

# Phoenix



Automated & semi-automated  
film and video restoration

Features & Benefits  
Version 2016.1

Doc Rev 1

# Nucoda and Phoenix Features and Benefits

## 2016.1

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## Phoenix Touch

### New Features

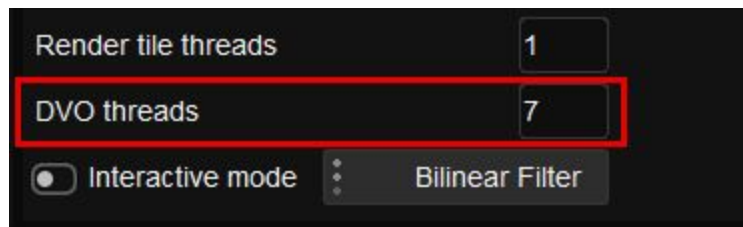
We have made some addition to Phoenix Touch to make it a true assist station for Phoenix Refine and Phoenix Finish.

- EDL import and Export has been added
- Support for Kona 4 SDI Monitoring - Video capture and layoff
- User FX Layers can now be used - allowing the use of shapes, keys and mattes as isolation tools.
- DVO Dry Clean and DVO RGBRegrain can be purchased separately and licensed to Phoenix Touch

Please contact [sales@digitalvision.se](mailto:sales@digitalvision.se) for details and pricing

## DVO Speed improvements

### DVO threads - Rendering Tab in preferences



- This affects only DVO tools and is most noticeable on machines with a high core count, e.g. 16 cores and up. The setting is set automatically, but for reference, if you have 16-22 cores, it should be set to 2 cores less than the total amount for 24-28 cores it should be 3 or 4 cores less than the total. Please make sure that hyperthreading is turned **OFF** on the workstation.

Currently some DVO tools are not affected by this change

- DVO Dust
- DVO Dropout
- DVO Grain
- DVO Noise

## New DVO

### DVO Dry Clean

#### What is the difference between DVO Dust and and DVO DryClean?



DVO Dry Clean is the result of years of experience and research into improved techniques in dust and defect detection and concealment, it allows for significantly better detection of defects and also allows much larger defects to be automatically repaired. The name reflects the fact that this tool does much more than dust removal.

Defects that previously would require manual intervention can now be detected and repaired using an automated tool. Meaning that more time can be spent on other aspects of the restoration.

#### Do I still need to use DVO Dust?

DVO Dust still has its place in the restoration toolset. It is an exceptional tool and is highly customisable. Many users have specific setups for dust removal that have been refined over a long period of time. For removing smaller dust specks and imperfections it is ideal. Revealing original source material is very easy to do using the new Matte Paint tool. **Please note, the Matte Paint tool is only available in an FX Layer**

#### Some guidance when using DVO Dry Clean

When using the tool always use it as a Effect layer since it is the most flexible  
Using any temporal tools (like Clarity or Flicker) after DVO Dry Clean should be avoided, it will Work, but any changes using paint will cause the entire affected clip to re-process.

#### When would I use DVO Dry Clean?

DVO Dry Clean uses a very advanced detection engine, there are not many settings in DVO DryClean and it is a lot more automated. If you have material with medium or very large blemishes DVO DryClean may be the tool to use. If the material has fast moving images, DVO DryClean will also be better suited, with the likelihood of motion artifacts being a much lower.

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DVO DryClean will also attempt to repair much larger issues such as scratches and tears, often providing a very good starting point for further manual repairs.

Because of the very sensitive analysis and repair functions, DVO Dry Clean is also capable of fixing blemishes that are too small for DVO Dust to detect. The repair function, when pushed all the way to the maximum value, will effectively serve as a de grain tool.

### When can it go wrong?

As with any auto detection tool, and when looking for dust, generally, you are looking for elements that are static and only visible in single frames, because of this, it is easy to remove blinking lights, water drops and flashing elements, like reflections. This is still true for DVO DryClean, in cases like these, the Matte Paint tool will allow revealing the source material, to repair any unintended repairs.

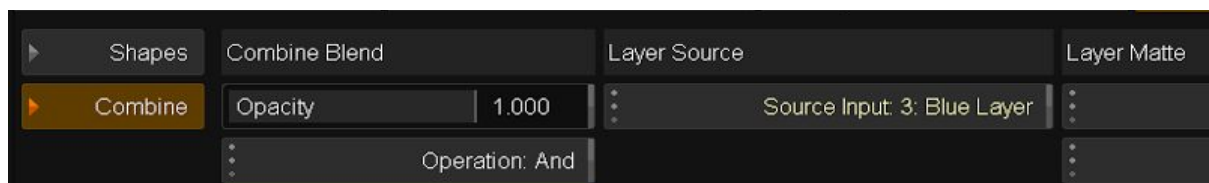
## Changes to the Router tool

### Use any layer as input for current layer

An often requested feature, it is now possible to route any layer as an input for the current layer, this is available from the Matte, Source, Key, Diff and Matte layers in the router.

Any new layers that are added will appear as selection in the dropdown menu, to keep menus organised, once there are 10 layers, they will be nested and labeled accordingly.

- If a layer that is used as an input is deleted, the input for the layer will default to previous layer.
- If a layer is moved around the layer stack, we will track the layer and maintain the correct input.
- In the example below, we are routing Blue Layer into the current layer.



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## New tools in the User FX and Colour layers

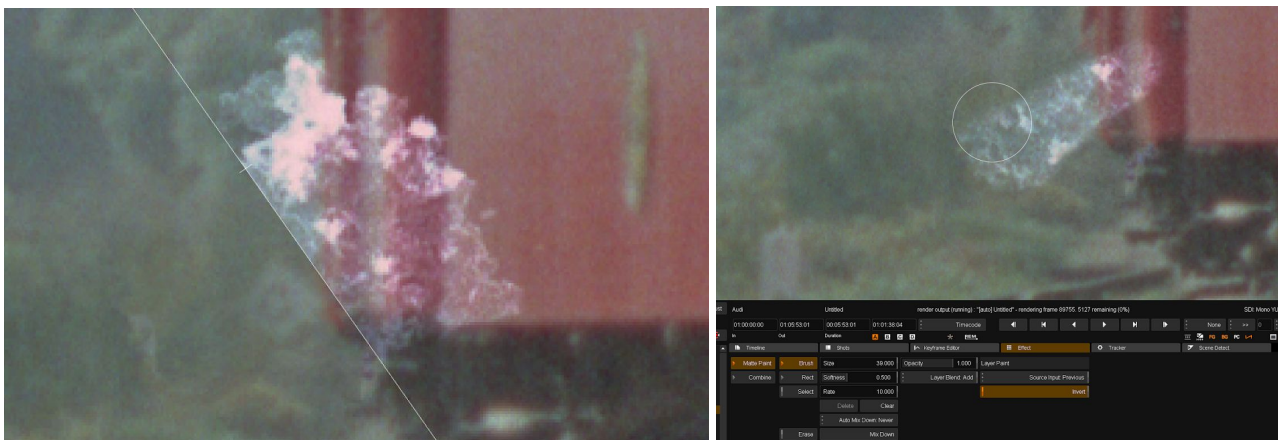
These features were primarily designed for use in Phoenix, but there are some creative uses in Nucoda and we have decided to include them for Nucoda users.

### Matte Paint

The matte paint feature allows paint strokes to be added directly to the current layer - for now the strokes are single frame only.

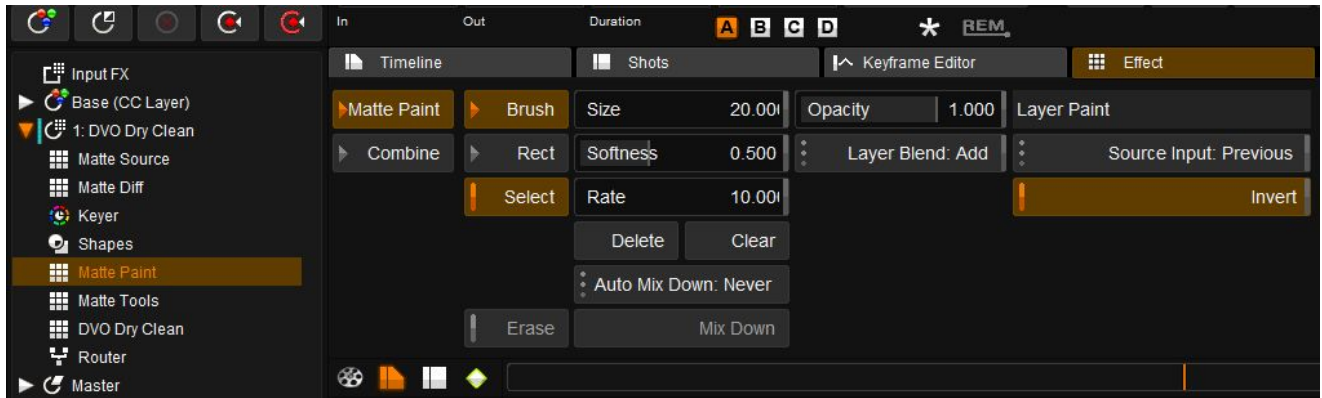
The default paint style is INVERT, the primary purpose being to use the paint tool to reveal the original source image. You can choose the Source input in the tool. This is especially useful when wanting to reveal material removed by mistake during working with DVO Dust or the new Dust 2 tool. There is no need for users to use an additional fix tool, just remember to add your dust layers as FX layers to get access to Matte Paint.

In this example the Matte Paint tool is used to reveal the blemish originally fixed by using DVO Dry Clean



The tool will also paint on the alpha of the image, so it can be combined with the composite tool to reveal images on tracks below.

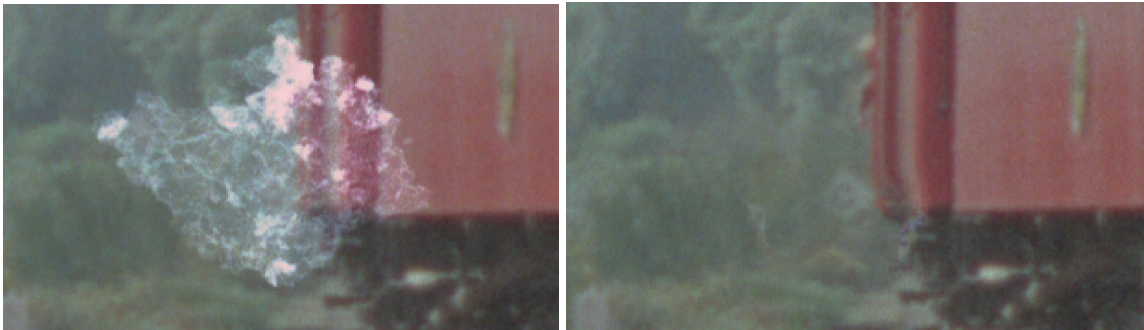
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### Matte Diff

Matte diff is a tool that will allow the user to create a matte based on the difference between the current layer, and any other layer. Using this feature, it is possible to easily create a matte for fixes that were done using a tool like DVO Dust or DVO Dry Clean or DVO Scratch.

Blemish removed by DVO Dry Clean



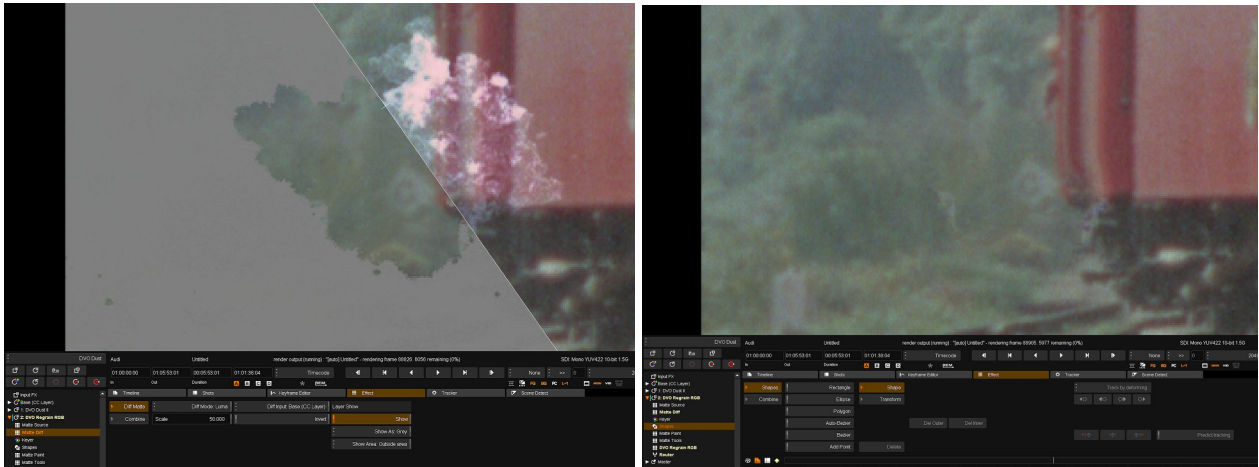
Apply DVO Regrain RGB as a user FX layer after DVO Dry Clean

Go to Matte Diff tool on the RegrainRGB layer and Set Layer show to on, and Diff Mode to Luma  
Select the Base layer as Diff input - use the Scale option to grow or shrink the visible matte

Turn off Show - the DVO RegrainRGB tool will process the image based on the matte, regaining the area that was repaired.



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## AJA Kona updates

### AJA Kona Video Driver Update

- This release includes AJA video driver v12.3.7.8
- **You must uninstall any current AJA driver and restart your PC before running the installer.**
- To make life easier, we have created a version of 2015.3 that uses the new Kona 4 driver  
This version 2015.3 038 SP1

### AJA Kona support for video and audio capture

- This version of Nucoda adds video and audio capture using the Kona card
- Up to 8 audio channels are supported
- For capture from DigiBeta please contact [support@digitalvision.se](mailto:support@digitalvision.se)

### Preference for AJA Kona buffer depth

- Add a preference to allow control of the buffer depth on the AJA card
- This will allow less of a delay between the Kona SDI and GUI monitor but can cause playback reliability issues if set to low.

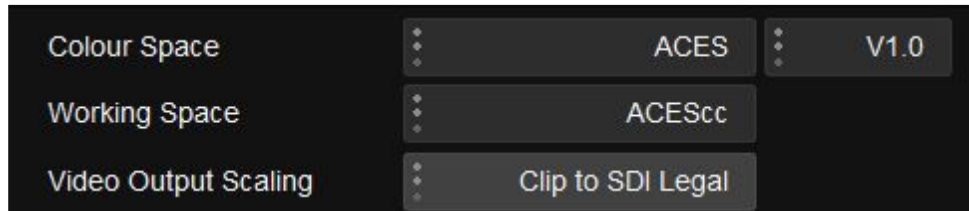
## Support for ACES 1.0.2

- We have implemented ACES 1.0.2



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- Includes new ACEScc working space, this allows grading controls respond like they would in Log space.
- Using ACES as part of the restoration workflow is now possible
- Please see the full documentation in the online user manual
- 128 point transforms are available for users who require additional precision
  - <http://www.digitalvision.tv/w/index.php?title=UM:ACES>



## Updates to the interface

### Nucoda and Phoenix

- The button style in the interface has been updated and refreshed
- There have been some icons updated.
- Playback, thumbnail, multi playhead options will now retain their state. This is a per user preference and is set at application level.
- The size and split of the GUI is now saved on a per user basis.
- The In, Out and Duration timecode boxes are now editable. The user can set in and out points by entering the timecode directly into the In / Out boxes above the timeline. After entering an In point, adding duration will add the Out point automatically.
- Default timeline start can now be set in preferences.
- The size and split of the effects and timeline interface will now be saved per user
- Focus will not be lost anymore when editing layer names and other labels until the user hits return
- The speed of turning track visibility on/off has been much improved

### Precision Panel

- The size and style of the menu buttons have been updated
- Changes has been made to the on screen graphics
- The keys on the touch screen keyboard has been enlarged and some keys have been removed

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### Find option in the library

Addition of a Find button to the filter matrix below the library, selecting clips in the library and clicking find will select the selected clip (or clips) in the timeline.

Once selected it is easy to apply grades, move or add them all to a group for group grading.



### Selected clips in segment mode can be moved using keyboard shortcuts

In segment mode, clip that have been selected on the timeline (audio or video) can be moved using shift+up arrow shift+down arrow.

Locked tracks will be skipped automatically and new tracks will be created as required. Using the m , and . / hotkeys will let you nudge clips by single frames ( , and.) or multiples of 10 (m and /)

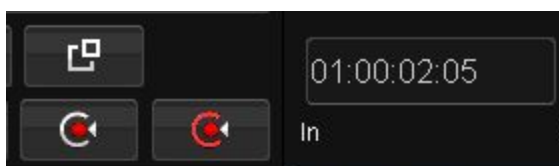
Moving clips in this manner will not allow other clips to be overwritten and if any clips are in the way and the track is not locked, the move will be cancelled. This is to avoid any accidental timeline catastrophes.

### New Master Reset features

#### Changes to Master Reset - Retain selected effects on reset

To make working with complex matte configurations in Nucoda easier the layer reset function has been redesigned to accommodate this. An additional Reset option has been added, which will allow the user to specify which effect types are reset.

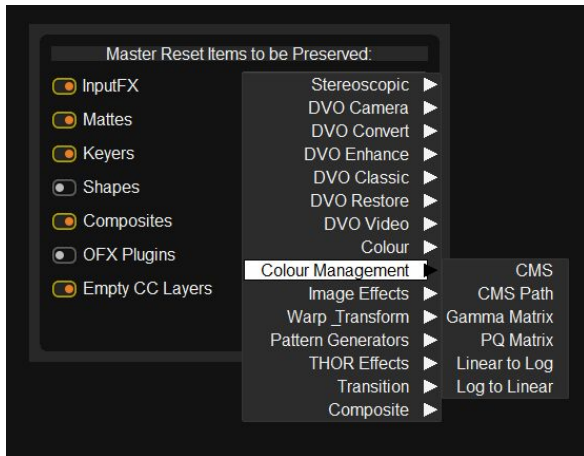
This is done via a new popup menu, that can be accessed the holding Ctrl+Shift and clicking on the new reset icon:



This menu will allow the user to specify which effects will be reset and which will be retained when Master Reset is pressed. The user can also use the effects menu in the Master Reset Option box to choose any available effect to not be affected.

Master reset will retain Input FX (current default) - we have chosen to keep the default behaviour but can recommend that you enable Matte layers, CMS and CMS Path layers and Pan & Scan to the defaults

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On the Precision, keyboard using “Backspace” or mouse click master reset in GUI

Alt+Master reset will still reset **everything**

Shift+Master Reset will reset the selected layer (except selected items)

Ctrl+Master reset will reset selected tool

## Precision Button changes

### Changes to Show K options (Precision)

Show K : Enable Show Key (alpha) mode for current layer.

The matte viewed will be the combination of Matte - Matte Diff - Keyer and Shape

Ctrl + Show K

The matte viewed will be the Keyer only

Shift + Show K

The matte viewed will be the Shapes only

Alt + Show K

The matte viewed will be the Matte Diff only

Long Press Show Key

The Matte viewed will included all layers that can contribute to the matte

Matte - Matte Diff - Keyer - Shapes -Matte Paint - Matte Tools

## Hotkey updates

Please check the Keyboard shortcuts document for updates to the **Master reset keys** and also for the addition of **Revert** and **Set New Revert** to the keyboard shortcuts. Also new shortcuts for moving clips on the timeline.

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## HUD and Grid updates

The HUD files have been updated and all the presets will now scale depending on the image resolution. Some of the presets have been tidied up and some have been renamed but all the favorites are still there.

Option for 1.66, 1.77, 2.40 and 2:1 has been added as default to the Masks and Grids

## New Project Format files in Examples

We have added two files to the examples directory. They are extended project formats as a Menu or List configuration and contain more resolutions and frame rates. In the Project Formats directory there are files with individual files for each resolution if you would like to construct your own format list.

## Shape handling

When creating shapes the you are now able to add points to the shape by simply holding the Ctrl key and clicking on the shape outline.

- Clicking and dragging the mouse will allow for selection of multiple points
- Double clicking a shape outline will switch it to transform mode
- Pressing Ctrl while inside the shape will allow you to move the shape
- Pressing Ctrl while clicking on a corner point will allow you to rotate the shape


## File Formats

### SDK Updates for Sony

- Full support for Kelvin, Exposure Index and manual exposure settings in Sony SDK
- Improved SLog2 Slog3 and .cine support for Sony sources

### SDK Updates for Red

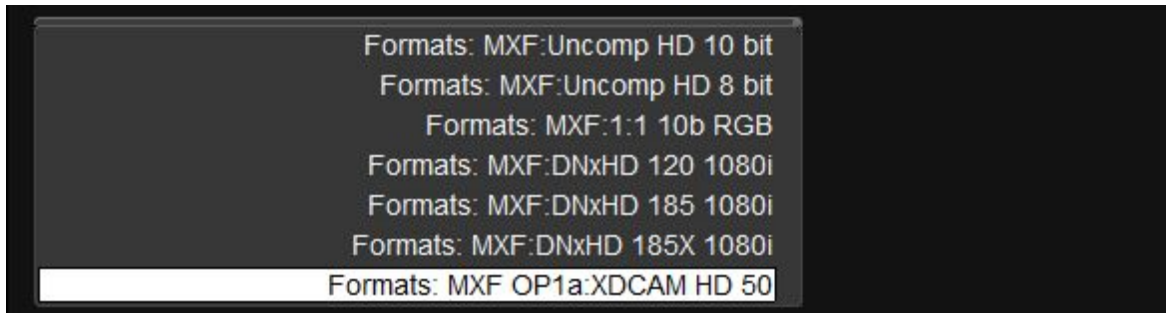
- New processing support for DEB (Dragon Enhanced Blacks)
- Loading DEB setting from RMD files
- Two new colour spaces - REDcolor 4 and DRAGONcolor 2

▶	Thumbnail	Tape Name	R3D.Decode	R3D.ColorSpa	R3D.GammaC	R3D.ColorScie	R3D.FLUT	R3D.HDRBlent	R3D.HDRBlent	R3D.BlackEnh	R3D.ASA	R3D.Kelvin	R3D.Bla
▶		A005_C008_12172F	1/2 Premium	REDcolor4	REDgamma4	FLUT	0	Track A	0	Off	800	5600.0	

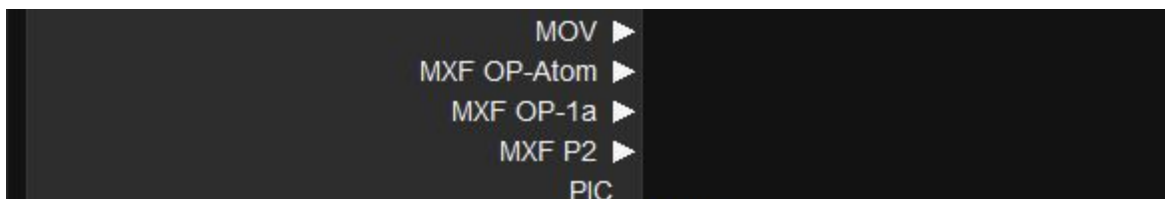
## Changes to MXF file exporting and naming of DNxHD/R

- In the previous version all MXF files were grouped under the MXF label
- Included in this group were OP-Atom and OP-1a

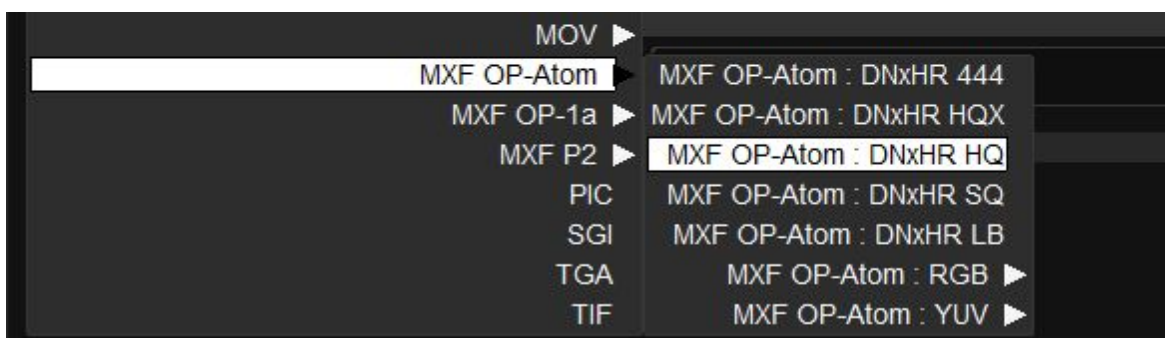
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- MXF exports have been split into 3 subcategories to make it clearer for users what format they are exporting.
  - MXF OP-Atom - Video and Audio files are separate, used in Avid workflows.
  - MXF OP-1a - Video and Audio combined into a single file, typically used in Broadcast servers.
  - MXF P2 - AVC-i 100
  -



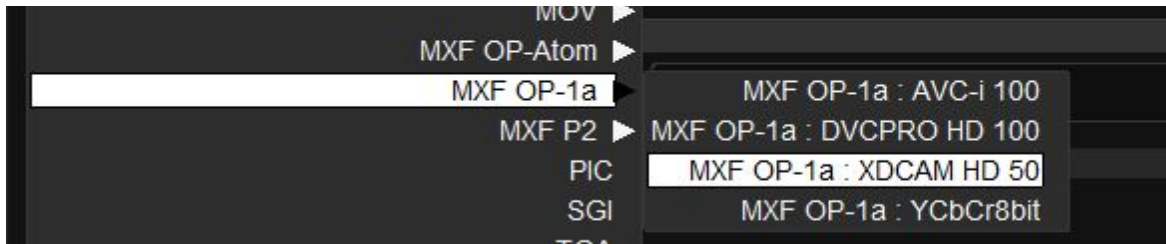
- In the MXF OP-Atom category DNxHD and DNxHR files have been renamed according to the new standards created by Avid.



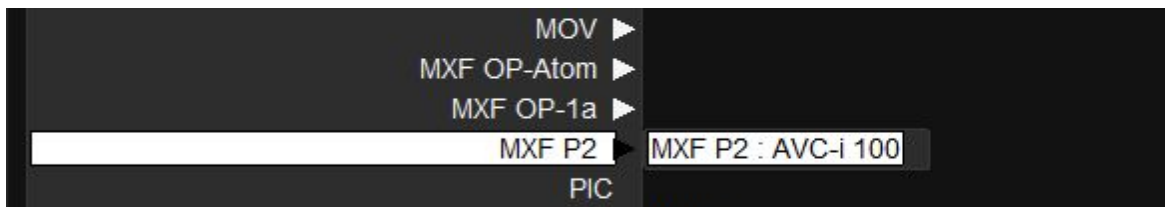
- In keeping with Avid guidelines, the formats have been renamed
  - DNxHD LB (Similar to DNxHD 36)
  - DNxHD SQ (Similar to DNxHD 115)
  - DNxHD HQ (Similar to DNxHD 175)
  - DNxHD HQX (12 bit) (Similar to DNxHD 175X)

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- DNxHD 444 (12 Bit RGB) (Similar to DNxHD 440X)
- Note that not all options are available for all resolutions and frame rates
- In the new MXF OP-1a category XDCAM HD 50 has been supplemented with;
  - AVCi 100
  - DVCPRO HD 100
  - YCbCr 8 bit

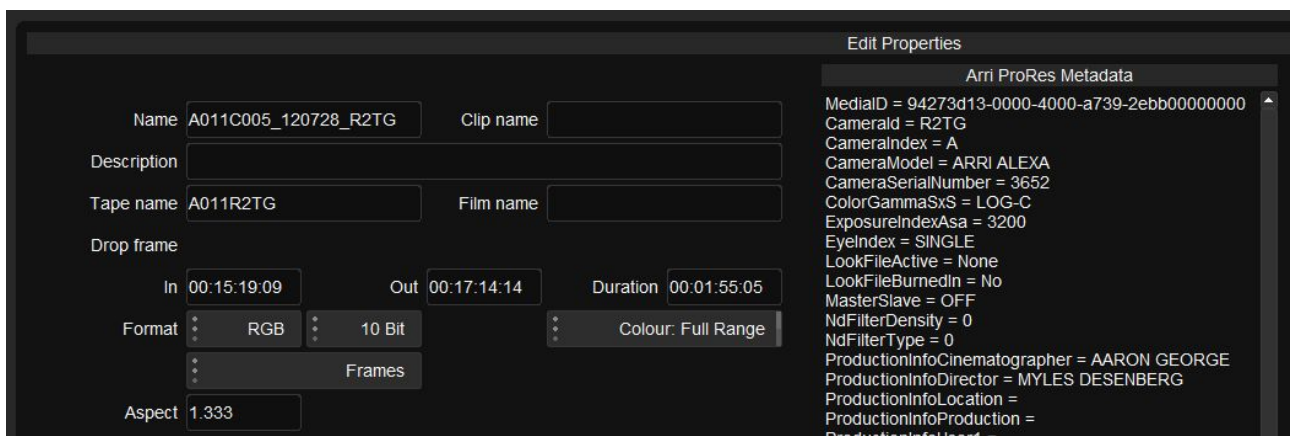


- AVC-i 100 is also available for export in the P2 layout, note, that the export in P2 will result in a directory structure suitable for use on a P2 memory card, and not only a single MXF file.



### Extended Properties for ProRes files (when available)

- When importing ProRes media clicking on the Properties of the file will show new extended Meta Data information



### New file options for export

- Support to tag DPX files as ADX 10 or 16 on export

## **Avid interchange updates**

### **Changes to Avid support**

- Subclips are now supported in AAF compositions.

### **Support for Avid locator import from AAF**

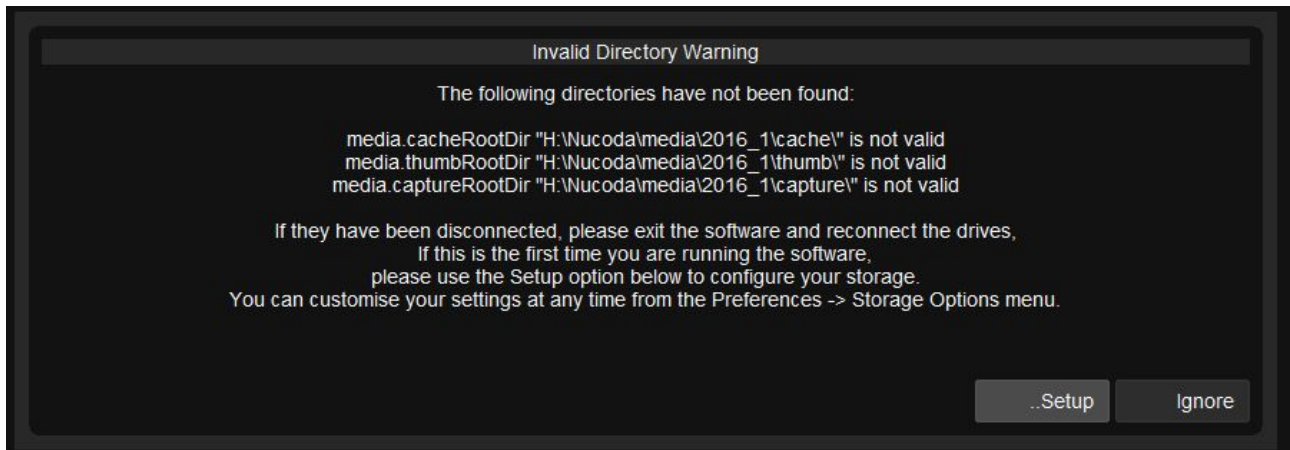
- If an AAF has locators they will automatically be imported to the Nucoda Timeline as Timeline Markers - colours will be retained.



## Nucoda and Phoenix Features and Benefits 2016.1

### Updates to Preferences

The setting of paths for Nucoda and Phoenix can now be done from inside the application using a path setup tool in the preferences. If you start up the application without setting valid default storage paths you will be presented with the option to do so.

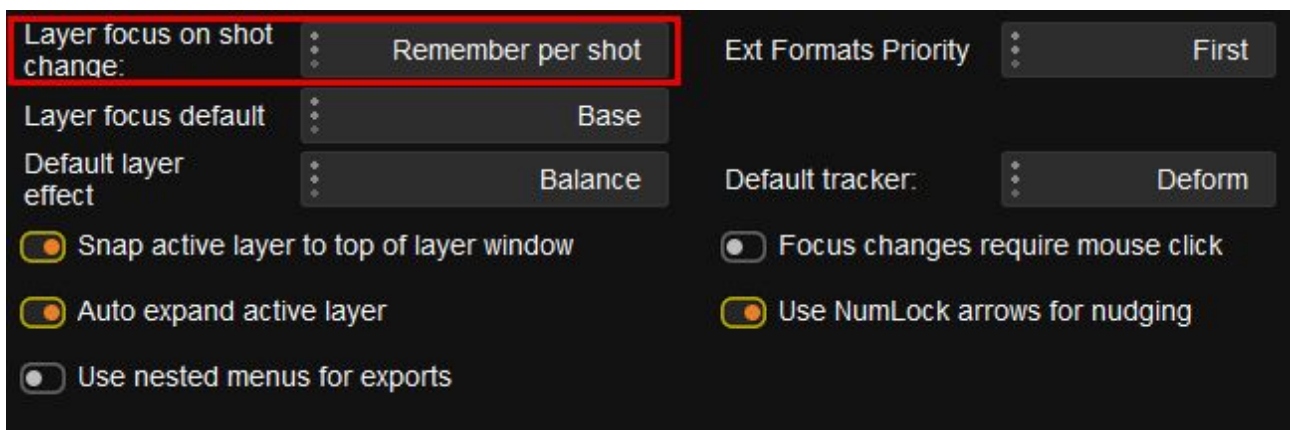


The settings for Avid media paths and Avid Interplay setup has been added to the preferences.

In the Precision preferences the order of colour tools on the Precision panel can now be set using drag and drop menus.

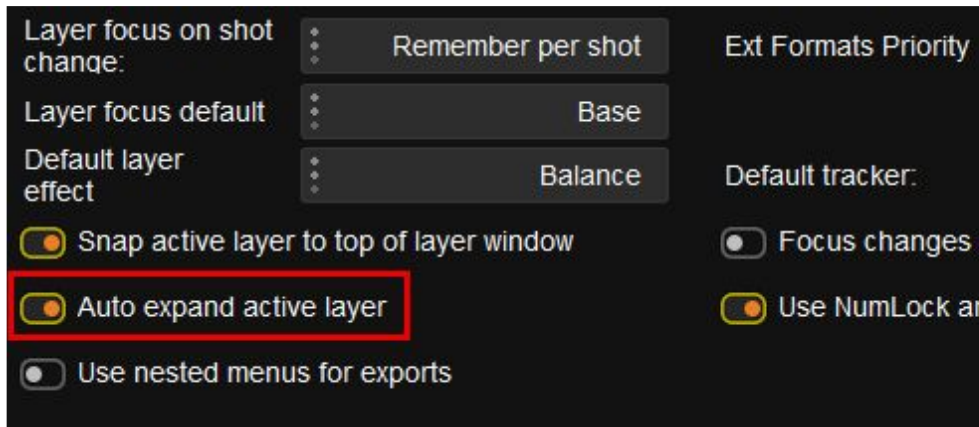
### Layer focus on shot change - General Tab

- Options changed from a Radio Button to a Drop down



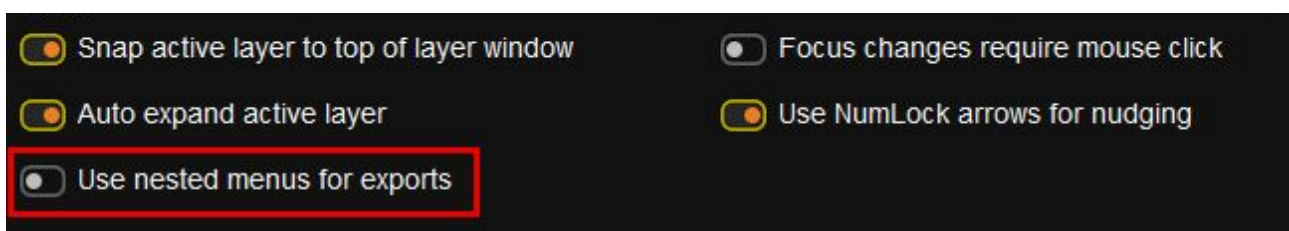
## Auto Expand active layer - General Tab

- The text “Snap layer list to active layer” has been replaced with “Snap active layer to top of layer window” to be more descriptive of the function



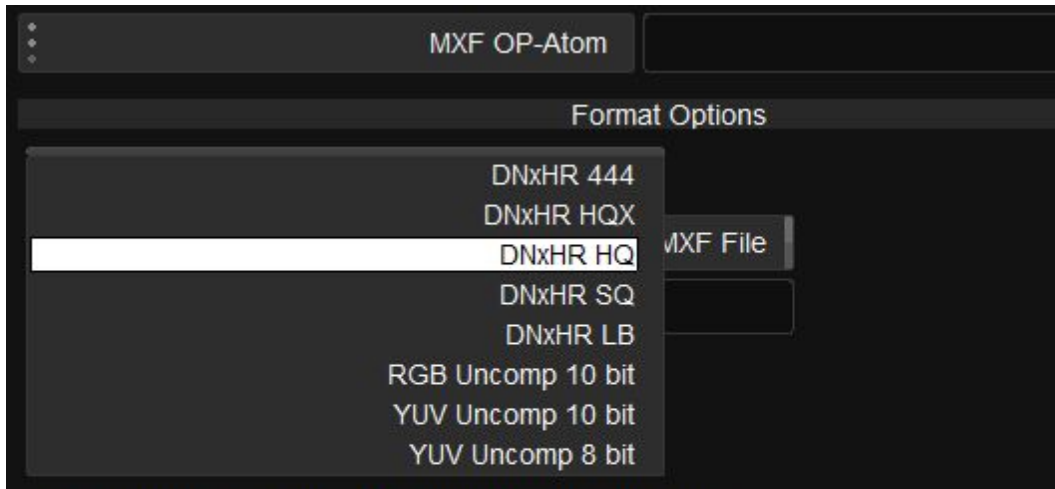
- This preference allows the user to select whether colour and effects layers are expanded when selected.
- When a layer has been expanded with the mouse it is assumed that the user wants to keep the active layer expanded, so even with the option off the active layer will stay open until it is collapsed with the mouse, at which point the active layer should no longer automatically expand.
- The arrow next to the layer name will now be orange when you switch between layers to indicate which layer is active. The icon goes back to white when you expand the layer and start clicking on tools as the icon is only orange if you have a tool highlighted (orange background)

## Use nested menus for exports - General Tab

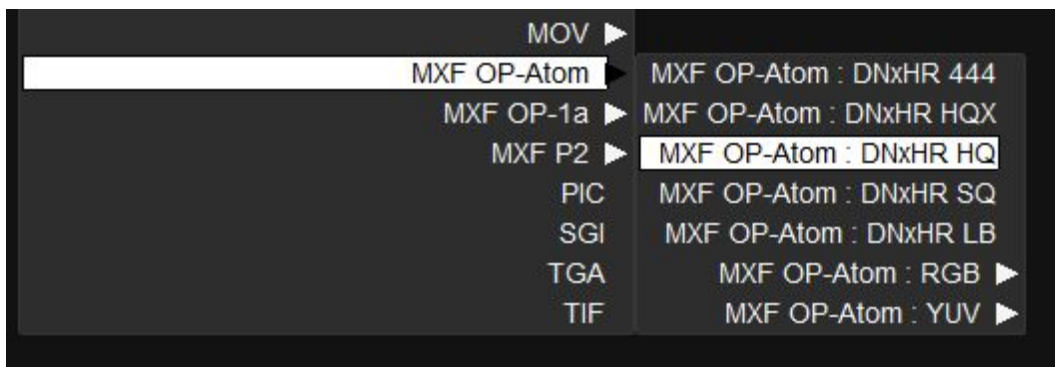


- When exporting files from the application it's now possible to choose nested menus instead of the default behaviour.
- In the default behaviour (as in previous versions) the main file type is selected from a drop down menu first ie MXF OP-Atom. Then the sub-type ie DNxHR HQ is selected from a second drop down menu

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- When using nested menus the sub type can be selected directly from the first drop down.



### Consolidate and Match Folder added to - Capture/Conform/Edit Tab in preferences



Two preferences from the conform page have been added

- Consolidate drop down menu
- Match open library folder - On/Off

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### Composition Start added to - Capture/Conform/Edit Tab



- Users can now determine the default start time for when a composition is created within the project.

### LUT's

#### Support for importing .cube lut format

- .cube LUT's can now be imported into Nucoda. We have tested as many variants as we could, please email [support@digitalvision.se](mailto:support@digitalvision.se) if you find any issues.
- New LUT's have been added to the CMS folder: PQ to HLG and HLG to PQ

### EDL Enhancements - Layer and Matte additions

In order to simplify workflows where multiple mattes and layers are involved in a production we have added ability to use extensions to our EDL format to allow the creation of colour and effects layers.

The purpose of the feature is to allow for the accurate and quick creation of named matte layers and to correctly assign matte sources inside the Nucoda layer stack. In addition to matte assignment the user will also be able to define and add User FX layers, colour layers and locators.

The commands are added as comments after the main event and are processed automatically when importing the EDL.

#### Syntax for additions to the EDL:

**\*NUCODA\_LAYER** [layer name] [-effect <effect-id>] [-matte.r|g|b|a <matte file and path>] [-offset <frame-offset>]

**[layer name]** - optional layer name - no spaces allowed

**[-effect <effect-id>]** - optionally add effect to layer on creation - see index for effect list. This includes OFX

**[-matte.r|g|b|a <matte file and path>]** - Set matte file and specify image channel to use

**[-offset <frame-offset>]** - optionally offset the matte (the importer will automatically offset the matte so it starts at the same frame as the clip, but you use this to add an additional offset)

**EDL Example - *please note that line breaks are not supported.***

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## 2016.1

TITLE: Animal Logic-S3D-with-Mattes-DEM0001  
FCM: FILM

003 Immortals-S3D-LEFT V C 03:00:08:15 03:00:17:20 03:00:08:15 03:00:17:20

\*FROM FILE S:\Immortals\Media\S3D\Left\Immortals-S3D-LEFT\_259407.dpx  
\*NUCODA\_LAYER Primary  
\*NUCODA\_LAYER Matrix -effect GammaMatrix

\*NUCODA\_LAYER 6015\_v002 -matte.r  
S:\Immortals\Media\VFX\Mattes\mt\_003\le\mos\_reel03\_scn0043\_shot6015\_v002\_mt\_003\_le.0001.dpx  
\*NUCODA\_LAYER 6015\_v002 -matte.g  
S:\Immortals\Media\VFX\Mattes\mt\_003\le\mos\_reel03\_scn0043\_shot6015\_v002\_mt\_003\_le.0001.dpx  
\*NUCODA\_LAYER 6015\_v002 -matte.b  
S:\Immortals\Media\VFX\Mattes\mt\_003\le\mos\_reel03\_scn0043\_shot6015\_v002\_mt\_003\_le.0001.dpx

\*NUCODA\_LAYER 6015\_v002 -matte.r  
S:\Immortals\Media\VFX\Mattes\mt\_003\le\mos\_reel03\_scn0043\_shot6015\_v002\_mt\_004\_le.0001.dpx  
\*NUCODA\_LAYER 6015\_v002 -matte.g  
S:\Immortals\Media\VFX\Mattes\mt\_003\le\mos\_reel03\_scn0043\_shot6015\_v002\_mt\_004\_le.0001.dpx  
\*NUCODA\_LAYER 6015\_v002 -matte.b  
S:\Immortals\Media\VFX\Mattes\mt\_003\le\mos\_reel03\_scn0043\_shot6015\_v002\_mt\_004\_le.0001.dpx

\*LOC: 03:00:08:15 RED RGB Left + Right Mattes

### Import EDL...

On importing the **EDL** into Nucoda there are options to import locators and LUT layers, if you need these options, make sure to select the options.

The **\*NUCODA\_LAYER** options will be imported and created automatically if they are in the EDL, if the media required for the mattes is not available, layers will be created but mattes will not be assigned.

The example EDL will:

Import and place the the main shot on the timeline

Create a colour layer named Primary

Create a UserFX layer called Matrix with Gamma Matrix effect in the layer

Create six separate colour layers each with Mattes set as specified in the EDL using the Red, Green and Blue channels respectively.

### Other available extensions in the EDL:

\***LOC:** <timecode> <locator color> [Locator information]

Locator colours:

BLUE | CYAN | MAGENTA | ORANGE | RED | WHITE | YELLOW

## Enhancements to Stereo workflow - track copy and media replacement

Two new functions have been added to Nucoda to make the stereo workflow more streamlined.

### Copy tracks



Copy tracks will make copies of all selected tracks and place the copies above the existing tracks. In a stereo project, the tracks will be copied to the same eye

### Copy S3D (Stereo 3D)



This function is only available in a stereo project and is used in conjunction with the Copy Tracks function.

After selecting and copying tracks using the copy tracks command, pressing the Copy S3D button will automatically move the new tracks to the other eye (depending on whether the left or right eye was copied) at the same time it will scan the source location of the current source and matte files for the material that corresponds to the eye that is being created. If the new media is found, all the material will be automatically replaced with same material but from the opposite eye.

This works based on the the naming of the material and requires that the material for the other eye is available from the same drive letter, and that the material and directories clearly indicate whether the material is for the left or right eye. The default is to look for the following patterns (case-insensitive):

Left eye: "left" "le" "li"

Right eye: "right" "re" "ri"

It will only work if these letter combinations appear on their own, for example :

"Shot\_02\_panleft\_left" will correctly be replaced by "Shot\_02\_panleft\_right" because we ignore "panleft" as an indicator, the same is true for directories.

In this example we will find the words left and le in both the directory and filename, replace them with right and re and conform and import the new material.

\*FROM FILE S:\Immortals\Media\S3D\Left\Immortals-S3D-LEFT\_259407.dpx

\*NUCODA\_LAYER Primary

\*NUCODA\_LAYER Matrix -effect GammaMatrix

\*NUCODA\_LAYER 6015\_v002 -matte.r

S:\Immortals\Media\VFX\Mattes\mt\_003\le\mos\_reel03\_scn0043\_shot6015\_v002\_mt\_003\_le.0001.dpx

\*NUCODA\_LAYER 6015\_v002 -matte.g

S:\Immortals\Media\VFX\Mattes\mt\_003\le\mos\_reel03\_scn0043\_shot6015\_v002\_mt\_003\_le.0001.dpx

\*NUCODA\_LAYER 6015\_v002 -matte.b

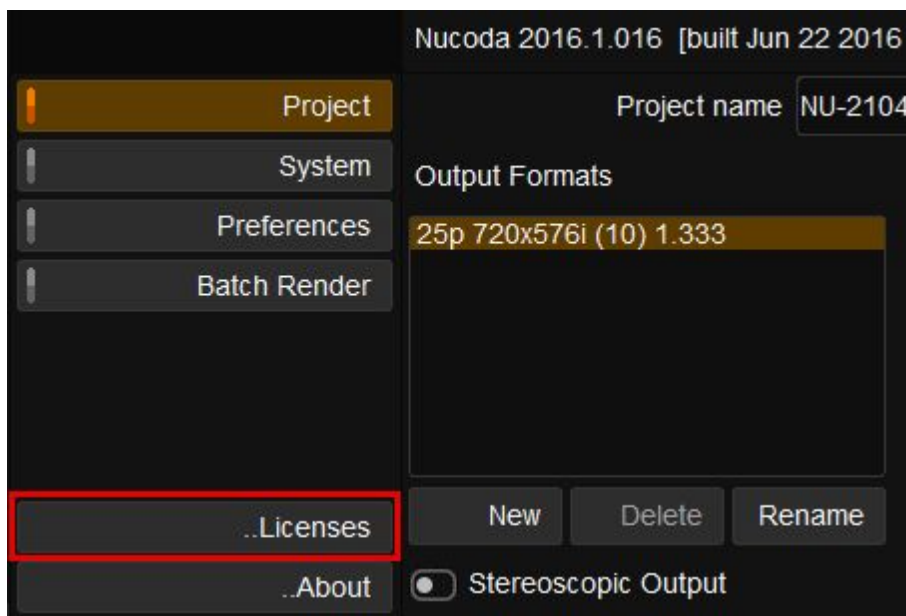
S:\Immortals\Media\VFX\Mattes\mt\_003\le\mos\_reel03\_scn0043\_shot6015\_v002\_mt\_003\_le.0001.dpx

## Updates to the CLI (Command Line Interface)

- Create Adjustment Segment with CLI
- CLI Should be able to pass through MXF audio
- CLI in/out point function exports wrong frames if filename contains a number

## Licenses - New Information panel

- A new .. Licenses information option has been added to the Projects Page making it easier to see what licences exist on the system and when they will expire.





## List of the file formats supported for Export via the Extended Formats

### AVC Intra 100 **OP-1a .MXF**

- AVCi.mxf
- Panasonic AVCi codec in OP1A mxf file
- Bit rate is 100mbps
- Can only be exported at 720 or 1080 resolutions.

### DVCPRO HD **Op-1A .MXF**

- DV.mxf
- Bit rate is 100mbps
- Can only be exported at 720 or 1080 resolutions.

### JP2 **OP-1a .MXF**

- This will be a Variable bit rate VBR file.
- There will be no limitation on the resolution of the exported file.

### XDCAM **Op-1A .MXF**

- This is HD4:2:2
- Bit rate is 50mbps
- Can only be exported at 720 or 1080 resolutions.
- Container Format
  - XDCAM
  - HDF01A

### DVCPRO HD **.Mov**

- DV100.mov
- Bit rate is 100mbps
- Can only be exported at 720 or 1080 resolutions.

### DV50 and DV25 **.Mov**

- For PAL and NTSC

### JP2 **.JP2**

- This will be a Variable bit rate VBR file.
- There will be no limitation on the resolution of the exported file.

### DCP Package

- Jpeg 2000 with XYZ Color Space.
- Basic implementation for previews



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