame is really a fraction of time, and in that small time range the samples can be specified to be taken from different positions, if the layer is moving. The \textit{Shutter} parameter specifies a time range (between 0 and 360) within the same frames so that the samples are made in movement.
It is important to note that the render speed of this effect is closely linked to parameters
that increase the resulting image quality, such as the Samples and RenderMd options and
the layer parameter Subdiv, all of which should be carefully set at the minimum values that
give the desired quality, since the misuse of these values can markedly reduce system
performance.

The three-dimensional space created by this effect is very large but finite, and a layer can
even be enlarged or reduced to the point of leaving the space, resulting in total or partial
disappearance of the layer that exceeds this limit. A layer can also totally or partially go
past the camera position. For this reason, it is recommended that the size and its position in
the depth axis are clearly differentiated, since, if an image is to be enlarged, the position
value in the Z axis can be increased, although this method is no more convenient than
increasing the size values.

When a virtual perspective with a multi-layer composition is to be created, first maintain a
common scale, specifying as a first step the sizes of each layer as if they were all in the
same plane. Then position the layers in the depth axis. This way, when the camera is
moved, a perspective with a consistent parallax is achieved.

The following image contains the deformation values for creating different primitive forms:

Comp3D has a special manipulation mode in the Visual Editor, which permits the specifying
of positions, rotations and sizes for the layers, lights and camera, and m for interactive
repositioning (dragging the image) the transformation pivot of each layer.

It is also advisable to know about the operation of the ActualPixels manipulator (1:1), which
helps deal with images of size different from the work format. In order to work with this
type of image, it is important to remember that the first layer must as large as the work
format (MistikaSetup->RenderFormat->RenderFormat->X/Y) since this gives the size
reference on which the other layers are made up. If there is no background image, include
an effect without n put as first layer (a Solid, for example), whose output will provide this
size reference to begin composing.

Also, remember that when including layers of nonstandard size, a red frame will appear when
selecting them, indicating that the complete frame is viewed but that a decision regarding
its rescaling is pending. In the situation in which we see (the complete image, it does not
have to match the output of the Node Graph monitor (this will trim them to the standard
size in case of no action being taken). This warning will disappear once any value of
transformation is established, (by pressing the ActualPixels (1:1)),

From Version 3.0, the tracking software in 3D Boujou can export its result to Mistika
environment. Boujou generates an environment with a Comp3D where the camera layer is
animated according to 3D tracking done in an original camera. This allows automatic to
integration of new image layers within another image (the one from the original camera),
without having to animate them manually. To do this, Boujou provides an animation of the
Comp3D camera, so that it moves the same as the camera that recorded the original
images.

It is possible to edit the colors of the lights by using the color Chooser manipulation mode,
and selecting in advance the folder containing the light to be edited.

When using Corner parameters, image movements can be extracted with manipulation mode
Tracker, using four trackers, one for each corner of the image.

Even if not using motion tracking, this mode is helpful for positioning graphically four corners
for specifying transformation, and *Move* must be applied to the tracking coordinates whenever it is necessary to refresh the position.

---

**HaloComp**

*Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Compose->HaloComp*

Composes a layer with a background, adding a luminous halo created from a copy of its mask to the foreground.

**I/O**

**Inputs**

- **Double input**: The first input will be the background and the second the foreground, using the alpha channel of the latter to generate the halo.

- **Image**: second input composed on the first, with a luminous halo around it.

- **Alpha**: No change.

**Parameters**

- **Blur**

  
  \[2 (0 / 100)]

  Halo blur. The copy of the mask of the foreground generated by the halo should be blurred so as to give it the appropriate look.

- **Inside**

  
  \[50 (0 / 100)]

  Sets the percentage level of mixing of the halo in the interior of the mask.

  Higher values indicate greater visibility of the halo in the foreground interior.

- **Red; Green; Blue**

  
  \[0; 0; 0 (0 / 100.000)]

  Specifies a gain correction of the halo color.

  Values higher than 100 are allowable, increasing the halo potential.
Use and Comments

This effect can be simulated by combining other effects of the system, although it is faster to work with this effect, since it has all the parameters necessary in one single effect.

Feedback

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Compose->FeedBack

This effect is not in itself an image process, but rather one of the system tools.

It sends the input to memory and to the output of all the Feedback effects without input, either evaluated by the monitor, or in the frame being processed in a render.

I/O

Inputs

Can be single input (image with or without alpha channel) or without inputs.

None.

Parameters

Use and Comments

This effect allows the creation of instances of one part of the flow in different branches of the same flow tree to which they belong, without needing to evaluate them repeatedly.

When the Feedback effect has no input, its output shows the last input that was read (of the same effect clip or another Feedback effect), thus for example permitting lengthening the duration of the result of a shorter effect, which has been memorized by the Feedback input and will be repeated during all the remaining duration of the Feedback clip as long as there is no new input.

In this example, it can be seen that the stacks on the left contain an animation with the appearance of a logo (made with the LiquidBump effect). When it is necessary to extend the duration of the static end of the animation, it would be possible to continue processing
the last frame. However, this would force the evaluation of all the additional frames, which would be pointless as they are identical. To avoid unnecessary evaluation of these additional frames, render and then extend the tail of the new clip, or use Feedback to repeat the last frame from memory.

This effect updates its output whenever any parameter of any effect is changed, making it an effect that is very useful when there is a need to see the changes in many created instances interactively.

Bear in mind the order of evaluation of the stacks when using this effect, since poor
organization can prevent its correct functioning, as it will continually insert the original Feedback effect (with input) obtained in a previous order of evaluation, in the successive instances of the Feedback effect. A new original Feedback with input will update the temporary memory used by the effect.

The effect can also be used for creating a trail during movement. For example, if a Feedback effect is created with a Comp3D as input (it will be the original Feedback), and another Feedback without input is created as background input of the Comp3D, the layers in movement in the 3D composition will leave a trail of copies of its previous positions. This is because the background of the composition is being fed back with its result. If a small color correction that slightly darkens the composition is now added to the original Feedback in a previous order of evaluation, the feedback copy created as background will show the feedback with the color correction that has been recursively run on the movement trail, having repeated the same color correction several times in the older tracks left by the trail.

Special attention should be paid to the monitor, since Feedback is an effect, unlike almost all the other Mistika effects, whose result may depend on how it is evaluated previously. The result, therefore, depends of the order in which the frames are evaluated, and the result of normal playback can be very different from that of reverse playback.

### Scope

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Compose->Scope

This effect is useful for grouping together layers that are not otherwise related to each other, thus avoiding manual offset of the monitor mark in the vertical axis of the Node Graph.

It can also be used to force the conversion of an image to a specific internal format in order to control quality.

### I/O

**Inputs**

**Multi-input**: Image with or without alpha channel.

**Image**: No changes, unless the input is YUV, in which case it is converted to RGB.

**Alpha**: No change.

### Parameters

**Format**

[NO CHANGE (NO CHANGE / YUV422 / RGB8B / RGBA8B / RGB10B / RGBA16B / HW-HDR)]

Defines the output of the effect.

### Use and Comments

This effect is useful for grouping a part of the timeline, and activating its Proxy, thus making it behave as a low resolution temporary clip.

In this example, it can be seen that the *Scope* effect has the Proxy active and calculated.
This speeds up the monitor in the timeline, since the effect avoids the monitor evaluating the effects of this part of the timeline, maintaining constant real-time speed. Remember that the Proxy is not visible if the monitor is only evaluating in high resolution.

It also allows the monitor to view tracks that cannot be contained in the height of the monitor bar, which in this example has a height of six tracks, and the effect allows a further four tracks below it to be viewed due to its scope. (There is no need to use this tool if the Center Monitor option is activated).

**Dummy Clip**

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Compose->Dummy Clip

This effect is not in itself an image process, but rather one of the system tools.

*Dummy* is a type of clip that is used in a group as a replacement for a layer, which may be outside the group as an input to the group, or also in combination with the *Dummy Comp* effect.

When a set of effects of the same duration are grouped with a *Dummy*, the group will change into a template group, which as compared with other groups, has a scope for placing inputs.

These inputs will be evaluated instead of the *Dummy* clips within the template group, activating the use of a template.

Another way to activate the use of a template is by using the *Dummy Comp* effect, without the need to group.

*Dummy* clips have a number corresponding to the input number of the template group that will be assigned as its replacement.

In order to assign an identifying number to the *Dummy* clip, a number should be entered into the calculator, with the Use button active, and then press the button in the gallery of effects that adds a *Dummy* in the Node Graph. The number in the calculator will appear in the *Dummy* clip that is created.

The *Dummy* clip identifying numbers correspond to the inputs of the template group in the following order:

*Dummy 1*: first input.

*Dummy 2*: second input.

*Dummy 3*: third input, and so on successively.
Bear in mind that the identifying numbers of Dummy clips should consist of a successive numbering starting with 1. Otherwise it is impossible to assign the inputs correctly to the template group.

Within a template group, several Dummy clips can coexist with the same identifying number, thus working as instances of the same template group input, which is only evaluated once, sent to memory and then replaces all the Dummy clips with the same identifying number, in this case resulting in similar behavior to the Feedback effect.

Each Dummy clip evaluated without having an assignment produces an image that symbolizes its number with squares specified by its index similar to the numbers on a dice, with a different color for each identifying number, so that there is a reference to the clip and the lack of an input in the template group can be detected.

The following example shows the steps to follow to construct an effect template.

In the example, it can be seen that the same input will be repeated three times in the original stacks. This repetition can be avoided by using the assignments generated by Dummy clips.

In other systems, the vertical flow of the first two steps of the example could be shown in the following way:

Remember that, in order to create a template group, it is necessary to group aligned clips of the same duration, with at least one Dummy clip inside the group. Otherwise the template group is not created and a normal group is specified instead.

However, once the template group is created, it is possible to navigate in it and modify the
duration of the clips. When exiting the group, Mistika will ask if any additional actions should be taken first, or if all the durations of the clips in the group should be adjusted to the original duration.

When the duration of the template group is specified again in the Node Graph, the duration of all the clips inside the group will also be specified again.

The template groups can be combined in an infinite number of ways, and a template group can be used as the input of another.

This means that this effect can be used to create templates from any stack of effects, creating groups that can be stored for later use, thus optimizing tasks that repeatedly use the same stack of effects preconfigured by the user. These can be modified at any time.

A more complex flow will be used as another example, also using the **Dummy Comp** effect:

This flow is also shown on the right in a one-dimensional diagram, since it does represent the duration of each process, to understand how the **Dummy** effect creates instances in another part of the flow. The blue lines indicate the assignments in the first flow, and the green lines those in the second.
Dummy Comp

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Compose->Dummy Comp

Activates *Dummy clip* templates, without the need to group the flow with *Dummy* in a template group, thus making visible the parameters of the generated templates.

I/O

**Inputs**

- **Multi-input**: the first input should be the flow with *Dummy* clips, and the following inputs the layers that will replace the *Dummy* clips.

**Inputs**

- **Image**: Image derived from the effect templates generated by the *Dummy* clips.
- **Alpha**: Mask derived from the effect templates generated by the *Dummy* clips.

**Parameters**

None.

**Use and Comments**

This effect is not in itself an image processor, but rather one the system tools.

This effect activates the *Dummy* clips templates without the need to group the effects and the *Dummy* clips in a template group.

In order to work correctly, this effect should have within its scope as first input the flow of the effects of the *Dummy* clips, and then the images (or flows) that will replace the *Dummy* clips in the order indicated by the numbers of the *Dummy* clips.
If *Dummy Comp* is grouped with the flow of the *Dummy* clips, the effect will be ignored within the group because it only has one input, thus permitting correct functioning of the template group.

This effect is ideal for interactively specifying the parameter values of a template, since it activates it without the need to group and lose the possibility of modifying parameters, while viewing immediately the result in the image. In addition, the effect can remain grouped in the template group without interfering with its functioning, and be reused when the template group that contains it is ungrouped.

**Boolean**

Ref. Mistika: Node Graph  Editor->Dashboard->Fx->Mistika->Boolean

The effects of the *Boolean* menu add Boolean operations to clips.

**Channels**

Ref. Mistika: Node Graph  Editor->Dashboard->Fx->Mistika->Boolean->Channels

Reassigns or combines the RGB and Alpha channels that come from the same or different images by using Boolean operations.
Clip naming system

The majority of the parameters of this effect are expressed with words to make their interpretation easier. These values are not usually animated, as they express modes. Certain combinations of parameters defines standard functions that the system recognizes. These standard functions (such as assigning an external mask) automatically modify the name of the effect being viewed in the Node Graph (for example, Channels automatically changes to ExternalKey when the external mask is defined).

If the values detected by the system in order to change names are found to be animated, it is viewed as the name of the combined parameters specified in frame 0.

This effect can be accessed from the effects gallery, via presets with associated hotkeys and its own button within the gallery, but in reality only this effect is invoked as it brings together many possible functionalities.

Parameters

This effect has four dropdown folders, one for each channel (red, green, blue and alpha). It also has a mode folder described below.

- **Mode**

  **[HW-HDR (SW, HW, HW-HDR)]**

  Defines the processing mode of the effect.

  **SW** specifies that the calculation is done by software.

  **HW** specifies that the calculation is done by hardware, in 8-bits color depth per channel.

  **HW-HDR** specifies that the calculation is done by hardware, in 16-bits color depth per channel. (HDR stands for “High Dynamic Range”). This mode is recommended for images that have more than 8 bits per channel, such as those obtained from a film scanner.

  **Note**: the default option (HWare) is recommended as modern graphics boards are optimized for calculating depth at 16 bits per pixel color.

  The folders of the four channels contain identical parameters, with differing default values in order initially to maintain the input image without changes. Below there is a description of the **Red** folder, since the only difference with the other folders (**Green**, **Blue** and **Alpha**) is in its default value.

  **Red:**

  Along with **Mode**, this effect has four dropdown folders, one for each channel (red, green, blue and alpha).

  Its parameters are defined here using the red channel as an example (**Red** folder).

  - **X**

    **R1 (R1, G1, B1, A1, Luma1, R2, G2, B2, A2, Luma2)**

    Reassigns the channel that is interpreted as the current channel (in this example, red channel). The default value specifies that the red channel is that of the first input.

    **R1** assigns the red channel of the first input as the current channel.
**G1** assigns the green channel of the first input as the current channel.

**B1** assigns the blue channel of the first input as the current channel.

**A1** assigns the alpha channel of the first input as the current channel.

**Luma1** assigns the luminance of the first input as the current channel.

**R2** assigns the red channel of the second input as the current channel.

**G2** assigns the green channel of the second input as the current channel.

**B2** assigns the blue channel of the second input as the current channel.

**A2** assigns the alpha channel of the second input as the current channel.

**Luma2** assigns the luminance of the second input as the current channel.

### Operation

**X Only (X Only, Only Y, Plus, Minus, And, Or, Xor, Min, Max, Diff)**

Specifies the mathematical operation that combines the first assigned value (X) with the second (Y).

**Note:** the second assigned value (Y) can also be multiple, so Y specifies the combination of the inputs from the second on, so it is possible for example to add the values of the multiple inputs to the first input.

**X Only** specifies that the current channel comes from the channel assigned by the X entry, without changes.

**Only Y** specifies that the current channel comes from the channel of the entry Y, without changes. In the case of multiple inputs, only the second input is taken into account.

**Plus** adds the values of the pixels of X and Y.

**Minus** subtracts the values of the pixels of Y from X.

**And** multiplies values of the pixels of X and Y.

**Or** specifies an Or operation with the values of the pixels of X and Y. This operation inverts the values of the inputs before multiplying them, and then the result is inverted again, thus functioning in an opposite fashion to And.

**Xor** specifies an Xor operation with the values of the pixels of X and Y. The Xor combination is an operation that is achieved by combining with Or the result of the two previous multiplication operations: multiplying the first by the second selection and multiplying the second by the first selection.

**Min** specifies that the lowest value of pixels between X and Y remains in the results.

**Max** specifies that the highest value of pixels between X and Y remains in the results.

**Diff** specifies as a result the difference between the pixel values of X and Y.

### Invert X

**No (Yes/No)**
Inverts the assigned values in the current channel.

**Invert out**

**No (Yes/No)**

Inverts the values of the result of the combination of the current channel.

**Invert Y**

**No (Yes/No)**

Inverts the assigned Y values in the current channel.

**Scale**

\[100 (-1.000.000 / 1.000.000)]\]

This parameter multiplies by percentage units the result of the combination of the edited channel, scaling the final result of the specified mathematical operation.

**Bias R;G;B;A**

\[0 (-1.000.000 / 1.000.000)]\]

This parameter adds a constant value (positive or negative) to the result of the combination of the edited and scaled channel, behaving like an offset control of the final result.

Thus the new value of the channel is the result of the mathematical operation, then multiplied in percentage units by the Scale factor, then added to the Bias value.

**I/O**

**Inputs**

**Multi-input**: from one to unlimited inputs, with or without alpha channel.

**Inputs**

**Image**: Combination of the RGB channels.

**Alpha**: Mask altered by the combination.

**Use and Comments**

This effect has a very generic use, since it allows the combination of each channel separately using mathematical operations, which makes it a very versatile effect both for combining different images and for combining channels of different images.

For example, to restrict an effect to a single channel, the red, for example, Channels can be used. The original image should be used as the first input, and then the same image with filter as the second input, specifying in the effect parameters that the red channel should come from the second input (R2).

Another common use is the one of the mathematical Diff operation to make a cut by
difference in static takes in which the camera does not move. Thus, we can insert an input with a clean background and another one with a character moving on the same background, and use the Diff operation to subtract the two images, obtaining the cut of the character. Thus we obtain an image in which all the pixels are black except those corresponding to the character. These pixels show a random color, which is why we have to process them later (for example, by means of the Color Grade effect) to obtain a valid mask (well contrasted in black and white) and to apply a slight blur effect smooth the edges.

The clip name system recognizes the following standard combinations: Add, Subtract, Multiply, Or, ShowAlpha, InvertAlpha, ClearAlpha, ExternalKey.

**Add**

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Boolean->Add

Add combines the pixel values in an addition result. Although Or gives a similar visual result, Add is the most appropriate for composing light sources, such as car headlights, or the sun in the sky for example. Since a source always adds light to a scene, this effect behaves in an analogous way.

<table>
<thead>
<tr>
<th>Input 1</th>
<th>Input 2</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image 1" /></td>
<td><img src="image2.png" alt="Image 2" /></td>
<td><img src="result.png" alt="Result" /></td>
</tr>
</tbody>
</table>

This effect is also often used for combining images representing masks.

<table>
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</tr>
</tbody>
</table>

**Or**

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Boolean->Or

Or inverts the input values before multiplying them, and the result is inserted again, thus working in the opposite way to And.

<table>
<thead>
<tr>
<th>Input 1</th>
<th>Input 2</th>
<th>Invert 1</th>
<th>Invert 2</th>
<th>Multiply</th>
<th>Invert</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image 1" /></td>
<td><img src="image2.png" alt="Image 2" /></td>
<td><img src="invert1.png" alt="Invert 1" /></td>
<td><img src="invert2.png" alt="Invert 2" /></td>
<td><img src="multiply.png" alt="Multiply" /></td>
<td><img src="invert.png" alt="Invert" /></td>
</tr>
</tbody>
</table>

Because of its behaviour, Or is the recommended operation for composing light reflected on transparent objects, such as the reflection of a driver on a car windscreen, for example. It is also highly recommended for use as a color corrector of the second input, which will work as a composition control.

<table>
<thead>
<tr>
<th>Input 1</th>
<th>Input 2</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image 1" /></td>
<td><img src="image2.png" alt="Image 2" /></td>
<td><img src="result.png" alt="Result" /></td>
</tr>
</tbody>
</table>
And

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Boolean->And

*And* (*Multiply*) combines the pixel values by multiplication. Bear in mind that the values of a pixel are measured in percentage units, and so the units must be normalized to understand that this is what is multiplied.

As an example, suppose that a pixel of the first input has a value of 80 (%). In normalized values, this is equivalent to 0.8. The pixel of the second input that corresponds by its position has a value of 50 (equivalent to 0.5 normalized). Then the value of the first is multiplied by the second: $0.8 \times 0.5 = 0.4$.

The first input is then obscured by the second. If the normalized value of the second were the maximum (1), the operation would be $0.8 \times 1 = 0.8$. Therefore, this operation always obscures the first input based on the values of the second. Because of its behavior, *Multiply* is appropriate for composing shadows.

In the example, it can be seen how the second input only adds darkness to the first input, in this case emulating a tattoo. The second image of the example was made by deforming an image with the *Refract* effect.

![Example of And effect](image)

The use of a color corrector, which will work as a composition control, in the second input is also recommended.

This effect is also often used to combine images representing masks, in this case obtaining as a result the opacity intersection area of both masks.

![Example of And effect with masks](image)

Sub

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Boolean->Sub

*Sub* (*Subtract*) combines pixel values by subtraction. Its use is not specially recommended, since there is no natural effect that is analogous to it.

Subtracting two identical images gives a black frame. For this reason, this effect is often used to evaluate the differences between two images, and also to obtain masks by difference.

This effect is also often used to combine images representing masks.

![Example of Sub effect](image)
The **Decode** menu includes decodification effects in order to natively process different image formats.

### Arri Params

This color correction effect is oriented for processing shapes from native images shot in Arri Raw (.ari) format. This format is used for Arri cameras such as Alexa.

Since Arri Raw is a RAW format (i.e., it contains the entirety of the image data captured by the camera sensor), the **ArriParams** effect can modify the values of any of the parameters established in the Arri camera during the shoot.

#### I/O

**Inputs**

- **Single input**: image

**Output**

- **Image**: color corrected image
- **Alpha**: opaque mask

#### Parameters

- **ASA**

  **[Source(Source/160/.../3200)]**

  Modifies the ASA value to be used.

- **Kelvin**

  **[Source(Source/2.000/.../11.000)]**
Modifies the Color temperature be used.

- **Tint**
  
  ![0 (-8/8)]

  Works as a complementary white balance corrector, compensating the magenta and green components derived from certain light sources such as fluorescents and sodium lights.

- **Sharpness**
  
  ![100 (0/300)]

  Defines the sharpness level to be used in each pixel.

- **Color Space**
  
  ![Wide Gamut+LogC(Camera Native+LogC/Wide Gamut+LOGC/ITU 709 +Gamma 2.4/P3+Gamma 2.6/Film/ACES)]

  Selects the desired color space as defined by ARRI.

- **Filter Chroma**
  
  ![None, (None/3x3/5x5/7x7/9x9)]

  Filters Bayer moire color artifacts on edges. The larger the value, the more thorough the filter, but at cost of loss of color detail resolution.

  The recommended value is 3x3.

  It can be left Off if no undesired artifacts are observed.

---

**R3DParams**

*Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Decode->R3DParams*

This color correction effect is oriented for processing shapes from native images shot in REDCODE (.R3D) format. This format is used for RED cameras such as RED ONE and EPIC.

Since REDCODE is a RAW format (ie, it contains the entirety of the image data captured by the camera sensor), the **R3DParams** effect can modify the values of any of the parameters established in the RED camera during the shoot.

---

**I/O**

**Inputs**

*Single input: image*

**Output**

*Image: image corrected de color.*

*Alpha: mask opaca.*
### Parameters

#### Kelvin:

- **Use**

  **[Source (Source/Value)]**
  
  Option for maintaining the values established in the camera during a shoot *(Source)* or to modify them via *Value*.

- **Value**

  **[6500 (1700/100.000)]**
  
  Modifies color temperature. The default value corresponds to the temperature of Daylight (6500K). The lower the value, the less "warm" the resulting image will be, compensating, for example, for Tungsten light (3200K).

  Generally its function is to compensate for the excess of "warmth" to achieve the most neutral result possible.

#### Tint:

- **Use**

  **[Source (Source/Value)]**
  
  Option for maintaining the values established in the camera during a shoot *(Source)* or to modify them via *Value*.

- **Value**

  **[0 (-100/100)]**
  
  Functions as a complementary corrector of white balance. It compensates for the magenta and green components found in certain light sources such as those derived from fluorescent or sodium.

#### ExposureCompe:

- **Use**

  **[Source (Source/Value)]**
  
  Option for maintaining the values established in the camera during a shoot *(Source)* or to modify them via *Value*.

- **Value**

  **[0 (-7/7)]**
  
  Raises or reduces the luminosity in units of exposure range (*f*-stops).
Gain:

Use

[Source (Source/Value)]
Option for maintaining the values established in the camera during a shoot (Source) or to modify them via Value.

Red; Green; Blue

[1 (-10/10)]
Permits the individual adjustment of the gain of the RGB channels. The modification of

Saturation:

Use

[Source (Source/Value)]
Option for maintaining the values established in the camera during a shoot (Source) or to modify them via Value.

Value

[1 (0/4)]
Defines the intensity of color of the image.

Contrast:

Use

[Source (Source/Value)]
Option for maintaining the values established in the camera during a shoot (Source) or to modify them via Value.

Value

[0 (-1/1)]
Defines the value of contrast, raising or reducing symmetrically the values of white and black while leaving the values medium (midtones) at around 50 percent.

Brightness:

Use

[Source (Source/Value)]
Option for maintaining the values established in the camera during a shoot (Source) or to modify them via Value.
Value

[0 (-10/10)]
Defines the brightness of the image.

DRX:

Use

(Source (Source/Value))]
Option for maintaining the values established in the camera during a shoot (Source) or to modify them via Value.

Value

[0 (0/1)]
By modifying the value of DRX (Dynamic Range Extension), it is possible to increase the dynamic range of the image to avoid clipping problems in bright lighting (highlights) owing to overexposure of camera material. To obtain results, it is necessary for at least one of the three color RGB channels not to have been overexposed (generally, blue), since DRX uses this information to reconstruct the rest.

Shadow:

Use

(Source (Source/Value)]
Option for maintaining the values set in the camera during the shoot (Source) or modify them via Value.

Value

[0 (-2/2)]
Defines the low values of the FLUT, that is to say, those close to black (shadows or low light).

FLUT:

Use

(Source (Source/Value)]
Option for maintaining the values set in the camera during the shoot (Source) or modify them via Value.

Value

[0 (-8/8)]
Defines the settings of the mid-tones.
R3DParams:

- ISO

[Source (Source / 50 / 80 / 100 / 125 / 160 / 200 / 250 / 320 / 400 / 500 / 640 / 800 / 1.000 / 1280 / 1600 / 2000 / 2500 / 3200 / 4000 / 5000 / 6400 / 12800)]

Like the parameter ExposureComp, this modifies the gain values of the image in a linear way, increasing or decreasing the value of white and maintaining the value of black at 0%.

- GammaCurve

[Source (Source / Linear / Rec.709 / REDspace / REDlog / PDlog 685 / PDlog 985 / CustomPDlog / REDgamma / SRGB / REDlogFilm / REDgamma2 / REDgamma3 / REDgamma3)]

Defines the color space of the values of the gamma curve.

- ColorSpace


Defines the color space of the image.

- Detail

[Source (Source/Low/Medium/High)]

Defines the level of detail of the image.

- OLPFCompensation

[Source (Source/Off/Low/Medium/High)]

Permits increase of the value clarity to compensate blur generated in a shoot by an optical low pass filter.

- Denoise

[Source (Source/Low/Minimum/Milder/Mild/Medium/Strong/Maximum)]

Defines the intensity of the denoise of RED.

- Reduce

[mConfig (mConfig/1:1/1:2/1:4/1:8)]

Defines the resolution relation with respect to original image. To respect the values established in mConfig->Codecs, select the option mConfig.
**Bit Depth**

**[10 bit (mConfig / 8 bit / 10 bit / 12 bit / 16 bit / 16-HDR)]**

Defines the bit depth of the image output. To use/restore the preset values in Mistika Setup, select mConfig.

**Track**

Sets the Track to be used in the case of a file derived from a HDRx recording (allowing us to capture 2 Tracks with different expositions, stored in the same .r3d file).

**DEB**

**[ON/OFF]**

DEB ("Dragon Enhanced Blacks") is an antinoise filter which works only in RED Dragon files, lowering the noise of the red channel to offer cleaner black and shadows.

**Use and Comments**

Mistika's main color correction is the effect Color Grade (Mistika->Node Graph Editor->Dashboard->Fx->Mistika->Color->Color Grade). Unless specifically indicated to use the setting employed during the shoot, the recommended workflow is the effect R3DParams in order to prepare material to be subsequently corrected with Color Grade.

Color Grade works with a bit depth values specified in the effect R3DParams. This allows maximum manipulation of color if values of 16 bit or 16-HDR are defined in the Bit Depth parameter (Node Graph Editor->Dashboard->Fx->Mistika->Color->R3DParams-R3DParams).

However, in order to obtain the best results and optimize process times, certain considerations must be taken into account to correctly define the bit depth:

The 8 bit option is only useful for comparing with other values, as it results in loss of quality.

Generally, 10 bit is that which gives the best results.

The 12 bit option is only supported in those systems that have a RED ROCKET card.

The 16 bit-HDR option ignores most of the parameters of the REDRAW codec, allowing the user to interpret the range, gamma, color space etc employed. This is the only mode that produces an image with pixels with values above 100%.

The 12 bit and 16 bit modes are only useful when working within a linear color space (instead of a "REDLOG" logarithmic color space, which is the most typical). It is recommended to use these two options very carefully, as they will rarely produce an improvement in the image quality, while they negatively affect the performance of the system. Their use must be for specific reasons, and never "just in case".

The R3DParams effect can modify the decompression parameters of the original .R3D file, even after a color correction has been done, as they remain editable at all times.

Before starting a color correction with Color Grade, it is recommendable to set the parameters of R3DParams with the aim of obtaining the best dynamic range possible and a neutral color temperature. Generally, this can be achieved by modifying the values of ExposureCompe, Gain and ISO (with the help of a vectorscope in W-Luma mode), to widen the dynamic range and set the Kelvin parameters to compensate the color temperature (with the help of the vectorscope in Vscope mode). If the material from the shoot presents
overexposure problems, these can be adjusted with the **DRX** option to obtain results that are within legal values for the image (Mistika->Node Graph Editor->Dashboard->Fx->Mistika->Color->R3DParams->DRX->Value).

Another point to bear in mind is the sharpness of the corrected image. As **R3DParams** has a native compensation for the optical low pass filter (OLPF) housed in all camera sensors, it is best first to correct the sharpness of a **R3D** image with this parameter before using the effect **Sharpen**. If the correction with **3RDParams** is not sufficient, **Sharpen** should then be used.

On workstations with reduced processing capacity, it may be useful to work in lower resolution (at least temporarily) to ease the post-production process. Via the parameter **reduce** (Mistika->Node Graph Editor->Dashboard->Fx->Mistika->Color->R3DParams->R3DParams->Reduce) it is possible to reduce the maximum theoretical resolution (1:1) to a half (1:2), to a quarter (1:4) or to an eighth (1:8). At any time subsequently this can be returned to the original state, usually to obtain the final render.

From **Mistika Setup** it is possible to redefine all the **R3D** parameters by overwriting the values set of the shoot. For example, if a **High OLPF** compensation is required on all the **.R3D** files, this can be done via **Mistika Setup** (Mistika Setup->RED) instead of modifying the clips one by one. In this case, the values overwritten by **Mistika Setup** will be the new **Source** values of **R3DParams**.

It is important to bear in mind that the majority of digital cameras (including RedOne and Epic) use Bayer matrix sensors, in other words each element of the sensor (or resulting pixel before processing the image) is only sensitive to one color component (R, G, or B, typically distributed in a pattern with more elements sensitive to green than the other 2 colors). Thus the effective resolution of the camera image is always less than a format with the same resolution (but real RGB) in Mistika. There are also other factors that reduce the detail that will possible to obtain, such as the signal/noise ratio of the sensor, the compression algorithms (JPEG2000) used by these cameras, exposure time, the lenses used, or a lower resolution in the format delivered than was requested.

For this reason it is usually recommendable to work with a Reduce factor of 1:2, and not increase it to 1:1 unless there is a specific reason to do so (and never "just in case"). Also, if greater sharpness results from using 1:1 mode, the image should be magnified to check that noise has not correspondingly increased, since in this case, quality is lost when the image has movement, and especially in Stereo3D formats, where noise is especially uncomfortable (since each noise element is visible in one eye and is not consistent).

The reverse may also happen, and that when changing to 1:1, the image is softened, depending on the other parameters of the effect: a softer image can result if the the blurring filters that use this codec are augmented. If it is desired that noise is eliminated it is usually more effective to use Mistika's effects Blur and Denoise, as they give greater control, quality and are much quicker to process.

Finally, it must be stressed that 1:1 mode should only be used to see greater detail, and not to resolve problems of noise or sharpness.

Also bear in mind that there is a macro in the editing panel to force this effect to reload the metadata parameters of the R3D files and their associated RMD files, if they exist.

---

**SonyRawParams**

**Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Decode->SonyRawParams**

This decoding effect is oriented to the native processing of images captured in RAW format, developed by Sony (packaged in **.mxf**). This format is used by Sony cameras, such as F65, F55, etc.

Given that it is a RAW format (ie it contains all the data of the image captured by the camera sensor), the effect **SonyRawParams** can modify the values of any of the parameters
for the processing and development of the final image.

**I/O**

**Inputs**

*Single Input*: image to be processed.

**Outputs**

*Image*: color corrected image  
*Alpha*: opaque mask.

**Parameters**

- **Exposure ISO**

  *[Source(Source/80/.../10000)]*

  Selects the value of ISO to be used.

- **Kelvin Use**

  *[Source(Source/Value)]*

  Indicates whether the value to be used is already selected from source or is the value indicated in the following field.

- **Kelvin Value**

  *[5500 (2800/10000)]*

  Kelvin value for the color temperature of the image.

- **Tint**

  *[0.00 (-1/1)]*

  Works as a complementary white balance corrector, compensating the magenta and green components that derive from certain light sources, such as fluorescent and sodium lights.

- **Source Gamut**

  *[S-Gamut/S-Gamut3/S-Gamut3.cine]*

  Select the input color gamut of the image.

- **Output Gamut**

  *[Camera Native/XYZ/709 sRGB/ACES/P3DCI/P3D60]*

  Select the output color gamut of the image.
Gamma Curve

[709 (709/709(800)/HG8009G40/HG8009G33/S-Log2/2.2/2.4/Linear/CineLog)]

Selects the desired gamma curve.

Reduce

[mConfig (mConfig/1:1/1:2/1:4/1:8)]

Defines the resolution relation with respect to the original image. To respect the values established in mConfig->Codecs, select mConfig.

Quality

[mConfig (mConfig/Standard/High)]

Defines the quality of the image processing.

Use GPU

[Off (Off/On)]

Activates processing by GPU.

CanonRawParams

This decodifying effect is intended for native processing of images in RAW developed by Canon (captured in .rmf). This format is used by cameras such as Canon C500.

As this is a RAW format (containing all the data of the image captured by the camera sensor), the effect CanonRawParams may modify values of some parameters in order to process and develop the final image.

I/O

- Inputs

  **Single Input**: image to be processed.

- Outputs

  **Image**: color corrected image

  **Alpha**: opaque mask.

Parameters

- Sharpness

  [100 (0/300)]
Sets the level of Sharpness to be applied to each pixel.

- **Color Space**
  
  [ACES A-D65 / ACES A-Tungsten / ACES C-D65 / ACES C-Tungsten / ACES D-D65 / ACES D-Tungsten]
  
  Sets the color space of the image.

- **Filter Chroma**
  
  [5x5 (3x3 / 5x5 / 7x7 / 9x9]
  
  Filters color artifacts: the higher this value, the greater the degree of filtering applied to the image, which causes loss of detail in the color.

**PhantomParams**

Ref. Mystika: Node Graph Editor->Dashboard->Fx->Mystika->Decode->PhantomParams

This decoding effect is oriented to the native processing of images recorded in .cine RAW. This format is used by high-speed Phantom cameras.

Via the effect PhantomParams it is possible to modify the values of various of the data parameters that come with the file, such as black point, and choose the quality or form of debayer of the image.

**I/O**

**Inputs**

*Single Input*: image to be processed.

**Outputs**

*Image*: color corrected image

*Alpha*: opaque mask.

**Parameters**

**WhitePoint:**

- **Use**
  
  [Source (Source /Value)]
  
  Indicates whether the white point is from source or has been defined, as below.

- **Red Gain**
  
  [1 (0 /100)]
Defines the value of the white point in the red channel.

- **Blue Gain**

  \[
  [1 \ (0 \ /100)]
  \]

  Defines the value of the white point in the blue channel.

**Debayer:**

- **Filter Chroma**

  \[
  [5x5 \ (3x3 \ / \ 5x5/ \ 7x7 \ / \ 9x9)]
  \]

  Filters color *artifacts* created by the Bayer pattern. The higher the value, the more the image is filtered, with the resulting loss of detail in the color.

**Correct:**

- **Gamma**

  \[
  [1.7 \ (1 \ / \ 10)]
  \]

  Defines the gamma value of the image. Lower values set a darker color, so the color correction lifts the brightness of the image.

- **Gain**

  \[
  [100 \ (0 \ / \ 3200)]
  \]

  Adjusts the gain of the image. The modification of these parameters increases or decreases the white value, scales the midtones \(y\) and fixes the black value at 0%.

- **Saturation**

  \[
  [100 \ (0 \ / \ 1000)]
  \]

  Defines the intensity of the color of the image.

**Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Decode->Debayer**

This effect converts a RAW image derived from the codecs of certain cameras based on Bayer-type sensors in an image with RGB color space.

When converting by means of hardware, using the GPU, **Debayer** decodes codecs such as Phantom Cine (from Phantom cameras) and Weisscam in real time.

Other cameras with Bayer sensors (such as RED and ARRI) may have their own specialized effect of transparent supports available from codec libraries such as ffmpeg. Thus, this effect should only be used with cameras specifically supported by the effect, although this is an area that is constantly evolving. Supports are constantly added for new cameras and new specialized effects are created for others so this documentation may be obsolete. We recommend consulting SGO in case of doubt.
I/O

Inputs

**Single input**: RAW image derived from cameras supported by the effect.

Inputs

**Image**: Image in RGB color space.

**Alpha**: Opaque mask.

Parameters

**Debayer:**

- **Pattern**
  
  **[Auto (Auto / GRGR / RGRG / GBGB / BGBG)]**
  
  Specifies the disposition of the R, G and B filters in the fabric of the Bayer mosaic to be converted.

- **Filter Luma**

  **[Type 3 (None / Type 1 / Type 2 / Type 3)]**

  Filters the *jigsaw artifacts* of luminance created by the Bayer pattern. The higher the value, the more the image is filtered. If the image is reduced in resolution, it is recommendable to set this parameter at *None*, and set a high value for *Tap* in the Framing tab.

- **Filter Chroma**

  **[5x5 (3x3 / 5x5/ 7x7 / 9x9)]**

  Filters the color *artifacts* created by the Bayer pattern. The higher the value, the more the image is filtered with a resulting loss of detail in color.

- **Flop**

  **[No (No / Yes)]**

  Allows the application of a predefined rotation of 180 degrees in Y.

**BlackPoint:**

- **Red**

  **[0 (0 /100)]**

  Sets the value of black in the red channel.
- Green

\[0 (0 /100)]
Sets the value of black in the green channel.

- Blue

\[0 (0 /100)]
Sets the value of black in the blue channel.

**Note:** These can also be set via the manipulator *Set Color* in the *Visual Editor* (Visual Editor->Dashboard->Set Color).

**WhitePoint:**

- Red

\[0 (0 /100)]
Sets the value of the white point in the red channel.

- Green

\[0 (0 /100)]
Sets the value of the white point in the green channel.

- Blue

\[0 (0 /100)]
Sets the value of the white point in the blue channel.

**Note:** These values can also be set via the manipulator *Set Color* in the *Visual Editor* (Visual Editor->Dashboard->Set Color). It is normally recommended to use it to do a white balance (clicking Pick Color in a "neutral" area of the image) and then adjust the luminance manipulator to establish the white point.

**Correct:**

- Gain

\[100 (0 / 3200)]
Sets the gain of the image. The modification of these parameters increases or decreases the white value, scales midtones and fixes the value of black at 0 percent.

- Gamma

\[1 (1 / 10)]
Sets the gamma value of the image. Lower value define a darker color, so the color correction lifts the brightness of the image, and vice versa.
Saturation

**[100 (0 / 1000)]**

Sets the intensity of the color of the image.

**Use and Comments**

To convert .cine archives, derived from Phantom cameras, it is recommendable to use the following settings:

In the group **WhitePoint**, set **Red** at 75, **Green** at 100 and **Blue** at 75.

In the group **Correct**, set **Gamma** at 1.7 and **Saturation** at 150.

**HDRMerge**

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Decode->HDRMerge

This decodification effect is designed to combine 2 exposition levels of a single image (via **Track** in **R3DParams**), resulting in an image with shadows and bright lights exposed precisely.

**I/O**

**Inputs**

**Double input:** A pair of images that will be used to create a new image that will maintain the desired final exposure, combining the shadows of one of the inputs and the bright lights of the other. The first input should always correspond to **Track 1** of the **R3DParams** and it will normally this which has a correct exposure in the shadows (even if the bright lights are burnt); the second input should correspond to **Track 2**, underexposed in order to preserve detail in the bright lights.

**Output**

**Image:** Final image with greater depth of color in bits than either of the two original exposures; this allows for a subsequent etalonage in which shadows can be lifted without introducing much noise, and preserving detail in the high lights. If the parameter **Show->Mask** is selected, the effect will show the mask of the combination.

**Parameters**

**ExpositionRatio**

**[3 (0/100)]**

This value represents the ratio of the codified values of the normal and the underexposed versions of the same image. If the values are linear, this value
corresponds to the ratio of the exposition time; however, for logarithmic scales, which are more usual, this value is more similar to the difference between f-stops.

**Clip**

**[90 (0/100)]**

The values of the first input (*Track 1*, normal exposure) which are above this percentage are considered "burnt" and will be replaced by pixels corresponding to second input.

**Transition**

**[20 (0/100)]**

For values below the threshold defined in *Clip*, a transition zone can be defined to avoid the banding that may be caused by an abrupt transition. It is recommendable to set this value temporarily at 0 (zero) to make the transition visible and then reset the value of *ExpositionRatio* until the separation of the dark and light zones is less visible. Once the desired for *ExpositionRatio* is found, *Transition* should be set as desired.

**Show**

**[Merge (Mask/Merge)]**

The user can choose between showing the combined result of the effect (*Merge*) or the mask of the combination (*Mask*). The mask is not in this case a simple grayscale image, since the combination is done independently for each channel (R,G,B).

**Color**

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Color

The *Color* menu includes color correction effects. Furthermore, it contains the effects of format conversion and parameters settings for depth of color.
Color Grade

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Color->Color Grade

*Mistika’s* color corrector contains all the features of high-end color correction systems, such as high dynamic range (HDR) processing, support for control surfaces (*Tangent Devices*), integrated functions of Pan&Scan (*Rescale*) and LUTs 3D applications. It can do all this in real-time hardware processing in 4K, 2K and HD SDI dual link formats, with output to YUV, RGB 10bit, and even HDR color spaces.

This effect corrects color in a structure of nodes or layers (called *Vectors*), basing each new step on three simultaneous chain-linked instants.

Thus, different color corrections can exist within the same Color Grade effect, each working independently (i.e., adding to a previous correction, if one exists) or in relation to others (taking as reference, and even recovering, previous corrections).

Within each node or layer, which have the functions as a new step in the final correction of the image, we find the following corrections ordered in the within the effect:

The first correction (*Primary*) redefines white points, gamma value and black towards any new RGB value, and controls for color printer lights that modify these parameters.

The second correction (*Bands*) processes the result of the first, subdividing the total range of luminance into five definable bands, for each band to be corrected individually later; it also has controls for tone, saturation and contrast (HSL), and masters for the three luminance ranges.

The third correction (*Fixed Vectors*) corrects the tone, luminance and saturation of the six principle areas of the color spectrum (red, green, blue, cyan, magenta, yellow) separately via six independent vectors.

Also, at the start of each *Vector* there is a tab that allows the defining of a color Range by means of HSL controls and masks, for the corrections to work only on the given selection, and also to be able to recover previous colors and modify them with the current correction.

I/O

**Inputs**

**Input simple**: image with or without alpha channel. The alpha channel can be used to mask the color correction carried out.

**Double input**: image with or without alpha channel. The second input is usually used to generated a mask to be applied to the first input.

**Outputs**

**Image**: color corrected, and optionally, rescaled, image.

**Alpha**: without changes, and optionally with the mask generated by one of the free vectors.

Parameters

**Select:**

The first six folders of *Color Grade* correspond to the first tab Select of its manipulation panel.
These parameters define the source of the color selector or keyer, as well as the mode and origin of the recovery tool for recovering any color.

### Key Source

**[Base (Source / In2-In5 / Previous / Base / V2-V48)]**

Selects the source for the color selection to be used for defining the mask that the various parameters and corrections of a given vector will affect. **Base** makes reference to the first layer of the effect, **Source** makes reference to the original input, **In2** makes reference to the second input of the effect, **Previous** makes reference to the previous vector or layer (i.e., the complete correction up to that point), or any previous vector, or one of the other four inputs available to the color corrector.

### Key Channels

**[All (All / Red / Green / Blue/ Alpha)]**

Defines the channels that will be used to make the color selection.

### Recover Mode

**[None (None / Inside /Outside)]**

Activates and defines the mode for recuperating color in a given vector. The default setting is **None**, in which setting no recuperation is carried out. **Inside** or **Outside** defines that the selection made is replaced by the set of colors corresponding to the mask created by the selection, whether by the mask itself (**Inside**) or the inverted mask (**Outside**).

### Recover Source

**[Base (Source / In2 / Previous / Base / V2-V48)]**

Defines the source of the set of colors to be recovered when **Recover Mode** is active. **Base** makes reference to the first layer of the effect, **Source** makes reference to the original input, **In2** makes reference to the second input of the effect, **Previous** makes reference to the previous vector or layer (i.e., the complete correction up to that point), or any previous vector.

This folder defines the values that restrict the color selection to be used as a mask of the vector or to recover colors, either from previous vectors or from the source image or a second input.

### Select HS mode

**[All Hues ( All Hues / Proportional HS / Simple HS )]**

Selection mode that will be used to define the color mask.

The default setting is **All Hues**, which automatically selects the whole image, and allows quick navigation to other tabs (Primaries, Bands and FixedVectors) so any value in the whole image can be modified with no specific selection made.

**Proportional HS** defines the selection based on proportional values of saturation in each pixel.
Simple HS define the selection simply, without taking into account the individual value of each pixel.

- **Select H source**

  
  **[0 (-100.000 / 100.000)]**

  Defines the value of hue that to be corrected. The units of hue are expressed in degrees, referring to the angle of a chromatic circle.

- **Select H tolerance**

  
  **[5 (0/ 180)]**

  Defines an interval of values of hue close to Select H source that will be totally included in the correction.

- **Select H soft-**

  
  **[0 (0/ 90)]**

  Defines a range of values of hue close to those included by Select H source in an anticlockwise direction, which will be decreasingly included in the correction.

- **Select H soft+**

  
  **[0 (0/ 90)]**

  Defines a range of values of hue close to those included by Select H source in a clockwise direction, which will be decreasingly included in the correction.

- **Select S toler-**

  
  **[0 (0/ 100)]**

  Defines the threshold of the interval of saturation where the correction will be applied.

- **Select S soft-**

  
  **[0 (0/ 100)]**

  Defines a range decreasing from the threshold of the interval of saturation where the correction will be applied.

- **Select S toler+**

  
  **[0 (0/ 100)]**

  Defines the end final of the interval of saturation where the correction will be applied.

- **Select S soft+**

  
  **[0 (0/ 100)]**

  Defines a range decreasing from the end of the interval of saturation where the
correction will be applied.

- **Select L toler-**
  
  
  \[0 \ (0/ \ 100)\]
  
  Defines the threshold of the interval of luminance where the correction will be applied.

- **Select L soft-**
  
  \[0 \ (0/ \ 100)\]
  
  Defines a range decreasing from the threshold of the interval of luminance where the correction will be applied.

- **Select L toler+**
  
  \[0 \ (0/ \ 100)\]
  
  Defines the end of the interval of luminance where the correction will be applied.

- **Select L soft+**
  
  \[0 \ (0/ \ 100)\]
  
  Defines a range decreasing from the end of the interval of luminance where the correction will be applied.

Folder that contains the values of the windows used to restrict the correction or selection to a specific part of the image.

- **Window CenterX; Y**
  
  \[0; \ 0 \ (-100.000 / 100.000)\]
  
  Defines the offset from the center of the window that restricts the correction.

- **Window Angle**
  
  \[0 \ (-100.000 / 100.000)\]
  
  Defines the angle of the window that restricts the correction.

- **Window Width**
  
  \[100 \ (0 / 100.000)\]
  
  Defines the width of the window that restricts the correction.

- **Window Height**
  
  \[100 \ (0 / 100.000)\]
  
  Defines the height of the window that restricts the correction.
- Window Soft

**[0 (0 / 100.000)]**
Defines a range of transparencies for the edges of the window that restricts the correction.

- Window Type

**[None (9 modes)]**
Defines the type of window that restricts the correction.

*None*: Defines that there is no window of restriction.

*Line*: Defines a window that divides the screen with a straight line like a wipe. The correction is restricted to one half of the screen.

*InvLine*: Works like the mode *Line*, but with the area of restriction inverted.

*Ellipse*: Defines an ellipse-shaped window inside which the correction is restricted.

*InvEllipse*: Works like the mode *Ellipse*, but with the area of restriction inverted.

*Shape*: Activates the window as a vectorial shape previously defined in the tab *Shape*.

*InvShape*: Works like the mode *Shape*, but with the area of restriction inverted.

*Rectangle*: Defines a rectangular window inside which the correction is restricted.

*InvRectangle*: Works like the mode *Rectangle*, but with the area of restriction inverted.

- Offset X Left; Right

**[0; 0 (-100.000 / 100.000)]**
Offset values added between the position of the window in the left and right images when working in stereo.

Folder that contains the values and parameters for combining and further restricting the selection defined in the current vector or layer.

- Ext Key Source

**[Base (Source / In2 / Previous / Base / V2-V48)]**
Defines the source of the channel with which the combination of the current mask or vector is to be made. *Base* makes reference to the first layer of the effect, *Source* makes reference to the original input, *In2* makes reference to the second input of the effect, *Previous* makes reference to the previous vector or layer (ie, the complete correction up to that point), or any previous vector.

- Ext Key Channel

**[Alpha (Red / Green / Blue / Alpha)]**
Defines the selected source channel, with which to operate for combining with the
selection of the current vector.

#### Ext Key Mode

**[None (None / And / Inv And / Or / Inv Or )]**

Operation mode for the selected source channel with the current selection or mask of the vector. If None is selected, none of the previous parameters are activated.

Other operations are defined in Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Boolean->Channels.

Folder that contains the parameters for dealing with and modifying the behavior of the defined mask and its inversion in mode *Outside*.

#### Key Filter

**[0 (0/ 100.000)]**

Defines a spatial blur of the area defined by the previous parameters, softening the mask generated by the qualifiers, and thus avoiding the appearance of noise when applying the correction.

#### Key Tolerance

**[0 (0/ 100.000)]**

Defines the opacity of the mask: 0 (zero) defines a totally opaque mask; and 100 is transparent.

#### Key Softness

**[100 (0/ 100.000)]**

Controls the range of soft transparencies from total transparency defined parameter tolerance to total opacity. Low values define less range of intermediate transparency.

#### Key Export

**[Off (Off / Inside /Outside)]**

Allows the export of the defined mask, or its inversion, as alpha channel.

#### Key Inv Mode

**[Inv Mask (No Inv/ Inv HSL / Inv Mask)]**

Mode in which the mask inversion will operate, when mode *Outside* or Grade *Outside* is in use.

The default mode is *Inv Mask*, which takes as the inversion of the mask (or *Outside*) the inverted values of HSL and everything outside any window that defines the area to be treated.

*Inv HSL* defines the inversion of the mask or selection (or *Outside*) with the inverted values of HSL outside any window that defines the area to be treated.
No Inv defines the inversion of the mask (or Outside) as the same values of HSL defined for the selection outside any window that defines the area to be treated.

→ Prop Grade Gain

Internal value that defines the saturation gain to show the mask in Highlight mode.

→ Key Correct (A, B) Mode

[(Grow/ Shrink / Fill Holes / Sparkles / Median)]

Defines the extra correction filters for finetuning the selected mask.

→ Key Correct (A, B) Rad

[0 (0/ 100.000)]

Defines the value of the selected correction filter.

→ Key-Key

Internal curve that represents the curve of contrast of the selection mask.

Output modes and options for the selection.

→ Output Mute

[Off (Off / On)]

Activates and deactivates the disabling of the vector.

→ Output Channels

[RGB (- / B / G / GB / R / RB / RGB / UV / Y / YUV)]

Output channels of the selected vector.

→ Output Legalize

[Off (Off / On / Whites / Blacks)]

Option for legalizing luma. The default value is Off; for legalizing the total luma range (whites and blacks) select the option On; for one of the extremes select Whites or Blacks.

→ Output Blend

[100 (0/ 100.000)]

Defines the opacity of the correction in a given vector.

→ Blur Gamma

[0 (0/ 100.000)]
Gamma value applicable to the blur via the tab Select to produce a Glow effect.

**Blur Knee**

**[1 (0.000/ 1)]**
This function is to avoid over-increase of values close to black in the gamma curve.

**Blur Mode**

**[Normal ( Normal / Under / Over)]**
Allows the choice of the kind of application of blur. Normal blurs the whole image and then recomposes it over the mask created (the key), pushing external colors inwards. Under applies the blur before the correction is done and crops it over the mask. Over does so after the correction, and so affects areas outside the mask.

**Grade Inside:**
The Grade Inside folder contains the values for modifying the effect Color Grade for an image defined by the selector or for the whole image if All Hues is selected.

Folder that contains parameters for the primary correction, which can be used for making initial adjustments of black and white points, and also for a primary correction similar to that of a telecine.

**WhitePt R; G; B**

**[100; 100; 100 (0 / 200 )]**
Defines the RGB value that will be corrected to white. Lower values define darker colors as white, so the color correction lifts brightness in the image if this value is decreased, and viceversa.

**Gamma R; G; B**

**[50; 50; 50 (-50 / 150 )]**
This parameter is a gamma value expressed in non-conventional units.

**BlackPt R; G; B**

**[0; 0; 0 (-100 / 100 )]**
Defines the RGB value that will be corrected to black. Higher values define lighter colors as black, so the color correction darkens the image if this value is increased, and viceversa.

Folder that contains parameters for advanced correction, which divides the total luminance range into 5 definable bands, so that each band can be corrected individually, and provides three additional HSC controls.

**HSC/Hue**

**[0 (-100.000 / 100.000)]**
Redefines the initial value of hue. The units of hue are expressed in degrees, referring
to the angle of a chromatic circle.

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<tbody>
<tr>
<td><strong>HSC/Sat</strong></td>
<td></td>
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<tr>
<td>[100 ((-100.000 / 100.000)]</td>
<td>Redefines initial saturation.</td>
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<tr>
<td><strong>HSC/Cont</strong></td>
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<tr>
<td>[100 ((-100.000 / 100.000)]</td>
<td>Redefines initial contrast.</td>
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<td><strong>White/ R; G; B</strong></td>
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<tr>
<td>[0 ((-100.000 / 100.000)]</td>
<td>Corrects color affecting only colors defined as white tonal range.</td>
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<tr>
<td><strong>Highlights/ R; G; B</strong></td>
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<tr>
<td>[0 ((-100.000 / 100.000)]</td>
<td>Corrects color affecting only colors defined as tonal range of highlights.</td>
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<td><strong>Highlights/HSC</strong></td>
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<tr>
<td>[0 ((-100.000 / 100.000)]</td>
<td>Corrects hue, saturation and contrast affecting only colors defined as tonal range of highlights.</td>
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<tr>
<td><strong>Midtones/ R; G; B</strong></td>
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<tr>
<td>[0 ((-100.000 / 100.000)]</td>
<td>Corrects color affecting only colors defined as mid-tonal range.</td>
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<td><strong>Midtones/ HSC</strong></td>
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<td>[0 ((-100.000 / 100.000)]</td>
<td>Corrects hue, saturation and contrast affecting only colors defined as mid-tonal range.</td>
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<tr>
<td><strong>Shadows/ R; G; B</strong></td>
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<tr>
<td>[0 ((-100.000 / 100.000)]</td>
<td>Corrects color affecting only colors defined as tonal range of shadows.</td>
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</tbody>
</table>
- Black/ R; G; B

\[0 (-100.000 / 100.000)\]
Corrects color affecting only colors defined as black tonal range.

- Black/HSC

\[0 (-100.000 / 100.000)\]
Corrects hue, saturation and contrast affecting only colors defined as black tonal range.

- Ranges/Lo/Lo_Limit

\[0 (0 / 100 )\]
Defines a percentage value of brightness which is considered the end of the black tonal range.

- Ranges/Lo/Lo_Slope

\[250 (0 / 100.000)\]
Defines a slope value for the tangent of the curve of separation for the bands in their lower zone, which, together with the parameters of the folder \( Hi \) defines the three central bands.

- Ranges/Hi/Hi_Limit

\[100 (0 / 100 )\]
Defines a percentage value of brightness which is considered the end of the white tonal range.

- Ranges/Hi/Hi_Slope

\[250 (0 / 100.000 )\]
Defines a slope value for the tangent of the curve of separation for the bands in their higher zone, which, together with the parameters of the folder \( Lo \) defines the three central bands.

Folder that contains parameters for a secondary correction (correction by predefined color vectors), of the primary and secondary colors: red, green, blue, cyan, magenta and yellow.

- Red R; G; B

\[100; 0; 0 (-100.000 / 100.000)\]
Defines RGB gain for colors reds.

- Green R; G; B

\[0; 100; 0 (-100.000 / 100.000)\]
Defines RGB gain for greens.

- Blue R; G; B
  
  \[0; 0; 100 (-100.000 / 100.000)]
  
  Defines RGB gain for blues.

- Cyan R; G; B
  
  \[100; 0; 0 (-100.000 / 100.000)]
  
  Defines RGB gain for colors close to cyan.

- Magenta R; G; B
  
  \[100; 0; 100 (-100.000 / 100.000)]
  
  Defines RGB gain for colors close to magenta.

- Yellow R; G; B
  
  \[100; 100; 0 (-100.000 / 100.000)]
  
  Defines RGB gain for yellows.

The parameters related to the Curves panel are internal Mistika parameters, although they can be used to reset the different curves from here.

- R-R
  
  Reed channel curve.

- G-G
  
  Green channel curve

- B-B
  
  Blue channel curve

- L-L
  
  Luma curve

- S-S
  
  Saturation curve

- L-S
  
  Saturation curve proportional to luma
These are the parameters which serve focus or blur the image depending on the mode selected in *Output*.

- **Blur Rad**
  
  **[0 (0/ 100.000)]**
  
  Radius of the application of the effect.

- **Blur Blend In**
  
  **[0 (0/ -100.000)]**
  
  Amount of focus or blur of the effect. Negative values indicate focus (sharpen) and positive values indicate blur.

This contains the different mutes for disabling the correction of that part of the corrector in the image.

- **Mute Primary**
  
  **[Off (Off / On)]**
  
  Activates/deactivates the of the subtab of *Primary* of the selected vector in the image.

- **Mute Bands**
  
  **[Off (Off / On)]**
  
  Activates/deactivates the of the subtab of *Bands* of the selected vector in the image.

- **Mute Fixed**
  
  **[Off (Off / On)]**
  
  Activates/deactivates the of the subtab of *Fixed* of the selected vector in the image.
Mute Curves

[Off (Off / On)]
Activates/deactivates the of the subtab of Curves of the selected vector in the image

Grade Outside:
The Grade Outside folder contains the values for modifying the effect Color Grade for an image defined by the inversion of our selection, set in active mode in Color Grade->Select->Key->Key Inv Mode. The folders and values are the same as those found in Grade Inside.

Manipulators:
This manipulator panel is especially designed for RGB color correction effects, and simulates the operation of traditional telecine systems. This panel is activated when selecting an Color Grade effect.

The panels have manipulators of the following type: Knob, Qualifier (Wheel & Slider) and Trackball.

Knob
A relative knob is a kind of button which is depressed and moved right to increase and left to decrease the value it controls.

Absolute Knob also shows an absolute value over the parameter that is being manipulated, and has a small reset button below. The background color indicates a negative (red) or positive (green) value. The value can also be edited, dragging it vertically.

The knobs present in the corrector can control tone, saturation, contrast, and brightness, color suppression, mask filter, level.

Command Button
This button runs a specific command when clicked, but without the option of adjusting the magnitude of the indicated effect.
Wheel Qualifier

This qualifier allows selection of a range of Hue by means of four manipulators like clock hands, which define a portion of a color wheel.

With the primary button, the central value of Hue is defined, turning the pointers to the value of hue desired (corresponding to the Select H source parameter).

Holding down <Ctrl> at the same time defines a symmetrical inclusion tolerance in the value, which translates in the manipulator as an increasing angle centered at the previous pointer. It is also possible to manipulate this directly with the secondary mouse or tablet button (corresponding to the Select H tolerance parameter).

Holding down <Alt> at the same time defines an asymmetric decreasing tolerance (soft) which appears as two new pointers beside the previous symmetrical tolerance. It is also possible to manipulate this directly with the third mouse or tablet button (corresponding to the Select H Soft- and Select H Soft+ parameters).

Slider Qualifier

This qualifier allows the additional isolation of the color range to be corrected, according to its saturation or luminance value. Two sliders exist in this corrector, the upper one defines saturation values, and the lower one luminance.

The main button defines the total range to be included, by pressing the sides of the slider and moving it laterally (corresponding to the type of parameter Select S toler and Select L toler).

Pressing <Alt> at the same time defines a decreasing range of tolerance (soft) towards the interior of the selection. This range is shown as slope within the manipulator. It is also possible to defines this directly with the secondary mouse or tablet button (corresponding to parameter Select S soft and Select L soft).

Note: Each slider has two sides. The right represents the higher limit, and the left the lower limit. Each limit can defines its soft value independently.

Trackball

Trackballs are more complex manipulators which control sets of RGB parameters.

Each trackball has common characteristics.

Ball

The central ball specifies a correction vector that indicates the saturation level with its radius, and the selected hue with its angle. The ball is manipulated by pressing and dragging it with the left mouse button.

Ring

The peripheral rings act on the luminance of the affected range, and are used for specifying the luminance level of the effected zone.

Each ring is manipulated by pressing and rotating it round the ball while holding down <Alt>, or directly with the secondary mouse or tablet button. Rotating clockwise increases luminance, while anticlockwise reduces it.

Color Reference
Color Reference enables viewing of the correction defined in the ball for mid-gray tones.

**RR**

Resets the trackball ring to its default position. When a color correction is animated, this button will add a keyframe with the default value to the parameters corresponding to the restarted ring.

**RB**

Resets the trackball to its default position. When a color correction is animated, this button will add a keyframe with the default value to the parameters corresponding to the restarted ball.

**Panels:**

The *Color Grade* correction panel has six subpanels with different manipulators for each layer or vector: *Select, Primary, Bands, Range, Fixed* and *Grade Setup*.

With *Color Grade*, each Vector acts as a complete correction, with a further step that acts as a primary correction, secondary correction, recovery of lost ranges or simply generating masks and creating advanced image effects.

► **Select**

In this first panel of *Select*, the range of colors to be worked on is defined (or in its default setting, the whole image). Also, by means of several manipulators and tools, more accurate masks can be generated, selections of specific parts of the image can be made, and also image effects and filters can be created. There also exists a range of possibilities for mixing channels and combining them with selections defined by the user to achieve greater control over the area to be worked on.

The first group of manipulators described here is that which qualifies the colors to be corrected. To use the *Wheel Qualifier*, activate either mode *Proportional* or *Simple Hue-Sat* in the controller *Hue-Sat Mode*. 
**Hue-Sat Mode**

Sets the correction to be restricted to the range of colors qualified according to hue and, optionally, as proportional to the saturation value. If this button is off, the correction will not be restricted by the qualifiers of hue and saturation, although it can be restricted by the luminance qualifier and by *Windows* and *Shapes*, as described below.

**Hue Pick**

This button selects a value of hue for the *Select H Source* parameter from the image.

**Hue Reset**

Returns the hue qualifiers to their default values.

**Wheel Qualifier**

Four pointers are drawn on the qualifier in the form of a color wheel; the pointers are manipulated directly on the color wheel, in order to define the range of hue to be transformed by the color correction indicated in the same subfolder.

Initially only two pointers are seen; they turn together when clicked and dragged with the main mouse button. These two pointers represent the hue values included in the tolerance of the corrector (*Select H Toler*), forming a cone that is centered on the source hue value (*Select H Source*). Together both pointers therefore represent the combination of two parameters that must be visualized together. When clicking on the
cone with the main button button, it can be turned towards other values. When clicking on the cone with <Ctrl> simultaneously held down (or with the third button), the angle of the cone increases.

Two other pointers outside the central cone represent a decreasing tolerance, which is asymmetric, as these two pointers are manipulated separately. In order to turn either of the two pointers, click in the margin of the desired central cone with the main button and <Alt> at the same time (or with the secondary button), dragging the pointer to the desired position.

Similarly, it is possible to isolate from these selected hue values a saturation and luminosity range for these colors, with another two qualifiers:

**Saturation Qualifier**

This qualifier is a slider with the function of specifying the saturation range to be transformed by the color correction indicated in the same subfolder. To its left there is a reset button and an invert button, to invert the selected saturation range.

**Luminance Qualifier**

This qualifier is a slider with the function of specifying luminance range to be transformed by the color correction indicated in the same subfolder. To its left there is a reset button and an invert button, to invert the selected luminance range.

---

**Ext Key Mode**

Activates the import of external keys (from other vectors or second inputs) in order to combine them (or not) with the current selection. When some of the modes are in use (And, Inv And, Or and Inv Or), the tabs of Ext Key Source (to select the source of the channel) and Ext Key Channel (to select the channel to be imported) will appear.

**Key Source**

Indicates the source that will be used when defining the mask by HSL.
**Key Channels**

Defines the channels of the selected source that will be used to create the mask by HSL.

**Recover Mode**

Activates the recovery mode for the interior or exterior of the mask created, in order to make available areas of tones, ranges or parts of the image that have been lost in previous vector corrections, or to use them as a second input. When active, the tab *Recover Source* will be visible (to select the source from which the recovery will be made).

**Key Correct**

Activates different mask correction modes, which may reduce (Shrink), increase (Grow), fill spaces between mask (Fill Holes), eliminate small isolated flashes outside the main mask (Sparkles), or apply a median blur filter (Median).

**Export Key**

Applies the selection of the qualifiers as mask in the output of the effect in the alpha channel. This generated mask may be edited with the manipulators of *Mask Toler* and *Mask Soft*, in a similar way to that of *Pick Key* for Greenscreen elements and so on.

**Highlight Selection**

Activates a temporary viewing mode, highlighting the range of color according to the mode we have selected in *Grade Setup*: saturated colors, in white and black or over black. This button is very useful for distinguishing in the processed image the total effect of the range included in the correction of the active vector (this function highlights only the vector being edited).

**Outside Mode**

Defines the inversion mode for the mode *Outside* of *Color Grade*. According to the selection made, the 'inverse' of the mask will vary, following different parameters.

**Blending Mode**

Chooses the way the current vector blends or adds to the image derived from the previous vector. All the blend modes are defined and coincide with those found in the effect *Comp3D*.

**Clamp**

Option for legalizing luma. By default this is *Off*; when *On* it can be used to legalize the whole range of luma (*Whites* and *Blacks*) or only the two extremes.

**Output Channels**

Output channels of the selected correction.

**Blend**

Opacity of the selected mask.
Key Blur

This last parameter is a post-process that is applied to the generated mask by the qualifiers, softening the selection by means of a spatial filter that blurs the restriction generated, hiding the generation of possible noise that may be highlighted by the applied correction. It is recommended to use this parameter in all cases, but always after defining the best mask possible with the tolerance and softness parameters of the qualifiers.

The second group of manipulators described are those which define the correction applied within the range of colors defined by the qualifiers, or by Windows as described below.

Key Tolerance

Defines the opacity of the mask; 0 is totally opaque, 100% transparent.

Key Softness

Controls the range of soft transparencies soft from total transparency defined by the tolerance parameter towards total opacity. Low values define a low range of intermediate transparencies.

Blur Blend

Value that indicates the amount of focus/blur for the image. Negative values act as focus, positive values as blur.

Key Curve

Allows the individualized creation of a luma curve for the selection of the mask, in order to better and more quickly redefine the area of the desired selection.

Line
Restricts the correction by dividing the screen with a line, specifying half as an excluded area. This line can be manipulated interactively, through the visual manipulator.

```
To move it, hold down the main button; to rotate it, hold down <Alt> at the same time.
```

The line has a cross at the center that indicates the rotation pivot point. It is also possible to manipulate a gradient (softness) that extends from the edge of the defined window, by clicking the main button and holding down <Shift>. The limit of softness is viewed as a second line.

**Ellipse**

Restricts the correction to within an ellipse, which can be manipulated interactively, through the visual manipulator.

```
To move it, hold down the main button; to rotate it, hold down <Alt> at the same time. To scale the ellipse, hold down <Ctrl> at the same time.
```

The ellipse contains a guideline with a cross at the center that indicates the rotation pivot point. It is also possible to manipulate a gradient (softness) that extends from the edge of the defined window, by clicking the main button and holding down <Shift>. The limit of softness is viewed as a second line.
**Rectangle**

Restricts the correction to within a rectangle, which can be manipulated interactively, through the visual manipulator.

To move it, hold down the main button; to rotate it, hold down `<Alt>` at the same time. To scale the rectangle, hold down `<Crtl>` at the same time.

The rectangle contains a guideline with a cross at the center that indicates the rotation pivot point. It is also possible to manipulate a gradient (softness) that extends from the edge of the defined window, by clicking the main button and holding down `<Shift>`. The softness limit is viewed as a second line.

**Shape**

Restricts the vector correction to within the area defined by the shapes associated with the free vector.

*Shapes* are created, modified, combined, and animated from the *Shapes* manipulation mode. In this manipulation mode, the assignation of the shapes created to the six different vectors is defined. In Shapes mode, all created shapes are seen together, and when one shape is selected, its association is seen from the Vector attribute.

If the *Shape* window mode is selected from one of the color corrector manipulators, the Visual Editor only shows the shapes assigned to the selected vector, hiding shapes unassigned to the free vector being viewed, to help with editing.

**Ellipse/Rectangle** and *Shapes* contained by an effect can be animated and/or tracked.
Remember that both windows (Ellipse/Rectangle) and Shapes contained by an effect can be animated and/or tracked.

**Invert Window**

A mode for inverting the modes of previous windows can be added to one of the four previous restriction modes.

The following example shows an ellipse with *Invert Window* activated:

Remember that the qualifiers can be combined with window to correct colors identified by their values within specified areas.

**Primary**

The *Primary* panel is for the initial correction; it contains three *trackballs*, the panel
Printer Lights, and eight relative knob and buttons.

This first correction uses classical correction operations for controlling the black point, the gamma value (standard gamma parameter) and the white point (multiplying all the pixels by a constant value, also called Gain or Brightness).

On the left there is the Printer Lights panel, which allows us to modify each parameter individually, according to the values of printer light in the logarithmic color space, as well as other controls that do not pertain to these parameters but are located here for ease of use. The relationship between the values of Mistika and the printer lights can be defined in the Setup panel of Color Grade.

In this panel, there are modification command buttons for simplifying the setting of the different primary and secondary tones (R+,R-,G+,G-, etc); also there are modifiers for Gain and contrast (All+,All-). The command buttons add or subtract a specific value (defined in Printer Lights Steps); the relative knobs of Level and Cont allow the modification of gain and contrast of each color, as well as two general relative knobs (with white letters) which affect the three channels, thus simplifying the most common operations.

The Level-type controls (gain) add or subtract the same value for the Black Point and the White Point, while the Cont (contrast) controls manipulate both points in opposite directions, to increase or reduce contrast.

The buttons 1, 1/2 and 1/4 indicate at what magnitude the value defined in Printer Lights Step will be used to modify the gain or contrast of any of the previously indicated parameters (at the whole value, half or a quarter). B+W+, B+, W+. B-W+ allow the selection of the range over which the command buttons will operate:

B+W+
Values of printer lights in the logarithmic color space for the total gain (black and white points).

B+
Values of brightness in Mistika parameters affecting the black point.

W+
Values of printer lights in the linear color space affecting the white point.

B-W+
Values of contrast in Mistika parameters affecting black and white points.
Below the *Printer Lights* panel there are two *pick* buttons which are used for selecting a value in the image of the *Canvas* and redefining the black/white point.

### Bands

![Band Controls](image)

After the first settings correction, the luminance range is divided into five bands, definable by the user (the term "band" interpreted as a fraction of the luminance range).

Each band has a trackball (*Black, Shadows, Midtones, Highlights* and *White*).

Additionally, there are four sets of HSC (hue, saturation and contrast) controls. The first affects the whole range, the second, dark colors, the third, midtones and the fourth, light colors.

### Range

The five bands are defined through this subpanel.

The subpanel is an image that has two control points with tangents.

The horizontal axis defines the input value (black to white, from left to right) already transformed by the primary correction.

![Range Controls](image)

In order to modify the control points, press and drag them towards their edges. To modify the tangent of these points, press the edge of the tangent.

The control point in the upper left (*Lo*) draws a curve that joins the lower right edge. The control point of the upper right (*Hi*) joins a curve with the lower left edge. A third curve without control points is drawn joining the lower edges.
These curves and their intersections define the five bands to be corrected by the five trackballs.

The first band is defined from the left control point towards the left: this is corrected by the Black trackball.

The second band is defined between the left control point and the first intersection of curves: this is corrected by the Shadows trackball.

The third band is defined between first and the second intersection of curves: this is corrected by the Midtones trackball.

The fourth band is defined between the second intersection and the right control point: this is corrected by the Highlights trackball.

The fifth band is defined from the right control point towards the right: this is corrected by the White trackball.

Vfix

This subpanel controls the secondary correction of the six fixed vectors: red, green, blue, cyan, magenta and yellow.

Each fixed vector has three sliders, controlling tone (hue), saturation and brightness of each fixed vector.

This interface permits the crossing of vectors with each other, for example, defining green as yellow and yellow as green at the same time, thus avoiding the need to use masks for this type of complex correction.

Curves

The Curves subpanel allows us to work on a correction in great detail, whether it is primary, using RGB curves, or secondary, carefully using any of them.

This subpanel is organized with 5 distinct tabs, each with different curves associated to a specific correction. On the left there is a series of tools that are available in all the tabs. To add points in the curves, either select from the tools on the left, or hold down <Alt>+<Click> with the mouse over the area of the curve where a new control point is required. To modify it, simply <Click> and drag the point.
Lo / Hi
Buttons for modifying zoom in the lower (Lo) or upper (Hi) part of the curve, allowing greater, more detailed control over the points in this area.

Cx / Cy
Buttons that block horizontal (Cx) or vertical (Cy) offset of the points being modified.

Sm / Sh / CT / IT
Options that control the transition of the points of the curve, and also of their tangents.

Pc0 / Pc1 / Pc3
These three functions have effect when a hue has been selected via Select, adjusting the curves to the selected hue.
- Pc0: adjusts without adding control points in the curves.
- Pc1: adds a control point in the selected hue.
- Pc3: adds a control point in the selected hue as well as one either side (in the curves with Hue the distance between the points is 16.66%, in others it is 20%).

Add Pts / Rst Sel / Rst All
Options that, respectively, add points by default on the curves, return to the original curve of the selected curve or return to the original curves of all the curves.

Gang RGB
Switches between the joint modification of the three RGB curves and if they are deactivated, to one curve at a time.

RGB Tab
Curves that correspond to each of the three primary colors, representing their complete range, from the lowest value, 0 (lower left corner) to their maximum value, 100 (upper right corner).

L-L S-S L-S Tab
Curves that correspond to the luma of the image ($L-L$), saturation ($S-S$) and Luma vs. Saturación ($L-S$). These curves allow corresponding modification of the values of luma based on the values of luma in the image (represented on the curve); similarly they modify the saturation based on the saturation value of each pixel or modify the saturation based on the levels of luma.

**Hue-Hue Tab**

Curve that modifies the tones of the image according to the tonal selection on the curve.

**Hue-Sat Tab**

Curve that modifies the saturation of the image according to the tonal selection on the curve.

**Hue-Luma Tab**

Curve that modifies the luma of the image according to the tonal selection on the curve.

**Setup**

The last subpanel *Setup* has options that affect the behaviour of the interface.

**Ball Sensitivity, Ring Sensitivity, Knob Sensitivity, Jog Sensitivity**

These define a scale in the drag sensitivity for the movement of the balls and of their outer rings. The minimum value (1) specifies that the relation between drag and modification of the parameter is 1:1, whereas higher values, for example be 1:8, specify that the manipulator is less sensitive to the actual movement.

**Draw Over**

Activates the drawing of the manipulators in the *Windows*, which can be hidden by deactivating this mode.

**CP Panels Reset**

Button for resetting Tangent Devices in cases of incorrect or suspended functioning.
Highlight Mode

Defines the viewing mode of the Highlight tool of the Color Grade subpanel Select. These options can be used to choose if viewing the color selection is done over black (On Black), contrasted in white and black (Display Key) or by saturation (Hi Saturate).

Printer Lights Step

Editable field that indicates the relationship between the values Printer Lights and the primary color parameters of Mistika. This value should never be modified (default value: 1.217).

Use and comments:

The Color Grade color corrector includes virtually all the functionality of all color correction effects of the system, and can also carry out other functions related to the processes of effects, generating masks or treating images.

Although it has many parameters, the corrector is easy to use, thanks to the number of dedicated manipulators.

When the appropriate hardware is available, this effect carries out color corrections in real time in HD RGB 4:4:4, 2K and 4K formats without compression.

The Primary correction is recommended for the first adjustment of values, in which white point, black point, a gamma value and a contrast value are defined.

The behavior of Primary is very similar to that of the primary color correction of telecine. It is advisable to work generally with its special manipulator, the Trackballs. This is also useful in white balancing, by selecting the white point with the Pick White function, and then returning to Trackballs to make a Reset Ring of the White ball. This way, the hue of the white color is compensated, without altering its value.

As well as applying a general correction of hue and saturation, it is recommendable to use the correction Bands for a fine adjustment of luminance and color.

The main advantage of Bands correction is to be able to correct high and low lighting (highlights & shadows), maintaining black and white values intact. This makes tasks of colormetric balancing between different sequences easier, and also helps to enhance the brightness of any intermediate luminance value, thanks to the fact that this correction also
allows the modification of the ranges that specify the bands.

The example below shows the original image and one corrected by bands. Neither Black nor White values have been modified, whereas the Shadow, Midtones & Highlight values have been tinted pink, orange and green respectively. This correction would not be possible using only the primary correction.

Additionally, the function of secondary correction has been added to the same group of processes, through correction of fixed vectors.

The fixed vectors are modified through six groups of three HSB sliders dedicated to the primary colors and their complements: red, green, blue, cyan, magenta and yellow.

The first subpanel Select has a range of tools. Any color range can be selected, qualified for hue, saturation and contrast (HSL Qualifiers).

In addition, it is possible to create trackable basic geometric Windows such as lines, ellipses and rectangles with the same corrector, and also to use vectorial forms generated within the effect, via the Shapes manipulation mode, in which forms can be created which are assignable to each of the vectors independently.

A typical use of the Qualifiers and the Mask Filter is the simulation of filters. For example, it is possible to restrict the high values of luminance via the Luminance Qualifier and increase the values of shadows in the result. Via the parameter Mask Filter the restriction generated can be softened, thus obtaining a simulation of the Promist filter.

It also has parameters capable of applying Sharpening and Blur filters, with different modes and variables, making possible such as Glow.

Another of the important characteristics is the option to recover range of colors lost either through an extreme stylistic correction or simply because another input or previous stage is required. With this goal, the combination of channels with previous Inputs and Vectors is huge, as well as being able to define what and how much is recovered.

Even more importantly is the fact that once the selection has been carried out with whichever image effect is chosen, or the recovery of ranges or a final mask final defined by the combination of qualifiers, windows and channels, both internal and external can be treated (by defining what is external) as a complete correction, using Primary, Bands and
Fixed Vectors.

Example of a color correction:

The first step is to carry out, in **Primary**, a first adjustment of black and white points, as well as slightly modifying gamma, ignoring the tab **Select**, as no specific selection is to be made and, by default this is fixed, in order to be able to work on the whole of the image.
The *Bands* tab provides greater control over the spectrum of color and luma of each luminance range of the image.

Next it is possible to exaggerate the coldness of the image and neutralize even more the spectrum of the original image, by means of the *Fixed Vectors*; thus it is possible to work on an image based in neutral tones.
Next, a mask is applied to the person with a new vector (Vector 2), which acts as a new layer, highlighting the person to be able to recover the original tones, or work with the inherited image. The qualifiers of saturation, luminance and the Wheel Qualifier are used; also, a small amount of blur is added to the mask (Mask Filter).

*Recover Mode* is activated, with the original image as *Source*, working on the mask that has been created, restricting it with a *Line* window to be able to achieve a horizontal degrading
of the recovery of tones and reducing the opacity (Tolerance) of the recovery. A small amount of the Blur filter is also applied to the recovered color to further eliminate noise.

Next, Bands is used both for the interior and exterior (Outside) of the mask, to achieve a different stylistic effect.

Another mask is then created using a third vector, without degrading, in order to have more
control over the relative appearance of the person with respect to the previous horizontal degrading. *Blur* is again applied, this time in *Over* mode, to add the effect of an aura (Glow) to the person.

Finally, another vector is used to fine-tune luma ($Y$), and to legalize the whole range (Legalize>On).
Clearly, the options have a wide range of possible uses, and the combination of different tools and modes of the Select panel for combining vectors or secondary inputs, as well as being able to carry out operations in isolated channels, means that the possibilities are almost limitless.

### B/W

**Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Color->B/W**

This is simply the *RGBCorrect* effect of the color correction, with a saturation value 0 assigned to its input.

### Negative

**Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Color->Negative**

This is simply the color correction *RGBCorrect* effect, with default values that invert its input colors.

### Unicolor

This effect allows for the conversion of images between common, standardised colour spaces.

### I/O

- **Input:**
  
  *Single input:* image with optional alpha channel.

- **Output:**
  
  *Image:* colour converted image.
  *Alpha:* without changes.

### Input

- **Input Curve**
  
  *Linear Light, Rec709/Rec2020, sRGB, P3DCI, Cineon, SMPTE 2084 PQ, ACES CG, ACES CC, ACES Proxy, Arri LogC V3, Canon Log2, RED Log Film, Sony Slog3, Sony Slog2, Gamma 2.2, Gamma 2.4*

  Select the gamma curve / transfer function of the image input.

- **Input Gamut**
  
  *XYZ, Rec709, Rec2020, sRGB, P3DCI, P3D60, ACES Primaries, ACES CG/CC/Proxy Primaries, Arri ALEXA Wide Gamut, RED Dragon Color2, Sony S-Gamut3, Canon Cinema Colour*

  Select the colour gamut of the image input.
Gamut Options

- **Convert Gamut**
  
  **[Yes, No]**
  
  Enable or disable the Gamut conversion of the effect function of the Convert node. When set to No (default) the node will perform only a gamma curve conversion, with no impact on the colour gamut of the image.

- **Use Bradford Matrix**
  
  **[Yes If Applicable, No]**
  
  If enabled (default), and if the white point of the input and output gamut parameters do not match, the Convert node will calculate and apply a Bradford Chromatic Adaptation Matrix to the image.

Output

- **Output Gamut**
  
  **[XYZ, Rec709, Rec2020, sRGB, P3DCI, P3D60, ACES Primaries, ACES CG/CC/Proxy Primaries, Arri ALEXA Wide Gamut, RED Dragon Color2, Sony S-Gamut3, Canon Cinema Colour]**
  
  Select the desired colour gamut of the image output.

- **Output Curve**
  
  **[Linear Light, Rec709/Rec2020, sRGB, P3DCI, Cineon, SMPTE 2084 PQ, ACES CG,ACES CC, ACES Proxy, Arri LogC V3, Canon Log2, RED Log Film, Sony Slog3, Sony Slog2, Gamma 2.2, Gamma 2.4]**
  
  Select the desired gamma curve / transfer function of the image output.

Parameters Explained

- **Curves:**
  
  **Linear Light**: Equivalent to Gamma = 1.0
  
  **Rec709 / Rec2020**: The non-linear transfer function common to ITU-R Recommendations BT.709 and BT.2020 (approximately equivalent to Gamma = 2.4).
  
  **sRGB**: The non-linear transfer function of the standardised sRGB colour space (approximately equivalent to Gamma = 2.2).
  
  **P3DCI (RGB)**: Gamma = 2.6. Used for gamma encoding of RGB images (to encode XYZ images, use the DCDM option).
  
  **Cineon**: A standard Cineon log-encoded gamma curve.
  
  **SMPTE 2084 PQ**: The non-linear transfer function defined by SMPTE 2084:2014, used for high-dynamic range display.
**ACEScg**: The gamma curve defined in ACES v1.0 for the ACEScg colour space (Gamma = 1.0, equivalent to Linear Light).

**ACEScc**: The non-linear transfer function defined in ACES v1.0 for the ACEScc colour space.

**ACESproxy**: The non-linear transfer function defined in ACES v1.0 for the ACESproxy colour space.

**Arri LogC V3**: The Arri Log C logarithmic encoding curve.

**Canon Log**: The Canon Log logarithmic encoding curve.

**RED Log Film**: The RED Log Film logarithmic encoding curve.

**Sony S-Log3**: The Sony S-Log3 logarithmic encoding curve.

**Sony S-Log2**: The Sony S-Log2 logarithmic encoding curve.

**DCDM**: The standardised transfer function used for gamma encoding of XYZ images in DCI mastering. Consists of a Gamma=2.6 power function, normalised to a reference 48 cd/m² display luminance (to encode RGB images, use the P3DCI (RGB) option).

**Gamma 2.2**: simple gamma curve 2.2

**Gamma 2.4**: simple gamma curve 2.4

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**Gamut:**

**XYZ**: The CIE 1931 XYZ colour space

**Rec709**: ITU-R Recommendation BT.709 primaries

**Rec2020**: ITU-R Recommendation BT.2020 primaries

**sRGB**: Standardised primaries of the sRGB colour space

**P3DCI**: P3 RGB primaries and DCI white point (SMPTE 321-2:2011)

**P3D60**: P3 RGB primaries and D60 white point

**ACES Primaries**: RGB primaries and white point as defined in ACES v1.0

**ACES cg/cc/proxy Primaries**: RGB primaries and white point common to the ACEScg, ACEScc and ACESproxy colour spaces, as defined in ACES v1.0

**Arri ALEXA Wide Gamut**: RGB primaries and white point used by the Arri ALEXA camera family

**RED Dragon Color2**: RGB primaries and white point used by a variety of RED digital cinema cameras

**Sony S-Gamut3**: RGB primaries and white point used by a variety of Sony digital cinema cameras
Use and comments

The **Unicolor** node is intended for use as a flexible, general-purpose colour space conversion utility. It provides the ability to quickly and easily convert clips between standardised colour spaces.

Common applications for the node include:

- Stripping gamma from a source image to create a Linear Light output (or the inverse)
- Converting a single clip or sequence on the *Mistika*'s *Node Graph* to a different RGB colour space.
- Converting clips from different cameras to be in the same colour space
- Performing an RGB to XYZ conversion for DCI mastering.

For a typical RGB to RGB conversion the node internally performs the following image processing steps (some steps may not apply based on parameter selection):

1. Remove the user specified input gamma curve from the source image
2. Calculate and apply an RGB to XYZ matrix conversion, based on the user specified source image gamut
3. Calculate and apply a Bradford Chromatic Adaptation Matrix (if the input gamut and output gamut white points differ)
4. Calculate and apply an XYZ to RGB matrix conversion, based on the user specified output gamut
5. Apply the user specified output gamma curve

To use the **Unicolor** node correctly, it is important to have a solid understanding of your desired colour workflow, and to properly understand the properties of both your input (e.g. the gamma curve and gamut of your source clips) and the parameters of your desired output.

**RGB to XYZ Conversion for DCI Mastering:**

The **Unicolor** node replaces the previous *RGB to XYZ* effect, providing more flexibility and also simplifying the colour conversion necessary for DCI mastering.

To convert a source RGB image to XYZ / DCDM space:

1. Enable Gamut Conversion within the **Unicolor** node (set Convert Gamut to Yes)
2. Select the Input Curve and Input Gamut of the source material
3. Set the Output Gamut to XYZ
4. Set the Output Curve to DCDM

**Note:**

The P3DCI (RGB) curve is a standard gamma of 2.6 across the full range of Black to White input values. It is intended for use only on RGB encoded images.

The DCDM curve option is a combination of a 2.6 gamma curve plus an XYZ scaling factor, necessary for conformance to the Virtual White Point capabilities of the DCDM image mastering format as described in SMPTE RP 432-1:2011. The DCDM curve
option should only be used on XYZ encoded images.

Remap

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Color->Remap

Resets the colors of an image by examining the color of a line of a second image. The line of the second image shows from right to left the colors that correspond to the luminance values of the modified image in order from black to white.

I/O

Inputs

**Double input:** The first is the image to be modified, and the second contains the line to be examined to respecify the colors.

Inputs

- **Image:** Image with modified colors.
- **Alpha:** Opaque.

Parameters

- **Line**

  **[50 (0 / 100.000)]**

  Selects the horizontal line to be examined to reset the colors.

  This value is a percentage, indicating by default the horizontal center line of the image. Every 100 parameter units, it returns to the bottom line of the image.

- **Cycle**

  **[0 (0 / 100.000)]**

  Specifies an offset from the origin of the line exploration.

  The line is always read from left to right, and even though an offset is specified, the line exploration is completed in a cyclical manner, reading what is necessary for completion by returning to left edge of the frame and then continuing until it reaches the point of origin. The default value indicates that the line starts to be examined at the left edge of the image; 50 specifies a start from its center (50%); a value of 100 returns to its left edge.

- **In Alpha**

  **[No (No /Yes)]**

  Restricts the influence of the color correction to the area specified by the levels of
the alpha channel.

Use and Comments

The parameters of this effect can be animated, generating psychedelic color effects.

The uses of this effect are varied. One classic use is to color the image of the first input with a color palette that the user can specify in the second input, obtaining for example images that simulate a heat detector, or for coloring black and white images.

In the following example, different palettes are used. The first simulates gold, and the second a heat detector.

Another useful application of this effect is to correct mask edges. If a black and white image representing a mask (which can be obtained with the ShowAlpha effect) is positioned, it can be blurred (with the Blur effect, for example) and inserted as the first input of this effect. As second input, a horizontal Wipe can be specified (the first Wipe of the wipe library) and by controlling its Grade and Soft parameters the white surface of the first input could be shrunk or gently softened, or the outline of the mask border achieved.

In the following example, a blurred mask with two different color maps is used. The objective of the first map is to shrink the opaque surface of the mask, and that of the second to obtain the mask border.
This effect is also useful for achieving a comic-book style image.

**Legalize**

*Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Color->Legalize*

Prevents values outside the RGB color space and limits abrupt chroma transitions that may create illegal peaks in YUV422.

**I/O**

**Inputs**

*Single input*: Image with/without alpha channel.

**Outputs**

*Image*: legalized image.

*Alpha*: alpha of the input.

**Parameters:**

- **422 Cleanup**

  *Off (Off / On]*)

Prevents values outside the legal RGB value of scope when sub sampling from RGB444 to YUV422.
Folder of parameters that define the compression and its softness in the range of shadows in the image.

- **Knee**
  
  \[64 \left(\frac{64}{X}\right)\]
  
  Defines the point in the luma curve from which the shadows will be softened and compressed to legalize the whole range.

- **Peak**
  
  \[0 \left(\frac{-X}{X}\right)\]
  
  Defines the amount of softness for the compression of the legalizer.

Folder of parameters that define the compression and its softness in the range of high lights in the image.

- **Knee**
  
  \[940 \left(\frac{X}{940}\right)\]
  
  Defines the point in the luma curve from which the high lights will be softened and compressed to legalize the whole range.

- **Peak**
  
  \[0 \left(\frac{X}{X}\right)\]
  
  Defines the amount of softness for the compression of the legalizer.

**RGB Levels**

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Color->RGB Levels

This effect allows the user to switch between the two standards of video signal, i.e. video and data, which are normally associated with the terms YUV, RGB, analog and digital. All automatic conversions carried out by Mistika between RGB and YUV are done with the proportion 1:1, so the operator has absolute control when changing between these standards. The work flow with RGB Levels consists of applying it to the selected clip, and if it needs to be extended, converting the effect into a filter via Display Filters (Visual editor->Dashboard->Display Filters).

**I/O**

**Inputs**

Single Input: Image with or without alpha channel.

**Outputs**

Image: image with the signal converted to the selected range.

Alpha: alpha of the input.
### Parameters

**Mode**

[Video->Data (Video->Data /Data->Video)]

Switches between modes of conversion for legal video and data.

**Use and Comments**

Switching between different color ranges not only means that it is necessary to match the files used within the environment, but it also means there may be confusion with different standards within each one. Therefore, Mistika simplifies the functioning of this type of conversion, making it possible always to work internally at 16 bit RGB, by default importing and capturing all the video clips without applying any conversion, allowing the operator to evaluate each video clip.

So, in a single workspace we may find image clips that are "video", using the values in a 8bit representation scale, between 16-235, and at the same time other there may be other image files working as "data", ie from 0 to 255. The basic reason for this kind of change is to have a common black point for all the files, avoiding having some at 0 and others at 16. So, when capturing the video, Mistika always works in extended range (capturing all the information it finds on the tape) without fixing a a black point to the video standard, allowing th operator to do this. If there are digital files received as "data" which we know should be in "video", the inverse correction can be applied.

### ACES

This effect allows conversions and changes of gamma curves in material with ACES color space.

### I/O

**Inputs**

- **Single input**: Image with/without alpha channel.

**Outputs**

- **Image**: image converted to color space or gamma curve as defined by the user.
- **Alpha**: alpha of the input.

### Parameters

The parameters of the ACES effect are as follows:

**Input:**

- **Input Curve**

  Indicates the gamma curve to be used as input.
• **Input Space**

  Indicates the color space to be used as input.

**Precision:**

One of the problems that ACES presents is the application of RRT (Reference Rendering Transform) which basically applies a default look over and above the color corrections a user may have applied. To resolve this, a LUT can be used to scale the result of the conversion, altering at the same time the gamma curve in order to specify how this scaling should behave.

• **Gamma**

  \[
  1, 2, 3
  \]

  Allows the Gamma curve to be altered according to scaling, giving more or less information to blacks.

• **Max Level**

  \[
  100\%, 200\%, 300\%
  \]

  Allows the conversion carried out in ACES to be scaled, in order to avoid the RRT being applied to color corrections.

**Output:**

• **Output Space**

  Indicates the color space to be used as output.

• **Output Curve**

  Indicates the curve to be used as output.

**ACES ODT**

This effect allows to make conversions of gamma and gamut to different output display profiles.

**I/O**

**Input**

*Single input:* Image with/without alpha channel.

**Output**

*Image:* Image converted to color space or gamma curve as defined by the user.
**Alpha:** alpha of the input.

### Parameters

#### Input:

- **Input Curve**

  
  [linear Light, Rec 709/Rec 2020, sRGB, P3DCI, Cineon, SMPTE 2084 PQ, ACES CG, ACES CC, ACES Proxy, Arri LogC V3, Canon Log, RED LogFilm, Sony Slog3]

  Define the input gamma curve of the clip.

- **Input Gamut**

  
  [XYZ, Rec 709, Rec 2020, sRGB, P3DCI, P3D60, ACES Primaries, ACES CG/CC/Proxy, Arri Alexa Wide Gamut, RED Dragon Color2, Sony S-Gamut3]

  Define the input gamut of the clip

- **Use Bradford Matrix**

  
  [Yes If Applicable, No]

  Enable the use of the Bradford matrix to make the Gamut conversion. It is a more accurate matrix, so it is recommended to enable it.

#### Output:

- **Output Space**

  
  [Rec2020_100nits_dim, Rec709_100nits_dim, RGBmonitor_D60sim, DCDM, DCDM_P3D60, P3DCI_48nits, P3D60_48nits, p3D60_PQ_1000nits, P3D60_PQ_2000nits, P3D60_PQ_4000nits]

  Select the output color space based on our output display.

- **Precision**

  
  [Normal, High, Higher, Highest]

  Select the conversion precision (higher values demands more system resources).
This menu includes tools relating to obtaining the alpha channel from and image and posterior composing.

Blue Screen, Green Screen

Although *Bluescreen* and *Greenscreen* are two separate effects, their parameters are identical. For this reason, only Bluescreen is described here, and the description of Greenscreen can be obtained by substituting blue for green.

This effect is specialized in generating an alpha channel from images recorded on a blue background, although it also permits composition in a mixed cut mode.

This effect can be used in three ways, depending on the number of Inputs.

**I/O**

**Inputs**

**Single input:** Extracts an alpha channel from the blue color.

**Double input:** Extracts an alpha channel from the comparison of blue colors of the two inputs.

To obtain a more optimized mask, insert the background image without character to crop as a second input.

**Triple input:** Extracts an alpha channel from the comparison of blue colors of the second and third inputs, and then composes the second input on the first, adding an additional fine control for edges and transparencies.
**Inputs**

**Single input:**
- **Image**: Image with suppressed cropping color.
- **Alpha**: Mask extracted from the image.

**Double input:**
- **Image**: Image composed on the background.
- **Alpha**: Mask extracted from the image.

**Parameters**

**Key:**
Folder containing parameters that specify the cut values.

- **Toler**
  
  **[0 (-100 / 100)]**
  
  Specifies the total transparency threshold in the alpha used for composing.

- **Soft**
  
  **[100 (0 / 100)]**
  
  Controls the range of smooth transparencies obtained from the total transparency specified by the **tolerance** parameter towards absolute opacity. A low value specifies a small range of intermediate transparencies.

- **PreBI X ; Y**
  
  **[1 (0 / 100)]**
  
  Specifies a horizontal and vertical blur value for the proxy image used for mask extraction.

  This parameter is very useful since it rounds the outline of the mask extracted, due to the fact that the blur filter associates the RGB values of neighboring pixels, smoothing the color transition of between the background and the figure before the mask is extracted.

**Spill:**

This folder contains parameters to suppress the blue spill that might remain in foreground after the mask has been extracted.

- **Pass>R ; Pass>G**
  
  **[-50 (100 / 100)]**
  
  Tolerance of color suppression.
The tolerance is adjusted asymmetrically, referencing two angles forming a cone centered in the blue vector in a chromatic circle. Pass>R specifies the suppression tolerance towards the angle of the red vector, whereas Pass>G specifies the suppression tolerance towards the angle of the green vector.

- **Red; Green; Blue**
  
  \[0 ; 0 ; 0 (100 / -100)\]
  
  Specifies a new color for the suppressed ranges.
  
  The default value specifies medium grey, thus achieving the desaturation of the edge color.
  
  The cancellation values of the suppression, in the case of blue, are -50; -50; 50 for RGB respectively.

- **Lum**
  
  \[0 (-100 / 100)\]
  
  Modifies the pixel luminance level of that made by the color suppression.

- **Shrink**
  
  \[0 (0 / 10.000)\]
  
  Shrinks the opaque surface of the mask already generated in the alpha channel.

- **EdgBld**
  
  \[0 (0 / 2)\]
  
  Copies the RGB values of the nearest pixel with an opaque alpha to the semitransparent alpha channel pixels.
  
  By this means, this parameter pushes the color surface towards the edges, since they are usually semitransparent in the alpha channel.

**Transp:**

Folder containing parameters for fine control of transparency composition.

This folder should be ignored when not using this effect with triple input, since the transparencies are composed in the first input by using a mask of the difference between the second and third.

- **Remove**
  
  \[2 (0 / 100)\]
  
  Transparency mixing control. High values suppress mixing.

- **OfsCor**
  
  \[50 (-200 / 200)\]
Adds saturation to the transparencies, since transparencies do not originally have saturation.

Positive values will tint the transparencies towards the complementary color of the edges, whereas negative values will tint towards the color of edges.

- **Smth X; Y**

  \[1 ; 1 (0 / 9)\]

  Specifies a blur of the individual transparencies in each axis, to smooth them.

**Crop:**

Folder containing parameters that permit cropping the alpha channel of the inputs with the four sides of the frame.

- **Left**

  \[0 (0 / 100)\]

  Left edge as a percentage of the image width.

- **Right**

  \[100 (0 / 100)\]

  Right edge as a percentage of the image width.

- **Up**

  \[100 (0 / 100)\]

  Top edge as a percentage of the image width.

- **Down**

  \[0 (0 / 100)\]

  Lower edge as a percentage of the height of the image.

**Use and Comments**

This effect is the most suitable for cropping bluescreens or greenscreens. When double or triple input is used, the extraction of a high-quality mask is guaranteed.

A shot of a figure walking on a green background can be seen in this example, with no camera movement. The foreground clip that has the figure to be composed in Foreground is used as the first input, and the second input is the empty set without the figure (*Screen*).

When there are two inputs, the effect generates a mask from both inputs and then runs a
Difference mathematical operation for both generated masks. The result is the removal of the imperfections due to bad on-set lighting, since this is suppressed in the comparison between background and background with figure, thus extracting a clean mask of the figure. In this case, it can also be seen that even the shadow cast by the character is included in the mask, thanks to the high selection range in the histogram.

In some cases, it is difficult to obtain the background image (Screen) without the figure being included, because there are camera movements in the shot. In these cases, it is very helpful to work with Motion Control systems to make an additional pass of the empty background. When a motion control camera is not available, the construction of a “proxy” background in movement can be attempted with its virtual reconstruction, with the help of the ScreenBuild effect, or by animating parts of the original background by using the tracking tools. In the final instance, an empty background can be artificially specified by inserting a Solid effect as second input, specifying its color with the Color Chooser, carrying out a Pick Color from the original background.

It is important that the background set is the purest possible blue (or green). The Color Chooser can be used to analyze the background color. Frequently it will be seen that the color tends to be lightly tinted towards cyan. This problem should be corrected before applying this effect, to obtain the widest possible tolerance histogram.

When this effect uses three inputs, it makes the final composition over the desired background, adding additional processes in order to work with transparencies. Other composition effects, such as Comp3D or HaloComp, do not carry out this additional process for transparencies.

The following image is an example of how the three inputs in the effect should be arranged.
The effect parameters should be set in the same way as when using two inputs, but in addition, the parameters of the Transp folder, which control the process of composition of transparencies, are used. The composition method of transparencies is different and totally independent from that of the composition of the foreground, using a calculation that considers only the luminance of the transparencies. The two processes, divided into layers composed on a grey background, are shown in the following image. The combined result of both processes takes maximum of the useful image information in order to create the mask, being especially visible in transparent details, such as shadows.

This effect, when used with triple input, provides an exceptional transparency background, which can be very useful for preserving fine details of the figure to be extracted, such as for example transparencies of hair or glass (for example, car windows), projected shadows, and above all, contact shadows. Contact shadows are one of the classical problems in a composition: they are the kind shadow which an object or character produces in contact with the background set (for example, the floor), and which, when it is extracted and added to the composition, helps to integrate the composed figure on the new background, and avoid having the foreground “float” over the background.

**External Key**

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Keyer->External Key

Assigns the luminance of a sequence to the mask of another one.

**I/O**

**Inputs**

- **Double input**: The first is the image to be composed and the second the image that to be assigned as the external mask, interpreting its luminance as the alpha channel.

**LocalStorage**

- **Image**: Image of the first input.
- **Alpha**: Luminance of the second input.
Parameters

The External key effect is basically a Channels preset with the Alpha folder changed to X=Luma.

Use and Comments

This effect is limited to assigning (either normally or inverted) the luminance of the second input as the alpha channel of the first. Thanks to its simplicity, its calculation is faster than other more elaborate effects that can cover the same functionality, such as the Channels effect. Its uses can be very diverse. Since this effect is a mask assigner and not a mask extractor, its use is valuable for assigning a mask previously extracted from image to another image, or assign any mask to an image to be able to work with effects that function on the basis of the mask information or that can limit its functionality to the mask, such as color correctors or spatial filters.

In this example, the original image and the mask assigned by this effect can be seen. The mask was previously extracted from the small image that accompanies the mask with a Greenscreen effect, and then the ShowAlpha effect shows the generated mask in grayscale, so that the ExternalKey effect can reassign the mask. The following four images show different possible uses of this external mask assignment.

The first example is simply the composition of the original image on a different image using an external mask, using the Comp3D effect.

The second example is the LiquidBump effect. This effect must have an alpha channel to be able to function and generate a relief and refraction at the edges of the mask, as well as to be able to specify an interior color and a projected shadow.

The third example consists of adding a color correction with the Mode->InAlpha parameter activated, and restricting the correction to the area delimited by the mask opacity. In this case, the correction darkens the image in the mask.

The last example is the Comp3D effect for composing the image on itself, but specifying a projected shadow with the parameters of the Shadow folder.

RGB Key

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Keyer->RGB Key

Effect for the extraction of masks from an RGB value.
Inputs

**Single input:** Image from which an alpha channel will be generated.

**Double input:** The first input is the image to be composed; the second image is the one from which the mask will be extracted.

Inputs

**Image:** Input image.

**Alpha:** Mask extracted from the image.

Parameters

- **Toler**
  
  **[0 (-100 / 100)]**
  
  Specifies the total transparency threshold of the alpha to be used for the composition.

- **Soft**
  
  **[100 (0 / 100)]**
  
  Controls the range of smooth transparencies from the total transparency specified by the tolerance parameter towards absolute opacity.
  
  Lower values specify a small range in intermediate transparencies.

- **Red; Green; Blue**
  
  **[0; 0; 0 (0 / 100)]**
  
  Specifies the color RGB selected to generate a mask.

- **Invert**
  
  **[No (No / Yes)]**
  
  Inverts the transparency and opacity values of the alpha channel.

Use and Comments

Although this effect is not the most suitable for creating a mask (since *Color Key* can use a single or multiple selection), it has the distinction of being able to animate a selected color as a mask generator, since its parameters are the ones that specify that color.
**Color Key**

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Keyer->Color Key

Effect that extracts a mask with a color selection, which should be done exclusively with Mistika->Visual Editor->Manipulators Tabs->Pick Key. This color selection cannot be animated.

**I/O**

Inputs

- **Single input:** Image from which an alpha channel will be generated.

Inputs

- **Image:** Input image.
- **Alpha:** Mask extracted from the image.

**Parameters**

- **Toler**
  
  \([0 (-100 / 100)]\)

  Specifies the total transparency threshold of the alpha to be used for the composition.

- **Soft**
  
  \([30 (0 / 100)]\)

  Controls the range of smooth transparencies from total transparency specified by the Tolerance parameter towards absolute opacity.

  Lower values specify a small range in intermediate transparencies.

- **Invert**
  
  \([No (No / Yes)]\)

  Inverts the transparency and opacity values of the alpha channel.

**Use and Comments**

This effect allows the selection of a number of arbitrary colors for specifying a mask, which is very useful in cases where objects or people that were not specially registered for that purpose have to be cutout.

In this example, the background color (red) is chosen to generate a mask. This effect is only a mask extractor, and has no parameters to improve the extracted mask, so that we recommend treating the generated mask with other effects, such as Shrink, Blur (in the mode RGB-InA) or VectorPaint for example. In the example image, the mask obtained requires a correction, since the color selected for the mask is noticeably affecting its borders.
Color selection is accumulative, and any combination of colors can be selected to generate a mask. In some cases, where a cutout figure is desired in the image, it may be more beneficial to select the colors of the figure instead of the background colors.

This effect is also very useful for generating masks that restrict the action of another subsequent effect. In this example, the mask was extracted from the skin by selecting the colors of the face and inverting the mask with the Invert parameter, and finally applying a blur filter through the generated mask (for example, the _Blur (Type Gauss)_ effect, with its _RGB-InA_ parameter activated).

In cases of material with a blue or green background, we recommend using the effects that are specialized for this purpose: _BlueScreen_ and _GreenScreen_.

**Luma Key**

_Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Keyer->Luma Key_

Generates a mask from the selection of low, medium and high of luminance values of the image.

**I/O**

**Inputs**

- **Single input:** Image from which an alpha channel will be generated.

**Inputs**

- **Image:** Input image.
- **Alpha:** Mask extracted from the image.

**Parameters**

- **Low**

  **[100 (0 / 100)]**

  Specifies the intensity of the mask in areas of low luminance.
Use and Comments

We recommend this effect for extracting masks from an image through its luminance, ignoring saturation and hue. The masks obtained with this effect can be improved with the Shrink, Blur (in the mode RGB-InA) or VectorPaint effects.

In most cases, the Boolean operations made by the And, Or, Add, Subtract or Channels effects, combined with color corrections are more recommendable than composing with masks, although this effect permits the selection of luminance ranges to mask color corrections of spatial filters with the InAlpha parameter.

In the following example, this effect is used in combination with Blur to simulate an image of mist on the original landscape.

In this case, the parameters were specified as follows: Low: 100; Mid: 0; High: 0.

Then a Blur (Type Gauss) is applied with the RGB-InA parameter activated. A blur is thus obtained in the low luminance values of the image, maintaining the details in the medium and high values, giving a misty sensation to the image, since the blur reduces the contrast in the dark areas, but detail is maintained in the bright ones.

Keyer Tools

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Keyer->Keyer Tools

This dropdown permits the selection of the tools Stroke, Edge Build and Screen Build.

Stroke


Adds a stroke (line) of color from the outline of a mask. This line can be drawn outside or inside the outline specified by the alpha channel. In order to view this effect correctly, it is necessary to compose the result on a background.
I/O:

Inputs

**Single input**: Image with alpha channel.

Inputs

**Image**: Image composed with the stroke color.

**Alpha**: Original mask added to the mask of the generated stroke.

Parameters:

▶ **Red; Green; Blue**

![100; 100; 100 (0 / 100)]

Specifies the color of the stroke in RGB values.

▶ **Side**

![0 (0 / 100)]

Position value of the stroke.

Positive values increase the thickness of the stroke outside the original mask, whereas negative values make the thickness of the stroke grow inwards. A value of zero specifies that the stroke should have no thickness, making it invisible.

Use and Comments:

This effect is normally used as a graphical tool to add an edge to composed images. This is especially useful for composing text, since the letters can be outlined any edge color, making them easier to read.

Bear in mind that the stroke generated by the effect is achieved by shrinking or growing the mask, and therefore if high values of the **Side** parameter are specified, the generated line will have geometrical borders that are not rounded.

If it is necessary to smooth the generated edge, a **Blur (Type Gauss)** effect should be added on top of the Stroke effect to blur the outside of the line.

**Edge Build**

*Ref. Mistika: Fx->Mistika->Keyer->Keyer Tools->Edge Build*

Improves the color of the pixels in the transparent area of a mask.
I/O:

Inputs

**Single input**: Image with alpha channel.

Inputs

**Image**: Image with improved edges.

**Alpha**: Mask without changes.

Parameters:

None.

Use and Comments:

This effect copies the RGB values of the nearest pixel with opaque alpha to the semitransparent alpha channel pixels. In this way, this effect pushes the color surface towards the edges of the mask, since they are usually semitransparent in the alpha channel.

In the example below, the difference between expanding the color with this effect instead of shrinking the mask can be seen. *Shrink* may possibly remove the undesired edges, but at the cost of shrinking the mask by modifying the outline of the composed figure. However, *EdgeBuild* keeps the mask intact, only affecting the color of the image outline and not the shape of the layer outline.

In this image the way the effect works, by expanding the image color, instead of shrinking the mask as with *Shrink*, can be seen in detail.

Screen Build

**Ref. Mistika: Fx->Mistika->Keyer->Keyer Tools->Screen Build**

Reconstructs the background color in the areas specified by its mask.
I/O:

Inputs

**Single input:** Image with alpha channel.

Inputs

**Image:** Image with background reconstructed.

**Alpha:** Opaque.

Parameters:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grow</td>
<td>[0 (0 / 1.000)] Mask expansion value.</td>
</tr>
<tr>
<td>Blur</td>
<td>[0 (0 / 10.000)] Specifies an image blur with the <strong>Blur (Type Gauss)</strong> filter.</td>
</tr>
</tbody>
</table>

**Use and Comments:**

This effect acts on the RGB channels of the image, filling the internal areas specified by the mask with an averaged color. The **Grow** and **Blur** parameters permit setting of the areas occupied by the figure in the mask with either expansion or blur, replacing them with an average color from the surrounding image, with the intention of regenerating the original background.

For this effect to function reasonably well, it is necessary to maintain the original color of the background intact, avoiding the color suppressors that may be running during mask generation, since the main purpose of this effect is to reconstruct the original background of the set for later use as a second or third input of the **Bluescreen** or **Greenscreen** effects.

**Spatial Key**

This effect allows advanced selections to be made of elements in a scene, based on multilayer information in EXR format (previously generated in a CGI program), and also based on Parallax information calculated by the **Stereo3D** effect. Normally in **Mistika** these selections are stored as masks in the Alpha channel.

The layers that **Mistika** detects in an EXR are: IDs, position layer (XYZ information), depth layer (Z-axis information), and diffuse reflection (according to the normals of the object).
This allows boolean operations to be carried out between different Layers contained in the EXR file. These Layers may be grouped together in three groups (Layer List 1, Layer List 2 and Layer List 3) in order to carry out operations together and generate a Key to be used in different tools of Mistika.

Bear in mind that many of the layers generated by CGI programs contain purely numeric information that must be interpreted in RGBA before it can be correctly combined with other layers. This is the case, for example, with Depth Layers, which must be previously normalized in order to be seen correctly in RGBA.

The result of these operations can be modified with different tools in Spatial Key in order to achieve more precise selections, by using ID, depth, position or direction of normals.

Object ID

Allows the selection of certain objects in an image based on their numerical ID as stored in the Index Object of the EXR file. This ID is set in the external program that generated the file, and as a general rule, a unique number for each object of the scene is set.
Parameters:

- **Layer**

  Defines the layer the effect will use to make the selection. This layer is set automatically using the tool *Pick Object ID* if and when the EXR file contains a recognizable layer as an ID index.

- **Object ID**

  Shows the ID number associated to the selected object.

Use and comments:

To be able to select an object by means of its ID, it is only necessary to have the option *Pick Object ID*, in the *Multilayer* tab of the *Visual Editor* (found on the right of the effect) active; then select the desired object in the image in the *Visual Editor* (Evaluation Zone). At this time, in **Layer**, the name of a layer automatically selected by Mistika should appear; if not, the user must select one manually.

Once the object has been selected, this selection is maintained throughout the whole clip, whether or not the object goes outside the edges of the image or if another object passes in front of it. The ID that defines this object is unique, so there is no chance of any alteration happening in the selection, thus opening up a whole range of possibilities in both composition and in Color Grading.

Position

![Image](image_url)

Allows the selection of a group of objects based on their XYZ position. The coordinates and the information relative to their position must be included in the EXR file being used.
Parameters:

- **Layer**

  Defines the layer the effect will use to make the selection. This layer is set automatically using the tool *Pick Position* if and when the EXR file contains a recognizable layer as position coordinates.

- **Shape**

  Allows the selection the shape of the selection mask. There are two options:

  **Sphere**

  The mask will be a circle.

  **Square**

  The mask will be a square.

- **Center X**

  Shows and allows the selection of the X position of the mask.

- **Center Y**

  Shows and allows the selection of the Y position of the mask.

- **Center Z**

  Shows and allows the selection of the Z position of the mask.

- **Size X**

  Allows the size of the mask to be adjusted in the X-axis.

- **Size Y**

  Allows the size of the mask to be adjusted in the Y-axis.

- **Size Z**

  Allows the size of the mask to be adjusted in the Z-axis.

- **Size**

  Allows the size of the mask to be adjusted by the same amount in all axes.
- **Softness**

  Sets the amount of softness of the mask used.

**Use and comments:**

To be able to select a group of objects in an image based on their position it is only necessary to have the option *Pick Position*, in the *Multilayer* tab of the *Visual Editor* (found on the right of the effect) active; then select the desired object in the image of the *Visual Editor* (Evaluation Zone) to set the initial coordinates. At this time, in *Layer*, the name of a layer automatically selected by Mistika should appear; if not, the user must select one manually.

From this point the user can configure the mask by means of its parameters. Unlike selection by ID, when selection by position is used, we do not isolate whole objects, but rather the areas found at the chosen coordinates. The risk of using this type of selection is that, depending on the size of the mask used, fragments or small groups of pixels located in the same position as the areas we wish to isolate may sometimes be introduced. In this case, we can adjust the softness of the mask, or combine the Alpha that results from this operation with a secondary manual selection via manual masks, or by using *Color Grade*.

**Depth**

Allows the selection of a group of objects based on their Z position. The information of the Z-axis or Depth Map must be included in the EXR file being used. This data can also be generated from a stereoscopic image by calculating Parallax.

**Parameters:**

- **Layer**

  Defines the layer the effect will use to make the selection. This layer is set automatically using the tool *Pick Depth* if and when the EXR file contains a
recognizable layer as a Depth Map.

- **Shape**
  
  Allows the selecting of the depth mask that is to be used. The following options are available:

  **Select Distance**
  
  Selects the objects found at the depth defined by the user in an EXR file.

  **Off Focus Distance**
  
  Selects the inverse of the previous mask.

  **Select Parallax**
  
  Selects the objects found at the depth defined by the user in a Stereo3D clip.

  **Off Focus Parallax**
  
  Selects the inverse of the previous mask.

- **Depth Z**
  
  Allows the adjustment of the position of the selection mask in Z.

- **Size Z**
  
  Allows the adjustment of the size of the selection mask in Z.

- **Softness Z**
  
  Sets the amount of softness of the mask used.

**Use and comments:**

To be able to select a group of objects by means of their Z-axis position, it is only necessary to have the option **Pick Object Depth**, in the **Multilayer** tab of the **Visual Editor** (found on the right of the effect) active; then select the desired object in the image in the **Visual Editor** (Evaluation Zone) to define its depth coordinates. At this time, in **Layer**, the name of a layer automatically selected by Mistika should appear; if not, the user must select one manually.

Once the initial depth of the mask is set, its size and softness can be adjusted. Unlike selecting by position, in a Depth Map the size of the mask in X and Y axes cannot be adjusted, since it uses the whole range of coordinates in both planes. The advantage is that the selection in Z is cleaner, as it does not introduce areas or groups of unwanted pixels that later have to be eliminated.

**Possible uses:**

Although the possibilities of these selection tools are infinite, thanks to the possibility of combining them with other masks or effects in Mistika, perhaps the Depth Map effect is its most obvious use. Thanks to **Spatial Key** the workflow is very simple:

**1- Selection mask**

Import the EXR clip and add the effect **Spatial Key**. With the tool **Pick Depth** choose
the desired depth for our mask. Adjusting the parameters of the effect, we can adjust the size and softness of the selection. The resulting mask is stored in Alpha.

**2- Using the selection mask with Gaussian Blur effect**

Next, add a Blur effect and configure it as we wish, not forgetting to set the parameter Mode as RGB-InA. This way, a selective blur effect is applied based on the mask done with the *Spatial Key* tool.

### Directional Light

Allows the selection of areas of reflection of the diffuse component of an image based on its normals, and the alteration of these position in order to relight a scene. This information must be included in the EXR file being used.

**Parameters:**

- **Layer Set**

  Sets which layer the effect will use to make the selection. This layer is set automatically using the tool *Pick Direction* if and when the EXR file contains information about the normals of the objects in the scene.

- **Tilt**

  Simulates the position of direct light as if it were a virtual sun.

- **RollZ**

  Allows the rotation of the zone of light incidences around an object in the Z-axis. If there are numerous objects in the scene, their shadows and light incidences will also logically rotate.
Use and comments:

To be able to select the areas of light sources of an image by means of the normals of the objects that compose it, it is only necessary to have the option *Pick Direction*, in the *Multilayer* tab of the *Visual Editor* (found on the right of the effect) active; then select the position of the light incidence of a group of objects in the scene in the image in the *Visual Editor* (Evaluation Zone) to define its light incidence. At this time, in *Layer*, the name of a layer automatically selected by Mistika should appear; if not, the user must select one manually.

The most obvious use of this tool is the possibility of re-lighting a scene, and completely change the lighting information of the scene. For example, it allows us to use the same 3D environment at different times of the day, without needing to carry out different renders in the CGI program from which the EXR comes.

Another use is the quick and easy selection of light incidences in a 3D scene, allowing us to calibrate the intensity of light and shadow with the *Color Grade* tool.

Integration with Color Grade

The *Spatial Key* effect is especially useful in color correction as it allows much more precise selections than can be made with manual masks. As a result of this Mistika integrates the functionalities of *Spatial Key* in *Color Grade*, so that the user does not need to use *Spatial Key* separately, and the selections made are imported automatically as External Keys to be used as masks (see Color Grade for more information).

In this case, the parameters of each of the selection options explained above can be viewed within the parameters folder of the color vector on which we wish to work. The automatic selection is done, however, via the *Multilayer* tab of the *Dashboard* of the *Visual Editor*. When using the effect *Spatial Key* separately, Mistika opens the *Visual Editor* with the *Multilayer* tab already activated since it is the only one relevant to this effect. However, with *Color Grade* the default tab is that of the color correction panels, as the *Multilayer* tab is a secondary selection function.

Thus, when we want to use the automatic selection tools of *Spatial Key* with *Color Grade* it is only necessary to follow the following workflow:

1- Import an EXR or *Stereo3D* clip.

2- Apply a *Color Grade* to it and in the *Visual Editor*, select the *Multilayer* tab.

3- Use the automatic selection tools.

4- If we wish to adjust the mask, open the parameters folder of the chosen color vector, and find the Multilayer subfolder. Depending on the tool used (*Object ID*, *Position*, *Depth* or *Positional Light*), we will have to open different options. The remaining parameters are common to those already explained in *Spatial Key*.

Bear in mind that when working in *Color Grade*, it automatically imports the selection made using *External Key*, so that if we activate the Alpha of the image, we cannot see the selection; for this reason, we should activate *Highlight* in the color vector. Practical examples of each of the selection option follow below:

**Object ID**
Following this workflow, we use the Pick Object ID tool in the Multilayer tab and select one of the elements in the scene. Returning to the Grade tab and changing the Gamma, we can see that the selected object automatically changes color. If we activate Highlight we can see the selection more clearly.

**Position**

In this second case, the automatic selection is not enough, so we have adjusted the mask via the parameters in the Multilayer folder of the vector in which we are working. Again, if we activate the Highlight function we can see the selection more clearly.

**Depth**

This case is similar to the previous one, but as explained above, the depth selection does not take into account the X and Y axes, but uses the full range of objects of those coordinates, so that the intensity of the selection in those axes is the same. Only in Z is there any alteration.

**Directional Light**

In this final example we can see the Highlight in the selection of the areas of light.
incidence, and the color adjustment done in these areas.

![Directional Light Parameters](image)

**Alpha**

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Alpha

The effects of the menu *Alpha* contain tools for manipulation of the channel alpha.

**Note:** the effects *Grow*, *Shrink*, *Blur Alpha* and *ForeBlur* are not documented here as they are variations of the effect *Blur Filter*.

**Show**

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Alpha->Show

More than an effect, *ShowAlpha* is a tool that changes the alpha channel to a grayscale, thus permitting working with this channel as if it were an ordinary image. In this way, the alpha channel of a clip can be separated so as to be able to use it as an external mask of another one for example, obtain the silhouette of a cutout to be able to apply filters inside it, use it as a displacement map, etc. In order to see examples of the use of this effect, see the "Uses and Comments" of the *ExternalKey* effect.

**Clear**

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Alpha->Clear

The standard ClearKey is useful for preventing an unnecessary mask from interfering in the input of subsequent effects.

For example, there are some processes which need a mask in order to work, although the original mask is maintained intact in the output (*HaloComp* or *Bump* for example). This could be a problem if rescaling the resulting image with a *3DComp* is required, since the effect respects the mask of the layer and composes it on the background of the effect. To avoid
this problem, add a **ClearKey** to the result of the process working with mask, and later apply a **3DComp**.

The standard **ExternalKey** is limited to assigning (either normally or inverted) the luminance of the second input as the alpha channel of the first. Its uses are diverse. Since this standard is not a mask extractor, but rather an assigner of masks, it is useful for assigning to an image a mask that has been previously extracted from a different image, or to assign any mask to an image to be able to work with effects that work based on the information of the mask or that can limit their effect to within the mask, such as color correctors or spatial filters.

![Image of original image, assigned mask, and 2D comp](image-url)

![Image of new bump, color correction (keep alpha), and 2D comp (shadow)](image-url)

In the example, the original image is seen, and then the mask assigned by this effect. The mask was previously extracted from the small image that accompanies the mask using the **Greenscreen** effect, and later, a **ShowAlpha** standard shows in grey scale the mask generated, so that the **ExternalKey** standard can reassign the mask. In the four following images, different possible uses of this kind of assigning of external masks can be seen.

The first example simply composes the original image over a different image using an external mask, using the **3DComp** effect.

The second example is the use of **LiquidBump**. In this effect, an alpha channel is obligatory to function and generate relief or refraction at the edges of the mask, as well as to specify an interior color and a projected shadow.

The third example shows the addition of a color correction with the **InAlpha** activated, restricting the correction to the area marked by the opacity of the mask. In this case, the correction darkens the image within the mask.

The final example shows the use of the **3DComp** effect for composing an image on top of itself, whilst specifying a projected shadow via the parameters of the **Shadow** folder.

### Invert

**Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Alpha->Invert**

In order to simplify certain tasks, **InvertAlpha** has been included as a parameter in some effects that are capable of assigning mask.

Remember that Mistika assigns an opaque alpha channel to the images without a mask by default. Thus, if the image does not have a mask, application of **InvertAlpha** will result in a completely transparent alpha channel.

This process is especially useful for making the alpha channel of a background in a composition transparent, and when a **ShowAlpha** is added on top of the composition, the sum of the alpha channels of the composed layers will be seen as foreground.

Three images are show in the following example. The first has not mask, so Mistika will add an opaque value by default.
If the images in this example were composed with a 3DComp effect to be able to modify their size and placement, the resulting mask would be white, since the background of the composition has an opaque mask assigned by default.

To obtain the mask of the layers modified by the 3DComp effect, it is necessary to invert the default mask of the background image.

The menu Crop includes two tools for cropping the image.

**Crop**

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Crop

Crops the edges of the input to the four sides of the frame, applying an RGB color outside the new limits, with a constant mask value.

**I/O**

**Inputs**

*Single input* (with or without alpha information).
Inputs

**Image**: Cropped on four sides by the specified color value.

**Alpha**: Mask cropped on four sides with the newly specified transparency value.

Parameters

**Modes:**

- **Mode**

  **[RGBA (RGBA / RGB / A)]**
  - RGBA applies the effect in the RGB and alpha channels.
  - RGB applies the effect only in the RGB channel.
  - A applies the effect only in the alpha channel.

**Crop:**

- **Left**

  **[0, (0 / 100)]**
  Left edge as a percentage of the image width.

- **Right**

  **[100 (0 / 100)]**
  Right edge as a percentage of the image width.

- **Up**

  **[100 (0 / 100)]**
  Top edge as a percentage of the image height.

- **Down**

  **[0 (0 / 100)]** Bottom edge as a percentage of the image height.

**Color:**

- **Red; Green; Blue**

  **[0; 0; 0 (0 / 100)]**
  Specifies the color to be applied from its new edges.
**Alpha**

\[0 (0 / 100)]

Specifies the opacity level to be applied from its new edges.

**Use and Comments**

This effect is useful for easy redefinition of the borders of a layer, although this effect exists as a parameter in many mask extraction and composition effects, such as *Bluescreen*, *Greenscreen* and *Comp3D*.

The redefinition of borders is useful in cases where undesired areas of the mask of a layer are to be removed, produced, for example, by having undesired objects in the background, or if the set does not fill the complete image.

Another example is the removal of the black borders generated in some video formats by the lack of signal from the mask, or when viewing the movie camera window.

The four edges can be specified from the *Visual Editor* by using the crop manipulators, dragging them from their default position the original borders of the frame. The color can be specified with the *color Chooser*, to use the effect for coloring an area of the frame.

It is possible to apply tracking coordinates to each edge of *Crop*.

**Crop Expand**

*Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Crop->Crop Expand*

Crops the input alpha channel on the four sides of the frame, filling the discarded image area with an expansion of the color of the pixels in the new edge.

**I/O**

**Inputs**

*Single input* (with or without alpha information).

**Inputs**

*Image*: Cropped on four sides by the expansion of the pixel values in the newly specified edge.
**Alpha:** Mask cropped on four sides of the frame.

### Parameters

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Left</strong></td>
<td></td>
</tr>
<tr>
<td>[0 (0 / 100)]</td>
<td>Left edge as a percentage of the image width.</td>
</tr>
<tr>
<td><strong>Right</strong></td>
<td></td>
</tr>
<tr>
<td>[100 (0 / 100)]</td>
<td>Right edge as a percentage of the image width.</td>
</tr>
<tr>
<td><strong>Up</strong></td>
<td></td>
</tr>
<tr>
<td>[100 (0 / 100)]</td>
<td>Top edge as a percentage of the image height.</td>
</tr>
<tr>
<td><strong>Down</strong></td>
<td></td>
</tr>
<tr>
<td>[0 (0 / 100)]</td>
<td>Bottom edge as a percentage of the image height.</td>
</tr>
</tbody>
</table>

### Use and Comments

This effect has a similar use to the effect Crop, with the additional function of expanding the color of the pixels in the new edge.

![Original image cropped image cropped mask](image)

**Deform**

*Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Deform*

The effects that modify the forms of images.

**Note:** The effects *Distort, Bump* and *LiquidBump*, are not documented here since they are variations of the *Refract* effect.

**Warper**

*Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Deform->Warper*

Permits the deformation of images with an advanced control based on a wipe that can be animated.

This effect has two different typical uses:
Warping: complex deformation of an image.
Morphing: complex transition based on a change of shape (metamorphosis).

I/O

Inputs

Single input: Image with or without alpha channel for warping.
Double input: Images with or without alpha channel for morphing.

Inputs

Image: Warping or morphing of the images.
Alpha: Warping or morphing of the masks.

Warper Editor

This effect has its own interface (Warper Editor) in which the deformation grid is controlled. Access to the interface is in Mistika->Visual Editor->Dashboard->Warper.

To explain the functioning of this effect, the section of "Uses and Comments" has a simple example of morphing between two fixed images of an apple and a pear.

The interface is divided into four areas: Canvas, Keyframe Slider, Quick Access and Dashboard.

Canvas:

The Canvas is located in the upper part of the interface. It where the image to be deformed is viewed and where the positions of the points that form the grid are defined.
Inactive Canvas is the area that exceeds the image resolution for which the system is configured. Mesh points can be located in this area, although the result of the deforming will not be seen, as it will exceed the limit of the frame.

Meshes are made up of horizontal (Row) and vertical (Column) lines of a number defined by the user.

The intersections of the lines define control points, Mesh Points. Each control point has a definable position and tangents (Tangent) for defining angles of tension in the lines that meet.

The part of the mesh that delimits a rectangle joining four points is a Cell. Within each Cell, a common polygonal subdivision is defined, allowing greater flexibility for distortions.

The polygonal subdivision is definable from the parameters of the effect, although it is not visible from the manipulators. However, a viewing aid is available which shows a fixed subdivision (Draw Patches) which is useful for orienting the user in the polygons within a Cell. This is important since a Cell is a rectangle which, in its interior, especially when editing tangents of a Mesh Point, can contain polygons with an irregular distribution.

Keyframe Slider:

The Keyframe Slider allows the addition of keyframes and specify their values according to their position in time. In the case of animations, whether they are warping or morphing, at least two keyframes are needed. In the case of a morphing, each source must be animated independently.

The keyframes that the mesh contains are viewed in the Keyframe Slider. To move a keyframe, select it with the mouse cursor while holding down <Ctrl>. Its temporary value within the effect thus changes.

If the effect Warper is to be used to carry out a warping effect (whether animated or not) the interface automatically deactivates Source, viewing and control modes in the Canvas and the Dashboard. If, on the other hand, a morphing effect is to be carried out, the Warper Editor works in two image modes: Source and Destination. Source keyframes will be red triangles in the upper margin, and Destination keyframes will be green triangles in the lower margin. In the whole interface, Source is identified by red and Destination in green. The white diamond indicates the currently viewed frame.
Quick Access:

Quick Access is an access bar for frequently used commands. It has two basic functions for controlling viewing: zoom and playback. There is also the button Exit, which returns the user to Visual Editor.

Dashboard:

In the lower area is the Dashboard, which possesses different groups of functions, described below:

- **Drag Mode**
  
  Activates and deactivates this editing mode for editing points. This mode facilitates the location of mesh points, since various points can be dragged simultaneously, according to the radius of influence defined.

- **Drag rad**
  
  Permits the definition of a value to the radius of a stroke for dragging the points of a grid according to the direction of the stroke.

- **Source** controls the origin position of the mesh.

- **Show Image**
  
  Shows the origin image in the Canvas, corresponding to the first input of the effect.

- **Show Mesh**
  
  Shows the origin mesh, in red. Both for warping and morphing, the shape of the origin mesh must replicate the origin image.

- **Reset Key**
  
  Eliminates the modifications of position of the Mesh Points, returning the mesh to the standard position.

- **Delete Key**
  
  Deletes the keyframe present in the current frame.

- **Bring Key**
  
  Pastes a copy of the position of the current frame of the opposing source, creating a keyframe.
Clear All Keys

Deletes all keyframes of the current source.

Bring All Keys

Pastes a copy of all the keyframes of the opposing source, making both sources identical. This function eliminates all previously established keyframes of Source, and so this action requires confirmation to be activated.

Destination controls the destination position of the mesh.

Show Image

Shows the destination image in the Canvas, corresponding to the second input of the effect. If the effect has only one input, Destination is viewed as first input.

Show Mesh

Shows the destination mesh, in green. In cases of morphing, the shape of the destination mesh must replicate the destination. In the case of warping, the shape of the destination mesh is irrelevant.

Reset Key

Eliminates the modifications of position of the Mesh Points, returning the mesh to its standard position.

Delete Key

Deletes the keyframe present in the current frame.

Bring Key

Pastes a copy of the position of the current frame of the opposing source, creating a keyframe.

Clear All Keys

Deletes all keyframes of the current source.

Bring All Keys

Pastes a copy of all the keyframes of the opposing source, making both sources identical. This function eliminates all previously established keyframes of Destination, and so this action requires confirmation to be activated.

If both buttons of Show Image are active, the result of the effect in the current frame is shown, indicated by the slider.

If both buttons of Show Mesh are active, the result of the interpolation of the mesh
between *Source* and *Destination* is shown, as a blue mesh.

**Note**: there is no function that allows the copying of a keyframe of the mesh to another position in time in the same source. However, there is a trick for achieving the same result via *Bring Key*:

- Copy the keyframe to the other source (*Bring Key*)
- Move the copied keyframe to the new destination position.
- Use *Bring Key* again in the other direction to bring the keyframe to the previous source, and then delete the intermediate copy.

**View** controls the viewing of components of the mesh.

- **Draw Points**
  Activates the viewing of control points of the mesh.

- **Draw Lines**
  Activates the viewing of mesh lines.

- **Draw Thicker**
  Activates the viewing of a black frame round the lines of the mesh, to make viewing easier.

- **Draw Tang**
  Activates the viewing of the tangents of the control points of the mesh.

- **Draw Patches**
  Activates the viewing of an orientative subdivision of the cells of a mesh.

- **Dim Other**
  Makes the viewing of the unselected part of the mesh semitransparent, thus helping concentrate attention on the points being edited.

- **Undim All**
  Undoes *Dim Other*, making the viewing of the whole mesh opaque.
The *Edit* functions modify parts of the mesh.

- **Select All**

  Selects all *Mesh Points* of the visible mesh.

- **Select Row**

  Selects other points in the horizontal line that pertain to the selected points.

- **Select Column**

  Selects other points in the vertical line that pertain to the selected points.

- **Add Line**

  Duplicates the selected line. After clicking this button, the position of the new line must be defined by clicking in another part of the mesh. The temporary state of the line without a defined final position is shown in white, for ease of identification among the lines of the mesh.

- **Delete Line**

  Deletes the selected line of the mesh.

- **Reset Tang**

  Resets the default values of the tangents of the selected points. The edited tangents are yellow, while those with default values are the same color as the mesh.

*Key* has two buttons.

- **Auto Fix**

  Automatically adds a keyframe in the *Node Graph* each time a modification in the grid of the *Canvas* is done.

- **Add Key**

  Manually adds a keyframe in the current frame.

*File* has three buttons.

- **Save Mesh**

  Saves the source position that is viewed as a grid, making possible the future of this in other *Warper* effects.

- **Load Mesh**

  Loads one source position of the grid.
New Mesh

Defines a new grid, defining the subdivision of the frame by number of vertical and horizontal cells.

Note: the extension of the grid file is .msh. The grid files are deposited in the OUTPUT folder of the current project.

Parameters

► Grade

[0 (0 / 100)]
Evolution of the interpolation of the mesh position sources.

A value of 0 indicates the Source position; a value of 100 indicates the Destination position.

► Mix

[0 (0 / 100)]
Evolution of the mixing of distorted inputs.

A value of 0 indicates the image of the first input; a value of 100 indicates the image of the second input. If there is no second input, this parameter will be ignored.

► Subdiv

[10 (0 / 128)]
Polygonal subdivision of the mesh cells.

► Dir

[0 (0 / 1)]
Reverses the direction of the mesh position sources, interchanging Source and Destination.

Use and Comments

This effect has two typical uses: transformation between two images for a transition (morphing) or distortion of an image (warping), which can have multiple uses.

Warping can be used to distort an image arbitrarily, and we recommend the use of Drag mode in the additional interface in this case.

It is also the ideal tool for correcting perspectives. To do this, only a few mesh lines should be used, in order to match the image escape lines with the Source, and then correct them. In this case, we recommend aligning the Source Mesh Points in the inactive area (outside of the image), thus making it possible for a few lines to control the perspective of the image to be corrected.

This tool is ideal when it is necessary to distort a texture to cover a figure in an image, as Source can be specified as a flat mesh, and Destination as the shape of the figure, and
thus give texture to the desired figure. A typical example of this is the replacement in post-
production of the label of a cylindrical container, such as a bottle. Other effects, such as
CornerPin, cannot distort the image adequately, since they do not have control points with
tangents.

Another common use, whether for warping or morphing, is the joining of cuts from different
takes to produce a single longer sequence, when it is not possible to shoot as a single shot.
An example might be a shot that appears to enter from outside a window to inside in single
take without cuts.

To explain a simple method of creation of Morphing, a basic example of transformation
between static images of an apple and a pear will be used.

Start by selecting a viewing mode of the Source image and the Source mesh.

Next, specify a new subdivision of the mesh with the number of cells.

Pressing the New Mesh button will cause a dialog to appear, in which subdivisions in X and Y
will each be specified to have a value of 1.

To add horizontal and vertical lines, it is recommendable to duplicate those already created.
To do this, use the commands Select Row and Select Column or select an area by dragging
the mouse. Once selected, the lines can be duplicated via the command Add Line. By means
of this method, we can locate the lines in the best places in order to wrap the image with
them.

To carry out this adjustment, it will be necessary to move the Mesh Points to locate them
on the shape of the figure and fix the points of the interior of the figure simulating the
image's volume. To do this, it is best to edit the tangents of the points, activating their
visualization via the command Show Tangents.
The mesh should cover the image, simulating the parallels and meridians of a globe.

Once the mesh has been situated in **Source**, select the image and mesh view **Destination**. Then bring the shape of the opposite mesh with **Bring Key**.

If the grid is not very visible, its black border can be activated with **Show Thicker**.

Once the opposing mesh is obtained, the mesh points of the target image should be readjusted. In this example, the shape of the apple can be seen superimposed on the image of the pear.

When adjusting the points, try to reassign their positions to more coherent places that can
be considered of similar meaning. For example, the points that surrounded the apple stalk should be placed around the pear stalk, the points of the apple outline in the pear outline, and the interior points in such a way as to resemble the shape of the pear.

The mesh is correctly placed on the image target. But the polygonal subdivision in each cell is poorly distributed, so that it does not correspond to the image volume.

*Show Patches* should be activated as a viewing guide for the adjustment of the interior of each cell. Then adjust the tension of the tangents to improve the distribution of the patch.

This same should also be done with the Source mesh.

When the tensions of the tangents have been adjusted, the functioning of the effect can be checked.

To do this, the view of both images should be activated, and the current frame then moved with the slider.

If there are anomalies, the mesh can be adjusted by viewing the average degree of interpolation. This is very useful for interactively viewing the changes in the mesh caused by interpolation of the effect, especially to adjust the points that are in the outlines of the figures. Bear in mind that in order not to create unwanted keyframes, the *Auto Fix* mode should be turned off, thus making sure that all the changes will be applied to the original mesh in the first frame.
To adjust the internal points of the figure, it is very useful to be able to see the warping that is produced in each image separately. To see the warping of a single image, the value of the *Grade* parameter should be reset.

This way we can view how the texture is adjusted in the deformations produced by the effect. To adjust the texture, its tangents should be used.

The end result of the effect is, in sum, two contrary deformations that are mixed together with a fade.

The progress of the fade is set in the *Mix* parameter, and the evolution of the deformation is set via the *Grade* parameter.

We recommend experimenting with these parameters (accelerating and decelerating their
curves) since when the fade is less visible, the impression of metamorphosis of the effect is better.

The invert parameter is recommended to return to a previous warp. For example, if a copy of the same Warper is placed on top of the warping made, but with the invert parameter with a value of 1, the deformation will be reversed, since it will be applied inversely.

The higher the value of the subdiv parameter, the better the deformation will react to the tension and angle of the tangents. Subdiv does not specify a global polygonal subdivision for the whole image, but only for the internal subdivision of the cell, and for this reason the number and size of the mesh cells should be borne in mind.

Subdivision with excessive values can slow the render time, and we recommend adjusting the parameter unit by unit, and always viewing the image result. After a certain value it will be seen that more subdivision does not improve the quality of the deformation, and this subdivision threshold gives the optimum value.

For standard resolutions, a good generic value is 10, whereas for high definition a value of 25 is generally recommended.

In cases where the inputs of the effect are images in movement, the position of the points of the mesh should be adjusted in each frame, generating keyframes both in source and in destination. This is the reason that morphing between images in movement is much more complicated to configure than morphing between static images.

**Refract**

- **Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Deform->Refract (Relief)**

The parameter Refract generates a distortion in the image via the interpretation of the borders of a refraction map, resulting in an effect to refraction.

**I/O**

**Inputs**

- **Single input:** Image with alpha channel. The alpha channel will be used as a relief map.

- **Double input:** The first input (with or without alpha channel) is the image to be distorted, and the second input is the relief map. Thus the alpha channel of the second input is preserved,

**Outputs**

- **Image:** Distorted image.

- **Alpha:** No change, or eroded by refraction, as specified in RebuildK parameter.
Parameters

**DisplaceMap:**

Folder containing the parameters that specify the sense of height of the effect.

- **Blur**
  
  ![1 (0 / 100.000)]
  
  Blurs the distortion map before being applied. The result of this blurring reduces the details of the refraction and magnifies the edges of the relief.

- **ClampLo**
  
  ![0 (0 / 100)]
  
  Lower limit of the generated relief. Visually, this means a threshold is created, giving a sensation of lifting slightly from the relief.

- **ClampHi**
  
  ![100 (0 / 100)]
  
  Upper limit of the generated relief. Visually, this means a cut that creates a plateau sensation.

- **Amplitud**
  
  ![100 (-100.000 / 100.000)]
  
  Specifies the simulated height of the relief effect. This means, visually, a greater contrast of light and shadow affecting the edges created by the distortion map, and also the amount of refraction generated.

- **Liquid**
  
  ![Off (Off/On)]
  
  Activates a liquid-style refraction mode. Visually, this means a feedback of specified refraction.

- **RebuildK**
  
  ![Off (Off/On)]
  
  Specifies that the alpha channel of the output of the effect is placed in the refraction map modified by the same erosion as the generated refraction.
Mode:
Folder that contains the parameters that specify the render mode of the effect.

- **Mode**

  **[Hware (Hware/Sware)]**
  Specifies the processing mode (hardware graphic or just software).

Distort:
Folder that contains the parameters that specify the applied refraction.

- **DirX ; Y**

  **[0;0 (-100.000 / 100.000)]**
  Amount of horizontal and vertical distortion.

- **Zero**

  **[50 (-100.000 / 100.000)]**
  Distortion map value that specifies X and Y without distortion.

- **Refract**

  **[0 (-100.000 / 100.000)]**
  Amount of refraction applied (visible at the edges of the relief). To make these borders bigger, increase the Blur parameter.

- **Angle**

  **[0 (-100.000 / 100.000)]**
  Specifies a rotation angle for the interior of the refraction.

- **Antialias**

  **[x1 (x1, x2, x3, x4, x8, x15, x24, x66)]**
  Number of sample for the refraction effect. High values specify greater quality samples, noticeably improving the resulting image quality, visible in the details.

Ambient:
Folder that contains the parameters that specify ambient light.

- **Intensity**

  **[100 (0 / 100.000)]**
  Intensity of the ambient light.
### Red

```plaintext
[100 (0 / 100.000)]
Defines the value in the red channel of the ambient light.
```

### Green

```plaintext
[100 (0 / 100.000)]
Defines the value in the green channel of the ambient light.
```

### Blue

```plaintext
[100 (0 / 100.000)]
Defines the value in the blue channel of the ambient light.
```

### Diffuse:

Folder that contains the parameters that specify the appearance of the lighting generated by the effect.

- **OffsetX**
  ```plaintext
  [26,430 (-100.000 / 100.000)]
  Position of the virtual light of the effect. This parameter can be defined with the 2D manipulation mode.
  ```

- **OffsetY**
  ```plaintext
  [73,570 (-100.000 / 100.000)]
  Position of the virtual light of the effect. This parameter can be defined with the 2D manipulation mode.
  ```

- **Intensity**
  ```plaintext
  [0 (0 / 100.000)]
  Intensity of the virtual light of the effect.
  ```

- **Red**
  ```plaintext
  [100; 100; 100 (0 / 100.000)]
  Defines the value in the red channel of the ambient light.
  ```

- **Green**
  ```plaintext
  [100; 100; 100 (0 / 100.000)]
  Defines the value in the green channel of the ambient light.
  ```
Blue

\[100; 100; 100 (0 / 100.000)]
Defines the value in the blue channel of the ambient light.

Specular:
Folder that contains the parameters that specify the specularity of the processed image.

Gloss

\[24 (24 / 100.000)]
Specifies the gloss the processed image.
The higher this value, the more the intensity of the gloss produced by the virtual lights will be concentrated.

Intensity

\[0 (0 / 100.000)]
Intensity of the specularity of the processed image. The higher this value, the more the brightness produced by the virtual lights will be reflected.

Red

\[100 (0 / 100.000)]
Defines the value in the red channel of the color of the specularity of the processed image. This parameter colors the brightness produced by the virtual light.

Green

\[100 (0 / 100.000)]
Defines the value in the green channel of the color of the specularity of the processed image. This parameter colors the brightness produced by the virtual light.

Blue

\[100 (0 / 100.000)]
Defines the value in the blue channel of the color of the specularity of the processed image. This parameter colors the brightness produced by the virtual light.
Image:

Folder containing the parameters that transform the image before being processed by the other parameters of the effect.

- **Zoom**

  \[
  [100 (-100.000 / 100.000)]
  \]
  
  Amount of zoom of the image.

- **Anamorp**

  \[
  [0 (-100 / 100)]
  \]
  
  Defines the anamorphic aspect of the applied effect.
  
  The default value indicates that the filter will act symmetrically between the vertical and horizontal axis. Positive values restrict the action of effect the vertical axis gradually, while negative values restrict it to the horizontal.

- **OffsetX**

  \[
  [0 (-100.000 / 100.000)]
  \]
  
  Amount of horizontal offset applied to the original image.

- **OffsetY**

  \[
  [0 (-100.000 / 100.000)]
  \]
  
  Amount of vertical offset applied to the original image.

**Perspective:**

This attribute is applicable to stereoscopic images.

- **InterOcular**

  \[
  [0.2 (0 / 100.000)]
  \]
  
  Modifies the values of the interaxial separation of the distortion applied to the stereoscopic image. The higher the *InterOcular* value, the more exaggerated the stereoscopic effect will be.

**Use and Comments**

This effect is accessed via the effect buttons *Refract, Distort, Bump* and *LiquidBump*.

This effect has many possible applications, such as to simulate refraction or reflection. The refraction map, in contrast to distortion or other maps, is interpreted according to the detected edges of the image, and not the luminance values of its pixels, so the color of the image is also taken into account. A solid color as a distortion map produces no distortion, whatever the color, since it is the contrast between the pixels that is evaluated in refraction map.
The results of this effect can also be combined with other effects to simulate reflection, for example.

This effect is very useful for creating metallic materials for logos etc.

This effect is also useful for distorting reflections or shadows added to a composition, copying the relief onto which they are projected.

In this example, it can be seen how the *Refract* effect can be useful in copying the relief of a background (even in movement) and applying the distortion for the shadow projected to integrate the character onto the new background. In this example, the same background image is used as both refraction map and shadow mask.
The effect can also be used to copy the relief of surfaces where it is necessary to apply a reflection. In this example, it is necessary to add a reflection of a composed character, since the wet ground reflects people walking on it, as can be seen in the background shot. This reflection must be distorted to match the roughness of the ground. In this example, the same background image is used for the refraction map of the reflection.

The $\text{DirX; Y}$ parameters distort an image using a distortion map horizontally and vertically independent.

Following the luminance of the pixels of the distortion map image, the pixels of the distorted image are moved horizontally or vertically, as defined in the parameters of the effect.

This allows it to be used, for example, to distort projected shadows or reflections that need to copy the visible roughness of a surface, such as water, floors, leaves etc.

Although the parameter $\text{Refract}$ can achieve a similar result (and sometimes better), $\text{Distort}$ also has a different distortion map for each axis.
In this example we see the usefulness of the distortion parameter \( \text{DirX} \), working just horizontally. The distortion map that is used simulates the split focus ring of a stills camera viewfinder. If the parameter \( \text{OffsetX} \) is animated between positive and negative values, we see that the image distorts as if through a stills camera lens being focussed.

The distortion map has a mid-grey background, which will not distort the image since the \( \text{Zero} \) parameters of the effect are at 50, while the black distorts in a direction the opposite to white.

This effect is also generally useful for assigning a material to a layer, for example text generated with the effect \( \text{Title} \) or a logo.

This effect can later be composed thanks to the fact that the deformations of the edge of the layer are also reflected in the alpha output channel, via the parameter \( \text{RebuildK} \).

By properly controlling the parameter \( \text{Refract} \), materials similar to water or glass can be simulated, and with negative values, metal or mirrors can be simulated.

This effect is also generally used for adding relief to the edges of a layer, for example text generated with the effect \( \text{Title} \) or a logo.
In this example, the alpha channel assigned to the image functions as a distortion and relief map.

Negative values invert the direction of the relief. By controlling the height of the relief with the parameters $ClampLo$ and $ClampHi$, it is possible to create bevelled edges. Because the alpha channel is conserved intact in the output of the effect, it is possible to compose the processed layer over other images.

Twirl

**Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Deform->Twirl**

Creates a spiral-shaped distortion based on a definable center.

**I/O**

**Inputs**

**Single input:** Image with or without mask.

**Image:** Distorted image.

**Alpha:** Distorted mask.

**Parameters**

**Twirl:**

- **Ang**

  
  
  $[0 (-100.000 / 1.000.000)]$

  Spiral distortion angle.

- **NRad**

  
  
  $[50 (-100.000 / 1.000.000)]$

  Specifies the value of the radius between the center of the spiral and its first torsion.
ring. When this parameter is animated, the spiral created by the effect rotates.

- **Move X; Y**

  \[50; 50 (-100.000 / 1.000.000)\]

  Center of the spiral as a percentage of the image.

- **Zoom**

  \[100 (-100.000 / 1.000.000)\]

  Scale of the result of the effect.

**Offset:**

Folder containing two-dimensional image repositioning parameters.

- **Shift X; Y**

  \[0; 0 (-100.000 / 1.000.000)\]

  Offset of the original position of the image on the spiral distortion.

**Use and Comments**

This effect is useful for making fast and simple deformations of images.

For more complex deformations, we recommend using the *Warper* effect.

Thanks to the spiral deformation of the effect, it is possible to create spirals that can be animated, based on distorting a simple mesh that divides the image into black and white halves.

In these examples, the *NRad* parameter acts on the rotation of the spiral. In the "Spiral" example, the rotation of the spiral will produce a psychedelic effect as a result. A part of the periphery of the spiral can be seen in the "Waves" example, and when the parameter *NRad* is animated, the waves will be seen to advance as a result.

This effect can be used as an interesting deformation for application to any mesh; for example, curving stripes.
Another powerful effect for generating waves is the effect *Wave*.

### Kaleido

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Deform->Kaleido

Generates a kaleidoscopic effect in the image, cutting it into reflective triangles.

#### I/O

**Inputs**

- **Single input**: An image with or without mask.

**Inputs**

- **Image**: Image with kaleidoscopic effect.
- **Alpha**: Mask with kaleidoscopic effect.

#### Parameters

- **Angle**
  
  
  
  **[0 (0 / 100.000)]**

  Specifies a rotation angle for the kaleidoscope triangles.

- **Size**
  
  
  
  **[20 (1 / 100)]**

  Size of the kaleidoscope triangles.

#### Use and Comments

The purpose of this effect is simply to simulate a rotating triangular kaleidoscope.
Amongst others effects, this menu includes tools relating to Optical Flow (Motion Estimation) technology, such as the modification of playback speed of a sequence or restoring an image.

It also includes tools for drawing on an image or generating vectorial masks and adding grain in the style of film.

**Note:** the effects *Grow* and *Shrink* are not documented here, since they are variations of the Blur effect.

**VectorPaint**

This effect permits freehand drawing or by using shapes and rotoscopes, including different brushes, based on vectors that can be animated. It can be used in many types of tasks, such as:

- Freehand painting with brushes or geometric shapes.
- Manual restoration of images, using Repair Mode (Motion Estimation) and with brushes such as *Clone* and *Reveal*.
- Creating masks, manually frame by frame or with the assistance of tracking tools.
- Manual composition of parts of an image on another.

**I/O**

**Inputs**

- **Single input:** Image with or without alpha channel.
- **Double input:** Images with or without alpha channel for composing.
Inputs

**Image**: Image with specified vectorial drawing (at 16 bits per channel color depth).

**Alpha**: Mask with specified vectorial drawing.

Parameters

These parameters simply possess the coordinates for the position of tracker animation.

- **PosX; PosY**

  **[50; 50 (-10.000 / 10.000)]**

  Two-dimensional coordinates that can be pasted to the vectorial shapes that the effect has.

Paint Editor

**Ref. Mistika: Visual Editor->Dashboard->Paint**

*Paint* is the extra interface of *Vectorpaint* in which vectorial shapes are drawn. Access to the interface is in *Mistika->Visual Editor->Dashboard->Paint*.

The use of vectors for painting on the image and the alpha channel maintain intact the original source files, allowing a non-destructive functioning. The vectorial information of the brushstrokes is stored as data, thus avoiding the modification of the original or the obligatory creation of a new file.

Thus the brushstrokes pertain to the clip of the effect, and can be applied to any other clip, moving or copying this effect in the *Node Graph Editor*.

To illustrate the normal functioning of this effect, an image of a face on a red background will be used as input. In the examples where the image mask is seen, a mask extracted by the selection of the red background is used. In examples where a second input is seen, noise generated by the *Noise* effect is used as the background.

The *Paint* interface is divided into four areas: *Canvas, Quick Access, Keyframe Slider* and *Dashboard*. 
Canvas:

The Canvas is located in the upper part of the interface. It is where the image is viewed and where the positions of the vectors are defined.

Keyframe Slider:

The Keyframe Slider allows the addition of keyframes and the specifying of their values according to their positioning in time. In the case of an animation, at least two keyframes are necessary.

In this frames grid, the keyframes added to the selected shape can be seen as green triangles. These keyframes can be moved in time, thus redefining their temporal value. The white triangle indicates the current frame within the ruler. The grey box of the white triangle indicates the current frame. To move a keyframe, select it with the mouse cursor while holding down <Ctrl>. This changes its temporal value within the effect.

The Position Box allows the user to jump directly to the desired frame by the introduction of the corresponding value.
**Fields** activates the vector draw mode by fields for interlaced images. Each field of a frame can have different vectors. Interpolation of the vectorial animations is also done with fields.

This mode should be specified before beginning to draw on the image, since any subsequent change of mode can provoke temporary disorder in the location of the vectors already generated.

The **Back** button returns the user to the **Visual Editor**.

**Quick Access:**

*Quick Access* is an access bar to frequently used commands.

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hide</td>
<td>Gives the option of hiding the <strong>Dashboard</strong> for better viewing and working on the <strong>Canvas</strong>, once the tool and its parameters are selected.</td>
</tr>
<tr>
<td>Zoom In; Zoom Out; Zoom Center; Zoom Reset</td>
<td>Modifies the viewing size of the <strong>Canvas</strong>. They also control the zoom via the central mouse wheel.</td>
</tr>
<tr>
<td>Go to Header</td>
<td>Establishes the first frame of the effect as a new position.</td>
</tr>
<tr>
<td>Prev K</td>
<td>Establishes the frame immediately prior to the current one containing a defined keyframe as a new position.</td>
</tr>
<tr>
<td>Prev F</td>
<td>Establishes the frame immediately prior to the current one as a new position.</td>
</tr>
<tr>
<td>Play F / Stop</td>
<td>Controls the frame to frame playback of the effect.</td>
</tr>
<tr>
<td>Next F</td>
<td>Establishes the frame immediately after the current one as a new position.</td>
</tr>
</tbody>
</table>
Next K

Establishes the frame immediately after the current one containing a defined keyframe as a new position.

Go to Tail

Establishes the last frame of the effect as a new position.

Dashboard:

The Dashboard operates in the modes Paint, Text and Setup, which can be accessed via their corresponding Options Tabs.

The submode Paint Editor works with three principal modes (Paint, Select and Transform) whose activation displays or hides specific command groups.

View

Image activates viewing of the input image of the effect.

Alpha activates viewing of the alpha channel of the effect.

When Image is also active, the alpha channel is superimposed on the image in a definable color (blue by default).

The value box Display controls the opacity of the mask superimposed ion the image.

Image Mix Frames activates mixed viewing, useful for comparing two images while working on the effect.
FG sets the image to be mixed in the viewing of the original image as the foreground (or the second input if there is one).

If BG is active, the mixed image is the background (first input).

The Mix values box controls the mix level between the original image original and the image specified to be mixed.

The Offset values box indicates the number of frames of temporary offset for the image specified to be mixed.

Alpha

The command Clear alpha eliminates any mask that the input may possess, replacing it with a transparent mask. Once the original mask original of the input is eliminated, a new mask can be drawn.

The mode Composite is used so that the effect functions like a composition effect in both its inputs at the same time. Thus, this mode is ignored if the effect has only one input.

This mode is recommended in cases where it is necessary to create masks of an image but view the result of the composition, allowing the user to paint interactively in the alpha channel while viewing the final composition.
Color

*Pick Color* allows the defining of a paint color by copying the color of an image's pixel, selected by clicking this button.

Above this button a box shows the current color.

*Pick Alpha* allows the defining of the alpha channel level for the paint by copying a pixel value from the selected mask.

Above this button a box shows the current level, representing a transparency over black of the defined color for tinting the viewing of mask.

The sliders and buttons of the *Color Chooser* define the paint color. The tabs represent available palettes: *RGB, HSL, Color Wheel (Hex)* and a library of definable colors (*Lib*). It is also possible to change the viewing mode by activating the button *WYSWYG*. The button *Pick Color* of the *Color Chooser*, unlike the button *Pick Color* at the head of the group, works when holding the mouse button until the cursor is over the chosen color and then releasing it.

Apply

This group allows the defining of which vectorials or shapes are to be applied in the image channels (*Apply Image*), in the alpha channel (*Apply Alfa*) or in both. The *Pressure* box defines the level of opacity of the brush. The box *Level* defines the level of opacity of the brush applied in the alpha channel.

Stencil

The *Obey* button specifies that the paint applied to the image only affects the transparent areas of the alpha channel, protecting the opaque areas of the same from being painted. In other words, it activates the use of the alpha channel as a mask.
The size of the brush is defined from the values box _Brush Size_ or by pressing _<Ctrl>+<Shift>_ with the mouse cursor over the image (only when the _Paint_ mode is set as brush).

The default command _Soft_ activates a brush with soft edges. If the button _Hard_ is active, the brush will have hard edges.

The default brush is _Paint_.

_Paint_ paints on the image with the color specified in the _Color Chooser_ and on the alpha channel with the level specified in the box _Level (Alpha)_ of the group _Apply_.

_Tint_ paints by modifying the hue and saturation of the image according to the value specified in the _Color Chooser_, ignoring the brightness of the selected color.

_Tint_ is not applicable to the mask.

_Lighten_ lifts the brightness of the colors of the image without bleaching them, ignoring the value specified in the _Color Chooser_.

In this mode the value specified in the _Pressure_ box alters the intensity of brightness. _Lighten_ is not applicable to the mask.
Darken darkens the brightness of the image by half with each brushstroke, ignoring the value specified in the Color Chooser. Unlike painting in black paint with Paint, the same brushstroke cannot accumulate the effect of repeated strokes.

Darken is not applicable to the mask.

Drag pushes the pixels of the image and the mask in the direction brushstroke, with the force equivalent to the speed of the brushstroke.

In this mode the value specified in Pressure box scales the force of the stroke Pressure box scales the force of the stroke.

Extend paints on the image and mask with the color and level of mask of the pixel where the stroke begins, ignoring the value specified in the Color Chooser and the Level (Alpha) box of the group Apply.

Blur gently blurs the pixels of the image and mask.

In this mode, the value specified in the Pressure box scales the force of the blurring.

Reveal Fore paints on the original image, reverting the actions of other strokes in
other modes. If the effect has two inputs, *Reveal Fore* specifies that it will paint with the first input.

*Reveal Back* is a brush designed to work with two inputs. In this case, *Reveal Back* will paint by composing the background (first input) over the foreground (second input). If the effect has only one input, *Reveal Back* behaves identically to *Reveal Fore*.

![Image of Reveal modes](image)

*Clone Fore* paints with an offset copy of the original image. To select the origin of the offset, select one point of the image while holding down <Alt>. Then choose the destination of the offset by drawing directly on the image.

If *VectorPaint* has two inputs, *Clone Back* will copy the background (first input) on the foreground (second input). If the effect has only one input, *Clone Back* behaves identically to *Clone Fore*.

![Image of Clone modes](image)

*Distort* applies a distortion in the image and mask according to the direction of the
stroke, with the size of the brush being the limit of the action. In this mode, the brush is viewed much larger than the defined size. The speed of the stroke defines the amount of distortion applied.

In this mode the value specified in the **Pressure** box is ignored, as the size of the brush is more important.

![Brush modes](image)

**Repair with virtual Frame** is an image restoration mode. The brush uses motion estimation techniques to reconstruct the areas where it is applied. Thus, when drawing on damaged areas of a frame, tracking of the same pixels in the previous and subsequent frames is carried out without taking the current frame into account, which normally permits the reconstruction of the area below the brush. This mode can only work if there is only one input in **VectorPaint**.

<table>
<thead>
<tr>
<th>Mode</th>
</tr>
</thead>
</table>

The work mode of the interface is defined with **Mode**.

**Brush** activates the creation of brushstrokes on the image. In this mode, the vectors are hidden.

**Select** activates the mode allows the selection of vectors, showing the points and vectorial lines that make up shapes and brushstrokes.

![Select modes](image)

**Transform** activates the vectorial shape manipulator once it has been selected.
This manipulator is a rectangular box with small square manipulators in its corners and midpoints of each side. When the side manipulators are pressed, rescaling in the axis dividing the square is activated.

When the corner manipulators are pressed, rescaling of the selected shapes is activated. To rotate a shape, click on any manipulator while holding $<\text{Alt}>$ at the same time to set the angle of rotation.

When clicking inside the manipulator without touching the small squares or the keyboard, the manipulator will move the selected shapes.

**Undo/Redo**

*Undo Point* undoes the creation of the last generated vectorial point.

*Redo Point* redoes the last vectorial point undone by *Undo*.

*Last Shape* undoes the creation of the last generated vectorial shape.

**Grid**

*Snap* activates the mesh magnet. When moving a shape, the only possible positions will be the mesh intersections, and drawing will only be possible along the mesh lines.

**Creation**

*Rectangle* specifies the creation of rectangles. If regular rectangles are required, hold $<\text{Shift}>$ while defining the rectangle.

*Circle* specifies the creation of circles. If regular circles are required, hold $<\text{Shift}>$
while defining the circle.

*Poly Line* specifies the creation of polygonal shapes by means of control points that are set with each click on the image.

*Curve Line* specifies the creation of rounded shapes by means of Bezier-type control points created with each click on the image.

**Modify**

*Insert* inserts control points in any vectorial line.

*Add* continues adding points after the last point created, thus modifying the selected shape.

**Type of points**

*Sharp* eliminates the tangents of the selected control points. When dealing with a shape, it will become a polygon.

If *Smooth* is active the shape or line created will be formed by B-Splines. As there is less control of the tangents than the Bezier-type splines, manipulation and work with B-Splines is easier. Furthermore, the precision of B-Splines is usually sufficient when adjusting a shape.

If *Connected Tang* is active the shape or line created will be created with Bezier-type splines whose nodes can be modified together.

If *Independent Tang* is active the shape or line created will be created with Bezier-type splines whose nodes can be modified independently.

**Edit shapes**

*Cut* moves the selected vectorial shape to the clipboard.

*Copy* makes a copy of the selected vectorial shape on the clipboard.

*Paste* pastes a copy of the selected vectorial shape on the clipboard in the current frame.

*Del* deletes the selected vector.

**Shape attributes**

*Close* closes the selected vectorial shape, joining its first and last points with a line.

*Fill* fills in closed vectorial shape. When *Fill* is active, the vector ignores the size of the brushstroke, since the vector is only used only to limit the shape, in the paint mode possessed by the vector.

*Shadow* creates a shadow by duplicating the result of the vectorial shape, and assigning color opacity and offset values.

*Soft* activates a pair of tangents (called Radials) in each control point of the selected shape, which define a gradient of opacity towards the inside or outside of the shape, commonly known as *Softness*. 
Softness

These two boxes allow the setting of the gradient value for opacity. Softness has both an interior and exterior limit, which are viewed as cyan-colored lines that join the ends of the radial tangents.

The radial tangents can be edited like any tangent and also via the manipulators Width and Offset.

Width is a Knob-style box which when dragged sideways increases or decreases the length of the radial tangents of the selected control points, proportionally to the internal and external radials. This allows the level of Softness to be set easily.

Offset is a Knob-style box which when dragged sideways increases or decreases the length of the radial tangents of the selected control points, inversely proportional between the internal and external radials. This button allows the internal and external offset of Softness to be set easily.

Shadow attributes

Offset X and Offset Y define the offset of the generated.
Opacity defines the opacity of the shadow as a percentage.

Select shapes

Current frames selects all the shapes found in the current frame.

All Frames selects all the shapes found in all the frames of the effect.

File

Load opens a dialog box for loading a vectorial shape into the effect.

Save opens a dialog box for saving the selected vectorial shape with the extension .shp.

Shapes Order

The dropdown Order contains three commands:

Forward moves the selected shape one plane forward or backward, according to the drag movement of the button (up/down).

Backward sends the selected shape behind all other shapes.

Front brings the selected shape in front of all other shapes.

Tangents reset

The dropdown Tangent contains three commands:

Reset All resets all default values of the tangents or radials of a control point.

Reset Radials assigns default values to the tangents of the selected control points, without changing the radials.

Reset Radials Angle assigns default values only to the angles of the radials, without changing the tangents or the length of the radials of the selected control points.
Add key

*Selected Shapes* adds a keyframe to the selected shapes in their current position. A keyframe is only assignable to a whole shape, and so it is impossible to assign keyframe to only one control point. Shapes that possess keyframes will be visible throughout the duration of the effect.

*All Shapes* adds a keyframe to all the shapes found in the current frame.

Edit key

*Cut Key* moves the current keyframe of the selected shape to the clipboard.

*Copy Key* copies the current keyframe of the selected shape to the clipboard.

*Paste Key* pastes the keyframe found in the clipboard to the selected shape.

*Delete Key* deletes the keyframe assigned to the selected shape in the current frame.

Animation

*Copy Tracks* pastes the tracking coordinates that the parameters of the effect possesses to the selected shape, incrementally to the values of the keyframes in the shape.

Tracking can only be pasted in the keyframe of a shape once. Tracking cannot be pasted in a shape that does not have at least one keyframe. This process is explained at the end of this chapter.

*Delete Anim* deletes all the keyframes that the shape has in the duration of the effect. To delete all keyframes, select the shape in one of its keyframes.

The shape will now exist only in the frame where it was originally created, with its original shape.

Shape animation

*Time Editor* edits animation curves.

*Text* opens a window for creating text vectorials, enabling selection of font, alignment, kerning, etc, as with the *Title* effect.

These vector texts are created as vectors when the *Convert To Shape* button of the *Text* interface is pressed.

These vectors are identical to other vectors, and can be animated and specified in any draw mode.
Safe Area

The command **View Safe Area** activates the viewing of an indicator of a safe area. The boxes \( X \) and \( Y \) define the values as percentages of the width and height of the safety area.

![Safe Area Image]

Snap Area

The commands **Snap X** and **Snap Y** activate the viewing of a mesh that divides the image. The values in \( X \) and \( Y \) define the number of divisions on each axis of the image. The values set in **Offset** define the offset of the start of the mesh.

Vector Colors

The color boxes allow the user to define the colors of the different types of vectors in order to avoid confusion with the colors of the image.

To change a color, first define it in the **Color Chooser** of **Paint Editor** (Paint Editor->Option Tabs->Paint->Color) and then click with the mouse cursor over the color box to be modified.

The **Reset Colors** button returns the colors of the vector types to their the default values.

- **Point** defines the color of the control points of unselected vectors.
- **Select** defines the color of the control points of selected vectors.
- **Shape** defines the color of vectorial lines that join control points.
- **Key** defines the color of vectorial lines that join control points that a keyframe has.
- **Transf** defines the color of the manipulator **Transf** of the vectors.
- **Box** defines the color of the band of selection.
- **Alpha** defines the color that represents the alpha channel.

Pressure

By means of defining a curve in this graphic we can control the sensitivity of the
Render

Auto Render manually activates the redesign of the effect of the vectors over the input. On some occasions, if there are many vectors in a large image, the redesign may be slow, in which case it is possible to detain the redesign via this option.

Shadows in Back specifies that all shadows of the vectorial shapes are drawn in the background regardless of their order, thus avoiding one vectorial shape casting a shadow on another.

Animation In Back specifies that all animated shapes are drawn in the background, so that unanimated shapes are drawn in front. If this function is deactivated, the animated shapes are drawn in front of the unanimated ones.

Animation

The mode Auto Fix adds one keyframe for each change of position in the shapes.

Spline is an interpolation mode for the position of a shape. When it is deactivated, interpolation of the position of the selected vectorial shape creates a straight path between the keyframes that it possesses. When it is activated, the interpolation of position creates a curved path between the keyframes it possesses.

Show Path shows the path of the movement between keyframes in the selected shape.

Shapes

Auto Select is a mode that automatically selects the last vectorial shape generated.

Hide Tang hides the viewing of the tangents of the vector control points.

Composition

The command With CBlack specifies that the composition should be carried out without multiplying the alpha channel over the foreground, since it pre-multiplied.

Cache

The command Use activates the memorization of the evaluations of each frame that
has been modified, storing the resulting frame in a disk cache to avoid having to redraw all the vectors each time we come to the same frame.

If the input of the effect changes, the cache is not automatically updated, so it must be deleted (Clear) to avoid memorized frames from a previous input affecting the final evaluation of the effect.

The cache is created in disk archives, in the directory defined in Mistika Setup (Mistika Setup->FilePaths->Paint tmp cache dir). It is important the locate this directory in the quickest storage available, so the effect can perform in real time when evaluated.

The command Clear deletes the cache where the evaluations of the effect are stored.

**Time Editor:**

*Time Editor* is a curves editor that contains the parameters of the selected animated shape. To return to *Paint Editor* select the *Time Editor* button.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>[12 (1 / 256)]</td>
<td>Defines the size of the brush.</td>
</tr>
<tr>
<td>Opacity</td>
<td>[100 (0 / 100)]</td>
<td>Defines the pressure of the stroke.</td>
</tr>
<tr>
<td>Level</td>
<td>[100 (0 / 100)]</td>
<td>Defines the mask level of the drawn line.</td>
</tr>
<tr>
<td>Red; Green; Blue</td>
<td>[100 (0 / 100)]</td>
<td>Defines the color of the line.</td>
</tr>
</tbody>
</table>
Folder that contains the parameters that control the appearance of the shadow of the selected vectorial shape.

- **DX; DY**
  
  `[10 (-100.000 / 100.000)]`
  
  Defines a horizontal and vertical offset of the shadow.

- **Red; Green; Blue**
  
  `[0 (0 / 100)]`
  
  Defines the color of the shadow.

- **Opacity**
  
  `[100 (0 / 100)]`
  
  Defines the intensity of the shadow.

- **Start**
  
  `[0 (0 / 100)]`
  
  Defines the start of the line drawn.

  The value of the parameter is expressed as a percentage value of the total length of the line.

- **Length**
  
  `[100 (0 / 100)]`
  
  Defines the length of the line drawn.

  The value of the parameter is expressed as a percentage value of the total length of the line.

- **Active**
  
  `[1 (0 / 1)]`
  
  Activates or deactivates the drawing of a line.

  The value 0 deactivates the influence of the line in the image.

The following image shows how the parameters *Length* and *Start* work.
Bear in mind that in some cases, many parameters will have no effect, since each shape obeys the attributes it has, if it has fill, shadow its paint mode, etc.

For example, a change of brush size makes no sense in a filled shape, nor the color of a line if the paint mode is Drag.

### Use of Motion Tracking with VectorPaint

Carry out this task by following the following steps:

Assign the effect VectorPaint to a clip.

From the Visual Editor select the Tracking tab (Mistika->Visual Editor->Manipulators Tabs->Tracking) and carry out a motion tracking from a point in the usual way.

Apply the motion tracking via the button Move (Mistika->Visual Editor->Manipulators Tabs->Tracking->Apply->Move). We will note that the parameters PosX and PosY of the VectorPaint are now animated, although they are not yet assigned to any shape.

Go to Paint Editor (Mistika->Visual Editor->Manipulators Tabs->Paint). Select the shape to be animated, activating the mode Select double-clicking over it.

If the shape has no keyframe, at least one must be created in order to create its animation curves. To do so, click the button Add key->Selected shapes.

Click the button Animation->Copy Tracks, which will copy (in the Manipulators Tabs of the Visual Editor) the animation that we have in PosX and PosY to the selected shape.

Note that the shape now moves in the desired way.

Although it is the most direct way, it is not necessary for the motion tracking operation to be carried out from the effect VectorPaint. It is possible to access and use the tracking interface from any effect that allows it (such as Comp3D and Color Grade). In this case, after operating in the Tracking interface, it should be accessed via the VectorPaint effect in order to apply the motion tracking to the PosX and PosY parameters of the effect.

### Timewarp

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Timewarp

Effect that modifies the reproduction speed of a sequence, generating intermediate frames through Optical Flow (Motion Estimation) algorithms. The main purpose is to produce high quality Slow motion effects.

In spite of its name, this effect should not be confused with the Timewarp groups, which carry out classic accelerations and slow-motions. This effect provides much greater realism, but is not an editing function as the others are, but rather an effect that requires a considerable amount of manual work.

If applied to make a clip longer, remember that the effect clip will have to have a greater duration than its input clip. For example, if a Speed parameter value of 25% is set, the duration of the effect will have to be forced so that it lasts four times the length of the original clip (if we want to see it complete).

### I/O

#### Inputs

**Single input:** Image with or without alpha channel.
Inputs

**Image**: Image sequence with speed altered by the effect.

**Alpha**: Opaque mask.

Parameters

**Timewarp:**

Dropdown folder containing the parameters that control the reproduction speed of the sequence.

**Note**: the user must choose which of the two parameters is to be used. Only one of the two should be used, and that which is not used should have a value of zero.

- **Time-Time**
  
  \[0 (0 / X)\]
  Parameter which indicates the number of the original frame viewed as current frame.

- **Speed**
  
  \[100 (0 / 1.000.000)\]
  Parameter as a percentage which scales the reproduction.

**Optical Flow:**

Dropdown folder containing the parameters that control the Optical Flow logarithm.

- **MinLevel**
  
  \[1 (0 / 8)\]
  Factor that divides in half the drag resolution. The higher the number, the less the resolution, thus accelerating the calculation speed of the effect.

- **Levels**
  
  \[7 (1 / 8)\]
  Refines the direction of the vectors of movement.

- **Iterations**
  
  \[25 (0 / 1.000)\]
  Revision of movement in areas with little detail.

- **Smoothness**
  
  \[10 (0 / 1.000)\]
Softens the direction of crossed vectors, making them more parallel.

**Display:**

Dropdown folder containing the parameters that control viewing mode of the *Optical Flow* logarithm.

- **Mode**

  **[Warp (MixFrames / Warp / Vectors / Slopes)]**

  Provides different output modes, which mainly help in adjusting other parameters. *MixFrames* obtains new frames by mixing previous and following frames (instead of using Motion Estimation techniques, and is useful for comparing with a traditional timewarp or if we have too many artefacts that cannot be corrected). *Warp* is the most usual mode and is that which will produce the best results via Motion Estimation techniques; *Vectors* show tracking for each pixel, and *Slopes* show the amount movement of each pixel by means of different colors.

  One use of *Vectors* and *Slopes* is to analyze what is happening in areas that produce artefacts: if we observe sudden, unexpected changes in direction of the vectors or in the amount of movement, increase the Softness parameter or vice versa, respectively.

  Sometimes, *Slopes* modes can be used to obtain masks close to objects that are moving at a different velocity to that of those around them, by means of their posterior extraction with a vector of the *Color Grade* effect.

- **VecsScale**

  **[1 (0 /100)]**

  Softens the direction of crossed vectors, making them more parallel.

**Deinterlace:**

Drop-down folder that contains the parameters of the mode for treating interlaced material. In a Timewarp effect, the fields of an interlaced sequence can generate complete frames, therefore, the deinterlace mode uses the effect of its own parameter internally.

- **Mode**

  **[Default (Default/Adaptive)]**

  Defines the deinterlace mode. The *Default* value defines the deinterlace mode by current interpolation, while *Adaptive* mode defines interpolation in which values are explored diagonally, giving better visual results.

  **Note:** This parameter only works in cases in which the render is done by fields. In progressive mode render, the value of this parameter is ignored.

**Use and Comments**

As in all the effects that use *Optical Flow*, pay attention to objects that get hidden behind other objects, crossed trajectories, and dynamic changes in light.

To deal with this type of sequence, the Parameters must be set evaluating the behavior of the vectors, using the *Vector* viewing mode, with a high *VectScale* value.
**Denoise**

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Denoise

High quality effect that reduces image noise or grain via Optical Flow (Motion Estimation) algorithms.

It is also suitable for reducing cine image grain, electronic video camera noise, and noise produced by image compression algorithms common in all types of cameras and VTRs (mpeg2, mpeg4, etc.).

**I/O**

**Inputs**

- **Single input**: Image with or without alpha channel.
- **Image**: Image sequence with reduced noise or grain.
- **Alpha**: Compositing mask.

**Parameters**

**Denoise:**

Dropdown folder containing the parameters that control application of grain remover.

- **Scope**
  
  [3 frames (none, 3frames, 5frames, 7frames, 9frames, 11 frames)]
  
  Parameter that indicates the number of frames included the Optical Flow algorithm. The higher the number, the greater the noise reduction, but with the increased possibility problems of accuracy.

- **Mode**
  
  Combined (Temporal, Spatial, Combined)
  
  Noise reduction modes.

  *Temporal* applies Optical Flow to detect noise and remove it, using images distorted by the Optical Flow algorithm.

  *Spatial* applies a spatial filter to remove noise, similar to a Median filter.

  *Combined* combines both modes a mask generated by the Mask parameter. This mode is recommended in the majority of cases, once the correct mask is created properly.

- **Spatial**
  
  [0.050 (0/100)]
  
  Spatial filter application radius for noise removal (not visible in Temporal mode).
**Mask:**

Folder that contains the parameters that modify the mask, where the *Spatial* filter can be combined with the *Temporal* filter.

- **NGamma**
  
  `[1 (0/100)]`
  
  Specifies a grey value as a start point for mask generation.

- **Filter**
  
  `[0.2 (0/100)]`
  
  Specifies a blur value prior to the extraction of the mask, reducing detail.

- **Level**
  
  `[0 (0/100)]`
  
  Specifies a transparency in the generated mask.

- **Scale**
  
  `[40 (0/100.000)]`
  
  Scale of opacity values in the generated mask.

**Optical Flow:**

Dropdown folder containing the parameters that control viewing mode of the *Optical Flow* logarithm.

**Note:** This algorithm automatically generates a mask at the intersections of crossed vectors, which will vary when editing these parameters. The *Mask* parameters function as post-process from the mask generated by *Optical Flow*.

- **MinLevel**
  
  `[1 (0 / 8)]`
  
  Factor that divides in two the drag resolution. The higher the value, the lower the resolution, accelerating effect calculation speed (with a value of 0, the *Optical Flow* carries out tracking of all the pixels of the image). Higher values drag areas whose size is specified by this number of pixels.

- **Levels**
  
  `[7 (1 / 8)]`
  
  Refines the direction of movement vectors.

- **Iterations**
  
  *Revision of movement in areas with little detail.*
- **Smooth**

  **[10 (0 / 1.000)]**

  Softens the direction of crossed vectors, making them more parallel.

*Use and Comments*

As in all the effects that use *Optical Flow*, pay attention to objects that get hidden behind other objects, crossed trajectories, and dynamic changes in light.

To adjust the parameters of the effect correctly, it is necessary to follow the order of the procedure detailed below.

In Temporal mode, specify the *Optical Flow* parameters (the parameters that are most sensitive to editing are *Smooth* and *MinLevel*), with the aim of reducing to a minimum the deformation generated in cases of crossed trajectories. The example shows the typical problems of occlusion (similar objects crossing one beyond the other) in *Optical Flow*, since the original image is a sequence in which the character moves from left to right of frame, “dragging” the foreground character.

Specify the mask using the *Show Alpha* mode of the *Visual Editor*. The mask gives the impression of seeing the outline of the figures, although in reality what is drawn are the areas where crossed movements are detected. So, the outlines of one figure are visible during a movement, and do not remain still.

First specify an *NGamma* value which makes the noise homogeneously visible in the light and dark areas of the image. Then defines the Level parameter to exclude from the mask areas of little occlusion, since *Optical Flow* will probably not generate occlusion errors in these areas. To make the mask areas larger, edit the parameters *Scale* and *Filter*.
Once the mask containing the occlusion errors generated by Optical Flow is defined, modify the parameter **Mode** to **Combined**. Finally, specify **Spatial** at a low value to equalize both combined modes and to make the transition between one mode and the other via the mask is not apparent.

Then adjustments of any type can be made to the parameters, especially **Level** and **Scale**, viewing the final result in order to hide the occlusion problems by expanding the mask that combines the spatial filter with the temporal.

The **Spatial** filter itself never manages to remove noise whilst conserving detail that the **Temporal** filter recognizes, so the combination of both methods gives the best results. In the example that follows, a detail is exaggerated from the previous image to better view the difference between the application of the spatial filter and the combined.
This effect is recommended for treating material before extracting masks, doing chroma key processes, secondary color corrections, or simply reducing grain in 16 mm film material. It is also useful for eliminating noise from video with gain problems.

It is also very useful for improving the precision of Motion Tracking, in cases of annoying vibrations of tracked areas.

The default parameters usually give good results.

Grain

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Grain

Adds grain noise to the image.
**I/O**

**Inputs**

- **Single input.** If the input contains alpha information, the noise pattern can be adjusted to this area of the image.

**Inputs**

- **Image:** The noise pattern acting on either the entire image, or restricted to the opaque area of the mask.

- **Alpha:** Unmodified.

**Parameters**

- **Repeat**

  
  
  \[
  [1 \ (1 / 100.000)]
  
  Number of frames in which the random position of the grains will be repeated.

- **Rad**

  
  
  \[
  [3 \ (1 / 100.000)]
  
  Radius of the spherical points applied to the image.

- **Gain**

  
  
  \[
  [100 \ (-100.000 \ / \ 100.000)]
  
  Multiplies the brightness of the image by a percentage value before processing the grain.

  This luminance correction is useful to compensate the loss of brightness caused by the amplitude of the grain.

- **Ampl**

  
  
  \[
  [30 \ (0 \ / \ 100.000)]
  
  Applied amplitude of the granulated noise.

  - **Gamma**

    
    
    \[
    [0 \ (-100 \ / \ 100)]
    
    Specifies gamma correction for the granulated noise. Higher values specify greater transparency from the center of the grain, and vice-versa.

- **In Alpha**

  
  
  \[
  [No \ (No \ / \ Yes)]
  
  SGO Mistika 8.5.6 © 2016 SGO
Restricts the influence of the effect to the area specified by the alpha channel levels.

**Use and Comments**

The purpose of this effect is simply to add grain to the image to simulate a photographic emulsion.

In many cases of composition, it is necessary to add grain to layers originally without it to integrate them with film material, or even video (although in this case it will be noise rather than grain), as for example the replacement of the contents of an current poster with a digital file.

In this example, as the logo is a synthetic image it has no grain, which should be added to integrate it better with its background.

![Image showing the effects of grain](image)

**FrameRepair**

**Ref. Mistika: Node Graph  Editor->Dashboard->Fx->Mistika->FrameRepair**

Effect that is used to eliminate hairs, dust or other small foreign bodies that often appear in images. It uses Optical Flow (Motion Estimation) algorithms.

**I/O**

**Inputs**

- **Single input**: Image with or without alpha channel.

**Inputs**

- **Image**: Image sequence with repaired “drops”.
- **Mask**: Mask showing where the repair takes place.

**Parameters**

**FrameRepair**: Dropdown folder that contains the parameters that control the frame repair application.

**Mode**

- **RepairF(Off,RepairF,RepairB,DirtMaskF,DirtMaskB,RepairFB,DirtMaskFB, RepairDirt,Composition)**

Except for the Composition mode, the other modes can be considered “modes for adjusting other parameters”, in other words, they can be used during the setting of other parameters, but ultimately, Composite is what is used to the final render. Exceptions are indicated at the appropriate time.
**Off**: effect off.

**RepairF**: in this mode, the Optical Flow (henceforth OF) is calculated between the previous frame and the posterior frame to the current. The result of this effect is to recreate the present frame, (the original current frame will not enter into the process) applying OF as Warper to the previous frame. As well as the current image created, a mask is calculated which indicates the areas of the image in which the OF has had tracking problems, normally caused by occlusions in the movements in the sequence.

Note: with all values at their default settings, the FrameRepair effect in RepairF mode, is that which is used internally when the Repair option in VectorPaint is activated. If the user needs to modify the values of Repair, instead of using the Repair option in VectorPaint FrameRepair can be used, applied to a copy of the input of VectorPaint as a SECOND input in VectorPaint. The Reveal Back brush acts exactly like the Repair option, while giving full control over the recreation process values for the current frame, which can be used to patch up the current damaged frame.

**RepairB**: Identical to RepairF, except that it interchanges the two frames used for calculation, the next and the previous. The OF calculation is not a symmetrical process, since in one direction the calculation may be able to create objects that are being hidden better, while in the other direction it may be the objects that are being revealed that are easier to calculate.

**DirtMaskF**: Calculates the OF between the current frame and the next obtaining a mask that indicates areas where tracking problems exist. This mode only serves to show an intermediate phase of the process of automatic repair.

**DirtMaskB**: Similar to DirtMaskF, using the current frame and the previous one.

**RepairFB**: Gives a result by combining the modes RepairF and RepairB. The combined mask generated can be interpreted as "areas of complex movements" which cannot be repaired automatically. Also, a Grow process is applied to the mask, specified by the parameter of the same name, with the purpose of adding a safety margin to the areas of complex movements.

**DirtMaskFB**: Gives a combined mask from the modes DirtMaskF and DirtMaskB, which indicates areas of possible defects.

**RepairDirt**: As an image, this returns the image recreated the same as inRepairFB, as a morphing between the previous and posterior frames to the current one. As a mask, it returns a combined mask from the previous phases: areas detected in RepairFB as the areas of complex movements subtracted from areas detected in DirtMaskFB (possible defects). Ideally, this mask only contains areas of defects in the image.

**Composition**: The final result of the automatic repair: it is composed of the image and mask resulting from the RepairDirt phase over the original image, only patched in areas of defects.

<table>
<thead>
<tr>
<th>DistBck</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1 (1/100.000)]</td>
</tr>
<tr>
<td>Offset, in frames, from the previous frame with which the repair or Dirt is to be done.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DistFwd</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1 (1/100.000)]</td>
</tr>
<tr>
<td>Offset, in frames, from the next frame with which the repair or Dirt is to be done.</td>
</tr>
</tbody>
</table>
**Mask:**

Folder that contains the parameters that modify the mask, to define the areas of the image that are to be used to carry out the morph between frames.

**NGamma**

**[1 (0/100)]**

Specifies a grey value as start point for the mask generation.

**Filter**

**[0.2 (0/100)]**

Specifies a blur value before the extraction of the mask, reducing detail.

**Level**

**[0 (0/100)]**

Specifies a transparency threshold in the generated mask.

**Scale**

**[40 (0/100.000)]**

Scales the opacity values of the generated mask.

**Grow**

**[0.5 (0/100.000)]**

Increase in the edges of the mask.

**Optical Flow:**

Dropdown folder that contains the parameters that control the Optical Flow algorithm.

**Note:** this algorithm automatically generates a mask at the intersections of crossed vectors, which will vary when editing these parameters. The Mask parameters function as a post-process of the mask generated by Optical Flow.

**MinLevel**

**[1 (0 / 8)]**

Factor which divides by two the resolution of the tracking. The higher the value, the lower the result accelerating the calculation speed of the process (if the value is at 0, the Optical Flow carries out the tracking of all the pixels of the image). Higher values track areas specified by this number of pixels.

**Levels**

**[7 (1 / 8)]**
Refines the direction of the movement vectors.

**Iterations**

[100 (0 / 1.000)]
Revision of movement in areas of little detail.

**Smooth**

[10 (0 / 1.000)]
Smoothes the direction of crossed vectors, making them more parallel.

**Use and Comments**

As in all the effects that use Optical Flow, pay attention to objects that get hidden behind other objects, crossed trajectories, and dynamic changes in light.

To adjust the parameters of the effect correctly, it is necessary to follow the order of the procedure detailed below.

Look for a frame that contains a hair, scratch or other localized interference. The example shows a single frame that contains a hair over the model's left arm.

In RepairF mode, specify the Optical Flow (the parameters that are most sensitive to editing are Smooth and MinLevel) with the aim of reducing to a minimum the deformation generated in cases of crossed trajectories.

Specify the mask using the Show Alpha mode of the Visual Editor. The mask gives the impression of seeing the outline of the figures, although in reality what is drawn are the areas where crossed movements are detected. So, the outlines of one figure are visible during a movement, and do not remain still.
First specify an NGamma value which makes the noise homogeneously visible in the light and dark areas of the image. Then defines the Level parameter to exclude from the mask areas of little occlusion, since Optical Flow will probably not generate occlusion errors in these areas. To make the mask areas larger, edit the parameters Scale and Filter.

Once the mask is specified, it is selected in RepairDirt mode and the mask that is not considered interference disappears, leaving, in the example, just the mark off the hair over the model's arm.

Once this has been viewed, go to Composite mode and activate the image in the Visual editor. Finally, the result - the result of the morph between the previous and subsequent frames to the one with the problem - substitutes the marked area with the mask.
Reverb

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Reverb
Generates an echo of the image, with a definable duration.

I/O

Inputs

**Single input**: Image with or without mask.

Inputs

**Image**: Image with echo.

**Alpha**: Mask with echo.

Parameters

- **Reverb**

  [0 (0 / 100)]

  Specifies the mixing level with the previous images.

Use and Comments

*Reverb* is an accumulative effect. It cannot be seen in a single static frame before rendering, since it must be evaluated sequentially. Therefore, if the monitor cursor is dragged randomly over the frames, anomalous results can occur.

It is not possible have more than one *Motion Blur* effect in the same stack. If more than one of these effects is grouped in the same stack, it is necessary to render to calculate each effect. As with *Feedback*, the results of this effect depend on the temporary order in which they are being evaluated, so that the result will be different for normal and reverse playback.

Bullet Time

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Bullet Time

The *Bullet Time* effect allows the creation of digital cameras located between real cameras around a scene. This allows smooth rotations around a scene on shoots with multiple cameras.

The effect also includes a *Timewarp* in order to accelerate, slow down or stop time at the
same time as performing the effect.

I/O

Inputs

**Multiple inputs**: Each input will be one of the cameras located around the scene. The result improves with more inputs.

Inputs:

**Image**: Final sequence with desired movement, regarding both positioning around the scene and time.

**Alpha**: opaque mask.

Parameters

**Bullet Time:**

Dropdown folder that contains the parameters that control the playback speed of the sequence.

**Note**: the user must decide which of the first parameters to use (*Time-Time* or *Speed*). Only one must be used; the other parameter must be set at zero.

▶ **Time-Time**

**[0 (0 / X)]**

Parameter that indicates the number of the original frame that is currently being viewed.

This is useful for slowing down or accelerating by simply mapping the time.

▶ **Speed**

**[100 (0 / 1.000.000)]**

Parameter in percentage that scales playback speed.

This is useful for slowing down or accelerating by indicating a velocity.

▶ **Angle**

**[0 (-1.000.000 / 1.000.000)]**

Parameter in degrees that indicates the value of the angle for positioning the camera, allowing the camera to be rotated around the scene.

The effect supposes that the cameras are located equidistant around the scene covering 360º, so that:

- 0º is the first camera
- any value greater than that will be interpolated towards the second, third, fourth
cameras etc (as many as are desired) and from the last camera we return to the first when reaching 360°.

The range is greater than 0 to 360 in order to allow repeating the circling around the scene continuously as many times as required.

**Optical Flow:**

Dropdown folder that contains the parameters that control the algorithm of *Optical Flow*.

- **MinLevel**
  
  
  [1 (0 / 8)]

  Factor that divides in half the drag resolution: higher values indicate lower resolution, thus accelerating the speed of calculation of the effect.

- **Levels**
  
  
  [7 (1 / 8)]

  Refines the direction of movement vectors.

- **Iterations**
  
  
  [25 (0 / 1.000)]

  Reviews movement in areas with little detail.

- **Smoothness**
  
  
  [10 (0 / 1.000)]

  Smoothes the direction of crossed vectors, making them more parallel.

**Display:**

Dropdown folder that contains the parameters that control viewing modes of Optical Flow.

- **Mode**
  
  
  [Warp (MixFrames / Warp / Vectors / Slopes)]

  Provides various output modes, which mainly help when adjusting other parameters. MixFrames obtains new frames by mixing previous and following frames (instead of using Motion Estimation techniques, and is useful for comparing with a traditional Timewarp or if there are too many artefacts que that cannot be corrected). Warp will be the usual mode of use and will be the one that obtains the best results through Motion Estimation techniques. Vectors shows the tracking vectors of each pixel. Slopes represents the amount of movement of each pixel using different colors.

  One practical use of Vectors and Slopes is to be able to analyze what is happening in areas that produce artefacts: if abrupt and undesired changes happen in the direction of the vectors (or in the amount of movement), we should increase the Softness parameter, and vice versa.
Sometimes, Slopes mode can be used to obtain masks close to objects that are moving at a speed to what is around them, through their subsequent extraction using a free vector of the *Color Grade* effect.

**VecsScale**

* [1 (0 /100)]

Increases/decreases the size of the vectors viewed when Vectors is selected in the Mode parameter.

**Deinterlace:**

Dropdown folder that contains the mode parameter for treating interlaced material. In a *Timewarp* effect, the fields of an interlaced sequence can generate whole frames, so the Deinterlace mode that the effect uses internally has its own parameter.

**Mode**

* [Default (Default/Adaptive)]

Defines the deinterlace mode. The *Default* value defines a deinterlace mode by sequential interpolation, while the *Adaptive* value defines an interpolation mode that explores the values diagonally, producing better visual results.

**Note:** this parameter only works in cases where the render is run by fields. Render in progressive mode ignores the value of this parameter.

**Use and Comments**

The main use of this effect is to create the sensation of time stopping and the camera revolving around the action. These visual effects can be managed independently.

*JellyTime* receives a variable number of sequences of images as its input. Each sequence comes from a camera within a group of equidistant cameras that complete a full circle of 360° around the scene.

Via the *Optical Flow (Motion Estimation)* algorithm, Mistika calculates the frames missing in the movement between consecutive cameras.

As in all effects that use *Optical Flow*, pay attention to occlusions of objects, crossing paths and drastic light changes.

To manage this type of sequence, set parameters, evaluating the behavior of the vectors, using the viewing mode *Vectors*, with a high value set for *VecsScale*.

**Optical Motion Blur**

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Optical Motion Blur

Effect that simulates motion blur, based on *Optical Flow (Motion Estimation)* algorithms.

**I/O**

**Inputs**

* **Single input:** image with or without alpha channel.*
Inputs

**Image**: image sequence with speed altered by the effect.

**Alpha**: opaque mask.

Parameters

**MotionBlur:**
Dropdown folder that contains the parameters that control the intensity and quality of the blur trail.

- **ShutterTime**
  
  
  [40 (0 / 1.000.000)]
  Parameter that defines the exposition time to be generated by Optical Flow. The value is in milliseconds.

- **Quality**
  
  [1 (1 / 10)]
  Sample rate of the render process. Higher values set higher numbers of samples, notably improving image quality.

**Optical Flow:**
Dropdown folder that contains the parameters that control the Optical Flow algorithm.

- **MinLevel**
  
  [1 (0 / 8)]
  Factor que that divides in half the drag resolution: higher values set lower resolution, accelerating the speed of calculating the the effect.

- **Levels**
  
  [7 (1 / 8)]
  Refines the direction of the movement vectors.

- **Iterations**
  
  [25 (0 / 1.000)]
  Reviews movement in areas with little detail.

- **Smoothness**
  
  [10 (0 / 1.000)]
  Smoothes the direction of crossed vectors, making them more parallel.
Display:

Dropdown folder that contains the parameters that control viewing modes of Optical Flow.

► Mode

[Warp (MixFrames / Warp / Vectors / Slopes)]

Provides various output modes, which mainly help when adjusting other parameters. MixFrames obtains new frames by mixing previous and following frames (instead of using Motion Estimation techniques, and is useful for comparing with a traditional Timewarp or if there are too many artefacts que that cannot be corrected). Warp will be the usual mode of use and will be the one that obtains the best results through Motion Estimation techniques. Vectors shows the tracking vectors of each pixel. Slopes represents the amount of movement of each pixel using different colors.

One practical use of Vectors and Slopes is to be able to analyze what is happening in areas that produce artefacts: if abrupt and undesired changes happen in the direction of the vectors (or in the amount of movement), we should increase the Softness parameter, and vice versa.

Sometimes, Slopes mode can be used to obtain masks close to objects that are moving at a speed to what is around them, through their subsequent extraction using a free vector of the Color Grade effect.

► VecsScale

[1 (0 /100)]

 Increases/decreases the size of the vectors viewed when Vectors is selected in the Mode parameter.

Deinterlace:

Dropdown folder that contains the mode parameter for treating interlaced material. In a Timewarp effect, the fields of an interlaced sequence can generate whole frames, so the Deinterlace mode that the effect uses internally has its own parameter.

► Mode

[Default (Default/Adaptive)]

Defines the deinterlace mode. The Default value defines a deinterlace mode by sequential interpolation, while the Adaptive value defines an interpolation mode that explores the values diagonally, producing better visual results.

Note: this parameter only works in cases where the render is run by fields. Render in progressive mode ignores the value of this parameter.

Use and Comments

This effect is especially useful for combining real images (generally with some motion blur) and CGI. It is also possible to set motion blur values in a stereo clip in order to correct differences that material from a shoot might have.

As in all effects that use Optical Flow, pay attention to occlusions of objects, crossing paths and drastic light changes.

To manage this type of sequence, set parameters, evaluating the behavior of the vectors,
using the viewing mode *Vectors*, with a high value set for *VecsScale*.

**Filter**

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Filter

The effects the *Filter* menu contain image alteration tools based on spatial algorithms, corrections of RGB values and luminance.

**Glint**

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Filter->Glint

Adds a blurred version of the image in its horizontal, vertical and diagonal axes, simulating flashes of light in a camera lens.

**I/O**

**Inputs**

**Single input**: Image with or without alpha channel.

**Inputs**

**Image**: Image with glints.

**Alpha**: No change.

**Parameters**

**Intensity:**

Folder containing the parameters controlling the intensity of the glint.

▶ **Global**

\[0 \, (-100.000 \, / \, 100.000)]
Global intensity of the glints in the image. This value multiplies the local values of each direction by a specified percentage.

- **Horizontal**
  
  \[200 \pm 100.000 \div 100.000\]
  
  Intensity of the horizontal glint.

- **Vertical**
  
  \[200 \pm 100.000 \div 100.000\]
  
  Intensity of the vertical glint.

- **DiagUp**
  
  \[200 \pm 100.000 \div 100.000\]
  
  Intensity of the diagonal glint coming from the top left corner.

- **DiagDwn**
  
  \[200 \pm 100.000 \div 100.000\]
  
  Intensity of the diagonal glint coming from the bottom left corner.

**Glint:**

- **RadImg**
  
  \[3 \pm 100\]
  
  Radius of the glint affecting the image.

- **Chroma**
  
  \[0 \pm 1.000 \div 1.000\]
  
  Specifies a coloring of the glint, simulating a chromatic aberration produced by a lens.

- **RadAlpha**
  
  \[3 \pm 100\]
  
  Radius of the glint affecting the alpha channel.

- **AddImg**
  
  \[100 \pm 100.000\]
  
  Adds the original image to the effect.
This effect is frequently used to simulate the behaviour of direct incidence of light sources on a camera lens. Normally, concentrated light emanating from a spotlight in complete darkness (such as the headlamps of a car at night) produce a glint with geometrical forms in the lens. In video cameras, these glints are cross-shaped, sometimes diagonal or even star-shaped, depending on the type of lens. Certain lower quality optics can even produce visible chromatic aberrations, which can be simulated with the Chroma parameter.

**Glint** is the ideal effect to obtain this type of glint, be controlled with the intensity parameters for each direction of the glint. Bear in mind that the result of the effect will be the sum of the intensities of each direction, and negative values may be specified for any intensity parameter, which are totaled to the *Global* parameter.

If only the image of the glint is wanted, without being composed over the original image, simply set the *AddImg* parameter to zero.

In the following example, the action of the effect on an image can be seen.
Specifies shrinkage of the polygon surfaces, thus creating a black border between them. This shrinkage also affects the mask.

**Seed**

\[0 (0 / 100.000)]

Seed for the random positioning of the mosaics.

This parameter can be animated so that the positions of the mosaics are moved randomly.

**Use and Comments**

This effect has the simple purpose of simulating an image constructed from irregular mosaics, and also the control of border size for simulating of stained glass images.

---

**QuadTree**

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Filter->QuadTree

Forms a mosaic of different-sized rectangles of solid colors, based on copying similar colors of neighboring pixels, controlled by a tolerance.

**I/O**

**Inputs**

- **Single input**: Image with or without alpha channel.

**Inputs**

- **Image**: Image formed by a mosaic of different-sized rectangles generated by the effect.

- **Alpha**: Edges of the rectangles generated in the mosaic.

**Parameters**

**Toler**

\[20 (0 / 100)]

Modifies the difference tolerance between the pixels to be joined in a rectangular mosaic of a single color. The higher the value, the greater the difference tolerated between pixels that form part of the mosaic.
Max Lev

[16 (0 / 16)]
Maximum level of detail allowed in the generation of subdivisions of the mosaic. The higher the value, the greater the level of detail preserved in the image.

Invert

[No (No / Yes)]
Inverts the opacity values in the edges of the rectangular mosaics generated in the alpha channel.

Use and Comments

This effect is used to simulate images derived from highly compressed file formats.

The mask generated by the effect can also be used to add a rectangular grid adapted to the image to the original one, thanks to its “technological” look.

In the following example the result of the effect can be seen in both the image and the alpha channel.

MosaicTiles

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Filter->MosaicTiles

Creates the effect of small tiles on an image, similar to an image created by mosaics.

I/O

Inputs

**Single input**: Image with or without alpha channel.

**Image**: Image modified by tiles.

**Alpha**: No change.

Parameters

Repeat

[1 (1 / 100.000)]
Number of frames in which the random position of the tiles will be repeated.
In Alpha

[No (No /Yes)]
Restricts the influence of the effect to the area specified by the alpha channel levels.

Use and Comments

This effect is used to add tiles to an image, simulating a mosaic.
In the following example the result of the effect can be seen.

Dither

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Filter->Dither

Produces a random change of position of the image pixels.

I/O

Inputs

**Single input:** Image with or without alpha channel.

**Image:** Image with the pixels moved to the new position.

**Alpha:** No change.

Parameters

**AmountX**

[0 (-10.000 / 10.000)]
Specifies the maximum horizontal distance by which the pixels will have their positions interchanged.

**AmountY**

[0 (-10.000 / 10.000)]
Specifies the maximum vertical distance by which the pixels will have their positions interchanged.
Repeat

\[[1 \ (1 \ / \ 100.000)]\]
Number of frames in which the position change pattern is repeated.

In Alpha

\[[No \ (No \ /Yes)]\]
Restricts the influence of the effect to the area specified by the alpha channel levels.

Use and Comments

**Dither** is a basic effect that moves pixels from their original positions, mixing them randomly. Its usefulness is related to adding noise to the image without changing its color palette, since the same pixels create noise when they are mixed up.

Another possible use is to add a *Dither* effect to a mix with the *Amount* parameters animated to dissolve and restore an image, for example, during a transition.

In the following example, the results of using different parameter values can be seen.

Contrast Band

**Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Filter->Contrast Band**
Specifies a subdivision of the image luminance range to increase the contrast in each subdivision.

I/O

Inputs

**Single input:** Image with or without alpha channel.

**Image:** Contrasted image depending on the specified bands.

**Alpha:** No change.

Parameters

Bands

\[[1 \ (1 \ / \ 256)]\]
Specifies the number of subdivisions or bands applied to the levels of the RGB
channels.

- Grade

[100 (-10.000 / 10.000)]
Increase of contrast applied to each band.

- By Luma

[No (No /Yes)]
Specifies whether the effect works based on luminance rather than RGB values.

- In Alpha

[No (No /Yes)]
Restricts the influence of the effect to the area specified by the alpha channel levels.

Use and Comments

The contrast generated in this effect with the parameter *ByLuma* set to 0 is applied to each RGB channel, and acts in a very different way to the contrast control of a color corrector based on luminance contrast. One possible use is for increasing the contrast of an image of a cloudy day so that it appears sunny. Since the contrast of this effect increases at the same time as the saturation, the skin color of people in the scene will be increased, together with the contrast. Negative values of the *Grade* parameter are useful for creating very simply images that simulate a heat detector. For example, setting the *Grade* parameter to -200 and *Bands* to 3, and adding a blur with *Blur (Type Gauss)* for example to the input image before *ContrastBand*, gives an acceptable effect. In the following example the results of different parameter values can be seen. A gradient from black to white can be seen below each image, representing the result of the effect on the luminance of each example.

Spot Poster

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Filter->Spot Poster
Creates a posterizing effect, by randomly selecting areas with a selection tolerance.
## I/O

### Inputs

**Single input**: Image to be processed.

### Inputs

**Image**: Modified image.

**Alpha**: Opaque mask.

### Parameters

#### Toler

**[20 (0 / 100)]**

Posterizing tolerance. Higher values include areas limited by their details, whereas lower values restrict the posterizing action.

#### Size X; Y

**[20; 20 (0 / 100.000)]**

Specifies the maximum horizontal and vertical size of the posterizing areas.

#### Seed

**[0 (0 / 100.000)]**

Seed for the random pattern for specifying the zone selection.

### Use and Comments

The result of this effect is very similar to *Posterize*, with the difference that it also randomly selects areas using a tolerance which allows the effect to maintain frame areas that have detail.

--

### FlareFx

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Filter->FlareFx

This effect allows the generation of different types of optical effects in the image, such as glows, rainbows, lens flares, light rings, and optical effects of stars with any number of points. It has noise parameters to make the effect more or less irregular.
I/O

Inputs

**Single input**: Image with or without alpha channel.

**Inputs**

**Image**: Sequence with applied the effect.

**Alpha**: Mask with the flare effect.

Parameters

**Origin:**

This group represents the original position of the optical effect. It contains the following parameters:

- **CentX**
  
  \[50 (-1.000 / 1.000)]
  
  X position of the origin.

- **CentY**
  
  \[50 (-1.000, 1.000)]
  
  Y position of the origin.

**Dest.**

This group represents the target position of the optical effect. It contains the following parameters:

- **CentX**
  
  \[50 (-1.000, 1.000)]
  
  X position of the target.

- **CentY**
  
  \[50 (-1.000, 1.000)]
  
  Y position of the target.

**Glow:**

This group represents the glow effect to be generated in the image. This effect comprises a ring of light around the origin of the effect.
Color Red; Color Green; Color Blue

[100; 50; 50 (0 / 100)]

RGB Components of the color of the effect.

► Glow Active

[No (No / Yes)]

Specifies if the effect is activated.

► Glow Intensity

[50 (0, 1.000.000)]

Intensity of the effect.

► Glow Radius

[50 (0.001, 1.000)]

Radius of the effect.

► Glow Decay

[2 (0.5, 1.000)]

Decay of the effect with distance.

Ray:

This group represents the ray effect to be generated in the image. This effect comprises a star of light beams that radiate from the origin of the effect.

Color Red; Color Green; Color Blue

[100; 50; 50 (0 / 100)]

RGB components of the color of the effect.

► Rays Active

[No (No / Yes)]

Specifies if the effect is activated.

► Rays Intensity

[60 (0 / 1.000.000)]

Intensity of the effect.
- **Rays Radius**

  
  \[100 (0.001 / 1.000)\]
  
  Maximum radius of the effect. Represents the maximum distance from the origin reached by the rays.

- **Rays MinRadius**

  \[0.100 (0.001 / 1.000)\]
  
  Minimum radius of the effect. Represents the distance from the origin to where the rays begin to appear.

- **Rays Rot.**

  \[0 (-1.000.000, 1.000.000)\]
  
  Rotation of the light rays.

- **Rays N.Spikes**

  \[5 (1 / 100)\]
  
  Number of rays.

- **Rays Thickness**

  \[20 (0.0001 / 100)\]
  
  Thickness of the rays.

- **Rays AngleNoise**

  \[50 (0 / 1.000)\]
  
  Noise in the ray angles. Use this parameter to break up the uniform angular distribution of the rays.

- **Rays LenNoise**

  \[50 (0 / 100)\]
  
  Noise in the length of the rays. Use this parameter to break up the uniform length of the rays.

- **Rays ThickNoise**

  \[50 (0 / 100)\]
  
  Noise in the thickness of the rays. Use this parameter to break up the uniform thickness of the rays.
**Flares:**

This group represents the lens flare effect. This effect comprises a series of flares that are distributed along the line joining the origin and target of the effect.

<table>
<thead>
<tr>
<th>Color Red; Color Green; Color Blue</th>
</tr>
</thead>
<tbody>
<tr>
<td>[100; 50; 50 (0 / 100)]</td>
</tr>
</tbody>
</table>

RGB Components of the flare color.

There is one flare that has special treatment due to its impact on the result of the effect. This is the one produced in the origin of the effect. Its parameters are in the First block and are:

- **First Active**
  
  [Yes (No / Yes)]
  
  Specifies if the effect is activated.

- **First Intensity**
  
  [100 (0 / 1.000.000)]
  
  Intensity of the effect.

- **First Radius**
  
  [100 (0.001 / 1.000)]
  
  Radius of the effect. Represents the distance between the origin and the point reached by the rays.

- **Flares Active**
  
  [No (No / Yes)]
  
  Specifies if the effect is activated.

- **Flares Intensity**
  
  [30 (0 / 1.000.000)]
  
  Intensity of the effect.

- **Flares Radius**
  
  [20 (0.001 / 1.000)]
  
  Maximum radius of the effect. Represents the maximum distance from the origin reached by the flares.
**Flares Length**

\[150 \ (-1.000 \ / \ 1.000)\]

Length of the line along which the effect is distributed. Represents the percentage of the distance between the origin and the target.

**Flares Rot**

\[0 \ (-1.000.000 \ / \ 1.000.000)\]

Rotation of the flares.

**Flares MinDecay**

\[0.05 \ (0.05 \ / \ 1.000)\]

Minimum decay of the flares.

**Flares MaxDecay**

\[1 \ (0.05 \ / \ 1.000)\]

Maximum decay of the flares.

**Flares N.Flares**

\[10 \ (1 \ / \ 100)\]

Number of flares.

**Flares N.Vertex**

\[0 \ (0 \ / \ 100)\]

Number of sides of the flares. 0 sides represents circular flares.

**Flares SizeNoise**

\[80 \ (0 \ / \ 100)\]

Noise in the size of the flares. Use this parameter to break up the uniformity in the size of the flares.

**Flares HueNoise**

\[50 \ (0 \ / \ 100)\]

Noise in the tone of the flare color. Use this parameter to break up the uniformity in the color of the flares.

**Ring:**

This group represents the effect of a ring of light around the origin of the effect.
Color Red; Color Green; Color Blue

[100; 50; 50 (0 / 100)]
RGB components of the color of the ring.

Ring Active

[No (No / Yes)]
Specifies if the effect is activated.

Ring Intensity

[50 (0, 1.000.000)]
Intensity of the effect.

Ring Radius

[70 (0.001 / 1.000)]
Radius of the ring.

Ring Size

[1 (0.1 / 1.000)]
Thickness of the ring.

Ring Decay

[1 (0.5 / 1.000)]
Decay of the ring towards its edges.

Rainbow:
This group represents a rainbow effect around the target of the effect.

Color Red; Color Green; Color Blue

[100; 0; 0 (0 / 100)]
RGB Components of the color of the ring.

Rainbow Active

[No (No / Yes)]
Specifies if the effect is activated.
Rainbow Intensity

\[50 \ (0 \ / \ 1.000.000)\]
Intensity of the effect.

Rainbow Radius

\[40 \ (0.001 \ / \ 1.000)\]
Radius of the ring.

Rainbow Size

\[5 \ (0.1 \ / \ 1.000)\]
Thickness of the ring.

Rainbow Decay

\[0.5 \ (0.5 \ / \ 1.000)\]
Decay of the ring towards its edges.

FlareFx:

Intensity

\[100 \ (0 \ / \ 1.000.000)\]
Specifies the global intensity of the effect. Affects all types of optical effect.

Radius

\[50 \ (0.01 \ / \ 100)\]
Specifies the global radius of the effect.

Rot.

\[0 \ (-1.000.000 \ / \ 1.000.000)\]
Specifies the global rotation of the effects.

Seed

\[0 \ (0 \ / \ 1.000.000)\]
Specifies the value of the random seed used to generate the effect.
Use and Comments

This effect is highly optimized for speed, and real-time can be achieved in modern workstations.

Posterize

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Filter->Posterize

Simulates lower depth of color.

I/O

Inputs

**Single input**: Image with or without alpha channel.

Inputs

**Image**: Image degraded by a lower depth of color.

**Alpha**: No change.

Parameters

- **Depth**

  **[8 (1 / 256)]**

  Specifies the depth of color by number of levels. The number of levels of an 8 bit channel is 256, the maximum value of this parameter.

- **ByLuma**

  **[No (No / Yes)]**

  Specifies whether the effect works based on luminance rather than chrominance values.

- **InAlpha**

  **[No (No / Yes)]**

  Restricts the influence of the effect to the area specified by the alpha channel levels.

Use and Comments

This effect simulates a lower depth of color for the video color depth, which has 256 levels. This effect can be used to simulate deterioration of quality, or to make the images appear colored as in a comic for example.
Pointillize

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Filter->Pointillize

Paints circular spots of color on an image, which when joined form straight cuts, thus achieving the appearance of an irregularly-shaped mosaic. The spots can be anamorphic circles of any size, which can be rotated and controlled by a rotation map. The edges of the spots generate an alpha channel mask offering possibilities for later use.

I/O

Inputs

**Double input**: The first is used as the background over which the circular spots will be drawn. The second is used as a color map, so that the spots have the color of the pixel that coincides with the center of the circular spot.

**Triple input**: The third additional input works as a rotation map, making the spots rotate proportionally to the luminance of the pixel that coincides with the center of the circular spot.

Inputs

- **Image**: Color spots in the first input.
- **Alpha**: Mask of the edges of the spots.

Parameters

- **Density**
  
  **[100 (0 / 100.000)]**
  
  Specifies the density of the spots on the background image. High values increase the number of spots, and vice-versa.

- **Size X; Y**
  
  **[1; 0.5 (0 / 100)]**
  
  Horizontal and vertical sizes of the spots.

- **Angle**
  
  **[0 (-100.000 / 100.000)]**
  
  Initial rotation of the spots, expressed in degrees.
Bear in mind that the rotation will not be visible if the circular spots are regular, with identical values of \( \text{Size } X, Y \).

- **Seed**

  \[0 (0 / 100.000)\]

  Seed for random positioning of the spots. This parameter can be animated so that the position of the spots are moved randomly.

- **Slopes**

  \[\text{Luminance (Luminance} / \text{Contour)}\]

  Permits varying the rotation of the brushstrokes by interpreting the rotation map based on its luminance values (\( \text{Luminance} \)) or on outline detection (\( \text{Contour} \)). This parameter is not used when the effect does not have a fourth input.

- **Blur**

  \[0 (0 / 100)\]

  Blurs the fourth input, thus achieving smoother luminance transitions in the rotation map, and less sudden rotation of the brushstrokes.

- **ColorVar**

  \[0 (0 / 100)\]

  Specifies random variability for the brushstroke color.

- **Chain**

  \[0 (0 / 1.000)\]

  Creates copies of the original brushstrokes in the form of a chain, joined from their right-hand edge.

  This parameter is ideal at high values, so that the brushstrokes behave like lines that change direction depending on the rotation map.

- **SizeVar**

  \[0 (0 / 100)\]

  Specifies a random symmetrical variability of the spot size.

- **E-Blur**

  \[0 (0 / 100)\]

  Blurs the mask of the spot edges created in the alpha channel.
E-Gain

[100 (0 / 100.000)]

Multiplies the intensity of the mask of the spot edges created in the alpha channel by the specified proportion.

Use and Comments

This effect is almost identical to Brush Stroke, except that Pointillize only works with an internal circular brush, whose appearance can be specified.

This effect has several orthodox uses, inserting copies of the same clip in all its inputs. The first frequent use is to generate an effect of irregular mosaics on an image, simulating stained glass. To do this, specify large circles (Size X; Y), and high densities (Density).

Another use is to simulate a painted image. For this, specify high densities (Density) and try different, preferably asymmetric, size values (Size X; Y). If there is a third input, the Blur parameter can attenuate sudden changes of rotation of the spots, making them appear to be continuous brushstrokes. The Chain parameter is also highly recommended for giving brushstrokes longer tracks on the image. The colorVar parameter can also transform colors randomly to give an impressionistic effect.

Another possible use is to compose the result of this effect on the original image. The mask generated by the effect consists only of the edges of the spots. If high values of Size X; Y and Density are specified, the composed borders give the sensation of looking at the background image through broken glass.

Mosaic

Ref. Mistika: Fx->Mistika->Filter->Mosaic

Forms a mosaic of rectangles of the same size, colored by the predominant values in the original image.

I/O

Inputs

Single input: Image with or without alpha channel.
Inputs

**Image**: Color mosaic.

**Alpha**: No change.

Parameters

► **SizeX**

[0 (0 / 100)]

Horizontal size of the mosaic. This parameter is expressed as a percentage of the image height.

► **SizeY**

[0 (0 / 100)]

Vertical size of the mosaic. This parameter is expressed as a percentage of the image height.

► **InAlpha**

[No (No / Yes)]

Restricts the influence of the effect to the areas specified by the alpha channel levels.

Use and Comments

This effect is typically used in television to prevent recognition of an area of the image, for example, a product name or the face of a protected witness. For this purpose, the InAlpha parameter can be used, which will restrict the action of the effect to the area of mask opacity.

![Original image](image1.png)  ![Amount X;Y : 3](image2.png)  ![with Keep Alpha (head mask)](image3.png)

Outlines

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Filter->OutLines

Combines an original image with an unfocussed copy with the *Difference* operation.

I/O

**Single input**: Image with or without alpha channel.
Inputs

**Image**: Image resulting from the comparison.

**Alpha**: No change.

Parameters

- **Blur**
  
  `[1 (0 / 100)]`

  Blurs the copy of the image to be combined with the *Difference* operation.

- **Gain**
  
  `[100 (-100.000 / 100.000)]`

  Multiplies the luminance of the resulting image by the specified percentage.

Use and Comments

This effect normally is used to obtain an image of the outline of figures that can be distinguished in an image.

This effect can be simulated with other effects, by combining a *Blur (Type Gauss)* with *Channels*.

Band Dither

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Filter->Band Dither

This effect reduces banding problems that can exist in images.

Banding is an artifact that can appear in images that have deteriorated as a result of digital processes, seen as recognizable color bands in areas where there should be a subtle grading between colors.

The *Band Dither* effect makes these bands less conspicuous, softening their edges by randomly intermixing pixels of adjacent areas, thus breaking up the regularity of the bands. The human eye is much more tolerant of noise (such as dithering), and considers it as something natural in the image, compared with bands of isolines, which seem very unnatural to an observer.

The difference between this effect and normal *Dither* is that it is capable of detecting the true borders belonging to image details and differentiating them from the banding, so that the latter can be removed without affecting the borders. The *Cutoff* parameter should be adjusted to do this.
I/O

Inputs

**Single input**: Image with or without alpha channel.

Inputs

*Image*: Image without banding.

*Alpha*: Mask without banding.

Parameters

- **Amount**

  *2 (0 / 100)*

  Specifies the maximum pixel intermixing distance for adjacent bands when dithering the effect.

- **Cutoff**

  *3 (0 / 100)*

  Specifies the application tolerance of the effect depending on contrast.

  If the tolerance is low, only pixels of similar values will be affected, thus preventing the effect having influence on important details of the image. If the tolerance is greater, pixels that with greater mutual contrast will also be affected.

- **Seed**

  *0 (0 / 100.000)*

  Seed for noise generation.

  This can be animated if necessary to simulate moving noise in static images of computer graphics, usually to integrate them better with sequences from video or cine sources.

Use and Comments

Bear in mind that the reduction of banding originally contained in an image can only be done with the use of random noise, which in some cases can become markedly visible. For this reason, the parameters of this effect should be carefully specified, since there are no values that can be recommended for all possible cases.

In the first image of the example below, the original image is shown, and in the second a detail in which its banding can be seen, in the form of recognizable green bands. The third image shows the suppression of this defect, leaving intact the character's details and affecting only the bands.
Note: Although the effect removes the banding correctly, the image in the example could still show banding depending on the type of printing or graphics mode employed to see it, given that many of these modes and compression formats for documents can cause deterioration of color quality.

Enhance

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Filter->Enhance
Enhances contrast in a detail size range.

I/O

Inputs

Single input: Image with or without alpha channel.

Inputs

Image: Blurred image.
Alpha: Opaque mask.

Parameters

► RadL

[0.5 (0 / 100)]
Lower limit of the detail range, specified by the minimum detail radius to be enhanced.

► RadH

[1 (0 / 100)]
Upper limit of the detail range, specified by the maximum radius of the details to be enhanced.

► Ampl

[100 (-1.000 / 1.000)]
Amount of enhancement to be applied to the range. Negative values blur details within the range.
Use and Comments

This filter is ideal for enhancing contrast in image areas without detail, thus balancing the areas of contrast in the entire image.

If the RadL parameter value is higher than the RadH, the effect will invert its range, and therefore its application will be reversed, similar to using the Ampl parameter with negative values.

If the range specifies low levels of detail, for example with RadL set to 0 and RadH to 0.3, the effect will enhance the details in exactly the same way as the Sharpen effect with its Amount parameter set to 0.3. The difference compared with Enhance is that the latter has a parameter specified by an action threshold set by a detail size that can be adjusted with the RadL parameter.

A typical use of this effect is to compensate for the contrast normally found in the details of images obtained by video cameras. If Enhance is applied with its default values, average detail values are emphasized.

By experimenting with the parameters of Enhance, the optical filters that are often used in telecines can be simulated.

The following example shows the results of using different parameter values.

<table>
<thead>
<tr>
<th>Original</th>
<th>Ampl: 100</th>
<th>RadL: 0.9</th>
<th>RadH: 0.2</th>
</tr>
</thead>
</table>

Brush Stroke

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Filter->Brush Stroke

Paints color brushstrokes with a definable shape on an image. The size, appearance and rotation can be modified, and a rotation map can also be used.

I/O

Inputs

**Triple input:**

The first is used as the background upon which the brushstrokes will be drawn.

The second is used as a color map, giving the brushstrokes the color of the pixel that coincides with the center of the brushstroke.

The third input specifies (via its luminance) the shape of the brushstroke, which has the color specified by the color map.

**Quadruple input:** The fourth additional input is used as a rotation map, making the brushstrokes rotate proportionally to the luminance of the pixel that coincides with the center of the brushstroke.

Inputs

**Image:** Image with the applied effect.
**Alpha:** Opaque mask.

### Parameters

- **Density**
  - **100 (0 / 100.000)**
  - Specifies the density of the brush strokes on the background image. High values increase the number of brush strokes, and vice-versa.

- **Size X; Y**
  - **1; 0.5 (0 / 100)**
  - Resets the horizontal and vertical size of the brush strokes.

- **Angle**
  - **0 (-100.000 / 100.000)**
  - Initial angle or rotation of the brush strokes, expressed in degrees.

- **Seed**
  - **0 (0 / 100.000)**
  - Seed for the random positioning of the brush strokes. This parameter can be animated so that the positions of the brush strokes are moved randomly.

- **Slopes**
  - **Luminance (Luminance / Contour)**
  - Permits the rotation of the brush strokes to be varied by interpreting the rotation map based on its luminance values (**Luminance**) or on outline detection (**Contour**). This parameter is not used when the effect does not have a fourth input.

- **Blur**
  - **0 (0 / 100)**
  - Blurs the fourth input, thus achieving smoother luminance transitions in the rotation map, and less sudden rotation of the brush strokes.

- **ColorVar**
  - **0 (0 / 100)**
  - Specifies a random variability of the brush stroke color.

- **Chain**
  - **0 (0 / 1.000)**
Creates copies of the original brush strokes in the form of a chain, joined at their right-hand side.

This parameter is ideal set at high values, so that the brush strokes behave as lines that change direction based on the rotation map.

▶ **SizeVar**

**[0 (0 / 100)]**

Specifies a random symmetrical variability in the brush stroke size.

**Use and Comments**

The most common use of this effect is to simulate impressionist painting styles.

The brushstrokes act as bitmaps colored by a color map that can control the appearance of the brushstrokes by their luminance, and so the position of these brushstrokes can also be controlled, making a mask or color correction in order to select color ranges in the image that will be the color map. Thus we can add star-shaped brushstrokes, for example, and add definable glints to highlights. This possibility in BrushStroke allows us to add bitmaps in selected pixels.

The rotation map also allows us to use this effect as a simple way of rotating brushstrokes in accordance with the luminance of the fourth input. If the fourth input is assumed to be a Circle effect with Rad and Soft values of 25, the distance of the brushstrokes to the center of the circle provokes a proportional rotation, behaving in a similar way to an expression specifying that the nearer the brushstroke to the center of the circle, the greater the rotation.

In the example, the results of different parameter values can be seen.

In certain cases, different rotation and color maps are used, which will appear as small images to the left of each image. The effects in which no parameter value exists are to be interpreted as keeping the value of the previous example.
Rain Fx

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Filter->Rain Fx

This effect creates the appearance of raindrops on water which evolve with time, producing the corresponding waves, and giving the sensation of rain in the input image. The raindrop areas can be generated either with random shapes, or based on input images. Effects of ship’s wakes or other effects of waves on liquids can also be generated by using the animation present in the inputs.

I/O

Inputs

**Multi-input**: With or without alpha channel.

The first input is the one applied to the effect.

The remaining inputs will be used to generate drops using the luminance of each frame. (The light areas in each frame produce new impacts).

**Image**: Sequence with the effect applied.

**Alpha**: Texture of the distortions in water.

Parameters

▶ Drip Rad

**[0.1 (0 / 50)]**

Specifies the radius of the random drops generated by the system as a percentage of the image width.

▶ Life

**[1 (0,01 / 100)]**

Specifies the life of the drop to the time of its disappearance. Higher values increase the life of the drops.

A value close to 0 will cause the drop to disappear almost as soon as it falls.

This value is not measured in frames.

▶ Hits

**[0 (0 / 1.000)]**

Specifies the number of drops that fall per frame. A value of less than 1 produces a single drop every few frames.
Depth

[60 (-100 / 100)]
Specifies the force with which the drops fall. A negative value means that the drops lift the water, instead of sinking it.

Seed

[0:100.000 (0 / 100.000)]
Specifies the seed for the generation of random numbers.

Refr.

[0 (-100 / 100)]
Specifies the refraction factor of the water. Negative values change refraction to reflection.

AntiAlias

[0 (0 / 7)]
Specifies the number of multiple samples to be made for antialiasing the effect.
The greater the value, the greater the antialiasing.

Obey Msk

[No (No / Yes)]
Restricts the influence of the effect to the area specified by the alpha channel levels.

Use and Comments

If the effect only has one input, this will cause the raindrops to fall on it.

If it has more than one input, the second and further ones will be used for the creation of additional drops, by making the luminance of each pixel produce a drop. With these additional images it is possible to make the drops fall in the desired place, or achieve the effect of a trail produced by an object in movement and making the drops are move following any path.

Very interesting drop effects can be achieved by applying the Bump effect to the output of this effect.

Important note: The result of the Rain Fx effect is an effect with feedback. In other words, each image depends on the result of the previous one. Thus the result seen in a frame during playback, will not be the same as the one seen if the frame is accessed directly to the frame without carrying out playback. In addition, when playing in reverse, the distortion map of the water is reset, so that, to remove the distortion map at any time to clean up the image, simply go back a frame in the clip.
The **Generate** menu collects together a wide variety of “generating” effects for creating new entities not existing in the input images, such as text, noise, degrades, etc.

### Title

Ref. Mistika: Node Graph  Editor->Dashboard->Fx->Mistika->Image->Title

Generates texts by means of a vectorial plane that can be animated.

#### I/O

**Inputs**

This effect can function without input, generating a white text on black, or a solid color with the text generated in the alpha channel.

**Single input:** Image. The alpha channel will be replaced by the image of the generated text or will be superimposed by the generated text, according to the Apply parameter. This effect can therefore be used directly to generate text and compose it on an image, since it can apply the text on the input of the effect (specifying the Apply parameter in Image value).

**Inputs**

**Without input:**

**Image:** color image of the generated text depending on the *Apply* parameter.

**Alpha:** Opaque mask or with generated text depending on the *Apply* parameter.

**Single input:**

**Image:** Image without changes or with superimposed text depending on the *Apply* parameter.
**Title Editor**

**Ref. Mistika: Visual Editor->Dashboard->Title**

This effect has an extra interface extra (*Title Editor*), in which texts are written. It is accessed via *Mistika->Visual Editor->Manipulators Tabs->Title*.

This interface is divided into two zones: *Input Area* and *Attributes*.

**Input Area**

This is where the texts to be generated are written.

To use characters pertaining to the language used (accents, monetary symbols etc), configure the keyboard via the OS application *Keyboard Layout*.

**Attributes**

This area has different sets of buttons that define the characteristics of the texts created.

To change the attributes of a character or paragraph already typed, simply highlight the text, select *Attributes*, and define the new value.

**Current Font**

This box indicates the name of the current font or typeface.

**Font List**

This list allows the font to be set. The selection mode is direct by clicking with the mouse over the name of the font to be used.

To install fonts in the system, consult the appendix of this document.

In all cases, once the fonts are loaded in the correct place, refresh the list of fonts by clicking *Reload Font List*. Unlike versions prior to v2.0, this list of fonts shows the name of the font and not the name of the file containing the font.

**Font Size**

Value defining the size of the font. Bear in mind that the size of all fonts can be modified with the zoom parameters of this effect.

30, 50, 70 and 100 are quick access buttons to predefined values.

**Kerning**

Value defining the space between characters.

*Normal*, *Medium* and *Wide* are quick access buttons to predefined values.

**Leading**

Value defining the space between text lines.

*Normal*, *1.2* and *1.5* are quick access buttons to predefined values.

**Slant Angle**

Value defining the inclination of the characters.

*Oblique* defines the default value.

*Normal* defines no inclination.

**Align**
Set of buttons that define the alignment of characters to different margins of the image.

*Left* aligns the text to the left.

*Center* aligns the text to the center.

*Right* aligns the text to the right.

To the right of the *Input Area* there is a set of buttons for animating and storing the texts created.

**Roll Up** and **Roll Down**

Set of buttons that define *Roll* animations in the values of the parameters of the effect, affecting all texts generated.

*Roll Up* defines an upward roll, as seen in the final credits of movies.

*Roll Down* defines a downward roll of the text.

The box *OffsetX* defines an additional offset value at the start of the *Roll* movement.

**Crawl**

Set of buttons that define *Crawl* animations in the values of the parameters of the effect, affecting all texts generated.

*Crawl Left* defines a text animation moving right to left, as seen in the final credits of TV programs or legal texts superimposed in TV commercials.

*Crawl Right* defines a text animation moving left to right.

The box *OffsetY* defines an additional offset value at the start of the *Crawl* movement.

**File**

Set of buttons for saving and loading text in the interface.

*Load Text* opens a dialog box to load texts without attributes that have previously been saved by the same effect or external text processing applications. This function can only load ASCII type unformatted text.

These files must have the .txt extension

*Save Text* opens a dialog box to save texts typed in Input, ignoring their attributes. These files will have the .txt extension and will be saved by default in the *Output* folder.

*Load Formatted* opens a dialog box to load texts with attributes that have previously been saved by the same effect.

*Save Formatted* opens a dialog box to save texts typed in Input, ignoring their attributes. These files will have the .ftxt extension and will be saved by default in the *Output* folder.

*Back* closes the *Title* interface.

**Parameters**

**Color:**

Parameters that defines the color and opacity values of text.

- **Red; Green; Blue**

  
  **[100; 100; 100 (0 / 100)]**

  Specifies the color of the text. This color is unique for all fonts generated by the effect.
Level

**[100 (0 / 100)]**

Specifies the opacity of the generated text (alpha channel value), assigning a single opacity value for all the text generated by the effect.

**Title:**

Parameters that defines disposition of text.

- **Rot X; Y; Z**

  **[0; 0; 0 (–900.000 / 900.000)]**

  Specifies the amount of rotation in each axis. The center of rotation is determined by the `Center` parameter.

- **Wide**

  **[3 (1.33 / 10.000)]**

  Specifies the leakage of the distortion of the vectorial plane where the text is generated. The leakage is only visible if the vectorial plane is rotated in X or Y.

- **Zoom X; Y**

  **[100; 100 (–100.000 / 100.000)]**

  Specifies the scale (amount of zoom). The scaling center is determined by the `Center` parameter.

- **Move X; Y**

  **[0; 0 (–900.000 / 900.000)]**

  Specifies the amount of offset in each axis. The position of the axes X and Y are can be specified with the 2D manipulation mode.

- **Cent X; Y**

  **[50; 50 (–10.000 / 10.000)]**

  Specifies the position of the centers of rotation and scaling.

- **Samples**

  **[4 (1 / 32)]**

  Number of samples in the render processes.

  High values specify greater number of samples, noticeably improving the image quality of the result, very visible in the details of the font, edges and in text that has been reduced in size.
> **ArccsDiv**

**[1 (1 / 10)]**
Specifies into how many segments the curves of vectorial text are subdivided. The greater the number of segments, the smoother the curves.

> **Reveal**

**[100 (0 / 100)]**
Sets the percentage of hidden/visible text. A value of 0 totally hides the text and 100 totally reveals it. The text can be viewed gradually by animating this parameter.

> **GapsX**

**[0 (–900.00 / 900.000)]**
Scales the kerning parameter (space between letters) respecting the alignment of each line.

> **GapsY**

**[0 (–900.00 / 900.000)]**
Scales the parameter of leading (space between lines).

> **Size**

**[100 (–900.00 / 900.000)]**
Scales the parameter of size (size of letter) without altering the kerning (space between letters).

> **Angle**

**[0 (–900.00 / 900.000)]**
Scales the parameter of Angle (inclination between letters).

> **Apply**

**[Image (Image/Mask)]**
Defines the channel where the text is generated.

**Image**: The text is generated in the channels of the image (RGB). If the effect has one input, the text is drawn on the image. If the effect has no input, it is drawn on a black background.

**Mask**: The text is generated in the alpha channel, without altering the channels of the image.
Use and Comments

All the texts generated by Title are written in a plane that can be positioned in a "three dimensional space" via animable parameters, and can be scaled without losing quality thanks to the vectorial typefaces.

Note that the processing speed of this effect is very closely linked to parameters that increase the resulting image quality, such as Samples and ArcDiv for example; we recommend that these are carefully set to the minimum values that give the desired quality, since misuse of these values can slow down the performance of the effect.

The effect generates fonts without texture, so that they can be used with other effects. Some examples of textures generated in combination with other effects of the system are shown below:

![Texture Examples](image)

---

**Solid**

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Image->Solid

Generates an image with a single color.

**I/O**

**Inputs**

None.

**Inputs**

- **Image**: Assigned color.
- **Alpha**: Opaque mask.

**Parameters**

- **Red; Green; Blue**

  \([0; 0; 0 (0 / 100)]\)

  Specifies the RGB value of the solid color.

- **Format**

  \([\text{HDR-HW (RGBA8b / YUV422 / RGB10b / HDR-HW)}]\)

  Specifies the color space used to generate that which will generate the solid color. This may be YUV 422, RGB.
The RGBA8b space assigns 8 bits or RGB 10 per channel and additionally 8 bits for the alpha channel. The other two modes do not generate alpha.

### Alpha

**[100 (0 / 100)]**

Specifies the alpha value of the solid color (only available in RGBA8b and HDR-HW formats)

### Use and Comments

The purpose of this effect is simply to create a solid color.

This effect has no field. To defines the color use the panel Set Color (Visual Editor->Manipulators Tabs-Set Color), activated by doubleclicking on the effect in the Node Graph.

### Grade

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Image->Grade

Generates a color gradient from all of the four corners of an image.

### I/O

#### Inputs

None.

#### Inputs

- **Image**: color gradient from the four corners.
- **Alpha**: Opaque.

### Parameters

#### Mode

**[HDR-HW (SW-RGBA8b /HDR-HW )]**

*SW* specifies that the calculation is done by software.

*HW-HDR* specifies that the calculation is done by hardware, in 16 bits color depth per channel (HDR stands for High Dynamic Range). This mode is recommended for images that have more than 8 bits per channel, typically those obtained from a film scanner.

#### UpLeft R; G; B

**[100; 100; 100 (0 / 100)]**

Specifies the color of the top left corner.
- **UpRight R; G; B**
  
  `[100; 100; 100 (0 / 100)]
  
  Specifies the color of the top right corner.

- **DownLeft R; G; B**
  
  `[100; 100; 100 (0 / 100)]
  
  Specifies the color of the bottom left corner.

- **DownRight R; G; B**
  
  `[100; 100; 100 (0 / 100)]
  
  Specifies the color of the bottom right corner.

### Use and Comments

This effect has no field. To defines the use Set Color (Manipulators Panels), activated by doubleclicking on the effect in the Node Graph.

The purpose of this effect is simply to create a color gradient from the four corners.

Remember that all four corners can be colored with the same color, by selecting the subfolder of each corner and using Copy Curve and Paste Curve in the Parameters Panel. (Mistika->Parameters->Clipboard->Copy Curve/Paste Curve)

![Color Gradient Examples](image)

---

**Circle**

**Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Image->Circle**

Generates white circles on a black background, of sizes that can be specified, with control of the smoothness of their edges.

This effect is used to generate **WipeCircle** of the Wipe Library (Mistika->Node Graph Editor->Dashboard->Edit->Wipes); as such, its description and parameters are the same as **WipeCircle**.

This effect is easy to combine with other effects. Its uses can be different and varied.

It can basically be used as a mask, or a rotation, distortion, blur or displacement map for different effects that use these types of map.

---

**Stripe**

**Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Image->Stripe**

Generates patterns of bands, with control of the smoothness of their edges, width and spacing between them.

This effect is used generate the wipes of the **Wipe Library** (Mistika->Node Graph Editor->Dashboard->Edit->Wipes); as such, such as, its description and parameters are the same as **WipeStripe**.
This effect is easy to combine with other effects. Its uses can be different and varied.

It can basically be used as a mask, or rotation, distortion, blur or displacement map for different effects that use these types of map.

### Wave

**Ref. Mistika:** Node Graph Editor->Dashboard->Fx->Mistika->Image->Wave

Generates an image of concentric waves.

### I/O

**Inputs**

None.

**Inputs**

- **Image**: Pattern of concentric waves.
- **Alpha**: Opaque mask.

### Parameters

**Wave_1:**

Dropdown folder that contains the parameters of the default wave. The layers created later are added to this one, as an identical folder identified by its number that is increased as they are created. Creation, copying and deletion of layers are controlled from the commands tab located in Mistika->Node Graph Editor->Mistika->Main Tabs->Parameters->Folder.

- **CentX; Y**

  ![image](50; 50 (-100.000 / 100.000)]

  Position of the wave generator, in percentage values of the image size.

- **WLen**

  ![image](20 (0,001 / 100.000)]

  Length of the waves.

- **Phase**

  ![image](0:400 (-100.000 / 100.000)]

  Evolution of the waves. This parameter should be animated so that the generator sends the waves from its center towards the periphery.

- **Ampl**

  ![image](100 (-100.000 / 100.000)]
Specifies the amplitude of the waves. The greater the value, the greater the contrast between the generated waves.

**Decay**

**[65 (0 / 1.000.000)]**

Specifies the decay of the amplitude as a function of the distance of the wave from its generator.

**Count**

**[100 (0 / 1.000.000)]**

Specifies the maximum number of wave phases that the effect will generate.

**Use and Comments**

This effect is easy to combine with the other effects. Its uses can be widely different and varied.

It can basically be used as a mask, or as a rotation, distortion, blur or displacement map for different effects that use these types of map.

<table>
<thead>
<tr>
<th>RadialWave</th>
<th>As mask</th>
<th>As displacement map</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="RadialWave Image" /></td>
<td><img src="image2" alt="As mask Image" /></td>
<td><img src="image3" alt="As displacement map Image" /></td>
</tr>
</tbody>
</table>

**Noise**

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Image->Noise

Permits generating noise animated with a color option.

**I/O**

**Inputs**

None.

**Inputs**

**Image**: Noise pattern in black and white or color.

**Alpha**: Opaque mask.
Parameters

- **Seed**
  
  
  
  **[0 (0 / 100.000)]**
  
  Seed of the random generation of noise. Can be animated if necessary to simulate noise in movement.

- **Rad X ; Y**
  
  
  
  **[0 (0 / 100.000)]**
  
  Specifies the average horizontal and vertical radius of the noise.

- **Qual**
  
  
  
  **[2 (0 / 3)]**
  
  Specifies the filtering quality of the effect.

- **Color**
  
  
  
  **[No (No / Yes)]**

- **Pan X; Y**
  
  
  
  **[0; 0 (-100.000 / 100.000)]**
  
  Specifies the offset of the noise. This parameter can be manipulated with the Set Pos mode.

- **Cycle**
  
  
  
  **[0 (-100.000 / 100.000)]**
  
  Specifies the evolution of the noise, producing a gradual change of the positions of the spots generated by the effect.

- **Mode**
  
  
  
  **[Normal (Normal / Plasma)]**
  
  Specifies type of noise required: normal or plasma.

Use and Comments

This effect is a tool that is very easy to combine with other effects. Its uses can be widely different.

It can be used basically to generate a smoke or steam texture, as a rotation, distortion, refraction, blur or displacement map for different effects that use these types of map.

Simulation of textures and materials can be attained by manipulating its parameters and combining it with other effects.
In the first image of the following example, color corrections, offset maps and three-dimensional lights are used within the Comp3D effect to simulate clouds and seas. In the second image, the same effect is used, but to imitate wood. In the third image, the \textit{Blur (Type Grow)} effect is used to \textit{Blur (Type Shrink)} the red channel and enlarge the green channel of the image produced with Noise, with its \textit{Mode} parameter set to \textit{No}.

If the \textit{Cycle} parameter is animated, noise evolution is achieved, which is useful for imitating the behaviour of waves or steam.

| Fractal |

\textit{Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Image->Fractal}  

Generates an image of animable fractal noise, optionally in color.

| I/O |

| Inputs |

None.

| Inputs |

\begin{itemize}
  \item \textbf{Image}: Noise pattern in black and white or color.
  \item \textbf{Alpha}: Opaque mask.
\end{itemize}

| Parameters |

\begin{itemize}
  \item \textbf{Seed} 
    \begin{itemize}
      \item \textbf{[0 (0 / 100.000)]}
      \begin{itemize}
        \item Seed for the random generation of noise. It can be animated if necessary to simulate noise in movement.
      \end{itemize}
    \end{itemize}
  \item \textbf{Levels} 
    \begin{itemize}
      \item \textbf{[8 (4 / 16)]}
      \begin{itemize}
        \item Number of noise levels. The more levels, the greater the size of the noise pattern. Decimal values are allowable, which specify mixing from one level to the next.
      \end{itemize}
    \end{itemize}
  \item \textbf{Decay} 
    \begin{itemize}
      \item \textbf{[2 (1 / 6)]}
      \begin{itemize}
        \item Decay of the visibility of noise details. The lower the value, the more noise detail is
      \end{itemize}
    \end{itemize}
\end{itemize}
viewed.

- **Contrast**
  
  **[200 (-100.000 / 100.000)]**
  
  Control of the noise contrast.

- **Color**
  
  **[No (No / Yes)]**
  
  Option to obtain noise in random colors.

- **Pan X; Y**
  
  **[0; 0 (-100.000 / 100.000)]**
  
  Specifies the noise offset. This parameter can be manipulated with the Set Pos mode.

- **Cycle**
  
  **[0 (-100.000 / 100.000)]**
  
  Specifies the progress of the noise, producing a gradual change of the positions of the marks generated by the effect.

- **Mode**
  
  **[Normal (Normal / Plasma)]**
  
  Specifies type of noise required: normal or plasma.

---

**Use and Comments**

This effect is a tool that is very easy to combine with other effects. Its uses can be widely different.

It can basically be used to generate a smoke or steam texture, as a rotation, distortion, refraction, blur or displacement map for different effects that use these types of map.

Unlike **Noise**, this effect generates synthetic noise which thanks to its reproduction method hides its cyclical pattern, making it less recognizable.

In the first image of the following example, color correction is used to simulate marble. In the second image, **LiquidBump** is used to simulate mercury. In the third image, two **Fractal** effects are combined with **And**, one to generate the basic color texture (with the **Color** parameter set to **Yes**) and the other to simulate the shape of a nebula.
Mandelbrot

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Image->Mandelbrot

Generates an algorithmic Mandelbrot-type texture.

I/O

Inputs

None.

Inputs

- **Image**: Mandelbrot image.
- **Alpha**: Opaque mask.

Parameters

**ShadeCount:**

Folder that contains the parameters that specify the base color from which the Mandelbrot will be generated.

- **Red; Green; Blue**

  **[64; 64; 64 (1 / 512)]**

  RGB value of the base color.

**Box_1:**

Dropdown folder that contains the parameters of the default viewing box. These boxes allow the specification of which part of the Mandelbrot is to be viewed, in a similar way to a magnifying glass.

Boxes that are created later will be added to this one, as an identical folder identified by its number, which is increased as they are created. Creation, copying and deletion of boxes are controlled from the commands tab located in Mistika->Node Graph Editor->Mistika->Main Tabs->Parameters->Folder.

- **Left**

  **[0 (0 / 100)]**

  Left edge of the viewing box as a percentage of the image width.

- **Right**

  **[100 (0 / 100)]**

  Right edge of the viewing box as a percentage of the image width.
Up

[100 (0 / 100)]
Top edge of the viewing box as a percentage of the image height.

Down

[0 (0 / 100)]
Bottom edge of the viewing box as a percentage of the image height.

Mandelbrot:

Iterations

[64 (0 / 256)]
Number of branches of the texture.

Box_

[256 (0 / 256)]
 Specifies which box will be viewed. Decimal values indicate a gradual change from one box to the next.

Use and Comments

The purpose of this effect is simply to generate a Mandelbrot image from which a part of the texture with the parameters of Box_1 can be selected, in order to amplify and visualize it in detail. In addition, animations can be created with an the interpolation of different Boxes, with the Box_# .parameter.

In the example, different levels of detail can be seen.
Blur/Sharp

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Blur/Sharp

The menu *Blur/Sharp* contains spatial filters, blur filters and effects to increase the detail of an image.

### Blur

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Blur/Sharp->Blur

This effect views a clip name composed of its two first parameters, so this description makes reference to the name of the effect according to its type and application mode.

It is an effect that applies spatial filters to any of the channels of the image (RGBA or chrominance), blurring, shrinking or increasing its bright surface, optionally controlling the radius of the application according to an attenuation map, and also, in "figure" mode for clips that are composed in a prior process.

The effect can be accessed via the effects gallery, the hotkey presets and a specific button within the gallery, but in fact only this effect is accessed since it brings together many possible functions.

### I/O

**Inputs**

*Single input*: Image with or without alpha channel.

**Inputs**

*Image*: Image with the specified filter applied.

*Alpha*: Mask with the specified filter applied.
Parameters

Modes:

Folder that contains the parameters that specify the type of spatial filter and application and calculation modes.

▶ Type

**Gauss, Box, Circle, Median, Grow, Shrink**

Specifies the type of matrix applied as filter.

*Gauss* is a classic soft defocussing and blurring filter.

*Box* is a classic soft defocussing and blurring filter, quicker to calculate than Gauss, but with a square matrix that is reconcilable with high radius values.

*Circle* is a blurring filter that uses a circular matrix, with a slower processing time, but is recommended for emulating camera blurs.

*Median* is a classic noise reduction filter.

**Note**: some graphics cards do not support the median-type filter, so in this case it is recommendable to use Sware render mode.

*Grow* is a classic filter for expanding bright zones in the image channels.

*Shrink* is a classic filter for shrinking bright zones in the image channels.

**Note**: The type of matrix specified is viewed as the first part of the name of the effect clip in the Node Graph.

▶ Mode


Specifies the application mode of the type of filter set.

*RGB* applies the filter to the RGB channels, leaving the alpha channel unchanged.

*RGB-InA* applies the filter to the RGB channels according to the opacity set by the alpha channel, leaving the alpha channel unchanged.

*Chroma* applies the filter to the chrominance values of each pixel, leaving the luminance values unchanged.

*Chroma-InA* applies the filter to the chrominance values of each pixel according to the opacity set by the alpha channel, leaving the luminance and alpha channel unchanged.

*R, G, B, A* applies the filter only to red, green blue and alpha channels.

*RGBA* applies the filter to RGB and Alpha channels.

*Foreground* applies the filter to the RGB channel according to the opacity set by the alpha channel, adding a “divide” function to de-premultiply the background figure, leaving the alpha channel unchanged.

*RGB-RadA* applies the filter to RGB channels, leaving the alpha channel unchanged.
using the alpha channel the Radius parameter as attenuation map.

**Note:** The type of matrix specified is viewed as the second part of the name of the effect clip in the Node Graph. For example, a blur filter of Gaussian type only in mask mode will be viewed as Gauss:A. A Box type filter applied in Foreground mode will be viewed as Box:Foreground.

**Render**

**HWare, Sware**

Specifies that the processing will be calculated by software or hardware.

**Note:** the default option (HWare) is recommended as modern graphics boards are optimized to work even in depth of up to 16 bits per pixel.

**Radius:**

Folder that contains the parameters that control the application radius of the specified filter.

► **Radius**

**[0 (0 / 100)]**

Controls the application radius of the specified filter.

**Note:** if an attenuation map (for example the alpha channel in RGB-RadA mode) is used, this parameter specifies the maximum application radius.

► **Anamorph**

**[0 (-100 / 100)]**

Specifies an anamorphic aspect to the matrix used by this effect.

The default value indicates that the filter acts symmetrically between the horizontal and vertical axes. Positive values gradually restrict the action of the effect to the vertical axis, whereas negative values restrict them to the horizontal axis.

► **Units**

**[10.000 (1 / 1.000.000)]**

Scales the value of the Radius parameter.

Note: this parameter should be used to find the best scale for the size of the image to be processed; the Radius parameter is relative to image size, and a low radius value for SD resolution might be much greater in HD. Use this parameter to reset the parameter scale that specifies the radius. To use the scale in versions of Mistika earlier than v4.0, the parameter should be set at 100.

**Use and Comments**

The Box spatial filter averages the pixel values with a square-shaped matrix of decreasing radial influence. This results in the softening of the transitions between opposing values, with an appreciable blurring of the outlines.
In the following example, it can be seen that, when the Amount parameter of the effect has high values, the square matrix that the filter uses for blurring becomes noticeable. With the Anamorph parameter, the action of the filter can be gradually restricted to either of the 2 two-dimensional axes.

The Gaussian spatial filter averages the pixel values with a circular matrix of decreasing radial influence. This results in the softening of the transitions between opposing values, with an appreciable blurring of the outlines, similar to seeing an image through a misted glass.

In the following example it can be appreciated that the Gauss filter, compared to the Box filter, requires a lower Amount value to blur the image, and the shape of the matrix of the filter is imperceptible. When the filter action is restricted entirely to a single axis by using the Anamorph parameter, the result of the effect is almost identical to that of Box since in the latter case it does not take advantage of the shape of the matrix of the Gauss filter.

The Circle spatial filter averages the pixel values with a circular-shaped matrix. This softens the transitions between opposing values, giving a visual result that enlarges and roughens outlines, similar to defocussing. Thus this filter is the most appropriate for simulating camera blurs.

In the following example, it can be seen that when the effect has high Amount parameter values, the circular matrix used by the filter for blurring is clearly visible.

In RGB-RadA mode, the alpha channel is used as an attenuation map and does not defines a level of opacity in the application of the filter, but rather attenuates the defocussing value defined by the Radius parameter, and therefore it is not the same as using the Blur effect with the RGB-InA mode activated.

In the following example both effects are compared.

The attenuation map can be generated for example with VectorPaint to simulate a reduction of the depth of field. In the following example a practical use can be seen.
The filters *Grow* and *Shrink* are basic filters which can be used to achieve various results. One possible use is to control the brightness of an image modifying RGB channels by the same small decimals values. High value make the filter's geometry visible in the image.

If channels are modified with different values, the result is a halo of the higher color surfaces around the white surfaces. The third image shows the result subtracting from the original image (with the Boolean effect *Sub*) a copy of the shrunk channels (as in the second image above) to obtain an image of the edges.

The *Gauss:Chroma* spatial filter is recommended for applying to images derived from compressed digital video formats or those with subsampling color to hide the damage caused by compression which may be exaggerated by later color corrections. In the case of needing to hide a problem of subsampling color (for example 4:2:2 digital betacam, or 4:1:1 DV), use this filter horizontally (with the anamorph parameter in -100).

Use of spatial filters only in the alpha channel are described below.

The *Box:A* spatial filter averages the pixel values with a square matrix of decreasing radial influence. This results in the softening of the transitions between opposing values, with an appreciable blurring of outlines.

The last image of the following example has a high blur value and an additional contrast, to make the shape of the matrix used in the effect visible.

Bear in mind that a mask blur produces a symmetrical softening at its boundaries, contracting and expanding the total opacity surface. This can be a problem in cases of composition of cutouts made on greenscreens or bluescreens, since part of the original background of the figure can leak into the composite layer.
The following image demonstrates this problem:

![Image of original foreground, composed, and composed and blurred]

To avoid this problem, shrink the mask (for example with `Shrink:A`) before applying the blur.

The `Gauss:A` spatial filter averages the pixel values with a circular-shaped matrix of decreasing radial influence. This results in the softening of the transitions between opposing values, with an appreciable roughening of the outlines, similar to seeing an image through a misted glass.

The last image of the following Example has a high blur value and an additional contrast, to make the shape of the matrix used in the effect visible.

![Image of original mask, blur value 1, and blur value 4 (contrasted)]

The spatial filter in `Foreground` mode (for example `Gauss:Foreground`) is ideal for blurring layers composed on a background or on other layers, virtually simulating depth of field in the composition.

A simple sum of blur filters for alpha channel and image applied at the same time (`Gauss: RGBA` for example) would create image imperfection at the edges, since the image blur would associate the pixel colors of the original background with the pixels of the cutout figure. `Foreground` is the mode for blurring foregrounds, since it affects all the canals of its input, adding in the image an additional operation that prevents problems of invasion of the foreground by the cutout figure.

In this example, the difference between blurring the image and mask and using this effect can be seen. In the second image, the problem of foreground invasion by the cutout colors is clearly seen, in this case as a gray border, creating a halo image around the composed figure.

![Image of original foreground, blur image & mask, and foreground blur]

`Shrink:A` shrinks masks to exclude the borders of a character or object from a composition, since the boundaries are usually the areas critical to the integration of images. In the following example, although the extracted mask itself looks very good, it allows part of the background of the original cutout to be seen in the borders of the composed figure, as a very thin gray exterior line. The same layer with a little `Shrink:A` corrects this problem, removing the exterior border of the mask opacity.
This should only, however, be a last resort, since \textit{Shrink:A} contracts the mask on the basis of copying the values of neighboring pixel. Therefore, if this effect is misused, artifacts can be generated in the composition, since the original shape of the mask is being modified and an outline that does not correspond to the original geometry of the composite layer will be made visible in the composition. This will be especially visible if the mask has areas of internal transparency.

In this example, it can be seen that small shrinkage values do not substantially alter the original shape of the mask, whereas high values deform and even break up the mask, in this case separating the hand from the arm.

Thin masks (such as masks of hairs for example) are often most affected by misuse of this effect, and other solutions should be sought to correct the mask, such as using the \textit{Remap} effect combined with other effects for example.

Very occasionally, an expansion of the mask may be required such as an outline with \textit{Grow:A}. A possible case would be expanding mask drawn with \textit{VectorPaint}, but almost never will the of a mask extracted with \textit{Bluescreen}, be required, for example.

A useful example of mask expansion would be to enlarge text, although within certain limitations, since a great degree of expansion would lead to a geometrical problem.

Note that with high values, \textit{Grow:A} will make the text lose its original geometry, most markedly in rounded forms of the letter “e”, where the generation of internal angles begins to be noted.

To attain more rounded results, we recommend using the \textit{Remap} effect combined with other effects.

\textit{Dir Blur}

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Blur/Sharp->Dir Blur

Makes a \textit{Directional} type blur, in a specified direction. Its result is similar to the moved image produced by a rapid camera pan.
I/O

Inputs

**Single input:** Image with or without alpha channel.

Inputs

**Image:** Blurred image.

**Alpha:** Blurred mask.

Parameters

► **Amount**

\[[0 (0 / 100)]\]

Specifies the blur length.

► **Angle**

\[[0 (-100.000 / 100.000)]\]

Specifies the angle of the blur direction.

Use and Comments

In addition to simulating the blurring of an image produced by a panning movement, this effect can be used to create luminous rays, by combining the Boolean *Add* effect.

Radial Blur

**Ref. Mistika:** Node Graph Editor->Dashboard->Fx->Mistika->Blur/Sharp->Radial Blur

Makes a *Polar* type blur from a specified coordinate. Its result is similar to an image movement produced by a rapid camera zoom movement.

I/O

Inputs

**Single input:** Image with or without alpha channel.
Inputs

**Image**: Blurred image.

**Alpha**: Blurred mask.

Parameters

- **Zoom X; Y**
  
  \([100; 100 (-100 / 100.000)]\)
  
  Specifies an expansion or contraction produced by the filter, individually for the horizontal and vertical axes.

- **Center X; Y**
  
  \([50; 50 (-200 / 300)]\)
  
  Sets the two-dimensional coordinate of the filter pole. These values are percentage coordinates of the image size.

- **Angle**
  
  \([0 (-10.000 / 10.000)]\)
  
  Sets the rotation angle of the effect. The blur can be rotated with this parameter, emulating a camera roll effect in the depth axis (roll).

Use and Comments

In addition to simulating the blurring of an image produced by a zoom or roll movement, this effect can be used to create luminous rays, by combining the result of this effect with a copy of the original clip with the **Add** effect.

The following example shows the results of using different parameter values.
Slope Blur

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Blur/Sharp->SlopeBlur

Makes a Slope type blur, which blurs the image in the direction determined by the boundary detection of a second input.

I/O

Inputs

**Single input**: The same input is used as the image to be processed and the blur map.

**Double input**: The first input is the image to be processed; the second is the blur map.

Inputs

**Image**: Blurred image.

**Alpha**: Opaque mask.

Parameters

► **Blur**

[0 (0 / 100)]
Blurs the blur map, softening it by expanding the boundaries that specify the stump range.

► **Amount**

[0 (0 / 100)]
Image blur level in the direction specified by the blur map.

► **Angle**

[90 (-100.000 / 100.000)]
Specifies a rotation in the direction specified by the blur map.

Use and Comments

This effect, unlike other Blur effects, does not have an a natural optical equivalent. Its results, when used with a single input and with high blur values, are somewhat similar to what occurs when a painting is treated with a solvent.

It is useful for creating surreal or dream-like images.

In the following example, the results of different parameter values are shown, and also of using the same image as a blur map or a different image.
Sharpen

Ref. Mistika: Node Graph  Editor->Dashboard->Fx->Mistika->Blur/Sharp->Sharpen

Sharpenes detail in the image by increasing the outline contrast.

I/O

Inputs

**Single input**: Image with or without alpha channel.

Inputs

**Image**: Image with enhanced details.

**Alpha**: No change or with enhanced details.

Parameters

**Modes:**

Folder that contains the parameters that specify the type of matrix and calculation mode to be used.

▸ **Type**

**[Gauss / Box / Circle / Median]**

Specifies the type of matrix to be applied as filter.

**Gauss** is a circular, unfocussed matrix.

**Box** is a square matrix.

**Circle** is a circular, sharp-focussed matrix.

**Median** is a low-pass-type matrix.

**Note**: some graphics boards do not support median filters, so in this case render in Sware mode.
### Mode

**[RGB / RGB-InA / A]**

Specifies the calculation mode of the set filter.

- **RGB** applies the filter to the RGB channels, leaving alpha channel unchanged.
- **RGB-InA** applies the filter to the RGB channels, with the opacity set by the alpha channel, leaving alpha channel unchanged.
- **A** applies the filter only to the alpha channel.

### Render

**[HWare, Sware]**

Specifies that the processing will be calculated by software or hardware.

**Note**: the default option (HWare) is recommended as modern graphics boards are optimized to work even in depth of up to 16 bits per pixel.

### Radius:

Folder that contains the parameters that control the radius of the filter application.

### Radius

**[0 (0 / 100)]**

Controls the radius of application of the specified the filter.

### Anamorph

**[0 (-100 / 100)]**

Specifies and anamorphic aspect to the matrix that uses the effect.

The default value indicates that the filter acts symmetrically in the vertical and horizontal axes. Positive values restrict the action of the effect to the vertical in a gradual manner, while negative values restrict the action of the effect to the horizontal.

### Units

**[10.000 (1 / 1.000.000)]**

Scales the value of the Radius parameter.

**Note**: this parameter should be used to find the best scale for the size of the image to be processed, the Radius parameter is relative to image size, and a low radius value for SD resolution might be much greater in HD. Use this parameter to reset the parameter scale that specifies the radius.
Sharpen:

Folder that contains the characteristic parameters of this type of spatial filter.

- **Amount**
  
  **[50 (0 / 100.000)]**
  
  Amount of contrast applied to the details.

- **Threshold**
  
  **[0 (0 / 100)]**
  
  Threshold of details where the improvement is applied.

Use and Comments

One frequent use of this effect is to improve the definition of images.

It should be mentioned that it is not possible to focus an unfocussed image during post-production. Existing detail can only be emphasized, even though it is not very sharp. When the contrast of the detail is increased, the image noise also always increases. This increase in noise will be more noticeable in image sequences than in a single frame.

Fields

**Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Fields**

The menu **Fields** contains filters for the control of fields.

Interlace

**Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Fields->Interlace**

Interfaces its two inputs, interpreting each as a field.
I/O

Inputs

**Double input**: Image with or without alpha channel.

Inputs

**Image**: Two interlaced inputs.

**Alpha**: Two interlaced input masks.

Parameters

None.

Use and Comments

This effect has the simple purpose of interlacing its two inputs.

The example shows how the effect works with two very different inputs. The first input will be inserted in the first field that is read depending on the standard specified in the system configuration.

When rendering, it is essential to activate the *Interlaced* option, as otherwise the effect will be ignored.

Mixed Field

**Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Fields->Mixed Field**

De-interlaces its input, creating a de-interlaced frame containing a mix of the images of both the original fields.

I/O

Inputs

**Single input**: Image with or without alpha channel.

Inputs

**Image**: Image without fields, with a mix of the two images of the original fields.

**Alpha**: Mask without fields, with a mix of the two masks of the original fields.
Parameters

▶ Quality

[On (Off / On)]

Activates or deactivates a higher quality interpolation method, although processing speed is lost.

Use and Comments

This effect is generically recommended for de-interlacing sequences with little movement, since mixing of two very different fields can create an undesirable effect, similar to “filage”. That said, field mixing gives a better result than line interpolation, which the lower stepping of the diagonal lines in the de-interlaced image makes clear, and even noticeable with the Quality parameter set to ON.

In the following example, three details are shown. The first is the original image. The silhouette is fixed, and so both fields form the same image. The following images compare this effect with InterpField, which uses a method of interpolation between the lines of the same field. The result of MixedField is in this case notably better.

![Original](image1) ![Interpolation](image2) ![Mix](image3)

The following example shows that the Quality parameter noticeably increases the resulting image quality, gaining sharpness when the parameter value is set to ON.

![Original](image4) ![Quality: 0](image5) ![Quality: 1](image6)

The precise interpretation of the Field parameter depends on the video format. The consecutive field order varies between PAL and NTSC. The De-Interlace calculation always corresponds to the temporary field order, not to the odd or even lines.

When rendering, it is essential to deactivate the Interlaced option, as otherwise the effect will be ignored.

Interp. Field

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Fields->Interp. Field

De-interlaces its input, creating an image by interpolation between lines in the field that is removed.
I/O

Inputs

**Single input**: Image with or without alpha channel.

**Inputs**

**Image**: Image with a field created by interpolation between lines, and with the other field intact.

**Alpha**: Mask with a field created by interpolation between lines, and with the other field intact.

Parameters

**Field**

*[Field-0 (Field-0 / Field-1)]*

Specifies the field to be extracted. A value Field-0 extracts the first field in time, whereas the second is extracted with a value of Field-1.

Use and Comments

This effect is generally recommended to de-interlace sequences with a lot of movement. For sequences with little movement, we recommend the *MixedField* effect.

The first example image shows that the two fields contain very different images, as occurs in video sequences with a lot of movement. The interpolation filter achieves a better image in these cases than the mix filter used by the *MixedField* effect, since mixing fields would cause loss of sharpness.

[Original Image] [Interpolation Image] [Mix Image]

The precise interpretation of the **Field** parameter depends on the video format. The consecutive field order varies between PAL and NTSC. The De-Interlace calculation always corresponds to the temporary field order, not to the odd or even lines.

When rendering, it is essential to deactivate the **Interlaced** option, as otherwise the effect will be ignored.

**Duplicate Field**

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Fields->Duplicate Field

De-interlaces its input, creating an image by copying lines in the field that is removed.
I/O

Inputs

**Single input:** Image with or without alpha channel.

Inputs

**Image:** Image with a field created by copying lines from the other field, and with the other field intact.

**Alpha:** Mask with a field created by copying lines from the other field, and with the other field intact.

Parameters

▶ Field

**[Field-0 (Field-0 / Field-1)]**

Specifies the field to be extracted. The value *Field-0* extracts the first field in time whereas the second is extracted with a value of *Field-1*.

Use and Comments

Generally, the *InterpField* effect achieves better image quality than this effect, although in some special circumstances it may be necessary to copy the field without interpolation. In the following example, three details are shown.

The first image is the original. The silhouette is fixed, and so both fields form the same image.

The second image uses *DuplicField*.

The third has the effect *InterpField* applied, which uses a method of interpolation, resulting in a notably better quality of image than that of duplication.

The precise interpretation of the *Field* parameter depends on the video format. The consecutive field order varies between PAL and NTSC. The De-Interlace calculation always corresponds to the temporary field order, not to the odd or even lines.

When making a render, it is essential to deactivate the *Interlaced* option, as otherwise the effect will be ignored.
Mistika’s tools for manipulating stereoscopic images and sequences are found in this group.

### The stereoscopic image

In the real world, objects are positioned in three-dimensional space.

A projected image is flat, in which objects are located only two-dimensionally. The third dimension, which corresponds to depth, is lost.

However, a process called Stereopsis is enough to convince the human eye to perceive this missing dimension; it consists of interpreting the difference between two images projected to each eye.

Although there is only a single image formed in the brain, the interocular distance - on average 65 mm - obliges each eye to focus and center on a close object, make both images converge into one. Closer and more distant objects are seen doubled and out of focus.

If the object being viewed is very far away, the eyes stop trying to make their individual images converge, since at large distances, the visible viewing point is greater than the interocular distance of 65mm and so they stay in parallel.
Stereoscopy is a technique that takes advantage of stereopsis to create the illusion of depth of an image, combining a pair of images that arrive separately to each eye, so the human brain tries to make them converge into a single image.

This "trick of the eye" is based on the fact that human sight will accommodate this effect to view a screen, while the observer can choose the convergence of the pair of images in an interocular distance that does not correspond to the accommodation plane for the focus that the eyes naturally try to find.

The means that a viewed object can seem to be closer to the observer than the screen (negative parallax) or behind the screen (positive parallax). A pair of stereoscopic images, given the differences they have as a result of the differing camera positions with relation to the same perspective, allows the viewer to choose the depth plane required to be converged, but cannot correct the focus of that plane, since the focal plane is set at the moment of obtaining the images during filming. For this reason it is important to make sure that the convergence plane is sharply focussed in the original material. The most visually comfortable convergence plane for the spectator is always that which coincides with the accommodation plane, or in other words, the screen, which defines zero parallax.
Positive parallax is limited by the interocular distance (an average of 65 mm), which is why it should be remembered that the larger the stereoscopic image, the more limited its positive parallax will be, since images that are separated by more than the interocular distance cannot be converged.

For this reason a better stereo effect is achieved in monitors than in large cinema screens.
A useful method for simulating greater positive parallax is to trick the viewer by creating a frame around the screen that simulates a negative parallax, which by reference creates the illusion of greater positive parallax. This frame creates a floating window which virtually brings the screen closer to the viewer. This method is also very useful to avoid visual discomfort caused by objects that "touch" the edge of the shooting frame, a situation which forces the viewer to perceive two convergence planes simultaneously. With Floating Window it is possible to relocate the frame of the image next to the negative convergence plane of this object, for example.

The difference between the accommodation plane and the convergence plane usually requires unnatural movements from the viewer's eyes, which could provoke headaches or visual discomfort, and so it is important to understand the limitations of the system in order to take maximum advantage of its effect, and avoid the possible difficulties it might cause.

Sudden changes of convergence plane generated, for example by cutting between shots, can be softened by Mistika's dedicated effects.

For greater visual comfort, it is important to correct stereoscopic material, using the interocular balance tools in the effects of Mistika.

It is also possible to edit even the sense of depth, modifying the complete interocular distance; it is possible to divide the sense of depth into segments to be scaled at a later moment. These characteristics are unique to Mistika.

The general processing of effects in Mistika treats the stereoscopic image clip as a unit instead of as a stereo pair of images. This makes postproduction tasks a lot easier, since there is no need to duplicate them, allowing real time color correction with Color Grade effect. Moreover, the effects Comp3D and Refract have a parameter for use with stereoscopic clips: InterOcular, which allows the resetting of the value of interocular distance.

Mistika's versatility when working with stereoscopic images allows the ungrouping and regrouping of the stereoscopic clips, if it is required -for example- to correct each eye separately.
Both effects have a common manipulation tool, *Stereo3D*

Stereoscopic Workflows in Mistika

The most common settings for a stereoscopic workflow in Mistika are detailed below, focusing on the combined use of different tools.

The tasks included in stereo mode are divided into two different phases; although the same tools are usually used in both, principally based around the *Stereo 3D* effect (Node Graph Editor->Dashboard->Fx->Mistika->Stereo 3D->Stereo 3D):

Phase 1 - Technical settings

Phase 2 - Creative settings

Before starting, we recommend the user takes note of certain basic rules for working in stereo:

*Tasks in the technical settings phase must be done without using stereoscopic viewing devices, or using them as little as possible.*

Mistika has various 2D viewing modes for analyzing and correcting problems without needing to use 3D viewing modes prematurely, which could produce headaches and dizziness until the images are correctly adjusted.

*Any small difference of color, geometry or time de-synchronization between the two eyes will badly affect the stereoscopic effect.*

- If these differences are significant, they could completely destroy the effect and cause discomfort when viewing.
- If the differences are small, they may go unnoticed when viewing a small number of clips. However, even small vertical misalignments of a pixel or other less
noticeable differences can result in headaches and dizziness when viewed in larger works.

The possibility of resolving problems in post-production has its limitations and should never be used as a replacement for adequately-shot material.

A good Stereographer is essential on set to ensure the quality of the stereo image, just as their presence is required later in the creative phase.

### Phase 1 - Technical adjustments

The adjustments of the technical phase refer principally to resolving problems produced by technical limitations in the shoot, and it is recommended that they are done before starting any other phase of postproduction, including offline edits.

Bear in mind that the viewing of unadjusted material can be extremely uncomfortable, and that decisions taken in this phase of production will affect all the elements involved in postproduction, so it is recommended that these are done before any other.

Once these adjustments have been made, a compressed version can be produced from the Output tab (Node Graph Editor->Dashboard->Output); or a version in Side-By-Side format can be produced for offline systems (usually MXF, which has sufficient quality for offline and provides timecode); and another version in master quality (without compression at full resolution) for VFX applications (usually in DPX).

Most problems result from the use of two lenses in the shoot: this produces differences in the image that are not perceptible in normal viewing, or because of the limitations of 3D viewing devices.

Many problems (especially those related to geometry) can be caused by working with Beam-splitter rigs: two cameras at 45° to a semitransparent mirror (one vertically shooting the reflected image, the other horizontally shooting through the mirror). This system is used in stereo shoots because high-quality lenses are too big to be placed side-by-side (since they would exceed the interocular distance of the human eye). Small misalignments of the lenses or mirror can produce significant geometric differences that need to be corrected.

As well as geometry, both for shoots with two side-by-side cameras and and those using a mirror, there may be differences in time synchronization, color, focus, lens quality, optical effects etc.

The steps to be followed in this technical setting phase are detailed below, divided into basic techniques (to be applied indiscriminately and can be processed in realtime) and other more advanced techniques that need more time and should only be required selectively.

**Basic technical adjustments (quick, real-time techniques):**

In the technical adjustments phase, the following problems are addressed (usually in the order below):

1. Choosing the dominant eye
2. Organizing material from a shoot
3. Time synchronization differences between the two eyes
4. Basic color differences
5. Basic geometric adjustments (vertical movement, rotation, size and Keystoning)
6. Resolving retinal rivalry using floating windows

The following steps generally require the adjustment of one eye to balance the other, so it is necessary to decide which is the eye to be modified, although sometimes both eyes are modified at the same time (LR option) in order find a balance between the two.
When adjusting Stereo3D effects, the dominant eye is selected via Balance Geometry \texttt{Apply}(L,LR,R) and Balance Color \texttt{Apply}(L,LR,R).

The norms to be followed are established by the stereography artist, and normally the following situation should be taken into account:

- If the production of VFX is going to require camera tracking or other complex effects depending on studio cameras, it will be necessary to maintain one eye without modifications to be used later in calculating the virtual camera in other systems; thus only one eye will be adjusted matching it with the first.

- In cases in which the images for one eye are better than the other, it is recommendable to set this as the dominant eye and only modify the other (for example, in beam-splitter rigs, the image with worse quality would be that reflected in the mirror).

- That said, this decision may be more complex than it first appears: with some shots it may be necessary to carry out the opposite, if it not possible to improve the poorer image, in which case the solution is to introduce the same problem (such as loss of focus, flashes and glints in one eye etc) into the other eye to balance it and produce matching stereo images.

- Setting one eye as dominant also allows the stereography artists to carry out postproduction tasks in parallel: for example, colorists can work on a creative color correction in the eye NOT to be modified, while stereo and match grading adjustments can be done by modifying only the other eye in parallel. They can later be joined quite simply.

- When there are no prior requirements, it is usually recommendable to allow modification in both eyes (LR mode) in order to find a balance between both, since this way, less quality of image is lost in the laterals (this loss is due the need to move, rotate, and scale images to make them coincide, leaving established black borders). This loss is compensated for in Mistika by increasing the image beyond the lack borders, and is less visible in balanced correction mode.

These kinds of decisions definitively affect the whole subsequent workflow. They must be taken at the start and they should be documented in \texttt{Node Graph}, for example via \texttt{Notes} (Node Graph Editor->Dashboard->Edit->Edit->Cursor/Notes).

This aspect of the work is usually time-consuming and consists of loading and preparing the material from the shoot.

- Loading all the clips (via tape capture or using the \texttt{Import All Movies} tool (Node Graph Editor->Dashboard->Media->Import All Movies) for non-tape formats, and optionally conforming if and EDL is available).

- Aligning the clips of both eyes in the \texttt{Node Graph}, bearing in mind that the clip for the left eye must always be in a track above that of the right eye, sin the Stereo3D effect always needs to find them in this order.

\textbf{Note:} This step is not necessary for clips in \texttt{js 2xYUV422}, \texttt{Cineform Stereo}, or \texttt{SXR} formats, as these already contain both eyes in a single clip. For this type of dual clip, we only need to separate the two eyes in the \texttt{Node Graph} (Edit->StereoBreak) in case it is necessary to apply different effects to each.

It is important to verify visually that left and right eyes have not switched places in some clips, since it is a common mistakes made on shoots.

- Apply the Stereo3D effect to each pair (or each dual stereo clip) to prepare it for the following steps.

- If the image in one eye is vertically or horizontally inverted, use the Mirror parameters to undo the inversion.

- Normally, it is necessary to apply the same adjustments to all clips (or at least those
from the same camera rig), so use the Propagate function (Visual Editor->Parameters->Propagate->Propagate Selected/All) to propagate the adjustments to these parameters across to the other Stereo3D clips. This tool can also be useful for many of the following steps, since it is logical to assume that the clips from the same scene require the same treatment.

° In the Node Graph, check that both eyes have the same timecode.

° Open the visual editor (double-click Stereo3D), and visually check that the left and right eyes show the same image for that moment (do not simply trust the timecode).

The recommended viewing mode for this comparison is B&W + Anaglyph (Stereo3D Editor->Quick Access->S3DDisp->B&W + Anaglyph), since it neutralizes all color in the image, leaving red and cyan only at the edges of the objects, according the eye to which it pertains (red = left eye, cyan = right eye), making comparison of movement and geometry easier.

Look for obvious incidents of time de-synchronization, such as clapper-boards, footsteps, blinking eyes etc. If the two clips are out of sync, use Shift Clip (Stereo3D Editor->Quick Access->S3DDisp->Shift Clip), to sync them.

**Note:** Remember that this control does not modify the duration or position of the clips, but simply moves their content in time. For this reason, if the clips are not trimmed at their head or tail, they should also be cut in the Node Graph, so that no clip has frozen images at the start or end.

These problems can be corrected by modifying either of the two clips, but it is always recommendable to be consistent in the choice of dominant eye to make organizing material easier.

**Note:** An extreme case consists of the use of two cameras with no video syncing mechanism between them, which may produce fractional differences in time that cannot be solved with Shift applied to a whole number of frames, and which will be discernible in shots containing a lot of movement. In these cases, the only solution is to use Timewarp to interpolate new intermediate frames that allow us to synchronize the action.

It is common for color differences to exist between the two cameras, mainly due to differences in the electronic settings and the way light interacts with the mirrors and lenses.

Color differences should be corrected as much as possible, as they cause dizziness when viewing uncorrected stereoscopic images for long periods.

It is recommendable to do a first color adjustment via the button Match Colors (Visual Editor->Manipulators Tabs->Stereo3D->Actions->Match Colors) in the Stereo3D Editor before doing geometric adjustments. This is because color balancing will also help the accuracy of other tools. Many of these are based on identifying the position of each element in the two images, and will be more accurate if both have the same color).

For color adjustments, the recommended viewing mode is Checkerboard (Stereo3D Editor->Quick Access->S3DDisp->Checkerboard), which combines the images from both eyes as the squares of a checkerboard. This allows the comparison of each small area separately. It can also be used in combination with the AlignWarp button, which allows the distorting of the elements of one eye to make it coincide with its position in the other eye, and the Checkerboard makes this easier to interpret.
If color is successfully matched in one area, but in doing so other adjustments are undone in other areas, it is usually due to problems with light polarization in the mirror and requires more complex techniques to resolve: see Advanced technical adjustments below. If this is the case, for the moment simply match color in the most important areas (that which will the viewer's focus area) with Match Light / Match Dark, as these tools allow clicking on an area to be balanced, leaving a more precise adjustment for a later time (as described below).

This section refers in terms of geometry to the discrepancies between the two images provoked by misalignment of cameras or by their differing positions with relation to the mirror. These discrepancies are very common owing to mechanical limitations of camera rigs and limited time available during shooting for changing lenses or making corrections. Advanced rigs are robotized and can correct some of these discrepancies, in realtime during the shoot, but they are not perfect and can also produce errors.

The following steps are aimed at eliminating differences in vertical alignment between the same element in the two images: a person's eyes clearly see things at the same relative height and the brain is accustomed to see images in this way. Any vertical deviation (even just one line of one pixel) can cause problems and dizziness. These problems are caused by a variety of reasons which are dealt with below, but they all share the same problem: vertical displacement between what the two eyes see, and which is different in each area of the image, for which reason it is not sufficient just to move the image in one eye up or down, but also to resolve each possible cause separately.

Differences in horizontal displacement (Disparity) are normal and intentional, since these form the basis of stereoscopic vision. However, they can be adjusted to increase or reduce the stereoscopic effect selectively for creative reasons, as explained in the section below. The present section deals only with vertical alignment.

To resolve problems of geometry we can normally use automatic techniques (MatchGeometry button), although there are also semi-automatic techniques if these first are not successful, or if a problem analysis is required in order to improve the chassis (used in shoots with "Mistika Live").

Completely automated systems (such as those available on advanced cameras rigs) are only recommended for live transmission or for adjustments made before shooting, although...
they are not totally accurate, and the mechanism or software can produce errors (it is often impossible to identify 100% the same pixel in the two eyes). A human operator is slower but can do this process much more accurately in the postproduction phase with Mistika.

As a first step, click **MatchGeometry**, which will automatically resolve the majority of problems, and increase the size of the image in **S3DDisp->BW Anaglyph** viewing mode in order to check that both eyes are well aligned vertically in all areas of the image.

If this function is not enough, or if we require a more detailed analysis, then follow these steps:

- Prepare the interface and initial recommendations
- Adjust differences in position
- Adjust differences in size
- Adjust rotation
- Fine tune adjustments
- Adjust Keystoning
- Make other geometric adjustments
- Recover the original convergence (cancelling PosX horizontal displacement)
- Lock future vertical displacement using *Y-constraint*

- Select both clips and apply **Stereo3D**, and double click this to load it into the **Visual Editor**.
- Activate **Automatch** as a first step. This will command Mistika to look for the same element in the two images each time we click the image, and try to make it coincide via the image transformation operation that is selected (**Match Move**, **Match Size**, or **Match Rotation**). (If **Automatch** is deactivated these adjustments have to be done manually, by dragging the cursor in the image).
- Activate **B&W + Anaglyph** viewing mode, which, as previously stated, is especially useful for comparing geometry.
- Check that the *Y-Constraint* button is deactivated. This informs Mistika of vertical discrepancies in the image, so that when clicking in any area, it is not limited to looking for them in the same vertical position in the other eye, since they may be found lower or higher.

During the adjustment of position, scaling, and rotation it is important to choose elements in the image that are not near to the corners (*a useful rule is always to choose points that are at least a third of the distance from the corners*), since distortions produced by camera lenses in these areas produce inaccurate alignment.

Also, we will always have sufficient zoom in the image for accuracy (up to the level of seeing each pixel clearly). and we will look for elements that are clear and sharply focused that can be reconciled (unfocused areas make it difficult to align accurately).

In the following steps, remember that each time we click the image, the scaling pivot and rotation moves to that position. This pivot also provides a cross to the edges of the image that is useful for comparing alignment.
Before adjustment (problems of size and rotation):

Corrected geometry:

The recommended workflow for aligning geometry is as follows:

Locate 4 points that more or less form a cross in the image. The 2 points in the vertical of the center are used to set position and scale, since it is clear that where differences exist in the central vertical axis of the image, they are due to differences in size between images, but hardly any rotation is visible.
On the other hand, the 2 points on either side of the central horizontal axis, are useful for aligning rotation, since rotations are much more notable in these areas, while differences in size will not produce notable vertical misalignment in the horizontal central area. Both these assertions can be checked further in the images in the following sections that deal with scaling and rotation.

**Note:** all the example images have suffered exaggerated distortions for illustrative purposes: distortions in material from shoots would be much less noticeable.

Activate *Match Move* and click on an element in the image in which the vertical misalignment can be seen, which is close to the vertical of the center of the image (since later the size ill be changed; if the example image is used, click in the center of the upper "M").

This action should make the selected element is automatically matched in both eyes (both horizontally and vertically, as this tool also fixes convergence at the established point).

Further clicks in the same zone may be necessary, until the pixels of the element are aligned (red and cyan anaglyphs will coincide at this point, so their color will disappear).

If an exact match cannot be achieved, try using another zone, or deactivate *Automatch* and drag the image to align it manually. These recommendations also apply to the following steps.

Let's now look at another element of the image, more or less following the vertical of the previous one.

If we note vertical misalignment in this new element it will be because the two images are not the same size, since rotation would only produce horizontal differences in these zones (as can be seen in the image in the next section).

Activate *Match Size* and click the new element in the image to adjust its size (following the example, click on the lower "K"). Both anaglyphs should be aligned to their pixels in the vertical (the setting of the previous point is not undone, since by clicking previously, it will be doing a scaled pivot).

Note that the scaled pivot was established in the previous action via *Match Move*. This is because the manipulator *Match Move* is also fundamental in rescaling and rotation operations, so when fixing the convergence in a point it sets an optimum rotation and
scaling pivot in order to carry out these adjustments.

This correction is done after setting size because it is the least common and serious rotation adjustment in beam-splitter rigs.

To adjust it:

- Look for an element near to the central horizontal axis of the image and which is close to the left or right edge, and carry out a **Match Move** at this point to converge the rotation pivot here (in the example, we do **Match Move** in the center of the left "M").

- Now look for a point of interest at the other side of the image close to the same horizontal, and check the vertical misalignment vertical between both anaglyphs in this area. It is clear that the vertical differences in this area must be ones of rotation, since size difference would only cause horizontal misalignment in this area, which now doesn't matter. Correct it with **Match Rotate** (in the example, we do this in the center of the "A" on the right).

Once the previous process is complete, look at the center of the image: this central point is never affected by misalignments of rotation, scaling, lens aberrations, Keystoning, etc. Thus, there must be no misalignments whatsoever in this area. If there are, use **Match Move** to correct. This action may undo other adjustments done in peripheral areas, which means that there exist other problems, mentioned in later sections.

Sometimes, in the previous steps, the mistake of adjusting size and rotation to compensate differences that in fact have other causes: in this case it will be necessary to repeat the three steps one or more times to achieve perfect alignment. This is especially true when finding elements that may have accumulated within the recommended zones: repeating steps will fine-tune these.

Keystoning is the distortion of perspective that both images suffer when two cameras converge on one point (it only occurs when shooting with two parallel cameras, that is to say, cameras that do not converge ), although some camera rigs have advanced image processors to deal with the problem). **It is generally barely perceptible, and therefore it not always necessary to adjust it, or if so, only to a minimal degree.**

This distortion of perspective is inverse in the two cameras since they are viewing the scene from horizontally symmetrical perspectives. The vertical misalignment produced in
the elements of the image are usually only evident near the corners of the image.

Positioning the pivot so that its horizontal line crosses areas in the upper or lower regions of the image (not the central area) with geometrically recognizable patterns helps the detection of the problem. Also, look for the evolution of the problem along the whole of the horizontal line of the pivot, as this helps distinguish the effect of this distortion with respect to those produced by other causes.

To correct it, drag the cursor in the Keystone parameters (Balance Geometry->Keystone) while pressing <Alt> to carry out the adjustment with greater detail (the correction is usually very small, and this action offers greater sensibility).

It is important to remember that Keystone distortion is related only to convergence and has nothing to do with the use of mirrors or distortions caused by optical lenses, although these other issues may make the detection and correction difficult, by producing curved perspective lines and other geometric aberrations.

As previously mentioned, sometimes during adjustments, some processes need to be repeated until the optimum vertical alignment is achieved for all the reconcilable elements in the image.

However, there may be other complex problems that cannot be resolved with the previous techniques, so do not attempt to resolve them by applying the same steps again and again. Experience is necessary in order to acquire the best habits for solving problems such as those caused by mirror angle, the glass of the lenses, zoom, focus, etc. These complex aberrations are dealt with the section on Advanced Technical Adjustments.

During the previous steps convergence has been set at different point that were useful for setting pivots and points of reference for comparison. When adjustment has been completed it is important to eliminate changes made in the horizontal (X-axis) of the images; if not, the convergence point will be different from the original one. The position of this convergence point is an artistic decision (normally set by the stereography artist on the shoot), so that at the end of the adjustments phase it should be left as it is. To do so, when all adjustments have been done, select the PosX parameter (Balance Geometry->PosX) and click Del to eliminate changes made.

Once there are no vertical discrepancies anywhere in the image, it is recommendable to activate the Y-Constrain control.

There is also the option of using the tool Match MoveX, with has the same effect as using Match Move when the control Y-Constrain is active.

These functions indicate that only elements that have the same vertical position in each eye que are looked for, which considerably improves the accuracy of the Optical Flow
algorithms that will be used in the following phases of stereo adjustments.

The questions of retinal rivalry and floating windows require a more exhaustive document to explain them in depth. However, in this section describing basic adjustments, we can give a simplified version of them, focusing on the most important case that will need to be resolved in this phase of adjustment.

The situation that we will deal with here is that of elements that enter or leave the image at the edges or are cut off by it (and so must be viewed as if passing behind the screen frame) and thus cause retinal rivalry resulting in dizziness, if in the part in which they are within the image they are being perceived as if located in front of the frame (by value of having negative parallax). This creates the paradox of having an object being perceived both in front of and behind another object at the same time. Furthermore, it is evident that an object close to the cameras and that leaves by one edge only appears in the camera on the same side as it.

The **Floating Window** technique mitigates this problem by creating the optical illusion of a frame close to the spectator, "in front of" the conflictive objects in a natural and consistent way. This artificial frame also crops the border and hides objects that are only visible to one camera due to being located in this area of retinal rivalry.

To achieve this illusion of moving the screen frame, it is only necessary to crop a a small area on the left-hand side of one of the images, and a similar area on the opposite side of the other image at the same time, which can be done interactively dragging the parameters in the folder **Floating Window**.

This technique can affect creative decisions related to depth perception and also the perception of original images, so it should not be used indiscriminately, when not necessary.

Furthermore, for the optical effect to work, it is necessary for the real frame of the screen being viewed by the spectators to be very dark, with no light leakage around the area of the visible image (such as unfortunately happens with LCD screens, that do not successfully cut out the backlight in dark areas), so this effect works well for cine versions, low range or old 3D televisions.

Remember that in Mistika there are also other advanced and radical techniques for resolving such problems, via optical flow and selective adjustment of depth, although they are slower to carry out and do not offer realtime solutions; thus they fall outside the range of this section of the document.

**Advanced technical adjustments:**

**Common errors:**

- Advanced polarization and color adjustment problems (color discrepancies in different areas of the image)
- Convergence jumps in consecutive clips
- Optical aberrations caused by camera lenses
- Mirror rotation problems and other asymmetric deformities
- Ghosting (double image) problems
- Noise and grain problems
- Differences in Motion Blur
- Glints, optical effects and other imperfections occurring in one eye
- Differences in Zoom, focus and depth of field
- Setting minimum and maximum depths (Depth Budget).
How to solve these problems in Mistika is described below:

Sometimes it is impossible to match the color in the two images by means of the basic settings previously mentioned. This occurs when different corrections are required for different parts of the image.

This problem is normally caused by light losing part of its polarization when reflected in the mirror, thus affecting the color perceived by the sensor. The original polarization differs according to the surface on which the light is reflected, so the changes produced depend on each area.

In order to resolve it, the effect Stereo3D includes the parameters of the folder ColorBalance2 that automatically allows the balancing of color pixel by pixel. Normally, it is only necessary to choose whether we wish to modify the left or right eye via the Fix parameter. If this is not enough, we can modify the MaxDiff parameter which allows more or less radical color modifications; if this is not enough, modify the Softness parameter which indicates to Mistika if the image contains sudden or smooth movements and optimize the accuracy of the calculation for these situations.

When two consecutive clips have their viewer's focus zones in different planes of depth, the resulting effect is uncomfortable, as it forces the viewer to rotate the eyes dramatically in order to focus. This can be corrected via the Depth Transition effect, which animates the convergence plane to achieve a progressive depth transition. This effect works in a similar way to a Mix effect, and similarly, should be done only in the final edit.

To adjust for this problem, first obtain the disparity values from both clips by selecting one at a time and Pick disparity Head controls (selecting the area of viewer's focus at the start of the second clip) or Pick disparity Tail (selecting the area of viewer's focus at the end of the first clip), and then apply an animation of the Depth Transition effect, selecting and clicking Set Stereo Depth Transition Effect.

Most lenses produce spherical deformations in images. Generally, these produce visible vertical misalignments if the cameras are not parallel (and thus produce differences in perspective when converging at one point), and furthermore they will be increased by the Keystoning effect.

This problem is more evident depending on the focal length of the lens used. Stereographic artists usually use fairly open lenses to achieve greater depth in the scene, usually in the range 18mm-50mm, which can therefore produce this problem in postproduction.

Such aberrations are accentuated with smaller lenses.

In order to detect this problem, once the geometry is aligned, look for vertical misalignment in the corners of the image, which is where the problem is visible.

Another technique for correcting these problems is Corner Pin: create 4-point tracking in the dominant eye and apply them to the same points in the other eye to make them coincide, via the Corner Pin parameters of Comp3D.

Sometimes this is not enough and it is necessary to use the effect Warp, especially if this problem is combined with another of mirror rotation, which will produce asymmetric differences that cannot be solved using Corner Pin.

This is one of the most complicated problems to resolve, especially when combined with others. If a mirror is slightly rotated around the vertical axis, asymmetrical discrepancies are produced (which will be very exaggerated in a corner, and different in each corner.)

When the mirror is not perfectly aligned with the lenses in a mirror rig, use the Mistika Match Shear tool to compensate horizontal "shear" distortions.

To set this value, find a vertical object in the middle of the scene: a column, lamppost, tree, vertical edge of a building whose top point is about the same distance from the camera as the bottom one.

To set it, use Match MoveX mode on the top point of the object, then use Match ShearX.
In other asymmetric distortion cases, an alternative is to apply the $\text{Fx-}\rightarrow\text{Warp}$ effect to the non-dominant eye to make the vertical alignment coincide zone by zone.

First, delete the default grid of the $\text{Warp}$ and construct another made-to-measure grid, usually with 9 points (3 vertical and 3 horizontal lines).

The central point is very important as it anchors the area perfectly (vertical misalignments are never acceptable in the central area). Then, pull the corners one by one to correct them.

When using lenses with different aberrations it may be necessary to add more grid correction points. This problem can occur when using lenses from differing manufacturer's batches.

Sometimes it is necessary to compensate for relative scale mismatch in the horizontal axis only. For example, if the mirror used was deformed and not completely flat (ie concave or convex mirror problems).

To fix it, use the $\text{Match ScaleX}$ tool:

To do so, find two objects at the edges of the images (preferably at the same height on the screen) that can be assumed to be at a similar distance, yet they seem to have different parallax, owing to the distortion. Use $\text{Match MoveX}$ on one of these objects, then use $\text{Match ScaleX}$ on the other, to locate it at the same distance as the first.

A related tool that may help to compare both eyes when looking for these problems is $\text{Match MoveX}$: it is identical to $\text{Match Move}$ action with $Y\_\text{Constraint}$ activated, but using just one click.

These issues produces very complex situations in which each area requires a different amount of warping to fix it, because linear geometrical adjustment that fixes discrepancies in one area will produce a problems in other areas.

These cases are easy to detect when using the geometry matching tools as the background and foreground features will be seen to require different geometrical adjustments, which is obviously impossible to fix with standard geometry transformations, and so a complex warp is required.

Typical causes in mirror rigs are:

* When the mirror is not at exactly 45 degrees to both camera.
* When both lenses are not at an angle of exactly 90 degrees to each other.
* When both lenses are not at the same distance from the mirror. This can happen if a camera is slightly displaced or if the zooms are not in identical positions.
* When the lenses have slight differences in geometry.
* When the mirror is slightly deformed or rotated. Mirrors are usually fixed in place at only 3 of their 4 corners. (four points would create tension that could lead to the mirror breaking). This leaves the fourth corner free, which avoids this problem, can create slight mirror deformation due to mechanical stress.

In theses cases, first use $\text{Balance\_Geo\_2}\rightarrow\text{KeystoneX}$, because these situations may produce scale mismatch in the X axis.

You may then need to use the $\text{AlignXY}$ tool, which will identify each pixel of one eye in the other eye and warp one eye at a pixel level in order to match the remaining deformations of both images.

**Note:** Sometimes the corners of the image can not be completely fixed, and it will be necessary to also apply a small amount of zoom to get rid of these areas after using this tool.
Access to this tool is via Stereo3D->OpticalFlow->Mode->AlignXY.

This should be the last step of geometrical adjustments for two reasons: its calculation will benefit from previously carried out adjustments, and because motion estimation tools can create artifacts in some situations, so it should only be used if strictly necessary (if artefacts appear, you may need to use the FX->Warp tool to manually warp the images rather than using this tool).

This refers to the problem of a double image in one of the eyes, sometimes due to an electronic fault in the camera (as might happen in 2D), but mainly this is a problem in the reflected eye when using beam-splitting rigs: the mirror has a thickness which produces a secondary reflection on the rear surface of the mirror. This reflection is weaker, but still visible in the brightest parts of the image.

In order to solve this problem, an effect that works surprisingly well is \textit{Substruct}, which removes one copy of the image, previously aligned with the double image (via Comp3D) and a \textit{Color Grade} or \textit{Channels} effect to control the intensity of the image removed. This technique works well thanks to the fact that the problem is usually only visible in the brightest parts of the image.

On certain rare occasions other problems caused by secondary reflections in the mirror when the cameras are not well-protected from unwanted light, which may be reflected by the camera hood. These problems cannot usually be solved with this technique.

Noise is usually produced by the camera's electronics, caused by the use of codecs with compression, or by film grain when using filmstock negative. This may seriously affect the perception of the stereo image, since each grain or compression will be visible only in one eye, causing discomfort when viewing the stereo image and reducing its effect.

In order to solve such problems, the best results are obtained using \textit{Denoise} in Mistika.

Differences in the settings of the shutter and un-calibrated sensors can cause Motion Blur discrepancies between the two eyes.

Solve this problem with the effect \textit{Optical Motion Blur}.

This effect can also be applied to CG elements derived from VFX to give them the same Motion Blur that a real image has, which is especially important in stereo compositions.

These problems tend to be very time-consuming to correct.

If it is not possible to eliminate artifacts that appear only in one eye, they should be are softened as much as possible and introduced into the other eye with composition techniques, in order to maintain consistency in both eyes.

In extreme cases, it is impossible to remove the artifacts, so the shot has to be discarded and reconstructed using the other eye, by, for example, cutting the elements that are at different depths and locating them in the 3D space with the effect \textit{Comp3D}, (this effect has two virtual cameras when used in stereo mode).

DepthMap can sometime be useful as a base for working with cut masks, but they usually only have defined edges in some parts of the image. If this is not the case, another technique is to blur the DepthMap and use it like \textit{Displacement Mapping} in the \textit{Comp3D} effect, making sure the polygonal subdivision is set as high as possible.

Problems sometimes arise when variable Zoom lenses are used in the shoot, and when the zooms are not exactly the same, and therefore the lenses are not the same distance from the mirror, and thus the focus is not the same.

In this kind of situation, the main symptom is that if we adjust the geometry of elements in the foreground (in negative Parallax) elements in the background (in positive Parallax) lose their setting, and vice versa (and thus a problems of geometry is also created, as well a lack of focus in one eye).

There are various techniques that can be used to deal with this problem, even though it may be problematic:
Mistika also has a very powerful tool for dealing with these situations, which means the user can deal with an unfocussed eye by taking each pixel of the focussed eye and moving it to its corresponding position in the other eye (the unfocussed eye will be discarded but first it is used to ascertain where each pixel is to be positioned). To do so, select the eye to be modified via ColorBalance2->Fix and reduce the parameter ColorBalance2->Smoothness to 0 if necessary. It is also usually recommendable to change the parameter OpticalFlow->Range to None.

The previous method may resolve both problems (geometry and focus) but will not function in all cases, since in certain cases it may result in deforming the image or produce artefacts. The following are some partial alternatives for resolving geometry:

A first approximation is to try to establish an intermediate geometric balance using both settings, always forcing the center of the image to remain correctly aligned.

The Stereo3D->OpticalFlow->Mode->AlignXY tool may solve these geometry issues in many cases. This tool, which will identify each pixel of one eye in the other eye and warp one eye at a pixel level to in order to match the remaining deformations of both images.

**Note:** Sometimes the image corners can not be fully fixed, and it is necessary to also apply a small amount of zoom to discard these areas after using this tool.

The access of this tool is in Stereo3D->OpticalFlow->Mode->AlignXY.

This should be the last step of geometrical adjustments, both because it will benefit from previous adjustments and because motion estimation tools that can create artifacts in some situations.

On some occasions, it is possible to use other techniques based on creating two (or more) versions with different settings, one for each significant depth layer, and later compose them with Mistika's different composition tools.

The FX->Warp effect may help to resolve very complicated areas but may be very time-consuming.

Mistika has unique tools for subsequent adjustments of interocular distance and for the control of the depth of the stereoscopic effect. This section only deals with its use for adjusting extremes of maximum and minimum depth.

Each stereoscopic screen has a maximum and minimum depth that can be shown, and which depends on the distance from the spectator and the quality of the technology employed.

The limits of disparity depend on each specific situation (normally, tables or simple formulas that relate real depth with the number of pixels of disparity for the intended 3D display are used as reference). Generally, it can be said that:

- For 3D televisions, use positive parallax, locating the majority of the action "behind" the screen.
- For cinematic productions, the action should be located at the depth of the screen, without abusing the effects of negative parallax,
- For large-scale screens with considerable distance between screen and viewers (such as IMAX) it is possible to position a large part of the action between the spectator and the screen.

To adjust for different versions, remember that independent of the 3D display available, it can be used to simulate larger or smaller screens, only by changing the spectator's distance from the screen distance.

The following adjustments require the supervision of the stereography artist, since as well as solving technical problems they may also affect the fundamental perception of the scene.

To center the scene between the depth limits, modify the parameter PosX.
To obtain a good visual reference, there are two possibilities:

- Open the viewing mode panel *ShowDepth* (Optical Flow->Mode->ShowDepth), which shows the depth (disparity) of each pixel in grayscale.

- Choose the viewing mode *Warp* (Optical Flow->Mode->Warp) and open the panel *DepthGraph*:

![DepthGraph](image)

Before using these graphics, the geometry needs to have been correctly adjusted as detailed earlier, and color matching and other questions need to have been addressed, otherwise, these graphics will make no sense. Also, activate the *ConstrainY* button for greater accuracy.

If it has not yet been done, adjust the *Negative Split* and *Positive Split* parameters (Optical Flow->NegativeSplit/PositiveSplit) is acceptable for the intended 3D display.

The vertical lines of the *DepthGraph* represent the limits of negative, positive and the plane of the screen (convergence plane). When the convergence plane is changed (*PosX* parameter), we can see how both graphics change interactively.

The *DepthMap* allows us to see the depth associated with each element of the scene, so we know which elements exceed the limits (although it is not always necessary to correct them), and we know if the full depth is being adequately used for elements that are subjectively important.

**Phase 2 - Creative stereoscopic adjustments**

Some creative stereoscopic techniques and their method of employment in Mistika are described below. Generally, they should be carried out under the supervision of a stereoscopic artist. They should not be begun until the technical setting phase is completed, for the many reasons previously mentioned.

- Choosing and animating the convergence point
- Setting interocular distance and dwarfism/gigantism
- Setting selective depths for different ranges of depth
- Narrative use of floating windows
- Using DepthMap as a mask for other effects
**Choosing and animating the convergence point:**

The convergence point has the virtue of attracting the viewer's attention as the default focus point in the screen. It can be use in a manner correlating to the focal point in 2D.

To set it, select **Match Move** and click on the character to be converged, or modify the **PosX** parameter if no clear convergence point exists.

The **PosX** parameter can also be set via keyframes so that the convergence follows the required element when moving (or if the camera moves) changing depth in each scene.

The animation of the convergence point can be combined with the animation of the floating window to achieve greater dynamism and accentuate changes in depth, or in productions in which a more subjective, or contemplative viewpoint, is required, in which case the same plane needs to be maintained as long as possible.

**Adjusting interocular distance and dwarfism/gigantism:**

For obvious reasons, if the distant between the cameras lenses exceeds that of the human eye (average 6.5cm), characters in foreground (negative parallax) are "dwarfed", while more distant characters in positive parallax suffer from gigantism.

If the distance is less than that between the two eyes, then the reverse is observed.

**Mistika** has unique tools for adjusting interocular distance in postproduction, either to correct such effects or to provoke them intentionally for narrative effects.

- Activate **Warp** (OpticalFlow->Mode->Warp) and **YConstrain** (OpticalFlow->YConstrain).
- Modify the parameters **All** (OpticalFlow->All) to adjust the interocular distance.

Furthermore, if the whole range of depth is not being fully utilized (the stereoscopic effect is hardly visible) or both extremes are being exceeded, use the parameters **All** to change the interocular distance, compressing or expanding the space within the scene.

**Note:** This cannot be seen in the graphic **DepthGraph**, since Warp is a subsequent process based on the results calculated by this graphic. If a graphic of the result is needed, render the current frame for both eyes and view the graphic in a new stereo effect.

**Adjusting depths selectively for different ranges of depth:**

The **Positive**, **Middle** and **Negative** parameters in the **Optical Flow** folder allow the selective adjustment of interocular distance for each of the three zones (behind the screen, central and close to the spectator). This allows the selective adjustment of the depth offering different narrative possibilities. This way, shots that are acceptable in certain areas, but which contain depth problems in others can be kept: so acceptable zones remain unmodified when **All** mode is used to to correct others.

**Narrative use of floating windows:**

Animation of floating windows can also be used to achieve effects of zooming in or out, useful when the convergence can no longer be altered, or in conjunction with the animated convergence.

**Using DepthMap as a mask for other effects:**

A **DepthMap** (OpticalFlow->Mode->ShowDepth) can sometimes be obtained for use in other effects (especially if there is no occlusion, i.e. no object passing behind another, which would prevent tracking pixels at the edges).
To obtain a good-quality *DepthMap*, both geometry and color need to be set perfectly. Activate *YConstrain*, and improve the quality parameters of optical flow (increase *Iterations* and lower *MinLevel*).

The *Smoothness* parameter can also help improve results. This parameter tells Mistika if sudden changes of tracking vectors are allowed, which helps to choose the correct solution for the tracking vector of each pixel. For example, if there are clapping hands in the image, it is necessary to allow the tracking vectors to "bounce" with each clap, whilst if the hands cross instead of clapping, then it should be increased, to prevent vectors bouncing during occlusions.

Then, add a certain amount of blur to the result of the *DepthMap* to soften problems at edges, and contrast it with *RGBCorrect*.

These maps can be a useful base for constructing masks which can be used, for example, to:

- Blur backgrounds or sharpen blurred images
- If well focussed, they can help create composition masks in combination with other techniques. For example, they can help clean up badly-lit Chroma keys, combining both masks.
- If they are correctly set, they can help create composition in combination with other techniques. For example, they can help clean up badly lit Chroma keys, by combining both masks, or by inserting elements in a scene at a certain depth, so that they pass behind other elements and in front of others.
- Re-light scenes with movement in 3D. This may be required for scenes with "flat" lighting, or for more creatives results: apply *DepthMap* as a displacement map in *Comp3D*. Blur the map a little and apply *Color Grade* or *Channels* to extract the correct range and contrast it. Use the 3D lights of the *Comp3D* effect to obtain new lighting. If the displacement map is applied to a dark gray image, masks can be obtained (ideally for each light source) with which secondary color corrections can be applied in *Color Grade* or other effects to simulate lighting for each light.

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**Stereo 3D**

*Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Stereo 3D->Stereo 3D*

The *Stereo3D* effect allows settings changes and the redefining (by means of the application of the *Optical Flow* algorithm) of the values of a stereoscopic image.

**I/O**

**Inputs**

**Input Stereoscopic**: stereoscopic image

**Inputs**

**Image**: stereoscopic image

**Alpha**: opaque mask
### Parameters

#### Mirror:

- Mirror Left Eye; Mirror Right Eye

**[None (None / Horizontal / Vertical / Rotate)]**

Undoes the mirror effect in the pairs of stereo images obtained from *mirror rig* systems, inverting the image horizontally, vertically or both ways.

#### Adjust Geometry:

Global setting parameters for the appearance of the stereoscopic image.

- **PoxX; PosY**

  **[0; 0 (-100.000 / 100.000)]**

  Sets global values of X and Y for geometric correction of the image. The pivot of this parameter is always the center of the image.

- **Zoom**

  **[100 (-100.000 / 100.000)]**

  Sets global scaling values for geometric correction of the image. The pivot of this parameter is always the center of the image.

- **Roll**

  **[0 (-100.000 / 100.000)]**

  Sets a global value for roll for geometric correction of the image. The pivot of this parameter is always the center of the image.

#### Balance Geometry:

- **Apply**

  **[LR (L Only / LR / R Only)]**

  Specifies the range of application of the settings for geometry: left image, right image or both images.

- **PoxX; PosY**

  **[0; 0 (-100 / 100)]**

  Specifies the value of the convergence point, transforming the selected point into zero parallax.
**Zoom**

**[100 (50 / 150)]**
Specifies the value of the size of both images of the stereo pair.

**Roll**

**[0 (-90 / 90)]**
Specifies the value of rotation of both images of the stereo pair.

**Keystone**

**[0 (-10 / 10)]**
Applies a compensation of the Keystone effect, eliminating the trapezoidal deformation caused by badly projected images in stereo capture systems.

**Adjust Color:**

- **Black:Red; Black:Green; Black:Blue**

  **[0; 0; 0 (-100 / 100)]**
  Defines the values of black in the RGB channels.

- **White:Red; White:Green; White:Blue**

  **[100; 100; 100 (0 / 200)]**
  Defines the white point in the RGB channels.

**Balance Color:**

- **Apply**

  **[LR (L Only / LR / R Only)]**
  Specifies the range of application of the color settings: left image, right image or both images.

- **Black:Red; Black:Green; Black:Blue**

  **[0; 0; 0 (-100 / 100)]**
  Specifies the RGB value to be corrected to black in both images of the stereo pair.
  
  Higher values specify a lighter color as a black point, so that the color correction will darken the image if this value increases, and vice versa.

- **White:Red; White:Green; White:Blue**

  **[100; 100; 100 (0 / 200)]**
Specifies the RGB value to be corrected to white in both images of the stereo pair. Lower values specify a darker color as a white point, so that the color correction will lighten the image if this value decreases, and vice versa.

Wedge:Red; Wedge:Green; Wedge:Blue

[100 (0 / 200)]
Specifies the RGB value of the gradient of correction in both images of the stereo pair. This parameter allows the correction of differences in color between images derived from mirror rig systems. In these systems, the mirror is close to one of the two lenses but too far from the other producing gradual differences in color.

Note: If acceptable results are not obtained, it is recommended to use Fix Left or Fix Right of the Fix parameter in the Balance Color 2 folder of this effect.

Floating Window:

Warning: this is the old version of Floating Windows to maintain the backward compatibility. You can find the current version in FW Left Edge and FW Right Edge.

- Left Width; Right Width

[0; 0 (-100 / 0)]
Specifies the crop value of a window floating over the convergence plane.

- Left Slant; Right Slant

[0; 0 (-100 / 100)]
Specifies the value of inclination of a window floating over the convergence plane.

Balance:

Setting parameters for convergence and balance between the pair of stereoscopic images.

- Geometry PoxX ; PosY

[0; 0 (-100 / 100)]
Sets the value of the convergence point, transforming the selected point to zero parallax.

- Geometry Zoom

[0 (-100 / 100)]
Sets the size of both images of the stereoscopic pair.

- Geometry Roll

[100 (50 / 150)]
Sets the roll value of both images of the stereoscopic pair.

- **Geometry Keystone**

  
  
  **[0 (-10 / 10)]**
  
  Applies a compensation of the Keystone effect, which eliminates the trapezoidal deformation that badly projected images can suffer in a stereoscopic capture system.

- **Geometry FloatWin**

  
  
  **[0 (-100.000 / 100.000)]**
  
  Sets the cropping value of a window floating over a convergence plane at negative parallax.

- **Color-Black R; Color-Black G; Color-Black B**

  
  
  **[0 (-100 / 100)]**
  
  Sets the RGB value to be corrected to black in both images of the stereoscopic pair.

  Higher values set a lighter color as the black point, so that the color correction will make the image darker if this value is increased, and vice versa.

- **Color-White R; Color-White G; Color-White B**

  
  
  **[100 (0 / 200)]**
  
  Sets the RGB value to be corrected to white in both images of the stereoscopic pair.

  Lower values set a darker color as the white point, so that the color correction will lift the brightness of the image if this value is decreased, and vice versa.

**Optical Flow:**

- **Mode**

  
  
  **[Off (Off / ShowDepth / Warp / Align)]**
  
  Defines the four possible viewing modes of the optical flow effect, as follows:

  - **Off.** Deactivates the warping effect.

  - **ShowDepth.** Viewing mode for the depth of the stereo pair, shown in grayscale. Darker grays represent objects with negative parallax, lighter grays represent objects with positive parallax.

  - **Warp.** Activates the warping effect, allowing the scaling of depth by means of the Optical Flow algorithm.

  - **Align.** This mode is automatically activated when selecting the Align Warp manipulator based on the Optical Flow algorithm. With the Checkerboard viewing mode activated, Align Warp allows the viewing of both cameras as if they were identical frames, which assists color correction of both simultaneously.

  - **AlignXY.** Activates the deforming effect that allows the correction of vertical
alignment cause when the angle between the lenses and the mirror is not exactly 45º, or when the distance between each of the lenses and the mirror is not the same (as for differences in zoom).

- **Y-constrain**

  [No (Yes / No)]

  Limits warping to the horizontal axis, avoiding undesired warping in the vertical axis.

- **Range**

  [Medium (None/Small/Medium/Large)]

  Indicates the interpolation that Optical Flow will use.

- **MinLevel**

  [1 (0 / 8)]

  Factor that divides the drag resolution in half: the higher the value, the lower the resolution, thus accelerating the calculation of the effect.

- **Levels**

  [7 (1 / 8)]

  Refines the direction of the movement vectors.

- **Iterations**

  [100 (0 / 1.000)]

  Reviews of movement in areas with little detail.

- **Smoothness**

  [10 (0 / 1.000)]

  Smoothes the direction of crossed vectors, making them more parallel.

- **Min**

  [-96 (-1.000 / 1.000)]

  Defines the minimum values of depth to be included in the viewing range of the histogram represented by the Depth Graph tool.

- **Max**

  [32 (-1.000 / 1.000)]

  Defines the maximum values of depth to be included in the viewing range of the histogram represented by the Depth Graph tool.
→ All

**[1 (0 / 3)]**
Scales the sensation of the whole depth range.

→ Negative Split

**[-32 (-1.000 / 0)]**
Defines the limits between the negative convergences and those of the mid-range. This value is represented in the Depth Graph with the blue guideline.

→ Negative

**[1 (0 / 3)]**
Scales depth in the negative range of convergences.

→ Middle

**[1 (0 / 3)]**
Scales depth in the middle range of convergences.

→ Positive Split

**[16 (0 /1024)]**
Defines the limits between positive convergences and those of the mid-range. This value is represented in the Depth Graph with the red guideline.

→ Positive

**[1 (0 / 3)]**
Scales depth in the positive range of convergences.

**Balance Color 2:**

These parameters specify the correction values used by Mistika's advanced tools for balancing color in the two images of the stereo pair. For more information on the functions of the **Balance Color 2**, group, see Advanced polarization and color problems.

⇔ Gain 1; Gain 2; Gain 3

**[1 (0.100/ 10)]**
These parameters store values for the **Match Color** manipulator and should not be manually modified.

⇔ Offset 1; Offset 2; Offset 3

**[0 (-1 / 1)]**
These parameters store values for the *Match Color* manipulator and should not be manually modified.

- **Fix**
  
  **[Off (Off / Fix Left / Fix Right)]**
  
  Specifies which of the two images of the stereo pair (*Fix Left* or *Fix Right*) is to be modified to balance the color.

- **Smoothness**
  
  **[1 (0 / 100)]**
  
  Specifies which type of *Optical Flow solution* should be chosen. Higher values indicate to Mistika that the solution should not allow sudden color changes, and vice versa.

- **Max Diff**
  
  **[5 0 / 100]**
  
  Specifies the maximum permitted limit of the range of the color correction.

**Balance Geo 2:**

Parameters that define the correction values used by the Match Shear and Match ScaleX tools.

- **ShearX**
  
  **[0 (-10 / 10)]**
  
  Value in the horizontal axis for correcting shear distortion.

- **ScaleX**
  
  **[100 (50 / 150)]**
  
  Scale value for the horizontal axis, which is needed when viewing two objects at the same depth in the shot that have different parallaxes. This is caused when the mirror used in the chassis is not totally flat. To correct this, select two objects at the edges of the image (preferably at the same height) at a similar distance from the camera; using *Match MoveX* click on one of them, then with *Match ScaleX* click on the other. Mistika corrects the difference in scale between the two eyes.

- **KeystoneX**
  
  **[0 (-10 / 10)]**
  
  Keystone value for compensating scaling issues between upper and lower parts of the image; this can be caused by the mirrors on the chassis being misaligned or the cameras not being at exactly 90°. This parameter is not usually necessary, and so can only be adjusted manually.

**Note:** Once this is used it may be necessary to use *AlignXY*, as these cases also sometime have image deformation issues.
Image:

These parameters define final modifications for the stereo pair.

- **Gamma**

  \[1 \ (0 \ / \ 10)\]

  Sometimes, the zonal Match Color tool (Fix Left / Fix Right) works better if a logarithmic scale with a gamma values is applied to the correction.

- **Border**

  **[Extrude (Extrude / Fill Black)]**

  Indicates whether there is an extrude (if a bigger original image is required) or black fill at the edge of the original pair of images; an extrude is produced by dragging the values of the final pixel of the original border to the edge of the final image.

**FW Left Edge:**

This allows the control of the values of the Floating Window and the Crop of the left side of the image.

- **Crop**

  Controls the value of crop of the left side of the image. This affects the whole of the stereo pair.

- **Top**

  Controls the values of the Floating Window at the top left of the image.

- **Both**

  Control values of the Floating Window values of all of the area left of image.

- **Bottom**

  Controls the values of the Floating Window at the bottom left of the image.

**FW Right Edge:**

This allows the control of the values of the Floating Window and the Crop of the right side of the image.

- **Crop**

  Controls the value of crop of the right side of the image. This affects the whole of the stereo pair.
• **Top**

Controls the values of the Floating Window at the top right of the image.

• **Both**

Control values of the Floating Window values of all of the area right of image.

• **Bottom**

Controls the values of the Floating Window at the bottom right of the image.

**HIT:**

Functionally, the HIT parameter acts like the PosX value in Balance Geometry, ie it defines the value of the convergence point. But while PosX is a technical feature, the value of HIT serves a creative tool. Thus its use is indicated as the final step: once the stereo pair has been adjusted technically, the creative phase begins using this parameter.

**Quick Access**

The following tools are found in the direct access bar dedicated to the **Stereo 3D** mode of the **Visual Editor**.

- **Use Stereo Mode.**
  
  Activates the stereoscopic viewing mode.

- **S3D Disp.**
  
  Sets the stereoscopic viewing mode for the visual editor.

- **S3D Live.**
  
  Sets the stereoscopic viewing mode for the video output.

  **Note:** some modes, such as **Anaglyph**, may be viewed badly in non-calibrated monitors, with imperfections in the YUV video signal.

- **Viewing modes.**
  
  The possible modes are described below:

  - **Left Eye.** Mode for viewing only what will be seen by the left eye of the viewer.

  - **Right Eye.** Mode for viewing only what will be seen by the right eye of the viewer.

  - **Anaglyph.** Color viewing mode for anaglyph glasses, red for the left eye and cyan for the right eye.

  - **B&W Anaglyph.** Black and white viewing mode for anaglyph glasses, red for the left eye and cyan for the right eye. This mode is more comfortable than common anaglyph, since by eliminating the color in the stereo pair, it avoids the problem of darkened objects where colors are saturated.
Interlaced. Interlaced stereoscopic viewing mode. Each one of the stereoscopic pair is viewed in a different field within the same interlaced signal.

**Note:** This mode does not work with progressive sources such as an interface monitor.

Side By Side. Viewing mode that scales the resolution of the stereoscopic pair to half, in order for both images to be viewed side by side.

**Note:** Many devices, such as active glasses, recognize this mode, in order to automatically activate their own stereoscopic system later.

Difference. Viewing mode in which the stereo pair is superimposed to detect differences between the images. This mode helps the user to set zero parallax, indicated by the vanishing silhouettes of the objects found in the accommodation zone.

Checkerboard. Viewing mode that overlays the stereo pair with a checkerboard mask. This mode helps the user with balance of brightness and color in the stereo pair.

**Note:** To maximize the use of this mode, activate `Warp->Mode` in `Warp`.

Mix. Viewing mode in which the stereo pair is mixed into a single image.

Dual Link. Viewing mode in which the video output uses the two dual link outputs as independent signals.

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Shift Clip

Allows the setting of input and output points of an image without changing its duration. Applied to a stereo clip, this command is very useful for balancing out of sync cameras in the `Node Graph`.

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**Stereo3D Editor**

*Ref. Mistika: Visual Editor->Manipulators Tabs->Stereo3D*

It is common to find pairs of images with imbalances, owing to the use of mirrors, or simply a lack of care when setting the two stereoscopic lenses.

These commands define behavior of clicking over a point in the stereoscopic image. Mistika reconstructs the depth map that the parallaxes of the pair of images create, thus allowing them to be edited interactively. Thus when clicking over a point, it will automatically recognize the convergence shot to which it pertains.

The interactive selection modes are used to change the convergence point, and match size, rotation and brightness of both images. The matching of the stereoscopic pair maximizes the effect of depth and improves visual comfort.
Match Tools:

- **Set Pivot**

  Selects the pivot point for the balance correction between the two images. This point must be set as a first step before trying to set the Match Rotation and Match Size points.

- **Match Move**

  Interactively matches the position of both images of the stereoscopic pair. This is used to reset the convergence point, transforming the selected point to Zero Parallax.

- **Match Size**

  Interactively matches the size of both images of the stereoscopic pair. It is recommended to first select a Pivot point with the mode Set Pivot, and then a second point that, vertically anchored to the Pivot, will reset the size of both images.

  **Example of use**: The cross manipulator is useful for looking for a good pivot point, since we will need to find an object that can be measured vertically. The first click with Set Pivot should be, for example, on the upper edge of a vertical post. The second click should be done with Match Size, on the lower edge of the post. The vertical distance between both points will define a size that Mistika will balance between the pair of images.

- **Match Rotate**

  Interactively matches the rotation of both images of the stereoscopic pair. It is recommended to first select a Pivot point with the mode Set Pivot, and then a second point that, horizontally anchored to the Pivot, will reset the horizon line of both images.
Example of use: The cross manipulator is useful for looking for a good pivot point, since we will need to find a straight line in order to define the camera roll. The first click with Set Pivot should be, for example, a point on the horizon, or the top of a table. The second click should be done with Match Rotation, at the opposite end of the tabletop. The inclination defined by both will create an angle that Mistika will match between the pair of images.

Match Shear

Interactively corrects the shear effect that one image in a stereo pair might have with relation to the other. It is recommended first to select a pivot point with Match MoveX mode, then select a second point with Match Shear which, anchored vertically to the pivot, corrects the shear distortion.

Example of use: The cross-shaped manipulator is useful for helping find a good pivot point, since we need to find a straight line to establish the degree of incline (camera roll). Once an object that shows the shear distortion has been found, click the bottom or lower part of the object with Match MoveX (in the example the bottom of the corner). The second click should be done with Match Shear at the other end/edge. The shear distortion will be corrected with the second click.
Match ScaleX

Interactively equalizes the horizontal size of both images in a stereo pair. It is recommended first to select a pivot point with Match MoveX mode, then select a second point with Match ScaleX which, anchored horizontally to the pivot, corrects the difference in horizontal scale.

**Example of use:** The cross-shaped manipulator is useful for helping find a good pivot point, since we need to find a straight line to establish the degree of incline (camera roll). The first click with Match MoveX should be done on one of the sides of the image, such as on an object with a horizontal shape or one which has the same depth on the other side of the image. The second click is on the other side of the image with Match ScaleX. Mistika corrects the difference between the two images in horizontal scale.

![Before correction](image1) ![After correction](image2)

Place pivot with Match MoveX

Pick here to match

Match Corner

Interactively matches the geometry of both images of the stereo pair in the selected corner without modifying the other three corners. This is not a simple warper, but rather modifies position, rotation, scale and keystone.

Match Dark

Interactively matches the levels of dark in both images of the stereoscopic pair.

For both Match Dark and Match Light, first select "Checkerboard" mode in the S3D display to check that the setting has worked.

**Example of use:** Select a point where the image is dark, although it does not have to be absolute black. Mistika will match the levels of dark between the pair of images.
**Match light**

Interactively matches the lightness in both images of the stereoscopic pair.

For both Match Dark and Match Light, first select "Checkerboard" mode in the S3D display to check that the setting has worked.

**Example of use:** Select a point where the image is light, although it does not have to be absolute white. Mistika will match the brightness levels between the pair of images.

**Pick Tail**

Sets the disparity value in the output clip in a *Depth Transition.*
Pick Head

Sets the disparity value in the input clip in a *Depth Transition*.

Pick Floating Window Depth

Interactively sets a floating window of negative parallax over the convergence shot.

**Note**: the floating window can only be defined in negative parallax, since it only allows the simulation of the closeness of the viewer to the screen by means of the virtual floating window.

Match MoveX

This tool allows access to the same function carried out by *Match Move* with Y-Constrain activated in just one click.

**Interface Modes:**

Auto Match

Activates the automatic correction mode of the manipulators of the *Match Tools* group. To match or line up the cameras, just left click in the area within *Canvas*.

**Equaleyes:**

The *Equalize* function in Mistika allows the automatic setting of different geometries and colors in stereoscopic images.

- Match Geometry

  Specifies an automatic geometry correction (position, size, rotation and keystoning). This preliminary correction allows the resetting of differences between the two images of the stereo pair.

- Match Colors

  Specifies an automatic color correction. This preliminary correction allows the resetting of differences between the two images of the stereo pair.

Disparity Handoff:

The function and use of these manipulators is explained with the *Depth Transition* effect.

**Stereo3D effect modes:**

- Align Warp

  The *Align Warp* manipulator, based on the Optical Flow algorithm, activates the *Align* mode which allows the viewing of both cameras as if they were identically framed.
Y Constrain

Limits the warping to the horizontal axis, avoiding undesired warping in the vertical axis.

**Manip Speed Reduction:**

These buttons define a scale of sensitivity of drag for the movement of the manipulators. The minimum value (1) defines that the relation of drag and modification of the parameter is at 1:1, while higher values define it at, for example, 1:128, making the manipulator less sensitive to the drag movement.

**CP Speed Reduction:**

These buttons specify a scale of drag sensitivity for the Tangent Devices controls when doing Depth Grading controlling parameters of the Stereo3D effect, which requires a different sensitivity than when doing Color Grading (the RGBCor effect has its own sensitivity control). The minimum value (1) specifies a drag and parameter modification relation of 1:1, while higher values, for example, values such as 1:128, specify that the manipulator is less sensitive to the drag movement.

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Depth Graph

This toggle allows the selection of different monitor types in order to evaluate depth of the stereo image.

**Histo Depth:**

This monitor displays a Depth statistics graphic as a histogram.

The vertical axis shows the number of pixels with the same convergence value that have been found in the image; the horizontal axis shows the convergence planes.
This histogram shows the convergence planes found between the parameters $\text{Max}$ and $\text{Min}$, allowing the user to modify these parameters to set the depths of field indicated by the graphic.

The graphic has three vertical guides. The red guideline indicates Zero parallax, the plane where the screen is best situated. The blue guideline indicates the $\text{Negative Split}$ parameter and the green guide indicates $\text{Positive Split}$.

The histogram therefore represents the number of pixels found in the convergence planes closest to the spectator to the right of the green guideline, while to the left of the green guideline is the number of pixels further from the spectator.

The depth range found to the left of the blue guideline can be scaled using the parameter $\text{Negative}$. The depth range between the blue and red guidelines can be scaled using the parameter $\text{Middle}$, while The depth range found to the right of the red guideline can be edited using the parameter $\text{Positive}$.

Use the parameter $\text{All}$ to scale the whole depth range.

**Note:** this tool only shows the original depth of the stereo image, and not the result of the depth scales defined in this effect.

---

**Depth Radar:**

This monitor displays a Depth statistics graphic in wave form.

The vertical axis corresponds to the image, showing the different depths of the pixels in this part of the stereo pair.

The wave form corresponding to the the stereo pair is displayed along the the horizontal axis. The three horizontal guidelines correspond to the parameters $\text{Negative Split}$ (blue), Zero parallax (green) and $\text{Positive Split}$ (red).

**Note:** this tool only shows the original depth of the stereo image, and not the result of the depth scales defined in this effect.

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**Depth Trace:**

This monitor displays a Depth statistics graphic in the form of traces or strokes.

The vertical axis shows the different frames that have been viewed over the course of time, from top to bottom, with the lowest trace being the most recent.

The horizontal axis shows the maximum and minimum depth levels (Depth Budget) used in the given frame, by mean of three depth guides.

**Note:** this tool only shows the original depth of the stereo image, and not the result of the depth scales defined in this effect.

---

**Depth Transition**

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Stereo 3D->Depth Transition

The $\text{Depth Transition}$ effect is a transition between two $\text{Stereo3D}$ effects.

The general use of this transition is to bring the convergence points of two images whose distance apart could be uncomfortable for the viewer when cutting from one shot to another closer together.

Just like other transitions in Mistika, $\text{Depth Transition}$ should be positioned over the two clips (or in this case, $\text{Stereo3D}$ effects) to be applied. The duration of $\text{Depth Transition}$ is
set by this transition.

The only parameter of this effect is Balance->PosX, which defines the position of the mixed convergence point during the transition.

The most practical way of applying Depth Transition is to use the Visual Editor with its Eval Tree and Storyboard tools.

Once the Depth Transition is applied in the Node Graph, drop down the Eval Tree and Storyboard toggles in the Visual Editor.

In the Storyboard, choose a position with the command <Ctrl>+<LeftClick>. Use the Pick Tail manipulator in the Dashboard of the Visual Editor to define the output convergence.
point, and left click on the Canvas. The Disparity Tail box in the Disparity Handoff group of the Dashboard is updated with the value shown. This box also allows values to be set manually.

Next, select the input image using Storyboard again. With the Pick Head manipulator, define the input convergence point as before. The Disparity Head box in the Disparity Handoff group of the Dashboard is updated with the value shown. This box also allows values to be set manually.

Finally, to apply the transition, select Depth Transition from the Eval Tree toggle by left clicking and then select the command Set Stereo Depth Transition Effect in the group Actions of the Dashboard.

Stereo Extract

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Stereo 3D->Stereo Extract

This tool allows the conversion of a simple clip to a stereo clip with stereo information in SBS (Side-By-Side) format, extracting both eyes in separate images, normally to be passed to the effect Stereo3D. Generally, this type of format is derived from stereo recording done on VTRs que that do not allow dual stream recording.
I/O

Inputs

**Single input**: Image in *SBS (Side-By-Side)* format.

Inputs

**Image**: Stereoscopic image (*SBS-Auto*) or simple image (*SBS-Left, SBS-Right*) scaled to the current resolution.

**Alpha**: Opaque mask.

Parameters

**StereoExtract**: Parameter which specifies how SBS images are processed.

- **Extract**

  **[SBS-Auto (SBS-Auto / SBS-Left)/ SBS-Right]**

  Specifies whether the extraction produces a stereo image (*SBS-Auto*) or a simple one. If it is the latter case, the value specified as resulting image may correspond to the left eye (*SBS-Left*) or the right eye (*SBS-Right*)

  **Note**: Owing to the process of selection and rescaling the resolution of the original image will be visibly reduced.

Depth Grade

The main function of this new effect is to transform a 2D image to a 3D image using mainly depth maps and masks (manually created or extracted from an Index map). It also allows to compound in Z-Depth, using the Depth values of the scene and the alpha channel information. The depth grade node generates the stereo pair based on a *p-map* (a parallax map created with depth maps), allowing in the composition to control depth adjustment independently by layer based on its masks information.

I/O

Inputs

**Multiple Inputs**: RGB image with a *p-map* (parallax map generated with depth maps), and (optional) mask layers top adjust independently the elements of the image.
Output

**Output:** Stereo Image.

Parameters

**Global:**

The Global parameters control the general depth adjustment of the scene.

- **Target Eye**
  
  Specifies the range of application of the settings for geometry: left image, right image or both images.

- **Pushing Range**
  
  Specifies the depth range application of the settings for geometry.

- **Z-Preview Near**
  
  Extend or stretch the *Depth Graph* visualization using negative parallax as reference. It doesn't affect the clips, it's just pure visualization.

- **Z-Preview Far**
  
  Extend or stretch the *Depth Graph* visualization using positive parallax as reference. It doesn't affect the clips, it's just pure visualization.

- **Z-Translate**
  
  Moves the objects in Z using the value in *InterAxial Center* as reference.

- **Interaxial Center**
  
  Controls the position of the convergence plane. It works as reference for *Z-Translate* and *InterAxial Scale*.

- **Interaxial Scale**
  
  Scales the interocular value using *InterAxial Center* as reference.

- **Compress Near**
  
  Moves the *Negative Split* in *Depth Graph* (in blue). It's used as reference for *Compr. Direction*.
• Compress Far

Moves the Positive Split in Depth Graph (in red). It’s used as reference for Compr. Direction.

• Compr. Direction

Compress the parallax difference of the clip without pass the Compress Near/Far reference.

Layer:

Depth Grade effect works with a Layer system based on Depth Maps and masks. Because of this, the Depth Grade node allows to composite one entire scene using the depth information of each individual layer or even elements inside that layer. The structure of a Layer in Depth Grade is quite different from other layers in Mistika. In the following example we can see the different objects in a layer:

The layer is composite by one RGB image (the 2D main image), a depth map or p-map (which information will be used for generate the Stereo pair), and finally 3 masks created with an Index Map to control the depth of each individual element. This group (RGB+Depth map+masks) is an entire layer. If we would like to add a second layer, we will need to use another RGB image with a Depth map for that image (masks are optional, only if we want to have more control of the layer).

The parameters of each layer are the same that Global, with the difference that only affects the selected layer and not the entire composition. This control allows us to composite all the layers not only based on the alpha channel or by operations like Blending Modes, but using the depth information as well to adjust each layer in Z, and then control the general depth of our composition with the global parameters.

Add or delete new layers is the same than in other effects (Comp3D or Color Grade, for example).
Switch Eye

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Stereo 3D->Switch Eye

The effect Switch Eye allows the isolation of one of the two clips that form the stereo pair; they can be modified separately, only one eye worked on, or the 3D effect simply inverted, changing both clips and recombining them with their positions inverted.

I/O

Inputs

Single input: Pair of stereo images.

Outputs

Image: Original image or single image corresponding to one of the images created by the stereo pair, according to the option selected.

Parameters

Switch Eye

[Both (Both /Only Left / Only Right)]

Switches between the different possible outputs that the effect offers. It can be applied with no immediate effect on the stereo pair (Both), preserving both images, or can be selected so that the output is only one of the images.
Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Misc

The menu Misc contains various effects that do not belong to other groups.

**Framing**

Ref. Mistika: Node Graph Editor->Dashboard->Fx->Mistika->Misc->Framing

This effect allows direct access to the Framing tab in the Visual Editor (Visual Editor->Dashboard->Framing) without needing to apply an additional effect (such as Color Grade or Comp3D).

As well as the possibility of adjusting rescale and cropping values via its manipulators, Framing offers parameters that are relative to the preparation of stereo clips and to the management of different image resolutions in the same project.

For more information relating to the use of the manipulators in the Visual Editor, consult the chapter dedicated to the Framing tab.

**I/O**

**Inputs**

*Single input:* image with or without alpha channel.

**Inputs**

*Image:* Cropped and rescaled; with the original resolution or with that corresponding to the current project (depending on the parameter Result Size).

*Alpha:* Cropped and rescaled mask; with the original resolution or with that corresponding to the current project

**Parameters**

**Options**

- **Mirror**
  
  **[None (None / Horizontal / Vertical / Rotate)]**
  
  Corrects the mirror effect in the stereo pairs deriving from mirror rig systems, inverting the image la horizontally, vertically or both ways.

- **Result Size As**
  
  **[Input (Input / Project)]**
  
  Specifies the resolution of the output of the effect. The Input option sets the resolution as the same as the original clip. The Project option sets the output resolution as that of the current job (mConfig->RenderFormat).

  The Input option is especially useful, when the clip has a higher resolution than the project and it is desirable to maintain this resolution to be applied to other effects later, such as Comp3D and Color Grade which can work in full resolution and extract
greater detail from the working resolution.

The *Project* option has two modes: *Project Anamorphic scale*, which rescale the clip in X and Y to the project resolution; and *Project 1:1* which maintain the original resolution of the clip inside the project resolution.

The *Live* option has two modes: *Live Anamorphic scale*, which rescale the clip in X an Y to the *Live Video* resolution (video output); and *Live 1:1*, which maintain the original resolution of the clip inside the *Live Video* resolution.

- **Quality**

  **[Bilinear (Nearest / Bilinear / Bicubic / 7 Taps / 15 Taps)]**

  Specifies the quality of the rescale filter.

  The qualities available are shown in the dropdown list of the parameter, from lower to higher from top to bottom. It is recommendable to use the lowest quality that gives appreciable improvements, since the higher the quality, the more calculation time is required.

- **Roll**

  **[0 (-100 / 100)]**

  Rotates the whole image around its center point.

  **Note:** This parameter works in degrees, unlike the majority of Mistika parameters, which work with percentage values.

- **Scale**

  **[100; 100 (0 / 100.000)]**

  Specifies the percentage value of the output image size to which the original will be rescaled. This value is relative to the configuration set in *Options*.

  **Note:** The percentage value is relative to the resolution of the output, not to the original resolution of the file to be rescaled. To see the values in pixels, it is recommended to use the manipulation mode *User Resize and Offset in Pixels* of the *Visual Editor-*->*Framing* manipulator.

- **Offset**

  **[0; 0 (-100.000 / 100.000)]**

  Specifies a two dimensional offset of the output image, expressed in percentage units.

  **Note:** The percentage value is relative to the resolution of the output, not to the
original resolution of the file to be offset. To see the values in pixels, it is recommended to use the manipulation mode User Resize and Offset in Pixels of the Visual Editor->Framing manipulator.

### Crop

- **Crop Left; Right; Top; Bottom**

  \[[0; 100; 100;0 (0 / 100)]\]

  Specifies the cropping of an image from its four borders, coloring the cropped area black and at the same time cropping the alpha channel.

  **Note**: The percentage value is relative to the resolution of the output, not to the original resolution of the file to be cropped. To see the values in pixels, it is recommended to use the manipulation mode User Crop in Pixels of the Visual Editor->Framing manipulator.

### GLSL

This effect allows the application of GLSL code and controls its parameters via the Mistika interface.

This code is supported natively by Nvidia GPU and is implemented via the three floating variables in each of its 5 parameters.

The intention of this is to permit the programming of user effects that can be processed at great speed or in real time.

#### I/O

**Inputs**

- **Single input**: Image with or without alpha channel.

**Inputs**

- **Image**: Image with changes specified by the GLSL parameters.

- **Alpha**: Mask with changes specified by the GLSL parameters.

#### Parameters

**GLSL Code**

- **GLSL Code**

  Allows the selection of the source code to be applied. These codes must be installed in the directory `/home/Mistika/Mistika-ENV/etc/GLSL`.

  If the directory does not exist, it must be created.
Parameters: paramX

This folder contains a group of 5 parameters each with 3 different values. All of these parameters can be specified via the application of source code.

The use of these parameters allows the direct implementation of effects processed by the GPU.

- paramX.r; paramX.g; paramX.b

\[0; 0; 0 \ (0 \ / \ 100.000)]

Value fields for the selected source code.

LUT 3D

This effect allows the application of LUTs 1D and LUTs 3D directly to a clip in real time.

Unlike the 3DLUTs of RGBCor effects (which all use the same 3DLUT), this effect allows us to apply different LUTs to each type of clip.

It also allows advanced combinations of LUT1D and LUT3D.

We normally only need to apply one of the three possible LUTs, but up to three LUTS can be combined at the same time in various ways. If they are defined, the three LUT are applied in the order that they appear (LUT 1D a, Lut 3D, LUT 1D b) (see Use and Comments section for more information).

I/O

Inputs

Single input: Image with or without alpha channel.

Inputs

Image: Image with the color values processed and modified by the LUTs.

Alpha: Unchanged.

Parameters

Input

- Scale

\[1 \ (-100.000 \ / \ 100.000]\]

Specifies the value of the gain of the input.

- Offset

\[0 \ (-100.000 \ / \ 100.000]\]

Specifies a displacement of the luminance values of the input.
- **Gamma**

  `[1 (-100 / 100)]
  Specifies the value of the gamma curve of the input.

- **Use**

  `[Direct (Direct / Inverse)]
  Specifies whether the input parameters are applied directly or inversely. Inverse mode is normally only used when using the effect to reverse the application before in the same LUT in a different effect.

**Lut 1D**

Dropdown LUT File which allows the selection of the LUT 1D file to be applied before the application of the LUT 3D.

**Lut 3D**

Dropdown LUT File which allows selection of the LUT 3D to be applied.

**Lut 1D**

Dropdown LUT File which allows the selection of the LUT 1D file to be applied subsequently to the application of the LUT 3D.

**Output**

- **Scale**

  `[1 (-100.000 / 100.000)]
  Specifies the value of the gain of the output.

- **Offset**

  `[0 (-100.000 / 100.000)]
  Specifies a displacement of the luminance values of the output.

- **Gamma**

  `[1 (-100 / 100)]
  Specifies the value of the gamma curve of the output.

- **Use**

  `[Direct (Direct / Inverse)]
  Specifies whether the input parameters are applied directly or inversely. Inverse mode is normally only used when using the effect to reverse the application before in the same LUT in a different effect.
Specifies whether the output parameters are applied directly or inversely. Inverse mode allows the reversal of the effect of the application of the Lut 1D to which it was applied before the LUT 3D.

**Use and Comments**

The effect **LUT 3D** allows the application of a correction via 1D LUTs before and after the application of a LUTS 3D.

The order of the process is the same as that of the folders of the parameters, that is to say: the Lut 1D a correction will be applied to the result of the Input correction parameters, and so on up to the Output parameters.

The default format for these files is *.itx*. This format is compatible with other systems such as Lustre (16bit), Nucoda, Nuke, Quantel, Shake, SRW and Blackmagic HDLink.

The Input and Output groups of parameters allow additional corrections to be carried out before and after applying the main LUT. For example, if the effect is applied to a clip whose color space is logarithmic, it is possible to change the value of Gamma in the input of the effect (Input) to linear, via, for example, a LUT1D, since LUTs 3D are more accurate when working in a linear space. Once the LUT 3D is applied, it is possible to reverse the conversion of Gamma in the output (Output) to be able to return to the original color space. To do so, we directly invert the original LUT1D without needing to have a file with it.

**Layer Route**

The effect Layer Route works in a similar way to the effect Channels, but in this case using the layers contained in the relevant EXR clip as interactive elements. Depending on the EXR file used, the number of layers can vary, as can their names, since these are characteristics that are generated when the file is created.
### Inputs

**Single Input**: EXR image

**Image**: any of the information layers contained in the RGB channels of the EXR file.

**Alpha**: any of the information layers contained in the Alpha channel.

### Parameters

- **Layer Set**: Allows the selection of the layer to be used as general information for the clip.

- **Layer to R**: Allows the selection of the layer to be used as information for the red channel of the clip.

- **Layer to G**: Allows the selection of the layer to be used as information for the green channel of the clip.

- **Layer to B**: Allows the selection of the layer to be used as information for the blue channel of the clip.

- **Layer to A**: Allows the selection of the layer to be used as information for the alpha channel of the clip.

### Use and comments

As with the effect Channels, this effect can have multiple uses. The most obvious is the possibility of extracting the different information layers contained in the OpenEXR file. Some of these layers (like Depth, Position, ID, etc.) need the use of the Special Key effect, because they have pure numeric information that need to be translated to RGB to work with them.

It is also possible to have an information layer that is different in each of the channels, and perform general operations between them with effect such as Channels, Color Grade or directly with Comp3D for compositing.
F-3 OFX and compatibility with other applications

This tab provides access to external plugins previously installed in the system.

*Mistika* supports the API of OFX plugins. API is public and allows external developers to create effects that can be used with the softwares that support them. These plugins must be installed in the folder `/usr/OFX/Plugins`. The Plugins folder may not, in this case, have to add a new one. Once installed using the manufacturer's instructions, a new tab called OFX should appear in *Mistika*, where the plugins installed will be located.

At the publication date of this manual, OFX plugins from the following companies are available:

*Sapphire*. www.genarts.com

*Ultimatte*. www.ultimatte.com (Chroma key Ultimatte)

*Imagica*. www.vfxplugins.com

**Compatibility with other non-OFX applications:**

*Mistika* is compatible with the 3D tracking applications of *Boujou* ([www.boujou.com](http://www.boujou.com)) and *Syntheyes* ([www.ssontech.com](http://www.ssontech.com)) cameras. *Mistika* can read and import curves from these applications, and thus they can be used to write *Comp3D* effects. When using these applications, select "Mistika" when exporting the camera.

It also supports the color calibration and 3DLUTS generation of LightSpace CMS from *Light Illusion* ([www.lightillusion.com](http://www.lightillusion.com))
F-4 Legacy

This tab provides access to the \textit{Legacy} type effects belonging to previous and obsolete versions. For this tab to be visible, it needs to be activated in \textit{Mistika Setup} (Mistika Setup->Interface->Show obsolete FX).
Utilities
SGO Mistika can be used in setups that use different external and internal tools, making it easier to carry out tasks related to Mistika's own workflow, and also to increase their potential. The differences between the downloadable and/or external applications supported by SGO and Mistika's functioning are explained below.
SGO Mistika’s Transfer application is used for copying and/or transferring files, whether they exist independently or are referenced by an environment file (.env) or an EDL used by Mistika.

**Toolbar**

The different operating options available in the MTransfer utility are accessed from this toolbar. Many of these tasks can be carried out directly from their own graphics panels or with `<Right Click>` on the file itself.

**File**

- **New Mistika Project**: This creates a new project, with all the associated folders, in the directory specified as WORK. A text field for naming the new project will appear. The keyboard shortcut is `<Ctrl+Shift+N>`.

- **Save log**: Saves the current log in the specified directory with an `.mlog` extension. This informative document can be opened as simple text.

- **Quit**: Closes Mistika Transfer. The keyboard shortcut is `<Ctrl+Shift+Q>`.
Edit

- **Refresh**: Refreshes the Source and Destination panels, to check for new files and directories.

Job

- **Create job from used media in .env**: This creates a task or job in the Job List derived from a Mistika environment (.env) which should be selected via a window that opens when executing this action. All the referenced media in the specified file will therefore form part of the copy made by the job.

Once the environment is selected, a new window appears in which the directory to which the media referenced in the environment is to be copied can be selected.

Finally, an information window will indicate the number of referenced files found, and if they are to be ordered in the document according to their position in the timeline.

*Mistika* Transfer will request confirmation for completing the text document with the indications of the specified copy and add it to the Job List. The text document created will be found in the same directory as the selected environment, with the following nomenclature: mtEnvPaths_NombreEnv (version number).txt. Example: mtEnvPaths_rushes_R3D_day2 (1).txt

- **Create job from text file**: This creates a task or job in the Job List derived from a text document which should be selected via a window that opens when selecting this option. Another window will then appear for indicating the directory to which the referenced files in the text document are to be copied. Information is shown with the number of files referenced in the text document, and finally confirmation for including it in the Job List will be requested.

**Important Note**: The order of the files within the text document will determine the order of the copy of the files when the task or job is started.

Transfer

- **Add to queue**: Adds the file/s selected in the Source panel to the Job list to be copied to the directory in the Destination panel. If they are environments or text documents referenced to files, the files they indicate will not be copied: the previous Job tab exists for this case. The keyboard shortcut is <Ctrl+Shift+A>.

- **Process queue**: Starts the processing of the differing pending tasks in the Job List. The keyboard shortcut is <Ctrl+Shift+P>.

- **Stop all copies**: Stops all copying that is either underway or pending.

Checksum

- **Activate checksum**: Activates the checking (checksum) of copies of new tasks created.

- **Save in checksum file**: Allows the saving of the checksum file as text document. The generated file will be saved by default in the Destination directory, although this location can be modified by selecting the task in the Job List. The generated file will indicate the copied files, the source and destination directories, the task creation date and the checksum file creation date, as well as the checking algorithm employed. The text document created will be named as follows: mtChksum_creationDate_CreationHour.txt. Example: mtChksum_20130121_155021.
Confidence check: Enables the checking of a task via an existing checksum file. To do so, select, select the checksum file of the required task: a dialog box will appear indicating whether the files in the destination directory coincide with those in the source directory. In the case of an error, the file and its corresponding file path will be indicated.

Md4, Md5, Sha1 y File Size: Different checking algorithms from which one can be selected for new tasks created. This can be modified by selecting the task in the Job List.

Number of repetitions: Number of times an attempt is made to repeat the copying of the files detected to be in a checksum process which do not coincide with the originals.

Show panel: This shows a panel with the Checksum options above the Source and Destination panels. The keyboard shortcut is <Ctrl+Shift+K>.

Filters

When copying via the source and destination panels, by dragging the material or folder, the files can be filtered in different ways.

EDL: Allows the filtering of files via an EDL that must be opened in Filters>EDL>Open EDL. Only files referenced in the EDL will be copied. This option can be activated/deactivated in the panel without needing to eliminate the selected EDL.

Extensions: Allows the filtering of files, even those found within an environment or text document, by their file extension. The two tabs Extensions and Default contain standard extensions that can be selected and combined; Custom allows the inclusion of any extension (Enter Text) or via a text document. These options can also be shown in a permanent panel found above the Source and Destination panels, with the option Show Panel the keyboard shortcut is <Ctrl+Shift+F>.

Help

About: This shows the version of Mistika Transfer being used and its compilation date. The keyboard shortcut is <F2>.
(explained in more detail below in Utilities>SGO Mistika Transfer>Toolbar).

To copy, simply select a file or directory in the lower part of the Source panel (this will copy everything contained within it, applying a filter if one is activated in Toolbar>Filters) and drag it to the lower part of the Destination panel (or to one of the directories visible there, in which case the copy will made in that directory).

Job Box and Status Bar

Job Box

The list of tasks (Job Box) possesses various tabs, indicating the different jobs that are pending, their current status; it also indicates failed and completed jobs, and has an information log.

Log

Information screen detailing Mistika Transfer processes.

Job List

List of pending jobs and their current status. All jobs are shown with their source route, destination, and any other data according to the options selected.

The Enable on the left is for activating/deactivating jobs directly from the processing queue.

It is also possible to edit jobs individually and organize the complete list of jobs from this tab. To do so, <Right Click> over the selected job; a dropdown menu will appear showing various options: for starting or activating the processing of a queue of tasks (Start Here), resetting tasks (Reset task) rewriting the creation date, checking that referenced files are not already found within the destination (Check for files in the destination) and modifying priorities within the task's processing queue (At First, Up, Down, To Last).

Tasks can also be deleted (Remove Selected, Remove all pending, Remove all) and jobs can be individually edited (Edit job). On opening Edit Job a window will show the characteristics of the selected job, and its destination can be changed, checksum can be activated/deactivated, and the algorithm can be changed.

Finally it is also possible to save the current jobs list in an XML list by selecting Save, in case the status of a job queue at a specific moment needs to be recovered at a later stage. To do so, simply Open and choose the required list.

Important Note: When a task is eliminated, only its processing sequence is deleted, not the material it refers to.

Failed Jobs

List of failed tasks: like Job List, this tab allows various actions, simply with <Right Click> over the panel. The various actions available include selecting which failed tasks are repeated (Repeat Task) which then return to the processing list, an automatic check that files are not already found within the destination, and re-attempt in cases when only the checksum has failed (Repeat only failed checksums).

To assist organization and clarity, it is also possible to Remove selected tasks, remove canceled tasks (Remove all canceled), remove failed tasks (Remove all failed), remove tasks in which the checksum has failed (Remove all checksum not pass).
and remove all tasks (*Remove all*).

**Important Note**: When a task is eliminated, only its processing sequence is deleted, not the material it refers to.

### Completed Jobs

List of jobs completed correctly. As in the previous tabs, the source and destination of the tasks are shown, as are their dates. Finished tasks can also be deleted from here.

**Important Note**: When a task is eliminated, only its processing sequence is deleted, not the material it refers to.

### Status Bar

The lower status indicates at any given time tasks or jobs that are waiting (*Waiting Jobs*), those that have failed (*Failed Jobs*), those that have been completed (*Completed Jobs*) and the status of the process (*Status Process*).

When *Checksum* is activated, the algorithm selected for checking the copy will be indicated, as will the number of attempts specified for repeating failed tasks (*Checksum Repetitions*).
SGO has several downloadable applications that can be used in combination or to supplement work related to Mistika. These applications are available in the Android Market to be downloaded for mobile/cellular telephones and Tablets.

**SGO Mistika 3D Calculator**

The 3D Calculator application of SGO Mistika, downloadable for Android mobile/cellular telephones, allows the evaluation of a series of common parameters for calculating the final result to be obtained.

**How to use it**

The calculator has 3 main screens:

- **The Settings View**: contains the main the configuration settings.
- **The Calculus View**: performs the stereo calculations.
- **The Screen View**: view and manipulate parameters related to screen viewing.

To move from one View to another, click on the background and slide horizontally.

**Setting Views**

The Settings View enables the user to configure the calculator settings we want to use. Those are:

- **Small Units**: Sets the preferred unit to measure small distances, such as Interocular distance, Focal length, Screen sizes and Disparities.
- **Large Units**: Sets the preferred unit to measure large distances, such as on-set distances and the spectator's distance from the screen.

- **Camera Model**: Defines the camera being used, and automatically sets the Sensor Width and Sensor Height. If the camera used is not in the list, manually adjust the size by selecting “User Defined”.

- **Sensor Width**: The sensor width is automatically set, based on your Camera Model. To set it manually, select the “User Defined” Camera.

- **Sensor Height**: The sensor height is automatically set, based on your Camera Model. To set it manually, select the “User Defined” Camera.

- **Screen Size**: The target screen size defines where the stereo 3D footage will be displayed. There is a list of standard sizes, but a different one can be selected via “User Defined”.

- **Screen Width**: Screen width is automatically set based on the selected Screen Size. To set it manually, select the “User Defined” Screen Size.

- **Spectator Dist.**: Distance from the spectator to the screen.

- **Interocular**: Spectator's interocular distance.

---

**Calculus View**

This view allow us to perform the stereo 3D calculus. The calculus view has 3 main areas.

- On the top it has the scale area: This allows the user to select how fast we want to change numerical values: x1 means it will use unit increments, x10 will use increments of 10, and so on.
On the left there is a column of circular option buttons. Only one will be selected (enhanced in green), and defines what parameter the user wants the calculator to automatically calculate. The selected parameter will be automatically recalculated every time any other value is altered. For example, if we want to calculate the Positive depth budget, select it, and then, every time any other value is changed the positive depth budget will be calculated for the new settings.

The central area includes all the parameters used for calculations.

The parameters of the central areas are:

- **Focal Length**: Camera Focal length we are using.
- **Max. Dist.**: On set maximum distance. The distance to the furthest object on set. Just to the right of the name there is an infinite button. It is used to define the situation where the furthest object is really far away so it can be considered infinitely far. Such us with landscape environments.
- **Converg. Dist.**: Convergence distance. The distance from the camera to the point they are aiming at – regardless of parallel or converged shooting.
- **Min Distance**: Minimum distance. The distance from the camera to the closest object on set.
- **Max Interaxial**: The distance between the cameras.
- **Roundness**: Roundness represents the depth relationship between the real scene and the projected scene. It is measured in percentage. To better understand this concept, suppose we shoot a perfect sphere:
  - 100% Roundness means the perception of the sphere in the projection will be perfect. That is, it will be a sphere.
  - Roundness below 100% means the sphere will be flattened on the projection and will be perceived as a flattened oval in Z. The lower the Roundness is, the more flattened it will be.
  - Roundness over 100% means the sphere will be extruded in Z on the projection and will be perceived as bigger in the Z axis than in the X and Y axes.

A color visual warning tells you how far are you from perfect roundness (100%). The number color changes from green (good) to Red (bad).

- **Pos.**: Positive disparity. This is represented in screen units and in percentage. If the positive disparity is bigger than the interocular distance, a visual warning will advise you by changing the disparity numbers color to red.
- **Neg.**: Negative disparity. This is represented in screen units and in percentage.

There are 3 ways to change the values:

- Using the increment/decrement arrows: using the arrow increases or decreases the value selected in the scale area.
- Holding and sliding the value: pressing the value box and sliding a finger horizontally or vertically the value will be increased (moving up or right) or decreased (moving left or down). Although the increase/decrease value will depend on how much you move, the relative speed depends on the selected scale value.
- Double clicking the value: to enter a specific value, double click on the value.
box. A dialog box will allow you to enter a number.

**Screen View**

On this view is displayed the parameters related to final image display. Its components are:

- **The Screen representation**: This is a visual representation of the screen. On it is shown the positive and negative disparities in percentage of the screen size as well as the distance in screen units. If the Far disparity is uncomfortable for the spectator, the display will show an ‘uncomfortable’ warning. This warning is either "slightly uncomfortable" or "uncomfortable" depending on how intense the sensation would be. If the far disparity is too large to be perceived as 3D by the spectator, the warning will say Double Image!!!

- **Screen Size**: This is the same value as in Settings View. It is available here as it is closely related to this view.

- **Screen Width**: This is the same value as in Settings View. It is available here as it is closely related to this view.

- **Spectator Dist**: This is the same value as in Settings View. It is available here as it is closely related to this view.

- **Roundness**: This is the same value as in Calculus View. It is available here as it is closely related to this view.

- **Pos**: This is the same value as in Calculus View. It is available here as it is closely related with to view.

- **Neg**: This is the same value as in Calculus View. It is available here as it is closely related with to view.
SGO Mistika Remote Control

The SGO Mistika application Remote Control, which is downloadable for Android Tablets, allows the remote use of Mistika viewing functions.

Remote Control has a screen with three zones of buttons: Upper bar, Buttons for controlling the Node Graph (Node Graph Controls) and Jog Panel.

Upper bar

The upper bar has a button with two fields:

**Start**

Button that establishes the remote connection with Mistika. The Remote Control application disables the Feedback mode (in the Visual Editor) by default; if flashes are observed in the video output, its disabled state should checked.

**Mistika IP**

The IP of the Mistika in use is defined in this field.

**Mistika Port**

The default value of the port Mistika will use for remote connections should not be modified.

**Proxy IP**

When Mistika packets arrive at the application via an intermediate proxy, such as a local network, this field must include the IP of said proxy. Normally this field is empty, but check with the network administrator in case of doubt.
**Node Graph Controls**

**Delete Mark**
Deletes the User Mark that we are over in the Monitor, as well as that which is active (if another is selected in the Node Graph).

**Add Mark**
Adds a User Mark.

**Prev Mark**
Moves the Node Graph to the previous mark.

**Next Mark**
Moves the Node Graph to the next mark.

**Prev Edit**
Moves the Node Graph to the previous edit.

**Next Edit**
Moves the Node Graph to the following edit.

**Play Backward**
Activates playback of the Node Graph in reverse.

**Stop**
Stops playback of the Node Graph.

**Play Forward**
Activates forward playback of the Node Graph.

**Jog Panel**

**Scaling buttons** x1 x2 x4 x8 x16 x32
Allows scaling of the sensitivity of the virtual shuttle.

**Jog**
Dynamic control for modifying the position of the Monitor over the Node Graph.
Annexes
Annex 1: Autoconforming and format conversion techniques

Before reading this chapter, the user should be familiar with Mistika’s EDL conforming tools and how to deal with normal situations, as explained in the chapter Conform. This section expands on the information in the aforementioned chapter, and will not normally be required; this section therefore covers methods for dealing with difficult cases, such as non-standard formats, or when filming, offline and conforming systems work with different frame rates or different video formats.

General considerations

In general, when conforming, the following must be borne in mind:

- Mistika allows the user to work independently from the output in terms of reproduction speed and timecode format. This means that work can start in one format and later be switched to a different format.

For example, we can conform an EDL PAL file in HD 25p, and later switch format to HD 24p. In such cases, we will obtain the same Node Graph content, but it will be played out at a different frame rate, and the timecodes will also be different, without adding or removing frames or needing additional action. This is achieved thanks to Mistika’s ability to work internally with dimensions in absolute numbers of frames rather than timecodes.

Thus, whenever importing an EDL, Mistika calculates where each clip in the Node Graph begins (and also measures internally the number of absolute frames) and the absolute number of frames between the input and output points of each clip. From this point on Mistika uses this information internally.

Many of Mistika’s interface tools can independently display the number of frames in Timecode format, but this timecode information will be generated on-the-fly, based on the current user Preset.

In summary, all editing projects are actually stored as an absolute number of frames and thus do not change between different formats, although their timecode representation depends on the presets selected for each work session.

This allows the user to switch between different image playback speeds, but audio is not affected in the same way, since audio speed only depends on the Sampling Rate value (44Khz, 48Khz, etc). As a result, if we switch to a different f.p.s. preset, the audio tracks will be out of sync with the images, depending on the f.p.s. of each preset.

- Whenever we have conformed an edit offline, it is highly recommended that the offline version is loaded into a Node Graph track in order to compare it with the conformed version. This is the best way of detecting in time any possible errors. The offline version can be obtained by capturing it from video, via an .avi file or from a numbered sequence of image files.

- In special cases, it may be necessary to work with playback speeds that are different to the video formats supported by the video board, for example, if we wish to playback at 24f.p.s. our video card only has 25 or 30 f.p.s. formats. In this case, we use Monitor Display to to play video at a different speed, if the f.p.s. value has been modified in Mistika Setup (Mistika Setup->Render Format->Render Format->Frames Per Second).

- The playback speed in the video output (Monitor Display->Menu->Live Video) will always be forced to the format selected in Mistika Setup for the video board (Mistika Setup->Video I/O->Video Board Options). This obliges us to choose between the few options supported by each video board.
° We can also achieve a change of format via effects with rescale capability but these work in a different way, as they only affect the clips to which we apply the effect. In this case, first we load the preset corresponding to the output format desired and then apply the rescale effect to the clips that are at a different resolution to the said format. For example, we can be working in PAL and load an HD clip, to which we apply an effect with rescale to obtain its PAL version and thus integrate it into the edit. Generally, the tool that provides the best quality for rescales is the Framing tab (Visual Editor->Dashboard->Framing), increasing its quality parameters as necessary.

° When working in NTSC, pay special attention to the Drop Frame option (Mistika Setup->Video I/O->Video I/O->Drop Frame) in Mistika Setup corresponding to the possible variants of NTSC. Its incorrect configuration can produce inconsistencies between the timecodes of the EDL and those observed when capturing or transferring video.

° When recording to camera, the camera operator should follow these rules:

° When connection to the VTR is via direct cable (RS232-RS422), a 5 seconds preroll is required in order to capture each cut defined in the EDL, so if recording with timecode “jumps”, at least 5 seconds extra must be recorded at the start of each shot. If the tape has timecode jumps between the start of a cut and the previous 5 seconds, the VTR might not be able to provide the images correctly during capture in Mistika. In this case, the segments with timecode jumps will need to be captured manually using the Start Free feature. (Node Graph Editor->Dashboard->VTR->VTR Capture->Start Free).

° Even when there is enough preroll in each segment, if different recordings made on the same tape introduce timecode jumps, the VTR may not be able to find in-points as requested by Mistika. To capture a cut of this type, use the shuttle within any continuous timecode segment to select the timecode and then request its capture.

° Mistika can import audio/video EDLs with cuts, timewarps, mixes, fades to black and SMPTE wipes. Any other effect included in the EDL will not be imported by Mistika.

° From version 3, Mistika can also conform EDLs against numbered image sequences (.dpx). To do so, use the Import tab in the Dashboard of the Node Graph Editor. For more complex cases the external tool Sequencer is recommended.

° In all cases, before importing an EDL, it is essential to be in the Mistika Setup preset that has the same f.p.s. speed as that used to make the EDL. Once conformed, the preset then can be changed as required.

### MXF

Mistika can read .mxf files based on the following codecs:

- DV-25
- DV-50 (DVCPRO)
- DV-100 (DCVPRO-HD)
- MXF uncompressed

The reading of these clips has been optimized in order to be carried out in realtime. Conversion to another format is not necessary.

**Note:** Audio is not supported within MXF files.
Matika supports AAF files generated with Avid Adrenaline® systems, and those which reference MXF files as described above. Their main function is to avoid the need to capture an EDL in order to conform the edit, reusing the MXF file already captured by the offline system.

AAF files should only contain the usual effects: cuts, mixes, SMPTE wipes, blank spaces, and linear timewarps.

When creating AAF files, choose the external media option as referenced (media files referenced by .aaf files should only be external .mxf files, since media inserted in the AAF is not supported).

AAF files should be located in the same directory as the mxf files that it references.

AAF files must be imported with the external Sequencer application, which creates a Mistika .env file with the edit itself with the necessary links.

**Note:** for optimum work flow, capture in uncompressed mxf is recommended during offline, ideally on a shared storage, type S.A.N. This produces optimum quality, and avoids duplication of files since both systems (offline and Mistika) can work on the same files in realtime.

**Conflictive cases**

The following points refer to situations where the offline system does not work in the same video format as the online system, in which case special techniques must be applied in order to maintain timecode consistency. The following points cover the most typical cases, but the user will be able to solve other cases by combining the techniques described.

**Shooting in Sony HDCAM at 24p, offline to PAL with TC at 25 (interpolated) fps for conforming to HD 24p**

The majority of HD VTR permit playback of original 24p tapes in 25p. In this case, the images are reproduced more quickly, in a ratio 25:24, and there are various solutions to deal with timecode issues. This example covers the methods that maintain the original timecode original, and also those that “interpolate” the new timecode.

The “interpolated” method consists of the VTR providing the timecode to 25 that is closest to the original to 24. In this case, the output timecodes will not be consecutive but will be “missing” one timecode per second. (Note that it is not in image frame that is missing, but a timecode that has been skipped). The advantage of this method is the timecode do not go out of sync with the originals, although not all offline systems can capture this kind of timecode with jumps (these cases are dealt with in the following point).

Thus, when the offline system has the capacity to capture even when timecode is missing, we can work in the manner explained in the following image:

A variation of this example would be converting the EDL to 24fps once the offline edit has been done (if the offline system being used offline allows the export of EDL carrying out this conversion). In this case, configure Mistika to 24p format before importing the EDL, and
Notes on some steps in the example:

**Step 3:** Configure Mistika in 25p and import the EDL (double click on the EDL file). To capture new clips, the HD VTR must be configured in 24 converted to 25 mode, as the remote commands will send the in-points received in the EDL, and so there may be in-points that only exist in 25p.

**Step 4:** Once the capture is completed in order to carry out the conform (and not before), reconfigure Mistika to work in the final format (preset 24p). This change from 25p to 24p is transparent to Mistika, since to avoid problems, it always works internally with dimensions measured in an absolute number of frames and not timecodes. Once the edit is finished, also configure the VTR in HD 24p (without any kind of conversion) and transfer the master.

This method is usually used when the offline system cannot capture when the VITC is not consecutive, and so is necessary to create a new 25fps converted timecode (not interpolated).

It can also be used in the offline phase if only SD versions with converted timecode are available, even if the system is able to capture with discontinuous timecodes.

As an example, image capture is via a Sony HDCAM VTR with the option of converting HD and PAL by means of accelerated playback of the images (with the ratio 25/24).

The original vertical timecode (24fps VITC) contained in one line of each original frame will also be present in one line of each frame converted to PAL, or it can be an “timecode interpolated to 25” (depending on how the VTR is configured and on the copy used for the offline). In this example, the Offline system cannot capture with either the original or interpolated timecodes (note that when converting to PAL, frames have been neither inserted nor removed, but rather that the VITC executes one timecode jump per second as compared to standard PAL).

Furthermore, the VTR HDCAM allows the activation of the TC convert option in order to generate a new 25fps continuous timecode, as required for PAL standard. This new timecode will match the original timecode only at one reference point (configurable in the VTR menu). From that point onwards, an offset of one frame per second will result. The new timecode will only be present in the TC out connector of the VTR, and it not in the VITC of the video signal.

In this example, a second VTR or any other device capable of generating video signal) receives both the new timecodes and the SD video signal, allowing it to be inserted into the VITC code of the video out signal with continuous 25fps VITC timecode. From this moment, the output signal will be PAL standard for all effects and with continuous 25fps timecode, and can be captured in any Offline systems, whatever limitation it might have.

However, bear in mind that the new 25fps VITC does not match the original 24fps, but rather goes out of sync at a rate of one frame per second (in relation to the timecode reference). For this reason, when the EDL is captured in Mistika, keep the same configuration of the VTR HD (timecode converted to 25).
Notes on some steps in the example:

**Step 1:** A second VTR is required in order to insert the new converted TC (25fps continuous) into the VITC of the video signal. Other devices can be used for this task instead of a VTR, but their use lies outside the scope of this document.

**Step 2:** The offline is made based on 25fps converted timecodes. The EDL will also generate 25fps timecodes. For correct synchronization with audio, if the system so allows, playback can be at 24fps to the graphics monitor instead of to the video output, so that the playback speed of both sound and image coincides with that of the Master (thus versions of audio tracks at different speeds are not required).

**Step 3:** Configure Mistika in 25p and import the EDL (double click on the .EDL file). To capture new clips, the VTR HDCAM must be set to the converted to 25 mode used for the Offline (in the case of Sony HDCAM, "TC convert On") as the remote commands send the in-points received in the EDL, and it is essential that the VTR interpret them as 25fps "converted" timecodes. In addition, the HD VTR must have the same initial timecode "reference point" (the only timecode where both original and converted timecode will match), because occasionally Mistika is used for capture with a different VTR from that used for the Offline capture, and the user must avoid having this parameter set differently. Also, check that the VTR is configured to use converted timecodes via the remote port.

**Step 4:** To carry out the conform, after finishing the capture (and not before), reconfigure Mistika in order to work in the final format (preset 24p). This change from 25p to 24p is transparent in Mistika, since in order to avoid problems, Mistika always works internally with average dimensions in absolute number of frames and not with timecodes. Once the edit is finished, also configure the VTR to HD 24p (without any kind of conversion) to transfer the master.

As in the previous case, a possible variation is to convert the EDL to 24fps after finishing the offline edit, if the offline system allows the export of the EDL doing this conversion. Also, the EDL converter must bear in mind the "Reference point", (the only point where both timecodes will match). In this case, both the VTR and Mistika should be configured to 24p format before beginning the EDL import, and this format maintained during the remaining processes.

**Shooting in 720p with Panasonic cameras**

This case is applied when the material to be processed was shot with Panasonic camera in HD 720p format with a non-standard frame rate, and which will be edited in SD (PAL/NTSC) and conformed a cine or video.

The Panasonic Varicam (like VTR D5-HD and DVCPro-HD) can work in HD 720p (1280x720 60fps) with a user-definable frame rate. This special characteristic, which is not available in other cameras, means that this camera is sometimes used for working when the final format is not HD 720p.

In fact, despite its theoretical variable "frame rate", the video tape actually runs at a constant speed at all times (corresponding to 720p of 60 frames per second). Panasonic's
solution is that recording of the last available image continues until the next is available. So the tape always contains 60 frames per second, and if the during the recording a different frame rate is selected, images are repeated as necessary to complete the 60fps.

To capture, it is only necessary to activate the option Use SDI User Data in Mistika Setup (Mistika Setup->Video I/O->Video Board Options Use->SDI User Data). This allows correct capture without repeating frames. If the offline system does not have said capability, a new master tape can be generated from Mistika so that the offline system can capture it correctly.

Switching between 24 fps and 25 fps formats

If an audio/video environment has been created and then a format with a different speed is used to open the edit, the audio tracks will be out of sync in relation to previous format, because the audio tracks maintain the original duration but the video tracks do not. To solve this problem, the following alternative methods are available, either to change the duration of either the image or the audio.

Method A: speeding up/slowing down the image

Apply a Timewarp to the video tracks so they last the same amount of time as the original version.

- Via the Timewarp group from the Edit tab of the Dashboard. In general, use a high value for the width parameter of the Timewarp group to achieve smooth playback and avoid “jumps” where a frame has been removed or added. The advantage of this method is that it is simple and requires no manual adjustment of the parameters, though it may produce loss of image sharpness, or even that some small jumps may still be visible. Thus, whenever possible, alternative methods are recommendable.

- Via the Timewarp effect from the FX tab of the Dashboard. This effect produces higher quality but may require manual adjustments that are different in each shot.

When dealing with audio tracks, only the metadata of the clips needs to be regenerated, so the audio tracks of the original edit should be deleted (or silenced via the Console tool in the Audio tab) and then the original audio files re-imported (double click on the .wav or .aiff audio files), but only after switching to the new preset.

Nevertheless, if the audio has also been edited within the edit in Mistika, another process must be carried out in Mistika, since the in/out points contained in the metadata for each audio clip will no longer be valid after the change of format. In this case, follow these steps:

1. While in the original Preset, do a render with audio for the whole environment (the image format is not important, because only the audio file produced by this render process is used later).
2. Switch Mistika to the new Preset and open Mistika again.
3. Import the new .aiff file produced in Step 1. Note the need to navigate in order to find the .aiff file which will be stored in the directory specified for audio as defined in the Mistika Setup->File Paths->File Paths->Audio option. Import this file again, as it is not sufficient just to load the clip obtained form the render (since the in and out points of the metadata will not be correct for the new format).

Method B: speeding up/slowing down audio

Make a new version of the audio tracks, accelerated or decelerated by factors of 1/25 of a second, in order to match the new image track duration. In this case, a timewarp is not
needed for the image tracks, since these are simply reproduced at a different frame rate, changing the total environment duration.

This can be done with the tools in the audio tab (Node Graph Editor->Dashboard->Audio->Tools). See the chapter Audio for more information.

### Conversion between 24fps/25fps and 30fps formats

Cases of switching between 24 (or 23.97) fps progressive and 30 (or 29.97) fps interlaced (typically from 24p or cine to NTSC or 1800_30i / 1080_60i) do not require modification of audio tracks, because these cases are solved with a 3:2 pulldown Render 3:2 Pulldown Mode so the total duration of the edit does not change. (Note: this process loses some image quality, but is the only reasonable alternative. This is because the difference between 24fps and 30 fps is too evident and it cannot be resolved simply by changing playout speed, as in 24<->25 conversions.)

For format conversions between HD_25p and formats at 30 (29.97) fps (typically 1080_60i / 1080_30i or NTSC) a standard direct method with acceptable quality does not exist, so using the 24p format as an intermediate format is recommended.

For progressive formats, one possible alternative is to use the effect Timewarp (Node Graph Editor->Dashboard->Fx->Mistika->Timewarp), although this can be time-consuming.

### Audio in different variants of NTSC and HD formats

When importing a clip with audio, Mistika uses the Frames Per Second parameter of Mistika Setup (Mistika Setup->Render Format->Render Format->Frames Per Second) as a reference to synchronize it with the image.

When working with the variants of NTSC and HD with values of 30fps, 29.97fps and 23.97fps differences may be noted in the synchronization. If in the playback of these formats the user notices the outputs of audio and video are not in sync, this parameter should be checked as a possible cause.
H-2 Annex 2: Transfer with Original Timecode (Crash Record)

As an open system allowing perfect integration with other post-production systems, Mistika is the new standard in digital color grading.

This annex analyzes the color correction process of a production shot on film, but whose output format will be video. One example could be the advertising market.

Traditionally, the first step is to make a telecine with one light to be able to edit an offline copy. Using the EDL of this edit, color correction is done using a telecine set up for SD or HD formats. The result is transferred to video tape. The tape is given to the client who continues the post-production process.

The disadvantage of this method is that the transfer process is limited by the capabilities of the telecine suite.

Furthermore, this method is not compatible with the use of high-quality scanners, for example.

If a producer requires a high-quality scan, to carry out a color correction in a system digital and add other post-production processes, they will receive an HD or SD tape with a post-produced version of the edit. The tape will contain fades between cuts that cannot be eliminated and the possibility of conforming the EDL original is lost.

In the work sequence proposed below, Mistika is located in the middle of the production process:

1. A traditional telecine work sequence starts with an offline version being edited.
2. An EDL is exported in any system (or using Mistika, but in this case it is not important).
3. The EDL is sent to a cine scanner or to a datacine and all the files are scanned (normally .dpix). These files will maintain the information of the timecodes and the number of frames within the name of the file.
4. The same EDL is loaded into Mistika (using the software Sequencer or by means of Browser (Node Graph Editor->Dashboard->Import->Import All Sequences), which will conform the EDL with the .dpix files (for more details see the Help menu of Sequencer).
5. The color correction and other necessary post-production processes are done in Mistika.
6. The complete HD or SD production is recorded to tape to be sent to another system as if Mistika were the original telecine.
7. In Mistika, apply the command Linearize (Node Graph Editor->Dashboard->Edit->Edit->Macros->Linearize). This command puts all the clips utilized in an environment in order, according to the original timecode of each clip (derived from the EDL original). It eliminates all fades and wipes, and adds sufficient head and tail time between the clips in order to be recaptured at a later date without pre-roll problems.
8. A new tape (HD RGB 4:4:4, HD 4:2:2, or SD) is recorded, establishing the recording of the original timecode of the EDL. This action will produce timecode jumps in the tape, but they will be "legal" ascending jumps and there will be sufficient space between clips for later pre-rolls. This situation is valid for the majority of VTRs and capture systems. To carry out this action, the TC button and the Assemble mode, both located in the VTR tab (Node Graph Editor->Dashboard->VTR->VTR Play Out) must be activated.
9. This tape can be sent to another post-production system. Thanks to the ordered transfer via Linearize, any external system will be able to capture and conform the original EDL, receiving all the cuts separately and being able to add fades non-destructive.

**Note:** The jumpers of the Centaurus video card must be changed in order to obtain the LTC through audio channels 7/8 (XLR connection) and connect the other end to the LTC-IN input of the VTR.
H-3 Annex 3: Mistika Tangent Devices

SGO Mistika is compatible with a range of external control surfaces for the operation of Mistika’s effects, especially those related to color correction and stereo image adjustment.

**Note:** It is important to note that references in this chapter to "keyboard" are to those of the color correction surfaces, the functions $\langle F1 \rangle$-$\langle F9 \rangle$ and the $\langle Alt \rangle$ key and not the keys on the computer keyboard.

Mistika’s interface has three control panels, assigned to different functions depending on the module selected.

The main use of the panels is to control the *Color Grade*, allowing colorists to work with the traditional workflow with which they are familiar. It is also possible to control the *Framing* and *Stereo3D* effects with this system.

The Tangent CP200 surfaces have various kinds of button and displays which provide information regarding the function associated with each button at any time. Rotating
buttons or Knobs are used for adjusting parameters rapidly and intuitively. Selection buttons are used as direct access to different functions.

Text appears in the displays over two lines. The upper line indicates the function assigned to the Knobs. The lower line indicates the functions assigned to the selection buttons.

The rotary dials are used in the same way as a traditional Shuttle/Jog of a VTR, and allows the user to move in real time through the Node Graph of Mistika.

This control consists of two elements: the central Trackball whose movement is associated with the control Ball of the Color Grade effect, and is used for selecting colors. The external ring is associated with Ring of the Color Grade effect for manipulating levels of correction.

**Transport/Selection panel**
This panel provides access to the controls allowing us to move shot to shot via the Visual Editor or in real time via the Node Graph Playout. It also allows us to directly select Presets of effects and manage memories and other functions associated with Color Grade.
These buttons allow the movement between shots in the Visual Editor, selecting the corresponding Color Grade effect for later modification.

**Functionality with <Alt>:** This allows the movement between frames.

- **Reverse/Stop/Play**
  These buttons allows movement through the Node Graph in real time to obtain the evaluation of corrections done, seen in the the Record Monitor.

  **Functionality with <Alt>:** The combination <Alt>+<Stop> allows the use of the Go To Selected function in the Storyboard. The combination <Alt>+<Play> does the same thing in the Play Multiple function of the Visual Editor.

- **Jog/Shuttle Switch**
  This button switches the VTR control dial between Jog and Shuttle.

- **Jog/Shuttle Control**
  This dial works in the same way as traditional VTR controls. In Jog mode, rotating the dial moves the Visual Editor forward or back frame by frame. In Shuttle mode, rotating the dial moves the current location quickly through the Node Graph.

- **Display**
  In Jog mode, nothing shows in the display. In Shuttle mode, the display shows an illuminated rectangle to indicate the stop position of the shuttle, or triangles to show the direction of movement ion the Node Graph.
This button is used in conjunction with other selection buttons to access alternative functions.
Each modification done in the color corrector can be saved in an unlimited History. Each time we press the <Do> button, the correction in progress is saved in the history. To indicate the state of the history, a number appears in the Storyboard which is associated with the shot being worked on and which shows the total number of stored corrections and the position of the correction being viewed at any time. For example, 2/5 means we are viewing the correction of the second history from a total of five stored corrections. To browse the history, use <Prev>/ <Next> in conjunction with the button <Alt>.

The <Do> button is equivalent to the Bring OK function in the Mistika interface.

**Functionality with Alt:** The combination <Alt>+<Do> eliminates the correction being viewed at the time (Delete Current History of the Bring tab, and organizes the remaining ones from oldest to newest.

### Undo

This button undoes the last modification created by any change in parameters. It is also used in conjunction with the correction history in order to reestablish the value of a specific history after modifying its parameters.

### Redo

Every time a shot is loaded into the Visual Editor with the buttons <Prev>/ <Next Edit> a double buffer is created in which corrections can be stored. Each time <Redo> is pressed, we switch between one buffer and the other in order to compare different corrections of the same shot (the same as Bring Modified). This double buffer empties each time a new shot is loaded using <Prev>/ <Next Edit>.

**Functionality with Alt:** To make correcting or balancing with other shots easier, combine <Alt>+<Redo> which swaps the current correction with the defined shot HeadB (the same as the command Swap Playheads of the Bring tab).

### Cue

This button takes a snapshot of the current correction (Snapshot Selected of the Snapshot toggle).

**Functionality with Alt:** <Alt>+<Cue> takes a snapshot of the preset selected.

### Prev/Next

These buttons allow movement through the Storyboard clip by clip: a white appears over the current shot, corresponding with the functions of the buttons <Prev>/ <Next Edit>.

**Functionality with Alt:** This permits navigation through the history of the corrections stored with the button <Do>. This navigation through the history is the equivalent of the functions Bring Older and Bring Newer in the Mistika interface.
Mark

This shows the content of the snapshot in the last mode selected. Pressing a second time returns us to the current shot; this works as a toggle between Show Live and Show Split/Show Snapshot).

Functionality with Alt: <Alt>+<Mark> works in the same way, though in this case between the different modes of Snapshot (thus toggling between the current shot and the snapshot, but in the way defined here, either Show Split or Show Snapshot).

In/Out

Defines the input or output keyframe for the dynamic color correction. It is represented by a green triangle in the Node Graph of the Visual Editor. With it, we can define a dynamic correction between one point in the shot and another, setting different values before and after the input/output points. Use with the "Autokey" button inactive. Simply position in any frame before or after the transition region defined by the green bar between the two input/output points. The positions of the input/output points can be modified in the Node Graph of the Visual Editor by left-clicking them with the mouse while holding "ctrl".

Functionality with Alt: <Alt>+<In> lock the selected object, avoiding the possibility of moving on the TimeSpace.

<Alt>+<Out> Center the view on the selected object.

Mem

Saves the current correction on the list of FX Presets in Mistika to be used later.

Functionality with Alt: Replaces the preset that the clip has with that selected from the different effects.

Grade

Automatically applies the color correction of the selected shot (on the red frame) to the shot or clip being worked on; this is the same as the Bring Fx function of the Visual Editor.

Functionality with Alt: Replaces the preset that the clip has with that selected from the different effects.

Del

Inserts a keyframe (or control point) in the current frame with the default value (a Neutral Key).

Functionality with Alt: Resets the values of a keyframe to the default values of the color corrector (Remove Points).
To assign a Preset to the current shot, simply press the corresponding numerical button.

Our Presets can be assigned to these buttons by selecting the appropriate Preset and pressing `<Alt>` with the number required; thus up to 10 Presets are accessible at the single touch of a button.
Together with the numerical buttons, this assigns the current correction to a temporary buffer which memorizes the dynamic correction so that it can be recovered whenever the corresponding numerical button is pressed. For example, \(<\text{MODE}/icons/1>\) stores the current correction in button number \(<1>\), so that when we press button number 1, this stored correction is taken to any other shot selected by using \(<\text{Prev}>/\text{Next Edit}>\).

**NOTE:** The content of the buffer is lost when Mistika is closed, so it is not advisable to use it as a substitute for the FX Presets. It is also lost when assigning an FX Preset to the numerical button. Thus, if we assign a temporary buffer to a numerical button again that previously had an FX Preset assigned, this latter will be lost in favor of the temporary buffer.
This button is used in conjunction with other selection buttons to access alternative functions. When combining them with the numerical buttons, they bring the history corresponding to that level (the numbers <1>-<9> correspond to Bring H1-H9; <0> corresponds to Bring H10, the most recent).

The button <.> swaps the current plan with that assigned in HeadB; it brings the HeadB and assigns it to the previous one as the new HeadB. Combined with <Alt>, it allows the assigning of HeadB to the selected shot (with a red frame).

These buttons allow navigation between Preset FX, selecting and applying them to the current shot with with <Alt>+<Mem> or <Alt>+<Grade>.

The combination <Alt>+<+->/<-> allows the adding or eliminating of Color Grade folders (to add Free Vectors).

Eliminates all the history memorized for a clip.

The display of the Transport/Selection Panel indicates the assignation of the buttons below.
the respective functions.

- **Presets**
  
  This button shows the panel of *FX Presets* in the dashboard of the left monitor.

- **Color**
  
  Direct access to the manipulators of the *Color Grade* in the dashboard of the Visual Editor.

- **Rescale**
  
  Direct access to the *FRAMING* tab in the dashboard of the Visual Editor.

**Trackballs Panel**

The Trackballs panel contains the trackball & ring manipulators that allow intuitive modifications in Mistika’s interface. They also have direct access buttons to the different modules of the Color Corrector.
Each Trackball has a group of buttons: 3 function buttons and 2 for resetting the values of the corresponding Trackball.

Each Trackball is assigned to the respective color manipulator of Color Grade. In the case of primary correction, the left Trackball controls Black Point and its color, the center Trackball adjusts gamma and the right Trackball adjusts White Point.
Buttons Panel

With this panel we control the parameters of the modules of the color corrector. The buttons are assigned differently according to the module in which we are working, and a description appears in the display above each set of buttons. This panel is therefore directly associated with each of the 9 function buttons of the Trackballs, described below:

**BUTTON F1**

This gives direct access to the *Primary* correction. The buttons assigned to *[Curves]* switches between the *Curve* subpanel and the panel *Primary*. We achieve the same by pressing *<F1>* again, switching between the *Curve* subpanel and the *Primary* panel.

**Bring Step** allows navigation through the *Storyboard* more quickly than shot by shot, since it is a knob that in this case recreates the *<Jog>*/*<Shuttle>* type of
movement.

In this mode, the buttons panel appears as follows:

The buttons panel shows the assignation of the Knobs to the global [Level] and [Cont] settings and the same settings for each RGB channel separately.

In **Pinter Lights** mode, the numerical buttons carry out the following functions (corresponding to the commands related to workflows based on printer lights, in the section **RGBCorrect->Primary**):
The button \(<\text{F2}>\) gives access to the Bands mode of the Color Grade. It acts as a switch between the modes Bands-Center and Bands-Edge, in order to be able to manipulate the 5 balls of the Bands interface with the balls of the Trackball panel. In Bands-Center mode, the 3 Trackball balls are assigned to the Shadows, Midtones, and Highlights bands. In Bands-Edge mode, the left Trackball is assigned to Black and the right Trackball is assigned to White.

The button immediately below the text [Curves] gives access to the band curves panel.

In this mode, the buttons panel appears as follows:
The Knobs are assigned to the respective parameters of *Bands* mode, and the button to the right of each Knob resets each parameter. These buttons give direct access to both global *Hue*, *Saturation* and *Contrast* controls and those for dark, mid and light colors.

**BUTTON F3**

The button *<F3>* gives access to the *[Range]* mode, showing the corresponding panel in the dashboard. The buttons panel appears as follows:
The knobs assigned to [Hi Limit] and [Lo Limit] control the protection areas of the white and black points, while the knobs assigned to [Hi Slope] and [Lo Slope] modify the curves whose intersection define the ranges of color which the band correction will affect.

The buttons to the right of each knob reset the curves.

**BUTTON F4**
The button `<F4>` accesses the *FixedVectors* mode. The buttons panel appears as follows:

When accessing the *FixedVectors mode*, the *Hue* controls of each of the 6 fixed vectors appear by default. Pressing the button immediately below the text `[Vfix:Sat]` allows modification of the saturation (*Sat*) of the vectors, and the button corresponding to the text `[Vfix:Lum]` allows modification of its luminance (*Lum*). It is also possible to move through this mode sequence by consecutively pressing button `<F4>` in the Trackballs panel.
The the knobs corresponding to each color, Red, Blue, Green, Cyan, Yellow and Magenta adjust Hue, Saturation and Luminance depending on the selection made in the display above.

**BUTTON F5 - F9**

These buttons are used to access the different modules of the FreeVector panel.

The defect mode when pressing <F5> is Vector Selection (ModeSelecVec).

Buttons <F5> and <F6> select different FreeVectors that the Color Grade contains. Pressing <F6> advances us to V2, V3, etc.; pressing <F5> moves us back to V2, V1 etc.

**Note:** For the button <F6> to be active at least a second FreeVector must exist.

In SelecVec mode, the knobs and buttons are assigned to the functions indicated by the text above them:

- **LHue**

  This knob sets the left tolerance of the Hue Qualifier.

- **Solo**

  Activates the Solo mode.

- **CHue**

  Sets the central range of the Hue Qualifier.
- **Mute**

  Activates the *Mute* button.

- **RHue**

  Sets the right tolerance of the *Hue Qualifier*.

- **Radar**

  Activates/deactivates the *SrcAct* button.

**Note**: Once these values are modified, to choose the desired color, use the Ring of the center Trackball.
- **MaskFilter**

  This knob adjusts the blur filter that we can add to the selection mask. The button next to resets the parameter.

- **SatMin/SatMax**

  These two knobs set the saturation limits of the color, defining maximum and minimum values. The button next to the knob assigned to *SatMin* carries out a reset.

- **SatMinSoft/SatMaxSoft**

  Sets the softness ramp of the selection by maximum and minimum saturation values.

- **Tolerance**

  Defines the total transparency threshold in the alpha generated (corresponding to *RGBCorr->Key->Tolerance*).

- **Softness**

  Controls the range of soft transparencies from total transparency set by the tolerance parameter to total opacity. A low value defines a small range of intermediate transparencies (corresponding to *RGBCorr->Key->Softness*).

- **Show Alfa**

  This button switches between the states of *RGB* and *Alpha* of the *View* menu within the viewing options of the Visual Editor.

- **LumMin/LumMax**

  Sets the luminance limits of the color selection. The *LumMin* button sets the minimum limit of the selection; *LumMax* sets the maximum.

- **ExportKey**

  Activates the export button of the selection to the alpha channel of the RGBCorrect. Acts as a switch, activating and deactivating the export.

- **LumMinSoft/LumMaxSoft**

  Adjusts the softness ramp of the selection by maximum and minimum luminance values.

**BUTTON F8**

Clicking `<F8>` in the *Trackballs panel* gives access to Window mode, in which we can apply different wipes. If *ActSrc* is deactivated, the color correction is carried out in the whole image using the wipe as a selection mask. If *ActSrc* is active, the wipe is
used as a prepared cut for the selection via color qualification settings.

In the display of the Trackball panel, the description of the current mode (ModeWin) and the three direct accesses will appear:

- **Solo**
  
  Activates *Solo* mode.

- **Mute**
  
  Activates the *Mute* button.

- **ExpK**
  
  Activates export mode of the key.
Line/Elip/Rect

These three buttons respectively select the three types of wipe available in Window mode: line, ellipse and rectangle.

Shape

Selects the selection mode using a Shape assigned to the corresponding FreeVector.

WinKey

Activates the incoming alpha channel in the Color Grade as selection mask.

Invert

Inverts the selection.
MoveX/MoveY/Rotate

Defines the position and rotation of the wipes.

SizeX/SizeY

Defines the size of the wipes. When dealing with a line, this has no effect.

Soft

Defines a soft edge for the wipes.

**Note:** in *Window* mode (<F8>), the controls of the Trackball panel control the parameters of displacement, rotation and softness of wipes.

The left trackball adjusts rotation and position of the wipe, while the right trackball adjusts soft and size in X/Y.

**BUTTON F9**

<F9> provides access to *Destination* mode, the third block of parameters accessible from the button panel. In the display of the Trackball panel, three direct access will appear:

- Solo

  Activates *Solo* mode.

- Mute

  Activates the *Mute* button.
### ExpK

Activates the export mode of the key.

![Image of the ExpK interface](image)

### MaskFilter

With this knob we adjust the blur filter that we can add to the selection mask. The button next to it resets the parameter.

### Contrast

Controls contrast in the selection of the image. The button next to it resets the contrast values.

### SubSpill

Controls color spill suppression of color (Spill Suppression), which acts by mixing the inverse value of the colors to be corrected, thus cancelling their saturation.
Hue/Saturation/Luminance

Controls the tone, saturation and luminance of the selected color. The respective adjacent buttons reset the modified values.

Show Alpha

This button shuttles between RGB and Alpha in the View menu within the viewing options of the Visual Editor.

Shape/I/O: In

Shuttles between correction modes within the selection/wipe and outside it, allowing independent corrections in both regions.

Note: in Destination mode (<F9>), controls of the Trackballs panel control the trackballs of the Mistika interface, for adjusting Black, Gamma and White.

The access Rescale in the display of the Transport/Selection panel opens the following accesses in the Trackballs and Buttons:
Rescale Y/N

Shuttles between "NO" and "YES" values of the Rescale Apply parameter. "NO" applies no Rescaling or Offset.

Crop (Left, Up, Right, Down)

These knobs adjust Crop parameters corresponding to each side of the screen.

Crop:LockRatio

Selects Lock Ratio mode in the Crop parameters, so adjusting one side forces the others to maintain aspect ratio.

Crop:Reset

 Resets Crop settings,
### Ratio (2.35, 1.85, 16:9, 4:3)

Applies preset *Crop* values for different aspect ratios.

### Ratio: SetCrop

Applies the *Custom* value set by the user.

### Scale X/Y

With this knob we adjust the rescaling values of the image both in *X* and *Y*. "YES" must be previously selected in the *Rescale Apply* parameter.

### Offset X/Y

*Offset* adjustment for the shot in values of *X* and *Y*, producing a horizontal or vertical displacement of the image.

### Scale: LockRatio

Selects the *Lock Ratio* mode in the *Rescale* parameters, maintaining aspect ratio when adjusting only one rescaling parameter.

### Scale: Reset

Resets the rescale parameters.

---

**Elements**

Mistika has six interface controls to which different functions can be assigned according to the module selected at any time.

The primary use of these panels is to work with the *RGBCorrect* effect, allowing the use of the traditional workflow that colorists are used to. It is also possible to control the effects *Framing* and *Stereo3D* with this system.

The Elements panels possess a range of buttons and displays that provide information relating to the button selected. The Knobs allow the adjustment of parameters quickly and intuitively. The selection buttons are used for direct accesses to different functions. The buttons with alternate functions &lt;A&gt; and second functions page &lt;B&gt; allow a single panel to...
be used for different functions related to the panel and effect selected.

Texts appear in the displays in 4 lines indicating the function assigned to each button in each specified effect in order.

This control has 2 elements: the central **Trackball** is a ball whose movement is usually associated with the **Ball** function of the RGBCorrect effect for selecting color.

The outer element is associated with the **Ring** function of the RGBCorrect for adjusting correction levels.

Also, in the navigation panel, the **Ring** is associated with the Jog/Shuttle function.

Although many of the uses of the various panels are common to different effects (such as RGBCorrect and ColorGrade) or to different modes, they are divided into different chapters for greater clarity, according to the effect in which they are used.

**Selection and Transport Panel**

The Selection and Transport panel is common to all the modes and effects found in Mistika.

This panel provides access to the controls for moving between shots via the **Visual Editor** or
in realtime, between the *Playout* in the *Node Graph*. It also allows for directly adjusting modes in the *Snapshot* tool and the function in the *Storyboard*.

These buttons allow movement from shot to shot in the *Visual Editor*, selecting the corresponding *RGBCorrect* effect to be modified later.
**Functionality with <A>:** Allows jumping to the start/end of the current clip.

- **Reverse/Stop/Play**

  These buttons allow movement via the Node Graph in realtime obtaining the evaluation of corrections using the Record Monitor.

  **Functionality with <A>:** Allows movement through the Node Graph or the current clip, frame by frame.

- **Jog Control**

  The Ring of this panel functions like traditional VTR controls.

- **Key In/Out**

  Defines the input or output keyframe for a dynamic color correction. This is represented by a green triangle in the Node Graph of the Visual Editor. This allows the definition of a dynamic color correction between differing points in a shot, setting differing values before and after the defined input/outputs. It must be used with the button Autokey deactivated; simply locate in any frame before or after the region of transition defined by the green bar between the two input/output points. The position of the input/output points can be modified in the Node Graph of the Visual Editor by left-clicking over them while pressing <ctrl>.

- **Prev Key / Next Key**

  Navigates within the range of the clip between the different defined keys.

  **Functionality with <A>:** Activates the functions Autokey of the timeEditor and Lock Selection in the Bring tab.

- **Bring FX**

  Applies the correction of the clip selected in the Storyboard, indicated by a red frame, to the active clip being worked on, indicated with a white frame.

  **Functionality with <A>:** Activates the Autokey function of the timeEditor.

- **Select Prev/Next**

  These buttons are used to move the selection via the Storyboard clip by clip, indicating the selected frame with a red frame.

  **Functionality with <A>:** allow the application of a correction from the previous or next clip (with reference to the current one being worked on), being indicated with a white frame in the Storyboard. This corresponds to the functions Bring Prev and Bring Next of the Bring tab.

- **Snapshot from Selected**

  Allows a Snapshot of the selected clip in the Storyboard to be taken, indicated with a red frame.

  **Functionality with <A>:** This takes a Snapshot of the active clip, indicated with a white frame in the Storyboard.
Show Snapshot

Switches between the view of the Snapshot (in any of its modes) and the current clip (Live).

*Functionality with <A>*: Changes the viewing mode of the Snapshot.

Swap / Bring Mod

These buttons allows the switching between the last modification and the state of the effect before the last change.

*Functionality with <A>*: The functionality changes to manage the HeadB of the Storyboard, allowing the fixing of the selected frame as HeadB or locking its movement along with any frame which can be selected in the Storyboard, indicated with a red frame.

Delete All

Eliminates all modified parameters, returning them to their default values.

Center Selected / Center Current

Centers the Storyboard view on the selected or the currently active shot.

*Functionality with <A>*: Resets the position of the selected shot, with a red frame, to the current shot.
On the second functions page, some of the functionalities of the buttons change.

- **Repl Preset**

  Replaces the memorized correction of the selected preset with the one found in the active clip, identified with a white frame in the *Storyboard*.

  **Functionality with `<A>`:** creates a floating button of the effect preset above the
active clip.

- **Prev Preset / Next Preset**

  Buttons for navigating through the different stored presets.

- **Snapshot Preset**

  Allows changing the different viewing presets in *Snapshot*.

- **Swap HeadB**

  Switches between active or current shot with that designated *HeadB*.

- **Delete All**

  Eliminates all modified parameters, returning them to their default values.

## ColorGrade

The controls and mapping for panels corresponding to the *Color Grade* effect are shown below.

### Modes, Functions and Knobs Panels

```
Color    Framing    Stereo
Primary  Bands     Fixed Vectors
Select   Window    Curves
Prev FVector  Next FVector  Add FVector
```

The Modes panel allows the selection of the effect in which the parameters are to be modified via the Functions, Knobs and Central panel. The functions available in the Modes panel are seen above, depending on which of the 3 effects is pressed (*Color*, *Framing* or
Stereo); this also activates this effect in the current stack (navigating between them, if there are more than one).

- **Primary, Bands, Fixed Vectors / Balance, Adjust, Optical**
  
  Buttons that activate the functionality of the other panels according to the parameters of each to be modified.

- **Add FVector**
  
  Adds a new folder in the Color Grade, making use of a new Free Vector.

  **Functionality with <A>:** Eliminates the free vector in which we are currently located.

- **Prev FVector / Next FVector**
  
  Permits navigation between different free vectors to be worked on.

- **Source, Window, Destination**
  
  This selects the modes or work phase within any free vector. According to the selection, the Functions and the Knobs panels will show differing parameters of the free vector to be worked on.

- **Inside / Outside**
  
  Shuttle between correction modes, inside and outside the mask.
Functions related with the tools of the *Storyboard* and different viewing modes on the second page of functions of the mode panel.

- **Active FX Presets**
  Activates the window or toggle of the presets, in *Visual Editor>*FX Presets, to be used in color correction or any other effect.

- **Max FX Presets**
  Maximizes the presets window.

- **Snapshot Ctrl**
  Activates or opens the *Snapshot* toggle in the *Visual Editor>*Snapshot.

- **Active Storyboard**
  Activates viewing of the *Storyboard* in the *Visual Editor*.

- **SB More / SB Less**
  Adds/deletes viewing of a new line or level in the *Storyboard*, vertically expanding/contracting.
Keyframe

Activates the *Curves* toggle, opening the window to work on curves, points and animating parameters.

Max Keyframe

Maximizes the curves window, in *Visual Editor* > *Curves*.

Depth Grade

Activates the *Depth Grade* toggle to be used with the effect *Stereo3D*.

View RGB / View Alpha / View RGBxA

Modifies the viewing mode of *Visual Editor*.
Scope 1, 2, 3, 4

Activates/deactivates the toggles of the *Scopes* in order to view them.

Remove Vector

Eliminates the vector in which we are currently located.

Storyboard Max

Maximizes viewing of the *Storyboard*.

View R, G, B

Modifies the viewing mode of *Visual Editor*. 
When selected in **Color>Primary** mode, the Functions panel also allows the running of various **Printer Lights** functions (corresponding to the section of commands related to the workflow based on printer lights, in **Color Grade->Inside Grade->Primary**).
When selected in **Color->Primary** mode, the Knobs panel also allows the running of **Printer Lights** (functions corresponding to the section of commands related to the workflow based on printer lights, in **Color Grade->Inside Grade->Primary**).
(Bands mode)
(Range mode)
With the knobs corresponding to each range (All, High, Mid, Dark) we can adjust **Hue**, **Saturation** and **Contrast**. This setting also depends on the selection made in **Range** mode, which modifies these ranges (and will switch automatically to the **Range** panel).

The knobs assigned to **Hi Limit** and **Lo Limit** control the protection of the black and white points, while the knobs assigned to **Hi Slope** and **Lo Slope** modify the curves whose intersection defines the ranges of color which will affect the correction of bands.
In **Fixed Vectors** mode, only the Knobs panel has adjustable parameters, with the Knobs corresponding to each color, Red, Blue, Green, Cyan, Yellow and Magenta, **Hue** saturation, (**Sat**) and luminance (**Lum**), with the last being accessible via the **<B>** functions page.
Key Mode

Switches the selection mode used by the **Wheel Qualifier**.
- **Key Source**
  
  Switches the source used by the selection.

- **Key Channel**
  
  Changes between the different channels available from the source to be used in the selection.

- **Ext Mode**
  
  Switches between the different application modes (or operations) for external masks.

  **Functionality with <A>:** Allows the selection of the red channel (R) to activate/deactivate its output.

- **Ext Source**
  
  Switches the source of the external mask.

  **Functionality with <A>:** Allows the selection of the green channel (G) to activate/deactivate its output.

- **Ext Channel**
  
  Changes the channel to be used as external mask.

  **Functionality with <A>:** Allows the selection of the blue channel (B) to activate/deactivate its output.

- **Recover Mode**
  
  Switches between the different color recovery modes.

  **Functionality with <A>:** Allows switching the channel to be used to create the mask.

- **Recover Source**
  
  Switches between the different possible sources that can be used with the recuperation mode.

  **Functionality with <A>:** Allows the selection of the luma channel (Y) to activate/deactivate its output.

- **Exp Key**
  
  Activates/deactivates the export of the created channel as alpha channel.

  **Functionality with <A>:** Allows the selection of the chroma channel (UV) to activate/deactivate its output.
Inside / Outside
Alternates between internal and external correction.

Highlight
Activates/deactivates viewing of the mask.

Mute
Activates/deactivates the action of the current vector.

L Soft
This knob adjusts the softness range of the left selection of the Hue Qualifier.
Functionality with <A>: allows the modification of the horizontal size of the window/s used for said vector.

Hue Range
This knob adjusts the total selection range of the left selection of the Hue Qualifier.
Functionality with <A>: allows the modification of the vertical size of the window/s used for said vector.

R Soft
This knob adjusts the softness range of the right selection of the Hue Qualifier.
Functionality with <A>: allows the modification of the rotation of the window/s used for said vector.

Lum Lo/ Lum Hi
Adjusts the limits of the color selection based on luminance. The Lum Lo knob adjusts the minimum limit of the selection, while the Lum Hi knob does so for the maximum limit.
Functionality with <A>: allows the modification of the position of the window/s used for said vector.

Hue Angle
Adjusts the angle of rotation of the selection of the Hue Qualifier.
Functionality with <A>: Allows modification of the softness or decay of the edges of the window used for said vector.

Soft Lo/ Soft Hi
Adjusts the softness ramp of the selection for minimum or maximum values of luminance or saturation, depending on whether or not page <B> of functions (for
saturation) is selected.

- **Blend**

  Defines the opacity of the correction of the vector.

- **Soft**

  Controls the range of soft transparencies, ranging from total transparency defined by the parameter *Tolerance* to total opacity. Low values define a low range of intermediate transparencies (corresponding with RGBCorr->Key->Softness).

- **Tolerance**

  Defines the threshold of total transparency in the alpha generated (corresponding to RGBCorr->Key->Tolerance).
The **Select** function also has a page B of actions, both for the functions panel and that Knobs panel.
I-O Mode

Switches between the different modes that define the external selection.

Blur

This knob allows modification of the default value of the blur effect.

Radius

This knob allows modification of the value of radius of the blur effect.

Blend

This knob modifies the opacity value of said correction

Sat Lo/ Sat Hi

Adjusts the limits of the color selection based on saturation. The Sat Lo knob adjusts the minimum limit of the selection, while the Sat Hi knob does so for the maximum limit.

**Functionality with <A>:** allows the modification of the position of the window/s used for said vector.

Hue Angle

Adjusts the angle of rotation of the selection of the Hue Qualifier.

Soft Lo/ Soft Hi

Adjusts the softness ramp of the selection for minimum or maximum values of luminance or saturation, depending on whether or not page <B> of functions (for saturation) is selected.

Gamma

Modifies the gamma curve for values associated to the blur effect.
Via *Windows* we can access Color Grade's mask creation mode.

- **Line**
  
  Activates/deactivates the use of a line as a window.

- **Ellipse**
  
  Activates/deactivates the use of an ellipse as a window.

- **Square**
  
  Activates/deactivates the use of a square as a window.
- **Invert**
  
  Inverts the working areas of the window being used.

- **Conv Shape**
  
  Allows the conversion of any of the default windows into a vectorial (**Shape**) that can be modified by the user.

- **Edit Shape**
  
  Activates/deactivates the editing of a vectorial mask.

- **Move X**
  
  Allows the moving of a mask or window in the X-axis.

- **Move Y**
  
  Allows the moving of a mask or window in the Y-axis.

- **Rotation**
  
  Allows the rotation of a mask or window.

- **Size X**
  
  Allows the size of the window to be changed in the X-axis.

- **Size Y**
  
  Allows the size of the window to be changed in the Y-axis.

- **Soft Size**
  
  Allows the size of the softness of the window to be changed.

The mode **Curves** allows us to control the parameters of the color correction with curves.
- **Add Points**
  Adds three equidistant points in all the curves of the mode in which we are working.

- **Reset Sel**
  Resets the selected point/s to the initial position.

- **Reset All**
  Resets all the curves to their original positions.

- **RGB Curve**
  Activates the RGB curve mode.

- **L-L Curve**
  Activates the Luma curve mode.

- **S-S curve**
  Activates the Saturation curve mode.

- **L-S Curve**
  Activates the curve of Luma proportional to saturation mode.

- **Hue-Hue Curve**
  Activates the curve by Hue mode.
- **Hue-Sat Curve**

Activates the curve of hue proportional to saturation mode.

- **Hue-Luma Curve**

Activates the curve of hue proportional to Luma mode.

In the *Curves* mode, the knobs allow us to manually manipulate the points of our curves. The panel allows up to 6 editing points.

**Memory Panel**

The memory panel allows access to different saved memories and histories, as well as applying saved presets.
Every adjustment in the color corrector can be saved in an unlimited history. When this button is pressed, the current correction is saved in the history. A number appears in the Storyboard that indicates the state of the history associated with the shot being worked on, showing all the saved corrections and the position of the correction being viewed at each moment. For example, 2/5 means correction number 2 of a total of 5 stored is being viewed.

Recovers the previous values to the last modification carried out.

Allows rapid access to the saved presets or temporary memories (the last defined is accessed).
Deletes the correction currently being navigated, ordering the remaining ones from oldest to newest.

**Bring Older / Bring Newer**

Allows navigation via the history of corrections stored in the given shot.

**History 1 - 9**

Brings the history corresponding to the given level.
Save Lib

Saves a new preset in the folder FX Presets (corresponding to Save Preset).

Def TMP 1 - 9

Assigns the current correction to a temporary buffer that memorizes the correction which can be recovered when the assigned number is pressed.
Del Lib

Eliminates selected the preset (corresponding to Delete Preset).

Def Lib 1 - 9

Defines the presets stored in FX Presets with a numerical shortcut, for access to from the default mode of the Memories panel by simply pressing the assigned number.

Central Panel
The Central panel contains the ball/ring manipulators that allow intuitive setting adjustments of the Mistika interface.

Each manipulator has a pair of buttons, for resetting the ball (dot) and ring (circle).

When *Color->Primary* is selected in the mode panel, each Trackball is assigned to the respective color manipulator of the *RGBCorrect*. The left Trackball will control *Black Point* and its color, the central Trackball will adjust Gamma and the right Trackball will adjust *White Point*. Using the central Trackball in the function page *<B>*, levels in the 3 ranges will be modified at the same time.
In Color->Bands mode, the 3 balls of the Trackballs are assigned to the bands Shadows, Midtones and Highlights. In mode <B>, the left Trackball is assigned to Black and the right Trackball to White.
In the Color->Window mode, the Trackballs regulate the windows of *Color Grade*. The left Trackball controls the position and rotation of the mask. The right Trackball controls the size and the softness of the mask. The upper buttons are for resetting the previous parameters.

**Framing**

Controls of the *Framing* effect (when activated in the Modes panel) are shown below.

**Modes, Functions and Knobs Panels**
If the **Framing** option is selected in the Modes panel, the Functions and Knobs panels will show the values to be modified in this effect.

- **Change Mirror Option / Change Source Option / Change Quality Option**
  
  Cycles between the various options of each tab (as explained in the chapter **FX->Misc->Framing**).

- **Reset Scale**
  
  Resets the scale values to their default value.

- **Lock Current Ratio / Lock Result Ratio**
  
  Locks the selected ratio so that it remains unmodified by any subsequent change in setting.

- **2.35, 16/9, 1.85, 4/3, Apply Custom**
  
  Applies an image frame defined according to the standard selected or a variant set by the user.

- **Reset Crop**
  
  Resets crop values to their default value.
Lock Crop

Locks the crop parameters so that they remain unmodified by any subsequent change in setting.

Roll

Adjust the rotation of the image.

Scale X, Y

Adjusts horizontal and vertical scale.

Offset X, Y

Adjusts horizontal and vertical position.

Left / Top / Right / Bottom

Adjust the size of the image frame used for cropping frame.

Stereo3D

The Controls of the Stereo3D effect are shown below.

Modes, Functions and Knobs Panels

<table>
<thead>
<tr>
<th>Color</th>
<th>Framing</th>
<th>Stereo</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td><img src="image" alt="Stereo" /></td>
</tr>
<tr>
<td>Balance</td>
<td>Adjust</td>
<td>Optical</td>
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<td><img src="image" alt="Optical" /></td>
</tr>
<tr>
<td>Border</td>
<td></td>
<td><img src="image" alt="Border" /></td>
</tr>
<tr>
<td>Stereo Mode</td>
<td>S3D VE View</td>
<td>S3D Live View</td>
</tr>
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<td></td>
<td><img src="image" alt="S3D VE View" /></td>
<td><img src="image" alt="S3D Live View" /></td>
</tr>
</tbody>
</table>
The Modes panel allows the selection of the effect in which the parameters are to be modified via the Functions, Knobs and Central panels. The functions available in the Modes panel can be seen above, according to which of the three effects is depressed, (Color, Framing or Stereo), causing this effect to be activated in the stack in which we are located (navigating between them if there are more than one).

- **Primary, Bands, Fixed Vectors / Select / Balance, Adjust, Optical**
  
  Buttons which activate the functionality of the other panels according to the parameters to be modified in each one.

- **Add FVector**
  
  Adds a new folder in the *Color Grade* effect that contains the new *Free Vector* to be used.

  **Functionality with <A>:** Eliminates the free vector in which we are located.

- **Prev FVector / Next FVector**
  
  Allows navigation between different free vectors to be able to work on them.

- **Source, Window, Destination**
  
  Selects the modes or phase of work within each free vector. According to whichever is selected, the Functions and Knobs panels will show different parameters of the free vectors to be worked on.

- **Inside / Outside**
  
  Switches between correction modes for the inside and outside of the mask.

- **Border**
  
  Switches between the different options for choosing how the edge of the stereo image will be viewed.

- **Stereo Mode**
  
  Activates/deactivates stereo mode in Mistika.

- **S3D VE View / S3D Live View**
  
  Allows the changing of the viewing mode of the stereo images by cycling between them; this is valid for viewing in Visual Editor and in the video output (*Live*).
If **Stereo->Balance** is selected in the Mode panel, parameters for matching both images (left/right) can be adjusted with the Functions and Knobs panel.

- **Change Apply Color Option / Change Apply Geometry Option**
  
  Shuttles between options that indicate which images are to be adjusted.

- **Mirror L / Mirror R**
  
  Shuttles between options that indicate the need to rotate or invert one of the images.

- **Y Constrain**
  
  Activates/deactivates **Y Constrain**.

- **Match Color / Match Geometry**
  
  Carries out an automatic color and geometry matching of the image or images (according to the option selected).

- **Pos X / Pos Y**
  
  Manually modifies the balance of the pair of stereo images.
► Zoom

Modifies the difference in zoom n between the two images.

► Roll

Modifies the difference in rotation between the two images.

► Keystone

Sets the keystone parameter value in order to correct the trapezoidal deformation at the edges of the image.

► Shear X / Scale X / Keystone X

Modifies the values in the advanced geometry folder for Shear X, Scale X and Keystone X.

► Gamma

Modifies the final Gamma of the stereo image.
If **Stereo->Balance** is selected in the Mode panel, parameters for matching the stereo image can be adjusted with the Knobs panel.

- **Pos X / Pos Y**
  
  Modifies the vertical and horizontal position of the stereo image.

- **Zoom**
  
  Modifies the total zoom of the stereo image.

- **Roll**
  
  Modifies the total rotation of the stereo image.

- **L Width / R Width**
  
  Allows adjustment of the width (left and right) of the stereo window.

- **L Slant / R Slant**
  
  Adjusts the slant of the left and right edges of the stereo window.
If **Stereo->Optical** is selected in the Mode panel, parameters related to the correction based on Optical Flow can be modified.

The parameters correspond to those in **Stereo3D->Optical Flow**. They are defined in **Stereo 3D->Stereo 3D->Parameters->Optical Flow**.
When using the *Stereo* effect, the Central panel will control the geometric settings of the pair of images. The left Trackball adjusts the horizontal, the central Trackball sets the vertical and the right Trackball adjusts the scale relationship between the two images.
H-4 Annex 4: Precision Panels

Precision Panels are a system that allows Mistika to be controlled via a series of displays and buttons. Specifically, it is designed for working with color correction etc., but thanks to its numerous control options (such as its tablet and tactile keyboard), all the functionalities of Mistika are catered for.

Introduction

Before explaining how the Precision Panels work, we should clarify that they are currently in an early stage of development and constant evolution, so some buttons and functions are not yet integrated or in use.

The Precision Panels are divided into three main parts: the Transport Panel (with specific functions for navigation in the TimeSpace), the TrackBall Panel (including the main color correction functions via the balls and rings), and the Tablet Panel (with Learning Mode and tactile keyboard functions).

The Precision Panels also have 5 tactile displays: 4 identical ones in the upper area, and a larger one in the Tablet Panel. The 5 panels work independently of each other, and this is especially useful with regard to the first 4, which can control up to 4 different tools at once. The fifth panel’s specific functions will be discussed later.

Each display of the 4 upper panels has a group of associated buttons, composed of 10 dials, a joystick and 5 normal buttons. The 3 on the right (Tools, ISO and Lock) control the different groups of tools that are currently supported:

- **Tools**: groups the tools of the color effect Color Grade (Primary, Bands, Ranges and Fixed Vectors).
- **ISO**: groups the selection tools contained in the Select and Window menus of the Color Grade effect (selection via HSL, Filters, Windows and Shapes), as well as certain important miscellaneous color correction functions, such as Snapshot and (in some versions) functions relating to Canon monitors.
- **Lock**: Dashboard contains the functions of Mistika: Project, Import, Conform, Media, Edit, FX, VTR, Audio and Output (some of these options may not be activated because their integration is still in development).

Navigation through the different menus can be carried out by touch or by rotating the associated joystick. Depending on the menu selected, certain buttons (like the dials of the display) will change their function. This is because the work Precision Panels based on a
series of Layers and Modifiers which change the functionality of the different buttons. Precision Panels have a default mapping which mostly works independently of any tool currently in use. However, if a Modifier is activated, this mapping switches to provide new functions. Let’s define a Modifier and a Layer:

- **Modifier**: buttons such as CTRL/ALT/SHIFT/DELETE/ENTER (on the left). When activated, they are illuminated in white, and change the mapping of the entire table, independently of whether a new function has been assigned to a button or not; in this case the button will remain ‘empty’, without a function. For example: with the CC of the Transport Panel we create a new vector in Color Grade; if we activate Delete, the CC button is now used for deleting a vector. The remaining buttons are left without function unless they are assigned one with Delete activated.

- **Layer**: buttons such as Shape, Track and Mems are Layers (and are illuminated in yellow to distinguish them better). The main difference is that Modifiers only change the function of those buttons that are they affect, while the default mapping of other buttons is maintained. The Dials have the same functioning, whose functionality changes depending on the menu in the display and internal options selected (we will see this in more detail below). For example: by default, the Play button in the Transport Panel makes the TimeSpace play, but if the Track Layer is activated, the Play button then becomes a Track Forward. The remaining buttons maintain their function if not affected by the Layer Track.

Thanks to this system, Precision Panels can cover many functions, since each the functionality of each button can change depending on the Modifier or Layer activated.

### Basic Controls

- **Undo/Redo**: To undo or redo actions.
- **CTRL+Save**: To save an Environment. The Save button is used for saving Presets, since during a session it is a function that used more than the regular save.

### Cursor

The Cursor button is a special button in the Precision Panels. For practical purposes, it functions as a Layer, changing the functionality of the fourth ball and ring. When activated, the ring becomes a zoom, like the classic control with a mouse wheel, and the ball changes to control the cursor.

The upper buttons (usually with a Reset function) act like the left and right mouse buttons.
Displays

The use of the Displays is somewhat special, but follows the scheme of *Modifiers* and *Layers* as explained above. There are different types of menus, but most follow the same pattern:
As we can see, the menu consists of different areas:

- The upper menu of tools contained in that group (remember: Tools, ISO and Lock). They can be navigated by touch or by rotating the joystick.

- The central menu with two columns of buttons, left and right, and a mini central informative panel. The column on the left controls the upper dials of this display, and the right column controls the lower dials. It is important to keep this in mind, as each of these buttons functions as a Layer that affects only the corresponding dials, so the user can set not only what tool they want to use, but also which functions of that tool. For example, in Primary we have on the left the functions White, Gamma and Contrast, and on the right Gamma, Black and Levels; so we can configure Primary so that the upper dials control White and the lower dials control Levels.

- Lower menu (purely informative) with the name of the current Dial function and the numeric value of the parameter.

Each display also has a series of associated buttons. As mentioned, the functionality of the Dials changes depending on the tool selected in the upper menu, and the parameters of the left and right columns. Below each dial there are two, horizontally-arranged buttons. These buttons increase/decrease by +1 or -1 the value of the parameter controlled by this Dial. If CTRL is activated, these buttons change their function in order to control the degree of sensitivity of the Dial they affect; so if we press the right button with CTRL activated, the sensitivity scale of the Dial changes from 1 to 10, to 100 or to 1000, depending on whether we press the button 1, 2 or 3 times (the more intense the green light is, the greater the scale). Similarly, by pressing the left button, we change the scale to 0.1, 0.01 and 0.001 (the more intense the blue light is, the lower the scale).
In addition to the dials, there are other associated buttons:

- **Tools, ISO and Lock**: switch between the different groups of the panel's tools.
- **Bypass and Reset**: currently in development for the majority of tools.
- **Joystick**: The Joystick can be operated in two ways: rotating it navigates the upper menu of the Display; pressing it makes the Display active (in which case, lights around the joystick will illuminate).

**The Active Display**: to understand how the Precision Panels work, it is necessary to understand the Active Display System. Activating a Display means, in general, assigning functions of the tool of that display to the rings and balls of the panels. The remaining Displays will continue to work correctly, but the Trackball will only have the functions of the active Display. This happens with most, but not all, of the tools. When an active Display has functions not associated with the Trackball, it will maintain the functions of the last active tool. This system can change if a specific Layer assigns specific functions to the Trackball of the panels, in which case, the Layer has priority over the Active Display. For example, if we activate the Primary display by pressing the joystick, the Trackball will have the functions of Primary (Black, Gamma, White and Level). But if we activate the Shape Layer (clicking the Shape button in the panels), the Trackball will now control the Windows and Shapes we are using. This way, we can quickly switch the functions of the Trackball without exiting the tool.

Normally, every tool of the Display has an associated interface in Mistika (in Color Grade, for example, we have Primary, Bands, Ranges, Fixed, etc.) If we are in Primary in the interface of Mistika, the Display with Primary in the panels will be the active one. If we activate the Display of Bands by pressing the corresponding joystick, the Mistika interface will change to Bands. That is to say, the Mistika interface is synchronized with the active Display, and whenever it is changed, the interface changes (as long as the active Display has an associated interface in Mistika).

**TimeSpace Navigation**

The main tools for navigating the TimeSpace are found in the Transport Panel. To work properly with Precision Panels, firstly in Edit -> Setup activate the function Auto Sync Editor to Timeline, which improves communication between TimeSpace and Visual Editor.

In the following graphic we can see the navigation controls:
• **Jog**: Allows rapid navigating in the *TimeSpace*. Thanks to the activation of the function mentioned, the movement of the Jog communicates with the Visual Editor, which is synchronized by selecting the shot where the monitor is active.

• **Backward Play, Stop and Play Forward**: Controls playback of the *TimeSpace*.

• **Go Next/Prev**: Navigates the *TimeSpace* frame by frame.

• **Go to the Start/End**: Navigates to the beginning or end of the selected shot.

• **Next/Prev Frame**: Navigates the *TimeSpace* frame by frame.

• **Wheel**: Navigates only in the selected shot, without changing clip.

• **Loop**: Activates/deactivates Loop mode when in Play.

• **Cut**: Although mostly used in editing, this makes a cut in the position of the Active Monitor.

• **In, Out, In/Out**: Inserts playback marks to specify the area we want to Play. With the Modifier Delete and the In/Out buttons, we can eliminate these marks.

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**Color Correction: General**

**Management of vectors**

Before going into detail about the specific color correction functions, let's see how to manage Color Grade vectors in the Precision Panels. This management is done via the Transport Panel. In the following graphic we can see the main controls:
To create a new vector, use the button **CC**. With the Modifier **DELETE** on, **CC** will delete the selected vector. After deleting the vector, the Modifier **DELETE** will automatically be deactivated as a safety measure.

To navigate the vectors, use the joystick, either by rotating or pushing up and down.

The **Lyr** buttons allow navigation to the desired vector without needing to pass through previous ones; for example, from Vector 1 (**Lyr 1**) to Vector 5 (**Lyr 5**).

**Base** allows us to go to the first vector always.

**Inside/Outside**

The **Color Grade** effect allows different corrections in a Vector by considering the **Inside** or **Outside** of a mask if one is being used. There are several ways to choose whether we want to work **Inside** or **Outside**:

- **By Display**: all the Displays related to the **Color Grade** effect have a button for selecting the **Inside** and **Outside**; this selection affects the remaining Displays as it is a general color corrector parameter.

- **By Joystick**: The **Trackball** panel has a central Joystick with many functions. Moving the joystick left to right switches between **Inside** and **Outside**.

Each menu of **Color Grade** can mute the **Inside** and **Outside** related to each tool. The controls are located on the respective Displays.

**Mute**

To mute a vector, we must use the **Byp All** button, which will perform a general muting of a selected vector. If we want to mute a specific tool within that vector (such as **Primary**), we will use the corresponding display controls, muting the **Inside** or **Outside** (or both) as required.
Reset vector HiLgt

To reset a vector use the button \textit{M Reset}. If we want to reset the whole color corrector, activate the Modifier \textit{Delete} and click \textit{M Reset}.

HiLgt

If we are using a \textit{Window/Shape} or a selection by \textit{HSL}, and want to see what this selection affects, activate the \textit{HiLgt} with the \textit{Show K} button in the \textit{Trackball Panel}.

Scopes

We can activate or deactivate the \textit{Scopes} using the \textit{ABCD} buttons with the \textit{CTRL} Modifier.

\section*{Color Correction: Tools}

All the parameters and menus shown in this section are a representation of the \textit{Mistika} interface itself with effect \textit{Color Grade}, so the different tools are not explained here. For an in-depth explanation of the \textit{Mistika}'s color corrector, consult the section \textit{Color Grade}.

\subsection*{Primary}

The first menu in \textit{Tools} is \textit{Primary}. As we can see in the graphic below, there are two columns with different functions: on the left, \textit{White}, \textit{Gamma} and \textit{Contrast}; on the right, \textit{Gamma}, \textit{Black}, \textit{Levels}.

As discussed previously, the menu on the left controls the functions of the upper dials, and the menus on the right the lower dials. In certain cases, such as in \textit{Primary}, there are dials that never change their function, in this case \textit{All Levels} and \textit{All Contrast}. The remaining functions affect the RGB of the image independently. For example, if we activate \textit{White}, we see the functions \textit{White R}, \textit{White G} and \textit{White B} in the upper dials. It is the same for all other functions: \textit{Gamma} will be \textit{Gamma R}, \textit{Gamma G} and \textit{Gamma B}, and so on for the rest.

The \textit{Trackball Default} in \textit{Primary} controls \textit{Black}, \textit{Gamma}, \textit{White} and \textit{Levels}. Depending on the Modifier we activate, the functionality changes as follows:
We must remember that if there is no mapping applied to the rings or balls when a Modifier is activated, the last mapped functions are used. That is to say, if we activate CTRL, the first ring will be Level All, but since with CTRL the first ball does not have an assigned function, the function that it takes as default is Black Color (the previous one).

**Bands**

The Bands menu works the same as the Primary menu. We have two lateral menus for selecting the functions of the upper dials (left column: Hue, White, Highlight and Contrast) and the lower ones (right column: Midtones, Shadows, Black and Saturation).

With the Trackball we have an important detail: the interface of Mistika has 5 rings/balls (Black, Shadows, Midtones, Highlights and White), while in the panel there are 4. So the Trackball default in Bands is (from left to right): Black, Shadows, Highlights and White. To access Midtones, we must activate the Enter Modifier, which is the Enter button to the left of the Trackball panel (the other Enter works as a normal button, as we will discuss later).

Depending on the Modifier we have active, the functionality varies, as follows:
The **Ranges** menu pertains to **Bands**, so the parameters are the same, but with controls of the graphic always active in the left and right dials. The **Trackball** also behaves as in **Bands**.
The **Fixed** menu differs slightly from the others. Unlike other menus, the buttons in the columns do not follow the classic structure of left column – upper dials, right column – lower dials. In fact, each option (**Hue**, **Saturation** and **Luma**) affects all the dials, locating the controls for primary colors RGB above, and the secondary colors (CMY) below (although in this case the order is YCM, following the order in the interface of *Mistika*).

Depending on the Modifier we have active, the **Trackball** works as follows:

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**Color Correction: ISO**

The group **ISO** contains all the selection tools of the effect **Color Grade**, including some important functions within a color correction workflow, such as **Snapshot** and the **Canon** menu. The menus contained in **ISO** are: **HSL**, **Filters**, **Windows**, **Snapshot** and **Canon**.
The HSL menu controls the selection modes for **Hue**, **Saturation** and **Luma**. The control system is the same as in other menus, selecting the functionality that we want to control the lateral columns of the display. As well as the typical functions of HSL, we have a group of common filters (grouped in **Key Filters**) we can use without needing to move to the **Filters** menu.

The HSL menu does have not functions in the **Trackball**, so it maintains the previously assigned functions.

There are a couple of important buttons within the selection functions:

- **HiLgt**: As mentioned previously, if we wish to view our selection, we can activate the **HiLgt** with the **Show K** button.

- **Key Mode**: To switch between selection different modes by **Hue** (Proportional or Simple Hue-Sat), we can use the **Key Mode** button to cycle through the different functions.

- **Reset**: Although we can reset the selection values for **Hue**, **Saturation** and **Luma** by pressing the related dials, to carry out a general reset of each of the tools, we can use a Modifier plus the **Reset** button as follows:
Since the HSL display is linked to the Select menu, we can see other related functions, such as managing Keys. The controls External Key, Key Source and Recover are found in the Joystick of the Transport Panel, as follows:

- **Key Source**: CTRL + Transport Panel Joystick Rotate changes the Key Source. CTRL + Joystick Down changes Key Channels.

- **External Key**: SHIFT + Joystick Rotate controls the External Key Source. SHIFT + Joystick Up changes the External Key Mode. SHIFT + Joystick Push D controls the External Key Channel.

- **Recover**: ALT + Joystick Rotate controls the Recover Source. ALT + Joystick Up controls the Recover Mode.

### Filters

The **Filters** menu groups all **Color Grade** effect image filters, including some functions such as muting RGB, Luma and Chroma channels (**Legalize** controls are in development, and for the moment can only be accessed through the interface of **Mistika**).
The Filters menu is not linked to any interface of Mistika, since the idea is to be able to control the filters independently of the user’s current menu location. In fact, the Blend parameter can be controlled at any time from the vertical TrackBall Panel wheel.

Filters has no functions assigned to the trackball, so it maintains the previously assigned functions.

Window

The Window menu controls the system of masks and Windows of the Color Grade effect. Although very similar to other displays, the Window menu is different. The columns on the left and right are not related to the dials, and these always have the same functionality (for more information, see Color Grade).

The column on the left selects the type of mask we want to use:

- **Window**: Line, Ellipse, Rectangle
- **Shape**

We can also insert the masks from the corresponding physical buttons of the Trackball Panel.
In the right column, we activate the following functions:

- **Invert**: Invert the mask selection.
- **Conv. Shape**: Converts a Window into a Shape.
- **Insert Point**: Enables the possibility of adding points to a Shape.
- **Anim. Autokey**: Activates the Autokey mode for Shapes.

If the Window Display is active, the Trackball acquires the following functions:

No functions are assigned to active Modifiers

To access these Trackball functions, we so not necessarily need to be in the Window Display. To make working with Windows and Shapes easier, there is a Layer that can be activated in the Shape button.

If this Layer is activated, independently of where we are, the Trackball acquires the functions of Window. Thus we can speed up our management of masks. For example, if we
are working in *Primary* and we want to move or adjust a mask, we can simply activate the Modifier in order to control the mask, and deactivate it again to regain control of *Primary* in the *Trackball*.

**Shape Track:**

Another important Layer related to the *Window* display is *Track*. It works in a similar way to the Layer *Shape* but with the difference that it affects *Play* controls rather than those of the *Trackball*. If we want to Track a Shape simply create the Shape, confirm that it is selected, select the *Track Layer*, and *Play* (Forward or Backward). If we have more than one Shape we can select one or another by rotating the central Joystick of the *Transport Panel* (the same one used to navigate between Vectors in other Displays), as long as we are in the *Window* display or have the *Shape Layer* active.

**Snapshot**

The *Snapshot* menu is very different from other menus we have seen, mainly because as in *Window*, the buttons do not control the dials, which always maintain their original functionality. Additionally, in the case of the *Snapshot* menu, the buttons correspond directly with their counterparts in the interface of *Mistika* (for more information, see *Snapshot*).

There are two major shortcuts related to *Snapshots* (as physical buttons):

- **Comp**: the *Comp* button (in the Tablet Panel) carries out a *Selected Snapshot* (reference shot, usually *HeadB*).

- **Show**: the *Show* button (in the *Trackball Panel*) alternates between two *Snapshot* modes. For example, if we click on *Show Live*, and then on *Show Snapshot*, we see first the current shot (*Live*) and then that of the *Snapshot*. From this moment, we can switch between the two with *Show*.

We can control the position and size of the image of the *Snapshot* and the current shot using the dials. If the active display is that of the *Snapshot*, the *Trackball* acquires the following functions:
Storyboard Navigation

When navigating in the **Storyboard** we have two main controls. Rotating the central Joystick of the **Trackball panel** controls the selection of the **Active Shot**; rotating the Joystick of the **Tablet Panel** changes the **Reference Shot** (called **Selected** in **Mistika** and usually linked to **HeadB**). With this in mind, we can center the **Storyboard** view in the active shot or the reference shot by pushing the corresponding Joystick up.

On the other hand, if we press the Joystick of the **Tablet Panel**, we interchange the position of the active shot and the reference shot; if we press the **Trackball Panel** Joystick, we move the active selector to the position of the reference shot.

Related to both, there is a **Lock** next to the calculator for locking the difference of position between the active shot and the reference shot.
Bring Functions

To bring a color correction from a reference shot we use the Recall button in the Trackball panel. Here we also find the button Turbine, which manages the Bring Preview. Holding the Turbine button down gives us a preview of the correction; we apply it by double-clicking.

With the Revert button we return to the original correction.

Save Histories

If we want to keep a record of a correction, click on Enter, on the right. If we repeatedly click Enter we save different record of the same shot. Then we can browse the histories by activating the Layer Vers. and rotating the Trackball Panel Joystick.

With the Modifier Delete we can remove histories that we longer need by clicking the Enter button (following the same pattern of use as that for the creation or elimination of Vectors with CC and Delete).
In this section, not all the functions related to FX Presets are explained, only those related to Precision Panels (for more information, see FX Presets).

If we want to save a preset of a color correction or of any other effect, simply click the Save button.

We can view the stored presets in the FX Presets window which can be opened using the Book M button. This only displays the window of presets, it does not offer control over it for browsing, importing, etc. To do this, we must activate the Mems layer in the Tablet Panel. This button is especially important because it changes the focus of attention of the controls between the Storyboard and the FX Presets. Its use, therefore, is very common. To explain the following controls related to FX Presets, we will assume that the Mems button is activated.

Navigation

Navigation is done by rotating the Tablet Panel joystick.

If we want to delete a preset, simply follow the usual sequence: Delete Modifier and in this case click on Save, which is the button that creates the presets.
Bring Functions

If we want to bring a preset to a particular effect (usually a Color Grade, for example), simply navigate to the preset and follow the Storyboard, and click on Recall. Another method when importing a preset is the Append button, which has the On Top function of the FX Presets window, and which basically locates the preset above the current stack of effects added to the clip.

Temp. Memories

We can save certain presets as Temp Memories related to the session in which we are working. From Precision Panels up to 8 memories can be stored. Simply navigate the preset to be saved, activate the CTRL Modifier, and press the number we want in the number panel of the TrackBall Panel. This preset will be saved for this session with the specified number. Thus, if we click on that number (without CTRL Modifier) this preset is brought. This functionality does not need Mems activated in order to import the presets.

Animation and Keyframe Control

Mistika has several Keyframe systems depending on what is being animated. We have already seen an Autokey in the Window menu for shapes; however, the general Autokey (found in the Visual Editor) is the button A-Kfrm found in the Trackball Panel. Next to this is the button K Frm, which is used to insert new Keyframes.

If we want to use a dynamic in a Color Grade, the Keyframes In/Out are the most common. In this case, by activating the Modifier Dyn, the In/Out buttons of the Transport Panel will control the insertion of this type of Keyframe.
Insert In/Out Keyframe
H-5 Annex 4: Thanks

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**BTV Brighton & London:**

BTV Post is a cutting edge facility house leading the way in HD and 3D. Blending creative talent with advanced experience of technology, the company manages and delivers complex workflows and projects to clients.

**Das Werk Berlin:**

PICTORION das werk GmbH is one of the leading post production groups in Germany. With five offices across the country, they offer the complete range of digital post production services. Their customers are advertising agencies, commercial and film producers, TV broadcast stations and industrial enterprises.

**Framestore London:**

Framestore has been working in digital film and video for over 20 years, creating original and astonishing work that has helped make it the largest visual effects and computer animation studio un Europe.
Hocus Focus Oslo:

Hocus Focus is a postproduction company located in Oslo. Established in 1999 and have been using SGO Mistika from the very beginning. Hocus Focus Prime Focus is commercials, documentaries, shorts and feature films.

Visor Studios Madrid:

With 25 years experience, Visor Studios is an excellent production boutique, to tailor and make reality any project in time and with the best quality of service.
Glossary of Terms
**3:2 Pulldown:** A process consisting of dividing the original movie frames into fields (one with the odd lines and other with the even) to obtain 48 fields (2x24), with which to create the 60 fields per second that NTSC requires. This is done by repeating a field when necessary (first every three frames, then every two, then three frames again and so on, and alternating the field to be repeated between the odd and even ones).

**Antialiasing:** An effect that softens the edges of an image for removing the tooth effect. High quality Antialiasing (as referred to in Mistika by the word “Antialiasing”) is not based on smoothing the existing edge by using a simple blur of the mask edge, but rather it uses the edges of polygonal or vectorial objects and is based on the calculation for each pixel of the percentage of their area that would be included in the polygonal or vectorial object, so that the pixel color is not simply that of the interior or exterior of the object, but one that reflects this percentage. Antialiasing can be calculated with more or less accuracy, depending on the number of samples of subpixels that are taken to calculate these percentages.

**Aspect Ratio:** Relation between the height and width of an image.

**Banding:** Band effect that occurs because of problems of color depth when degrading between neighboring colors in the color space. It can be eliminated by using the Bandither effect.

**C-Black:** When processing images originating in computer graphics that were created on a black background with a mask, the color of their edges tends towards black because of antialiasing with the black background. This effect can be combated by using prior multiplication of the mask by the image color before composing, a process which is called C-Black.

**Cache:** Provides fast access to information for speeding up viewing and calculation processes.

**Channel Alpha:** Mask channel (see **Mask**).

**ClipBox:** When converting movie material to NTSC or PAL the original image is cut on the left and right. This process is called ClipBox.

**Chroma key:** See **Keying**.

**Animation curve:** The curve resulting from the interpolation of the keyframes that specify the animation of a parameter.

**Dynamic Tracking:** Process in which a VTR is capable of slowing down or accelerating the video signal.

**Drag & Drop:** A quick and easy technique for copying of information from one part to another part of the user interface. This tool works by selecting the object to be copied, and with the left mouse button pressed, dragging it to the place where it is to be copied. Once there, release the mouse button and the object will be copied to its target.

The Drag & Drop technique controls the type of object copied so that, if the position where the object is released for copying does not accept objects of this type, the object is not copied.

**Foreground:** The first (and frontal) element of a composition,

**Keyframe:** The Keyframe concept is used in animation. To animate a parameter in time, its value must be specified at every instant. This could be done with an infinite list of parameter values for every possible time value, but this would not be very practical. Therefore, the values of the parameter at certain important control points of the animation are specified, and the intermediate points are the calculated by interpolation. These control point values, which determine the whole animation, are called keyframes.
**Keying:** The process of generating mask information from the image contents.

**Letterbox:** When movie material is converted to NTSC or PAL, the material is scaled so as to view the entire image at the desired size, with black bands that appear at the top and bottom of the image. These black bands are called Letterbox.

**LUT:** See **LookUp Table**.

**LookUp Table:** These are color index tables used to extract the desired color from its position in the table. This technique is used in color palettes to extract the RGB color of each position in the color palette.

**Mask:** Grey tone image that specifies the intensity to be applied to an effect in each pixel of the original image. Pixels that have a black mask are not affected by the effect, and the intensity of the effect increases to 100% corresponding to the pixels of a white mask.

**Morphing:** Image interpolation or other warping techniques used on the original and target images to achieve a more adequate transition.

**Motion Blur:** Blur effect produced in objects that move rapidly. This effect is produced as the sampling of the capture system (video and movie cameras, etc) usually captures 24, 25 or 30 frames per second, so that each capture shows 1/24, 1/25 or 1/30 of a second. When an object moves at high speed, it will move a considerable distance in these times, which will produce a stump or blurring effect in them.

**Motion Tracking:** A technique permitting the specification of the path to be followed by one or several areas of a sequence for its later use.

**NTSC:** Standard video signal used in America.

**PAL:** Standard video signal used in Europe.

**Playback:** Viewing of a video or audio sequence.

**Postscript:** Vectorial file format.

Point of control: See keyframe.

**RGB:** Abbreviation of Red, Green and Blue. Refers to a color specified by its primary color components.

**Shape:** Also called vectorial objects or vector shapes. Vectorial figures produced with Paint are included in this category.

**VITC:** Acronym of Vertical Interval Time Code. Represents a timecode storage system that allows current timecodes to be read without needing to have the tape in Play.

**Warping:** Image deformation technique achieved by animation of the position of the pixels.

**WYSIWYG:** Abbreviation of “What You See Is What You Get”. Used on many occasions to reflect that what is seen on the screen, is the end result that will be obtained.

**YIQ:** color space definition system used in the NTSC standard. The Y, I and Q components are specified as follows:

\[
Y = 0.299R + 0.587G + 0.114B \\
I = 0.74(R-Y) - 0.27(B-Y) \\
Q = 0.48(R-Y) + 0.877(B-Y)
\]

**YUV:** color space definition system used in the PAL standard. The Y, U and V components are specified as follows:

\[
Y = 0.299R + 0.587G + 0.114B \\
U = 0.493(B-Y) \\
V = 0.877(R-Y)
\]
**Zbuffer:** Map of depth of each pixel used to hide geometry that is not visible in 3D.