



# Tactic Adv

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## Reference Manual

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About	Description
Revision	5.4.0;
History	
Authors	

# Overview

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Tactic Advanced is an interactive application that allows you to place specifically designed graphics into recorded video. It has various configurations and modes of operation that meet the demands of sports analysts worldwide.

Tactic Advanced may be used by presenters live on air to enhance discussions and analysis of sporting moments.

Tactic Advanced can work with either internal, file based clips or via external baseband SDI video coming from either live sources or from VTR devices using a number of industry standard protocols. Video control is provided via an intuitive VTR control panel on screen.

Tactic Advanced operates in 3 distinct camera modes. The camera mode dictates how the graphics drawn will appear in relation to the real broadcast camera used to film the footage. These modes are:

- 2D Camera – This is the simplest of all the modes and the graphics appear flat to the screen.
- 3D Camera – This uses a perspective camera. Graphics will appear on the playing surface and may be keyed between players and grass. You can select from a list of pre-set camera positions or create your own. These may be used on a freeze or Key Framed to follow the movement of play.
- 3D Image Tracked - In true 3D mode Tactic Advanced supports feature based tracking. This allows graphics to be 'tied-to-pitch' – even when the camera view moves.

All modes are available instantly.

As well as supplying a set of predefined graphics you can also build your own by combining any of these predefined graphics. These will automatically appear on the user interface.

# Video Tutorials

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Video tutorials are available to assist with installation and using Tactic Advanced.

[www.vimeo.com/album/5187310](http://www.vimeo.com/album/5187310)

# Installation

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## General Guidelines

Please observe these guidelines. Observation of these simple guidelines will avoid many typical installation problems.

- For Windows users to install, the user account name MUST have Administrator rights
- The user account name MUST NOT contain spaces or any non-English characters
- The software can only be used on the PC on which it is installed (no network / fileserver)
- The recommended screen resolution is 1920 x 1080 (1366 x 768 minimum, 3840 x 2160 maximum)

# Supported Hardware

Check our website for the latest supported hardware configurations.

<https://sports.rtsw.co.uk>

See Tactic Advanced Hardware Specs.

# Supported Operating Systems

- Windows 7 SP1 x64 Professional/Ultimate
- Windows 10 x64

# nVidia Graphics Card and Drivers

If not already installed as part of the operating system, these may be obtained from the nVidia website [www.nvidia.com](http://www.nvidia.com) and are specific to the hardware installed in your PC.

# AJA Video Card and Drivers

To send and receive video an AJA video card is required.

Always use the AJA driver version that is available with the installed version of Tactic Pro.

If you are re-installing or updating then refer to the uninstall section below before attempting a reinstall/update.

Locate the appropriate driver from the RTSoftware web site or FTP site.

You will need an authorised login to access this site. If you do not have one then please contact [support@rtsw.co.uk](mailto:support@rtsw.co.uk).

DO NOT INSTALL AN AJA DRIVER FROM THE AJA WEB SITE UNLESS EXPLICITLY DIRECTED TO BY RTSoftware

# RT Software Security

Tactic Advanced is licenced using one of the following methods.

## 1 - Software Licence (SL)

A software licence key installed on the PC.

A Trial licence is available upon request from RT Software <https://sports.rtsw.co.uk/>

To obtain a software licence, contact [sales@rtsw.co.uk](mailto:sales@rtsw.co.uk)

## 2 - USB Security Key - Hardware Licence (HL)

The USB Security key (dongle) must be inserted in a USB port of the PC at all times.



To obtain a USB Security key (dongle), contact [sales@rtsw.co.uk](mailto:sales@rtsw.co.uk)

# Download the Installers

Tactic Advanced is available to download from our website <https://sports.rtsw.co.uk/>

Please contact [support@rtsw.co.uk](mailto:support@rtsw.co.uk) if you have any questions.

The following lists the installers needed for Tactic Advanced:

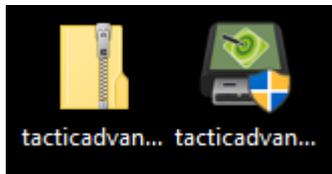
tacticadvanced-5.3.1_rxxxxx-windows-installer.zip	Tactic Advanced installer
ajadriver-<version> -windows-installer.exe	AJA video card driver. Optional.

## Installation

Once you have downloaded the necessary installer you are ready to proceed.

tacticadvanced-5.3.1\_rxxxxx-windows-installer.zip

Unzip the file and place a copy of the folder on your desktop.



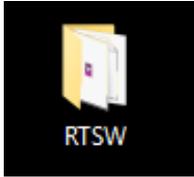
Run the installer, accept all defaults and conditions and click  as required.

Reboot your PC

**NOTE:** Once the installation is complete – Reboot your PC

# Users Desktop

The installation process will have created an RTSW folder on the users desktop.

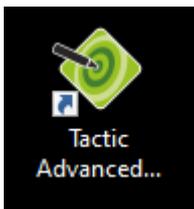


**NOTE: Do NOT delete this folder.**

This RTSW folder will contain the Tactic Advanced project folder etc..

The installation process will have created a Tactic Advanced shortcut on the user's desktop.

e.g.



# Uninstall

To uninstall Tactic Advanced run the uninstaller in the RTSW folder.

or

Use the system “Settings” tools, “Control Panel” or “File Explorer”.

## AJA Driver Installation

Once you have downloaded the necessary installer you are ready to proceed.

ajadriver-<version> -windows-installer.exe

Run the installer, accept all defaults and conditions and click  as required.

Reboot your PC

For details of cable connections see the separate document [AJA Driver Installation.pdf](#)

## AJA Driver Uninstall

To uninstall the AJA Driver open up the Control Panel.

Locate the 2 AJA entries and uninstall both.

 AJA Driver	RT Software	13/08/2016	28.4 MB	12.4.1.31
 AJA NTV2 Drivers 12.4.1	AJA	13/08/2016	15.4 MB	12.4.1

Note that only 1 AJA driver can be resident on the machine at any one time. If you see more than 2 AJA Drivers then uninstall all of them. The entries are identified by either ‘RT Software’ or ‘NTV2 Drivers’

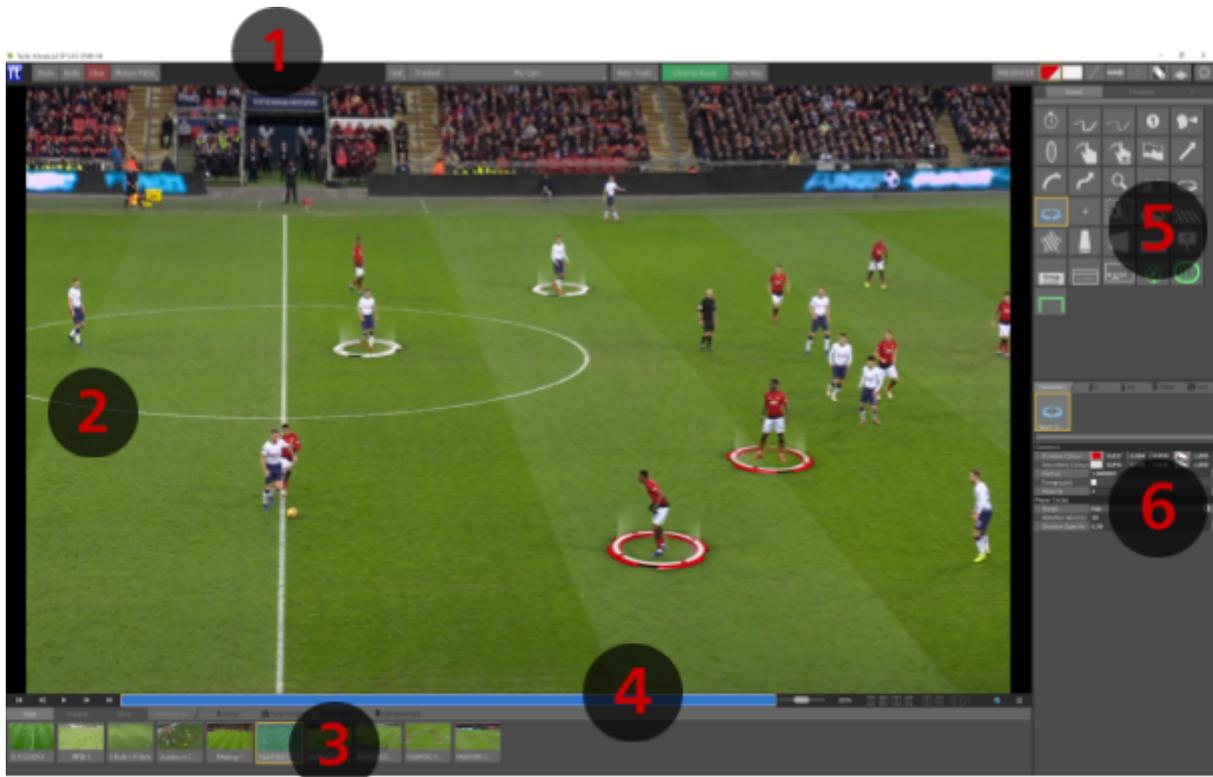
Locate the directory

C:\Program Files\tog\drivers\

Remove any entries starting with ‘AJA’

# Interface Overview

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## 1. Toolbar

- Undo/Redo
- Clear
- Motion Paths
- Grid
- Tracking
- Cameras
- Keyer
- Palette
- Preferences

## 2. Video

3. Clip Browser
  - Analysis View
  - Bookmarks
4. VT bar
  - Play/Pause/Rewind/etc
  - Seek bar
  - VT Context Menu
5. Graphics
  - Basic Graphics
  - Composite Graphics
6. Parameters
  - Appearance/Style

# Basic Configuration

## Select Sports Package

Tactic Advanced SP includes multiple pre-defined Sports Packages.

A Sports Package contains a project with sports specific graphics. On startup, if more than one Sports Package is installed, you will see a dialog asking you to select the Sport that you wish to analyse.



If you always use the same sport, select Remember My Selection.

The selected sport will be stored and can be reset in

Preferences > [Files and Directories](#) as "Sports Package to Load"

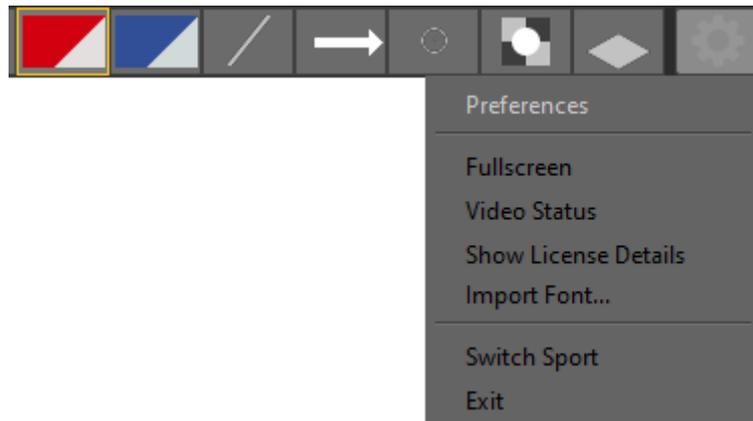
Select the Pitch representing the required Sport.

# Preferences

Tactic Advanced SP should be pre-configured for your system and ready to use.

Access the Preferences to change the default configuration.

Select the “gear” icon in the top right corner and select “Preferences” ...



For details of all application Preferences see [Appendix A](#) in this document.

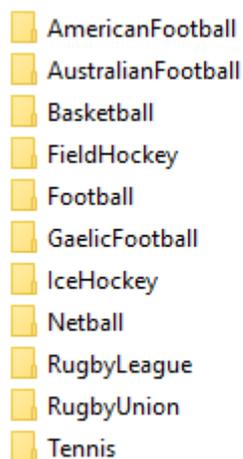
# User Data

All user data and application Preferences are stored in a single folder on the users desktop.

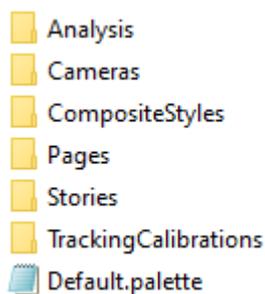
Each sport has it's own sub-folder. This includes Analysis, Composite Styles, Cameras and palettes.

This ensures that each sport can be configured independently, and any sport specific analysis tools are separated.

e.g. Desktop\RTSW\TacticAdv



Within each sport folder are preferences for that sport



# Initialisation File

It is recommended to use the TogSettingsManager application to review settings.

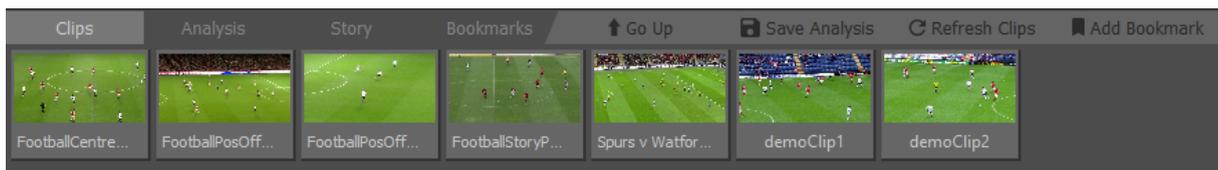
C:\Users\username\AppData\Roaming\RTSoftware\tacticadvanced.ini

# Clip Browser

Thumbnails of all stored video clips in the folder specified in [Set FileClipStore options](#).

e.g. Desktop\RTSW\clips

Select Refresh Clips to update the display



## Load a Video Clip

Choose and select a video clip to analyse from the Clip Browser.



# VT Controls

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The VT Controls are used to Play/Advance/Rewind the video clip.

Rewind to beginning, Step back one frame, Play, Step forward one frame, Fast Forward to end.



Seek Bar. Drag the vertical line to the desired clip position (Timecode).



Jog video clip backwards or forwards.



The Timecode for the current video clip position and total duration of clip.



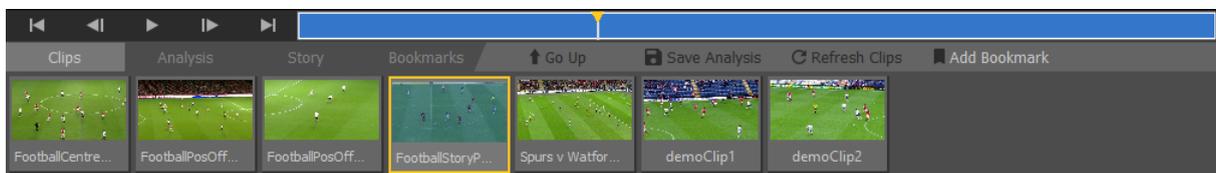
# Bookmarks

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Use the [VT Controls](#) to Play/Advance/Rewind the video clip and create a Bookmark at any point in the video clip that may be useful for future analysis.

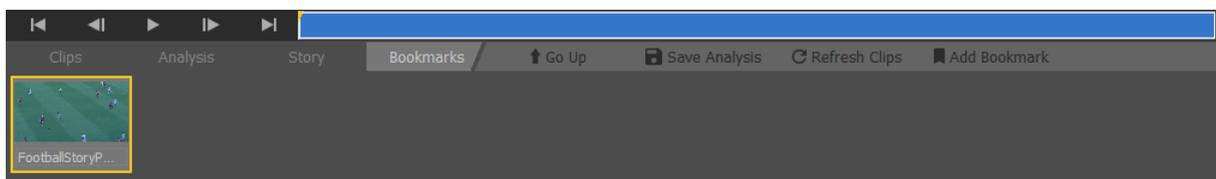
## Add Bookmark

Add a Bookmark at any position (timecode) within the current loaded clip.



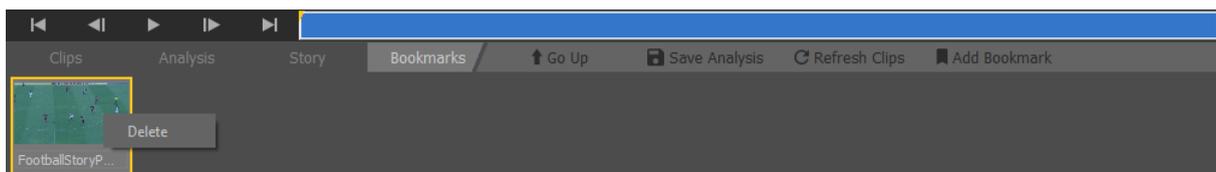
## Load Bookmark

Choose and select a Bookmark to analyse from the [Clip Browser](#).



## Delete Bookmark

Select the Bookmark, press the "Right Mouse Button" then Delete

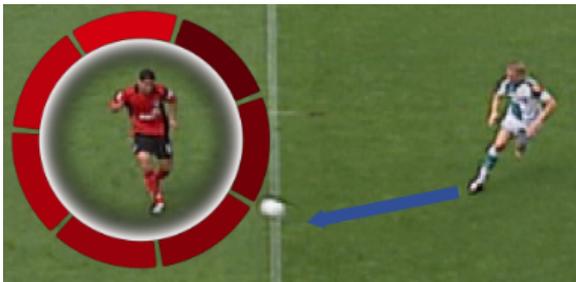


# Cameras

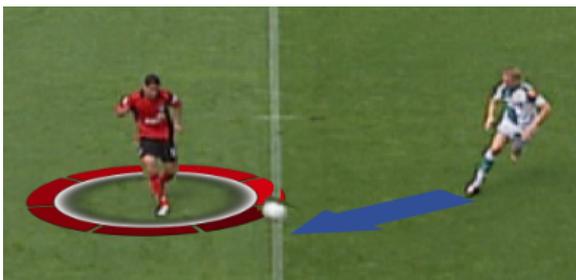
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Tactic Advanced operates in 3 distinct camera modes. The camera mode dictates how the graphics drawn will appear in relation to the real camera used to film the footage. These modes are:

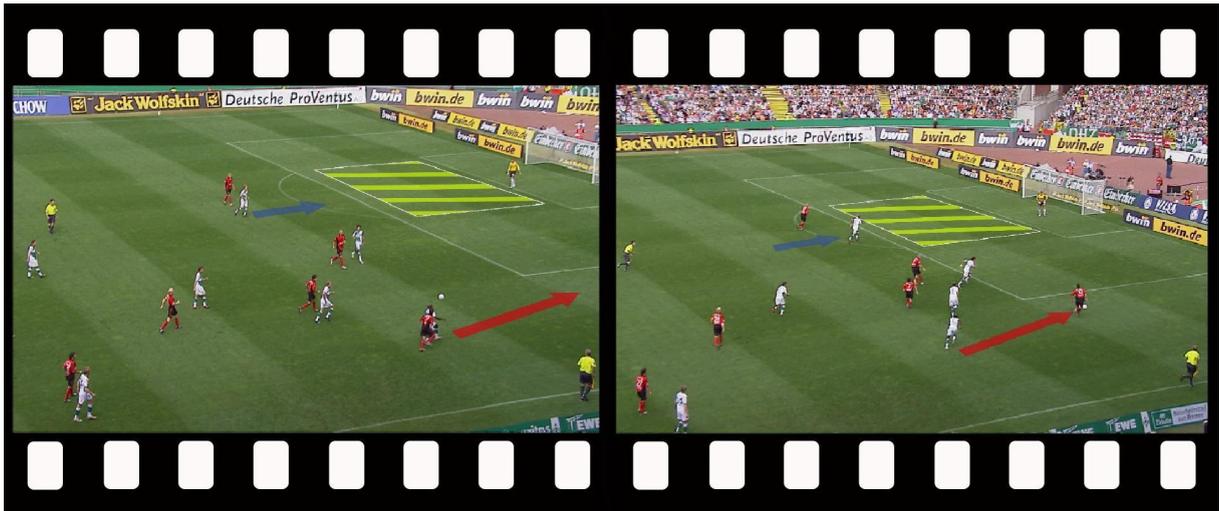
- **2D Camera** – This is the simplest of all the modes and the graphics appear flat to the screen.



- **3D Camera** – This uses a perspective camera. Graphics will appear on the playing surface and may be keyed between players and grass. You can select from a list of pre-set camera positions or create your own. These may be used on a “freeze frame” or using the “Motion Path” feature to follow the movement of play.



- **3D Image Tracked** - In true 3D mode Tactic Advanced supports feature based tracking. This allows graphics to be 'tied-to-pitch' – even when the camera view moves.



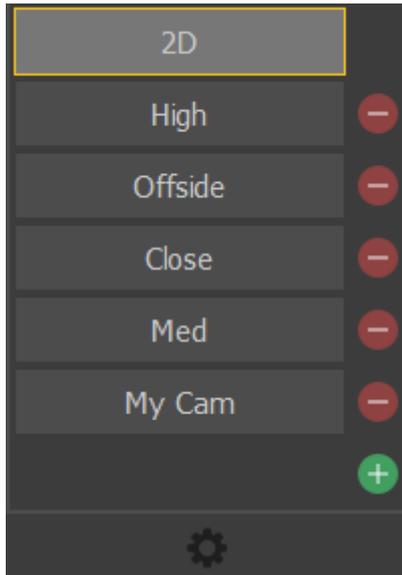
All camera modes are available instantly.

# Select Camera

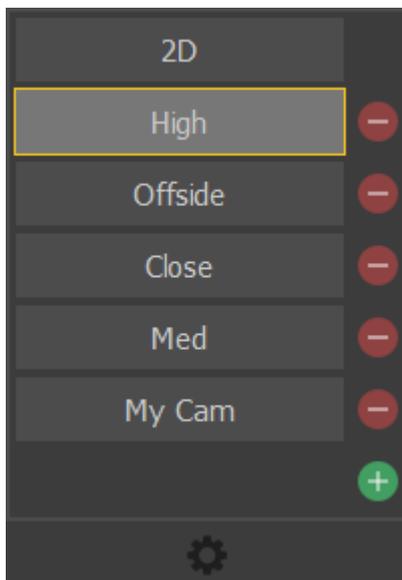
The currently active Camera is displayed on the Toolbar.



Select and hold the active Camera to display a list of Cameras.

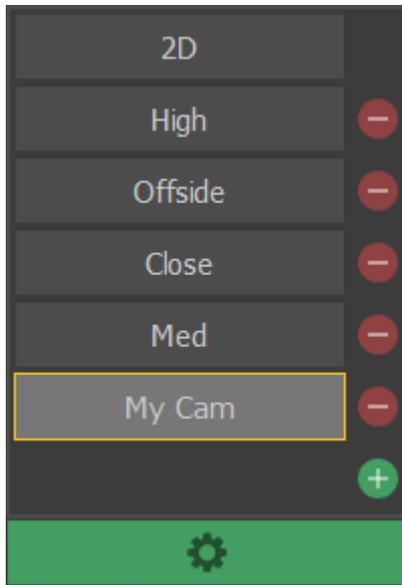


Select the required Camera from the list.



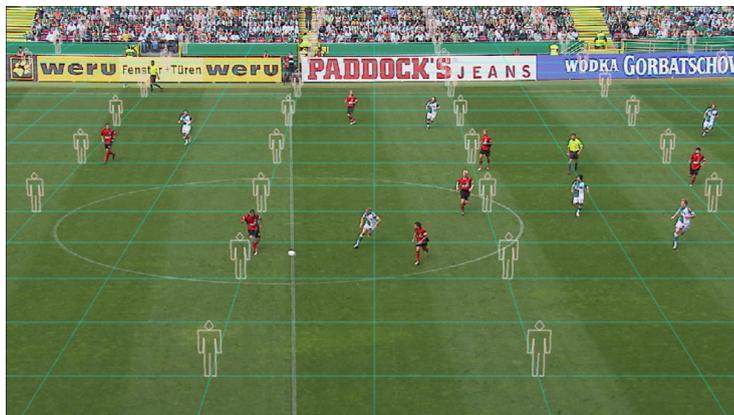
# Edit Camera

Select and hold the active Camera to display a list of Cameras.

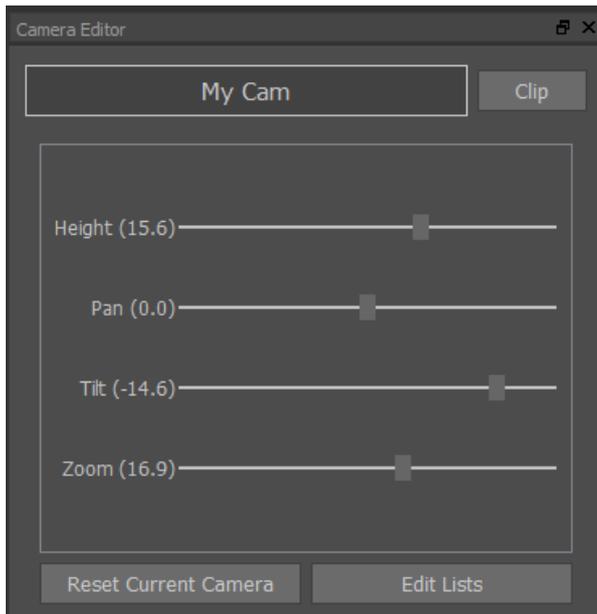


Select the “gear” icon at the bottom of the list.

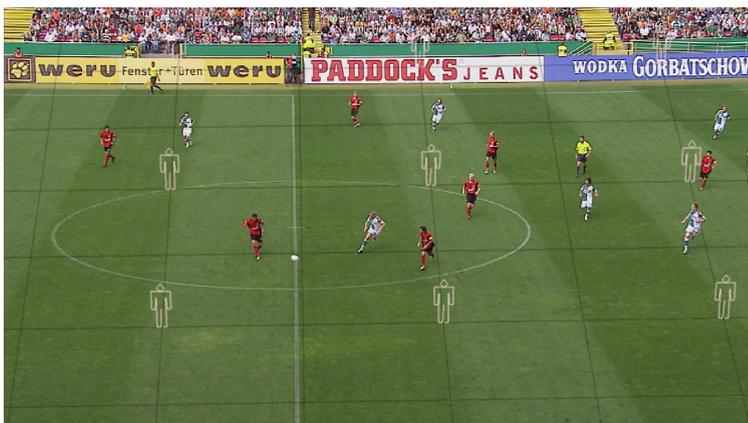
A “Render Grid” is overlaid on the video clip.



The Camera Editor dialog is displayed.

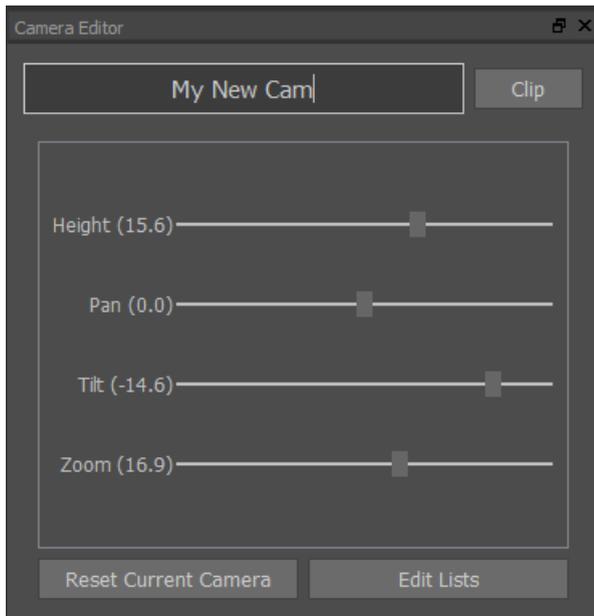


Adjust the grid using the slider bars (or place the cursor over the required slider bar and use the "Mouse Wheel") so that the view and scale closely align with the video clip.



The perspective of analysis graphics will now scale correctly.

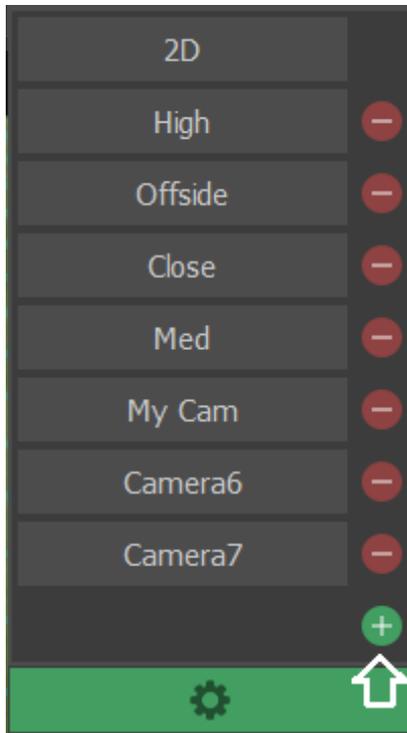
Rename the Camera if required



- Clip** Create a new camera named as the current timecode
- Reset Current Camera** Reset to the installation defaults
- Edit Lists** Select and Edit specific camera from the Camera List

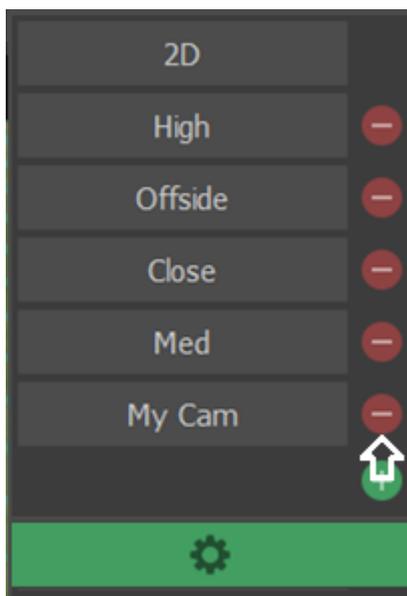
# Add Camera

Add a new camera using the + symbol



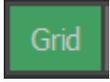
# Delete Camera

Delete unwanted camera using the - symbol



# Grid

Toggle the Grid display on/off



# Keying

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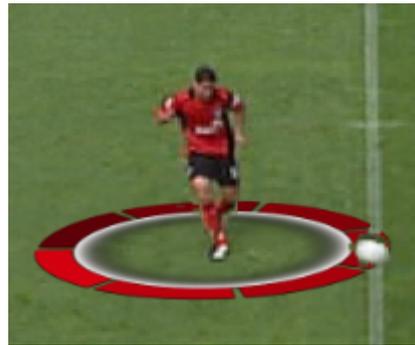
Without a Keyer, graphics appear on top of the players.

Using a correctly defined Keyer, the players appear in front of the graphics. The graphics now appear to be painted on the pitch surface.

Without Keying

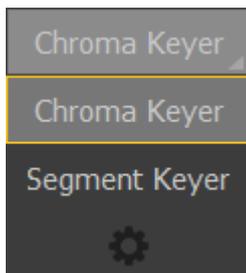


With Keying



## Select Keyer

Select the required Keyer from the list.



# Enable Chroma Keyer



Once Keying is enabled the icon turns green and the Auto Key button is displayed.



Press Auto Key to optimise the settings automatically.

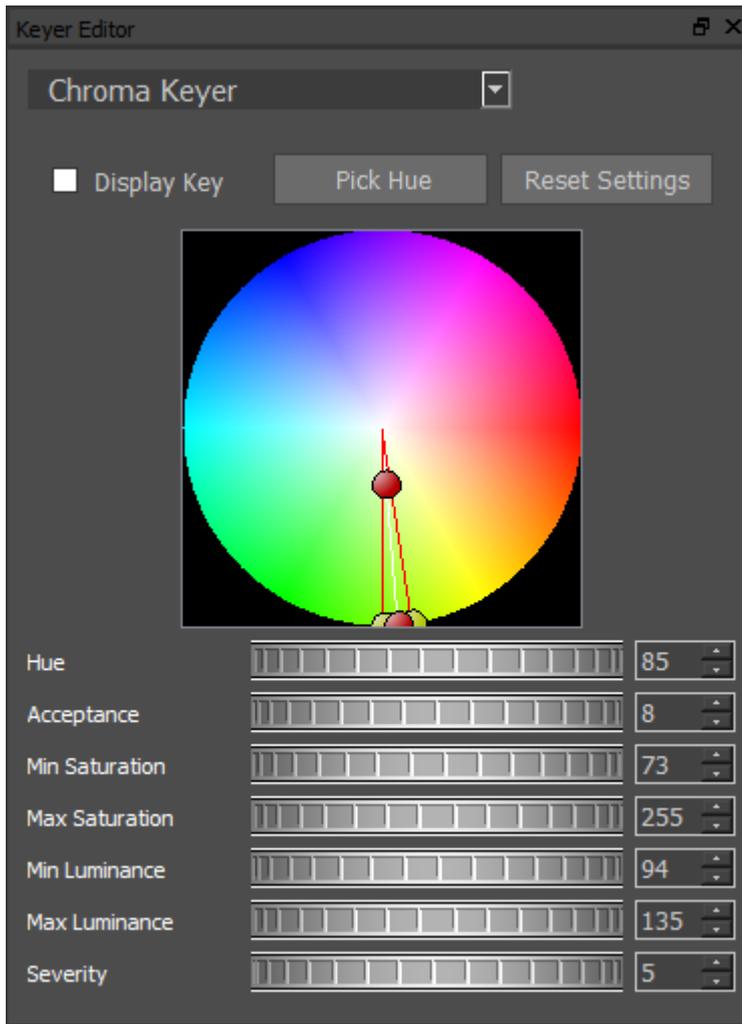
# Edit Chroma Keyer

Select and hold the active Keyer to display a list of Keyers.



Select the "gear" icon at the bottom of the list.

The Keyer Editor dialog is displayed.



**Display Key** A Black & White image of the current settings overlaid on the video clip

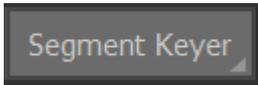
**Pick Hue** Manually select the background colour.

**Reset Settings** Reset to the installation defaults

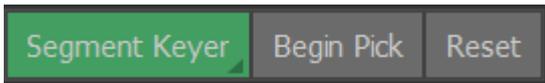


View and adjust the Keyer so that the graphics will only be drawn on the white area and appear behind objects that are black.

# Enable Segment Keyer

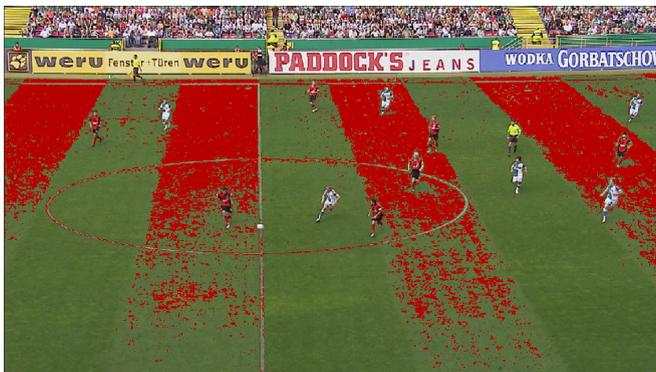


Once Keying is enabled the icon turns green and the Begin Pick and Reset buttons are displayed.



Press Begin Pick and select the background colour..

Hold the Left Mouse button down and drag the cursor across the video to select the Keyed area.



Adjust the Keyer so that the graphics will only be drawn on the white area and appear behind objects that are red.

Press End Pick when finished.



Press Reset to return to the default settings.

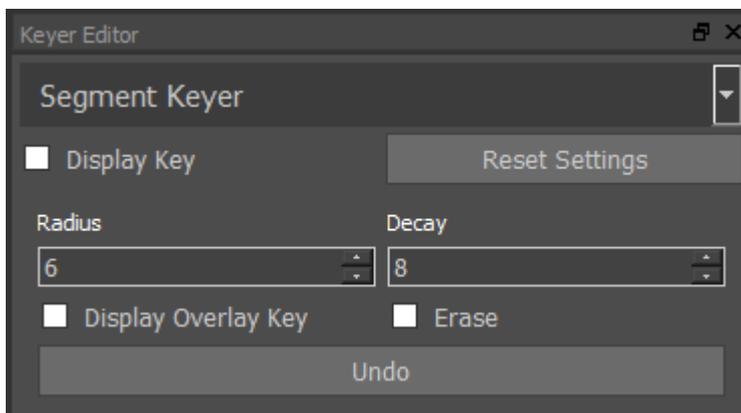
# Edit Segment Keyer

Select and hold the active Keyer to display a list of Keyers.



Select the “gear” icon at the bottom of the list.

The Keyer Editor dialog is displayed.



## Display Key

View and adjust the Keyer so that the graphics will only be drawn on the white area and appear behind objects that are black.

## Radius/Decay

Adjust the size of the Pick tool

Drag the cursor across the video to select the Keyed area.

## DisplayOverlayKey

View and adjust the Keyer so that the graphics will only be drawn on the red area and appear behind objects that remain.



# Palette

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Use the Palette tools to set preferences for the graphics tools.

Palette tools include 2 colour combinations (Home and Away team), Thickness, Arrow Type, Size, Opacity and 2D/3D.

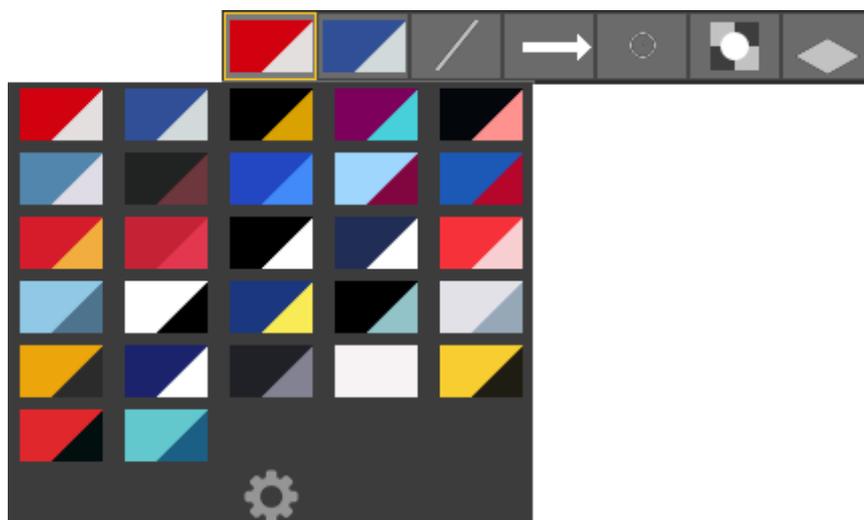


Select and hold the required Palette tool to change preferences.

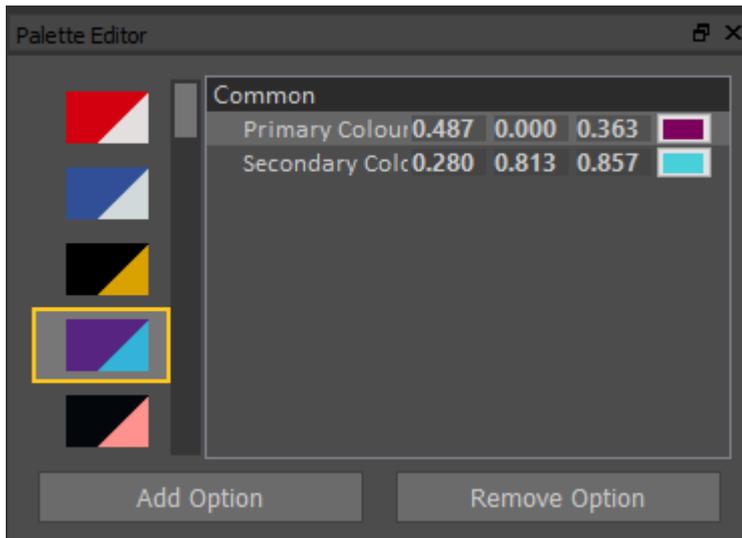
## Colours

Select and hold the Colour Palette tool to change preferences.

A selection of team colours has been pre-defined.

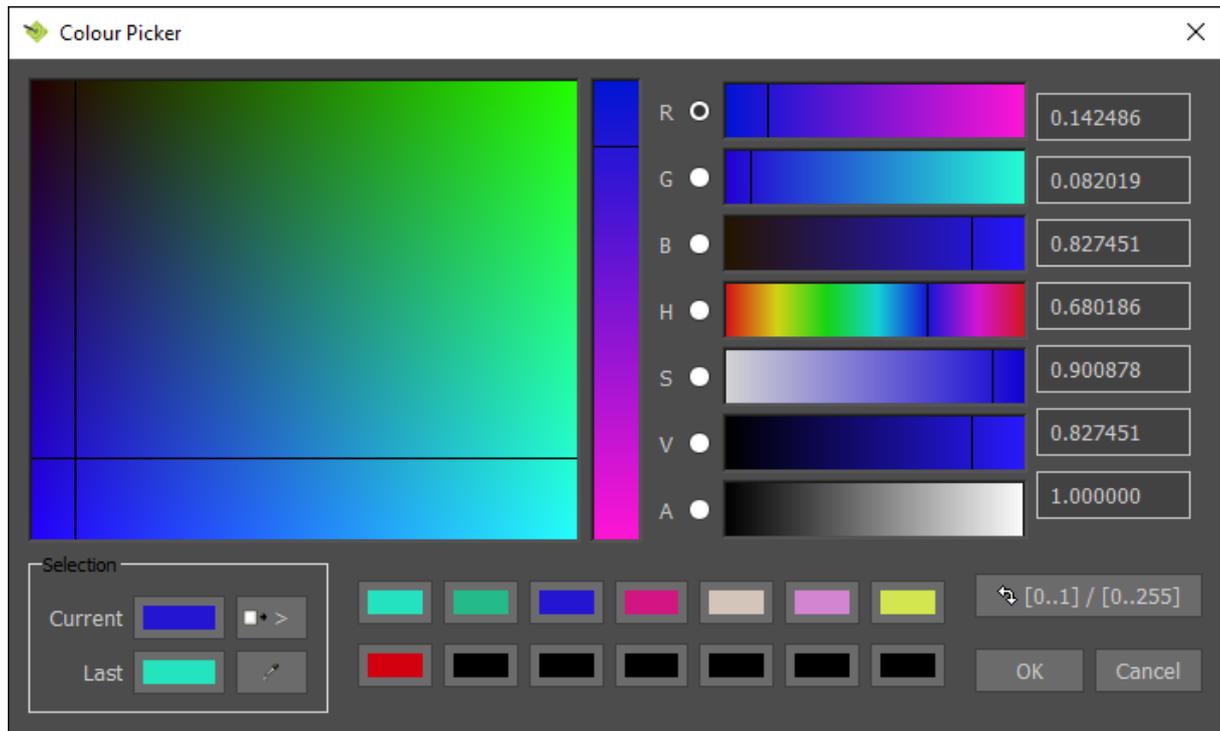


To edit the Colour combinations, select the “gear” icon at the bottom of the list.



To change either the Primary or Secondary colour enter numeric values for RGB or use the [Colour Picker](#).

# Colour Picker



Add current colour definition to the colour palette.



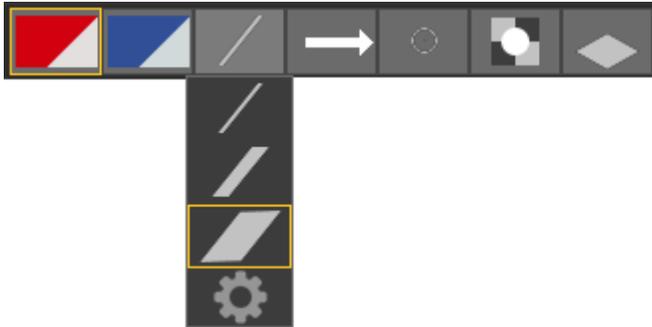
Use the colour grabber to select colour from anywhere on screen.



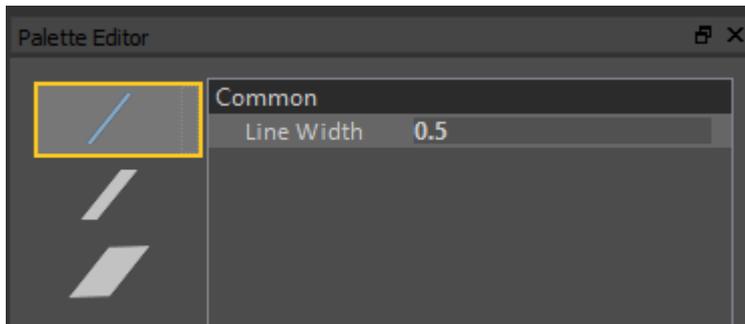
# Thickness

Select and hold the Thickness Palette tool to change preferences.

A selection of line thicknesses has been pre-defined.



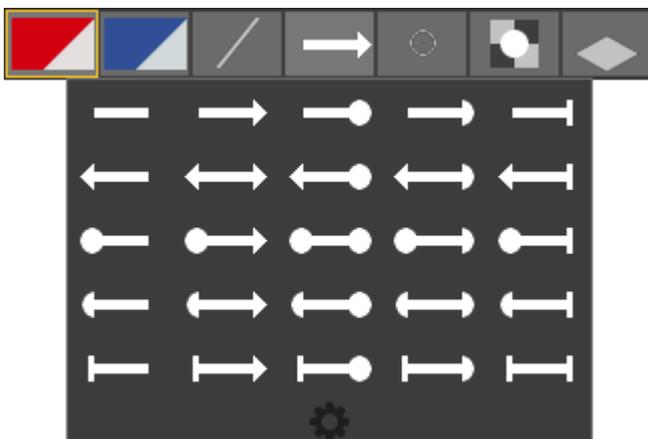
To edit the line Thickness, select the “gear” icon at the bottom of the list.



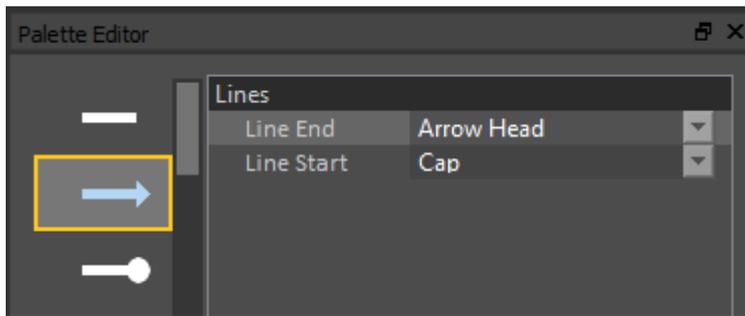
# Arrow Type

Select and hold the Arrow Type Palette tool to change preferences.

A selection of Arrow Types has been pre-defined.



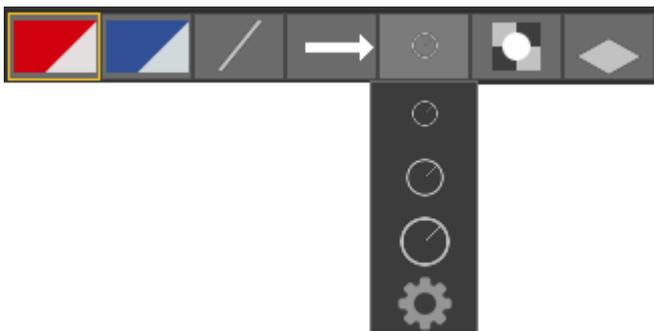
To edit the Arrow Type, select the “gear” icon at the bottom of the list.



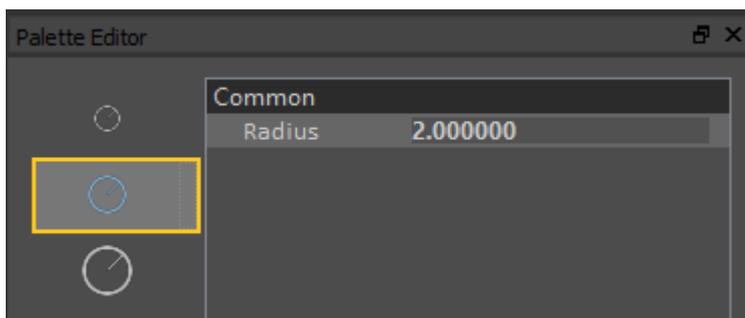
## Size

Select and hold the Size Palette tool to change preferences.

A selection of Sizes has been pre-defined.



To edit the graphic Size, select the “gear” icon at the bottom of the list.



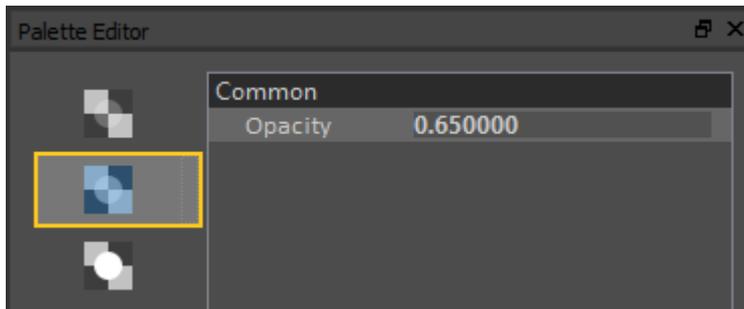
# Opacity

Select and hold the Opacity Palette tool to change preferences.

A selection of graphic Opacity settings has been pre-defined.



To edit the graphic Opacity, select the “gear” icon at the bottom of the list.

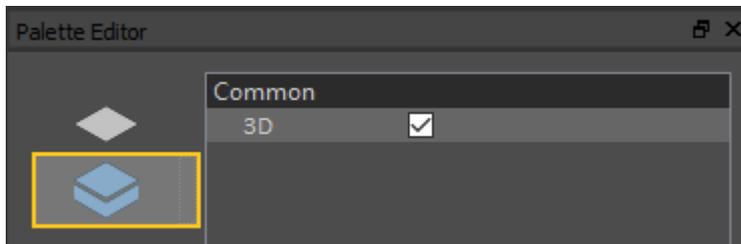


# 2D/3D

Select and hold the 2D/3D tool to change preferences.



Toggle between the 2D and 3D styles of certain graphic tools, or select the “gear” icon at the bottom of the list.



# Create an Analysis sequence

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An Analysis sequence of a sporting event consists of a sequence of Graphics used to explain the game play.

An Analysis sequence is usually cropped from the full duration of the original video clip.

The Graphics may follow the game play using a technique called Keyframing or may appear tied to the pitch using a Tracked camera.

An Analysis sequence may contain manual or automatic pauses to enhance the explanation of the game play.

Before creating an Analysis sequence, it is necessary to:

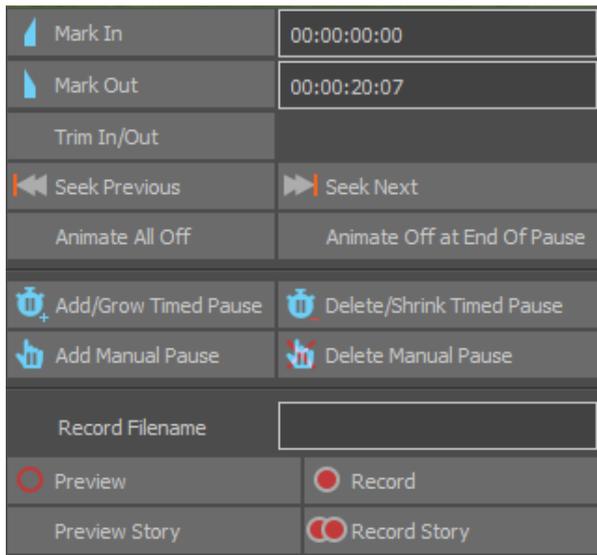
- [Load a video clip](#)
- Choose a [Camera](#)
- Setup a [Keyer](#) (if required)
- Define the graphic colours and size etc using the [Palette](#)

## Mark In / Mark Out

Select Show Additional Analysis Tools at the end of the VT Controls toolbar.

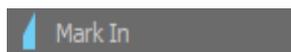


(Select Show Additional Analysis Tools again to toggle the menu display on/off)



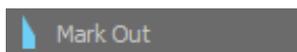
Either drag the vertical line on the Seek Bar to the desired video clip position or use the [VT Controls](#) to Play/Advance/Rewind the video clip and pause at the timecode a few seconds before the Analysis sequence will begin.

Select Mark In



Either drag the vertical line on the Seek Bar to the desired video clip position or use the [VT Controls](#) to Play/Advance/Rewind the video clip and pause at the timecode a few seconds after the Analysis sequence will end. The Mark Out should not be the very last frame of the video clip.

Select Mark Out



The total duration of the video clip displayed on the Seek Bar now represents the time period specified between Mark In and Mark Out.

# Add Graphic(s)

Either drag the vertical line on the Seek Bar to the desired video clip position or use the [VT Controls](#) to Play/Advance/Rewind the video clip and pause the video clip at the timecode where a Graphic is to be added.

Select a Graphic from the menu.

**Note the exact choice of Graphics available may depend on software licence options.**



**NOTE: The exact choice of Graphics available may depend on the [Sports Package](#) selected.**

Place the Graphic(s) on the video clip.

The "In" timecode of a Graphic(s) in an Analysis sequence is marked on the Seek Bar as a thin green vertical line(s).



Once analysis Graphic(s) have been added, navigate the Seek Bar using



# Add or Delete a Pause

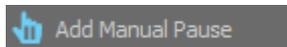


A Manual Pause will require the user to select Play to restart the video clip

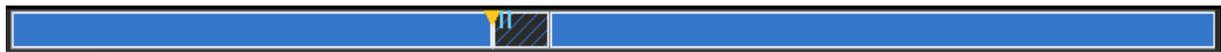
A Timed Pause waits for a predefined time before automatically restarting the video clip. The duration of a Timed Pause is specified in the Analysis Options.

## Manual Pause

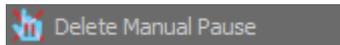
Add a Manual Pause using



A Manual Pause is added to the Seek Bar.

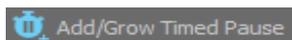


Delete a Manual Pause using



## Timed Pause

Add a Timed Pause using



A Timed Pause is added to the Seek Bar.



Reduce (or remove) a Timed Pause using



## Adjust Pause

Adjust a Pause by dragging the end point on the Seek Bar using the "Left Mouse Button".



# Remove Graphic(s)

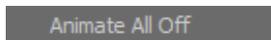
To remove a Graphic after either a Manual or Timed Pause navigate to the end of the Pause on the Seek Bar using



and at the end of the Pause use



Or to remove all Graphic(s) at the same time



The "In" timecode of Graphic(s) in an Analysis sequence is marked on the Seek Bar as a thin green vertical line(s).

The "Out" timecode of Graphic(s) in an Analysis sequence is marked on the Seek Bar as a thin red vertical line(s).



## Preview

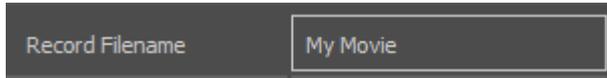
Playback the Analysis Sequence using



This will begin at Mark In, display the Graphic, Pause, remove the Graphic and continue to Mark Out.

# Record Analysis (Create a Layoff)

Produce a movie file of the Analysis sequence, first specify a Record Filename



A screenshot of a software interface. It shows a dark grey rectangular area with a white border. On the left side, the text 'Record Filename' is displayed in a light grey font. To the right of this text is a white rectangular input field containing the text 'My Movie' in a light grey font.

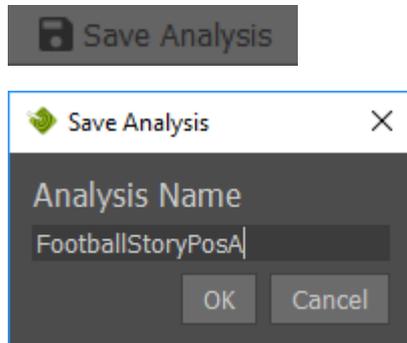
Then Record the Analysis sequence using



The movie file will be saved in the folder specified in [Layoff options](#) and in the format and quality specified in [Layoff Movie format](#).

# Save Analysis

Save the Analysis sequence using



There are 2 modes of behaviour of the Save Analysis feature:

1. Save Analysis button and CTRL+ SHIFT + S act as a "Save As":

User is prompted for a filename. If the filename is already used, a warning window opens to ask confirmation for overwriting.

If no analysis has been saved or loaded since loading a clip, the name of the clip is suggested by default.

If an analysis has been saved or loaded since loading a clip, the name of the latest saved or loaded analysis is suggested by default.

If no clip neither analysis has been loaded yet, no suggestion is made, the box is empty.

2. CTRL+ S acts as a 'Save':

If an analysis has been saved or loaded since loading a clip, it is overwritten immediately.

If no analysis has been saved or loaded since loading a clip, it acts as a 'Save As' (see above).

# Clear Analysis

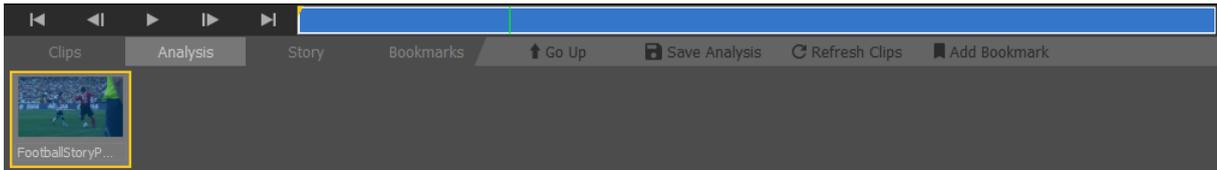
Delete all graphics in the current analysis sequence and re-load the current clip.

Note that the [Mark In / Mark Out](#) Timecodes and Tracking Data are preserved when re-loading the clip.

Clear

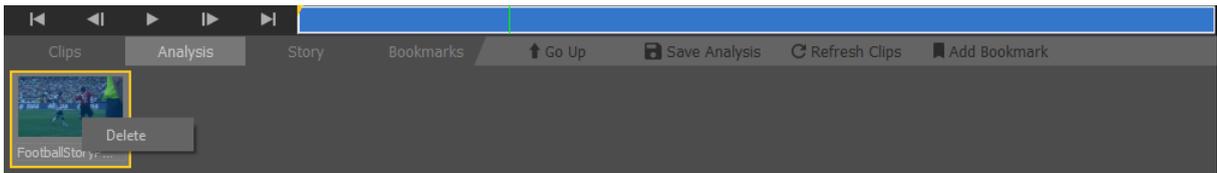
# Load Analysis

Choose and select an Analysis from the [Clip Browser](#).



# Delete Analysis

Select the Analysis, press the "Right Mouse Button" then Delete.



# Motion Paths

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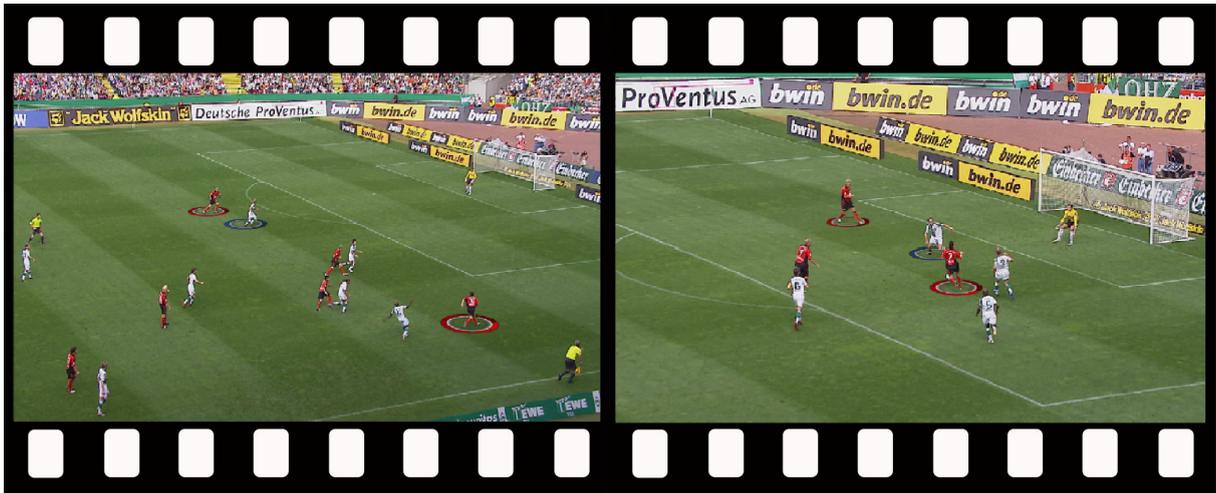
Graphics can move and follow the game play as the video clip plays using a feature called "Motion Paths".

All graphics can follow a Motion Path.

Multiple Graphics can be used and follow unique Motion Paths at the same time in the same Analysis sequence.

Motion Paths for [Tracked](#) graphics are Green, and Motion paths for non-Tracked graphics are Blue.

Note These colours may be changed in the user preferences - [Annotations](#)



[Add Graphic\(s\)](#) to the video clip at the start of the chosen section of play and enable Motion Paths.



Once Motion Paths are enabled the icon turns green and dot(s) appear on the Graphic(s).

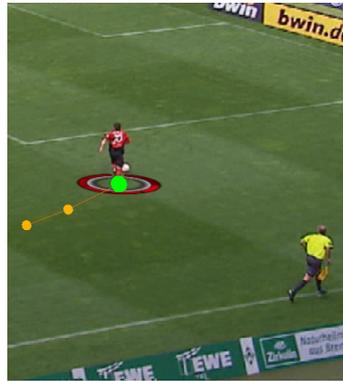
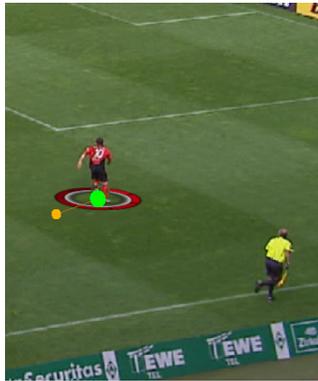
## Motion Paths



Select the dot and drag to adjust the position of the Graphic(s) (if necessary).

Either drag the vertical line on the Seek Bar or use the [VT Controls](#) to advance the video clip a few frames.

Select the dot and drag to adjust the position of the Graphic(s) (if necessary).



Continue to advance the video clip a few frames at a time and adjust the position of the Graphic.

At the end of the Analysis sequence insert a [Pause](#) if required and [Remove](#) Graphic(s).

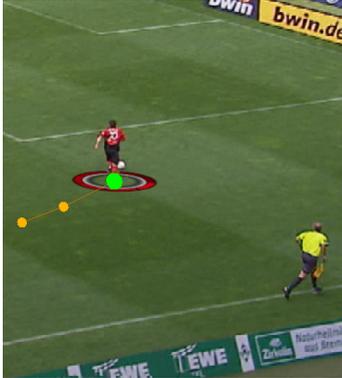
The In and Out timecodes for the Graphic(s) and Pause are displayed on the Seek Bar.



Select [Preview](#) to review the Analysis sequence, [Record](#) and [Save](#) as required.

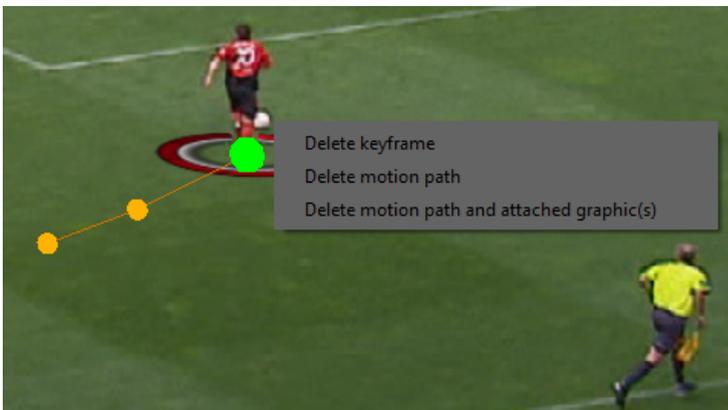
# Edit a Motion Path

Press and Hold the Ctrl key at any time to view the Motion Path.



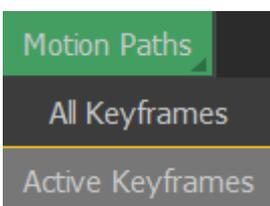
# Delete a Motion Path

To delete a Motion Path or part of a Keyframe sequence, press the “Right Mouse Button” on the Motion Path.



# Visible Motion Path(s)

To make editing easier it is possible to display ONLY the Motion Path(s) active at the current Time Code of the video clip.



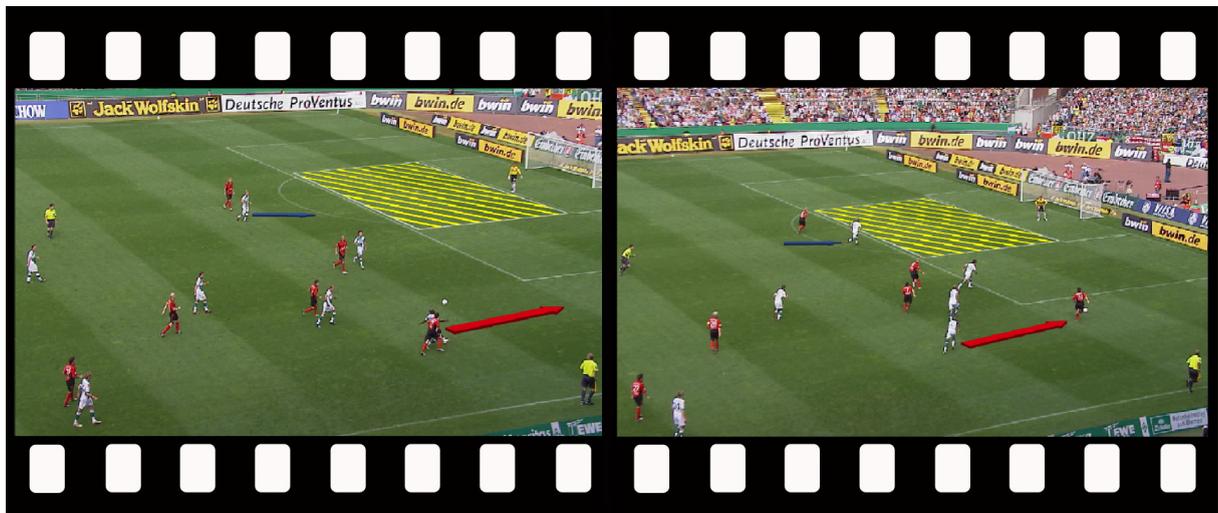
# Tracking

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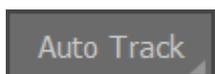
Graphics can be “tied to the pitch” as the video clip plays using a technique called “Tracking”.

Not all graphics are suitable for use with a Tracked camera.

Multiple Graphics can be used and Tracked at the same time in the same Analysis sequence.



Enable Tracking.



Once Tracking is enabled the icon turns green.



Motion Paths for Tracked graphics are Green, and Motion paths for non-Tracked graphics are Blue.

You can mix Tacked and non-Tracked graphics by setting Tracked on or off before placing the required graphic.

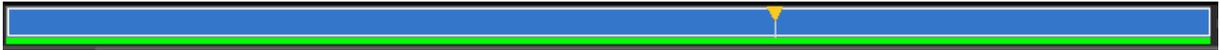


Tracked means the next graphic placed will be using the tracking computation.

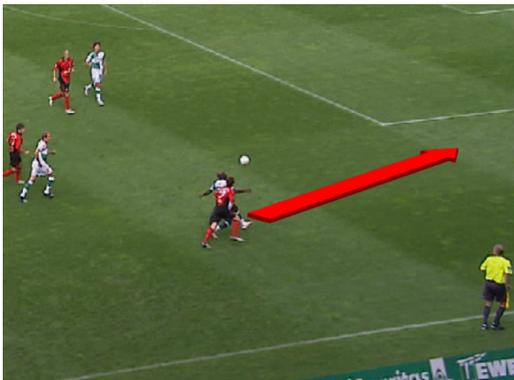
If Tracked is off the graphic will be untracked.

**Note that this does not mean the tracking calculation is lost or needs to be redone.**

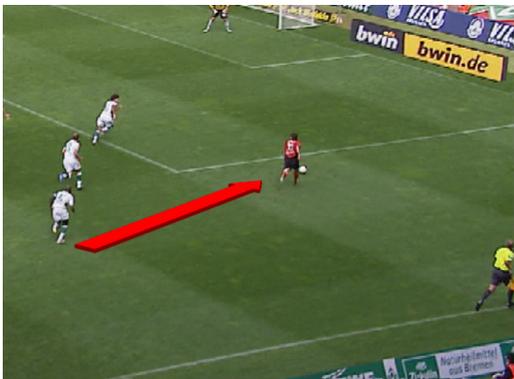
Once the Tracking data is calculated, a green line appears at the base of the Seek Bar.



[Add Graphic\(s\)](#) to the video clip at the start of the chosen section of play.



Either drag the thick red line on the Seek Bar or use the [VT Controls](#) to advance the video clip a few frames.



At the end of the Analysis sequence insert a [Pause](#) if required and [Remove](#) Graphic(s).

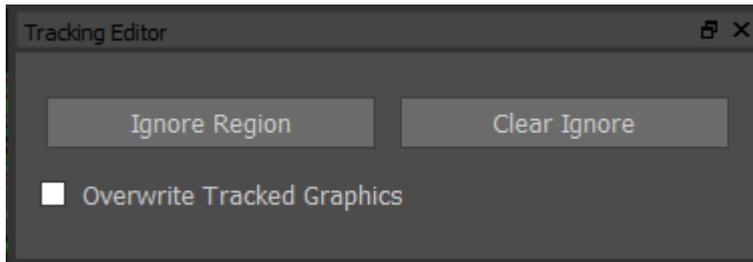
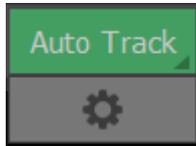
The In and Out timecodes for the Graphic(s) and Pause are displayed on the Seek Bar.



Select [Preview](#) to review the Analysis sequence, [Record](#) and [Save](#) as required.

# Adjusting Tracking Regions

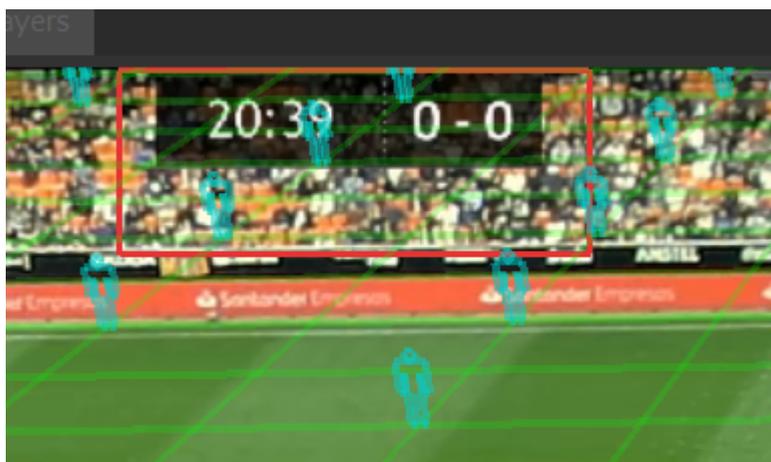
Select the “gear” icon beneath Auto Track to change the Tracking settings.



In certain circumstances it may be necessary to define a region of the video to ignore for the purposes of Tracking, for example, a scoreboard or league/TV channel logo.

Click on “Ignore Region” and draw a rectangle/square around the area you want to ignore, a red shape will form and that area will be ignored for tracking.

If you want to adjust the ignored area (enlarge the ignored region for instance), draw a bigger rectangle/square using the right-click mouse button, the new shape will be green and will erase the previous red shape.



# Edit a Graphic

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The colour, thickness, style, size and opacity of many Graphics are controlled by the [Palette](#).

These, and additional parameters of the chosen Graphic can be modified once the Graphic has been added to the video clip.

Navigate using the thick red line on the Seek Bar to the desired video clip position or use the [VT Controls](#) so that the chosen Graphic is visible.

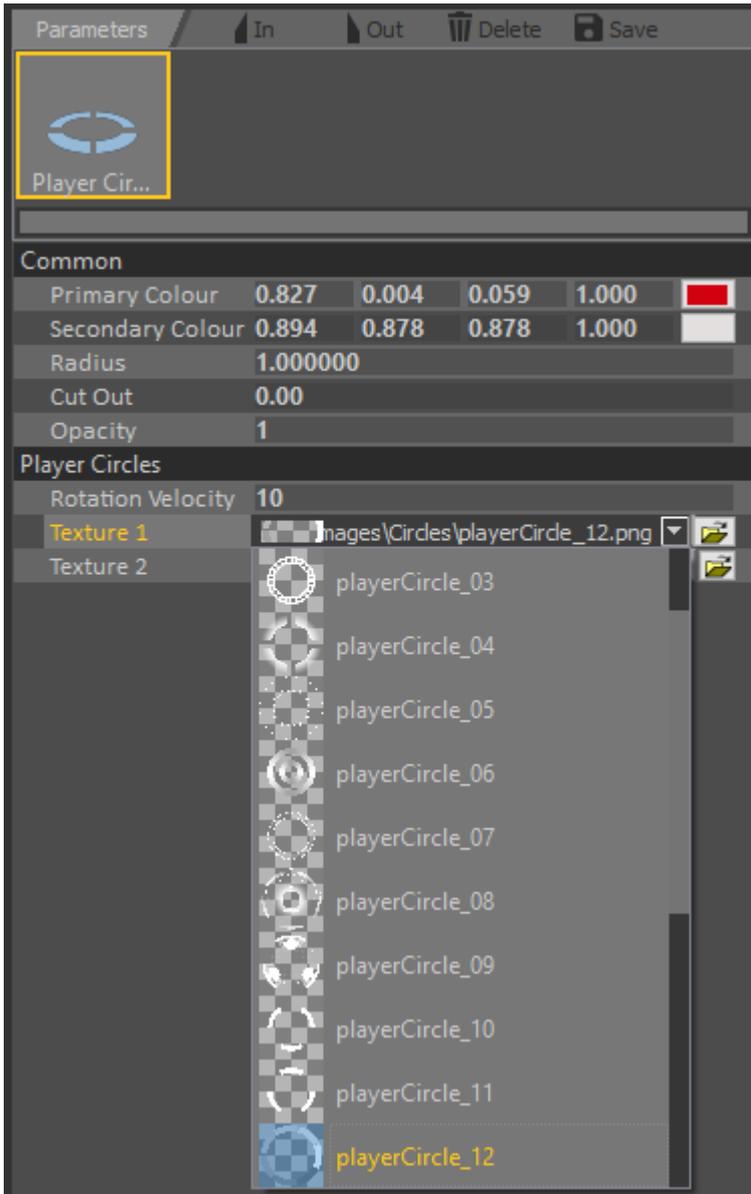
Or navigate to the chosen Graphic using



## Parameters

Select the Graphic on the video clip.

The parameters of the chosen graphic will be displayed.



Adjust the colour, thickness, style, size and opacity etc.. as required.

# Set In/Out Timecode

The In timecode for Graphic(s) are initially set at the timecode when the Graphic(s) are added to the video clip. See [Add Graphic\(s\)](#).

The Out timecode for Graphic(s) are set individually or all at the same time. See [Remove Graphic\(s\)](#).

Adjust the In and/or Out timecode by navigating using the red line on the Seek Bar to the desired video clip position or use the [VT Controls](#) and use



# Delete Graphic

Delete the current Graphic from the Analysis sequence using



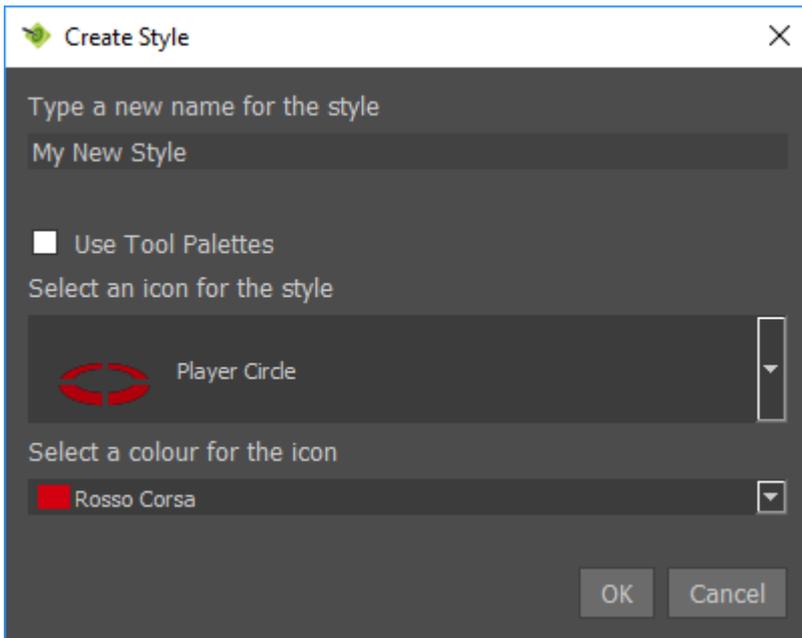
# Create Style

Change the [Parameters](#) of the current Graphic and Save this as a new style using



Choose a name and an icon to represent the new style.

To allow the new Graphic to share colour, thickness, style, size and opacity from the [Palette](#), enable "Use Tool Palettes".

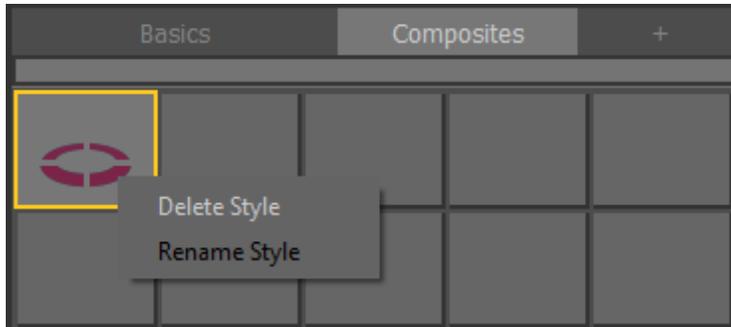


This will be added to the Composite Styles tab on the Graphic menu.



# Delete Style

Select the Graphic with the “Right Mouse Button” to delete it from the Composite Styles menu



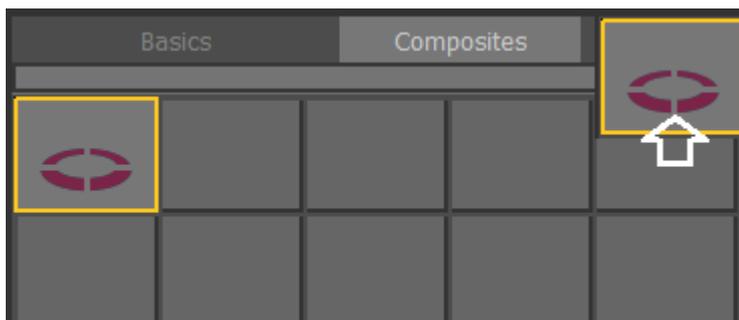
# Rename Style

Select the Graphic with the “Right Mouse Button” to rename it from the Composite Styles menu

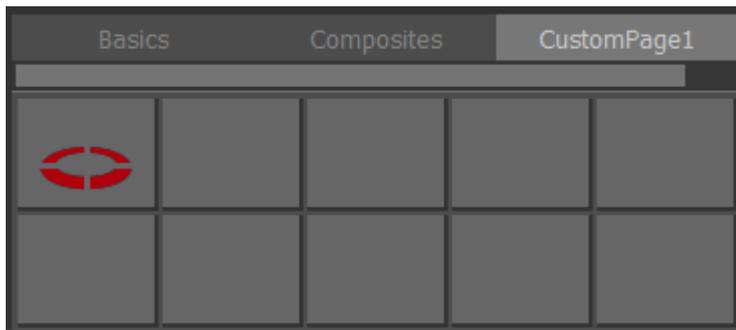


# Add Pages for Composite Styles

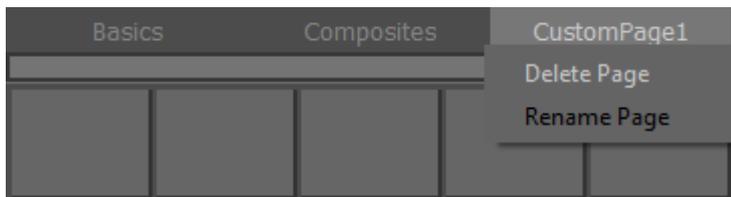
Select and Drag the Graphic with the “Left Mouse Button” and place it on the + sign



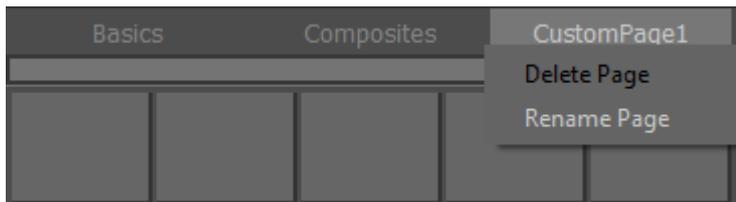
This will move the selected Graphic to a new Page



To Delete a Page, select the Page with the "Right Mouse Button"



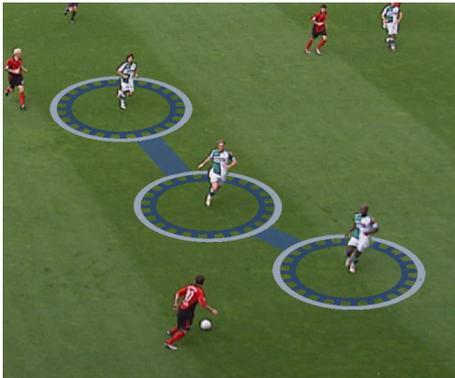
To Rename a Page, select the Page with the "Right Mouse Button"



# Composite Graphics

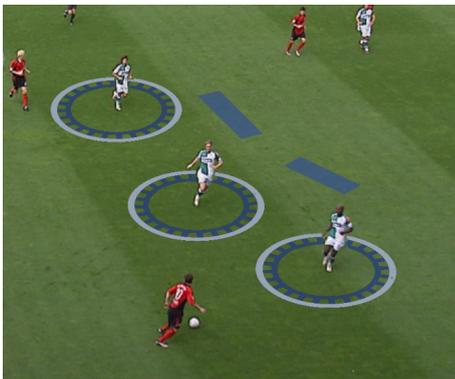
---

Basic Graphic styles can be combined together to build more complex, Composite Graphics.

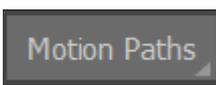


## Add Basic Graphic(s)

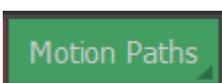
Add the Basic Graphic(s) as required to build the new Composite Graphic.

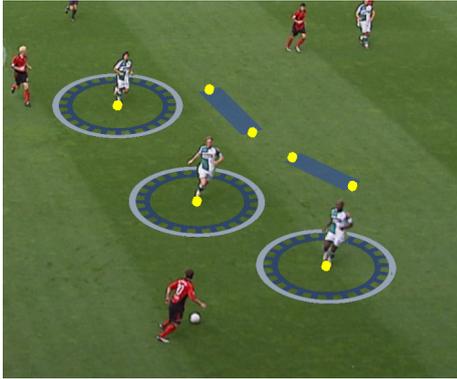


Enable Motion Paths

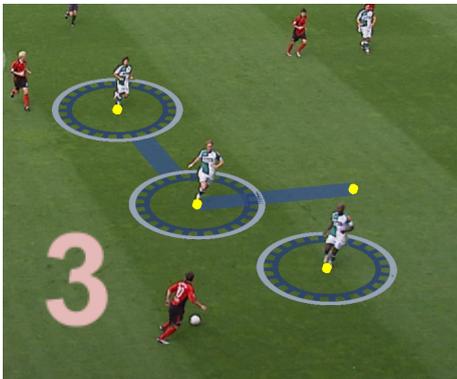
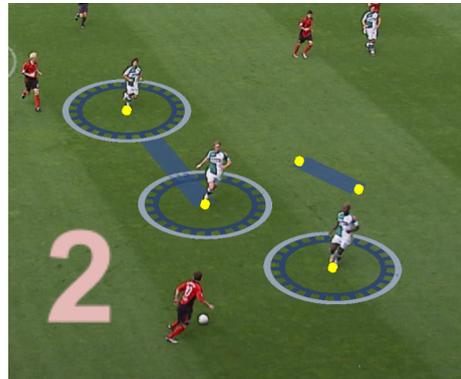
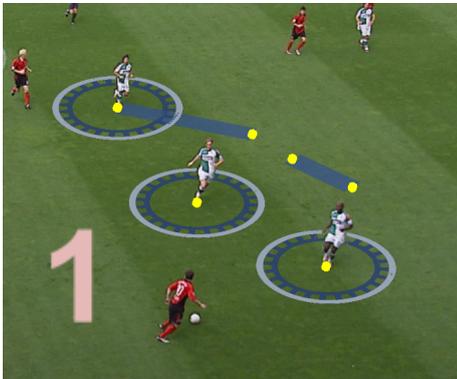


Once Motion Paths are enabled the icon turns green and dot(s) appear on the Graphic(s).





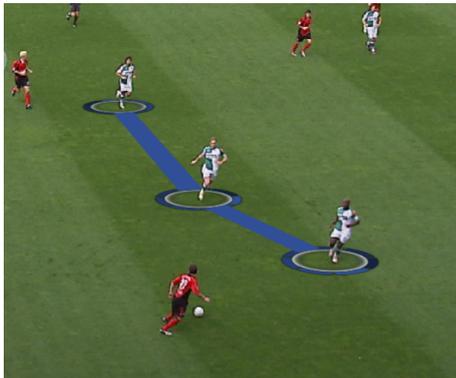
Select and Drag the dots to combine the Graphic(s).



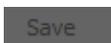
When complete, disable Motion Paths.

The Composite Style Graphic may now be used with [Motion Paths](#) in the same way as a Basic Style Graphic.

# Save Composite Graphic

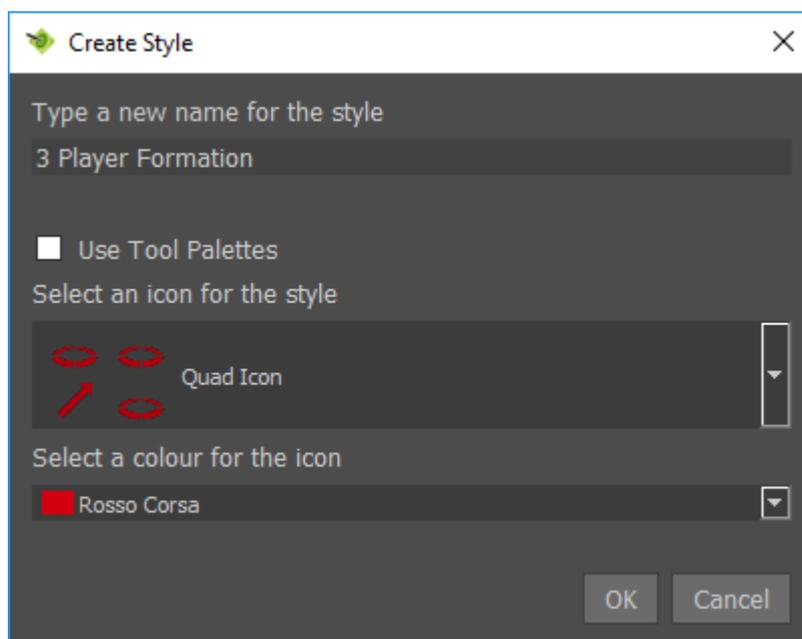


Save as a new Composite Style using

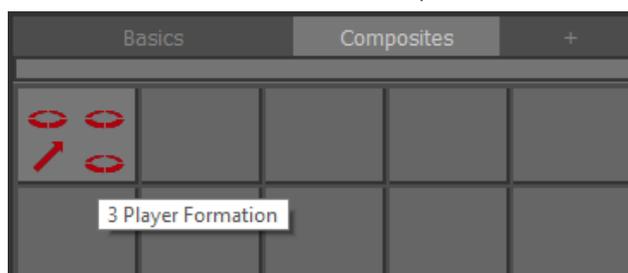


Choose a name and an icon to represent the new Composite Style.

To allow the Composite Graphic to share colour, thickness, style, size and opacity from the [Palette](#), enable "Use Tool Palettes".



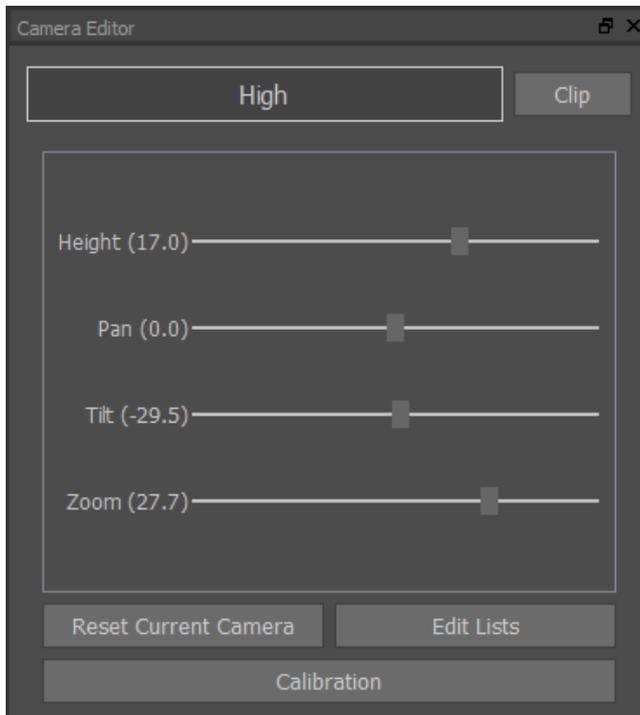
This will be added to the Composites tab on the Graphic menu.



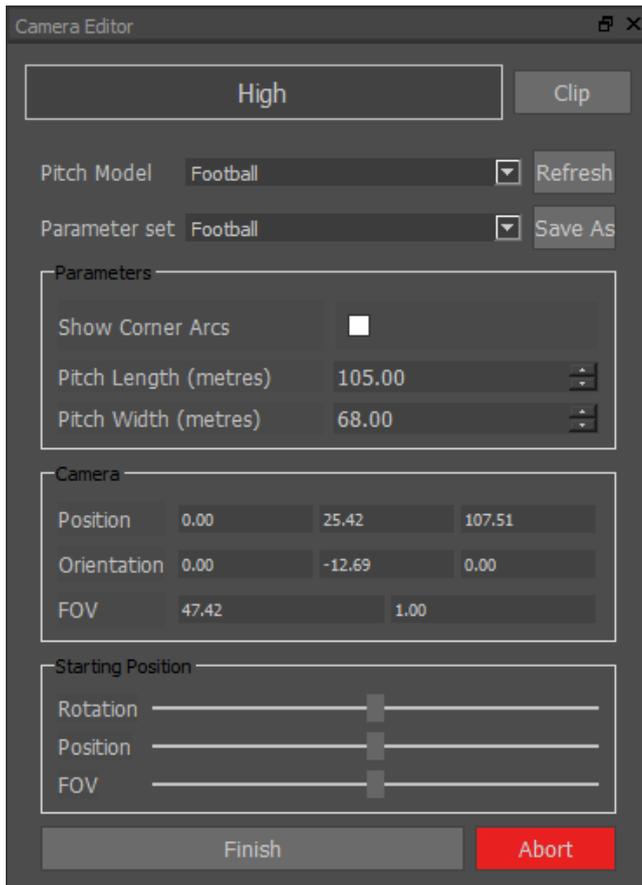
# Pitch Calibrate

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Select Calibration from the [Edit Camera](#) dialog.

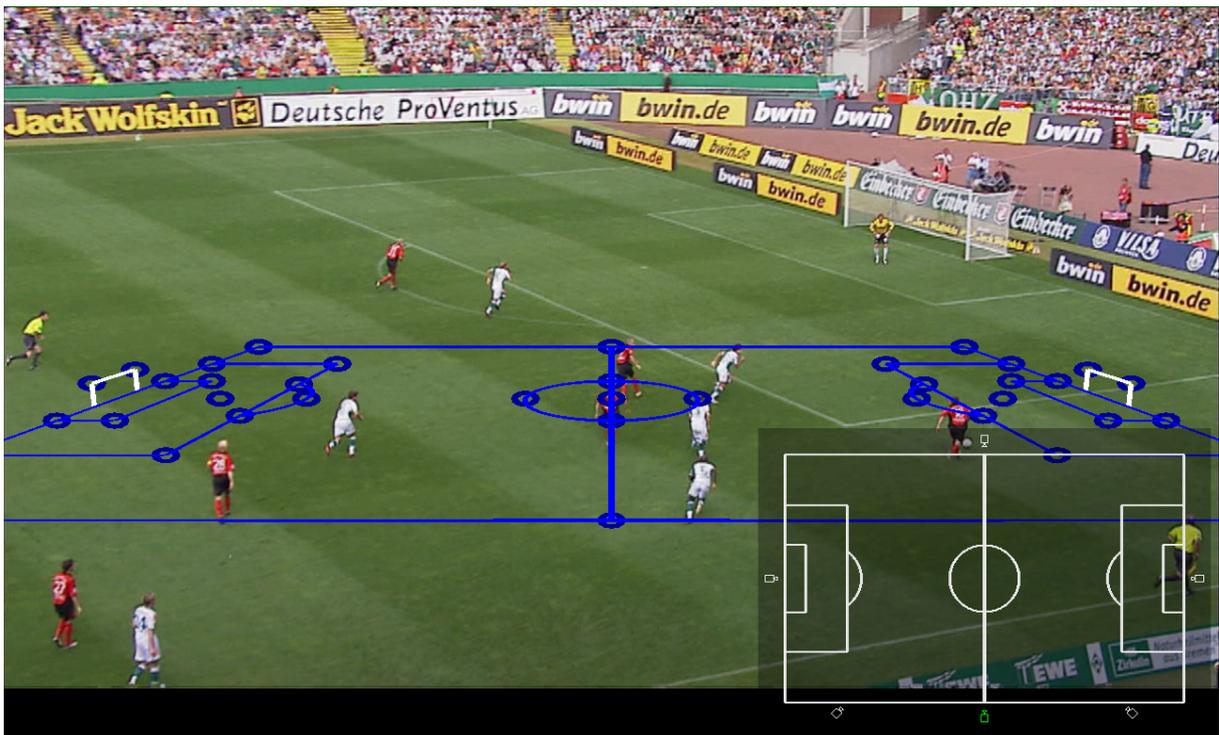


Select the Pitch Model

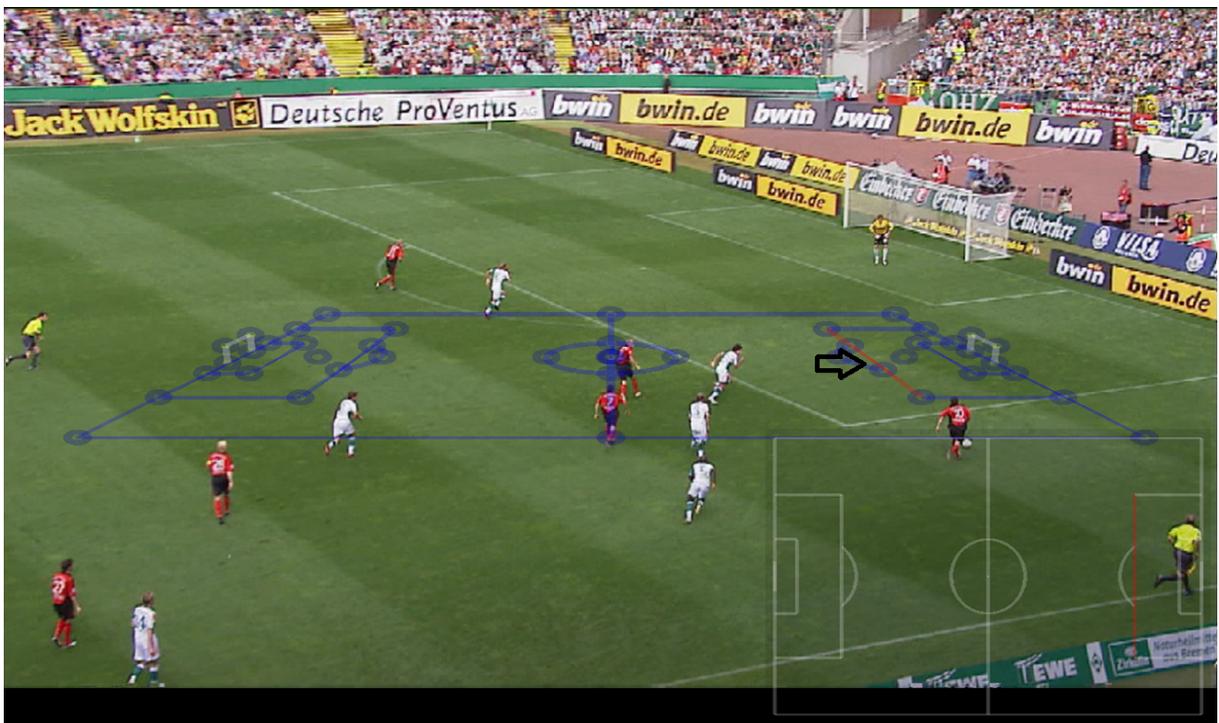


Check the Pitch dimensions and Save as a Parameter set if required.

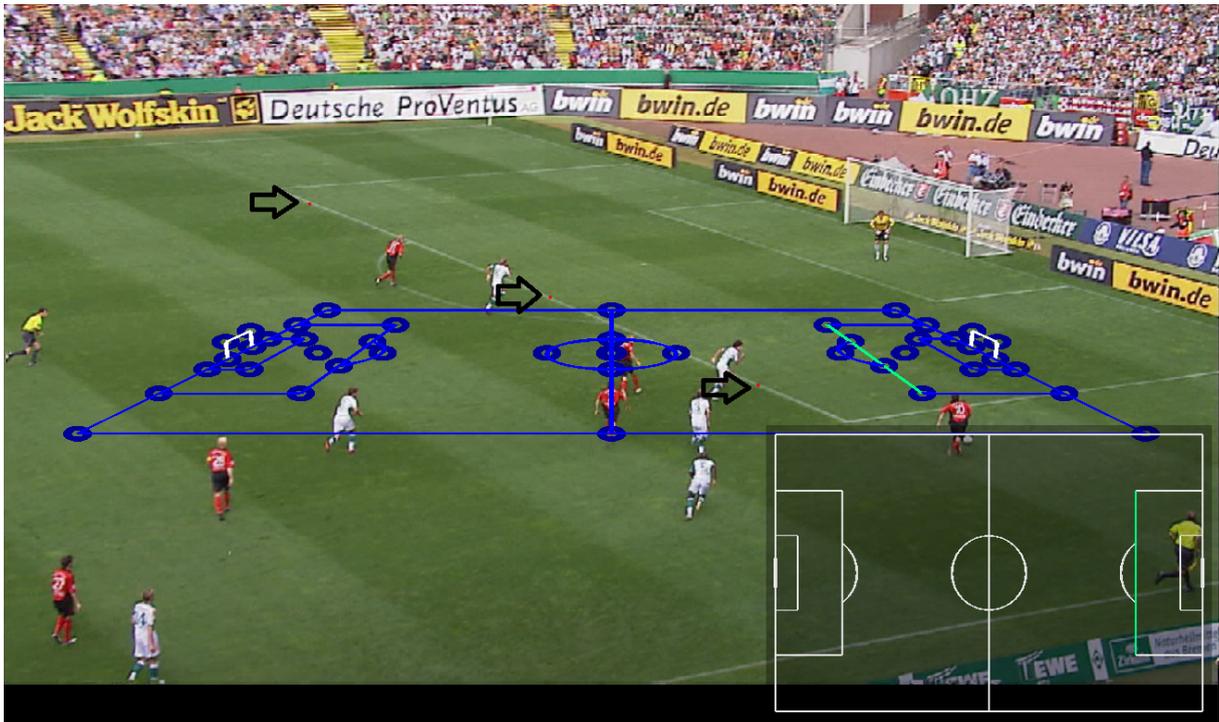
A Pitch model will be displayed ...



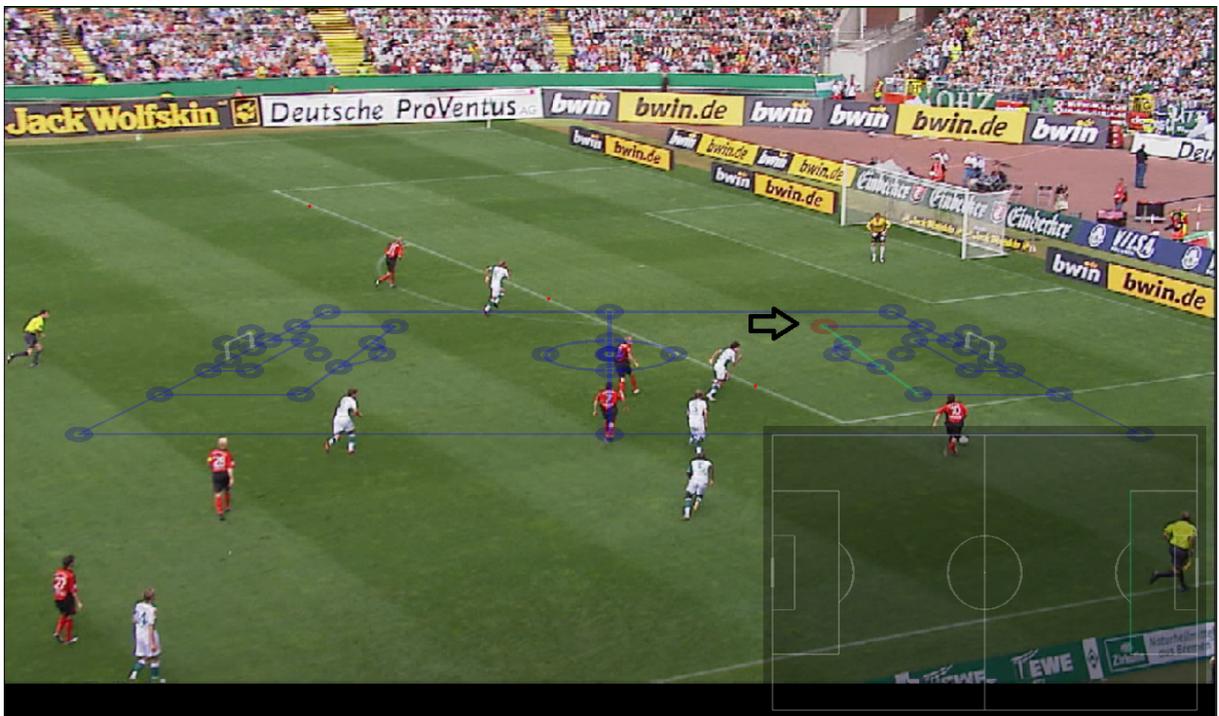
Using the "Left Mouse Button" select a line or circle on the pitch model ...



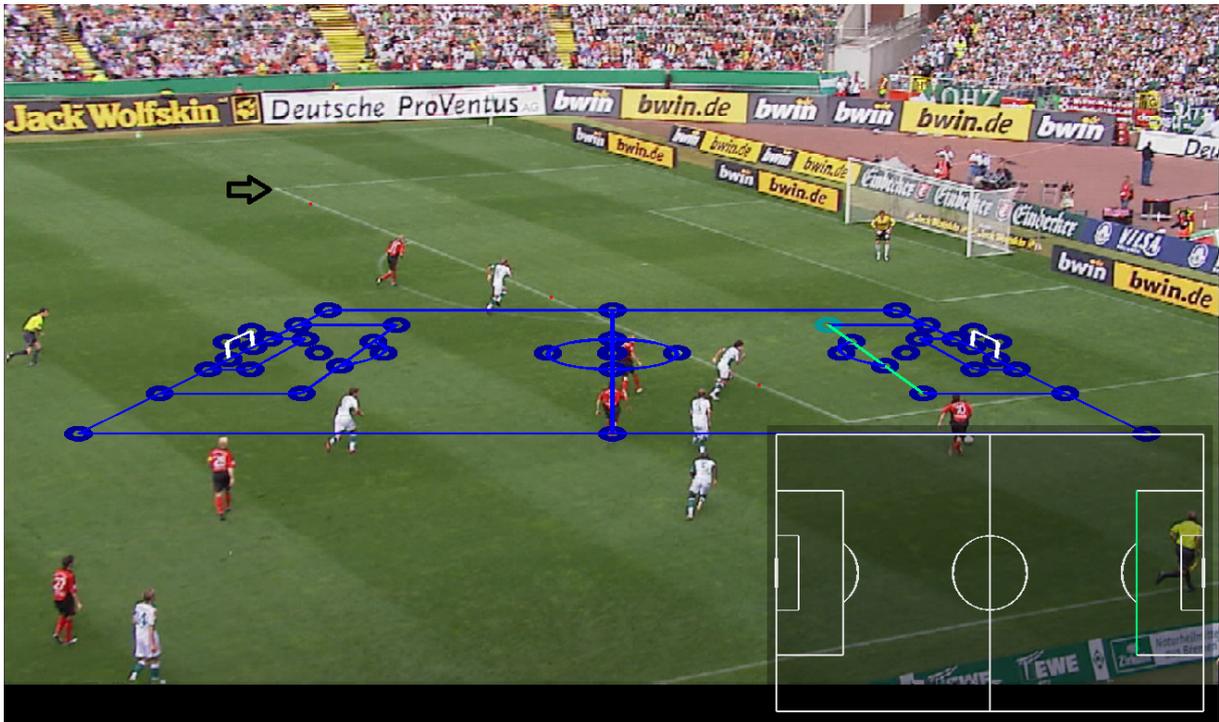
Using the "Left Mouse Button" select 1 or more points on the pitch using and finish with the "Right Mouse Button". The line will display Green once calibrated.



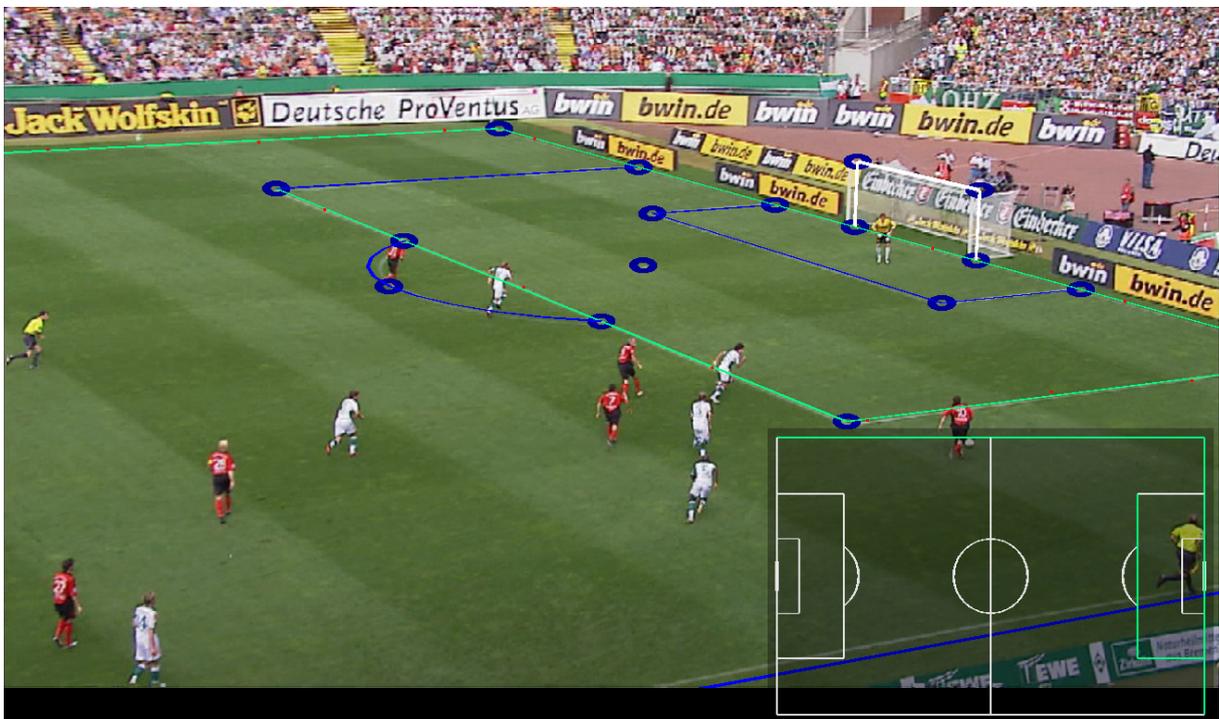
Using the "Left Mouse Button" select a corner point on the pitch model ...



Using the “Left Mouse Button” select the point on the pitch. The point will display Green once calibrated.

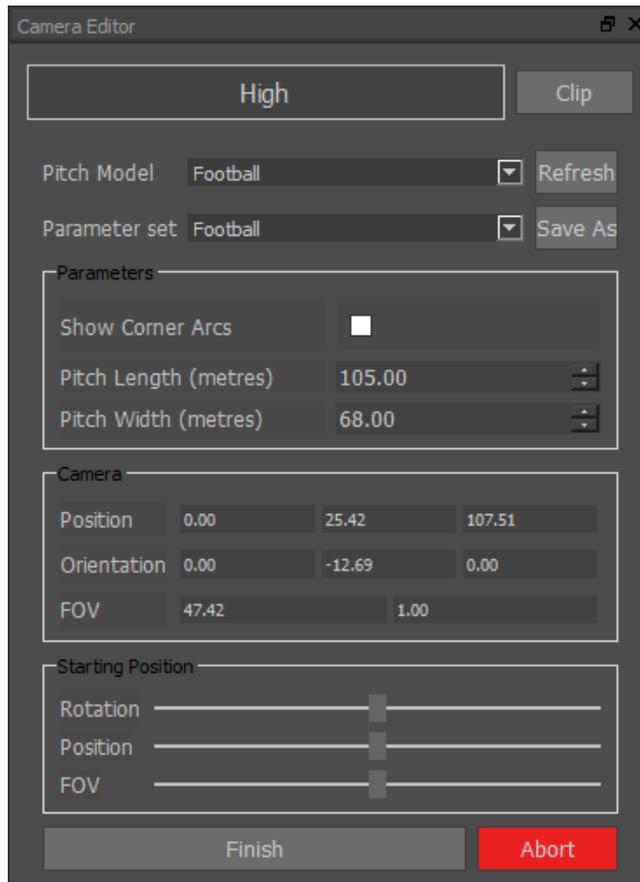


Repeat this for several lines, circles and corner points on the pitch until a good alignment is achieved.



For thicker lines, aim to click as close to the centre of the line as you can, if the line is inside the pitch. For lines along the pitch boundary, click along the edge of the line towards the inside of the pitch. Most of the time, lines appear thin on the screen, so there's no visible difference between the centre of the line and the edge. However, for certain sports, like American Football, the boundary lines can be significantly thick, so it's important to click in the right place

Select Finish to complete the calibration ...



The Render Grid will now be correctly aligned to the pitch ...



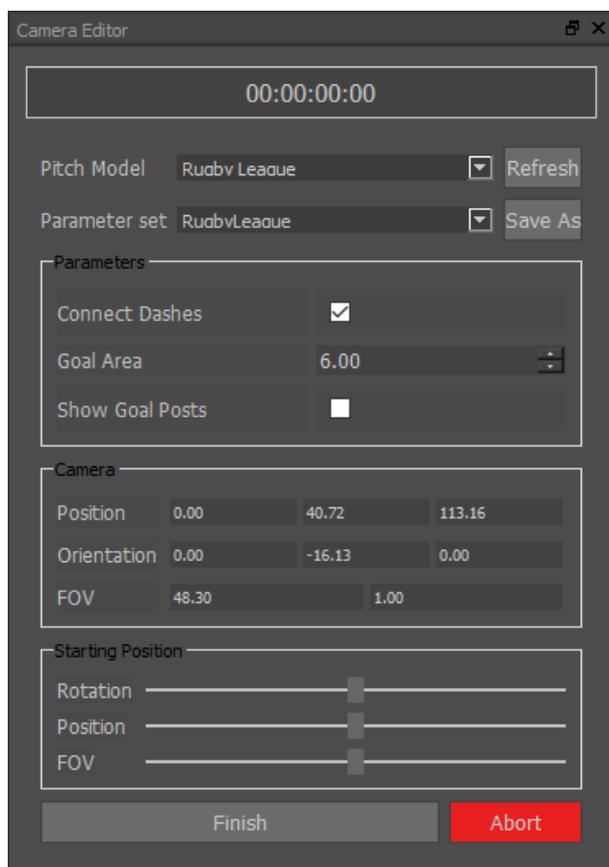
Toggle the Grid display on/off



# Additional Pitch Markings

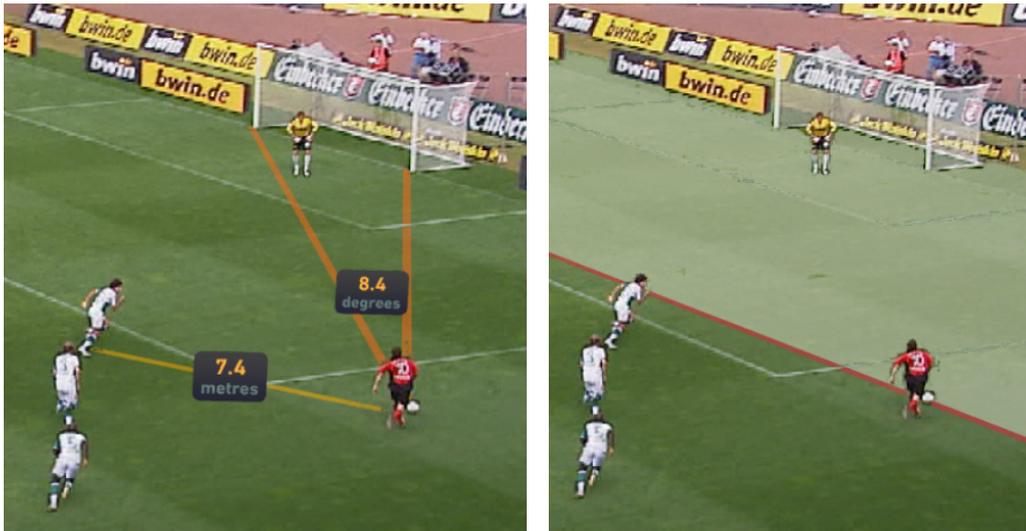
Each sport provides a number of parameters allowing customization of the pitch model. Some of these are optional to allow for improved calibrations beyond what is possible with just lines on the field, such as goal posts or standardized flag markings. However, most of the options determine important properties of the field you're calibrating against. Pitch width and length are common in many sports, and these should be set as accurately as possible. Other options are for rule variations, such as singles versus doubles nets in Tennis. It is important that these options be set to match the field wherever possible.

Parameter Sets allow you to save and load a collection of parameters for future use. For example, you could save different values of pitch width and length corresponding to different stadiums.



Once the pitch is correctly calibrated it is possible to measure angles, distance, speed and offside line using the graphics tools...





## Default Camera Position

The calibration default view matches the common pitch centre high-and-wide view. However, some cameras might fail to calibrate if they are too far removed from that initial view, for example offside or behind goal cameras. In that case, before selecting any lines, use the Rotation, Position, and FOV sliders under Starting Position to adjust the initial perspective to be closer to that of the actual camera.

## Advanced Pitch Calibration

When you perform a pitch calibration, by default it creates a pseudo camera tied to the current timecode of the current clip. However, the computed camera position may be several decimetres off from the actual position. In general, this is fine for showing graphics on static shots, or tracking over a short term, but for tracking longer shots (such as one side of the pitch to another), or using line tracking, this can create notable artifacts. In addition, you may want to reuse a camera with another clip of the same game without recalibrating, or simply give a camera a unique name for future reference. Two related features solve both these problems.

Named cameras can be renamed and moved between user-created camera lists just like standard user-created cameras, but can be re-Aligned like calibrated (timecode) cameras. To create a named camera, when starting a calibration, select one of the

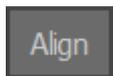
camera icons around the pitch model . These correspond to common camera positions like Pitch Centre, Offside, and Behind Goal. Notice this also updates the initial perspective.

Multi-pose cameras allow you to repeat the calibration at different points in a clip. The calibrations will be combined to refine the camera position, improving the accuracy of the results. Multi-pose cameras are always also named cameras. If you do not select a preset from the onscreen pitch model, the resulting camera is simply named "Camera", but like standard (single-pose) named cameras, can be renamed later.

To create a multi-pose camera, after calibrating on the desired starting frame, simply seek the VT control to the desired next frame, and repeat the calibration process. Ideally, should the clip contents permitting, this should be repeated for views to the left, centre, and right sides of the pitch, each at wider and tighter shots. If there are cuts in the clip, be sure to only calibrate on frames corresponding to the same physical camera. Click Finish as usual to complete and save the calibration. You'll notice that the currently selected resulting camera now shows a name instead of timecode.

## Align

The align button will appear once a calibrated camera has been created.

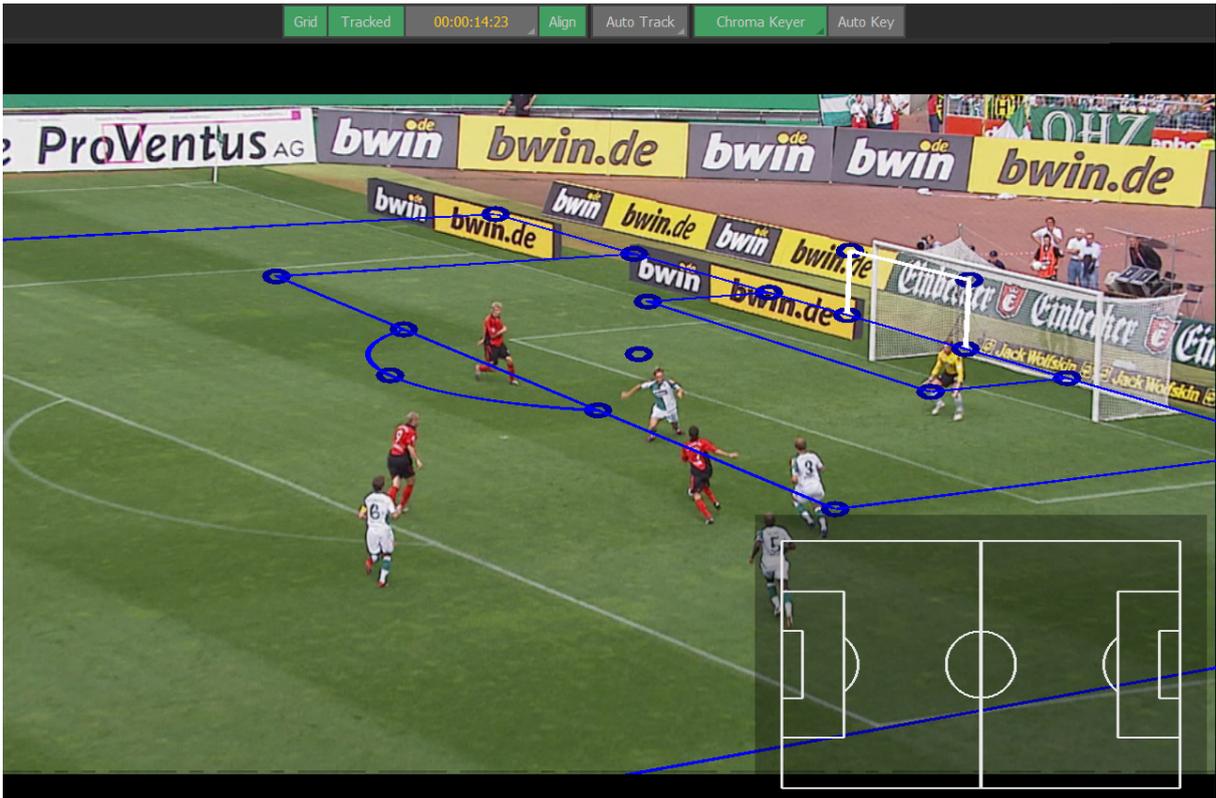


Play the video clip forward or backwards to a position where the camera has changed (tilt, pan or zoom) from the previously calibrated position.

Press the Align button to bring up the calibration model to recalibrate.

This enables recalibration and auto track from a different position than the original calibration.

It is quicker to use the Align button without having to go into the camera/calibration menu.



# Advanced Tracking

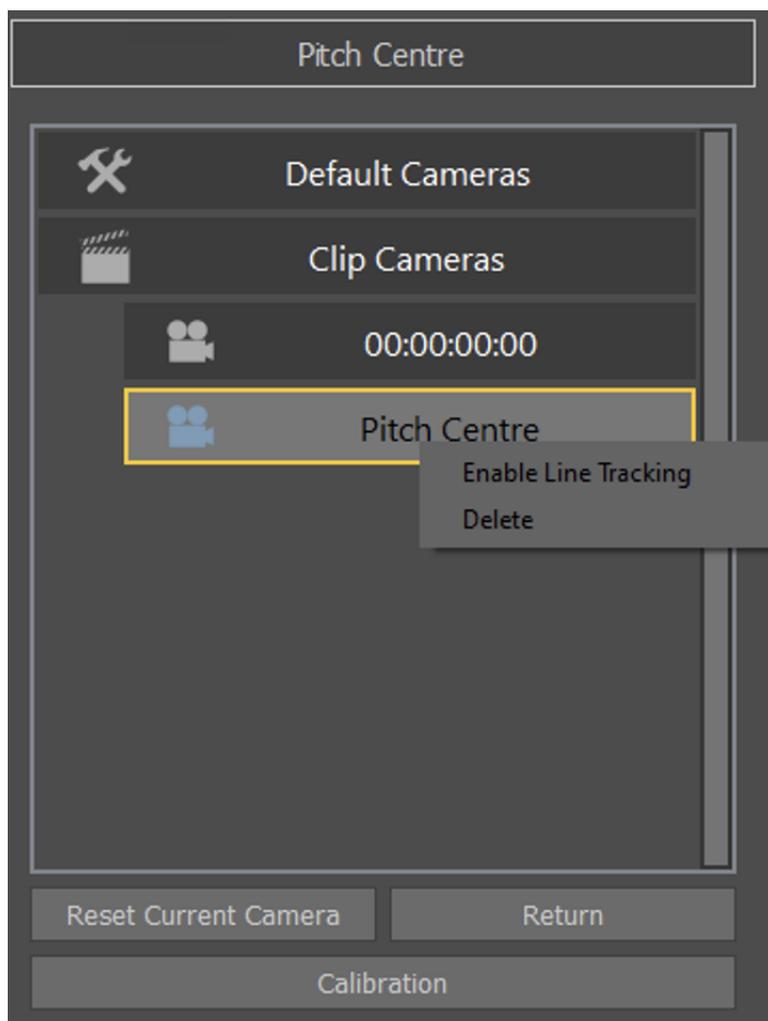
---

## Line Tracking

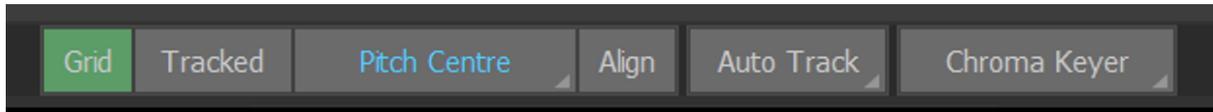
Tactic provides two tracking modes. By default, Autotrack uses Feature Tracking, which searches for 2D features in the image to track the 3D camera. Line Tracking is an alternative technique that uses the lines on the pitch to track camera motion.

To enable line tracking for a calibrated camera, ideally a multi-pose camera, enter Edit Lists, right-click the desired camera, and select "Enable Line Tracking".

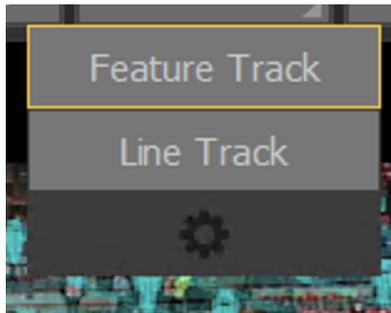
**Important: The Ultra tracking profile for line tracking is extremely computationally intensive, and may result in worse results for some clips. It is highly recommended to use at most the High tracking profile when Line Tracking.**



An automated calibration process will proceed in the background, and save to disk. The camera name will turn blue to indicate that Line Tracking is ready.



To use Line Tracking on a clip, click and hold the Autotrack button. A new menu appears allowing the selection of Feature Tracking or Line Tracking. Select Line Tracking to enable for the clip.



Line Tracking depends on Keying being enabled. If Keying is disabled, attempting to use Autotrack will fall back on Feature Tracking. Keying should be configured correctly for better results. Click Autotrack to track the clip using Line Tracking. Each clip will remember whether it was last tracked with either Feature Tracking or Line Tracking.

## Camera Re-Init

You may notice on starting a Line Tracking Autotrack that it takes a few seconds to start tracking. This is due to computing an initial camera state based on the pitch lines across the whole image. However, this process may fail with poorer quality clips, poor keying, or insufficient lines visible, and if so, tracking results will be unusable.

It is recommended that, before starting tracking, the user finds a frame that will re-init correctly. This re-init can be triggered manually by single-clicking the camera button in the toolbar with a Line Tracking-enabled camera selected.



From the desired starting frame that fails to re-init, seek in roughly half-second increments either before or after that point, and re-initting the camera until it succeeds, and start Autotrack from that frame.

Alternatively, if no frame succeeds satisfactorily, use Align to re-init manually on the desired frame, and then start Autotrack, which will skip the automatic re-init process.

## Re-Tracking

Any tracked clip may be re-tracked by clicking Autotrack again. This will overwrite the previous track. However, any tracked graphics that were placed prior to re-tracking will maintain their original track, unless "Overwrite Tracked Graphics" is enabled in the Tracking gear menu.

# Stadium View

Enter the Stadium View using

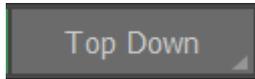


Navigate any Graphics used in the analysis sequence within the Stadium view using the tools



# Select Stadium Camera

The currently active Stadium Camera is displayed on the Toolbar.



Select and hold the active Stadium Camera to display a list of Cameras



Select the required Stadium Camera from the list.



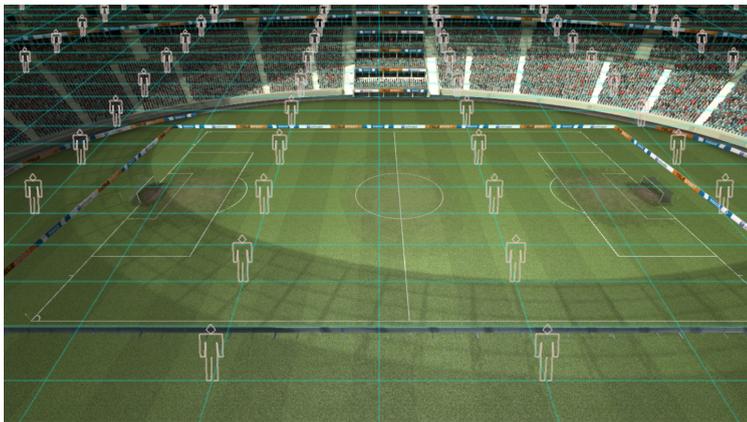
# Edit Stadium Camera

Select and hold the active Stadium Camera to display a list of Camera presets.

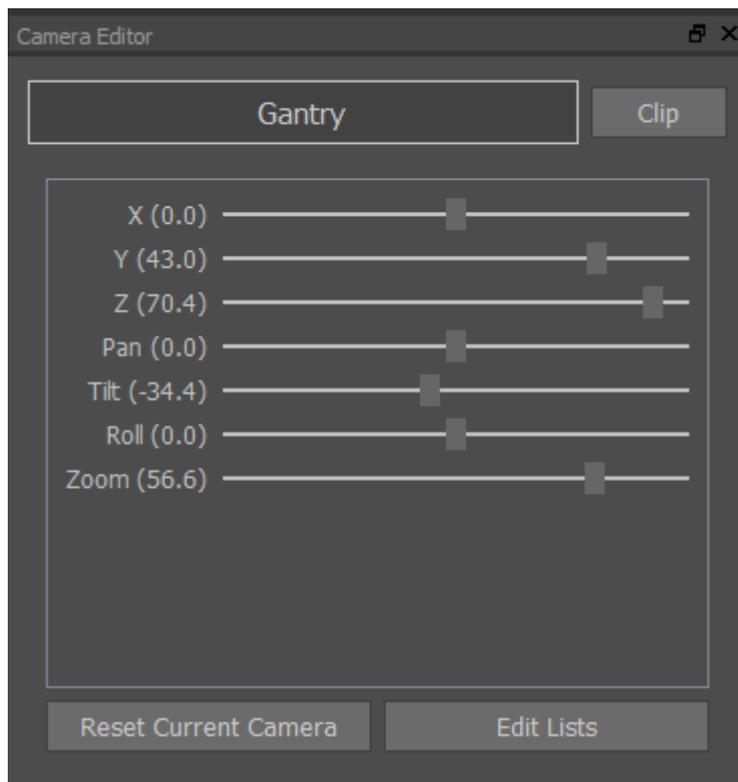


Select the “gear” icon at the bottom of the list.

A “Render Grid” can be overlaid on the Stadium View.



The Camera Editor dialog is displayed.



Adjust the position of the camera presets using the slider bars (or place the cursor over the required slider bar and use the mouse wheel).

**NOTE: The Camera Editor is only meant to be used to adjust/edit the Camera presets.**

Use the [Keyboard shortcuts](#) when moving the camera during an animation sequence.

To Key Frame (i.e. animate) the stadium camera, you move the stadium camera using the keyboard shortcuts:

- **Translate on X axis:** Hold Alt and drag the mouse horizontally using the mouse wheel
- **Translate on Y axis:** Hold Alt and drag the mouse vertically using the mouse wheel
- **Translate on Z axis:** Hold Alt and drag the mouse vertically using the right mouse button
- **Pan:** Hold Alt and drag the mouse horizontally
- **Tilt:** Hold Alt and drag the mouse vertically
- **Zoom:** Hold Alt and scroll the mouse wheel

**Clip**

Create a new camera named as the current timecode

**Reset Current Camera**

Reset to the installation defaults

**Edit Lists**

Select and Edit specific camera from the Camera List

# Add Stadium Camera

Add a new camera using the + symbol



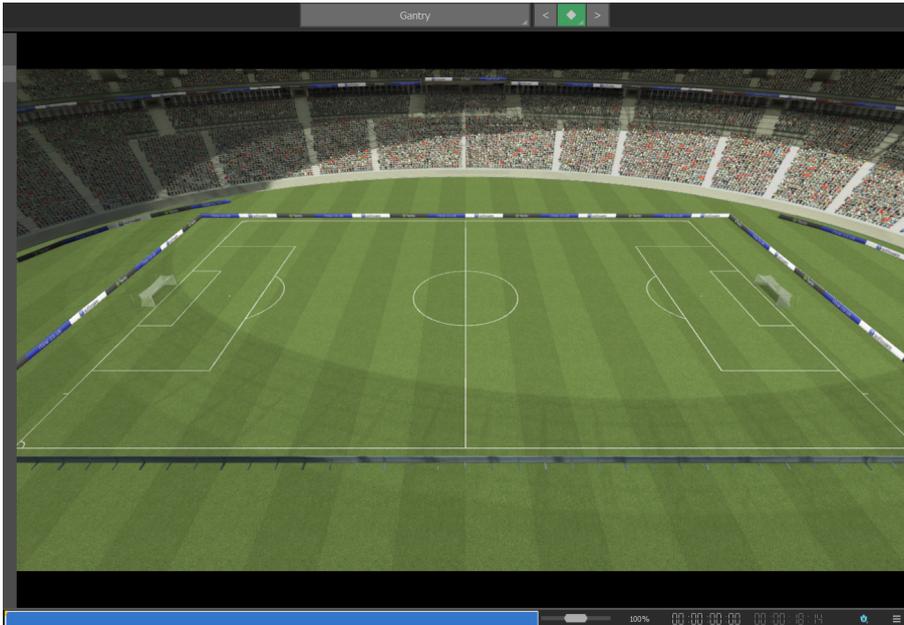
# Delete Stadium Camera

Delete unwanted camera using the - symbol



# Stadium View animation

Select [Stadium View](#)



Advance the video timecode (e.g. 5 seconds) and select/adjust the Stadium Camera as required.



Play the video and the Stadium View will animate smoothly from the first video timecode value to the second video timecode value.

Store the current Stadium View at the current timecode value using ..



Navigate the Stadium view(s) using the arrows.

The timing of the start and end of the animation can be adjusted.

e.g.

The Stadium View appears at timecode 0:00

The Stadium View remains stationary until timecode 2:00

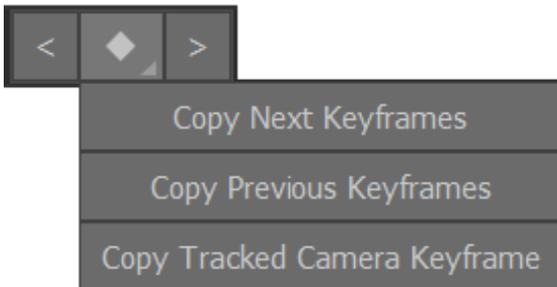
The Stadium View animates to the new position though to timecode 4:00

The Stadium View remains stationary until timecode 5:00

This is achieved by setting the video timecode to 2:00 and Copy Previous Keyframe position



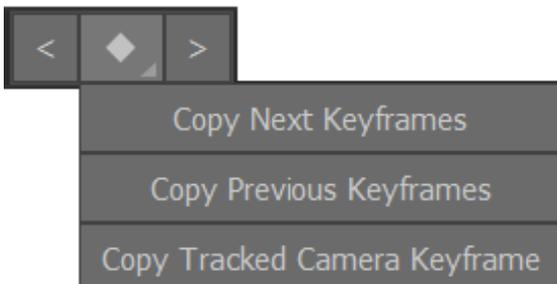
Copy Previous Keyframe position



Then setting the video timecode to 4:00

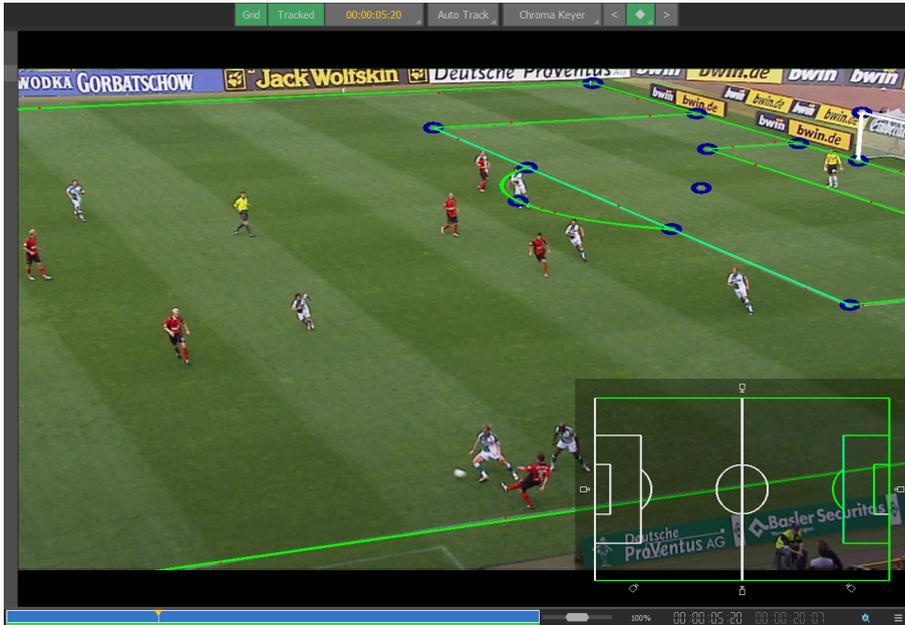


Copy Next Keyframe position

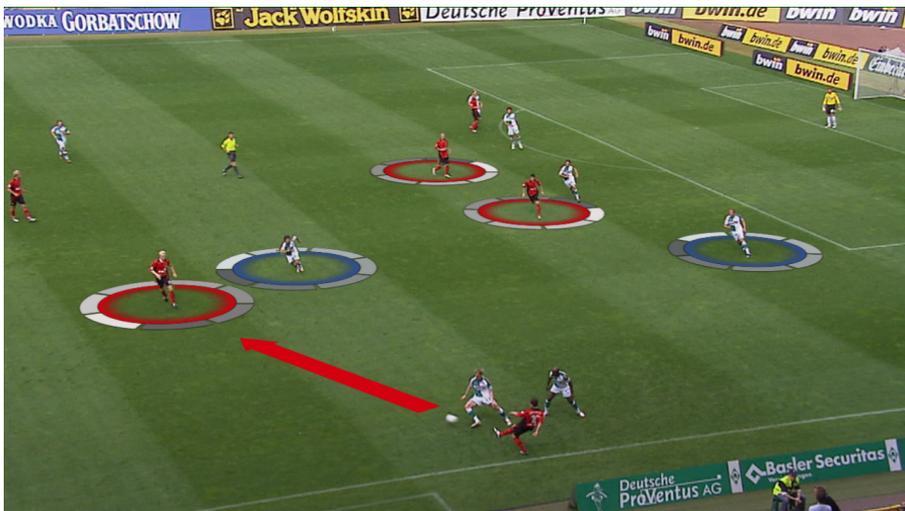


# Align the Camera position and Stadium View

Use [Pitch Calibrate](#) and setup [Tracking](#) for the required Camera position.



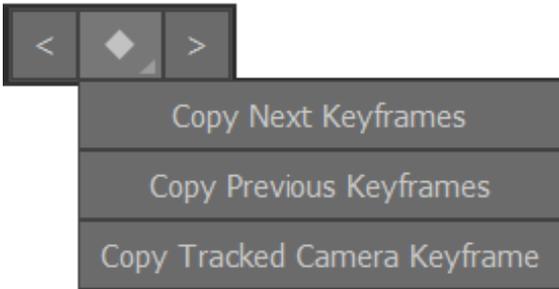
Add Graphics as required ...



The Stadium View will align with the Tracked Camera Keyframe.



Copy Tracked Camera Keyframe will synchronise the Stadium View to the Camera position as the timecode changes and can be used to define a smooth transition when the Stadium View closes.

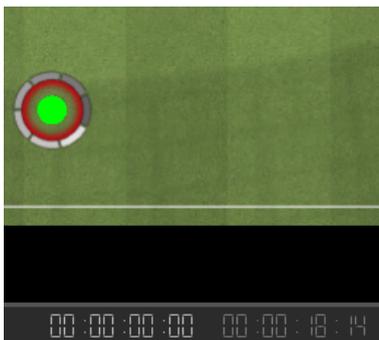


# Edit Keyframe sequence

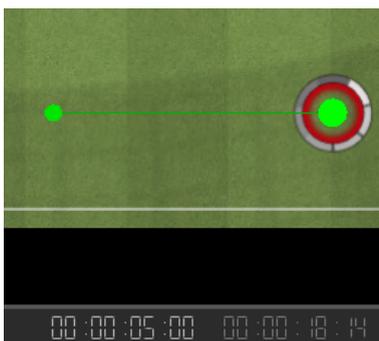
[Add Graphic\(s\)](#)



Display [Motion Paths](#)

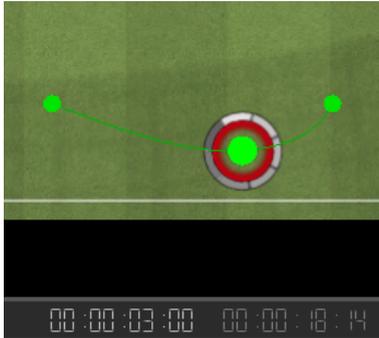


Advance the video timecode and add a new keyframe position for the Graphic



Play the video and the Graphic will animate smoothly from the first video timecode value to the second video timecode value.

The animation can optionally be modified by inserting a new keyframe position at an intermediate timecode value.



The timing of the start and end of the animation can be adjusted.

e.g.

Graphic appears at timecode 0:00

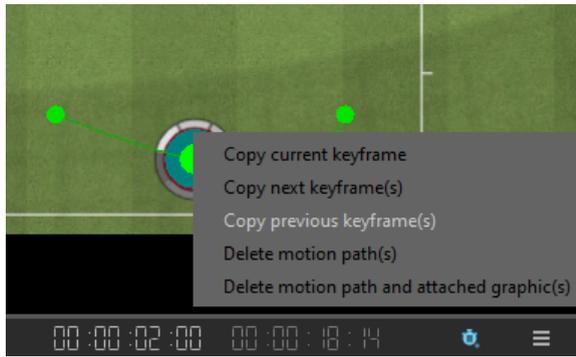
Graphic remains stationary until timecode 2:00

Graphic animates through intermediate keyframe position at timecode 3:00

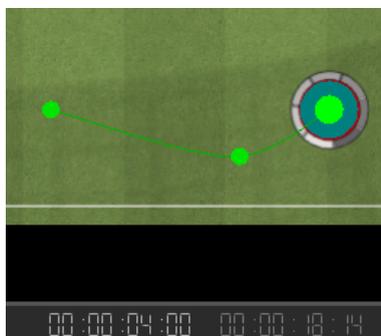
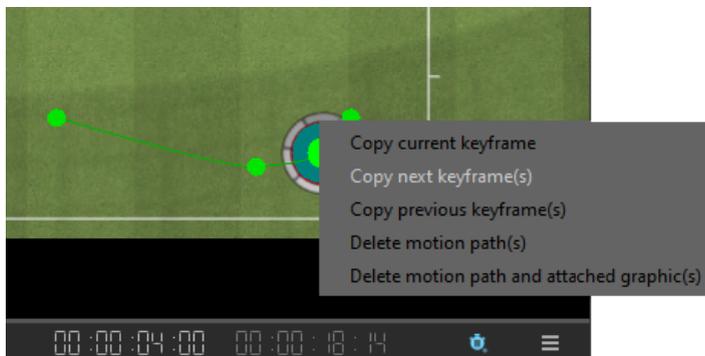
Graphic arrives at final keyframe position at timecode 4:00

Graphic remains stationary until timecode 5:00

This is achieved by setting the video timecode to 2:00 and copying the previous keyframe position



Then setting the video timecode to 4:00 and copying the next keyframe position



# Story

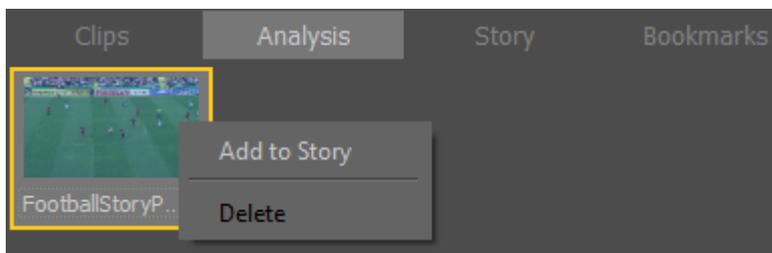
---

Use a story to collate a particular set of Clips, Analysis or Bookmarks for presentation, rather than providing the entire contents of the Clips folder.

For analysis files, this is the only way to put them on the [Presenter](#) interface.

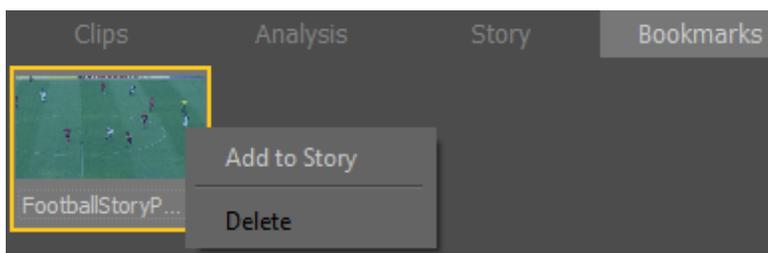
## Add an Analysis to a Story

To Add an Analysis to a Story, select the Analysis with the “Right Mouse Button”



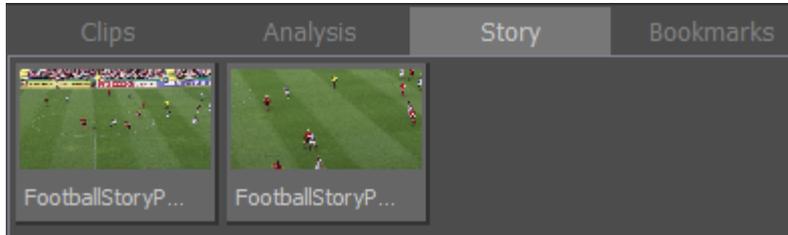
## Add a Bookmark to a Story

To Add a Bookmark to a Story select the Bookmark with the “Right Mouse Button”



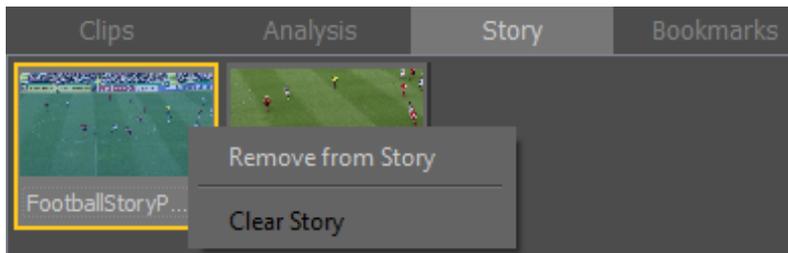
# View Story

To view the contents of a Story, select the Story tab



# Remove from Story

To Remove an item from a Story select with the "Right Mouse Button"



# Record Story

Select Show Additional Analysis Tools at the end of the VT Controls toolbar.



(Select Show Additional Analysis Tools again to toggle the menu display on/off)

To produce a movie file of the files save in the Story line, first specify a Record Filename



Then Record the Story sequence using



The movie file will be saved in the folder specified in [Layoff options](#) and in the format and quality specified in [Layoff Movie format](#).

# Appendix A

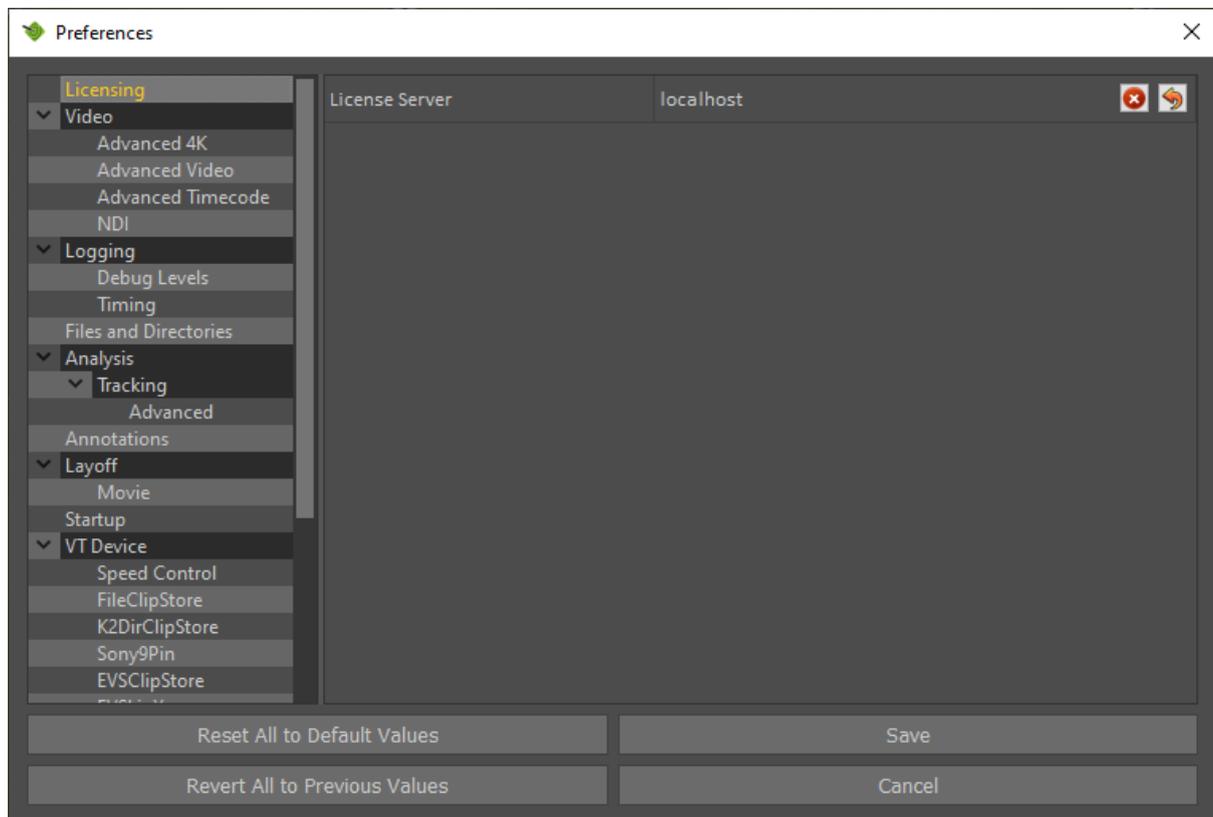
## Preferences Reference

NOTE: The exact Preferences available may depend on software licence options.

### Licensing

Licence Server

Default localhost



NOTE: Restart Tactic for any changes to take effect.

# Video

**Video Standard:** Set this to match the format of the video clips you intend to analyse.

**Video Device:** Set this to match the video card type. e.g. AJA

**Video In Enabled:** Default is off.

**Video out Enabled:** Default is off.

**Num input Channels** : Default is 2.

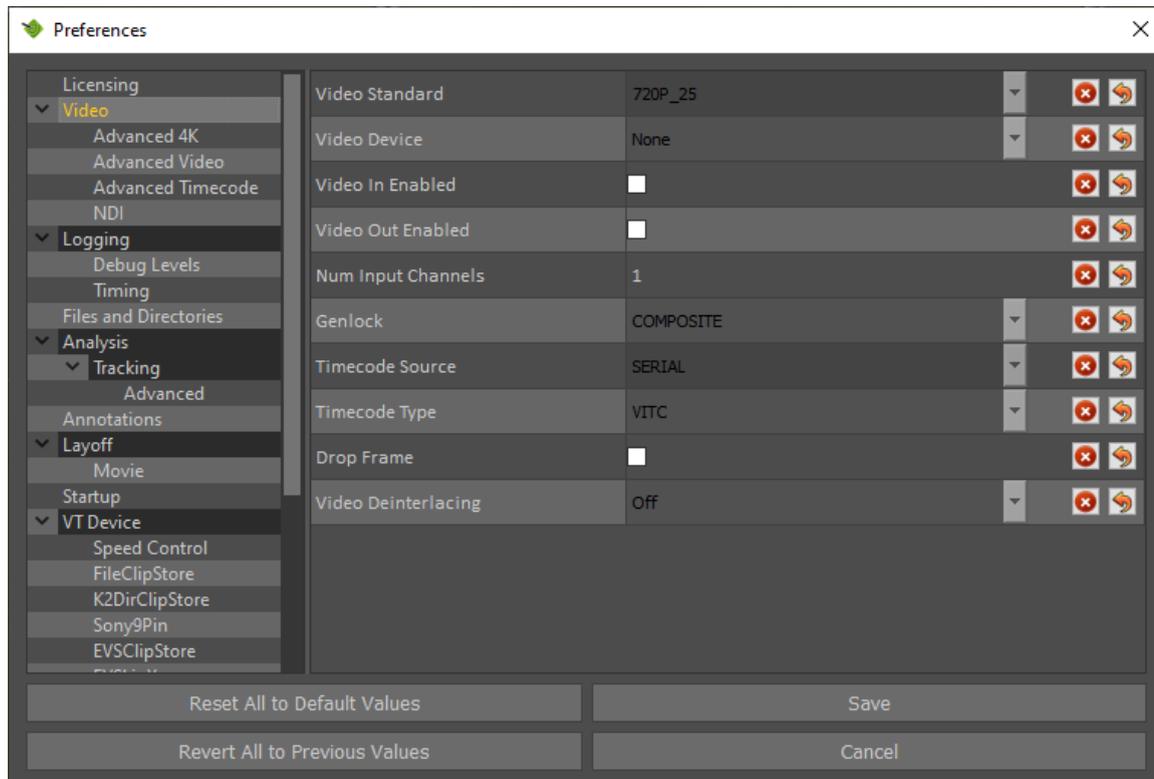
**Genlock:** Default is COMPOSITE.

**Timecode Source:** Default is SERIAL.

**Timecode Type:** Default is VTC.

**Drop Frame:** Default is off.

**Video Deinterlacing:** Default is off.

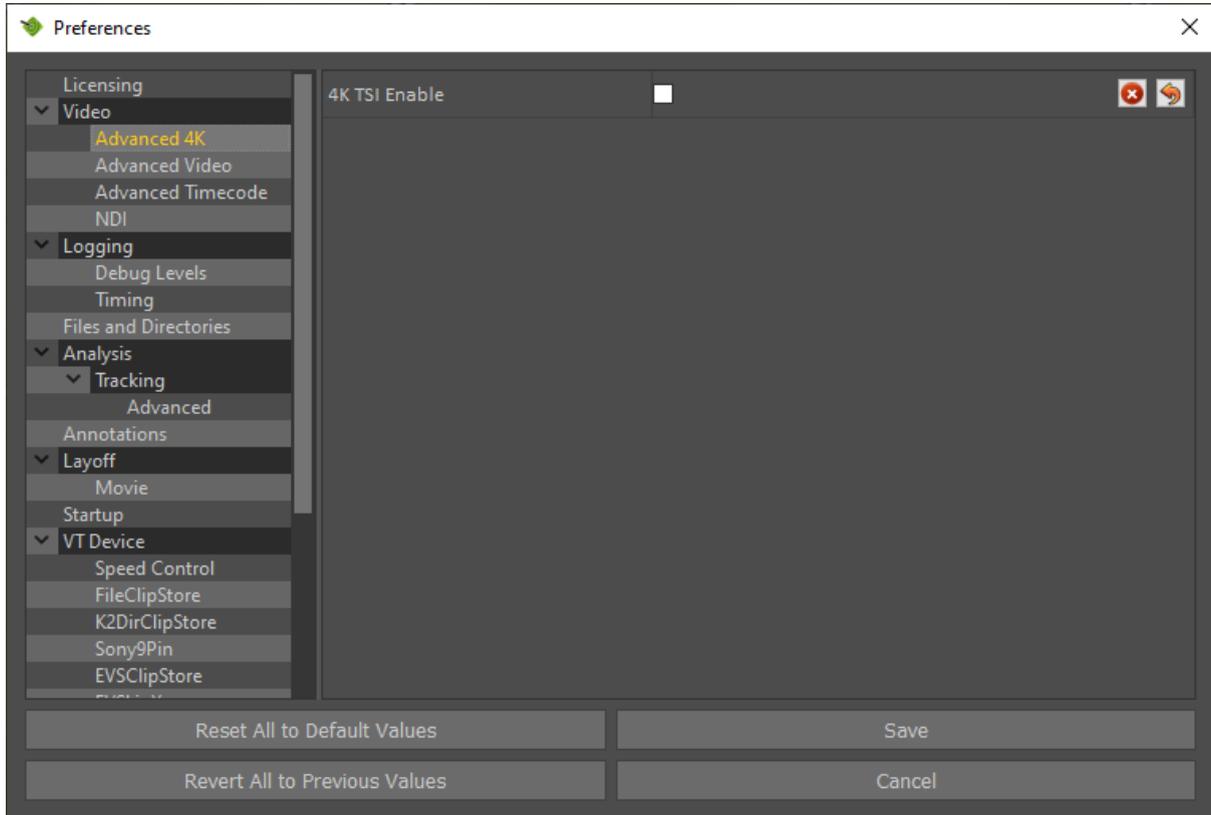


**NOTE:** Restart Tactic for any changes to take effect.

# Advanced 4K

4K TSI Enable

Default is off.

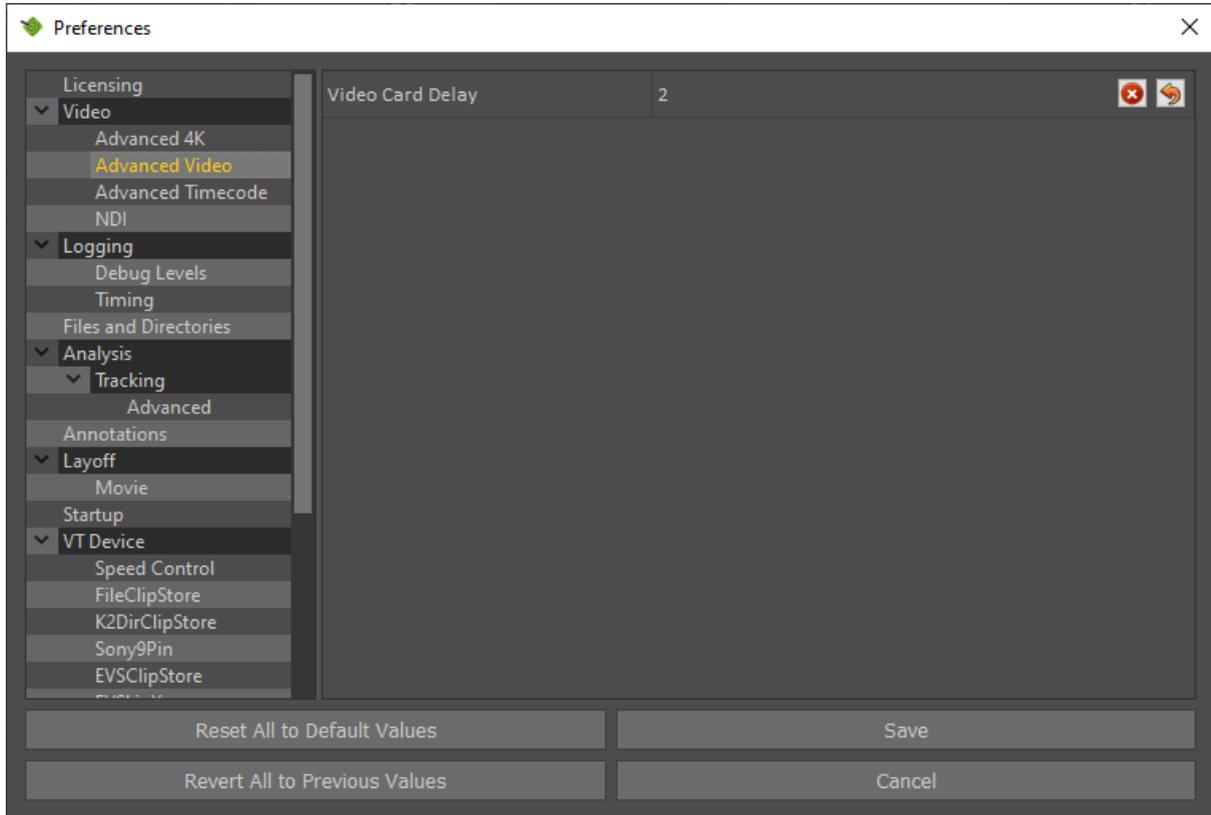


**NOTE:** Restart Tactic for any changes to take effect.

# Advanced Video

Video Card Delay

Default is 2.

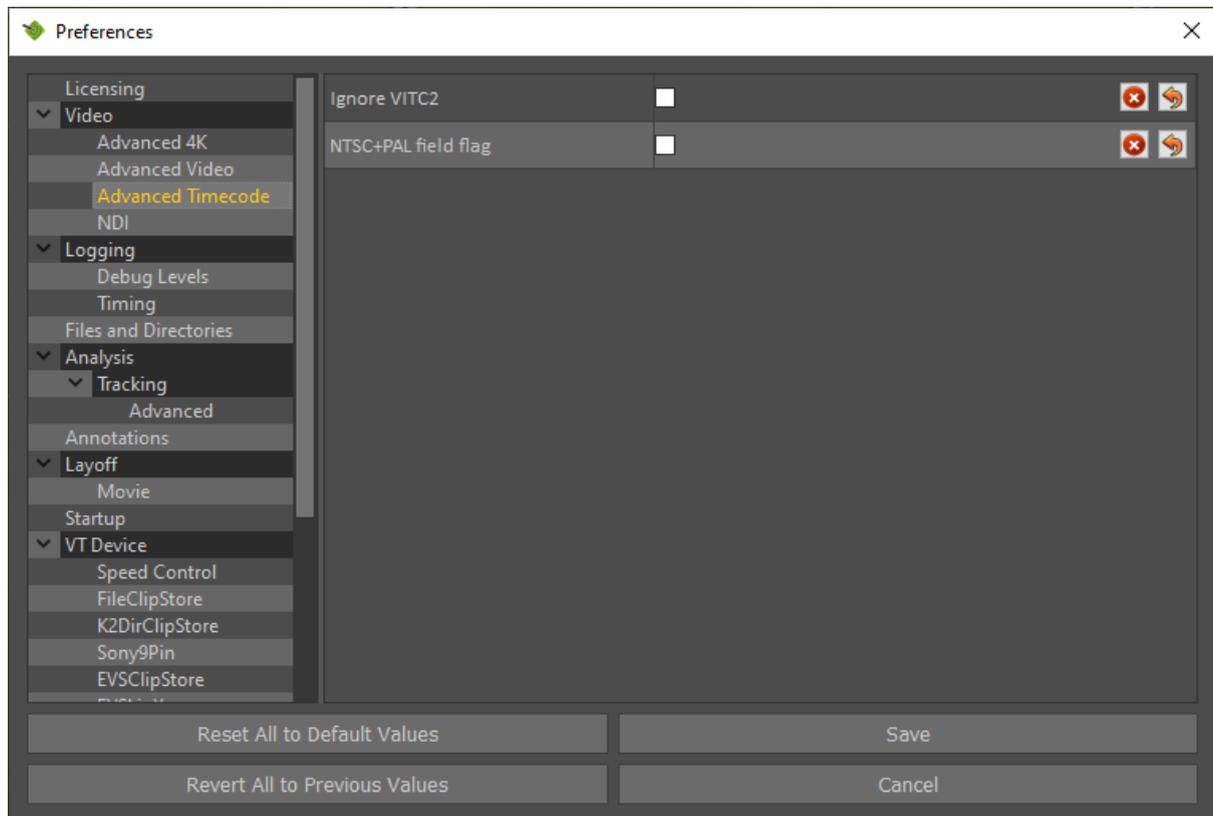


**NOTE:** Restart Tactic for any changes to take effect.

# Advanced Timecode

**Ignore VITC2:** Default is off.

**NTSC+PAL field flag:** Default is off.



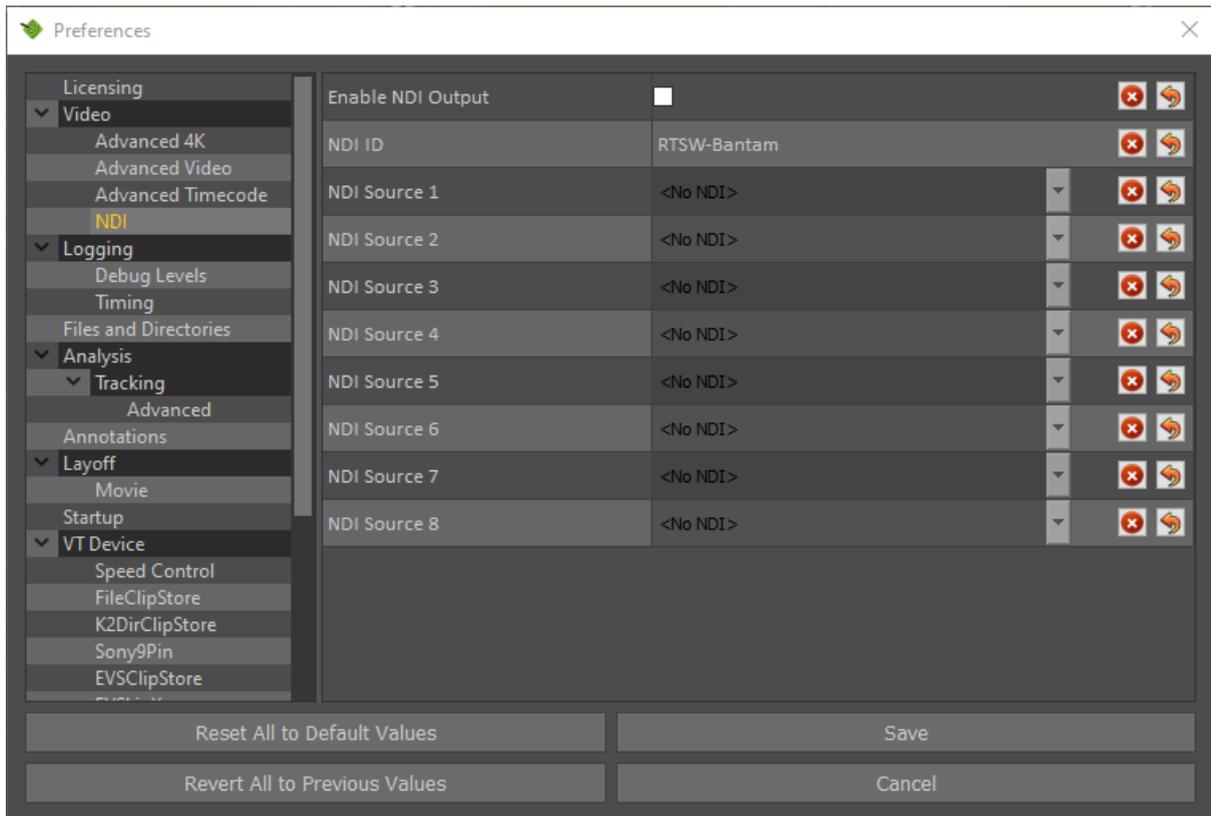
**NOTE:** Restart Tactic for any changes to take effect.

# NDI

**Enable NDI Output:** Default is off.

**NDI ID:** local PC.

**NDI Source 1-8:** not set.



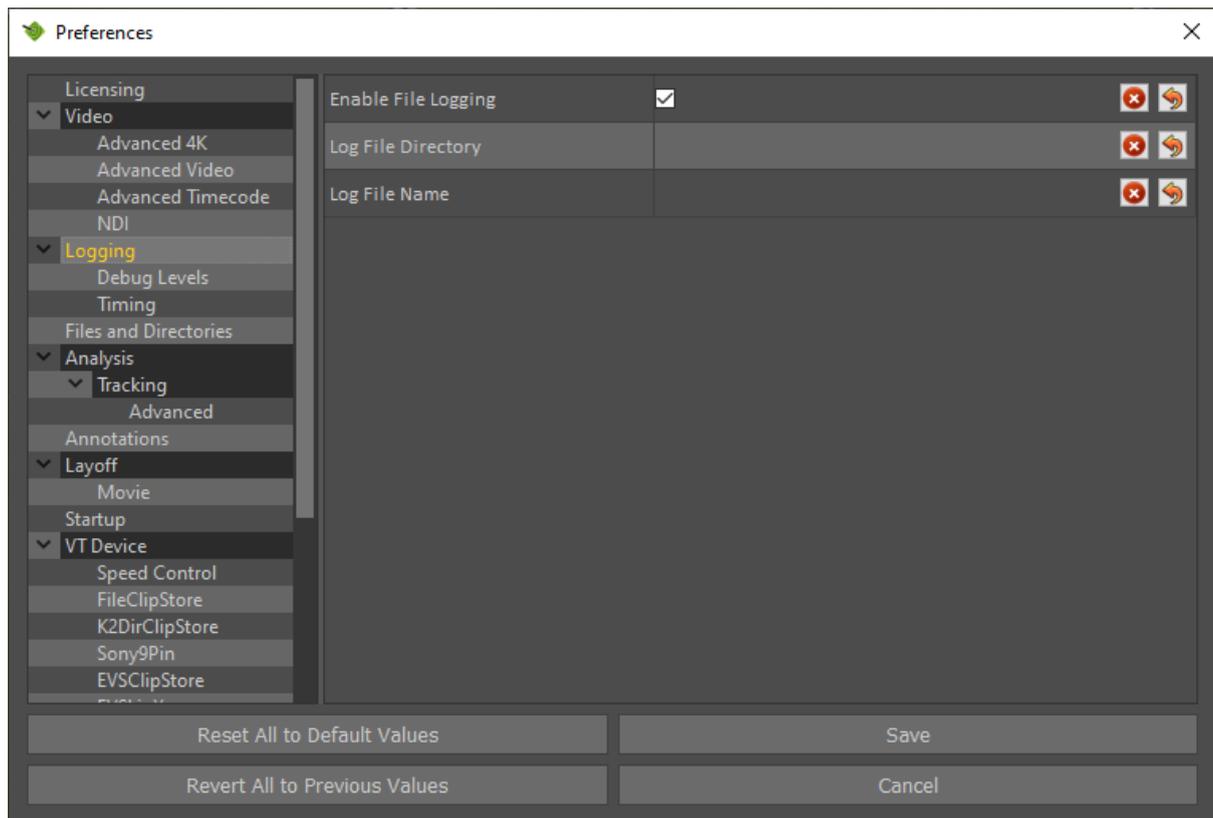
**NOTE:** Restart Tactic for any changes to take effect.

# Logging

**Enable File Logging:** Default on.

**Log File Directory:** Default blank.

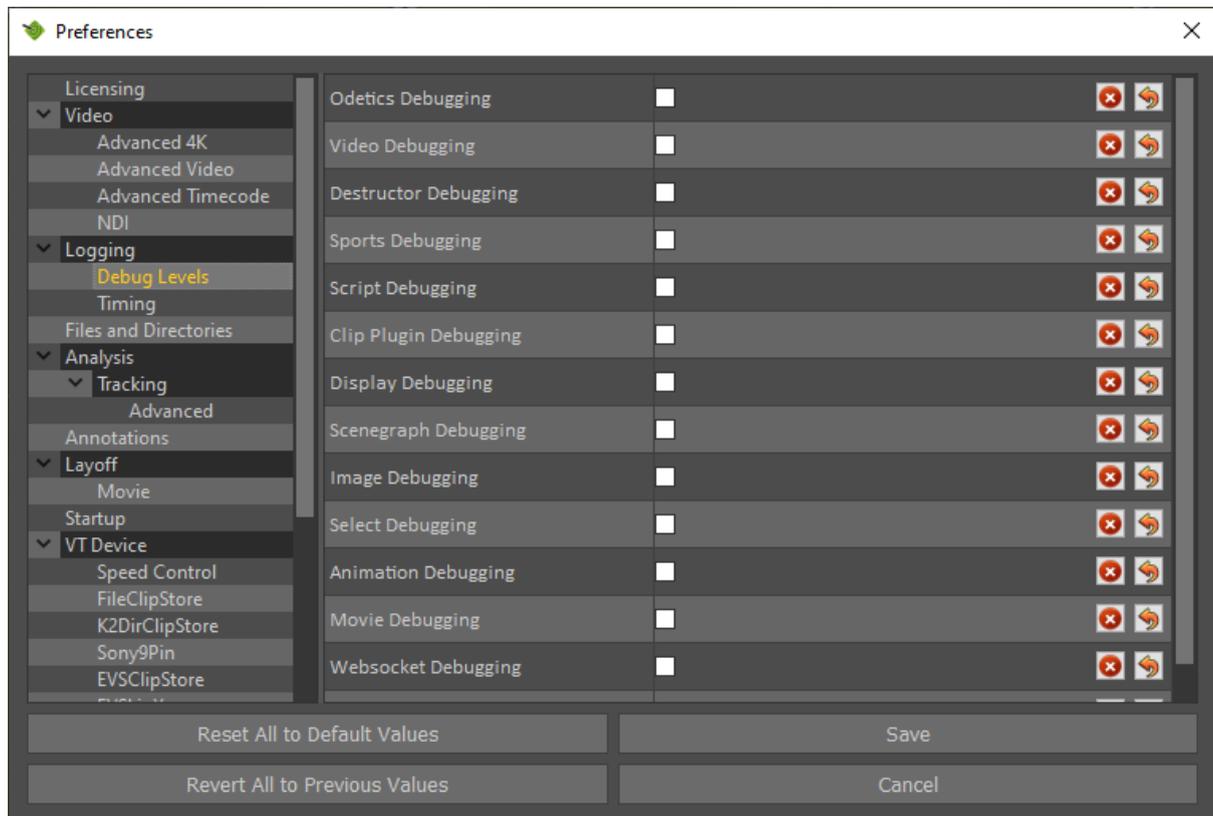
**Log File Name:** Default blank



**NOTE:** Restart Tactic for any changes to take effect.

# Debug Levels

Debug parameters should ONLY be used on instruction from RT Software.



**NOTE:** Restart Tactic for any changes to take effect.

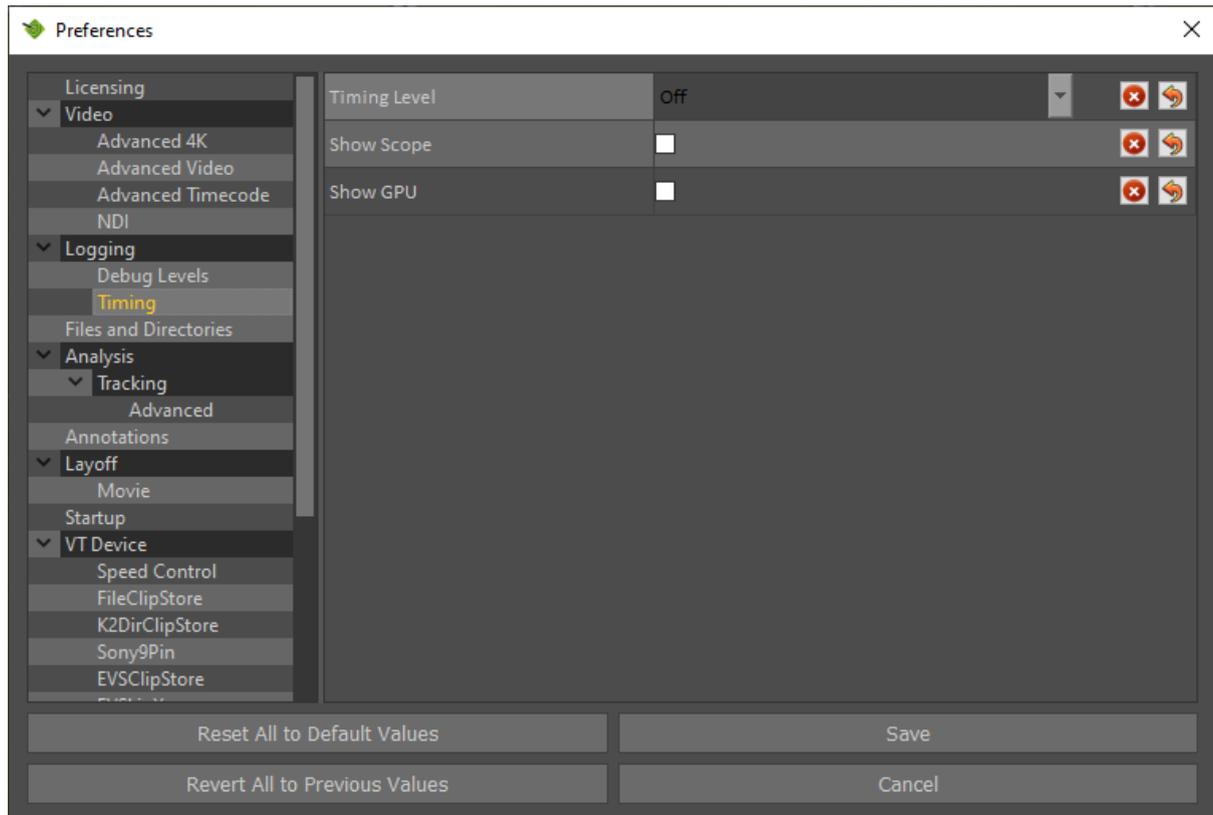
# Timing

Timing parameters should ONLY be used on instruction from RT Software.

**Timing Level:** Default setting is off.

**Show Scope:** Default setting is off.

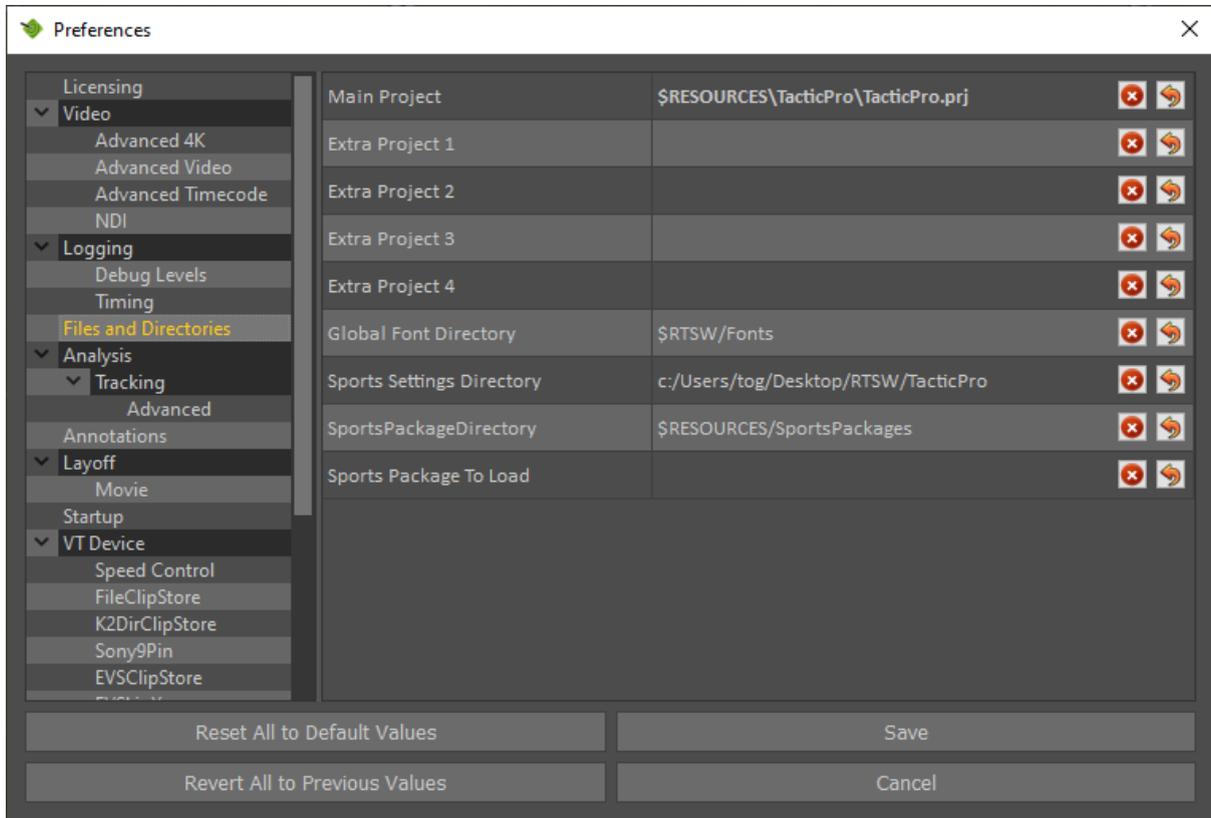
**Show GPU:** Default setting is off.



**NOTE:** Restart Tactic for any changes to take effect.

# Files and Directories

Project parameters should ONLY be used on instruction from RT Software.



**NOTE:** Restart Tactic for any changes to take effect.

# Analysis

**Default Pause Duration:** Default 4 seconds.

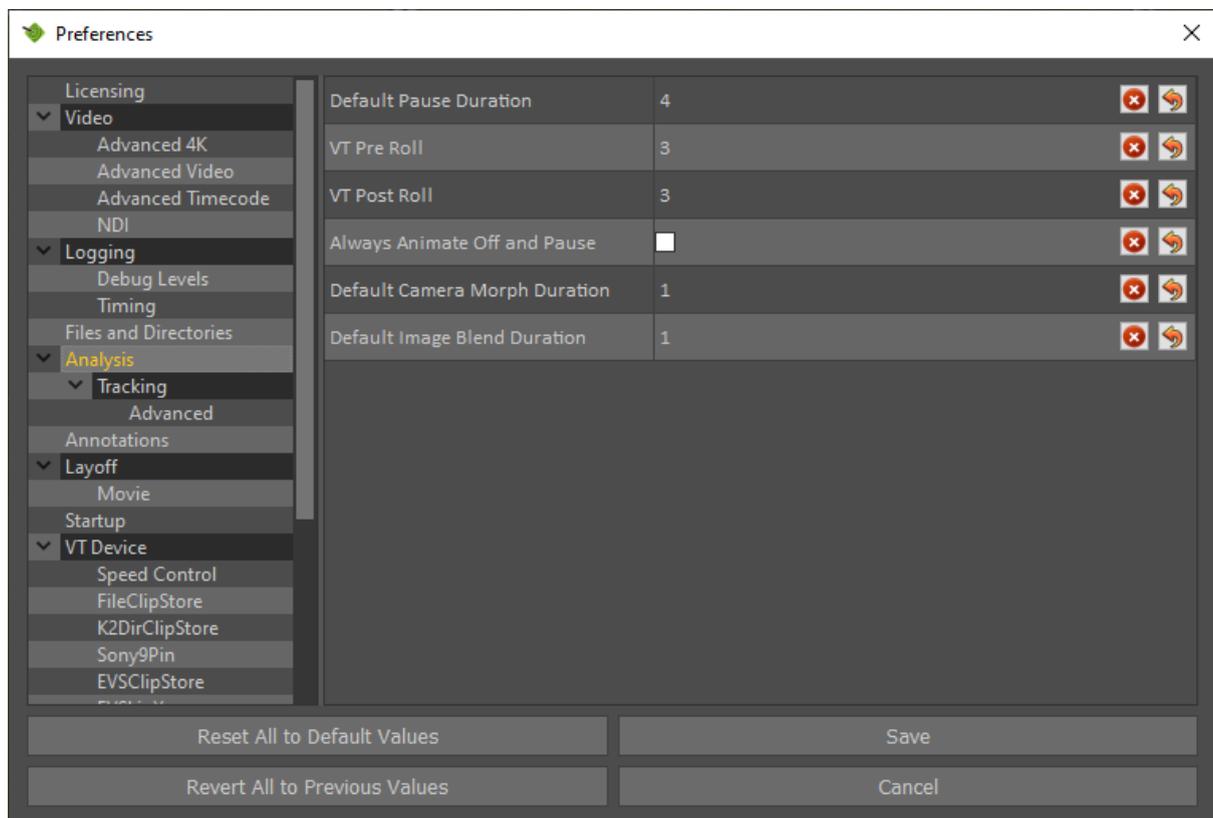
**VT Pre Roll:** Default 3 seconds.

**VT Post Roll:** Default 3 seconds.

**Always Animate Off and Pause:** Off.

**Default Camera Morph Duration:** Default 1 second.

**Default Image Blend Duration:** Default 1 second.



**NOTE:** Restart Tactic for any changes to take effect.

# Tracking

**Tracking Profile:** The higher the setting (low, medium, high, ultra), the better the tracking but the more powerful your graphic card needs to be.

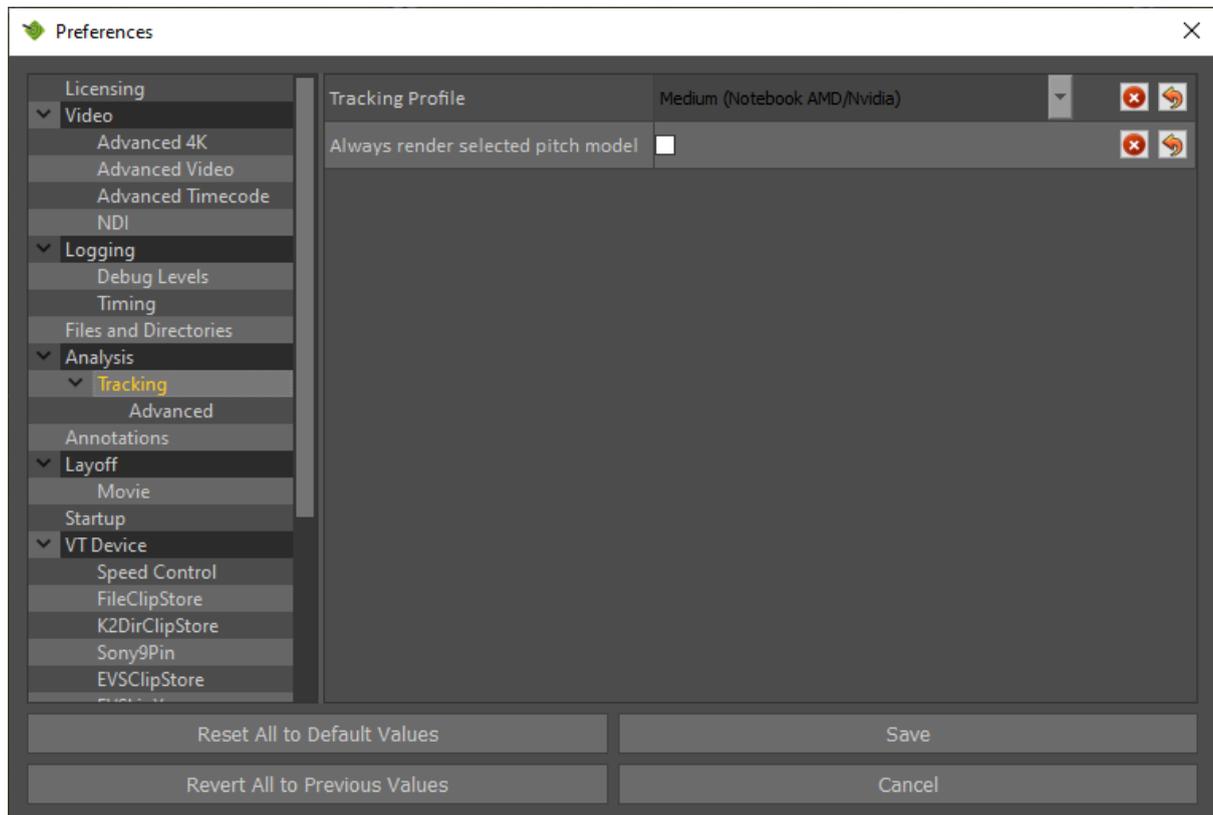
You can trade off real time tracking for better tracking.

The “Custom” profile is fine tune the parameters used by the profiles.

Parameters should ONLY be used on instruction from RT Software.

**Always render selected:** Default off.

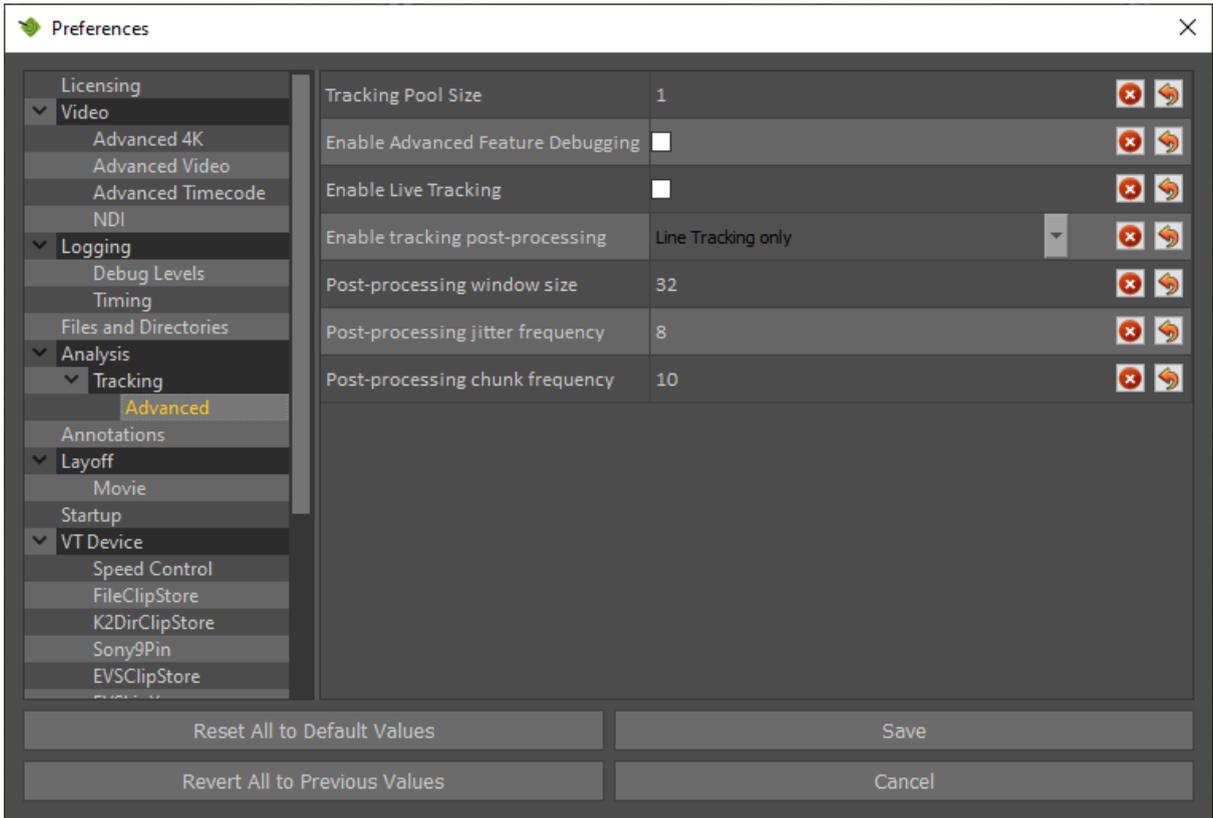
## Pitch model



**NOTE:** Restart Tactic for any changes to take effect.

# Advanced Tracking

Advanced Tracking parameters should ONLY be used on instruction from RT Software.



**NOTE:** Restart Tactic for any changes to take effect.

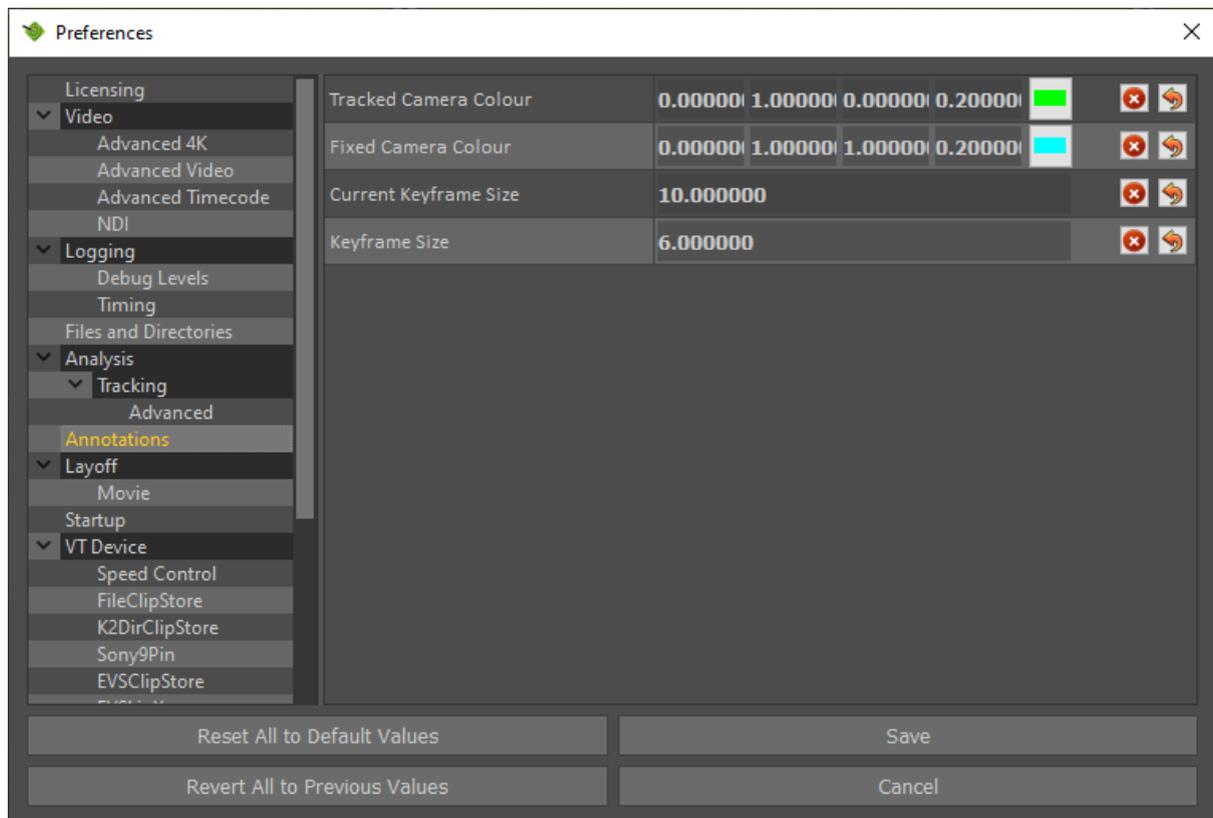
# Annotations

**Tracked Camera Colour:** Default Green

**Fixed Camera Colour:** Default Blue

**Current Keyframe Size:** Default 10

**Keyframe Size:** Default 6



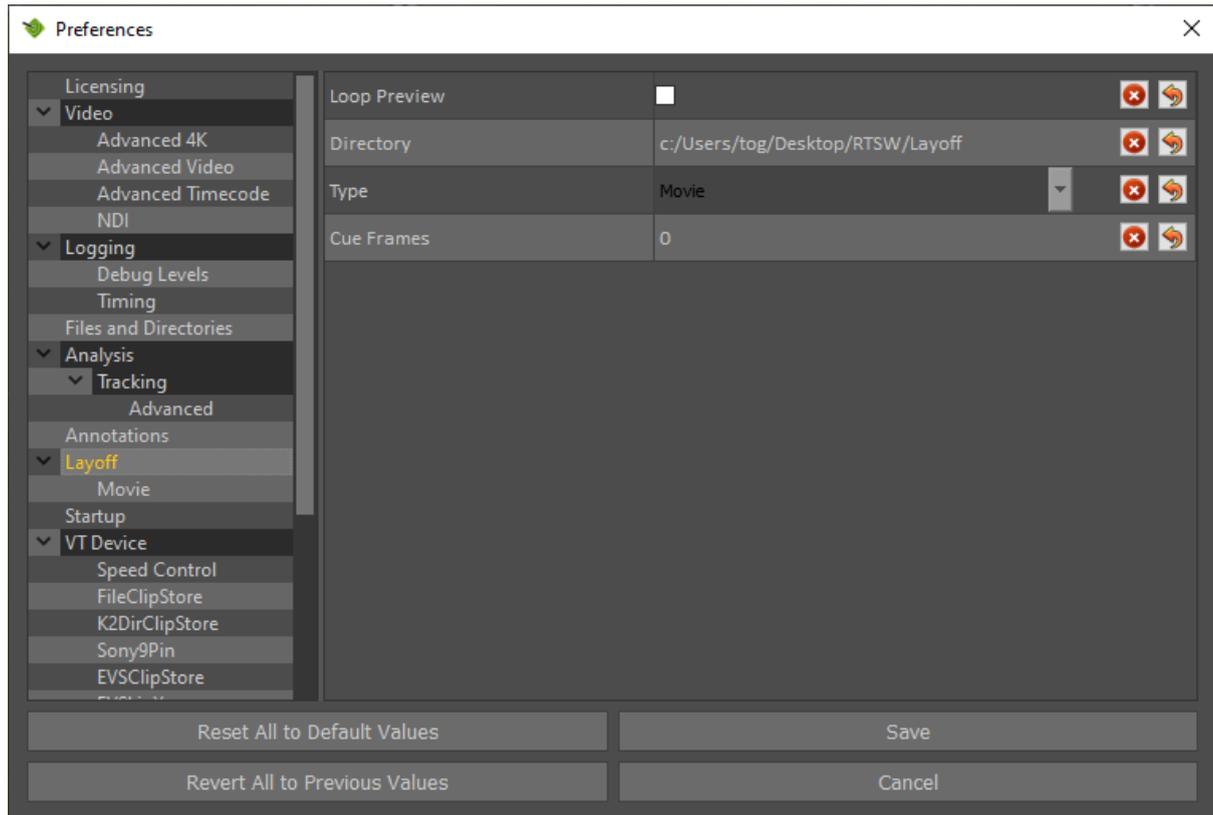
**NOTE:** Restart Tactic for any changes to take effect.

# Layoff

**Directory:** Set this to the file path of the base directory to store exported video clips (layoff). e.g. Desktop\RTSW\layoff

**Type:** Select either Movie or Image Sequence

**Cue Frames:** Default 0



**NOTE:** Restart Tactic for any changes to take effect.

# Movie

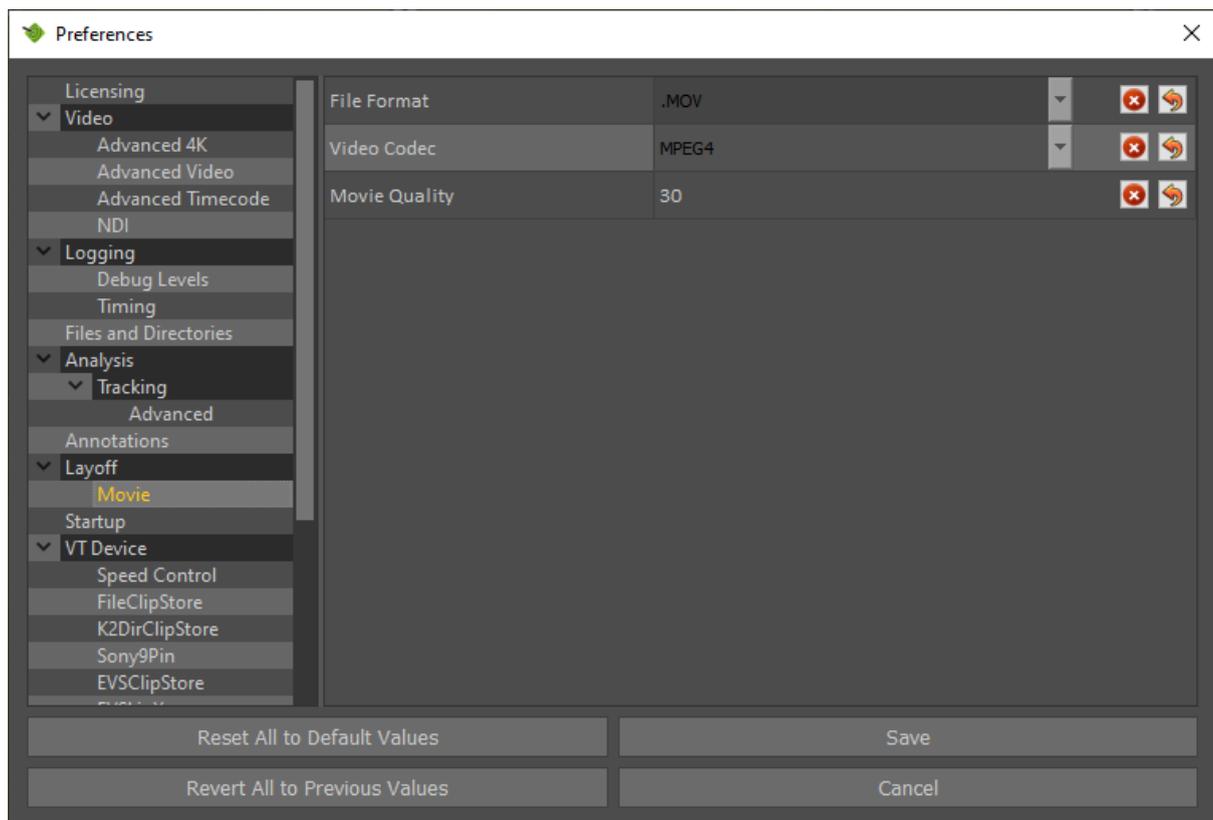
**File Format:** Select preferred video file format for exported clips (layoff).

**Video Codec:** Select preferred video codec for exported clips (layoff).

**Movie Quality:** Select the required movie quality.

1 = Small file size, low quality video

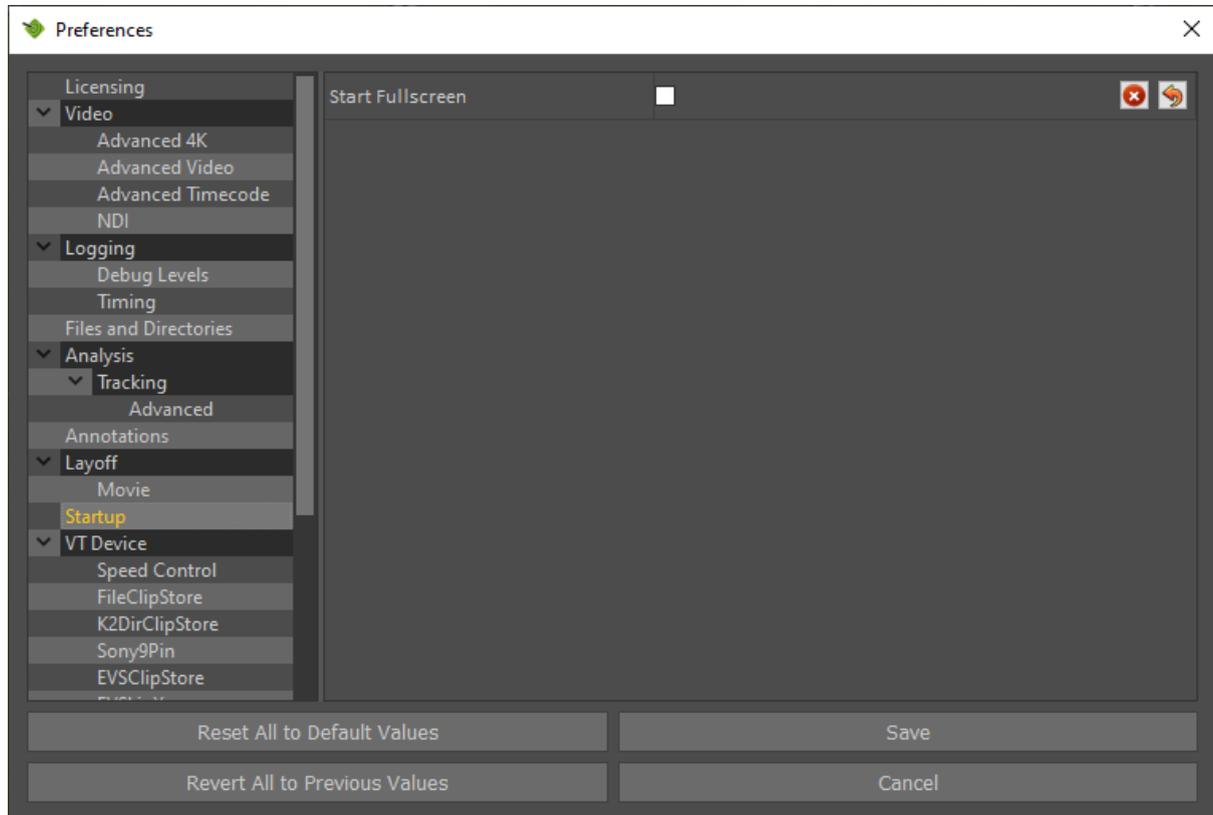
30 = Large file size, high quality video



**NOTE:** Restart Tactic for any changes to take effect.

# Startup

**Start Fullscreen:** Default is off.



**NOTE:** Restart Tactic for any changes to take effect.

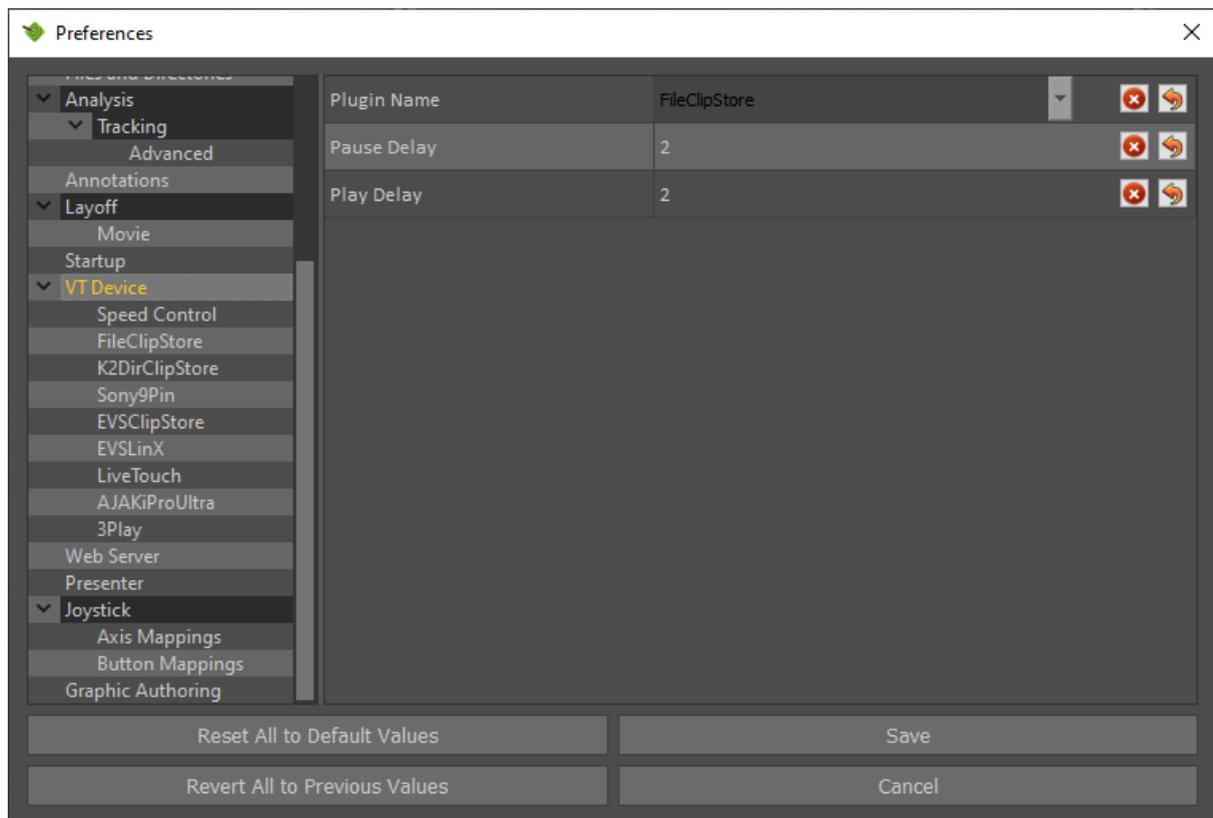
# VT Device

**Plugin Name:** Select FileClipStore for video clips stored on a local disk.

**Pause Delay:** Default setting is 2 frames.

Adjust this if you find that when playing the video clip it does not pause at the selected timecode once analysis graphics have been added.

**Play Delay:** Default setting is 2 frames.



**NOTE:** Restart Tactic for any changes to take effect.

# Speed Control

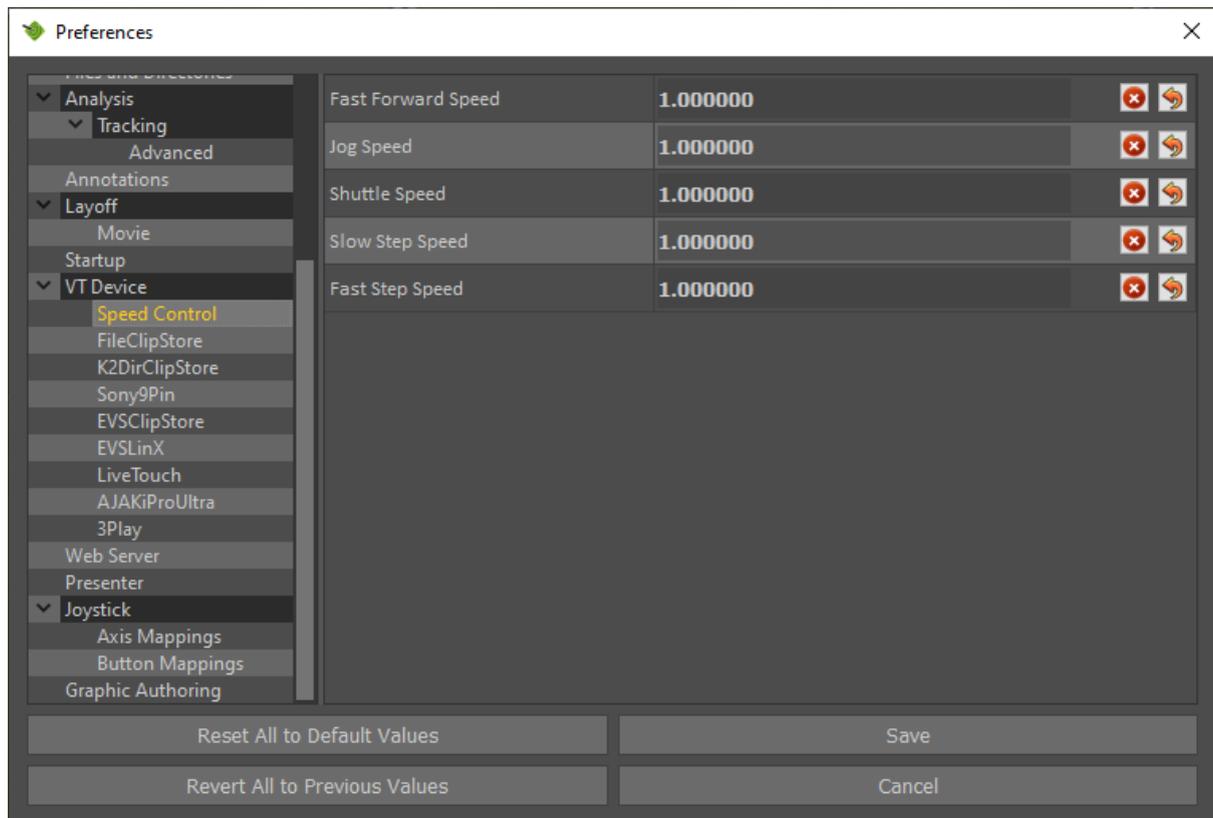
**Fast Forward Speed:** Default 1.0

**Jog Speed:** Default 1.0

**Shuttle Speed:** Default 1.0

**Slow Step Speed:** Default 1.0

**Fast Step Speed:** Default 1.0



**NOTE:** Restart Tactic for any changes to take effect.

# FileClipStore

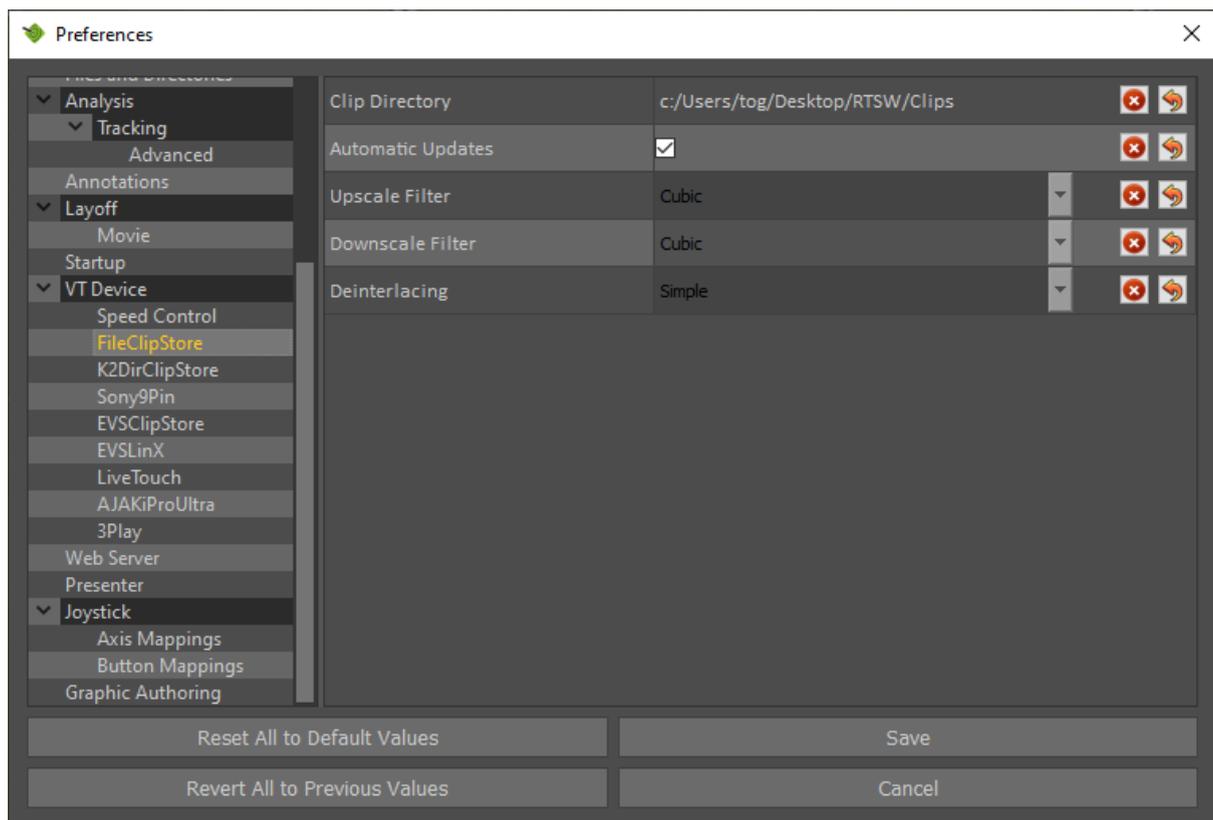
**Clip Directory:** Set this to the file path of the base directory for your clips.  
e.g. Desktop\RTSW\clips

**Automatic Updates:** Set this to automatically update the thumbnails in the Clip Browser.

**Upscale/Downscale Filter:** When using file based clips, these filters determine how video gets scaled if you feed a different video input than expected.

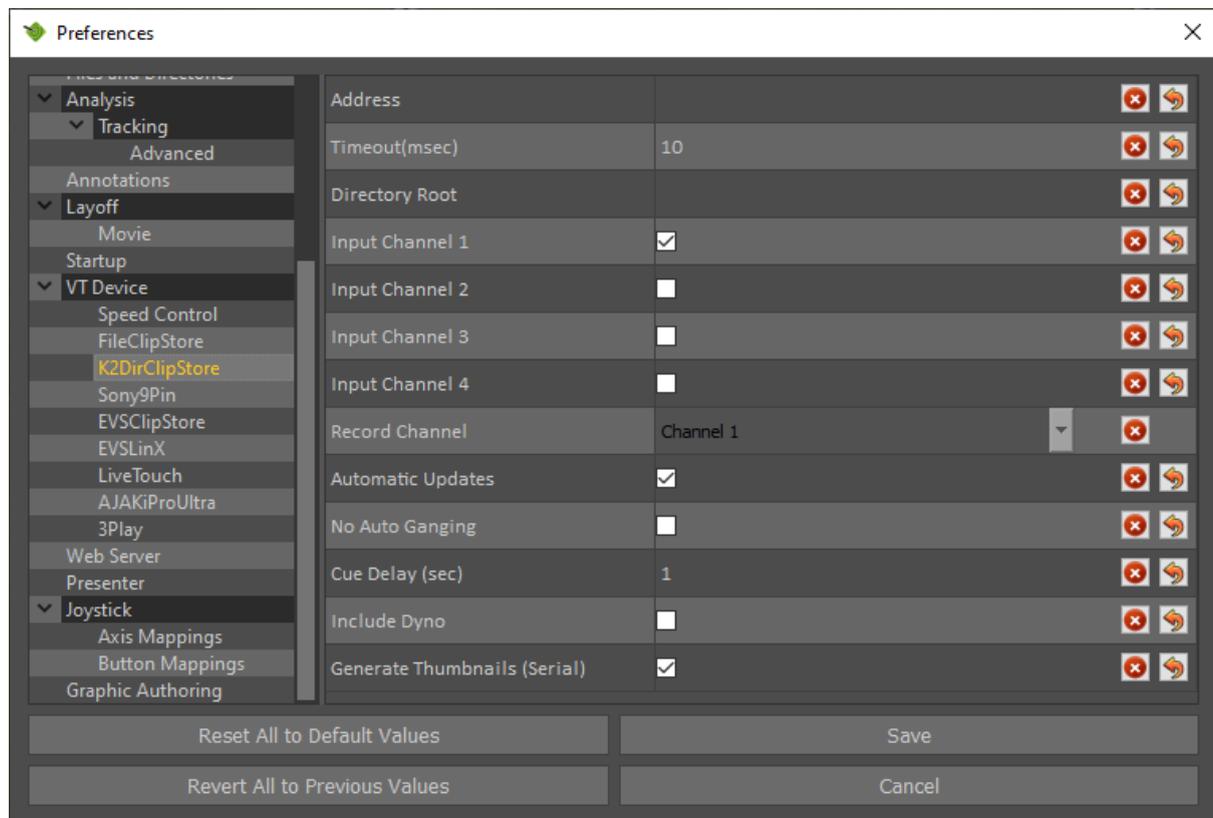
Different filters have different performance effects and have visually different results. Experiment with the scaling filter to find the one that suits your needs best.

**Deinterlacing:** The method used to convert interlaced video clips.



**NOTE:** Restart Tactic for any changes to take effect.

# K2DirClipStore



**NOTE:** Restart Tactic for any changes to take effect.

**Address:** Set to the network address of the control port of the K2. This is a standard IP address or hostname. E.G.: 192.168.10.10, or K2Control.

**NOTE:** Based on the entry address typed here, Tactic will determine whether to use network or serial connection. Setting the address to tty... or COM... will select serial control. An IP address will select network connection.

**Timeout:** In case of serial control it indicates the timeout on trying to send a command to the K2 before an error returns on failure.

**Directory Root:** Type in a file path to limit which directories on the K2 will be searched and made available. For example, default/steve/tmp would only look inside of the "tmp" directory on the K2.

**Input Channel 1-4:** Tick the boxes next to the channels that Tactic will control on the K2 server. The corresponding channel selector buttons will become available on the VT Control section.

**Record Channel:** When using the Record functionality, this defines which channel of the device to control for recording clips.

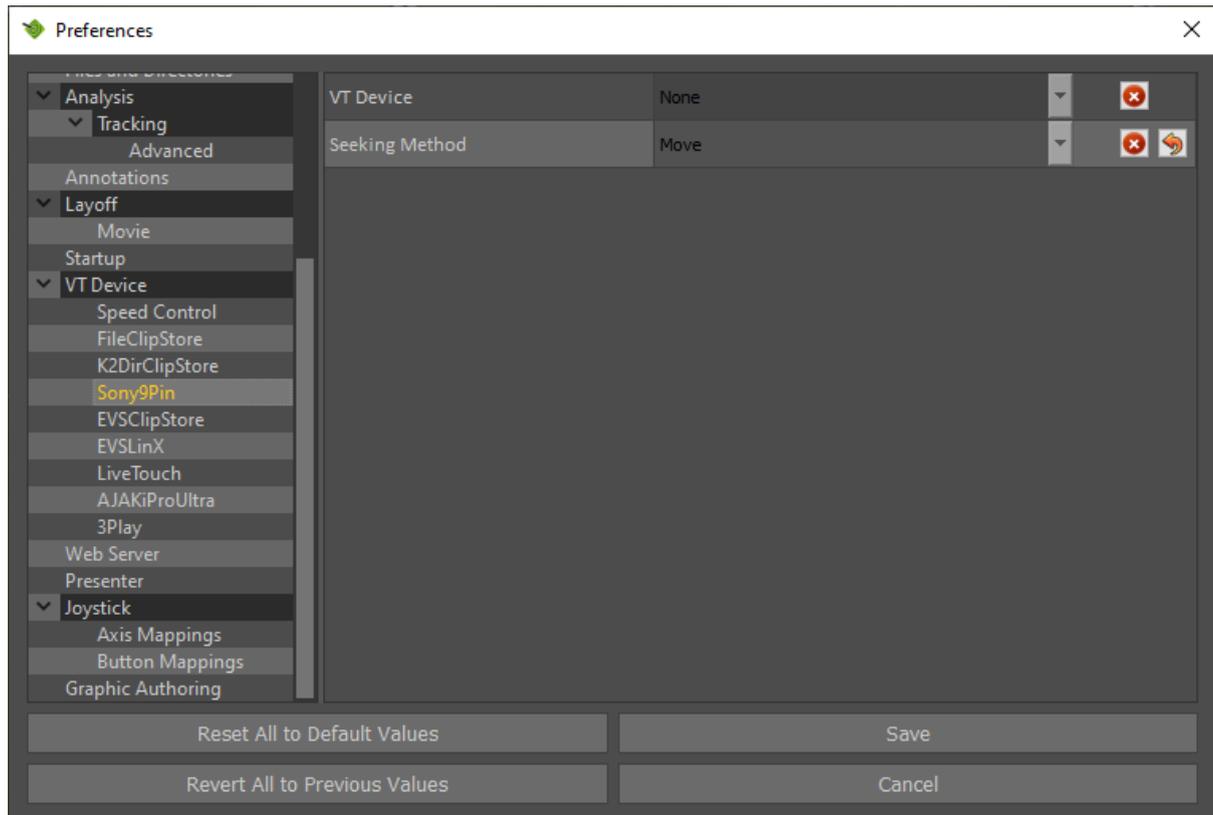
**Automatic updates:** Turn on automatic update if you want Tactic to automatically update its list in sync with the VT device. Clip changes on the VT device will be reported from a known sentinel point such as a refresh. If you delete or add clips these changes will automatically update Tactic Clip window.

**NOTE:** Network connection is preferred to serial connection because the network is faster and the serial does not support auto thumbnail creation.

# Sony9Pin

The Sony9Pin (BVW75) clip plugin provides VT control over any video device that supports this protocol. Tactic has been qualified with major brands such as K2, EVS, Sony Digital Betacam and Doremi.

The EVS is connected by a straight-through pin-to-pin RS422 serial cable to a serial extension panel of the Video Board on the Tactic PC.



**NOTE:** Restart Tactic for any changes to take effect.

**VT Device:** This setting defines how the System responds to some of the controls. It especially affects how the eject button works.

**Seeking Method:** This defines which Sony command is used for clip seek. If you are experiencing problems with seeking on clip restart you may find that changing this setting helps. This is especially true for VT Decks.

**Timecode Settings:** Navigate (press F10) **Preferences -> Video dialog**. Set Timecode to either Serial, or Embedded.

**Serial:** The timecode will be read from the serial feed.

**Embedded:** It means that the timecode will be read from the SDI video feed.



# EVS configuration for the Sony9Pin plugin

This section describes how to set up an EVS Video Server for Sony9Pin control under Tactic. It assumes that the systems have been connected appropriately as described before. The control protocol used is Sony BVW75 (9 Pin) and allows simultaneous control between the EVS and the LSM Remote controller.

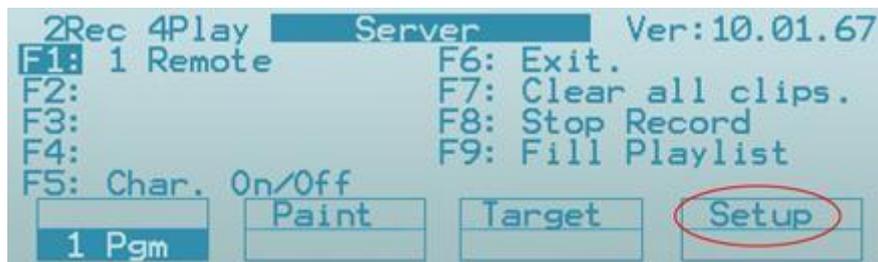
Although the EVS configuration is outside the remit of this document a brief outline is provided here to assist operators in setting up and troubleshooting the system. Bear in mind that these settings were correct at time of writing, but if the EVS workflow has changed since then they may not be correct - consult the relevant technical studio/broadcast staff to check. At this time, a single EVS is being used for both the Tactics system and Rostrum System.

There are 3 EVS configurations that need to be setup for correct Tactics/Rostrum operation.

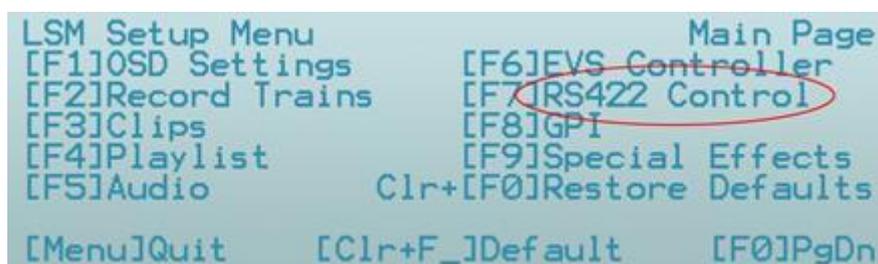
The first is to configure the EVS to have 3 inputs and 3 outputs. This allows the EVS to be controlled by 3 separate devices.

The second is the Remote RS422 control. This is done through the LSM controller.

## Multicam Version 10



From the Main system menu (Shift+Menu) select Setup (Shift+D). This will change to:



```

Port          Device/Protocol      p.7.1
RS422 #1     EVS Remote         [F7]ID Type:
[F2] RS422 #2 Sony BVW75         ID LSM
[F3] RS422 #3 -----
[F4] RS422 #4 -----
[F5] RS422 #5 -----
[F6] RS422 #6 -----
[Menu]Quit  [Clr+F_]Dft  [F9]PgUp  [F0]PgDn

```

Set the control for input 2 for Sony BVW75. This means that you MUST connect the serial link from the Tactics table into serial i/p 2 on the back of the EVS.

- Now select page 7.2 (F10)

```

Special Control Setting
Main RS422 Second. RS422
PGM1: EVS Remote -- [F5] Sony BVW75 02
PGM2: [F2]----- -- [F6] -----
PGM3: [F3]----- -- [F7] -----
PGM4: [F4]----- -- [F8] -----
[Menu]Quit  [Clr+F_]Dft  [F9]PgUp  [F0]PgDn

```

This page dictates which program channel the devices control. Set them up as shown above. This says that the LSM and Sony (Rostrum) can both control PGM1.

- Now select Page 7.4 (F10 twice)

```

Special Control Setting      p.7.4
Control Type OSD Display
PGM1: [F1]Parallel         [F5]Main
PGM2: [F2]Exclusive
PGM3: [F3]Exclusive
PGM4: [F4]Exclusive
[Menu]Quit  [Clr+F_]Dft  [F9]PgUp  [F0]PgDn

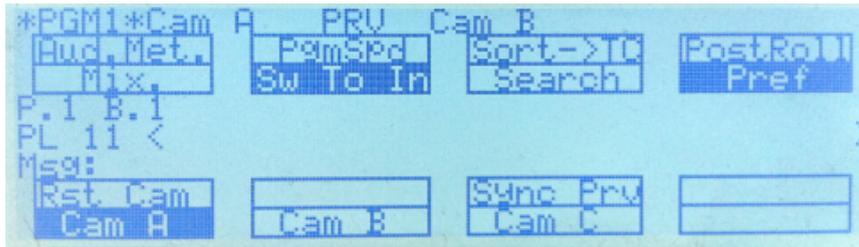
```

This page determines how the LSM and Sony (Rostrum) are to share control.

Setting F1 to Parallel means that they can both control the channel together rather than 1st control 2nd control.

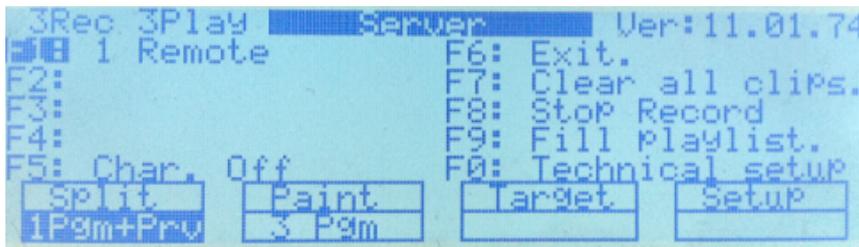
## Multicam Version 11

LSM Remote Main page



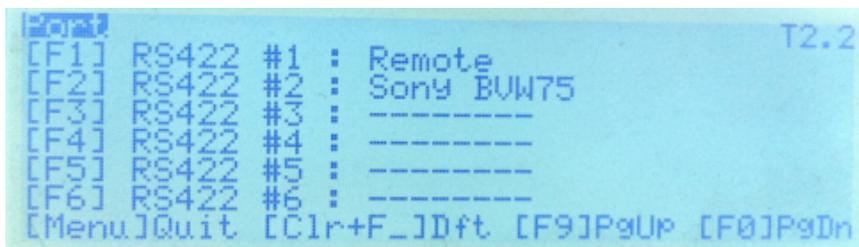
- From the Main system menu (Shift+Menu) select Technical Setup (press F10). Then use F10 to advance pages and F9 to go backwards in the Technical Setup menu.

#### LSM Remote Main System menu



- Find page T2.2 – as indicated in the top right corner of the screen and set by pressing F2 and then using the Jog Wheel to select SonyBw75 from a list of available protocols:

#### LSM Remote Page T2.2



- Advance to page T2.3 and set SonyBw75 as a secondary controller.

#### LSM Remote Page T2.3

```
[Menu]Quit [Clr+F_]Dft [F9]PgUp [F0]PgDn T2.3
Main Ctrl Sec Ctrl
OUT1 [F1] Remote - [F5] Sony BUW75 2
OUT2 [F2] Remote - [F6] ----- -
OUT3 [F3] Remote - [F7] ----- -
```

- Go to page T2.5 where you can set SonyBvw75 to parallel or exclusive.

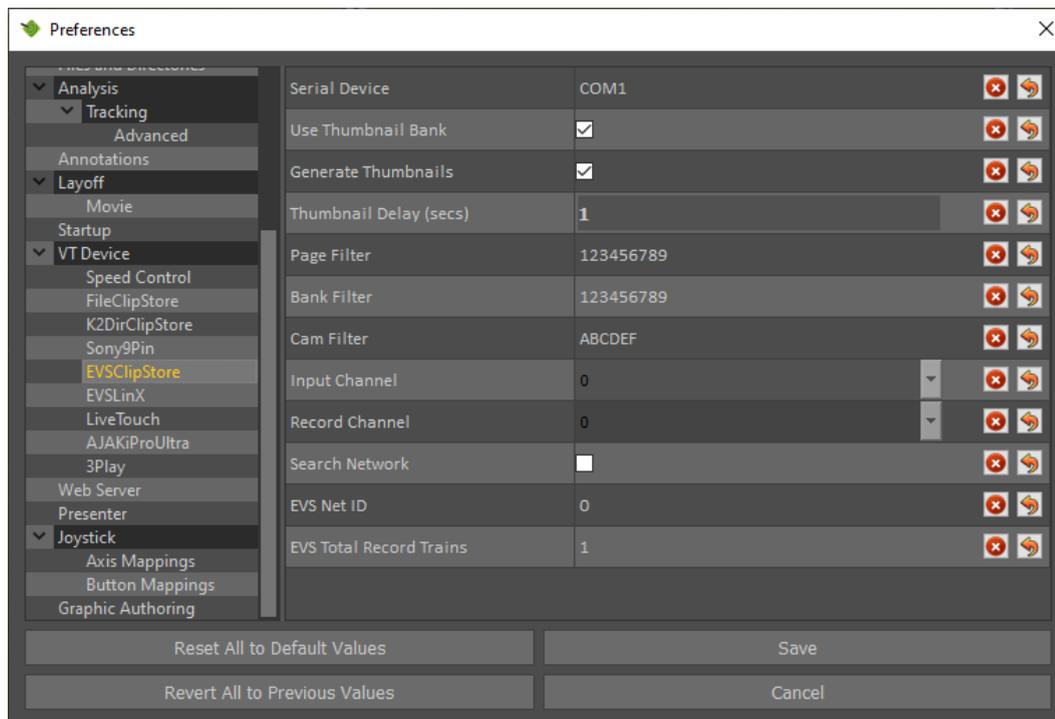
LSM Remote Page T2.5

```
[Menu]Quit [Clr+F_]Dft [F9]PgUp [F0]PgDn T2.5
Mode OSD
OUT1 [F1] Parallel [F5] Main
OUT2 [F2] Exclusive [F6] Main
OUT3 [F3] Exclusive [F7] Main
```

- When you finished you can press Menu to quit the setup menu and the system will prompt to save the changes you have made. It is necessary in order to use these changes. Press Menu again if you are happy with your changes.

# EVSClipStore

This plugin provides control over clips stored on an EVS using the Odetics protocol through serial RS422 connection to a generic serial port on the Tactic machine. Video streams are delivered over SDI.



**Serial Device:** Set to the serial port that is connected to the EVS. This is usually COM1.

**Use Thumbnail Bank:** This option has two features:

1. Sorting clips into separate directories according to Keywords. See the Keywords in the Tactic section for more details.
2. Selecting a specific video frame from which the thumbnail will be made.

**Thumbnail Delay:** Used in thumbnail creation. Set the delay between EVS starting to load a clip and Tactic grabbing the thumbnail. That is in case it takes too long for the EVS to load a clip.

**Page Filter:** Include only these page numbers (0-9) when updating the clip list.

**Bank Filter:** Include only these bank numbers (1-9) when updating the clip list.

**Cam Filter:** Include only these camera inputs (A-F) when updating the clip list.

**Input Channel:** Set the EVS OUT channel to be controlled by the plugin.

**Record Channel:** When using the Record functionality, this defines which channel of

the device to control for recording clips.

**Search Network:** FOR FUTURE USE.

**EVS Net ID:** This will be 0 if the EVS server to which Tactic is connected is the very same server that Tactic needs to control.

If the EVS server of interest is NOT the local server but one in a network chain of servers then set the target EVS server Net ID (1-99).

Please see the EVS documentation for further explanation on EVS server networks.

## Creating Thumbnails

The EVSClipStore plugin uses the SDI video input signal of Tactic to make thumbnails for the clips in the built clip list. For this it loads each clip on the EVS one after the other on whichever PGM channel Odetics is configured. If Use Thumbnail Bank is selected then only specific clips will load. Read the Use Thumbnail Bank section for more details.

**NOTE:** make sure that this process will not interrupt your production.

## Use Thumbnail Bank

In this mode when the clips are prepared, the operator should clear all clips from other channels and save the clips on Cam A. They should then make a single frame clip from the clip on Cam A, and save it to the corresponding Page and Bank number on Cam B. This clip will be the thumbnail clip and it will only be used to generate the thumbnail.

E.G.: supposing there is a clip with ID 133A/00 the thumbnail MUST exist on 133B/00.

**NOTE:**

- Make sure that the Cam Filter settings exclude the channels where the thumbnail clips are stored. (Cam B usually)
- It is actually not restricted which channel to use for thumbnails and clips. Tactic will always look for a clip with the matching Page and Bank number on the channel consecutive to the selected clip's channel: A->B, B->C, C->D,...

# EVS configuration for the EVSClipStore plugin

## Video connection

The EVS server provides VT source material via the SDI input to the Tactic system. The video board is equipped with 3 main BNC connectors. These are labelled InA, OutA and Ref. The selected channel on the EVS should be connected to the InA BNC on the video board. The OutA connector provides HD SDI output for Tx. This combines the EVS input with telestration. The Ref input is not used since Tactic is synch'd to its SDI input. Section 2 below describes the video setup in Tactic.

## Serial connection for VT Control

The second connection between the EVS and the Tactic system is the RS422 Serial control feed. The serial connection is a straight thru cable and may be extended via CatV at the Studio panel or via fibre. The port on the EVS should be on the same channel as the EVS video output. At the current time this has been designated channel 3 on Yellow EVS – but this may change!

The Serial cable is terminated at the PC thru an RS422/232 converter to the COM1 port. The converter is vital and correct operation will not occur if it is omitted. Ensure it is connected the correct way round with the 422 end plugged in to the cable going to the EVS and the 232 end plugged into the computer.

The final stage in EVS configuration is the setup of Odetics protocol on the EVS LSM controller.

## Exclusive and parallel modes

The Odetics protocol can be used in three different modes on the EVS:

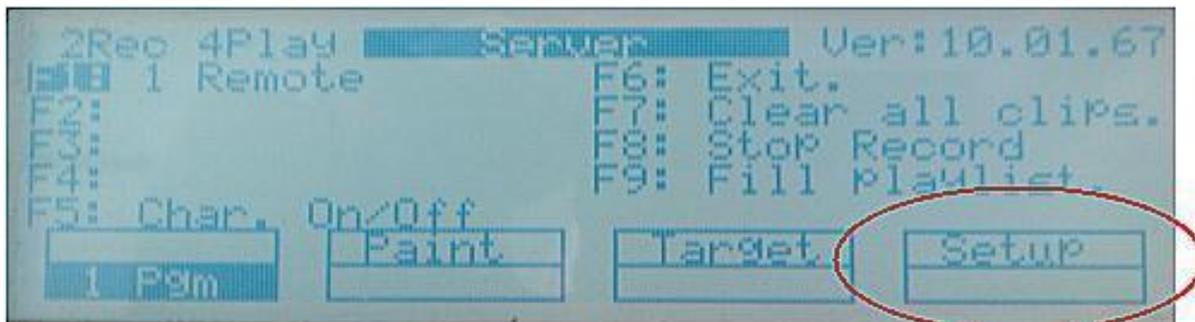
1. Odetics being set as a Main Controller on a PGM channel. No other controllers including the LSM can access that channel.
2. Odetics being set as a Secondary Controller in Exclusive mode. Both the main (LSM) and secondary (Odetics) controllers receive permanently the status of the channel(s), but only one controller at a time is able to actually control the channel. The main controller can decide at any time to pass the control to, or to retrieve the control from the secondary controller.
3. Odetics being set as a Secondary Controller in Parallel mode. Both the main (LSM) and secondary (Odetics) controllers receive permanently the status of the channel(s), and both controllers are able to control the same channel at any

time. Either of both controllers can take the control as long as the other controller is not executing a command. The control can thus be freely passed on from one controller to the other.

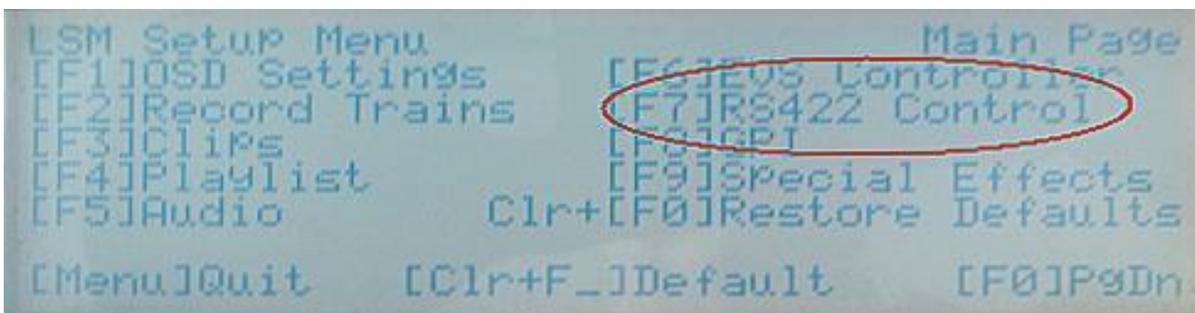
The following sections describe how to set all this up on Multicam v10 and on Multicam v11.

# LSM setup on Multicam 10

- The LSM Setup menu is selected by pressing Shift+Menu



- From here select the setup menu Shift+D



- Now select F7 for the RS422 Control screen



This page specifies the physical connection channel on the back of the EVS. To change the selection, press the function key corresponding to the desired channel – in this example channel #3. Press F3 to select, spin the LSM jog wheel to the right until it shows Odetics. Now press F3 again to confirm.

- Now select F10 for the next page 7.2.

```

Special Control Setting P.7.2
Main RS422 Second. RS422
PGM1: EVS Remote -- [F5] EVS_IPDP
PGM2: [F2] EVS Remote -- [F6] -----
PGM3: [F3] EVS Remote -- [F7] Odetics 03
PGM4: [F4] ----- -- [F8] -----
[Menu]Quit [Clr+F_]Dft [F9]PgUp [F0]PgDn

```

This page selects which program the connected channel controls. It is necessary for Golf that PGM3 (Yellow) is available for both EVS operator and Presenter (but not at the same time). To achieve this we can select parallel operation between LSM and Odetics. To do this, select F7 and spin the LSM Jog wheel until it shows Odetics 03. Then press F7 again. This allows both the LSM and odetics to control PGM3. Note in the figure that the name selected is 'Odetics 03'. The 03 corresponds to the channel selected on the previous page 7.1. This allows you to differentiate between multiple setups of the same protocol. Press the function key again to confirm.

- Press F10 twice now to get to page 7.4

```

Special Control Setting P.7.4
Control Type OSD Display
PGM1: [F1]Exclusive [F5]Main
PGM2: [F2]Exclusive
PGM3: [F3]Parallel
PGM4: [F4]Exclusive
[Menu]Quit [Clr+F_]Dft [F9]PgUp [F0]PgDn

```

This is the final page for the 422 setup and allows you to select whether the control you have setup operates exclusively on the selected PGM or in parallel with an LSM controller. In this case we want parallel operation on PGM3. Press F3 and spin the LSM jog wheel to select Parallel, press F3 again to confirm.

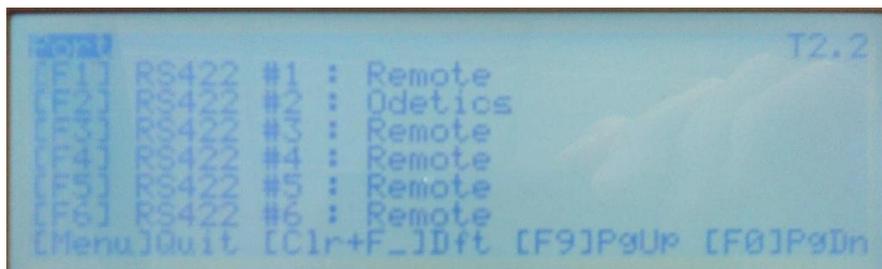
**NOTE: You will get an EVS warning message telling you your configuration is incomplete – you can ignore this.**

# LSM setup on Multicam 11

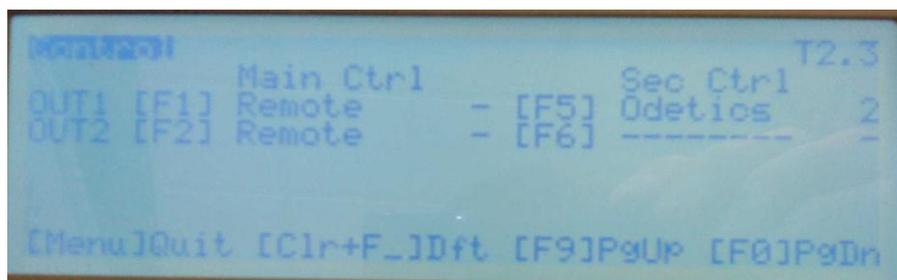
In this version of Multicam the menu structure in the LSM Remote changed slightly. The following is a working example on how to use Odetics with Tactic through a RS422 serial connection.

In this example, on all the EVS channels the LSM Remote is set as the main controller and Odetics is set as a secondary controller in parallel mode on channel PGM1. The serial cable is plugged into RS422 #2 connector on the server.

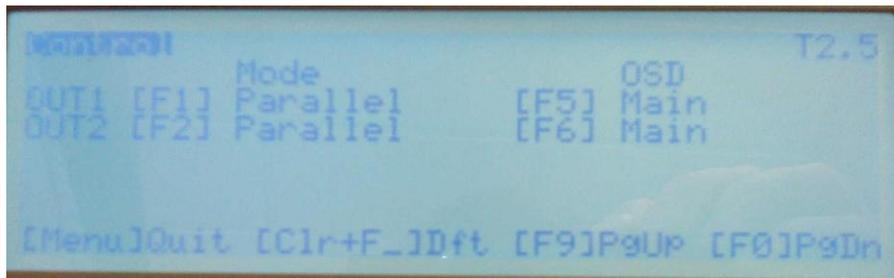
- From the Main system menu (Shift+Menu) select Technical Setup (press F10). Then use F10 to advance pages and F9 to go backwards in the Technical Setup menu.
- Find page T2.2 – as indicated in the top right corner of the screen and set by pressing F2 and then using the Jog Wheel to select Odetics from a list of available protocols:



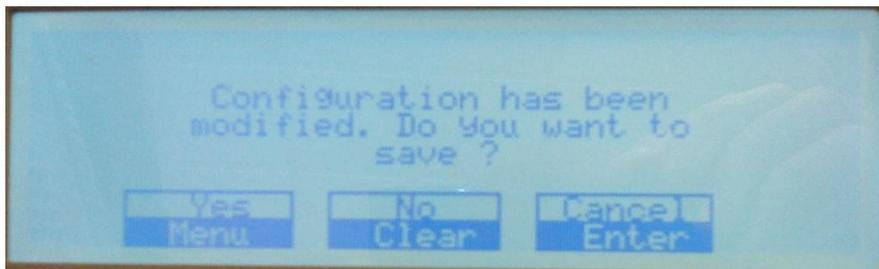
- Advance to page T2.3 and set Odetics as a secondary controller.



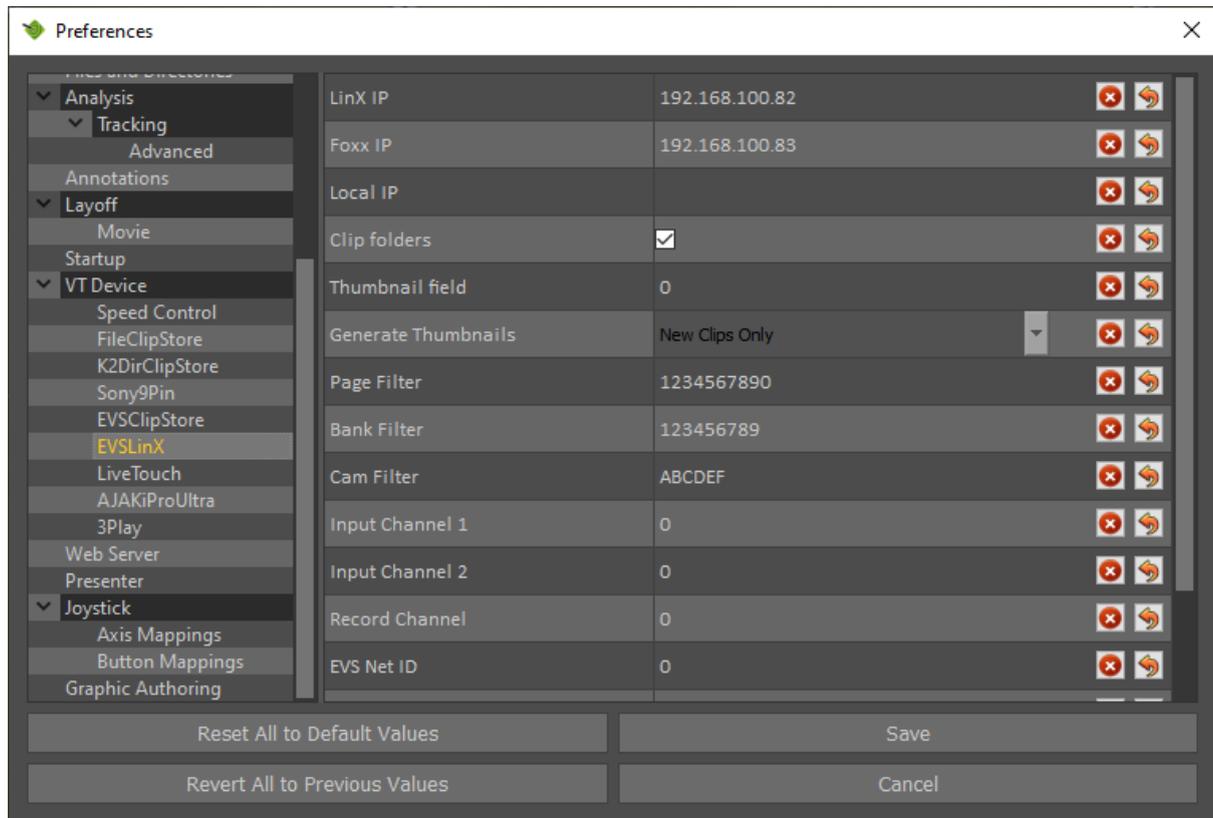
- Go to page T2.5 where you can set Odetics to parallel or exclusive.



- When you finished you can press Menu to quit the setup menu and the system will prompt to save the changes you have made. It is necessary in order to use these changes. Press Menu again if you are happy with your changes.



# EVSLinX



## Overview

The EVSLinX plugin is used to access and control clips stored on an EVS video server. Using the LinX protocol over network Tactic can control program and recording channels. Video streams are delivered over SDI.

## Main features

- Full Tactic VT control on up to 2 PGM channels on the EVS using LinX as a Main Controller.
- Monitor and control any 2 of the Recording trains at once in E2E mode on two separate Tactic input channels.
- Full Tactic VT control on any of the selected recording trains.
- Record back to an EVS recording train in real time including Tactic graphics and clip creation.
- Create a clip list with thumbnails in Tactic. Thumbnails are transferred from the EVS through Gigabit Ethernet via the Foxx protocol.

- Auto update Tactic's clip list in response to new clip creation and clip changes made on the EVS.

**NOTE: EVS only supports LinX on Windows operating systems.**

## Connections

In a typical configuration the connections and work-flow between Tactic and the EVS server would be as follows:

### Network connections

EVS Pc LAN socket	→	main Ethernet Network.
EVS Gigabit Ethernet socket 1 or 2	→	main Ethernet Network.
Tactic PC network socket	→	main Ethernet Network.

**NOTE: For efficient data transfer to grab thumbnails from the EVS, all the Ethernet Network infrastructure must have Jumbo Frames capability. See the [Setup Jumbo Frames](#) section.**

### Video SDI connections

EVS OUT-2	→	TACTIC IN-1
EVS OUT-3	→	TACTIC IN-2
TACTIC OUT-1	→	EVS IN-1

In this configuration Tactic can control two separate PGM channels on the EVS, build its own customized clip list from the clips that exist on the EVS server and create thumbnails for them by grabbing any 1 frame of the clips.

After building an analysis sequence in Tactic the clip can be recorded back to the EVS with the overlaid graphics, then Tactic will make a clip on the server at the specified time codes.

## Network connections on the Tactic PC

### LinX

The LinX protocol controls the EVS channels and connects to the PC LAN socket on the server.

## Foxx

Tactic uses an Ethernet network to transfer thumbnails from the EVS by a protocol called Foxx. It uses one of the Gigabit Ethernet sockets on the EVS server. The whole network infrastructure and the used network port on the Tactic PC need to support Jumbo Frames for fast transfer speed. Foxx can work without Jumbo Frames but the transfer gets considerably slower.

**NOTE 1: Jumbo Frames is not necessary for LinX.**

**NOTE 2: The Foxx thumbnail feature's availability depends on the Multicam version installed on the EVS. Contact support in case of any issue.**

## Local IP setting

If there are more than one physical, active network connection on the Tactic PC on the same subnet to the EVS network (for example, if you are using separate connections for LinX and Foxx) then it is possible that LinX cannot reliably detect which local connection to use. In this situation you can set the Local IP address in the Preferences menu to avoid this. This is the IP address assigned to the network port that connects to the EVS. Check the Windows network settings.

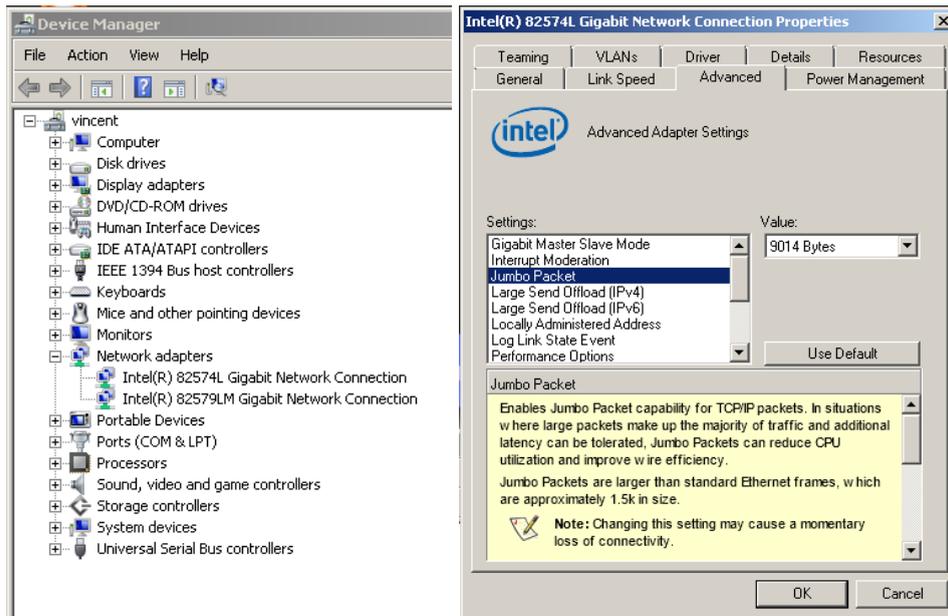
It is recommended, however, that you either use a single Jumbo Frame network connection or use 2 different subnets for the 2 connections.

## Setup Jumbo Frames

Method is based on a HP z820 PC:

- 1.) In Windows: open Device manager
- 2.) Double click on the used Network adapter
- 3.) Select the Advanced tab from the pop-up window
- 4.) Find Jumbo Packet in the list
- 5.) Set the largest value (9014 Bytes)

The Device manager and the Network adapter's pop-up window in Windows 7



## EVS configuration for LinX

This section will explain how to set up a working configuration for LinX by using the EVS Multicam 11.01.74 software interface. See the EVS documentation for further details.

1.) Open up the main configuration window.

This is the main window that appears after the EVS started up. If the Multicam is at the clip list view then you must exit by either pressing ALT+Q or by using the LSM Remote.

## Network connections

2.) To set the PC LAN port IP address:

- 1.) Select a configuration line at the left side of the setup window
- 2.) Press L
- 3.) Set the IP address, Subnet and Default gateway
- 4.) Press ENTER to apply

Main configuration window on EVS from Multicam 11.01.74

```

Multicam Setup 11.01.74 XT3-6U SN:112240
Configuration lines (ESC)
1. Custom
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15. LinXDiagnosticTool
16. LinXDiagnosticTool

Tools (F9)
I(m)port configuration lines
Ex(p)ort configuration lines
Assign server (f)acility name
Import/export (k)eyword files
E(x)port log files
(O)ptions codes management

PC Lan
IP Address 192.168.100.082
Subnet Mask 255.255.255.000
Default Gateway 192.168.100.001

ENTER : apply the new address
ESC : quit without saving

tion

Enable pass(w)ord for technical settings

Selected configuration summary
Mpeg2 Intra (HD) 100Mbps 1080i 50.00Hz
Multicam LSM 3in 3out 4 Monos

Server information
Genlock BAD
TC 15:41:52:24 LOST
LAN PC 192.168.100.82

Enter:Execute F8>Edit line CTRL+DEL>Delete line ALT+Q:Exit F1:Help

```

- 3.) To set the Gigabit Ethernet configuration:
  - 1.) Select a configuration line under the setup window
  - 2.) Press F8 then F3 for Advanced Mode
  - 3.) Navigate to the NETWORK window by pressing the RIGHT arrow on the keyboard
  - 4.) Press TAB several times to navigate to the IP settings
  - 5.) When finished press ALT+A to apply

NETWORK configuration window on EVS from Multicam 11.01.74

```

CONFIGURATION 15.LinXDiagnosticTool NOT RUNNING
1.SERUER 2.CHANNELS 3.NETWORK 4.MONITORING 5.PROTOCOL 6.GPI 7.OPERATION
1/1 Advanced Mode
SDTI
Speed Off
Net Name LDI
Net Number 21
Type Server
SDTI Priorities
High Priority PGM1 PGM2 PGM3
No No No
Gigabit Ethernet
Port 1 Port 2
IP Address 192.168.100.083 192.168.101.084
Subnet Mask 255.255.255.000 255.255.255.000
Default Gateway 192.168.100.001 192.168.100.002
ALT+A:Apply F3:Basic/Advanced Esc:Quit PgUp/PgDn:Change page F1:Help

```

## Setting up channels for LinX

4.) To set the channel configuration on the EVS:

1. Select a configuration line under the setup window
2. Press F8 then F3 for Advanced Mode
3. Navigate to the CHANNEL window by pressing the RIGHT arrow
4. Press TAB several times to navigate to the required line
5. Set Base config to Multicam LSM.
6. Set one of the RS422 ports to LinX.(This port will be used exclusively by LinX)
7. Set LinX as a Main controller on one or two OUT channels depending on how many channels Tactic will need to control.

NOTE: in Multicam LSM mode PGM1 and RS422 #1 have to be set to EVS Remote.

8. When finished press ALT+A to apply

CHANNELS configuration window on EVS from Multicam 11.01.74

1/7 Advanced Mode

<b>Base settings</b>		<b>Port settings</b>	
Inputs	3	RS422 #1	EUS Remote
Outputs	3	RS422 #2	Linx
Base config	Multicam LSM	RS422 #3	-----
SLSM Rec	None	RS422 #4	-----
3D	No	RS422 #5	-----
3G/Dual	No	RS422 #6	-----

**Channel and control settings**

	Name	Main ctrl	Sec. ctrl	Mode	OSD
OUT1	PGM1 PGM1	EUS Remote	-----		
OUT2	PGM2 PGM2	Linx	2 -----		
OUT3	PGM3 PGM3	Linx	2 -----		
IN1	REC1 REC1	EUS Remote	-----		
IN2	REC2 REC2	EUS Remote	-----		
IN3	REC3 REC3	EUS Remote	-----		

## Setup Tactic for LinX

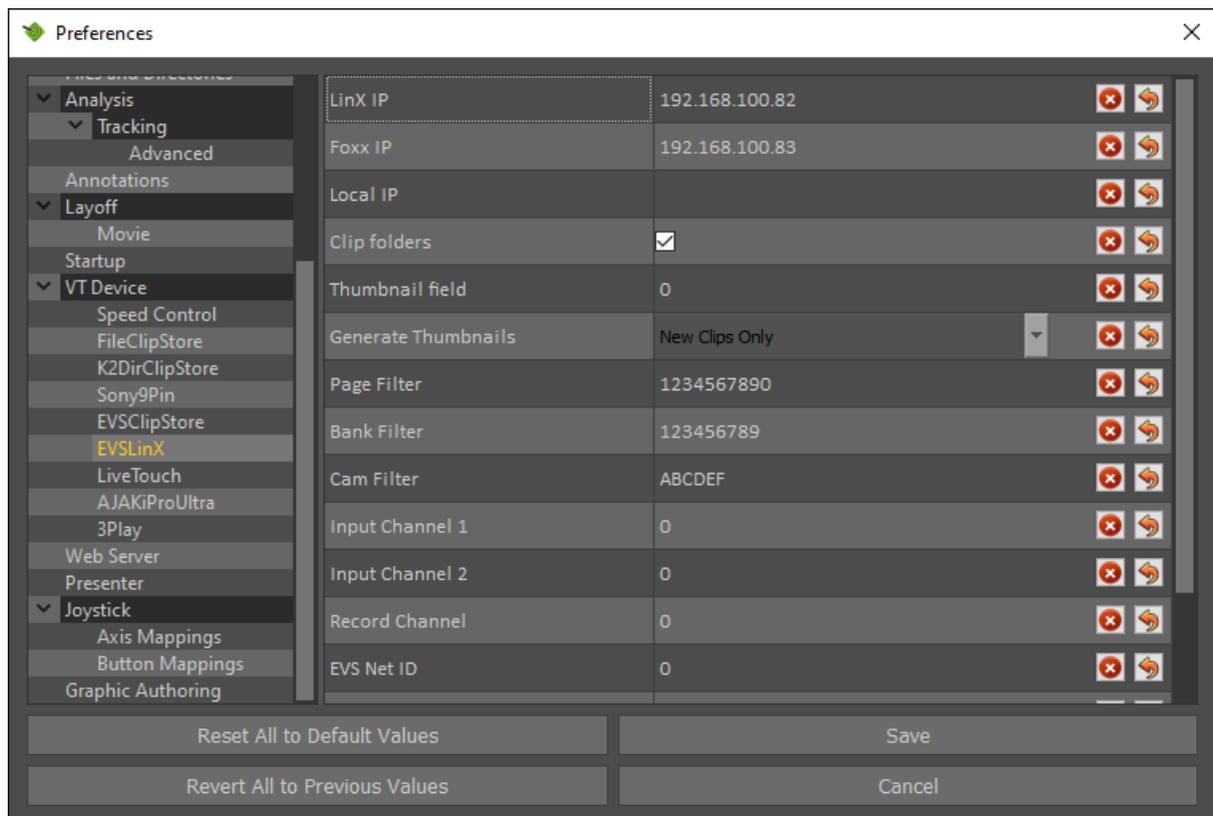
To open the EVSLinX plugin navigate to the Clip tab at the bottom left corner of the Tactic operator's interface and select EVSLinX in the "Clip Control Plugin" drop-down menu.

## Opening EVSLinX plugin for the first time

On selection of the EVSLinX plugin for the first time after installing Tactic the plugin will not be initialized correctly. The first item to set is the LinX IP address of the EVS server. See the [EVS Configuration for LinX](#) section to determine this address.

Once the LinX IP is set LinX will try to re-initialize and if successful Windows will prompt to allow network connection to the EVS server. This will have to be authorized through a Windows pop-up dialogue.

Until LinX is configured correctly Tactic will repeatedly attempt to open the communication channels used to communicate with the EVS. This will result in various error messages appearing on the Tactic debug window until successful connection. See LinX debug output for further details.



**LinX IP:** PC LAN connection IP address set on the EVS server for LinX.

**Foxx IP:** Gigabit Ethernet IP address set on the EVS for Foxx thumbnail transfer

**Local IP:** This has to be set if there are more than one active network ports on the Tactic PC. Set this to the IP address of the network port that is connected to the same network as the PC LAN port on the EVS.

**Clip folders:** Thumbnails will be organized into directories according to the assigned KEYWORDS in the clip. See the Custom Clips section for more details.

**Thumbnail field:** The field number in the EVS clip from which thumbnails will be created.

## Generate Thumbnails:

**All Clips:** make a thumbnail for every clip in the built clip list.

**New Clips Only:** going through the clip list for each clip Tactic looks for a matching thumbnail file of the correct format in the Thumbnails directory. For every file that is missing, Tactic will grab a thumbnail.

**No:** no thumbnails will be transferred. Tactic will still look for existing thumbnails in the Thumbnails folder and use them or set a default blank thumbnail for the clip.

**Page Filter:** Include only these page numbers (0-9) when updating the clip list.

**Bank Filter:** Include only these bank numbers (1-9) when updating the clip list.

**Cam Filter:** Include only these camera inputs (A-F) when updating the clip list.

**Input Channel 1:** Set EVS OUT channel (1-6) that is connected to Tactic video IN 1.

**Input Channel 2:** Set EVS OUT channel (1-6) that is connected to Tactic video IN 2.

**Recording channel:** Set EVS recording train (1-6) from which the clips will be created.

**EVS Net ID:** This will be 0 if the EVS server to which Tactic is connected is the very same server that Tactic needs to control.

If the EVS server of interest is NOT the local server but one in a network chain of servers then set the target EVS server Net ID (1-99).

Please see the EVS documentation for further explanation on EVS server networks.

**Automatic Updates:** Default to false. Automatically update Tactic clip list with changes made on the EVS regarding add/remove/rename clips.

**Show OSD:** Outputs text information on Linx channels the same way the Main channel

does. Clip name, Timecode, etc..

# Using the EVSLinX plugin

## Build clip list

Clip list is always built and updated based on the Page, Bank, Cam filter settings in preferences.

To import the clip list, click on the Refresh Clips icon



## EVSLinX debug output

Successfully initialized LinX with 2 PGM channels and one recording channel. LinX is configured to control through RS422 port-2 on the EVS.

```
Mon Apr 29 13 12:17:46.077: LinX - Opening EVSLinX plugin.
Mon Apr 29 13 12:17:46.097: LinX - Initialized OK
Mon Apr 29 13 12:17:46.111: LinX - IP connection: OK
Mon Apr 29 13 12:17:46.155: LinX - Control Port 2: connected
Mon Apr 29 13 12:17:46.216: LinX - Management channel: connected
Mon Apr 29 13 12:17:46.268: LinX - Database channel: connected
Mon Apr 29 13 12:17:46.292: LinX - Syncing Database: OK
Mon Apr 29 13 12:17:46.298: LinX - Clips in Database: 20
Mon Apr 29 13 12:17:46.317: LinX - EVS-OUT2 -> tOG-IN1 connected
Mon Apr 29 13 12:17:46.335: LinX - EVS-OUT3 -> tOG-IN2 connected
Mon Apr 29 13 12:17:46.353: LinX - tOG-OUT1 -> EVS-IN1 connected
```

---

## Channel connection error

“LinX - A player channel must be set to load clips. Set Input Channel 1 or 2 to the configured LinX port.”

- No channels are set on both Input channel 1 and 2.

---

“LinX - connecting EVS-OUT1 -> TACTIC-IN1 failed.”

“LinX - connecting EVS-OUT4 -> TACTIC-IN2 failed. Error: Error during open access”

- Channels settings are incorrect. Failed to connect EVS PGM1 and PGM4 to Tactic. Check EVS configuration whether LinX is set to control these channels or change Input channel 1 and 2 to different EVS channels.
-

## Time code error

"LinX - Failed to get time code Error: Bad channel type"

1) Didn't set Input channel 1 and 2.

2) Only either Input channel 1 OR 2 is set correctly but the VT Control channel selector is on the wrong channel.

---

## Lost network connection

"LinX - Failed to get timecode Error: A time-out occurred"

"LinX - Lost IP connection. Error: Connect error. Trying to re-open EVSLinX plugin."

"LinX - IP connection failed. Error: A time-out occurred"

- All these messages suggest that you have lost the network connection to the EVS. If the error message keeps appearing in a constant rate it means your connection is permanently off.

Every time the connection is lost Tactic will try to re-initialize the plugin.

---

"LinX - Database connection failed."

"LinX - Syncing Database failed."

- When the database connection or synchronization fails but the IP connection is fine it means the database management was busy at the time and Tactic will try to re-open the connections.

## EVSClipStore vs EVSLinX

This table collects the main technical differences between EVSClipStore and EVSLinX plugins. This is to help decide which plugin may work better for a particular production.

	EVSClipStore	EVSLinX
<b>Connections</b>		
<b>Tactic control over EVS</b>	serial cable + rs422 converter or USB-Rs422	LAN via main Ethernet network
<b>Tactic video I/O</b>	SDI via video I/O boards	SDI via video I/O boards
<b>Clip thumbnail transfer to Tactic</b>	via SDI	via network by Foxx protocol
<b>EVS setup</b>		
<b>EVS channel occupation</b>	can be set as secondary controller on any EVS player channels, working in parallel with an LSM control.	Needs to occupy a whole EVS channel, taking exclusive control over it. (This is under review by EVS)
<b>Compatibility</b>	Requires Odetics protocol being available on the server. It's an old protocol so very much available and compatible to old servers and Multicam too.	- requires Multicam 11.47 + - requires network Multicasting capabilities for Clip List Auto Update - Jumbo Frames compatibility on the entire network infrastructure is desirable for Foxx thumbnails
<b>Tactic Features</b>		
<b>Making clips from Tactic output onto EVS (record+clip)</b>	only manually via LSM	via Tactic interface with precise TC
<b>Clip List Auto Update</b>	no support	Tactic Clip List is managed by a regularly synced database. Any changes made on the EVS will appear in Tactic too.

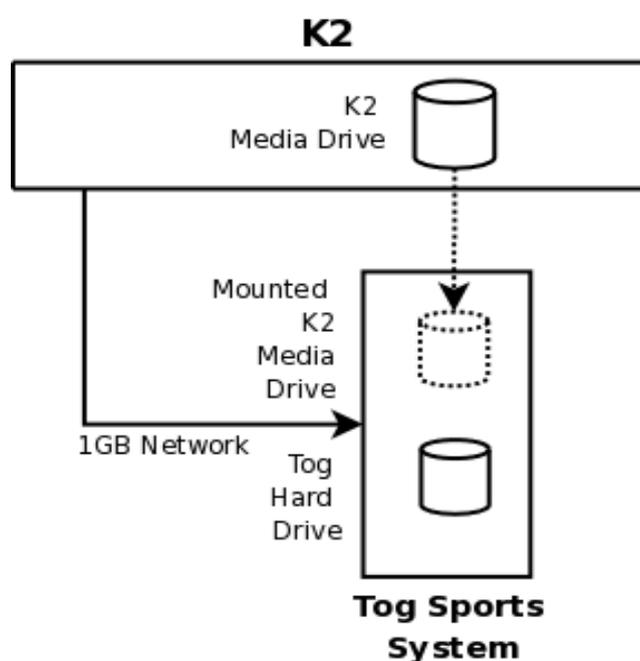
<b>Clip List thumbnails</b>	Requires exclusive control over one EVS channel, temporarily. For every thumbnail: - Tactic loads a clip on EVS - records the first frame onto disk via SDI input - scales the picture to thumbnail size - Takes 1-1.5 sec each	All in the background and also occurs for each Auto Update. - Tactic starts an app that's utilising Foxx. - grabs a full size video frame from required clip via network - scales the picture to thumbnail size - Takes 0.3-0.8 sec each
<b>Channel ganging</b>	no support	2 channels can be controlled simultaneously via frame accurate ganging
<b>E2E - Eject (controlling LIVE recording trains)</b>	Repeated eject-clicks cycle Tactic through the channels. No indication of which channel is controlled.	Repeated eject-clicks cycle Tactic through the channels. Current channel is indicated under Clip List at "Clip Name".

# K2 DLC

## System Overview

This guide is to provide a systems operators, support staff and engineers in the setup, configuration and operation of the K2 Video Server using DLC (Distributed Lan Client) to provide clip information for Tactic direct from a K2 Summit/Solo or San system. The connection between the Tactic system and K2 is network based and utilises a DLC client/server mechanism called Storenext by Quantum. The diagram below illustrates the system architecture.

K2 DLC System Architecture



The principle behind the connection is basic file sharing. The media drive on the K2 is shared and is mounted onto the Tactic system. The DLC client provides a file system called CVFS or SNFS to allow this to be done.

## Requirements and Warnings

There are a number of requirements to allow network mounted clip playback using SNFS/DLC. These are

- 1) SNFS/DLC with the K2 is not guaranteed to be real time in all situations. There is a finite amount of bandwidth available on the K2 and if this is being shared with SAN backup, DynoPA, Proxy control then your playback may not be in

realtime. You can still play and record back to the DLC and the completed clips will be real time. But if you are trying to play direct to air you should fully test your K2/Tactic setup beforehand.

- 2) Ensure you have JumboFrame support enabled on your network NIC's If you do not you will not get the optimum performance and you will increase the chance of dropping frames.
- 3) Ensure you have Reference clips enabled on the K2. Otherwise, all clips without reference mov files will appear as directories in Tactic.
- 4) Ensure you are using the correct version of the SNFS Client for the K2 you are connecting to. RTSoftware does not supply the SNFS Client for this feature. If you require this then you should contact either GrassValley or Quantum.

## Connection

The connection between the K2 and the Tactic system relies on a 1Gb network link. The network connections assume that network access is configured on both systems. It will also depend on whether you are running a DHCP server or not. If you are not running DHCP you will have to manually assign an IP address to the Tactic system.

The network cable should be connected to the Tactic system using the lower of the 2 network ports on the back of the machine (usually labelled ASF). You should have been supplied with a DLC.zip file that contains installers for Windows. It also contains this document as well as other docs for Windows configuration.

## Windows Installation and Configuration

This guide does not cover the installation of the DLC client for Windows systems. This is extensively covered in the DynoPA system guide – PA\_v2.0\_ConfigMan.pdf

You will find this in the DLC.zip you should have obtained. The docs and installers are located in the Windows directory of the zip file.

## Troubleshooting the K2 DLC

If you cannot successfully connect to the K2 you should check that the K2 is configured correctly. Check the following

1. Ensure you have entered the correct information into the Tactic system configurations files
2. Can you ping the K2 Open a Dos and type

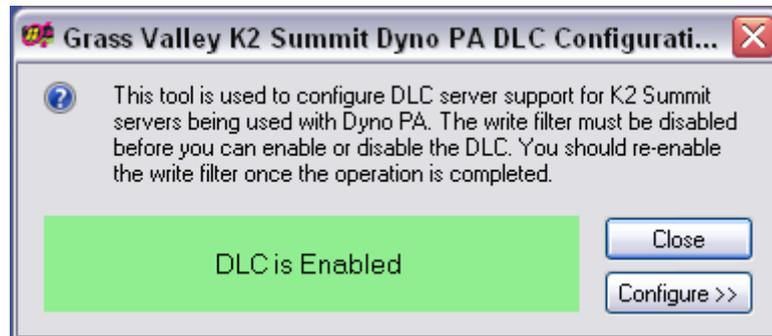
ping <hostname of IP address>

The K2 should respond:

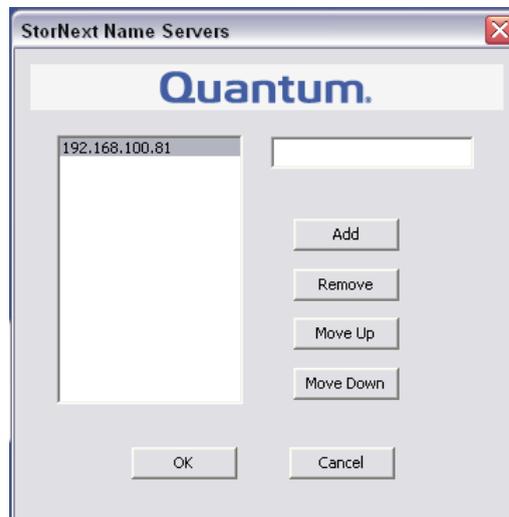
64 bytes from k2control.rtsw.co.uk (192.168.100.81): icmp\_seq=1 ttl=128 time=0.090 ms

3. Is DLC enabled and running on the K2? On the K2 desktop, goto System->All Programs->GrassValley->DLC Config->Launch DLC Tool.

If this is not there then DLC has not been installed. If it is, run it and check that DLC is running. If DLC is not running consult GV docs on how to start.



4. Is the correct nameserver IP address entered? Run AllPrograms->StoreNext FileSystem->NameServers. The IP Address of The K2 should be configured. If it is wrong, delete the entry and type in the correct one. Note that you will need to disable the Write Filter to make permanent changes thru reboots. Check K2 docs for more info.



5. Is the Name binding correct? Open up the Network Setting dialogue.

Open up Network connections on the K2. Select 'Advanced Settings' from the Advanced menu at the top of the dialogue.

6. Ensure that the 'Control Team' is at the top of the binding list and that 'Loopback Adapter' is at the bottom. Use the arrow keys at the side to change.

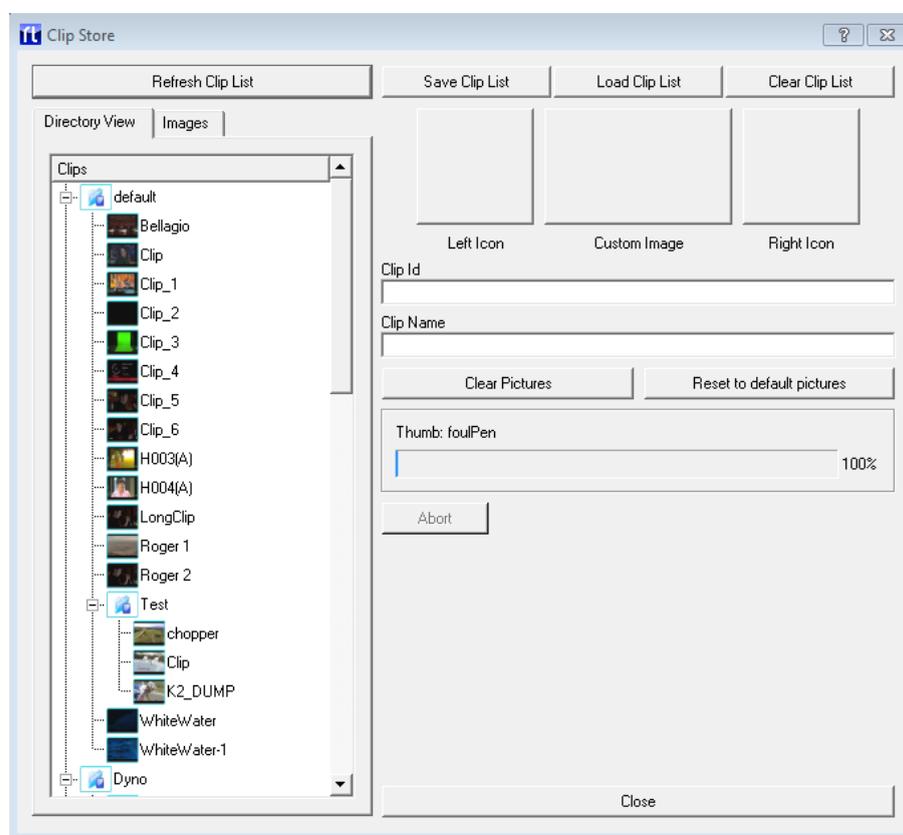
# Clip Browsing

Via Clip Plugins, Tactic provides the ability to browse through clips on a video server device, and to command the device to load those clips for further operation.

For this the Clip List has to be populated. Furthermore the list can be customized and edited in many ways that will be explained in this section.

To start, press F6 to bring up the Clip Store dialog while the main Tactic interface is in view:

Clip Store showing clips on a K2



## Querying Clips

The clip list will be empty by default. To query the clips on the device: Click Refresh Clip List and wait for the operation to complete.

NOTE: Serial based protocols will take much longer to complete than network protocols, as thumbnails must be grabbed by putting the clip to output on the device, and then screen grabbing it. It is recommended to keep the number of clips on the device small (<20) when using serial based protocols.

## Editing the clip list

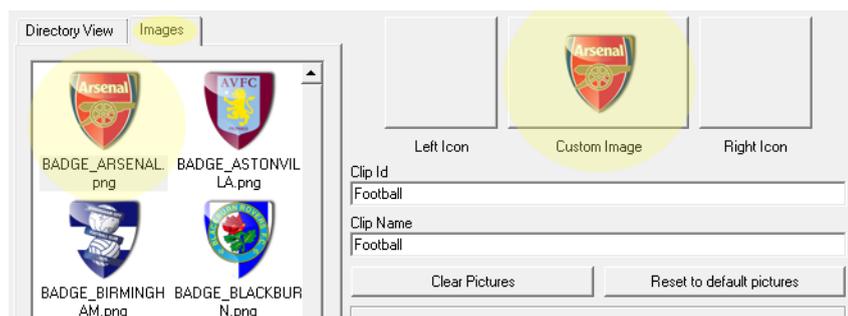
Once you have grabbed the clip list, you can use the Clip Store dialog to edit clip names, directory icons and clip icons.

The Directory View gives you a list of all directories and clips available on the device. By clicking on a directory or clip, the details for that clip will appear on the right-hand side of the dialog.

# Editing Directory Icons

- Click on the directory that you wish to edit. 
- To clear an existing icon, simply click on the icon button you wish to delete.
- To drop a new image onto the icon, drag it from the images tab on the left, onto the icon space you want to drop it on.

Edit an icon in Clip Store



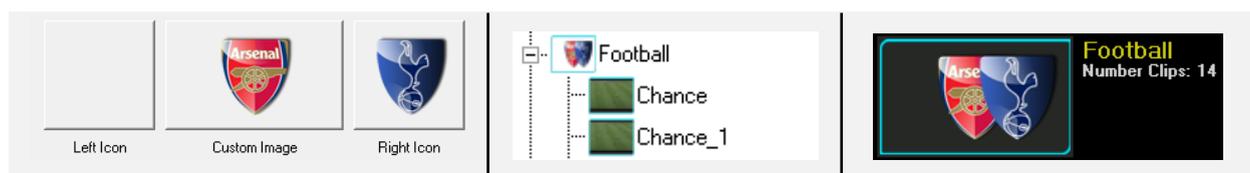
- Click Clear Pictures to clear out all icons for this directory.
- Click on Reset to Default Pictures to reset the icons for this directory to the original ones.

The directory icon is constructed from 3 separate icons. You may specify as many or as few of these as you want.

Icon editor

Clip Store view

Clip List view



The left and right icons appear offset to the left and right side of the button, in front of the custom image. The custom image sits centrally on the button.

# Editing Clip Icons

Clip icons work similarly to directory icons:

- Select a clip in the Clip Store clip browser
- Drop an icon from the image browser onto the Custom image box.

**NOTE: in this case you may only edit the custom image - the left and right icons are not available.**

## Editing Clip Names

- Select the clip that you wish to edit from the Directory View
- On the right hand side, click on the Clip Name, and type in a new name.

**NOTE: You cannot edit Directory names, or Clip Id-s.**

## Saving and Loading Clip Lists

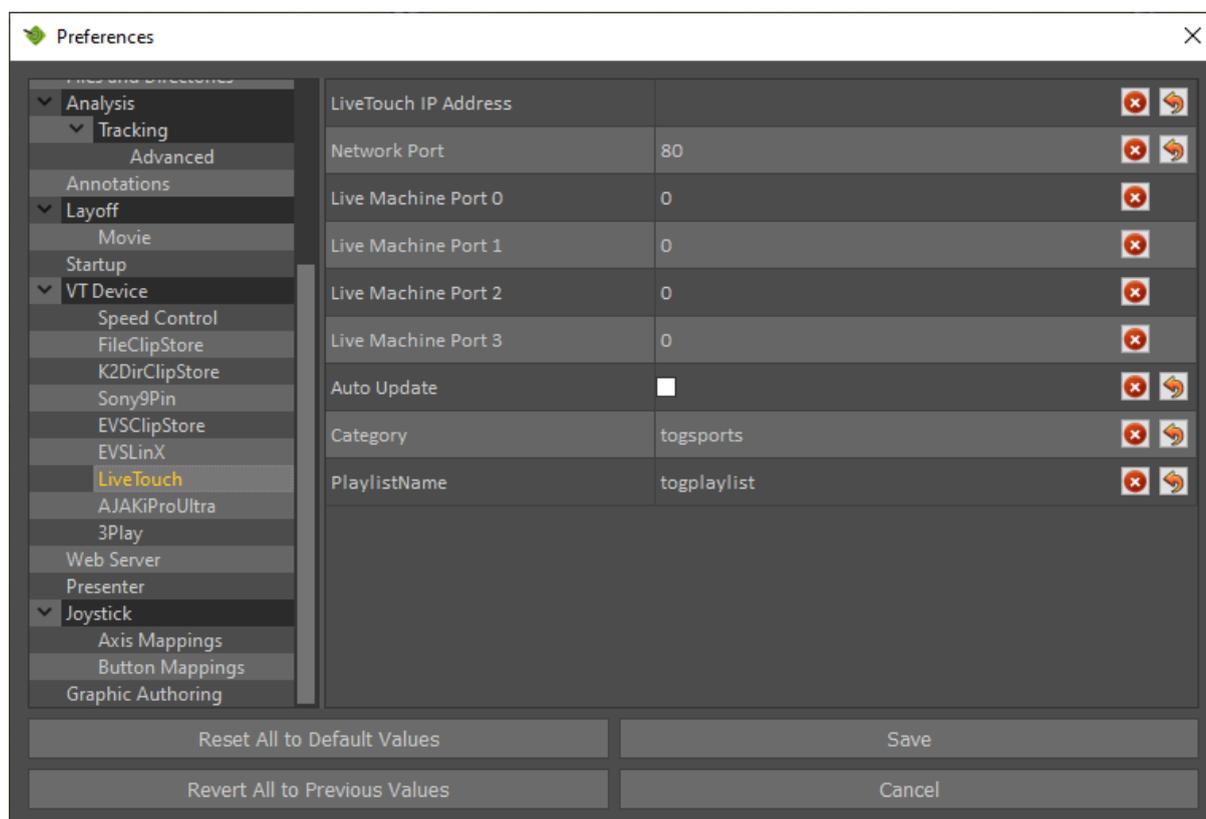
You can save your customisations to disk. When you do this, the last customisation saved will be loaded the next time you start Tactic.

In this way, you can pre-prepare a clip list with the customisations you require.

- Click the Save Clip List button to save your clip list

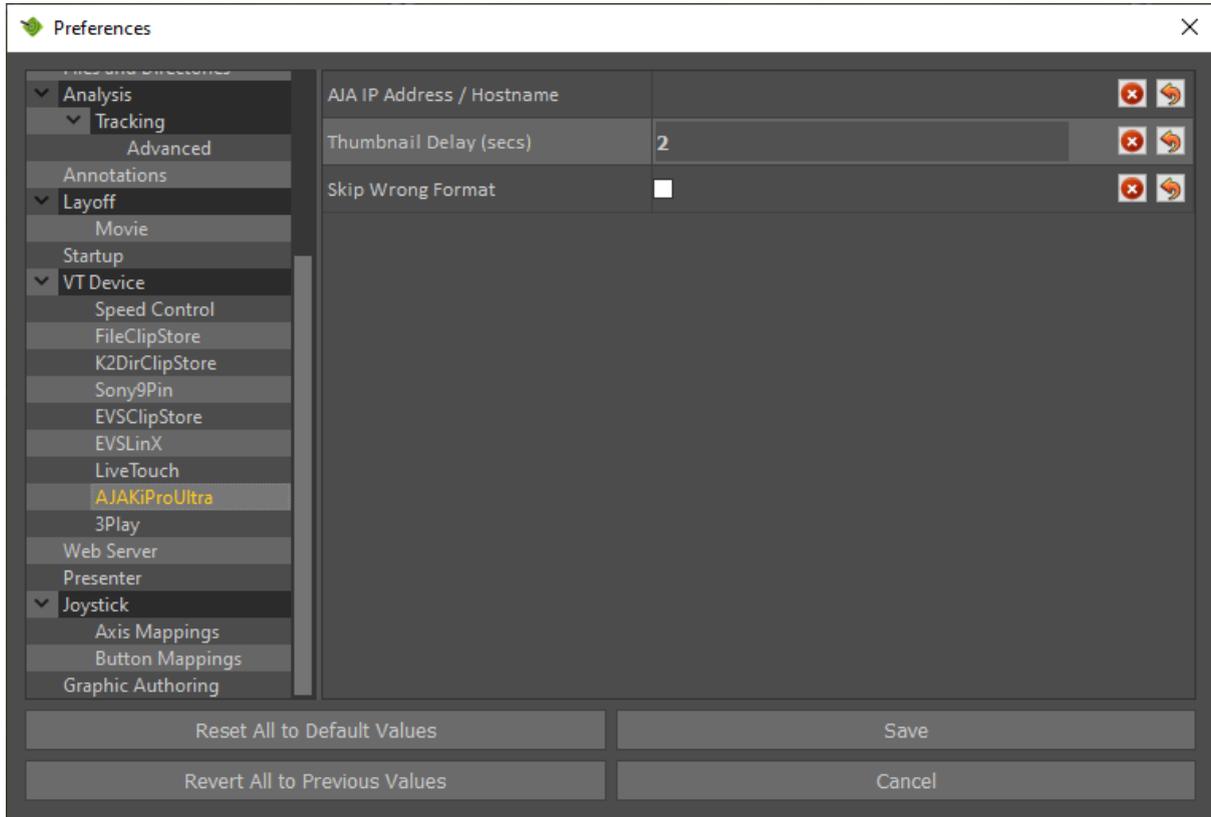
Click the Load Clip List button to load an existing clip list.

# LiveTouch



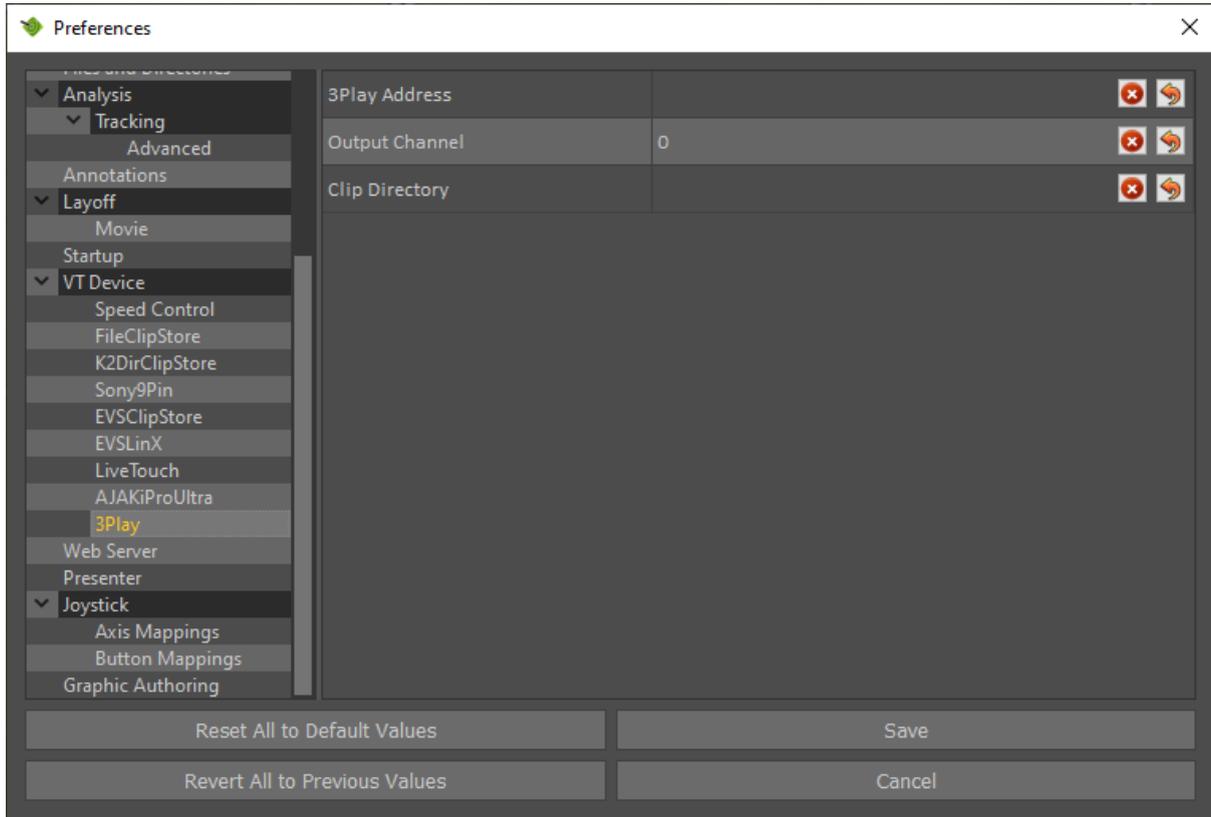
**NOTE:** Restart Tactic for any changes to take effect.

# AJAKiProUltra



**NOTE:** Restart Tactic for any changes to take effect.

# 3Play



**NOTE:** Restart Tactic for any changes to take effect.

# Presenter

**Presenter File:** Default location of Presenter interface

**Presenter Page:** Default Blank

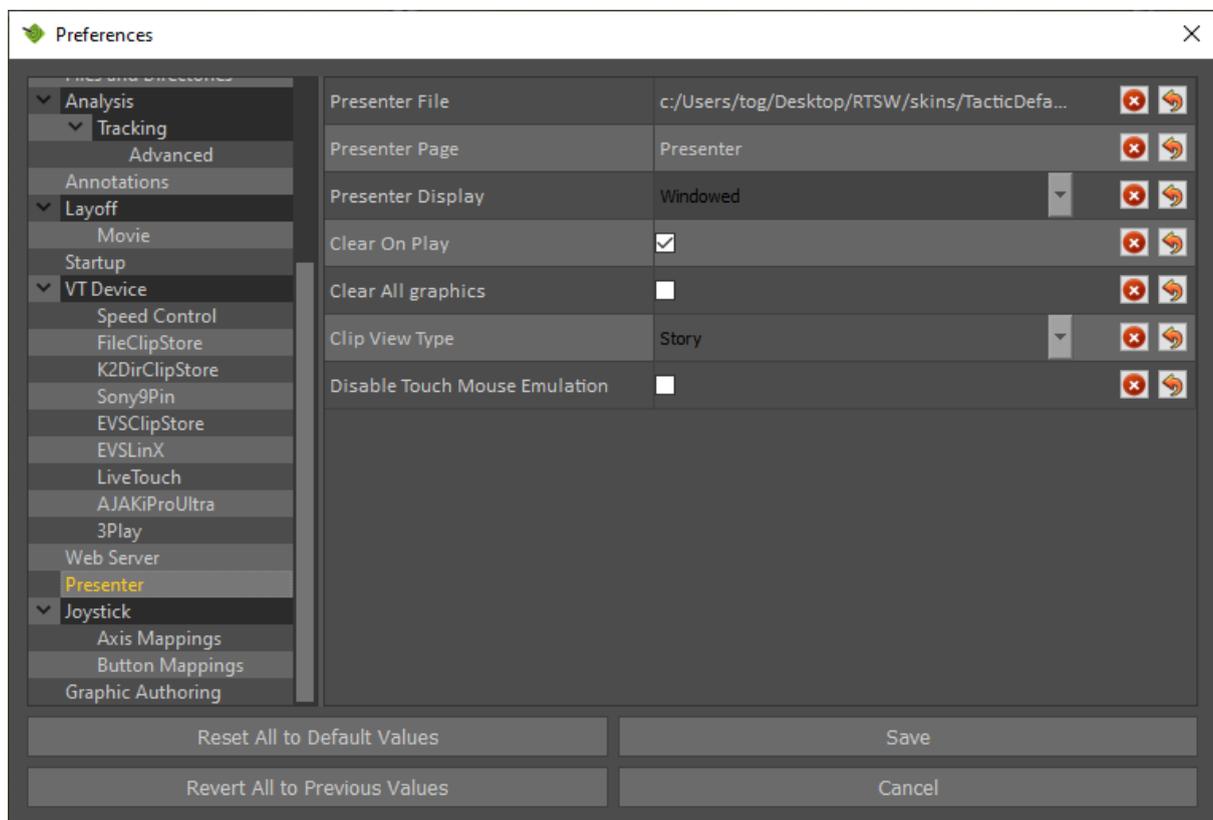
**Presenter Display:** Default Windowed

**Clear On Play:** All graphics automatically clear when video clip plays

**Clear All graphics:** Default Off

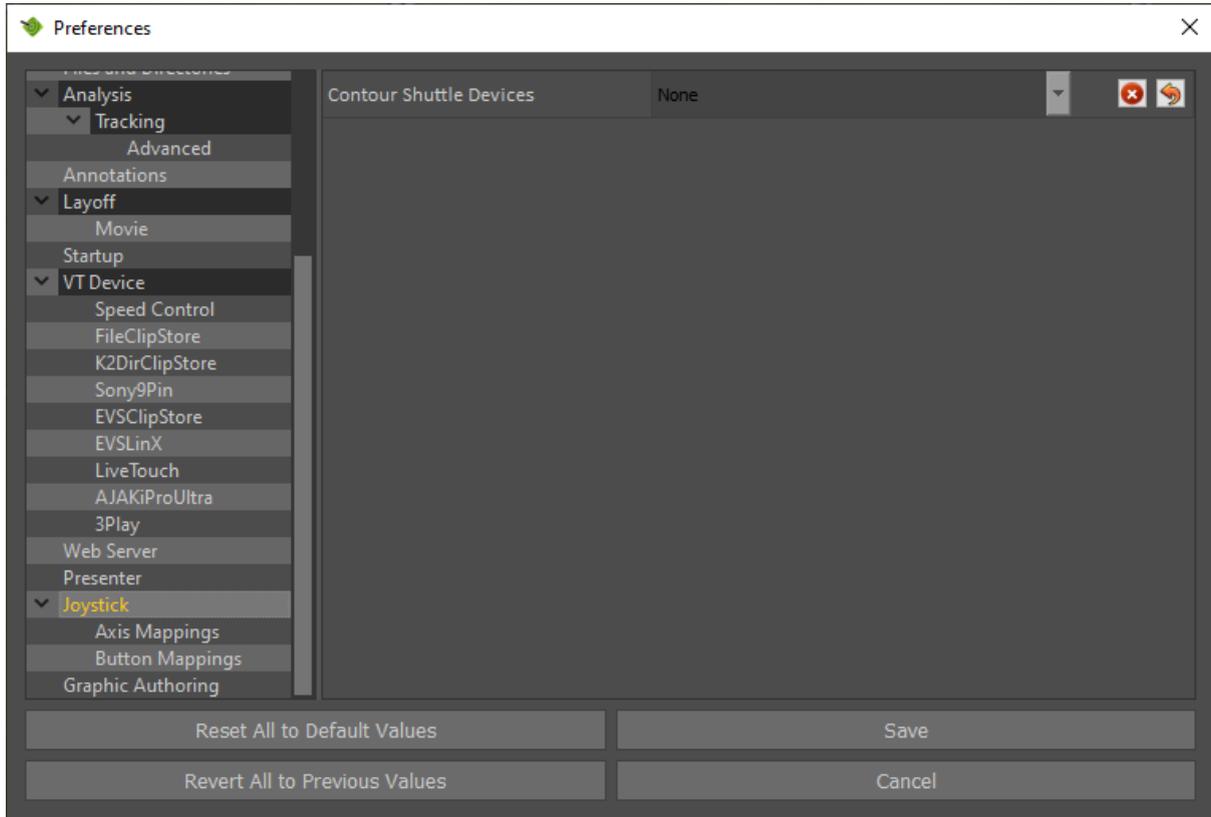
**Clip View Type:** Clips/Bookmarks/Story

**Disable Touch Mouse Emulation:** Default Off



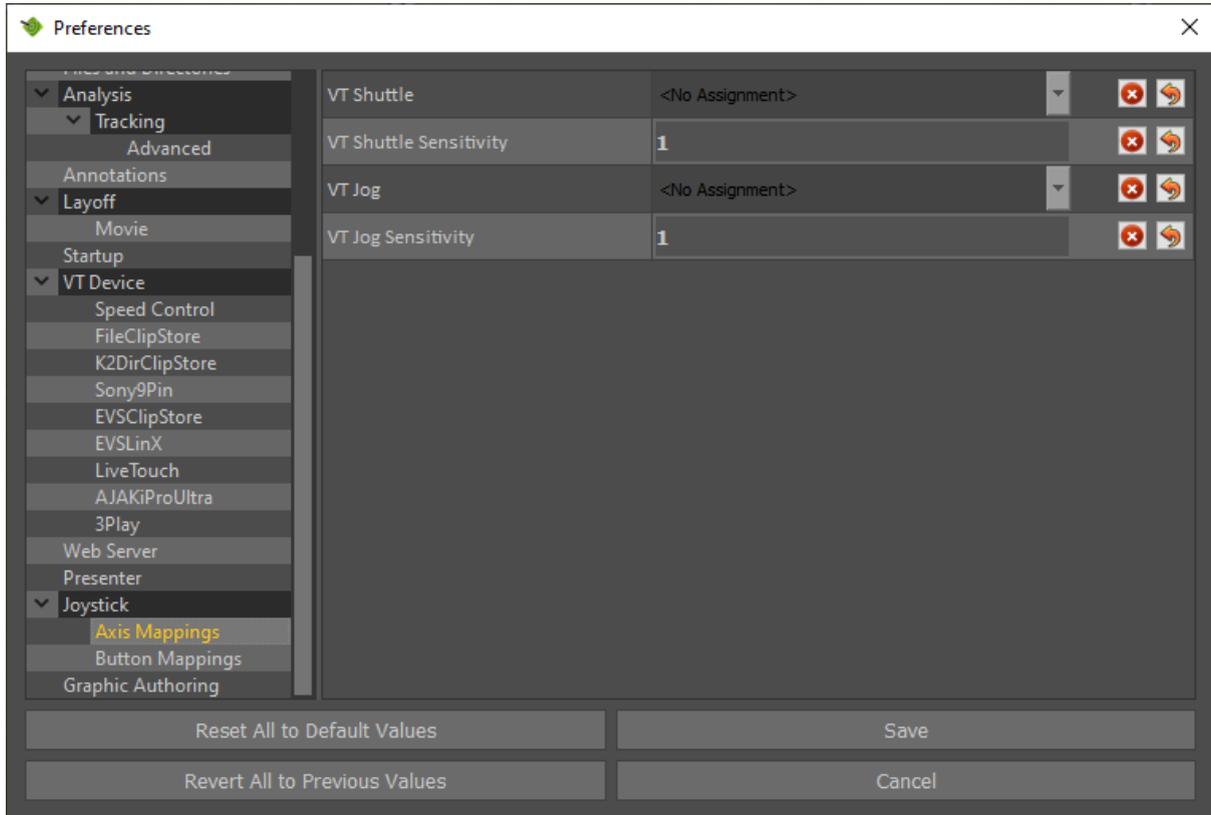
**NOTE:** Restart Tactic for any changes to take effect.

# Joystick



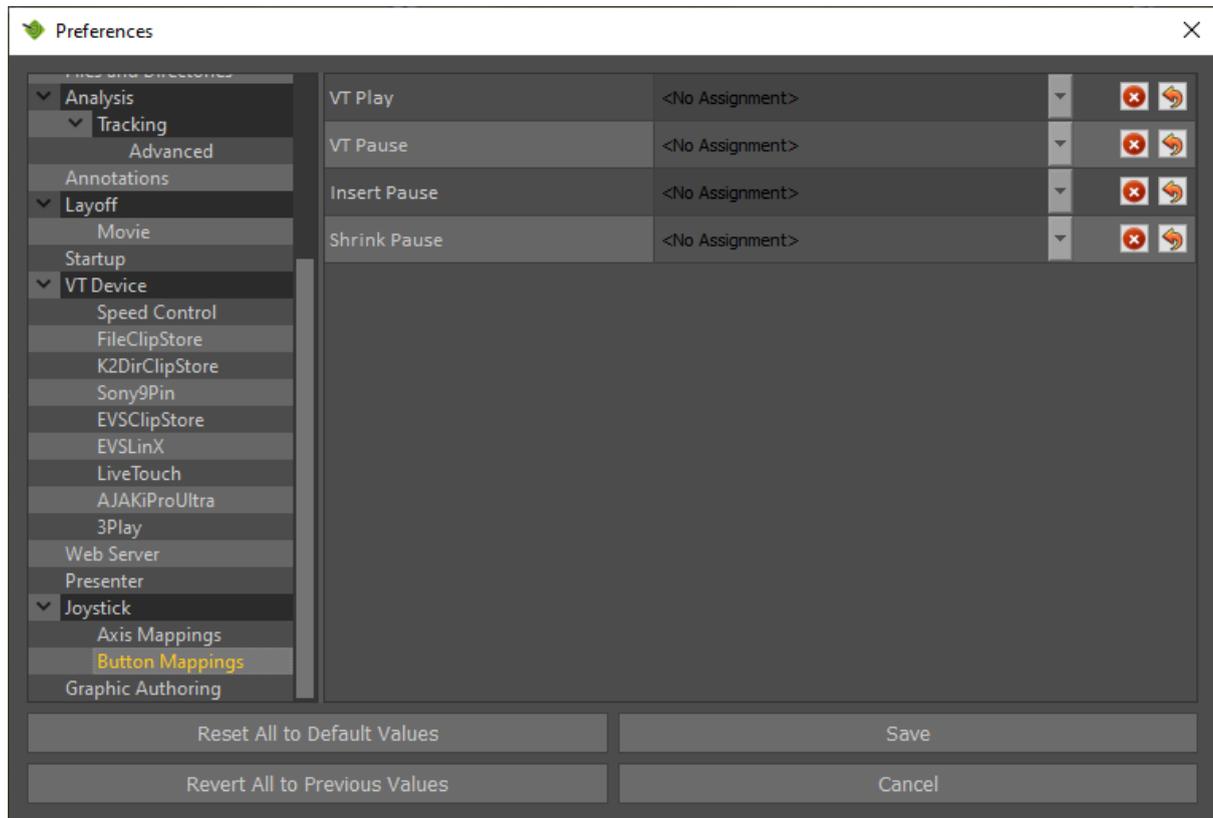
**NOTE:** Restart Tactic for any changes to take effect.

# Axis Mappings



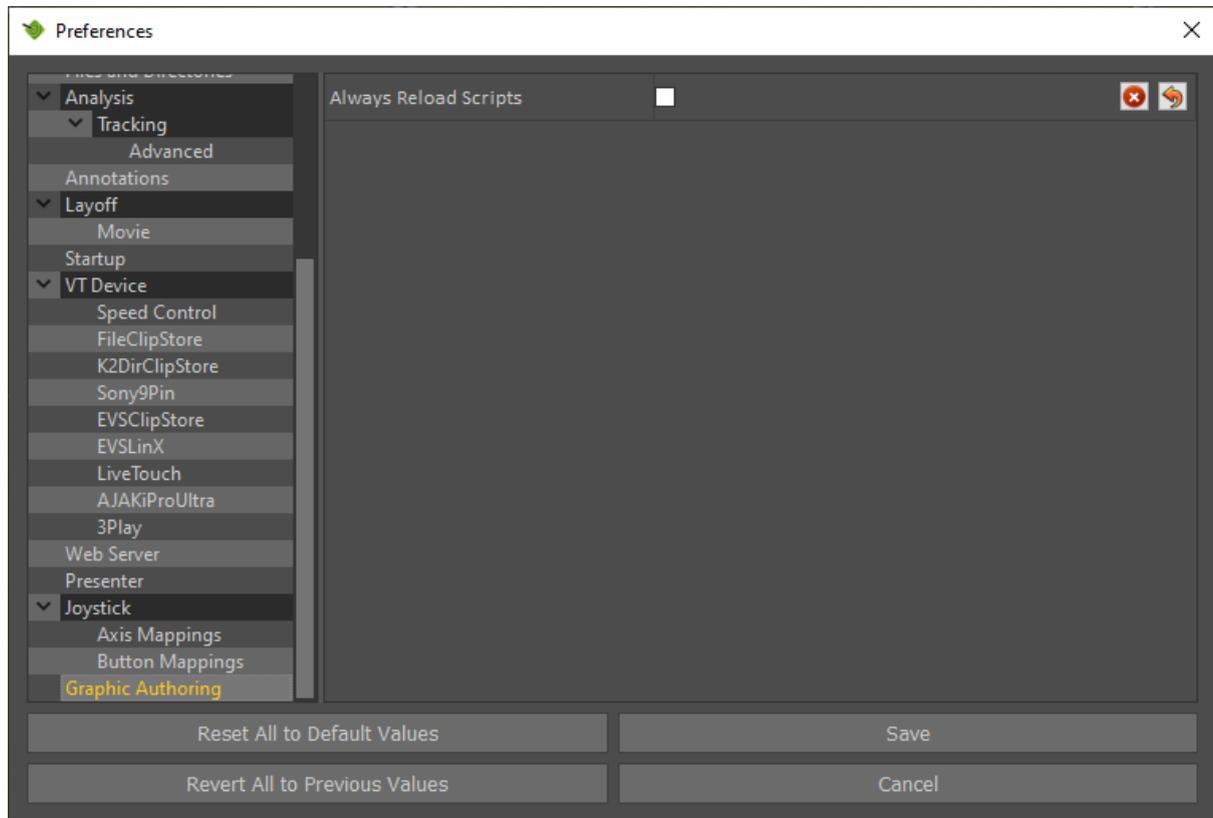
**NOTE:** Restart Tactic for any changes to take effect.

# Button Mappings



**NOTE:** Restart Tactic for any changes to take effect.

# Graphic Authoring



**NOTE:** Restart Tactic for any changes to take effect.

# Appendix B - Keyboard Shortcuts

"F5"	<a href="#">Presenter</a> interface
"F6"	Refresh Clips listed in the <a href="#">Clip Browser</a>
"F12"	<a href="#">Clear Analysis</a>
"1"	Camera 1 (Multicam)
"2"	Camera 2 (Multicam)
"3"	Camera 3 (Multicam)
"4"	Camera 4 (Multicam)
"9"	<a href="#">Set the In Timecode</a> of the currently selected graphic(s)
"0"	<a href="#">Set the Out Timecode</a> of the currently selected graphic(s)
"_"	Copy Previous Keyframe
"="	Copy Next Keyframe

“R” Animates out the currently selected graphics at the end of the current pause. If no pause exists, one is created.

“T” Trim automatically sets the [Mark In and Mark Out Timecodes](#) to before (pre-roll) and after (post-roll) the graphics in the timeline.

The pre-roll and post-roll times are configurable in [Preferences > Analysis](#)

“I” [Mark In](#)

“O” [Mark Out](#)

“P” [Preview](#)

“Ctrl” + “P” [Record](#)

“[” Previous Keyframe / Event

“]” Next Keyframe / Event

“A” Select linked Graphics

“Ctrl” + “S” [Save Analysis](#)

“Ctrl” + “Shift” + “S” Save Analysis As

“J” [VT Play Backward](#)

“K” [VT Pause](#)

“L” [VT Play Forward](#)

“,” [Insert Pause](#)

“Ctrl” + “,” [Shrink/Delete Timed Pause](#)

“Shift” + Left Mouse Select Multiple Keyframes

“Ctrl” + “Z” Undo

“M” Toggle Motion Paths

“,” [VT Step/Jog Backward](#)

“.” [VT Step/Jog Forward](#)

“/” Animate Off

“Alt” + Left Mouse Tumble Camera

“Alt” + Middle Mouse Track

“Alt” + Right Mouse Dolly

“Spacebar” Cue Graphic

# Keyboard Shortcuts (Windows)



**Tactic** Advanced 5.4.x Win shortcuts

■ General Shortcuts  
■ VT Shortcuts

<b>Esc</b> Cancel Selected Graphic	F1	F2	F3	F4	F5 Presenter Interface	F6 Refresh Clips	F7	F8	F9	F10	F11	F12 Clear Analysis	PrtScr	Scroll Lock	Pause	
1	2	3	4	5	6	7	8	9 Graphic Inpoint	0 Graphic Outpoint	- Ctrl+ Copy Previous Keyframe	= Ctrl+ Copy Next Keyframe	Backspace	Insert	Home	PgUp	
Tab	Q	W	E	R Remove Graphic at End of Pause	T Trim Clip	Y	U	I Mark In	O Mark Out	P Preview Ctrl+ Record	[ Previous Keyframe / Event	] Next Keyframe / Event	Delete Removes Selected Graphic	End	PgDw	
Caps Lock	A Select Linked Graphics	S Ctrl+ Save Analysis Ctrl+Shift+ Save As	D	F	G	H	J VT Play Backward	K VT Pause	L VT Play/Play Forward	; Insert Pause Ctrl+ Shrink Timed Pause	'	Enter				
Shift +LMB Select Multiple Keyframes	Z Ctrl+ Undo Alt+ Zoom in Pitch Caliber	X	C	V	B	N	M Toggles Motion Paths	. Step / Jog Backward	/. Step / Jog Forward	/. Animate Off	Shift +LMB Select Multiple Keyframes					
Ctrl	Win	Alt +LMB Tumble Camera +MMB Track +RMB Dolly	Spacebar Duo-Graphic									Alt Gr	Win	Menu	Ctrl	

+Mouse Wheel Zoom

# Keyboard Shortcuts (MacOS)



**Tactic** Advanced 5.4.x *Mac shortcuts*

- General Shortcuts
- VT Shortcuts

<b>Esc</b> Cancel Selected Graphic	F1	F2	F3	F4	<b>F5</b> Presenter Interface	<b>F6</b> +fn Refresh Clips	F7	F8	F9	F10	F11	<b>F12</b> +fn Clear Analysis	Eject
§	1	2	3	4	5	6	7	8	9 Graphic Inpoint	0 Graphic Outpoint	- Cmd+ Copy Previous Keyframe	= Cmd+ Copy Next Keyframe	Backspace Removes Selected Graphic
Tab	Q	W	E	R Remove Graphic at End of Pause	T Trim Clip	Y	U	I Mark In	O Mark Out	P Preview Cmd+ Record	[ Previous Keyframe / Event	] Next Keyframe / Event	Enter
Caps Lock	A Select Linked Graphics	S Cmd+ Save Analysis Cmd+Shift+ Save As	D	F	G	H	J VT Play Backward	K VT Pause	L VT Play / Play Forward	; Insert Pause Cmd+ Shrink Timed Pause	'	\	
Shift +LMB Select Multiple Keyframes		Z Cmd+ Undo Alt+ Zoom in Pitch Calibr.	X	C	V	B	N	M Toggles Motion Paths	, Step / Jog Backward	. Step / Jog Forward	/ Animate Off	Shift +LMB Select Multiple Keyframes	
fn	Ctrl	Option +LMB Tumble Camera +MMB Track +RMB Dolly	Cmd	Spacebar Cue Graphic				Cmd	Option		←	↑	→

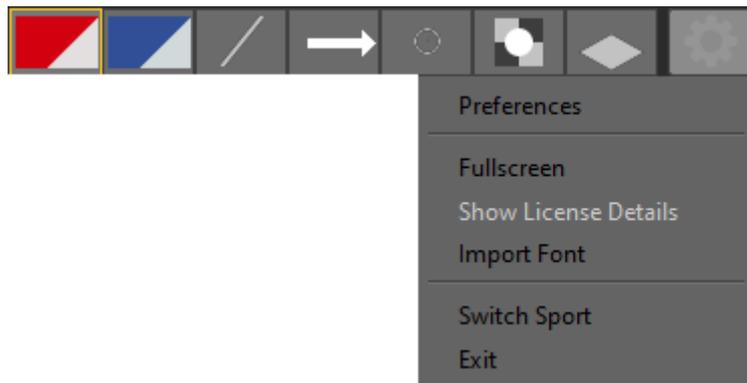
+Mouse Wheel Zoom

# Appendix C – Licensing

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## Licence Details

Select the “gear” icon in the top right corner and select “Show License Details” ...



Exact License Details will be specific to the version and features of Tactic Pro purchased.

**License Details** ? X

Current Time: Thu Jan 30 14:19:35 2020

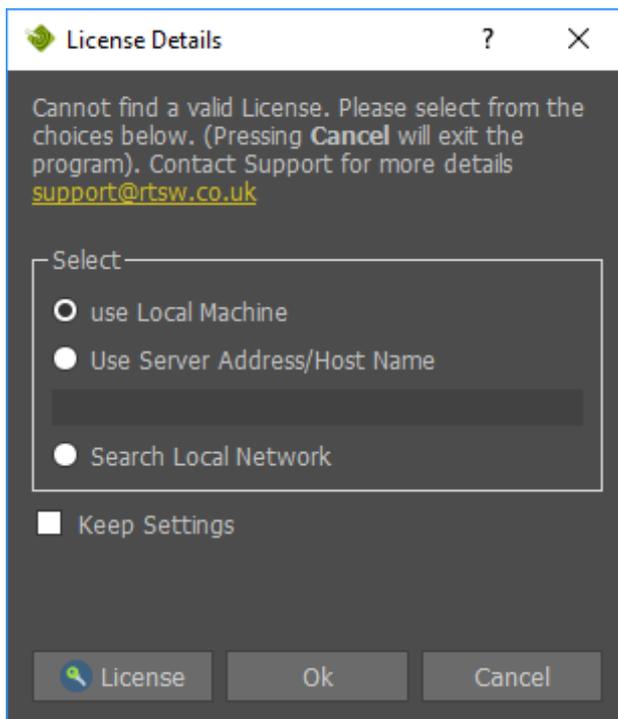
Device ID: 0x2fc

Product:

Feature	Status
HEARTBEAT	PERPETUAL
RTU_ENABLED	PERPETUAL
RTU	Tue Jun 30 23:59:58 2020
TOUCH	PERPETUAL
KEYER	PERPETUAL
CLIPPLAYBACK	PERPETUAL
LINETRACKING	PERPETUAL
FEATURETRACK	PERPETUAL
QUICKTRACK	PERPETUAL
2DTRACK	PERPETUAL
POSEDPLAYER	PERPETUAL
WEBSERVER	PERPETUAL
TACTIC PRO	PERPETUAL
PUNDIT	PERPETUAL
PITCHCALIBRATE	PERPETUAL

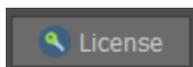
License Ok

If no License is found the following dialog will be displayed.



The top section of this dialog refers to the older style USB Security Key and can be ignored if using a Trial license, Software License and the new style USB Security Key.

Press "License" to Install / Update a Trial license, Software Licence or new style USB Security Key.



New style USB Security Key



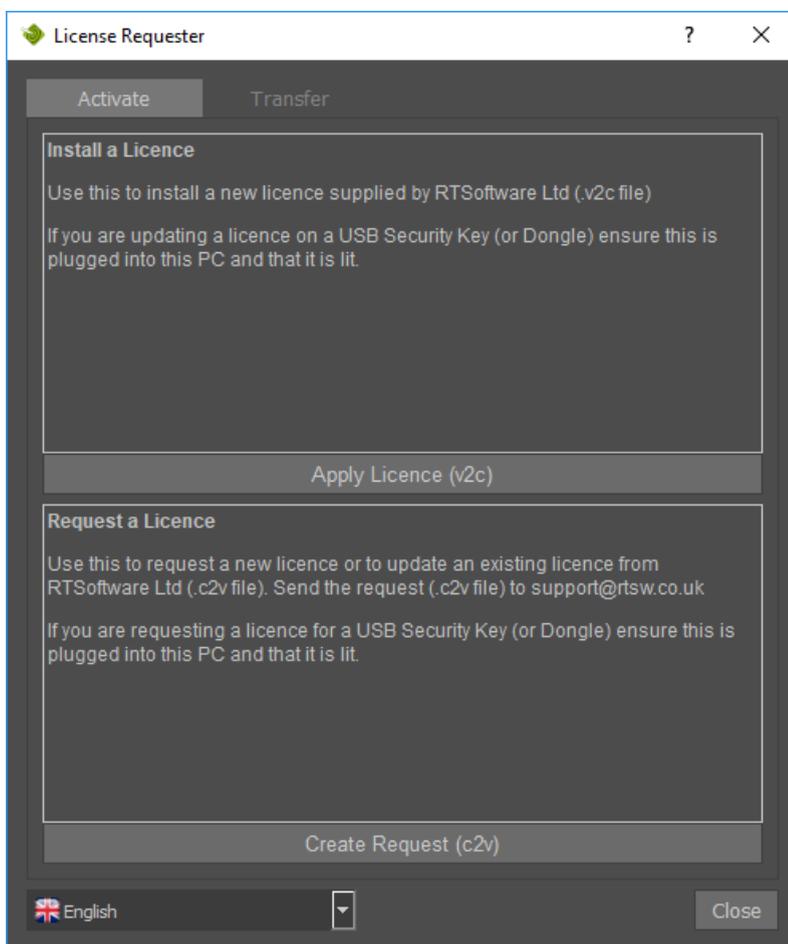
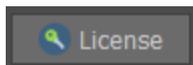
# Install a Trial Software Licence

A Trial Licence is available upon request from RT Software <https://rtsw.co.uk/>

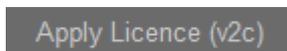
To obtain a Trial Licence, contact [sales@rtsw.co.uk](mailto:sales@rtsw.co.uk)

Upon receipt of the Trial licence file (TacticPro-30Days.v2c), save the file on your PC in a convenient location and apply the licence as follows.

Press "License"



Press "Apply Licence (v2c)"



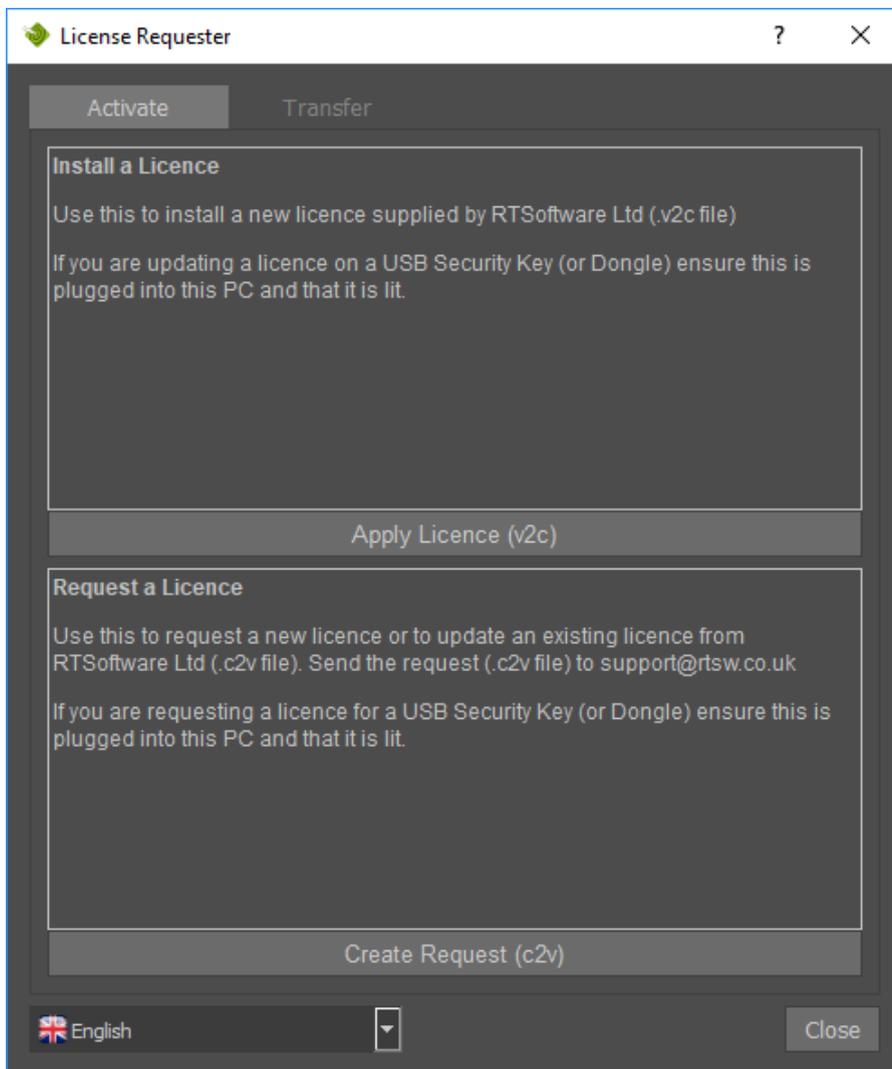
Locate and Select the Trial licence file (TacticPro-30Days.v2c)

# Request and Install a Software Licence

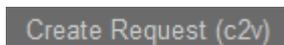
A Software Licence is available upon request from RT Software.

To obtain a Software Licence, contact [licence@rtsw.co.uk](mailto:licence@rtsw.co.uk)

Press "License"



Press "Create Request (c2v)"



Send the request file (Example\_0.c2v) to [licence@rtsw.co.uk](mailto:licence@rtsw.co.uk)

Upon receipt of your new licence (e.g.12345678901234567.V2C), save the file on your PC in a convenient location and apply the licence.

Press "Apply Licence (v2c)"

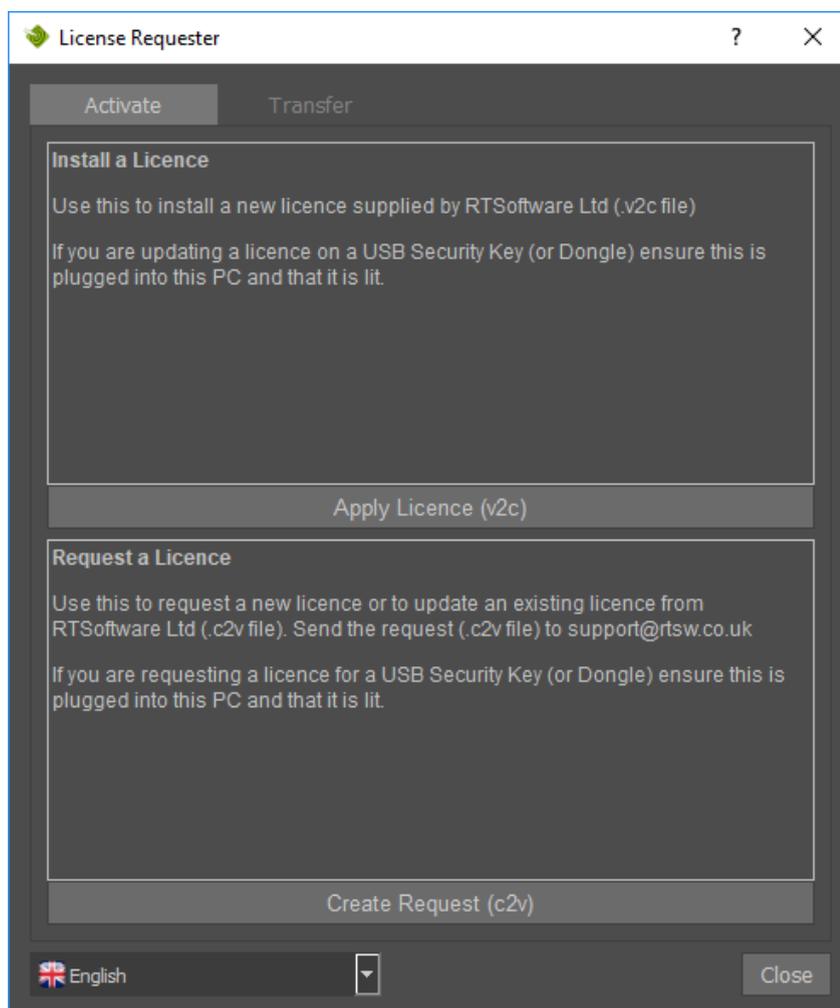
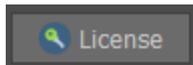
Apply Licence (v2c)

Locate and Select the licence file (12345678901234567.v2c)

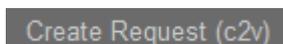
# Update a Software Licence or USB Security Key

To update your Licence, contact [licence@rtsw.co.uk](mailto:licence@rtsw.co.uk)

Press "License"



Press "Create Request (c2v)"



Send the request file (Example\_12345678901234567.c2v) to [licence@rtsw.co.uk](mailto:licence@rtsw.co.uk)

Upon receipt of your new licence (e.g.12345678901234567.v2c), save the file on your

PC in a convenient location and apply the licence.

Press "Apply Licence (v2c)"

Apply Licence (v2c)

Locate and Select the licence file (12345678901234567.v2c)

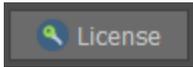
# Transfer a Software Licence

A Software Licence may be transferred from an "Old" PC to a "New" PC.

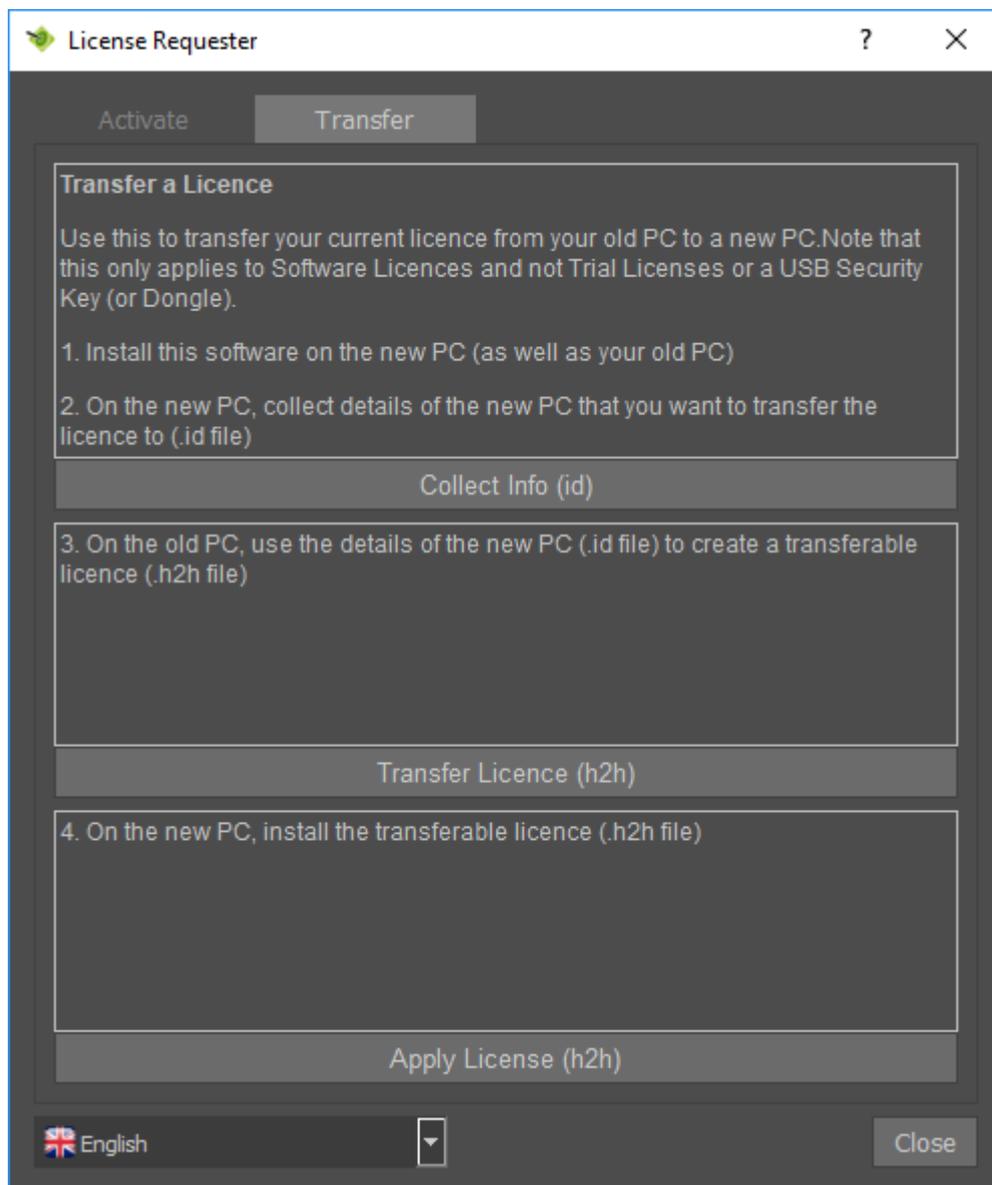
This can be performed at any time without contact with RT Software Ltd.

1. Install Tactic Pro on both the "Old" PC and the "New" PC.
2. "Collect Info" and create the \*.id file on the "New" PC.
3. "Transfer Licence" and create the \*.h2h file on the "Old" PC using the \*.id file from the "New" PC.
4. "Apply License" \*.h2h on the "New" PC.

Press "License"



Select the "Transfer" tab.



# Update the USB Security Key (older style)

If you are using the older style USB security key, instructions to update your licence can be found here...

<http://www.rtsw.co.uk/knowledge-base/#!articles/377-1817-how-do-i-renew-my-dongle>



# Install a Licence via the Web Portal

If you were provided with a product key instead of a v2c file, please visit <https://licensing.rtsw.co.uk/>

and copy/paste the key in the appropriate field then hit "Login".



Customer Portal Login	License Update
Product Key: <input type="text"/>	
<input type="button" value="Log in"/>	

**gemalto** security to be free © 2019 SafeNet Inc. All Rights Reserved.

[English](#) [Italiano](#) [Русский](#) [français](#) [中文](#) [Deutsch](#) [Español](#) [日本語](#)

# Update a Licence via the Web Portal

Once an update to your licence is available, please visit <https://licensing.rtsw.co.uk/>

And click on the “License Update” tab then click on “Update Licenses”



Customer Portal Login      License Update

Click Update Licenses to automatically check for and install any licenses that are available for the connected key.

[Update Licenses](#)

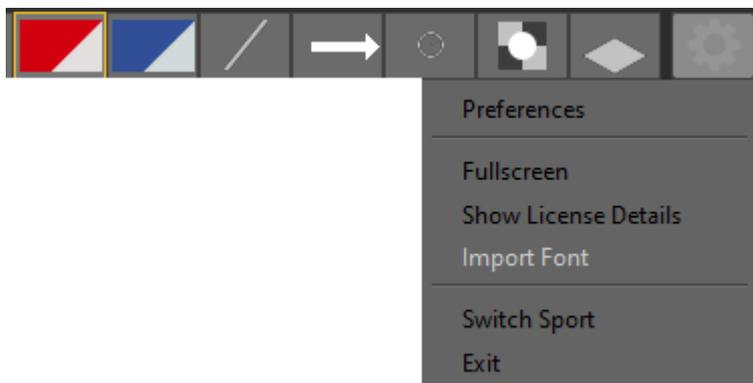
**gemalto** security to be free © 2019 SafeNet Inc. All Rights Reserved.

[English](#)   Italiano   Русский   français   中文   Deutsch   Español   日本語

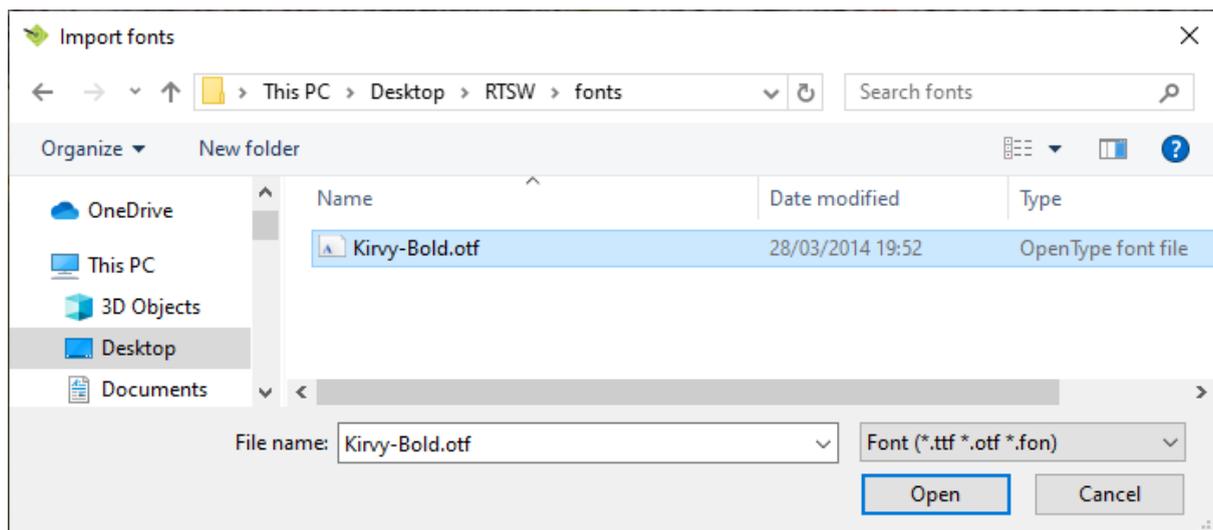
# Appendix D - Importing Fonts

## Windows

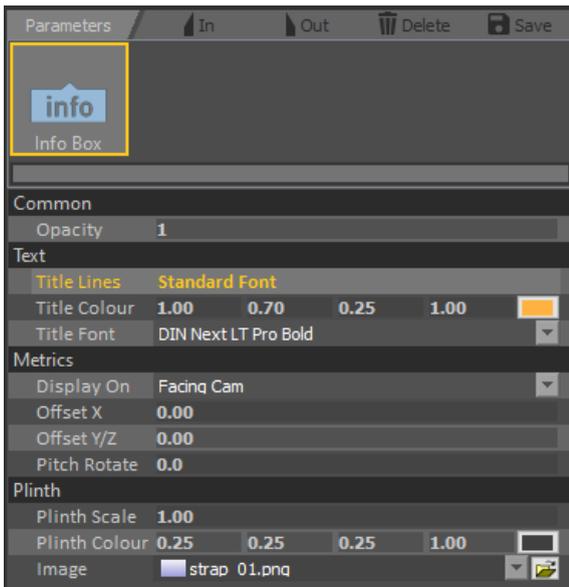
Select the “gear” icon in the top right corner and select “Import Font” ...



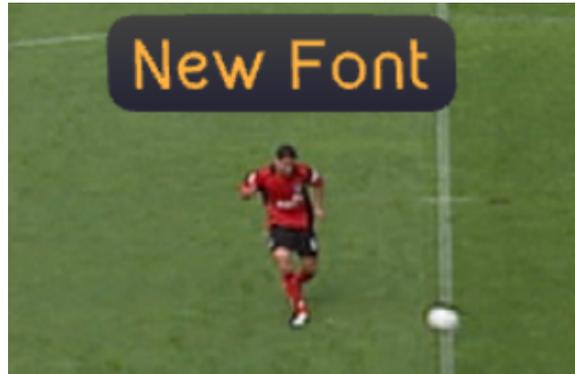
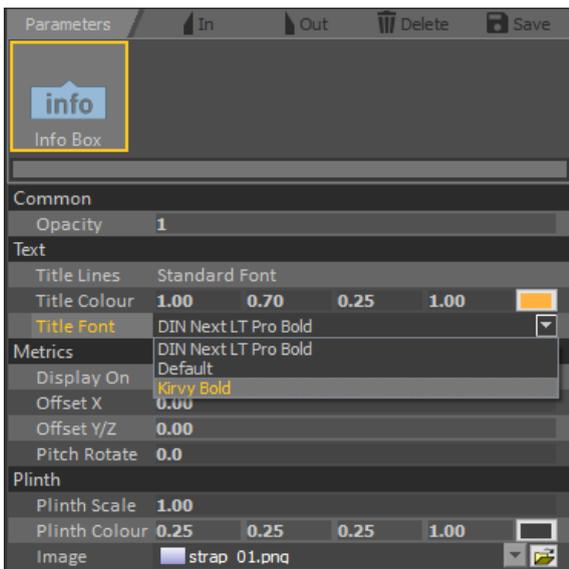
Locate the desired font ...



Imported Fonts can be used in any graphic tool that uses text.  
e.g.the Info Box



Change the Title Font parameter to the new font ...



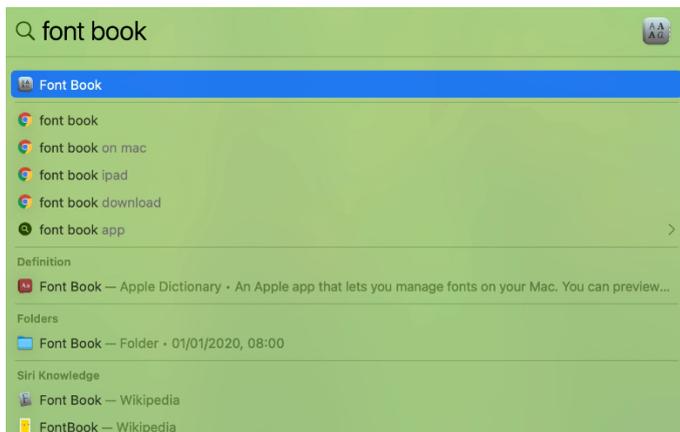
# Mac

Tactic supports TTF fonts, if your desired font is in a different format it has to be converted first.

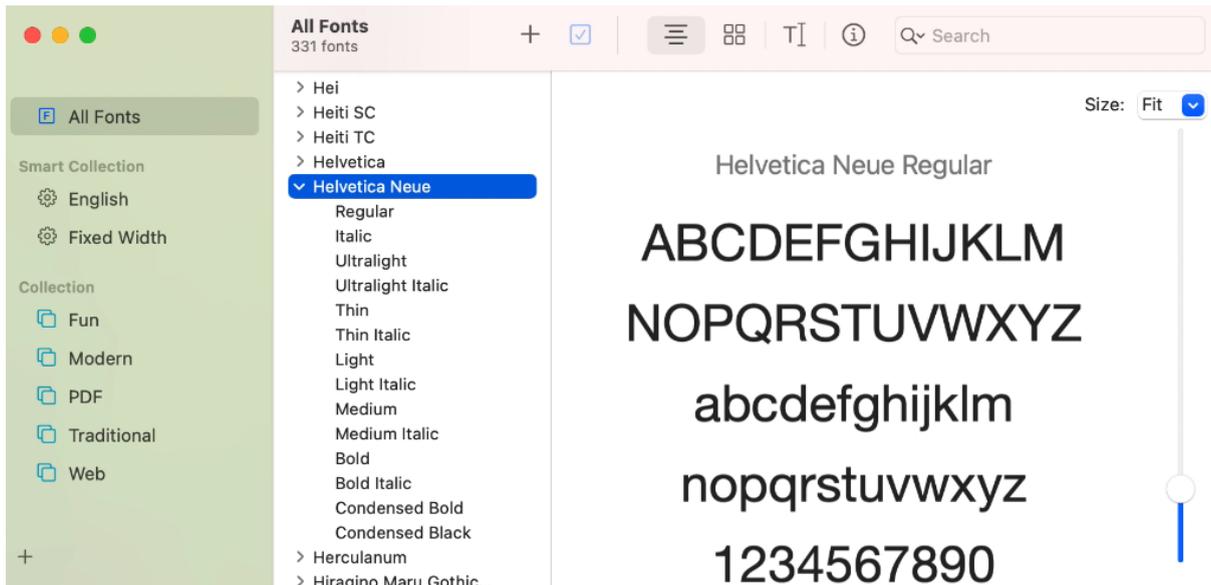
Open up the Spotlight Search bar on your Mac



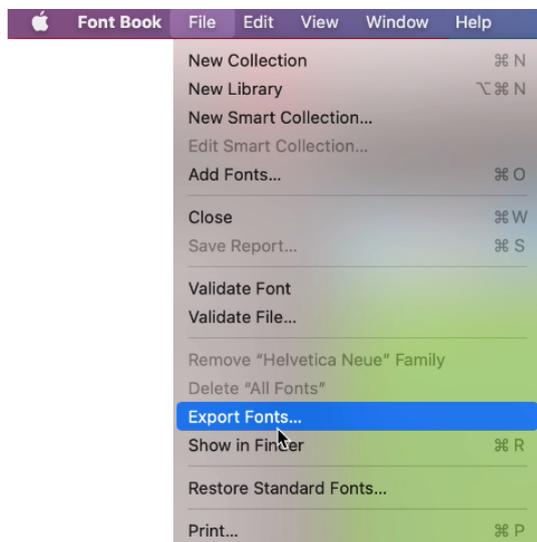
Search and open “Font Book”



Navigate to the font that you want to export (the below example is a TTC font that needs converting)



Click on File > Export Fonts... and save it in a location of your choice.



To convert the TTC file to TTF, please visit <https://transfonter.org/ttc-unpack> and upload the TTC file

Webfont generator   Unpack TTC   Font formats   Examples   Feedback   **Donate**

# transfonter

Convert TTC or DFONT to TTF online

[Upload file](#)

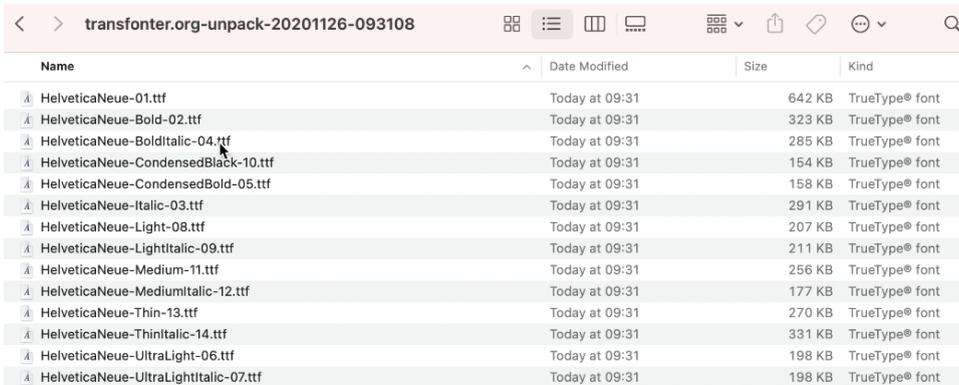
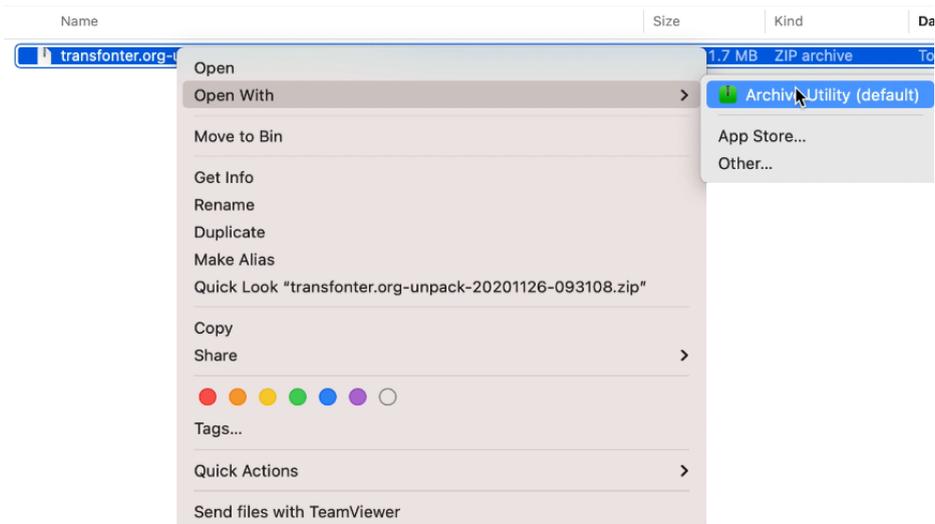
TTC or DFONT, 100 MB max. Drag-and-drop is supported.  
[My file is too large. What can I do?](#)

Once converted, download the zip file

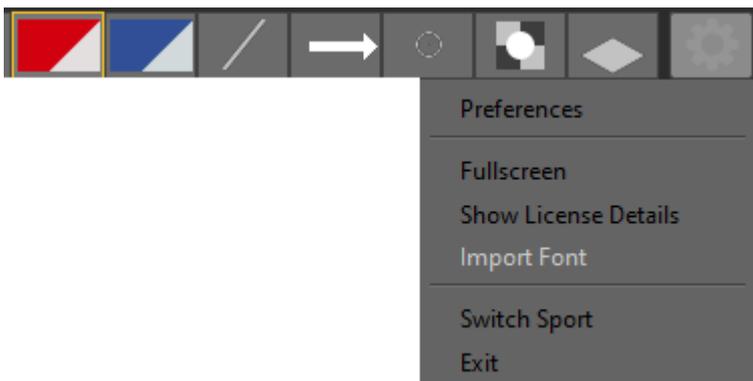
HelveticaNeue-01.ttf	642 KB	<a href="#">Download</a>
HelveticaNeue-Bold-02.ttf	323 KB	<a href="#">Download</a>
HelveticaNeue-Italic-03.ttf	291 KB	<a href="#">Download</a>
HelveticaNeue-BoldItalic-04.ttf	285 KB	<a href="#">Download</a>
HelveticaNeue-CondensedBold-05.ttf	158 KB	<a href="#">Download</a>
HelveticaNeue-UltraLight-06.ttf	198 KB	<a href="#">Download</a>
HelveticaNeue-UltraLightItalic-07.ttf	198 KB	<a href="#">Download</a>
HelveticaNeue-Light-08.ttf	207 KB	<a href="#">Download</a>
HelveticaNeue-LightItalic-09.ttf	211 KB	<a href="#">Download</a>
HelveticaNeue-CondensedBlack-10.ttf	154 KB	<a href="#">Download</a>
HelveticaNeue-Medium-11.ttf	256 KB	<a href="#">Download</a>
HelveticaNeue-MediumItalic-12.ttf	177 KB	<a href="#">Download</a>
HelveticaNeue-Thin-13.ttf	270 KB	<a href="#">Download</a>
HelveticaNeue-ThinItalic-14.ttf	331 KB	<a href="#">Download</a>

[Download ZIP archive](#)

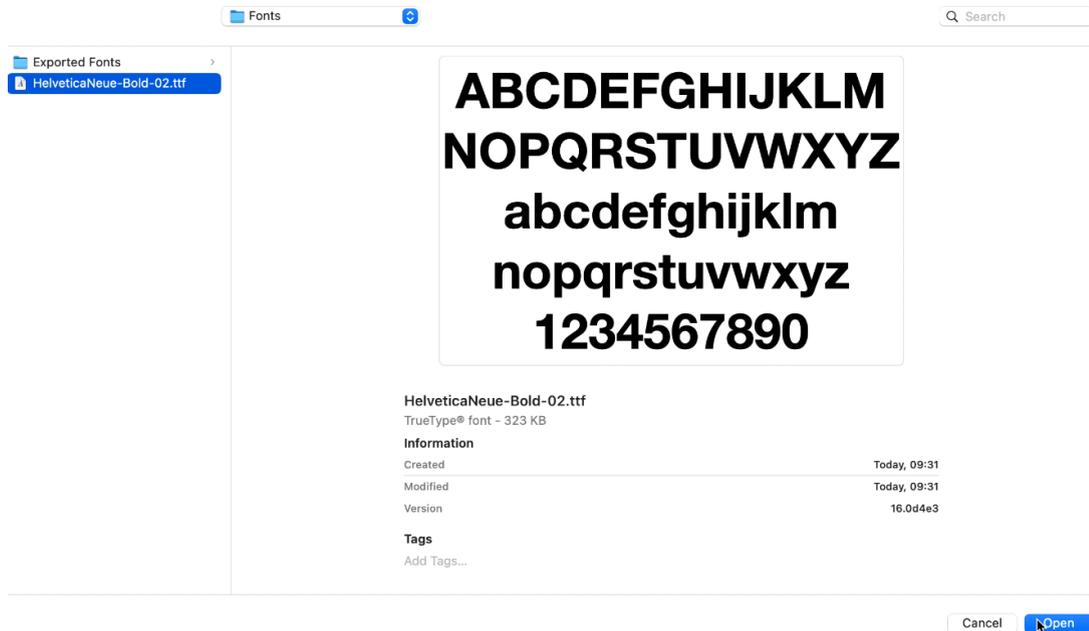
Extract the content of the zip file using the “Archive Utility” and you will have a new folder of the same name containing all TTF files.



In Tactic, select the “gear” icon in the top right corner and select “Import Font” ...



Navigate to the location of the TTF file that you want to import and click on "Open". If you want to import multiple fonts, you need to repeat the process.



Once imported, the new font should be usable in Tactic.

