

Spark

Version 1.3

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July 12, 2017

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1. Introduction

In this section:

What is Spark? on page 8

The Spark System on page 9

The Spark Workflow on page 10

Technical Specifications on page 11

New Features in Spark 1.3 on page 16

What is Spark?

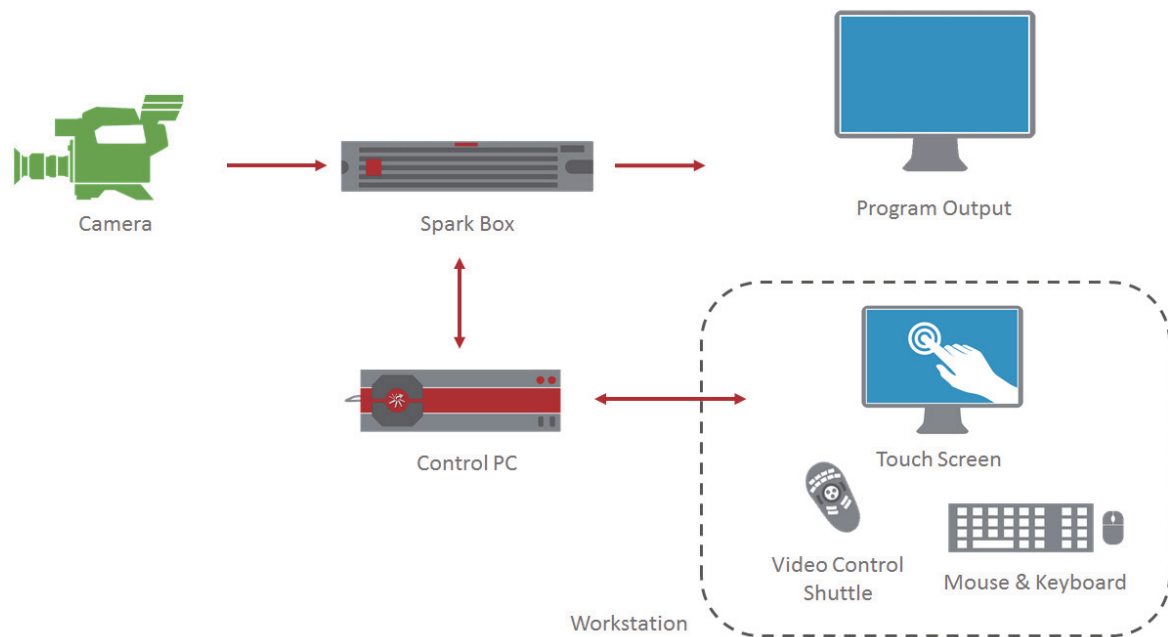
Spark is a telestrator for sports productions that enables commentators to easily and quickly add graphic enhancements to better visualize plays, the flow of the game, and the post-game analysis. Spark telestration tools use a powerful 3D graphics engine and a dedicated touch-screen interface, designed for live sport productions.



Spark does not require a prior technical knowledge. The touch screen requires a very short learning curve, much like using a tablet or a smart phone.

This user guide covers only the operational side of Spark. It assumes all the technical configurations and installation actions have been completed and that the system is ready for use.

The Spark System



Spark is a single-box, single-user solution. The video signal of the game or play is recorded to the Spark digital video server and rendering platform.

The Spark system includes:

- The Spark box, a digital video server and rendering platform.
- The control PC, on which the Spark application is installed. Shared graphics are stored here.
- The Spark workstation.

The Spark Workstation

To illustrate the plays with graphic elements you use the workstation connected to the control PC. The workstation includes the following components:

- **Touch screen** - to view and draw on the video of the play.
- **Mouse** - to draw on the video and activate the software.
- **Keyboard** - for entering text if needed (for example, player names).
- **Video Control ShuttlePROv2** - to intuitively navigate through the video.



TIP:

You can perform many of the tasks in Spark using either keyboard and mouse or the touch screen, which is generally faster during broadcast. However, you should familiarize yourself with the workflow before you go on air.

The Spark Workflow

The Spark system is installed by an Avid project engineer and the installation is outside the scope of this document. Before you start working with Spark you must perform a one-time calibration process, described in [Calibrating the Touch Interface](#) on page 33.

The Spark workflow includes production setup and the actual telestration during a broadcast.

During setup, perform the following:

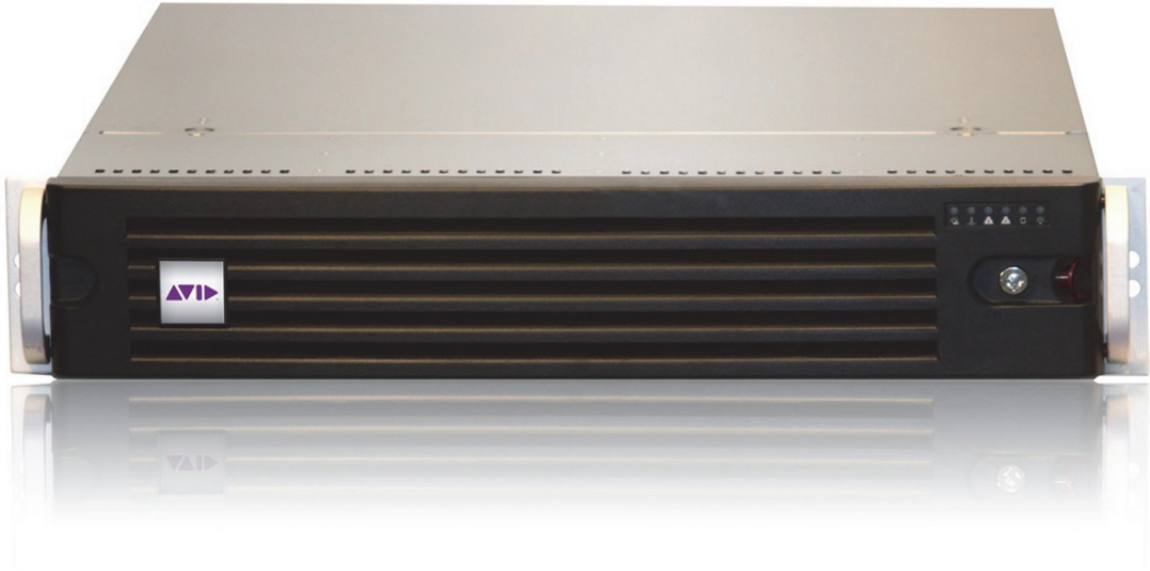
1. Open a project to save the scenes (or plays).
See [Spark Projects](#) on page 34.
2. Create scenes to illustrate during broadcast.
See [Creating Scenes](#) on page 49.
3. Set up the graphic element sets to use during broadcast.
See [Populating the Toolboxes](#) on page 63.

To telestrate the scenes:

4. Play the scene to the point of interest.
See [Creating Scenes](#) on page 49.
5. Illustrate the video using your graphic tools.
See [Telestration](#) on page 103.

Technical Specifications

Spark Technical Specifications



Front View



Back View

- Operating system - Linux 64-bit
- Internal storage
 - RAID 10 for clip player, 4 x 2 TB HDD
 - RAID 1 for system disk, 2 x 500 GB (optional)
- RAM - 16 GB
- Ethernet - 2 x 1000 BASE-T (RJ45)
- Ports
 - VGA, 2 HDMI, 4 USB 2.0
 - 2 USB 3.0, 2 RJ45 Gigabit Ethernet LAN, 1 serial port
- Control interfaces
 - Keyboard
 - Mouse
 - VGA/DVI
- Dimensions
 - Height - 2U, 3.5 in (88 mm)
 - Width - 17.4 in (443 mm)
 - Depth - 25.6 in (650 mm)
 - Weight - approximately 61.7 lbs (28 kg)
- Redundant power supply
 - 100–240 V
 - 47–63 Hz
 - 2 x 720W
- Supported video standards
 - HD: SMPTE 260, SMPTE 295, SMPTE 274, SMPTE 296
 - Full HD 1080p
- Video in - 2 x HD SDI background inputs
- Video output - 4 X HD SDI graphics + video compositing out
- Timecode - LTC IN
- Video references - Bi/Tri level sync (all cross formats are supported in the same frame rate)

PC3GO Specifications



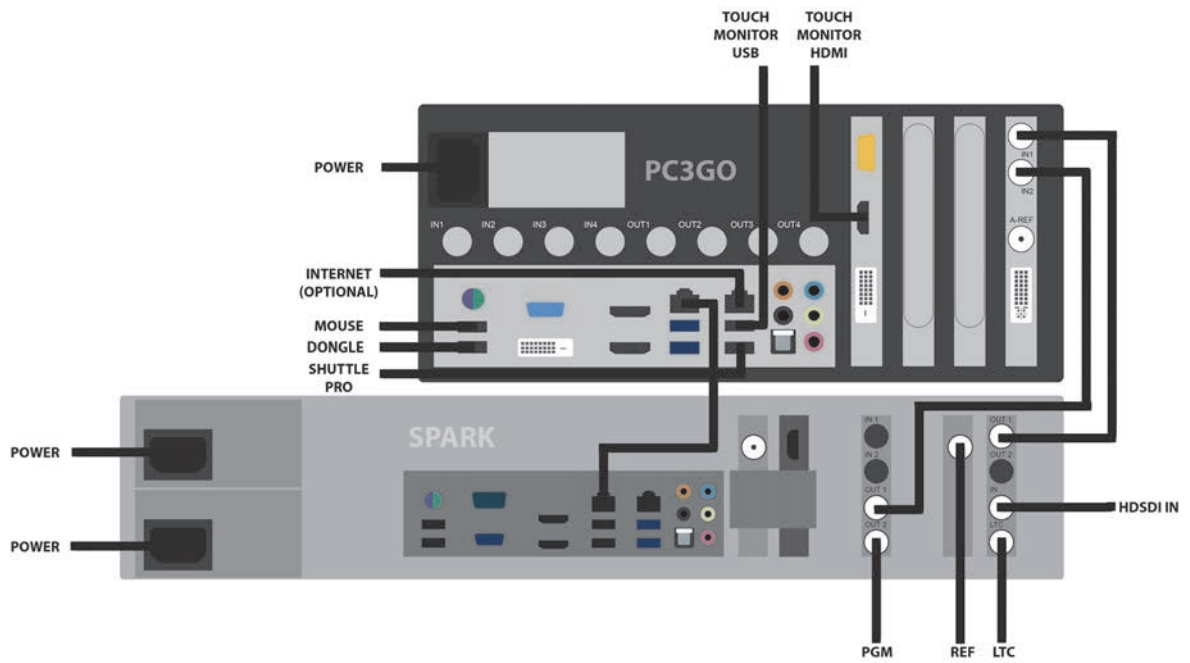
Front view



Back View

- Operating system Windows 7 64 bit
- Internal storage 64 GB SSD system disk
- RAM - 16 GB
- Ethernet 1000 BASE-T (RJ45)
- Ports
 - 2 USB 2.0 (front)
 - 4 USB 2.0 (back)
 - 2 USB 3.0 (back)
- Control interfaces
 - USB keyboard and mouse
 - HDMI, DVI
- Dimensions
 - Width - 10.1 in (257 mm)
 - Depth - 11.1 in (282 mm)
 - Height: 5.2 in (133 mm)
- Redundant power supply
 - 100–240 V
 - 47–63 Hz
 - 1 x 300 W
- Motherboard - Intel Haswell platform
- Graphic card - NVIDIA GTX 750
- CPU Intel Quad-Core i5
- Video in (insertion) - 2

Spark and PC3GO Connections



New Features in Spark 1.3

The following features have been added:

Export to video file

Now, Spark operators can export scenes directly to video files. These clips can then be shared across the entire Avid production environment.

For more information, see [Export Scene to video file](#) on page 55.

1080p support

There is an increasing need in high end sport productions for 1080p. Spark 1.3 now offers full 1080p support for both graphics and video content.

Studio Layout

In order to further enrich the broadcasters' story telling capabilities, Avid Spark 1.3 offers its new studio layout. The studio layout enables the commentator to telestrate in front of a camera in the studio environment. The menu can be placed in the right or left or both sides of the touch screen if there are two commentators.

For more information, see [Studio Layout](#) on page 24.

Chroma Key Sampling moved to the GFX controls panel

Chroma Key sampling has been made much easier and more convenient. A new, dedicated button has been added to the GFX controls panel.

For more information, see [Adjusting Chroma Key](#) on page 59.

New protected presets: "default" and "none"

New built-in presets have been added that cannot be overwritten, which means that it will be much easier to access an empty toolbox ("none") or one that has mostly used elements ("default").

Support for different units in calibration arenas has been added

When adding a new arena, it is now possible to select different units of measurement (meters, yards or feet).

For more information, see [Calibrating Arena Dimensions](#) on page 57.

Jumping between POIs on scene thumbnail tap

It is now possible to jump between POIs by simply tapping (or clicking on) a scene thumbnail in the scene gallery.

Conventions Used in this Document

▶▶ **This symbol marks a step-by-step procedure.**



NOTE:

A note specifies useful or optional information, relevant to the preceding text.



TIP:

A tip provides useful information on shortcuts, or how to do things differently.

Bold text marks a part of the User Interface such as a menu item, dialog box name, or button. For example, “click **OK**”.

ALL CAPITALS text specifies a keyboard key. For example, “press CTRL and drag the name...”.

2. Spark Work Modes and Layouts

There are two available work modes of the Spark application: Replay Telestration and Live Telestration. Each of these modes is licensed separately.

The Spark application also offers a new Studio Layout. The studio layout enables the commentator to telestrate in front of the camera in the studio environment. Studio Layout is licensed separately.

In this section:

[Overview of the modes](#) on page 19

[The Live Telestration Mode](#) on page 21

[The Replay Telestration mode](#) on page 23

Overview of the modes

The Live Telestration mode is meant for telestration of live events. It does not allow to save the video as a project or a scene. Its main purpose is to analyze live sports events with the help of 2D and 3D graphic tools.

The Replay Telestration mode is meant for instant post-production purposes. It assumes the video material is already available and can be divided into projects and scenes. You can analyze the footage with the help of the 2D and 3D graphic tools. In addition, the 2D graphic tools can be applied at any point, also on a playing clip. In order to use the 3D graphic tools, it is recommended that the scene first gets calibrated, the Chroma Key is adjusted and a Point of Interest (POI) is setup beforehand.



NOTE:

*Each of these modes is licensed separately. If you have purchased both licenses, you can switch between both modes in the **Spark Settings** application. For more information, see [SparkSettings](#) on page 39.*

Overview of supported features

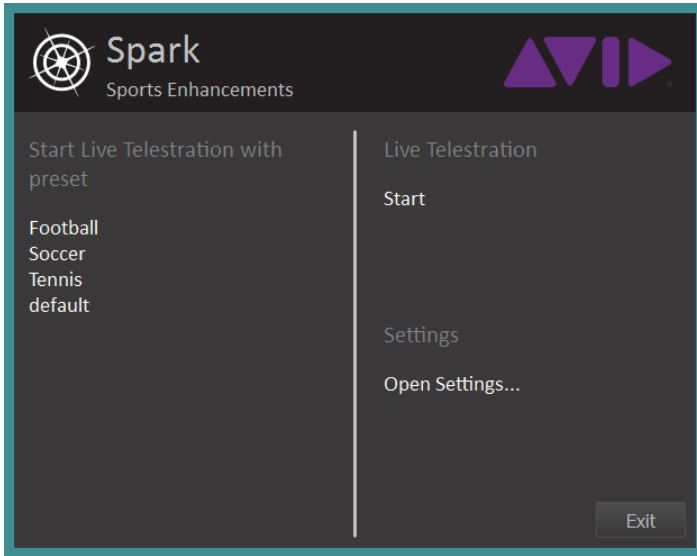
The table below presents an overview of the options and features available in each mode:

	Replay Telestration	Live Telestration
Create new projects	X	
Open existing projects	X	
Open recent projects	X	
Save projects	X	
Exit application	X	X
Calibration	X	
ChromaKey	X	X
Open Video controller	X	X
Scene editor	X	
Effects editor	X	X
Calibrate touch interface	X	X
Open RE manager	X	X
Open settings	X	X
Video Jog and Play	X	
GFX Controls	X	X
Color Selection	X	X
2D graphic tools	X	X
3D graphic tools	X	X
Lock graphic tools	X	X
Snap to Shape	X	X
Live Arrow	X	X
Export to video file	X	

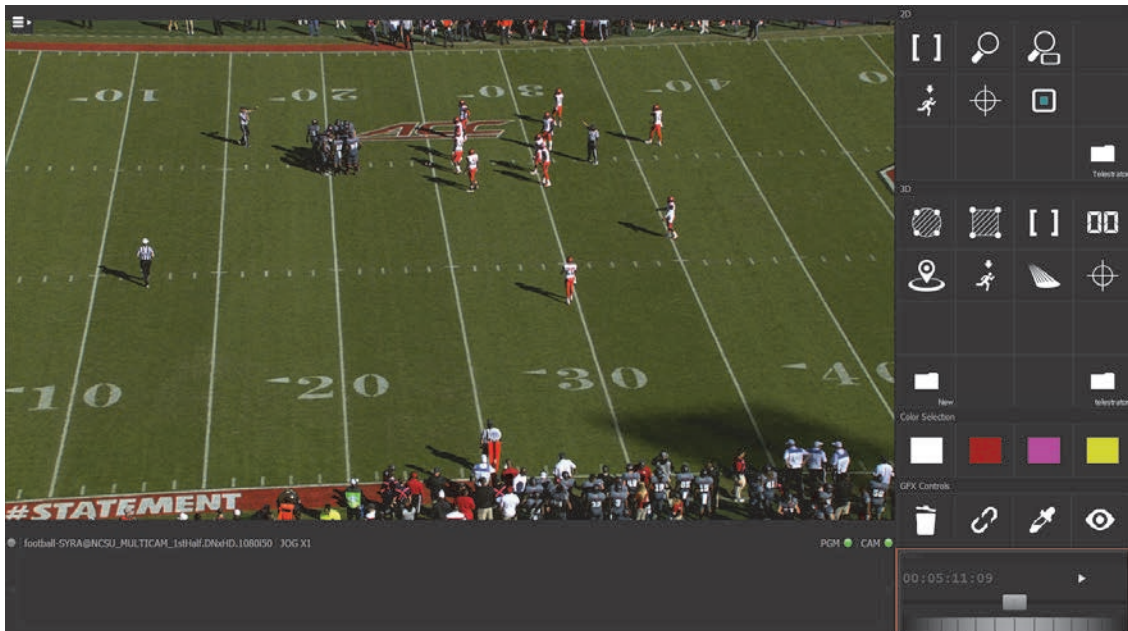
The Live Telestration Mode

The Live Telestration mode is designed for fast operation during live sports productions and with ease of use in mind. Prior to broadcast, simply fill the 2D and 3D graphic toolboxes with required tools, which are personalized with individual properties. Save your chosen graphic tools effects as presets to have them ready in time for broadcast. For more information, see [To save graphic tools as a preset:](#) on page 64.

When starting Spark in the Live Telestration mode, simply click on the saved graphics preset.



The application opens with the previously setup toolboxes and a live video stream.



As highlighted on the picture above, the Live Telestration mode does not allow to manipulate the live video. Therefore, the play/pause button and the video jog are unavailable.

Using graphic elements in the Live Telestration Mode

Telestration in the Live Telestration mode is very straightforward and intuitive.

▶▶ To add a 2D or 3D graphic:

1. Select the required graphic tool from its toolbox. For more information, see [Populating the Toolboxes](#) on page 63
2. If applicable, select the color from the **Color Selection** pallet on screen.
3. In the preview window, click the spot on which to draw.


For tools such as lines use drag and drop.
The graphic is drawn on the video.




TIP:

Some graphics elements have unique controls for example changing size or angle once drawn. For information on specific tools, see [2D Graphic Elements](#) and see [3D Graphic Elements](#)

▶▶ To delete a graphic:

1. Simply click or tap on the graphic tool to be removed. Select  from the **GFX Controls** tools.
2. Select the graphic drawn on the video.
The graphic is removed.



▶▶ To delete all graphics in a scene:

1. Double-click  from the **GFX Controls** tools.
2. All graphic tools are removed without a warning window to make this operation faster.

▶▶ To show or hide all graphics in the scene:

- Select Show or Hide .
All graphic elements are hidden or shown.

▶▶ To adjust chroma key:

1. From the **GFX Controls** panel, click on the **Color Picker** .
2. Tap the playing field to sample its color. Repeat several times for different color shades.
3. Tap the Color Picker  once again to confirm the sample.

In the Live Telestration mode you can use all of the features of the graphic tools:

To find out how to lock a graphic tool, see [Locking graphic tools](#) on page 66.

To learn how to use the Live Arrow feature, see [The Live Arrow](#) on page 70.

To get to know all of the available 2D and 3D graphic elements, see [2D Graphic Elements](#) and see [3D Graphic Elements](#).

The Replay Telestration mode

As illustrated in the table in the [Overview of the modes](#) chapter, the Replay Telestration mode allows to use all of Spark's available modes and features. Therefore, unless emphasized otherwise, all of the aspects mentioned in the following chapters apply to the Replay Telestration mode.

Studio Layout

Spark offers two different layouts: **Regular** layout for game time commentators and **Studio** layout for studio productions. The switch between these two modes can be done with a simple mouse click.

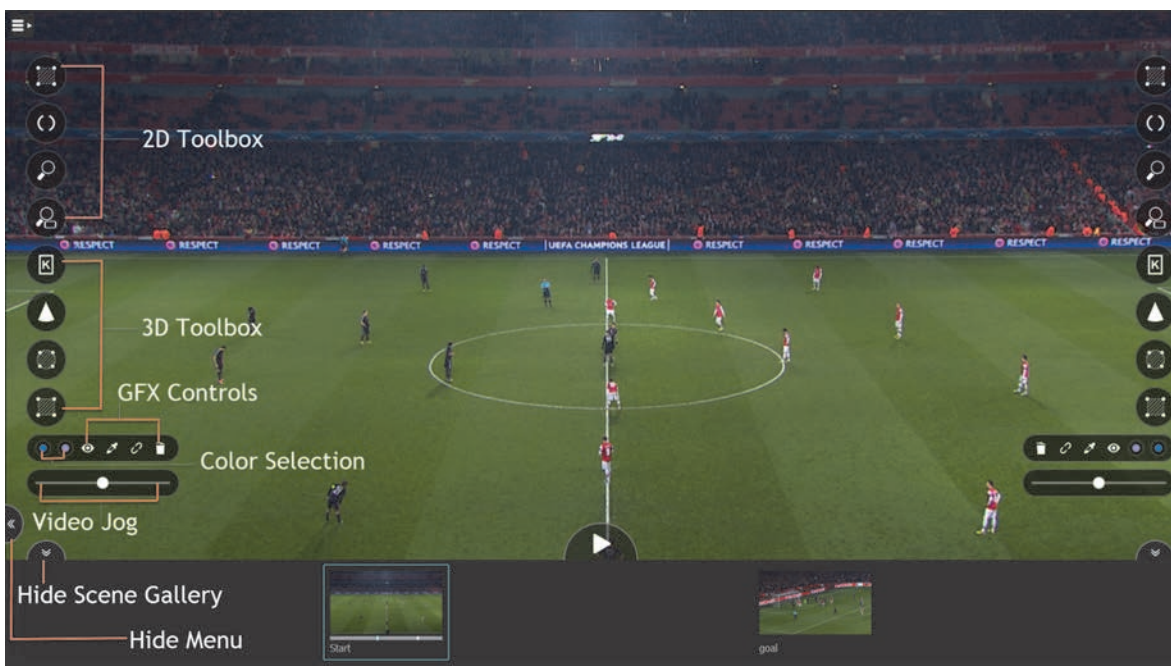
►► To enable Studio Layout:

- Go to **Tools** and select **Studio Layout**.



TIP:

*Studio Layout can also be enabled upon Spark's startup. To achieve that, open Spark's Settings (Tools > Settings) and under **Initial Layout** select **Studio layout**.*



The menu can be placed on the left side, on the right side, or on both sides. The menus can also be easily toggled on and off with a dedicated button. The scene gallery can be minimized to offer the best view of the game play.



TIP:

*In the **Studio Layout** tab of Spark's **Settings**, you can decide whether the menu should be placed on both sides, and whether the scene gallery should be shown by default when the Studio Layout is switched on. For more information, see [Studio Layout](#) on page 41.*

3. Getting Started

In this section:

Starting Spark on page 26

Main Screen on page 27

Spark Menu on page 29

Spark Virtual Keyboard on page 30

Using ShuttlePROv2 to Navigate the Video on page 31

Calibrating the Touch Interface on page 33

Spark Projects on page 34


Monitoring RenderEngine on page 35

Spark Keyboard Shortcuts on page 36

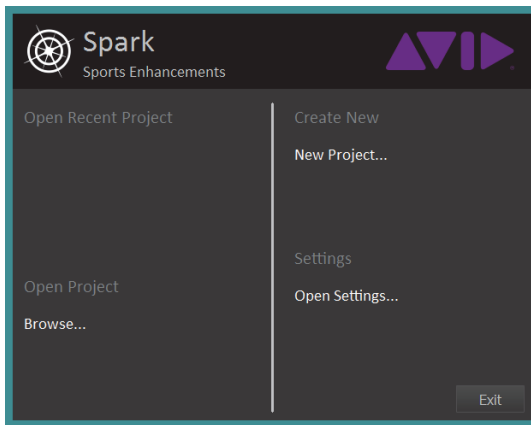
Starting Spark

During installation, Spark shortcuts are created on the desktop and in the Start menu. To start working with Spark, open the Spark client.

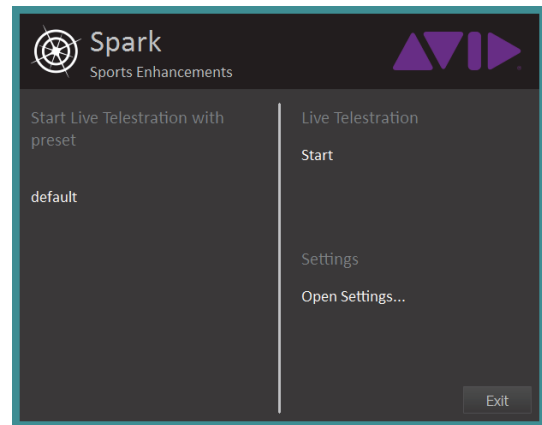
▶▶ To start Spark:

1. Double-click the Spark shortcut  on the desktop.
2. After the splash screen, a welcome screen is displayed:

Replay Telestration Welcome Screen



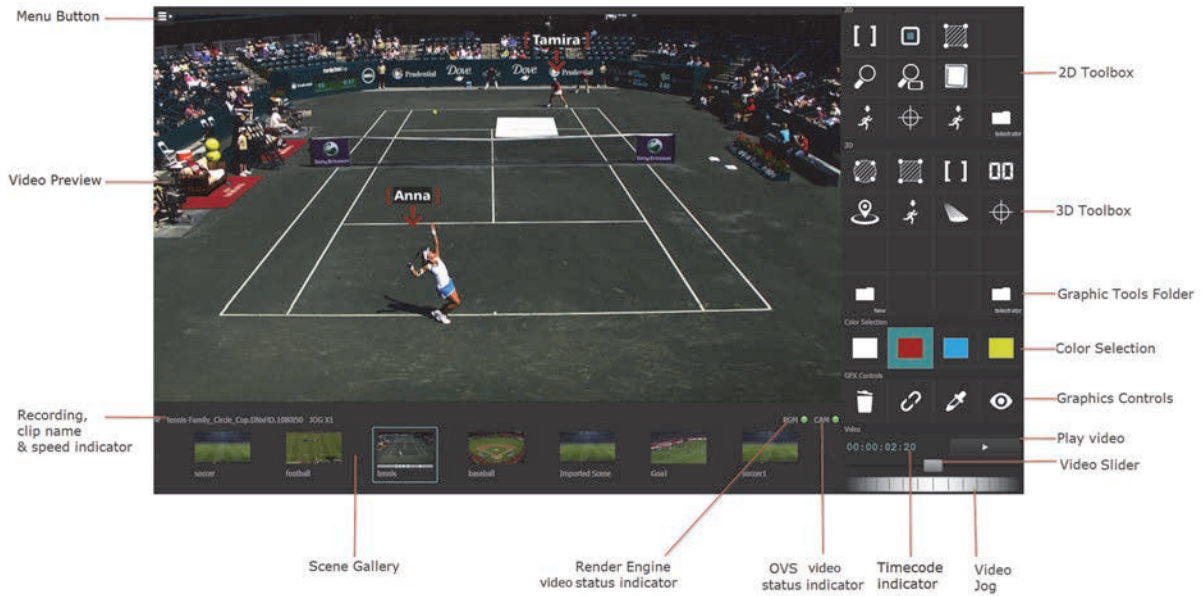
Live Telestration Welcome Screen



NOTE:

When you open the Spark client, all related system components are activated as well. This might take few minutes.

Main Screen



The main screen includes the following sections:

Menus

Open the Spark menus to perform various tasks. For more information, see [Spark Menu](#) on page 29.

The Preview Window

Displays the live or recorded video for navigation and telestration. For more information, see [Telestration](#) on page 103.

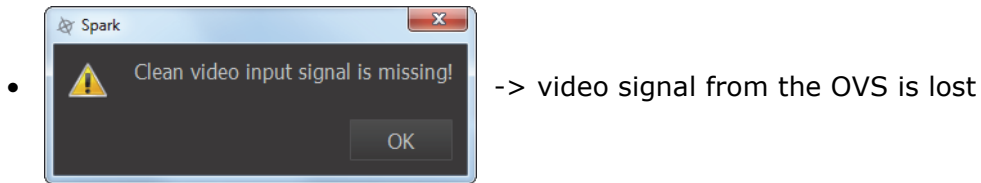
The Scene Gallery

This is where you store the game plays to analyze during broadcast. For more information, see [Creating Scenes](#) on page 49.

The Status Indicators

Green indicators show that Spark receives video signal from the Render Engine and the OVS. When a video signal is lost, the indicators turn red and an accompanying error message is displayed:





The 2D and 3D Toolboxes

User-defined 2D and 3D telestration graphic elements for the current project when analyzing plays during broadcast.

see [Setting Graphic Tools](#) on page 61

Color Selection

Customizable color palettes to use in the current project when analyzing plays during broadcast. To open the color picker, double-click on one of the colors in the palette.

For more information, see [Using the Telestration Graphic Elements](#) on page 104.

GFX Controls

A set of tools to use while analyzing plays during broadcast for example: Delete, Lock, Chroma Key Picker, Hide.

For more information see [Using the Telestration Graphic Elements](#) on page 104.

Video

Timecode Indicator	Unique identifier of every frame which uses a time stamp in hours, minutes, seconds, and frames. For interlaced video formats, every frame is split into two fields. The second field of each frame can be distinguished by the "+" character.
Video Jog	A virtual jog dial for moving the selected video backward or forward frame by frame.
Video Slider	A video slider for playing the selected scene backwards and forwards at an exponentially changing speed.
Play Video	Play the scene. When played before the point of interest (POI) the video stops at the POI. When played after the POI the video stops at the next POI or at the end point of the scene.

Spark Menu

The following table provides information on the menu items available in Spark.

The File Menu

New	Open a new project.
Projects	Open a window to select a previously saved project. From this place you can also delete a project by highlighting it and clicking on the Delete button.
Open recent	List of the most recently opened projects.
Save	Save the current project.
Exit	Close Spark.

The Tools Menu

Studio Layout	Enable the Studio Layout. For more information, see Studio Layout on page 41.
Calibration	Open the Calibration Model window to perform the calibrating of arena dimensions. For more information, see Calibrating Arena Dimensions on page 57.
Video controller	Open the OVS Controller. For more information, see License Manager on page 43.
Scene editor	Open the Scene Editor window. For more information, see Creating Scenes on page 49.
Effects editor	Open the Effects Editor window. For more information, see Populating the Toolboxes on page 63.
Export scene to video file	Export the selected scene to a video file. For more information, see Export Scene to video file on page 55.
Calibrate touch interface	Open the calibration screen to perform the calibrating of the touch interface. For more information, see Calibrating the Touch Interface on page 33.
Advanced ChromaKey	Open the ChromaKey controls. For more information, see Adjusting Chroma Key on page 59.
RE manager	Open the RE Manager window. For more information, see Monitoring RenderEngine on page 35.
Settings	Open the Settings window. For more information, see SparkSettings on page 39.
License Manager	Open the License Manager. For more information, see License Manager on page 43.

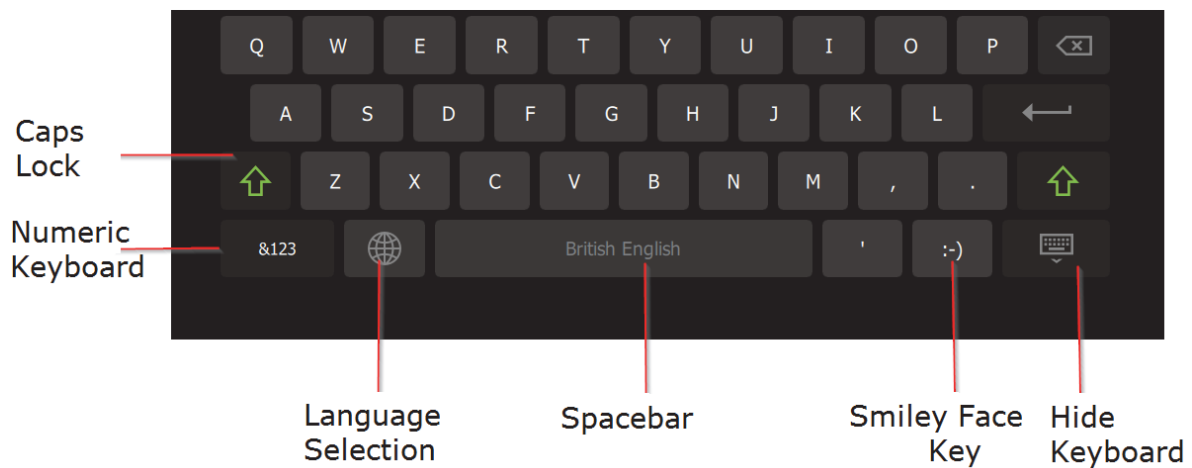
Spark Virtual Keyboard

The Spark application is equipped with a virtual keyboard, which can pop up every time you click on input field.

►► To enable the virtual keyboard:

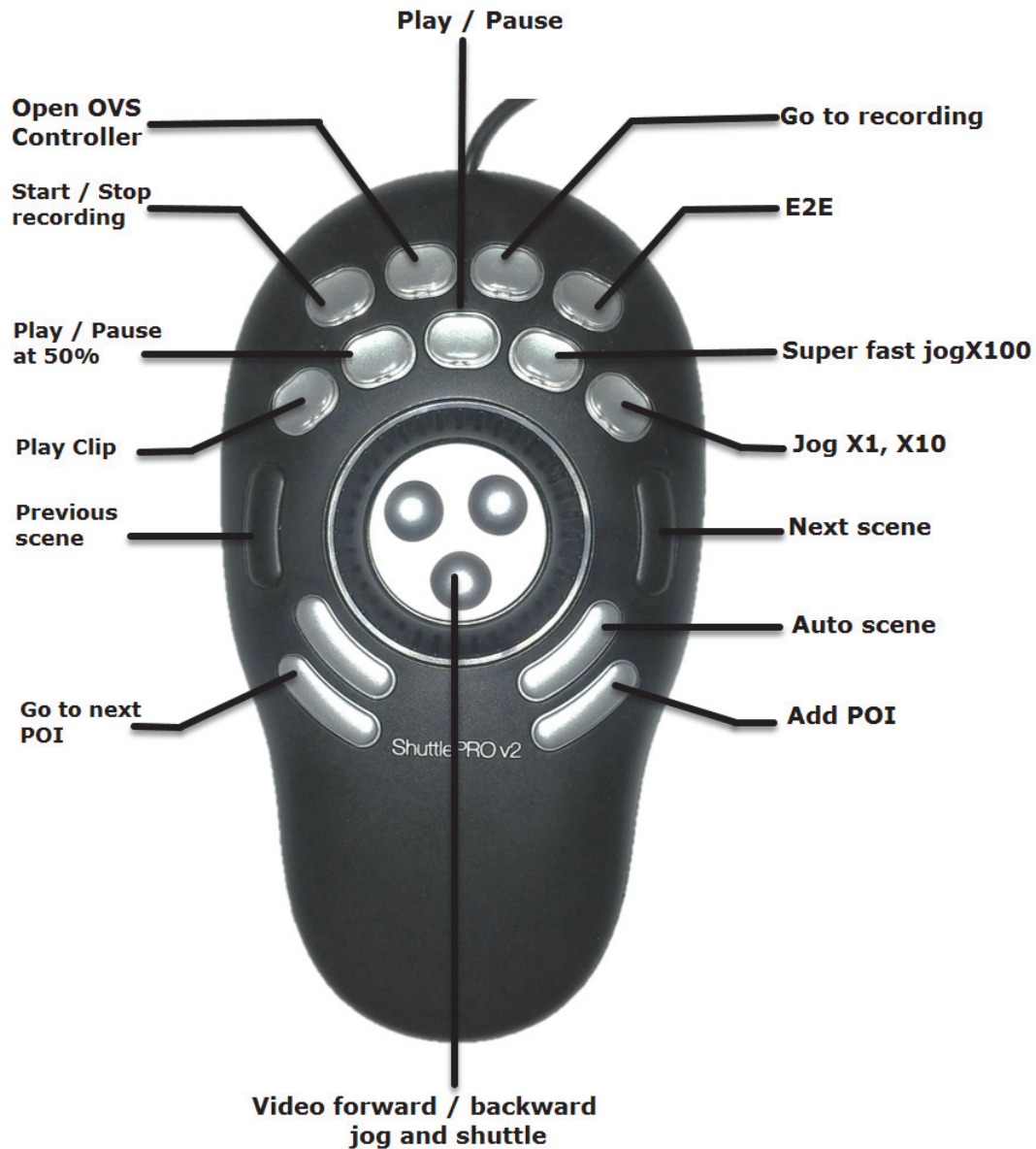
1. Go to **Tools** and select **Settings**.
2. Enable the checkbox next to **Show Virtual Keyboard**.

The virtual keyboard is presented below:



Using ShuttlePROv2 to Navigate the Video

The ShuttlePROv2 multi media controller is provided with Spark to improve workflow. The ShuttlePROv2 buttons are pre-programmed as described below:



Auto Scene	Create an auto scene with the current video time as the POI. For more information, see Auto Scene Mode on page 54
Add POI	Add POIs inside a scene.
E2E	Display the live video feed on screen.
Go to Recording	Enable the video to play beyond the scene end point.
Go to the next POI	Navigate the video to the next point of interest of the currently selected scene. For more information, see Creating Scenes on page 49.

Jog and Shuttle	Use the jog and shuttle to play the video forwards and backwards.
Jog X1, Jog X10	Set the jog playing speed to regular. Press again to increase the jog speed 10 time the regular speed.
Next Scene	Display the next scene in the scene gallery.
Open OVS Controller	Open the OVS controller window.
Play / Pause at 50%	Set the video playing speed to 50%.
Play Clip	Play the selected clip from the beginning
Play Pause	Play or pause the video.
Previous Scene	Open the previous scene from the current one selected.
Start/Stop Recording	Start or stop the recording of the current video feed.
Super fast JogX100	Set the jog playing speed to super fast.

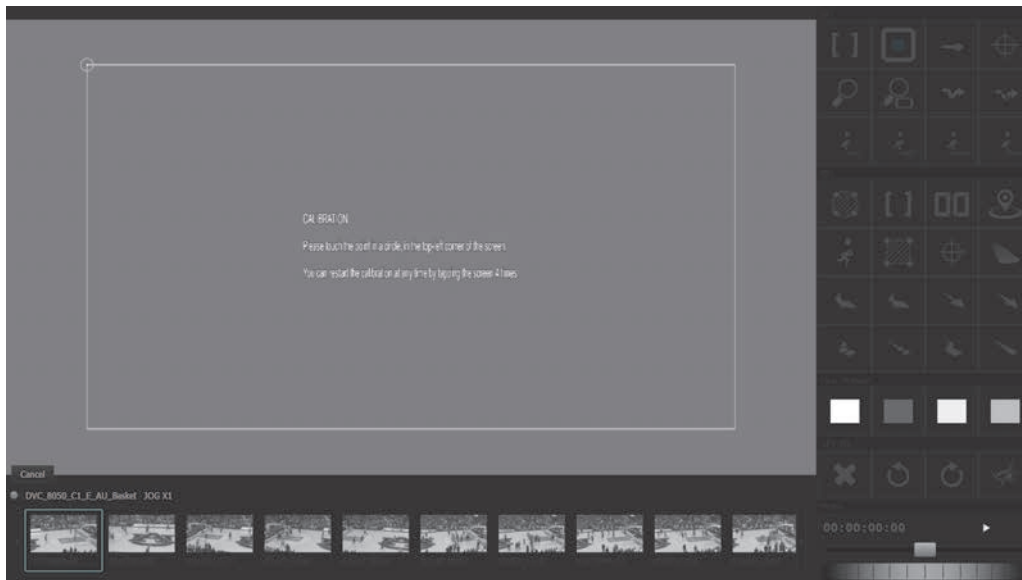
Calibrating the Touch Interface

Calibrating the touch interface is a one-time process, performed when the system is installed. Calibration configures the RenderEngine with the dimensions of the touch screen. If required, calibrate your touch-screen as follows.

►► To calibrate the touch interface:

1. From the menu, select **Tools > Calibrate touch interface**.

The calibration screen is displayed in the Preview window.



2. Follow the on-screen instructions.

The system guides you to tapping points marked with white circles at the corners of the rectangle. Once the calibration process is finished, the calibration screen is closed. Click **Cancel** to end the process without calibrating.

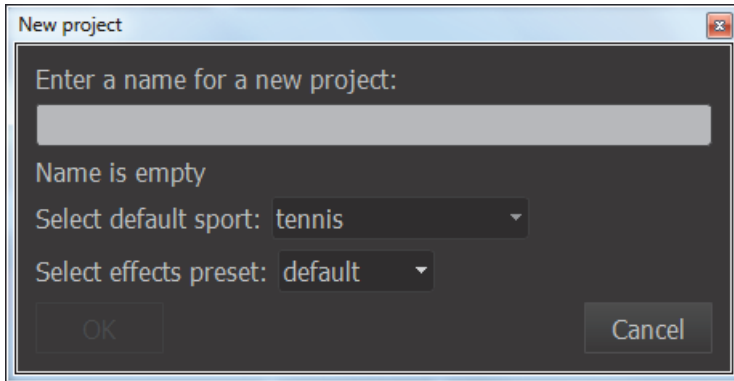
Spark Projects

A project contains the scenes created in Spark for a production. A scene is a clip, the video footage of a play in game that you illustrate using graphic elements. In addition to the scenes, the project saves user presets and selections such as the telestration tools available for immediate access, type of lines, size of fonts, etc.

▶▶ To create a new project:

1. From the main menu, select **File > New**.

The **New project** window opens.



2. Type in a name for your project.
Depending on your system settings, a virtual keyboard might open when you click a text input field.
3. Select the default sport and which group of effects presets should be used for this project.
4. Click **OK**.
5. To save your new project select **File > Save** from the menu.



NOTE:

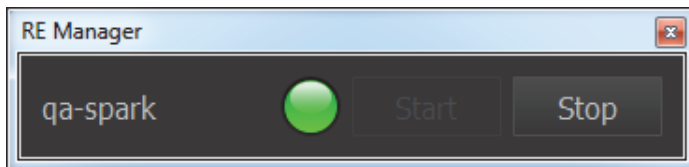
Newly created projects are not saved automatically. Upon exit the system prompts you to save your changes.

Monitoring RenderEngine

The **RE manager** monitors the RenderEngine (RE) connection and enables you to stop and start RE manually.

►► To open the RE Manager:

- From the main menu, select **Tools > RE Manager**.



The **RE Manager** opens.

The connected RE's name and status is displayed; green when connected or red when disconnected.

You can **Start** or **Stop** RE connection, as required.



NOTE:

Generally, there is no need to start or stop RE manually. RE is activated upon the system startup.

Spark Keyboard Shortcuts

When the Spark system is setup with a traditional keyboard, you can take advantage of the keyboard shortcuts, which have been designed to make scene operations easier and faster.

Shift + R	Record or stop recording.
CTRL + V	Show Video Controller.
R	Switch to recording when in clip.
E	Switch to the Live E2E
Shift + P	Rewind the current scene to start and play the clip.
Z	Play/Pause 50%
Space Bar	Play or Pause.
Left Bracket [Decrease the jog playing speed.
Right Bracket]	Increase the jog playing speed.
CTRL	Start Chroma Key sampling.
Shift + Enter	Auto scene.
Left Arrow Key	Select previous scene.
Right Arrow Key	Select next scene.
A	Rewind the current scene to start.
S	Rewind the current scene to the previous POI.
D	Rewind the current scene to the next POI.
F	Forward the current scene to the end.
F11	Toggle full screen on /off.

4. Standalone Applications

In this section:

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SparkSettings on page 39

License Manager on page 43


The OVS Controller on page 44

VideoGrabber on page 47

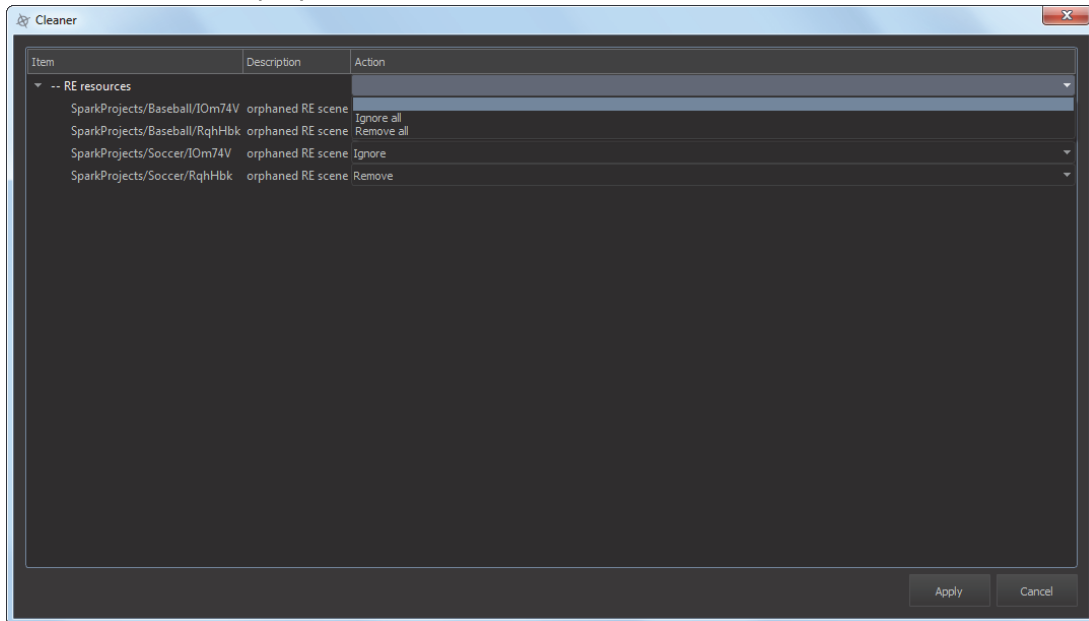
SparkCleaner

SparkCleaner is a scene and playlist cleanup tool, which also gives an option to repair faulty scenes.

►► To open the SparkCleaner:

- Go to the folder containing the Spark installation files: *C:\Orad\Spark* and double-click on the  **SparkCleaner** icon.

The **Cleaner** is displayed.



SparkCleaner Options

The main window contains the following sections:

Item	The name of the project and scene.
Description	The description of the error.
Action	List of all available actions adjusted according to the given error: Ignore - ignore the selected problem. Remove - remove the scene containing the error. Repair - available when the faulty scene is missing a RenderEngine scene. After clicking Repair, the system automatically creates an empty RenderEngine scene. Set to - available when the scene is missing a clip from the Video Controller playlist. After clicking Set to, the system suggests a clip from the Video Controller. Ignore all and Remove all -available at the project level, when the project has scenes with orphaned playlists or clips. After selecting Ignore all or Remove all, all of the errors within the scenes will be ignored or the scenes will be removed.

After selecting an action, click on **Apply** to administer the change.


SparkSettings

SparkSettings is a tool which allows to customize Spark's preferences.

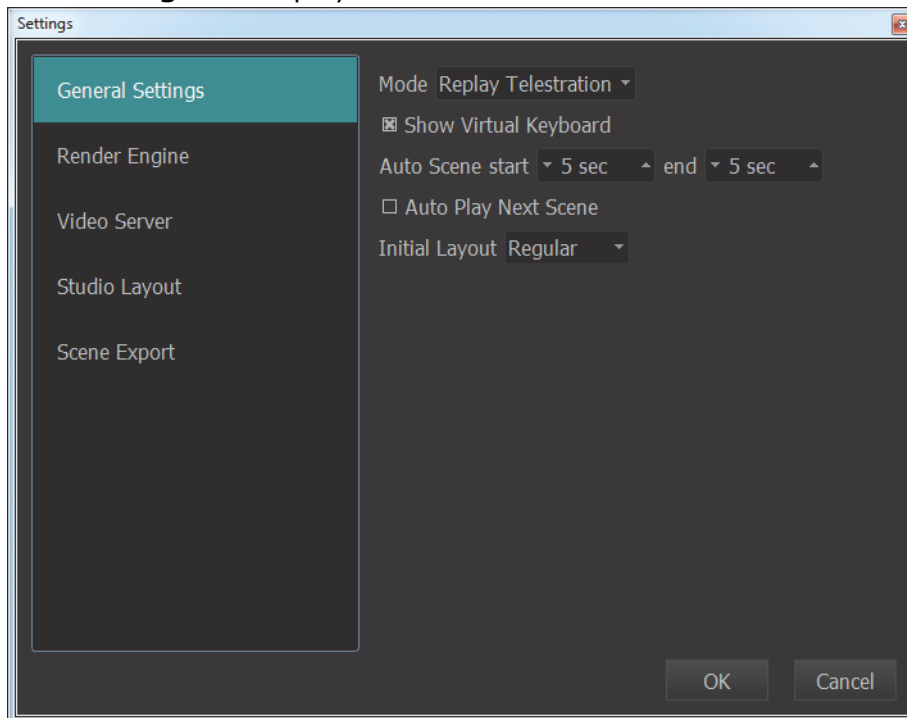
► To open the SparkSettings:

- Go to **Tools** and select **Settings**

- or


Go to the folder containing the Spark installation files: `C:\Orad\Spark` and double-click on the  **SparkSettings** icon.


The **Settings** are displayed.



General Settings

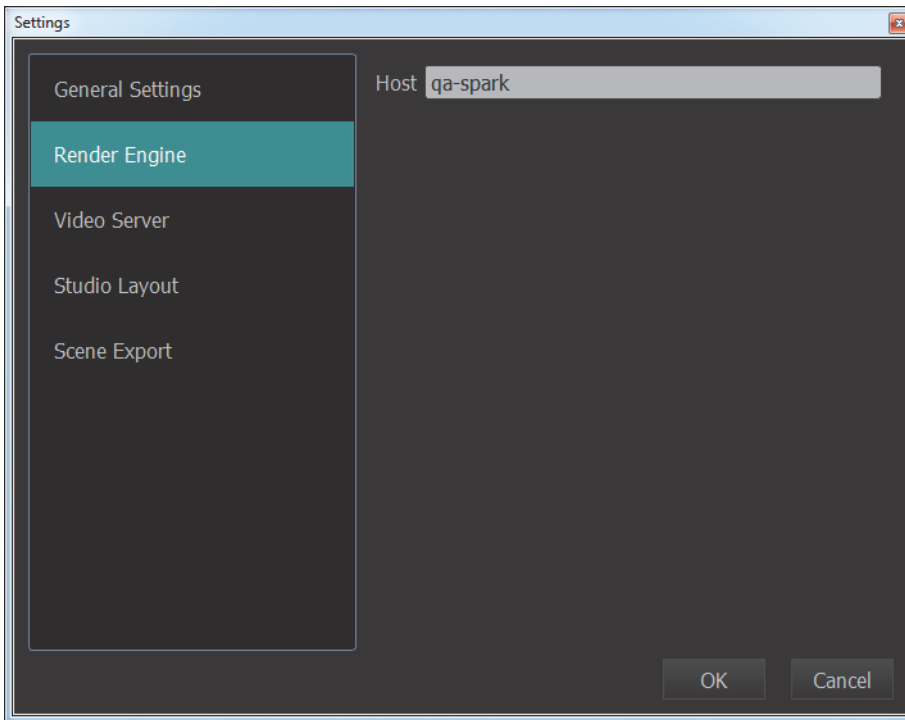
The **General Settings** section allows to change the Spark's mode and scene preferences.

<p>Mode</p>	<p>Select the operating mode from the drop-down list: Replay Telestration or Live Telestration.</p> <p>NOTE:  Each one of these modes requires a separate license. When the system has recorded only one license, then this menu item no longer has a drop-down list, but only displays the information about the available mode.</p> <p>For more information, see Spark Work Modes and Layouts on page 18.</p>
<p>Show Virtual Keyboard</p>	<p>With this checkbox enabled, the virtual keyboard appears every time you click on an input field. For more information, see Spark Virtual Keyboard on page 30.</p>

Auto Scene start	Set the amount of time in seconds; when pressing Auto scene on the ShuttlePROv2, it records the scene with a start time selected number of seconds sooner and it ends the scene with the selected number of seconds later. For more information, see Auto Scene Mode on page 54
Auto Play Next Scene	With this checkbox enabled, all scenes within a particular project are played automatically in a sequential manner.
Initial Layout	Select the initial layout of the Spark application: Regular or Studio Layout . NOTE:  <i>The Studio Layout is a subject to a separate license.</i>

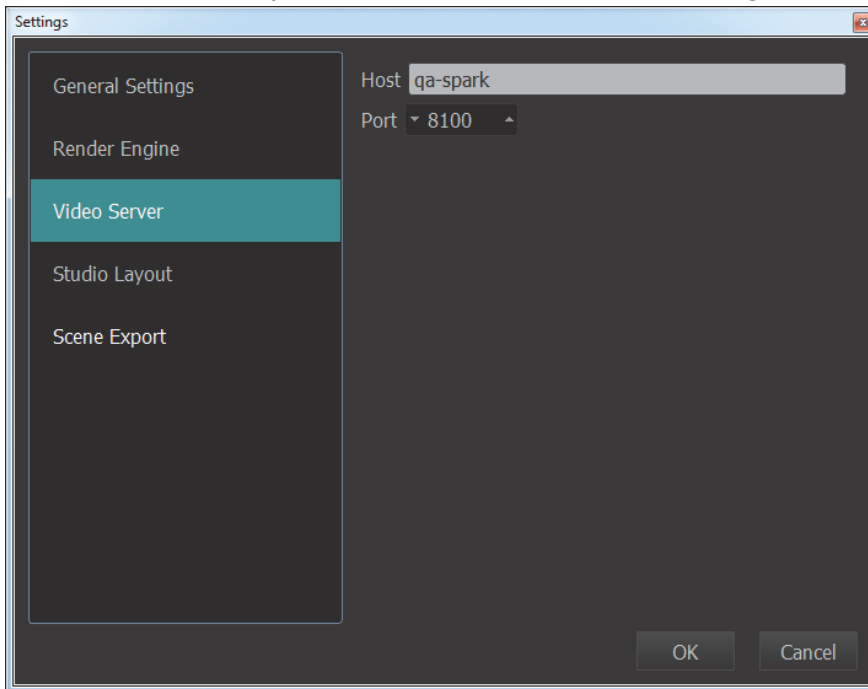
Render Engine

In the **Render Engine** section, set the hostname of the machine, where the RenderEngine is installed.



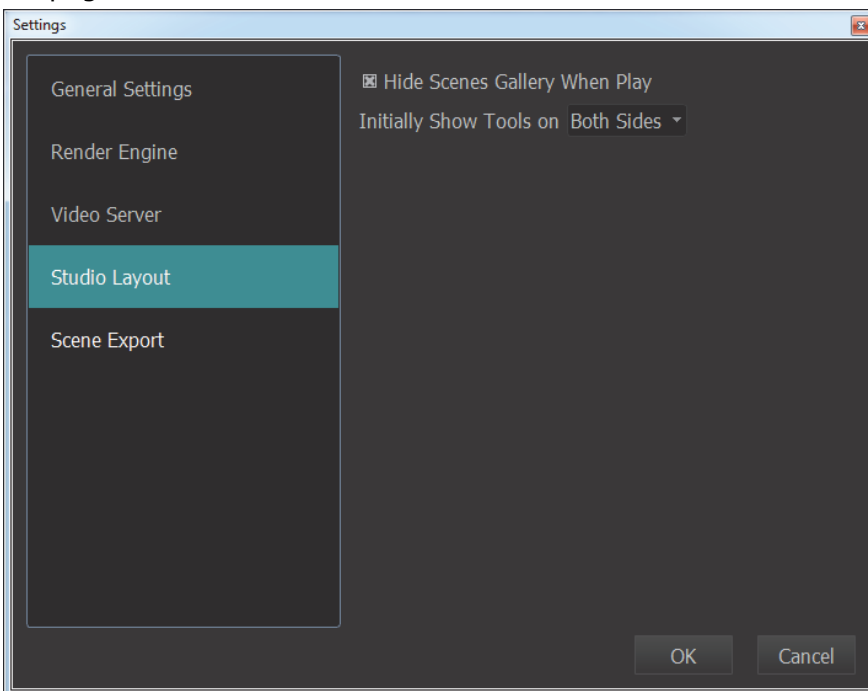
Video Server

In the **Video Server** section, set the hostname of the machine, where the OVS Server is installed and the port, on which the server is listening for incoming connections.



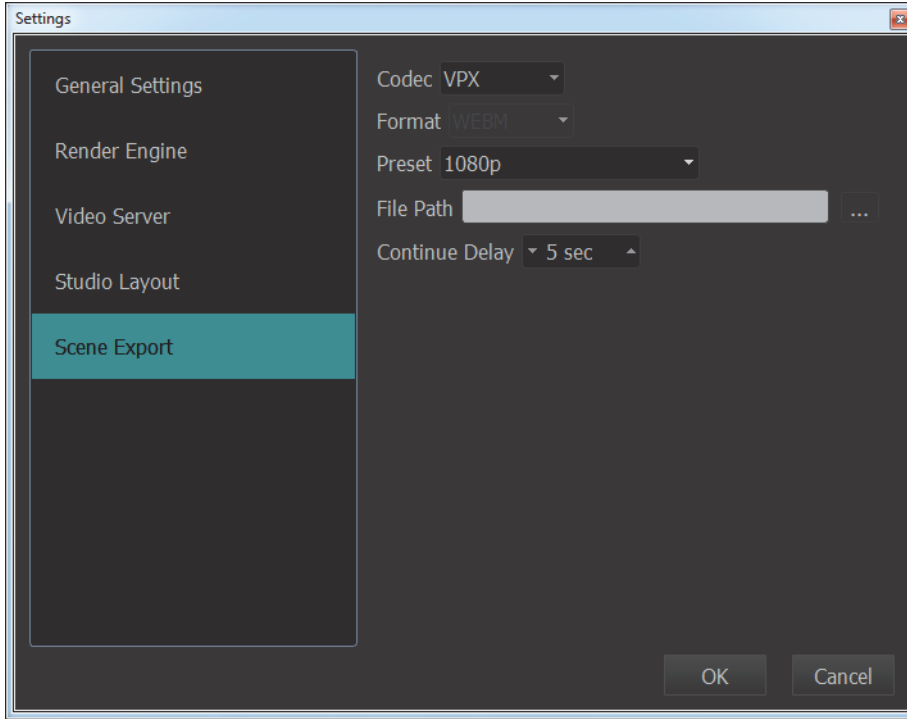
Studio Layout

In the **Studio Layout** section, select whether the **Scene Gallery** should be displayed when a scene is playing, and if the toolbar should be displayed at both sides of the monitor, or on the selected side (left or right). For more information, see [Studio Layout](#) on page 24.



Scene Export

In the **Scene Export** section, select the necessary parameters for video files created during the export. You can select a specific codec and preset for the clip, as well as the default save location and the pause time that is going to be applied to all POIs without a specified delay.

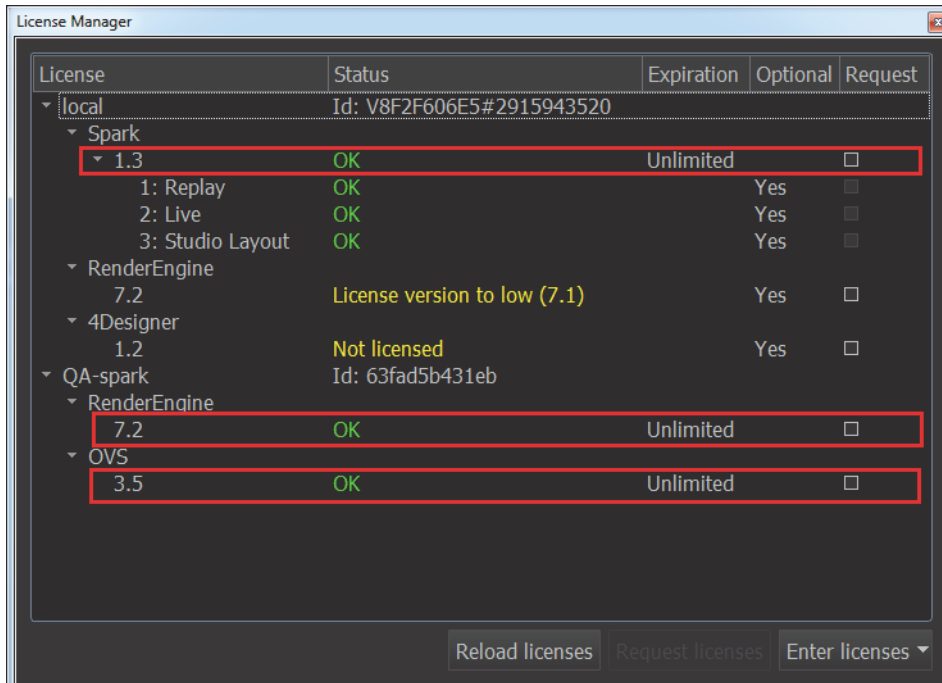


License Manager

The **License Manager** displays the current license status of all components of the Spark system. It also gives the possibility request a license for individual features, and to upload license keys for newly purchased components.

Minimum required software components:

- Spark 1.3
- RenderEngine 7.2 (Linux)
- OVS 3.5



▶▶ To upload a new license:

- Click on **Enter licenses**, and select **Type license** if want to enter the key manually, or **Select license file** to browse for the .dat file containing the license keys.

The OVS Controller


Video footage used in Spark is saved as clips that reference recordings from the video server. A referenced clip contains the data specifying the timecode of the in- and out-points of the clip, but refers to an actual recording for the footage.

The **OVS Controller** allows access to the video server where recorded video is saved. It is used to start and stop recording of live feeds, browse through recordings, and use them as Spark scenes.

►► To open the OVS Controller:

- From the main menu, select **Tools > Video Controller**.

or

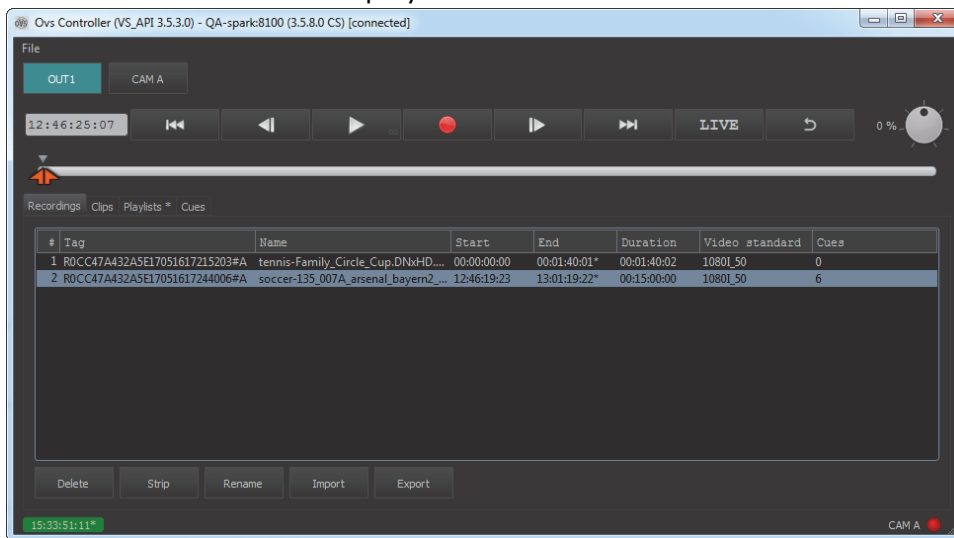
Go to the folder containing the Spark installation files: `C:\Orad\Spark` and double-click on the  `OvsController.exe` icon.



NOTE:

Opening the OVS Controller as a standalone application (from the Spark installation folder) gives access to more options. You can open the OVS Web Settings from the File menu (to view and manage OVS Server settings), or select the OVS playback channel to be used by the Spark application.

The **OVS Controller** is displayed.



OVS Controls

The following controls are available in the **OVS Controller** for recording and navigation.



NOTE:

*The **OVS Controller** is also used by other Avid programs. Only controls used in Spark are explained here.*

17:38:56:14

This field displays the current timecode.

Play the selected recording.

Stop the current recording.

Record the live feed.

Click to return to the live feed after rolling back.

Recordings Tab

#	Tag	Name	Start	End	Duration	Video standard	Cues
1	R0CC47A432A5E17051617215203#A	tennis-Family_Circle_Cup.DNxHD...	00:00:00:00	00:01:40:01*	00:01:40:02	1080I_50	0
2	R0CC47A432A5E17051617244006#A	soccer-135_007A_arsenal_bayern2_...	12:46:19:23	13:01:19:22*	00:15:00:00	1080I_50	6

Delete Strip Rename Import Export

The **Recordings** tab displays a list of all available recordings on the video server. The information displayed for each recording includes the unique identifier tag, the start and end time of the recording, the duration, the video format, and the number of cues marked on the original recording (by other applications that use the video server).

In the **Recordings** tab you can change a recording name using the **Rename** option, **Delete** a recording, **Import** a recording from a shared location, or **Export** to a shared location.

NOTE:
 If you delete a recording, all referenced clips will no longer be available.

Clips Tab

#	Tag	Name	In	Out	Duration	Recording tag
1	C0CC47A432A5E17070514324602	Spark_1080I_50_12_46_25_14_0	12:46:20:14	12:46:25:14	00:00:05:00*	R0CC47A432A5E17051617244006#A
2	C0CC47A432A5E17070514324603	Spark_1080I_50_12_46_25_14_1	12:46:25:14	12:46:30:14	00:00:05:00*	R0CC47A432A5E17051617244006#A
3	C0CC47A432A5E17070514334105	Spark_1080I_50_12_46_25_14_0	12:46:20:14	12:46:25:14	00:00:05:00*	R0CC47A432A5E17051617244006#A
4	C0CC47A432A5E17070514334106	Spark_1080I_50_12_46_25_14_1	12:46:25:14	12:46:28:00	00:00:02:11*	R0CC47A432A5E17051617244006#A
5	C0CC47A432A5E17070514334107	Spark_1080I_50_12_46_25_14_2	12:46:28:00	12:46:30:14	00:00:02:14*	R0CC47A432A5E17051617244006#A
6	C0CC47A432A5E17070514563601	Spark_1080I_50_Pass_0	12:47:37:19	12:47:40:04	00:00:02:10*	R0CC47A432A5E17051617244006#A
7	C0CC47A432A5E17070514563602	Spark_1080I_50_Pass_1	12:47:40:04	12:47:41:06	00:00:01:02*	R0CC47A432A5E17051617244006#A
8	C0CC47A432A5E17070514570604	Spark_1080I_50_new_0	12:46:19:23	12:46:24:00	00:00:04:02*	R0CC47A432A5E17051617244006#A
9	C0CC47A432A5E17070514570605	Spark_1080I_50_new_1	12:46:24:00	12:46:27:02	00:00:03:02*	R0CC47A432A5E17051617244006#A
10	C0CC47A432A5E17070514570606	Spark_1080I_50_new_2	12:46:27:02	12:46:27:15	00:00:00:13*	R0CC47A432A5E17051617244006#A
11	C0CC47A432A5E17070514570607	Spark_1080I_50_new_3	12:46:27:15	12:46:28:04	00:00:00:14*	R0CC47A432A5E17051617244006#A
12	C0CC47A432A5E17070514571909	Spark_1080I_50_New_0	12:46:24:00	12:46:25:07	00:00:01:07*	R0CC47A432A5E17051617244006#A
13	C0CC47A432A5E1707051457190A	Spark_1080I_50_New_1	12:46:25:07	12:46:26:09	00:00:01:02*	R0CC47A432A5E17051617244006#A

The **Clips** tab displays a list of all available clips on the video server. Spark clips are reference clips that apply to recordings. The information displayed for each clip includes the unique identifier tag, the in- and out-point of the clip, the duration, and the unique identifier tag of the recording the clip references.

When you create a scene in Spark, a playlist is created with two or more clips; one clip from the start point to the point of interest (POI), and another clipsOV from the POI to the end point. They are named accordingly *Spark_ <scene name>_start* and *Spark_ <scene name>_end*. For more information, see [Creating Scenes](#) on page 49.

Playlists Tab

#	Tag	Name	In	Out	Duration	Type	Effect	Param1	Par
1	P0CC47A432A5E17051617111801	1			00:00:00:00				
2	P0CC47A432A5E17070514324604	Spark_10801_50_12_46_25_14			00:00:10:01				
	C0CC47A432A5E17070514324602	Spark_10801_50_12_46_25_14_0	12:46:20:14	12:46:25:14	00:00:05:00*	CLIP	CUT	0	-1
	C0CC47A432A5E17070514324603	Spark_10801_50_12_46_25_14_1	12:46:25:14	12:46:30:14	00:00:05:00*	CLIP	CUT	0	-1
3	P0CC47A432A5E17070514334108	Spark_10801_50_12_46_25_14			00:00:10:01*				
	C0CC47A432A5E17070514334105	Spark_10801_50_12_46_25_14_0	12:46:20:14	12:46:25:14	00:00:05:00*	CLIP	CUT	0	-1
	C0CC47A432A5E17070514334106	Spark_10801_50_12_46_25_14_1	12:46:25:14	12:46:28:00	00:00:02:11*	CLIP	CUT	0	-1
	C0CC47A432A5E17070514334107	Spark_10801_50_12_46_25_14_2	12:46:28:00	12:46:30:14	00:00:02:14*	CLIP	CUT	0	-1
4	P0CC47A432A5E17070514563603	Spark_10801_50_Pass			00:00:03:13				
	C0CC47A432A5E17070514563601	Spark_10801_50_Pass_0	12:47:37:19	12:47:40:04	00:00:02:10*	CLIP	CUT	0	-1
	C0CC47A432A5E17070514563602	Spark_10801_50_Pass_1	12:47:40:04	12:47:41:06	00:00:01:02*	CLIP	CUT	0	-1
5	P0CC47A432A5E17070514570608	Spark_10801_50_new			00:00:08:08				

The **Playlists** tab displays the playlists available on the video server with their nested clips. When you create a scene in Spark, a playlist is created with two clips; one clip from the start point to the POI, and one clip from the POI to the end point.

The information displayed in the **Playlists** tab includes the unique identifier tag of the playlist and the clips, and the in- and out-points of the clips.

The default naming convention is *Spark_ <scene name>*. You can change the playlist name using **Rename**. Delete a playlist using **Delete**.




NOTE:

Deleting a playlist will delete the entire scene. Do not delete single clips in a playlist.

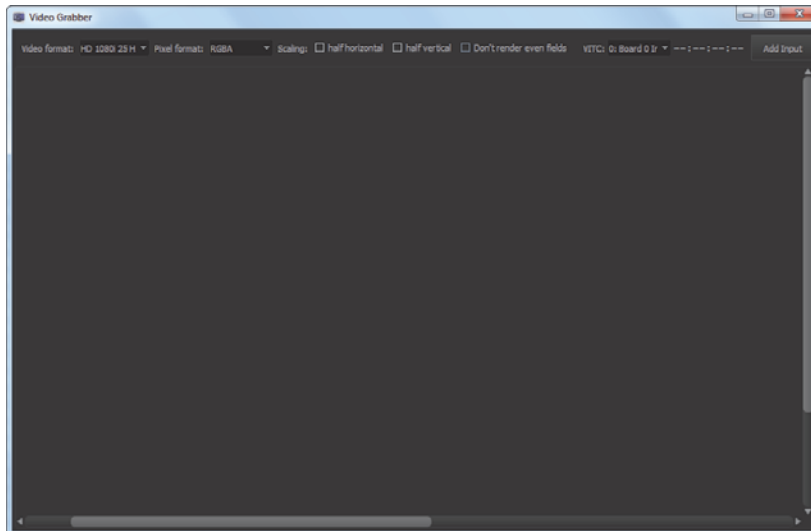
VideoGrabber

VideoGrabber is a standalone diagnostic tool, which enables video capture from multiple sources and of various formats.

▶▶ To open the VideoGrabber:

- Go to the folder containing the Spark installation files: *C:\Orad\Spark* and double-click on the  **VideoGrabber** icon.

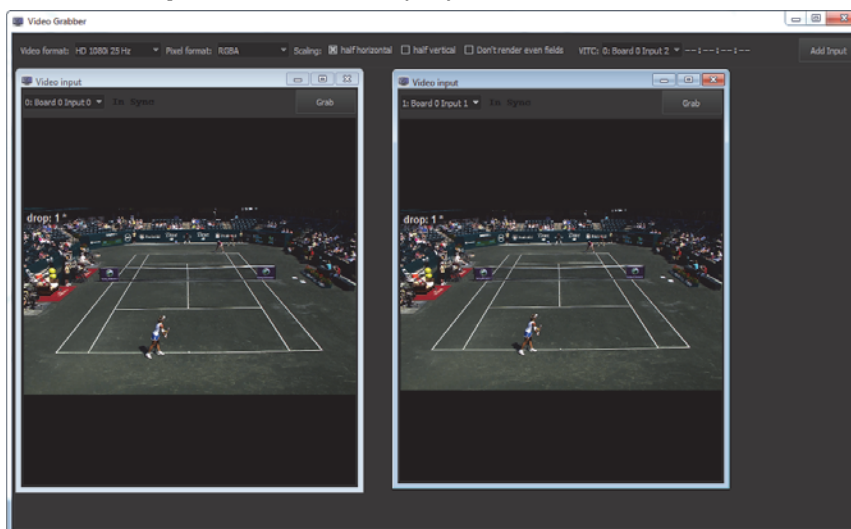
The **VideoGrabber** is displayed.



VideoGrabber can be used to diagnose the status of the video signal coming from multiple inputs. It allows to select the format of the video and the pixel format according to the received video signal. Video from multiple inputs can be displayed simultaneously.

▶▶ To add a new video input

- Select the required Video format and Pixel format and click on **Add Input**. A **Video input** window is displayed.



5. Setting Up Scenes

In this section:

Creating Scenes on page 49

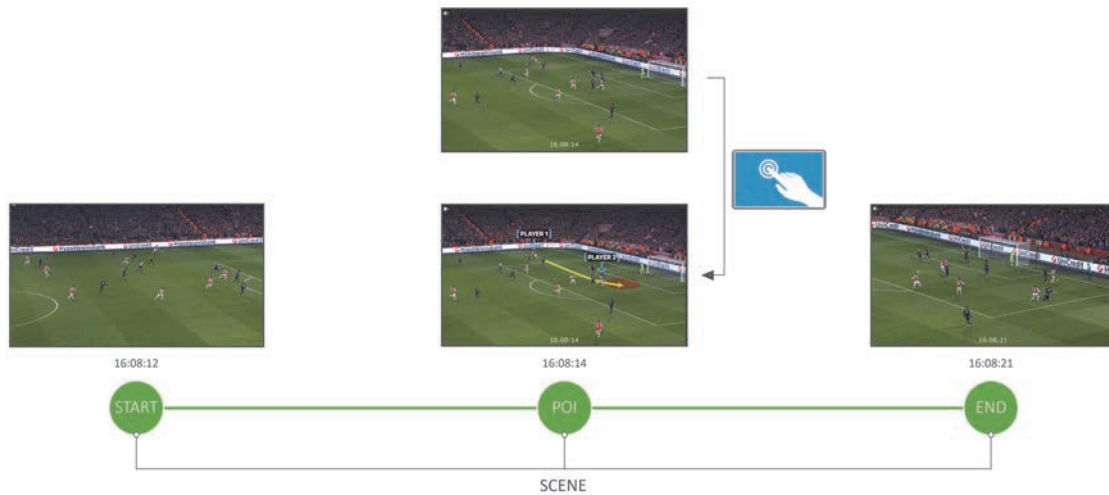
Scene Calibration on page 57

Creating Scenes

In Spark, a scene is a video segment that contains the play to be analyzed during broadcast—the points of interest (POI)—that you want to telestrate, and later the graphics used to telestrate the play.

Scenes have:

- A start (in) point where the “story” of the play begins.
- Points of interest or play that you illustrate using the graphic elements available.
- An end (out) point where the play ends.



Scenes are saved in the current project.

Scenes can be created in two ways:

- [Manual Scene Mode](#) on page 50.
- [Auto Scene Mode](#) on page 54.

Manual Scene Mode

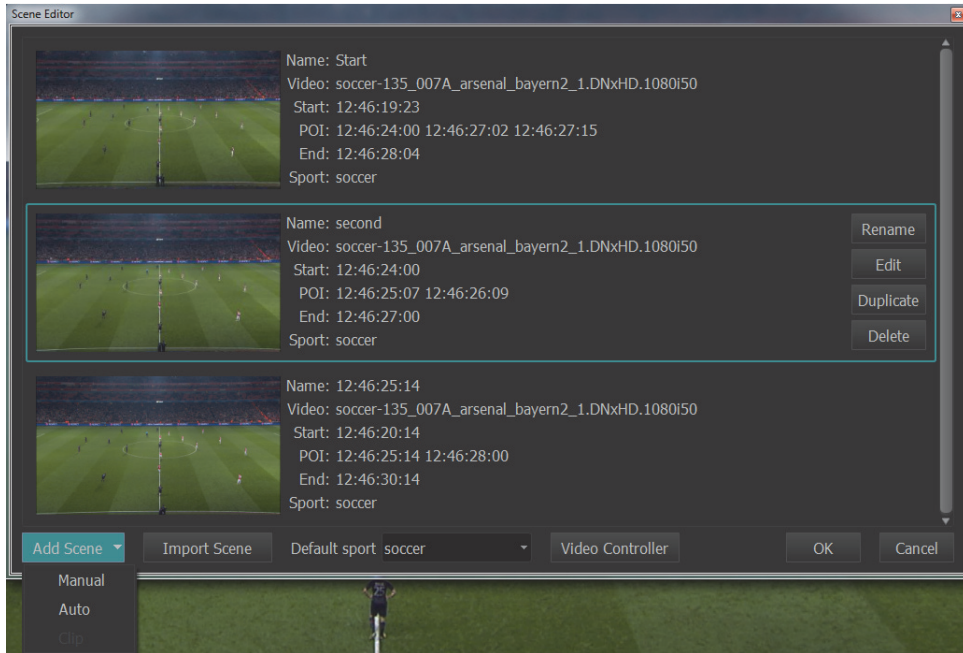
In a manual scene mode, you set the length of the scene. This method requires sufficient time for setup before going on air.

In this mode you must set the start point, the POIs, and the end point of the scene.

►► To create a scene in the manual mode:

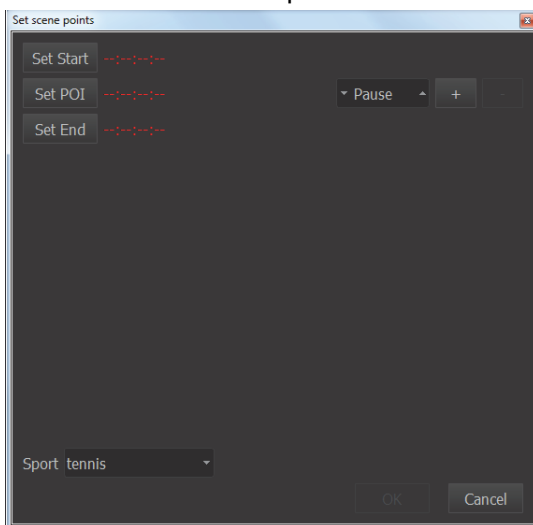
1. From the main menu, select **Tools > Scene Editor**.

The **Scene Editor** opens.



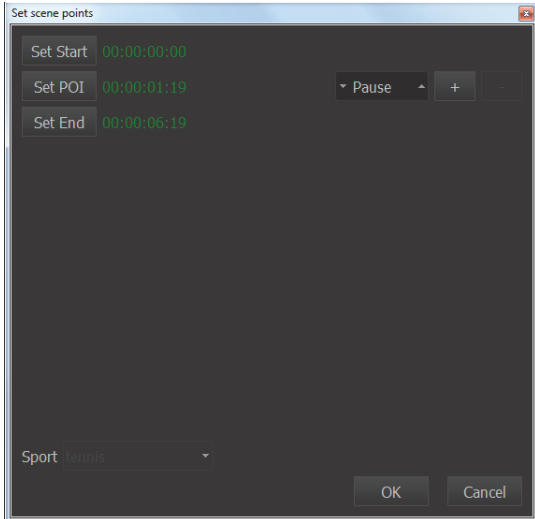
2. Select the type of sport from the **Default sport** list.
3. Click **Add Scene**. Select **Manual**.

The **Scene Editor** opens.



4. Use the Jog or the ShuttlePROv2 controller to roll the video to the required start point. Click **Start** to set the current frame in the video as the scene start point.

The start point timecode is displayed.



5. Roll to the required POI in the video and click **POI**.
6. The POI timecode is displayed.



NOTE:

You can create multiple POIs. For more information, see [Adding, editing and deleting a POI](#).

7. Roll to the end point of the scene and click **End**.
The end point timecode is displayed.
8. Fill in the scene name in the window that follows.
9. Click **OK**.
The scene is created.

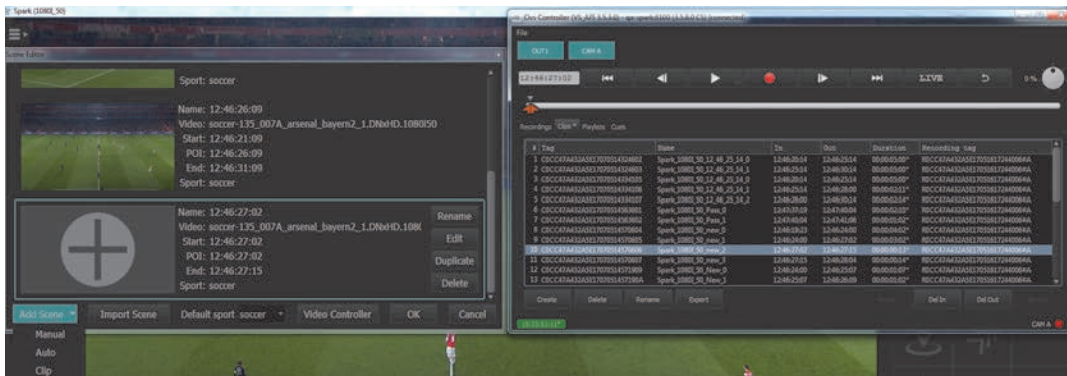


TIP:

When the selected timecode values are valid the timecode appears in green. If the timecode value is invalid (for example, if the end point is before the start point) the timecode appears in red and **OK** is disabled.

▶▶ To create a scene from an OVS clip:

1. Open the Video Controller (**Tools > Video Controller** or CTRL +V).
2. In the **Clips** tab, select the clip to be imported as a scene.
3. From the main Spark menu, select **Tools > Scene Editor**. Click on the **Add Scene** button and pick **Clip** from the list of options.
The clip is now imported into Spark as a new scene.

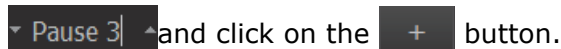



Adding, editing and deleting a POI

You can add multiple POIs within a single scene to mark numerous interesting moments of a single clip. The POIs can be added when creating a new scene or when editing an already existing scene.

▶▶ To add multiple POIs:

1. Go to **Tools** and select **Scene Editor**. Click on the scene, where you want to add the new POI or press **Add Scene**.
2. To add a second POI, first select the pause time between two clips in seconds

 and click on the  button.

A new POI editor row appears where you can assign the necessary values:





NOTE:

A newly created POI inherits the camera setup from the preceding POI.



TIP:


You can jump between POIs by tapping (or clicking on) the scene thumbnail.

▶▶ To change the POI margin:

1. Go to **Tools** and select **Scene Editor**. Click on the scene that you want to alter, and press on **Edit**.
2. Use the Jog or the ShuttlePROv2 controller to roll the video to the required point of interest. Click **Set POI** to set the current frame in the video as the scene POI.

The margin is changed.

▶▶ To delete a POI

1. Go to **Tools** and select **Scene Editor**. Click on the scene that you want to alter, and press on **Edit**.
2. Click on the  button next to the POI to be removed.
The POI is removed.

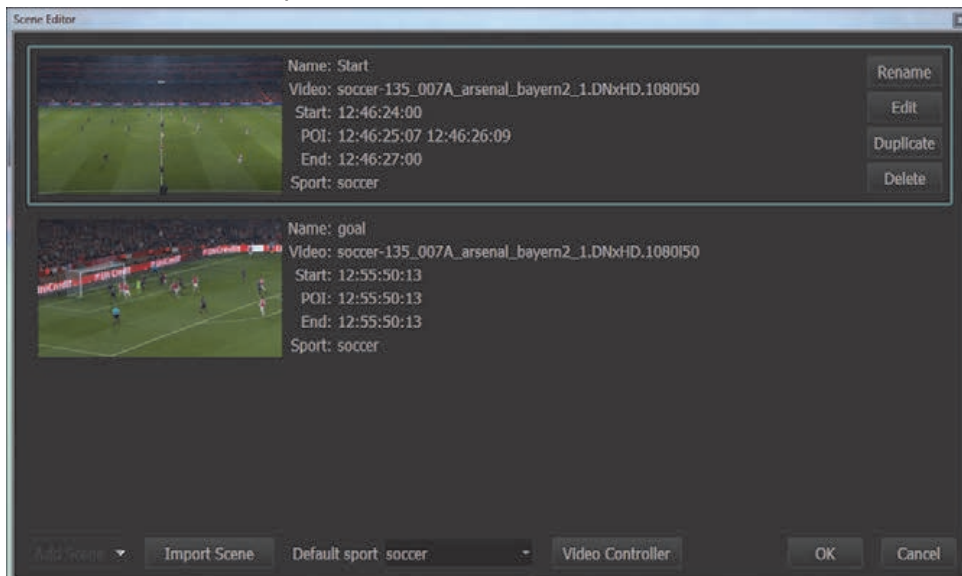
Renaming, Editing, Duplicating, or Deleting a Scene

Duplicate the video footage of a scene before adding graphic elements so that it can be re-used as required, for example, for different commentators to telestrate the same scene. Scenes can be renamed, edited or deleted, as required.

►► To rename, duplicate or delete a scene

1. From the main menu, select **Tools > Scene Editor**.

The **Scene Editor** opens.



2. Select a scene and click the required option:

- **Rename**- to rename the selected scene.
- **Edit** - to edit the selected scene.
- **Duplicate** - to clone the scene.
- **Delete**- to delete the scene.



TIP:

You can change the order of the scenes within a project by simply dragging and dropping them into a new place.

Importing a scene

You can import scenes into the current project. This can be useful when transferring scenes from one workstation to another.



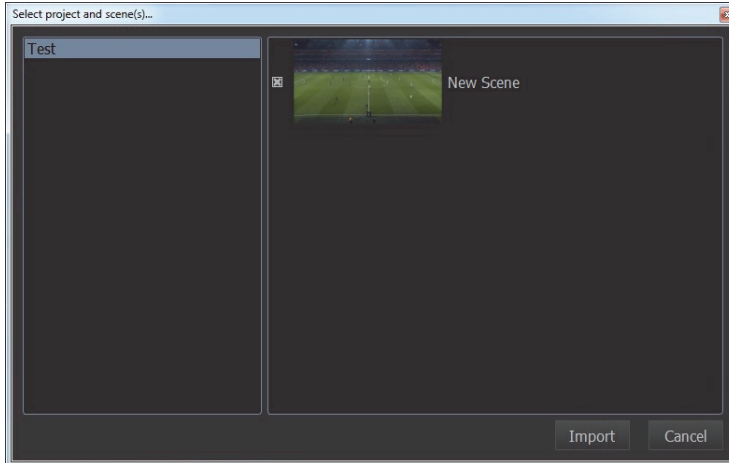
NOTE:

Before a scene can be imported into Spark, it needs to be available in the following location: G:\Projects\SparkProjects.

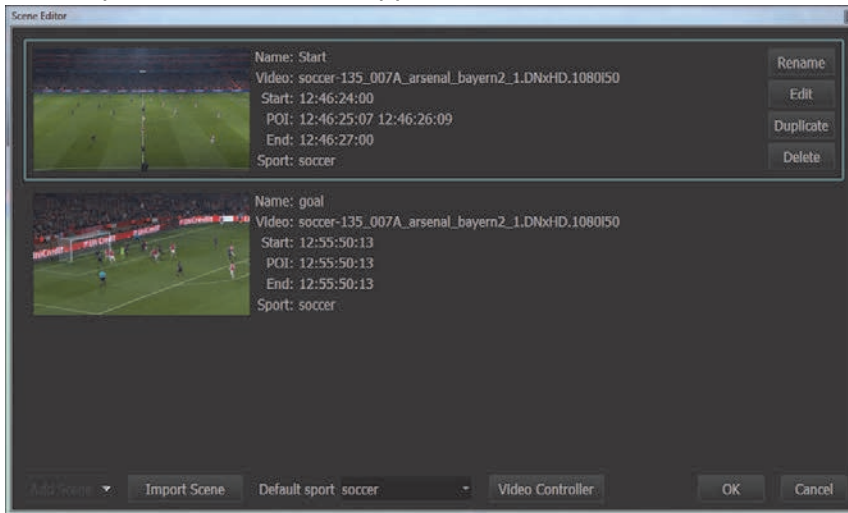
►► To import a scene:

1. From the main menu, select **Tools > Scene Editor**.

- Click on **Import Scene** and the **Select project and scene(s)...** window appears:



- Select the project and the scenes to be imported into Spark and click on **Import**. The imported scenes now appear in the Scene Editor.



- You can edit the imported scene or click **OK** to preview it.

Auto Scene Mode

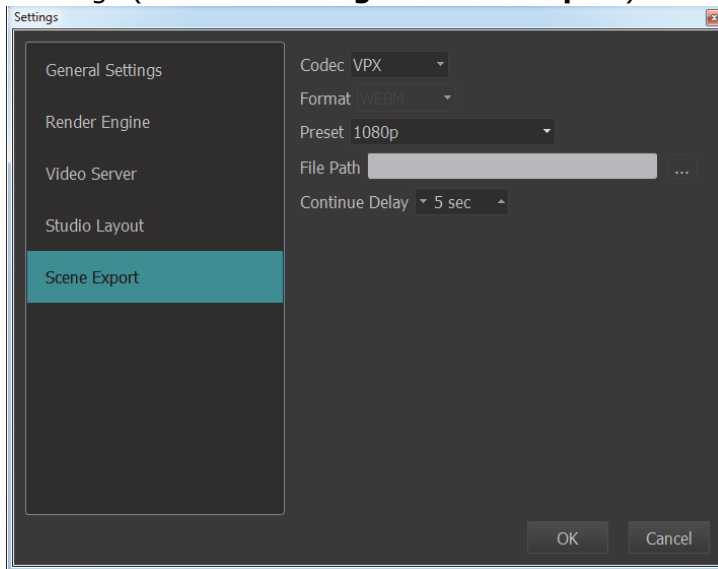
In the Auto Scene mode, a scene is created when you press **Auto Scene** on the ShuttlePROv2 controller. In this mode you indicate the POI while the video is paused at the required frame. A scene is created automatically, with start and end points at a specified margin from the POI. The time before and after the POI can be adjusted in the Settings. For more information, see [SparkSettings](#) on page 39. The name of the scene is the POI time code.

For more information, see [Using ShuttlePROv2 to Navigate the Video](#) on page 31.

Export Scene to video file

Spark 1.3 enables the import and export of video files from multiple sources. The workflow is now faster and easier: ingest video from any source, send it to Avid Spark, easily add graphics and export it to a video file to share it across the entire Avid production environment.

Default options for clip rendering can be found in the **Scene Export** tab of the Spark Settings (**Tools > Settings > Scene export**).

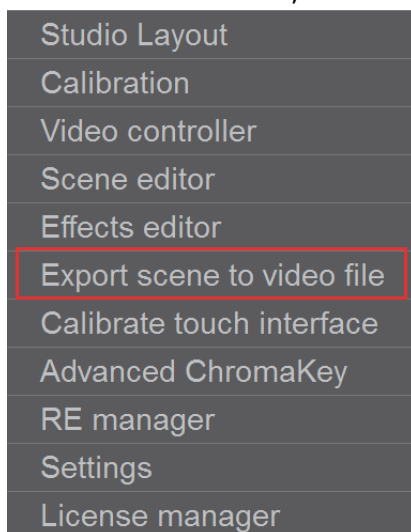


First, select the **codec** to be used to create the video. The **format** of the clip is then assigned automatically. Next, select the **preset**.

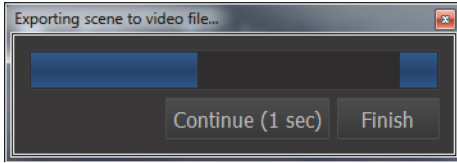
You can also pick a default location for newly created clips and a default pause time for all POIs that have been created without a specified pause.

► To export a scene to a video file:

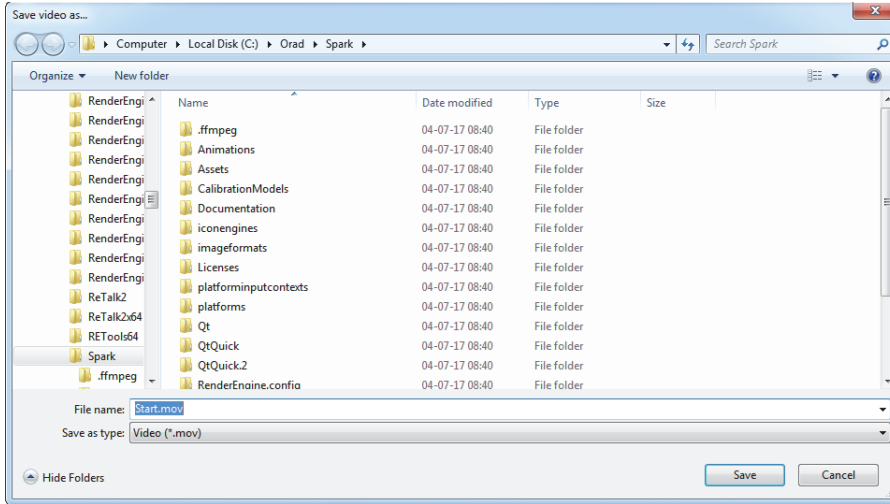
1. From the scene gallery, select the scene to be exported.
2. From the main menu, select **Tools > Export scene to video file**.



- The export begins and a progress window is displayed.



- When the file export is completed, a new window is displayed where you can select the location where the file should be saved.



Scene Calibration

Before adding 3D graphics to the scene, it is recommended to calibrate the dimensions of the field to work with RenderEngine and adjust the chroma key settings by sampling field color in the video.

Calibrating Arena Dimensions

In order to display the graphic elements in perspective to the playing field, you must calibrate arena dimensions and recognizable reference points for each scene.

►► To calibrate the scene with the arena dimensions:

1. From the scene gallery, select the scene to calibrate.

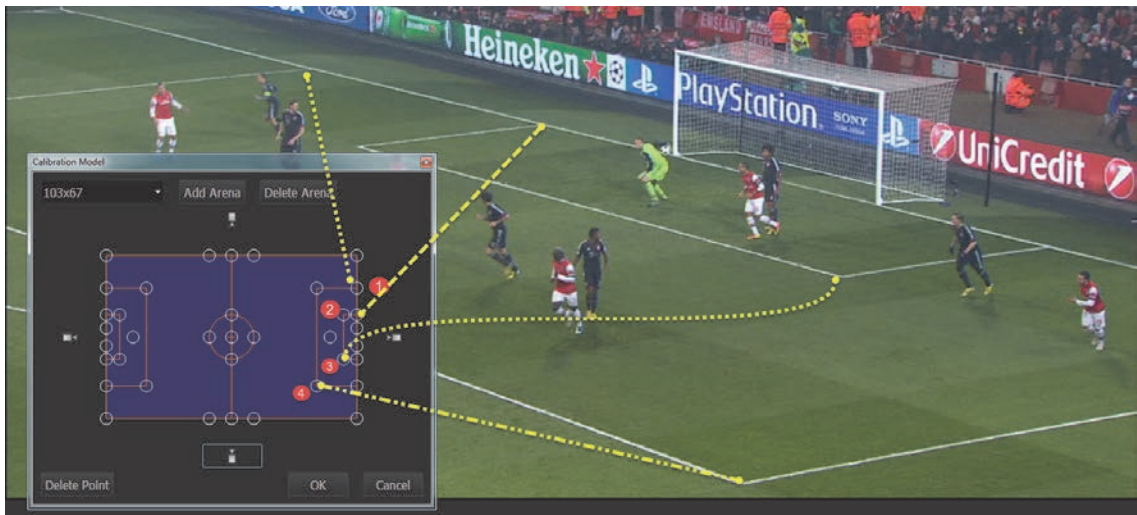


NOTE:

Calibrating a camera in a non-POI moment automatically creates a new POI at the selected moment.

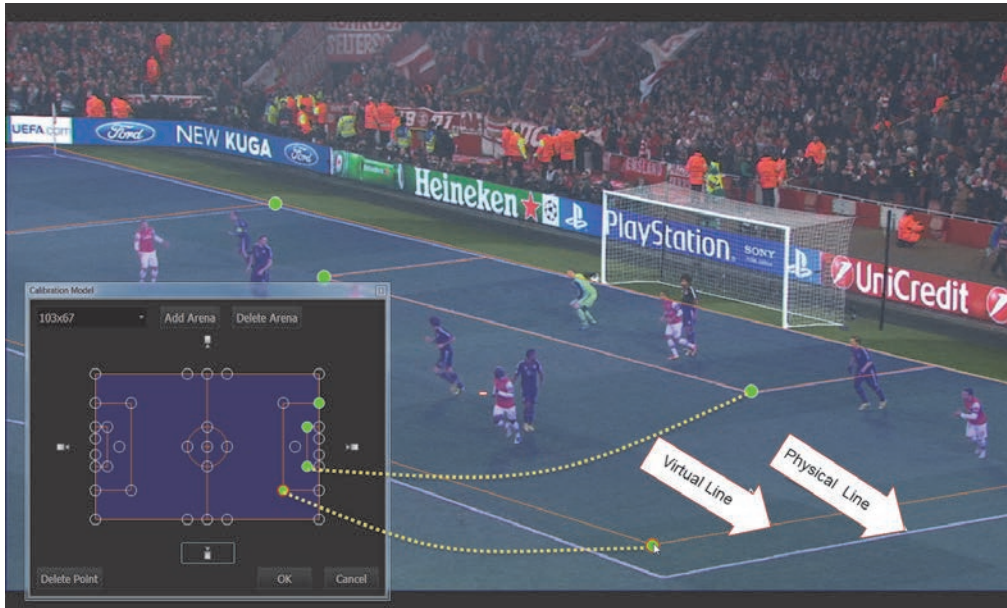
From the main menu, select **Tools > Calibration**.

The **Calibration Model** is displayed. The object of the process is to match at least four points of the field model to visible points in the video, as shown in the following image.



2. From the top left, list the dimensions that best describe the actual arena.
To add options to this list, see [Adding an Arena](#) on page 58.
3. Select the camera angle that represents best the angle of the camera in the video.
4. Select a point on the model to match.
5. Select the corresponding point on the video.
Both points are marked green.
6. Repeat steps 3-5 until you have four points matched.
You can select **Delete Point** to delete the last matched point and match another.
Once you have four matched points, the shape of the field is highlighted with a transparent blue color.

7. Verify that the virtual and physical arena lines overlap on the video. If necessary, drag the points on the video to adjust the lines. (In the following image the lines are not overlapping.)



8. Click **OK** to save scene calibration.



NOTE:

For best results, do not select more than two points on a straight line.

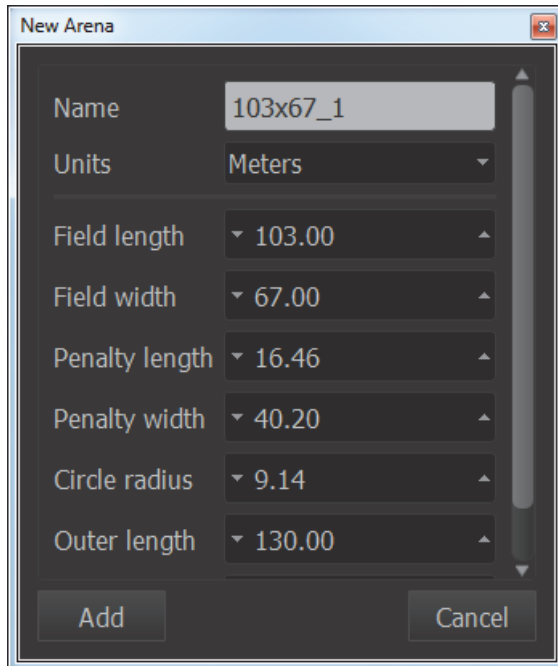
Adding an Arena

If you don't find an arena with the required dimensions in the **Calibration Model** list, you can define your own arena.

►► **To add an arena to the list:**

1. From the scene gallery select a scene.
2. From the main menu, select **Tools > Calibration**.
3. The **Calibration Model** is displayed.
4. Select **Add Arena**.

The **New Arena** dialog box is displayed.




5. Type the **Name** of your new arena.
6. Set the required field dimensions.
7. Click **Add** to save the new arena.

The new arena is available for all scenes with the same game type, in the **Calibration Window**.

Adjusting Chroma Key

The playing fields of different sports have different color characteristics. For example, the grass color, parquet tones, etc. Lighting also affects the color captured by the cameras. When illustrating the video with 3D graphic elements, the Spark system overlays the graphic elements on the video so that important field and players features are easily visible. Sample the chroma key (background) of each scene before broadcast to improve results.

►► To quickly sample the chroma key for a scene:

1. Open a scene from the scene gallery.
2. From the **GFX Controls** panel, click on the **Color Picker** .
3. Tap the playing field to sample its color. Repeat several times for different color shades.

4. Tap the Color Picker  once again to confirm the sample.

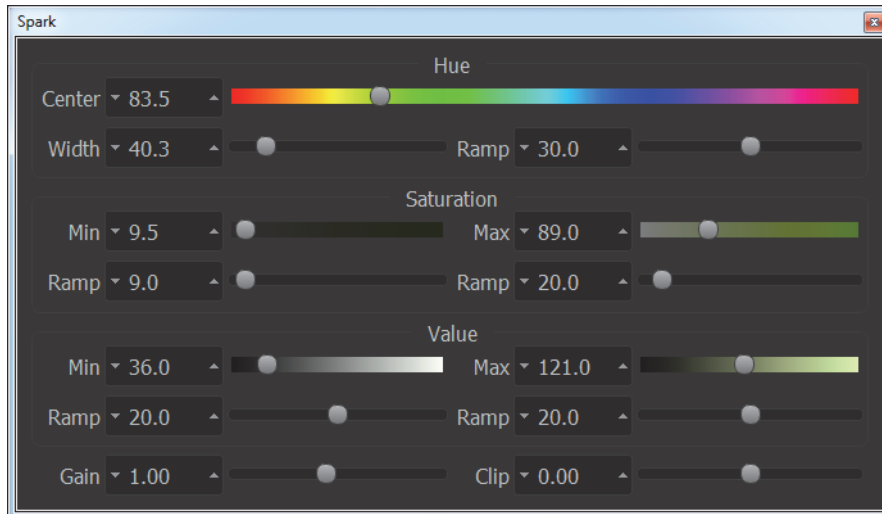


NOTE:

When switching between scenes, the sampled Chroma Key values are going to be remembered.

▶▶ To manually adjust chroma key:

1. Open a scene from the scene gallery.
2. From the main menu, select **Tools > Advanced ChromaKey**.
The Chroma Key calibration window is displayed.



Here you can manually adjust the Hue, Saturation and Value parameters.

6. Setting Graphic Tools

In this section:

Telestration Graphics on page 62

Populating the Toolboxes on page 63

Locking graphic tools on page 66

Snap to Shape and Snap to Area on page 67

The Live Arrow on page 70

Fully Customizable Arrows on page 71

2D Graphic Elements on page 74

3D Graphic Elements on page 85

Telestration Graphics

There are two types of graphics used to telestrate or analyze game plays (scenes) in Spark, 2D and 3D. In order for the 3D graphics to blend with the video and give a professional and “stylish” look, field calibration and chroma key sampling is recommended. For more information on this process see [Scene Calibration](#) on page 57.

To telestrate during broadcast you use tools, which are 2D and 3D graphics elements with customized properties. The following sections describe how to make these tools available.

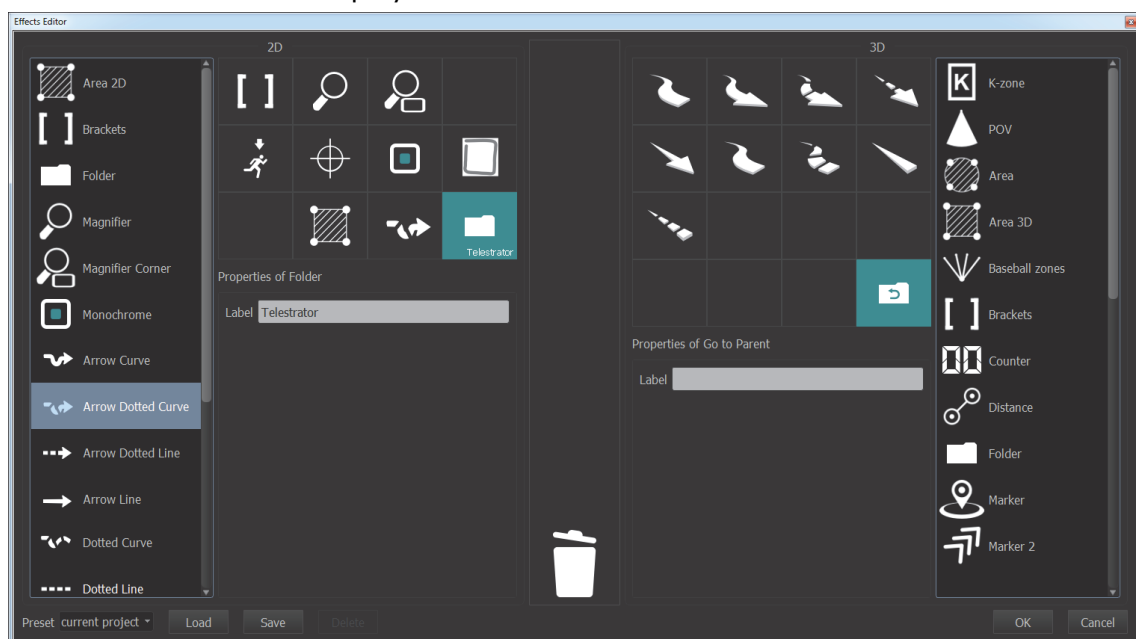
Populating the Toolboxes

To streamline telestration while on-air, you must create a set of tools before the broadcast. Each tool is a graphic element with user defined properties. During broadcast you can only select the tools that you added to the toolbox. These tools are arranged into **2D** and **3D** toolboxes. For each graphic element, you set properties such as line thickness, zoom level, etc. The 2D toolbox can hold up to 12 tools. The 3D toolbox can hold up to 16 tools. You can add the same graphic element several times with different presets to create different tools. You can also organize your graphic elements into folders.

►► To add tools to the toolbox:

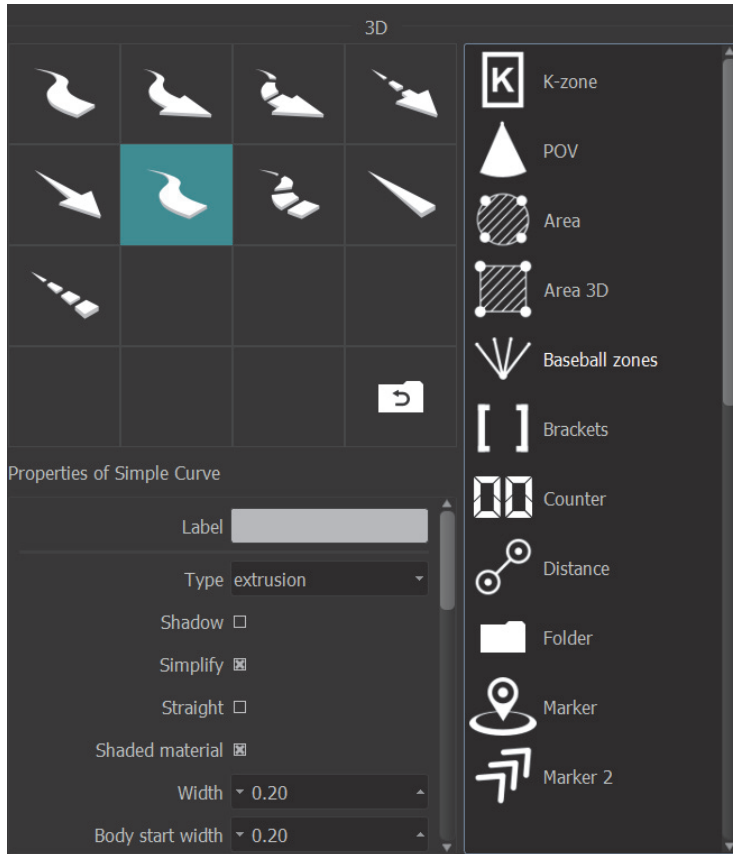
1. From the main menu, select **Tools > Effects Editor**.

The **Effects Editor** is displayed.



2. Drag 2D/3D elements from their respective lists to one of the available toolbox slots.

The element is now selected in the toolbox and you can set its properties:




3. In the **Label** box, type in a short description for the graphic element.

For example, **Zoom 5X** 

4. Set the default properties for the tool.

For more information, on tool properties see [2D Graphic Elements](#) on page 74 or [3D Graphic Elements](#) on page 85.

5. To group elements into a folder, first drag the **Folder** element into a toolbox slot. Set the name of the folder in the **Label** section. After double-clicking on the newly created folder, drag and drop the graphic elements into it. You can also add another folder element, to create a directory structure. To go back to the main toolbox, press the  button.

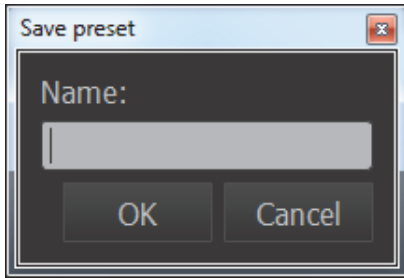
6. To remove an element, drag and drop it into the bin.

7. After adding all the required graphic elements to the toolbox, click **OK**.

▶▶ To save graphic tools as a preset:

1. After the toolbox has been populated with the required graphic tools, you can save that selection as a preset. To do so, click on the **Save** button in the lower left corner.

2. A save preset window appears.



3. Type in a name for your tools preset.

4. Click **OK**.

▶▶ To load or delete a graphic tools preset:

1. To load an existing preset, select it from the drop-down list in the lower left corner and click on **Load**.

2. To delete a preset, select it from the drop-down list in the lower left corner and click on **Delete**.



NOTE:

You can select presets marked as **Default** or **None**, which cannot be overwritten or deleted. The default preset contains the mostly used graphic elements, while the "none" preset is completely empty.


The tools you added to your toolboxes and organized into folders appear on the **Main screen**.





Locking graphic tools

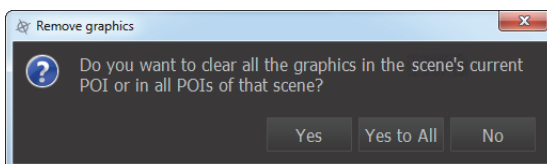
Most of the available 2D and 3D graphic tools can be used several times within the same scene. In order to make applying multiple graphic tools more dynamic, you can use the **lock** feature.

►► To lock a graphic tool:

1. Add the required graphic tools to the toolbox. For more information, see [Populating the Toolboxes](#) on page 63. When available, select the scene and the POI to be illustrated.
2. Click on the lock icon .
3. Select the graphic tool, and if applicable its color, and apply it onto the scene. You can use that same tool consecutively.





4. To use a different graphic tool, simply select it from the toolbox.
5. To delete a single graphic tool, press the  button once and click on the graphic tool to be removed. To delete all graphic tools, press the  button twice. A confirmation window appears asking whether to remove the graphic tools in the current POI or in all POIs of that particular scene:



6. Select the preferred option: **Yes** to remove graphics from the current POI; **Yes to All** to remove the graphic tools from all POIs of that scene. Select **No** if you do not wish to clear the graphic tools.

Snap to Shape and Snap to Area

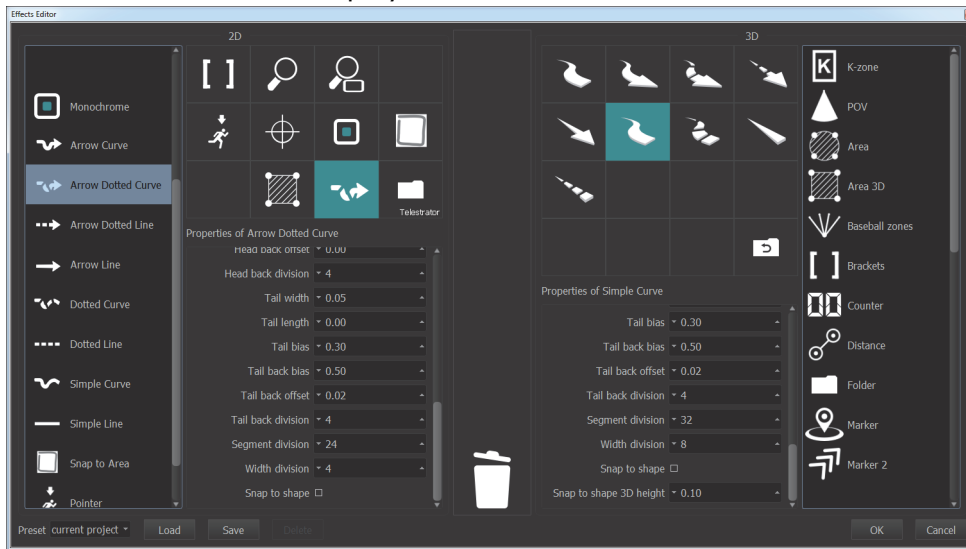
The 2D and 3D Snap to Area / Snap to Shape elements as well as all the arrows and curves are equipped with the "Snap to shape" property. This option allows you to mark the video with custom-made shapes and areas in a process that is fast and intuitive.

The Snap to Area  / Snap to Shape  graphic elements have the Snap to Shape feature enabled by default. Before you can apply the Snap to Shape feature to any other suitable graphic element, you need to enable it in the properties of that element.

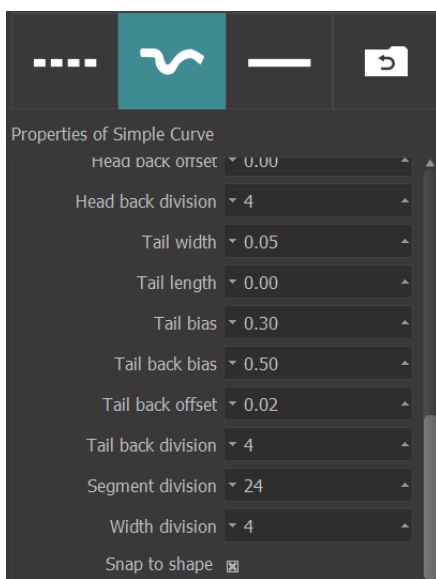
▶▶ To enable the Snap to Shape property:

1. From the main menu, select **Tools > Effects Editor**.

The **Effects Editor** is displayed.



2. Drag the required 2D or 3D line or curve graphic tools to their respective toolboxes. Select the elements to be used to draw the freehand areas and enable the **Snap to Shape** checkbox.



**NOTE:**

The 3D elements have an additional parameter: *Snap to Shape 3D Height*, which changes the height of the created 3D shape.

3. After adding all the required graphic elements to the toolbox, click **OK**.

Now that the Snap to Shape property is enabled for the chosen graphic tools, you can draw the shapes on the clip. There are three available shapes: rectangles, rectangles with rounded corners and ellipses.

Select the graphic element from the toolbox, and if necessary the desired color, and draft the shape.



In order for the path to become a color filled area, you need to close it on the first point. Once you close the path, it automatically snaps into an area:

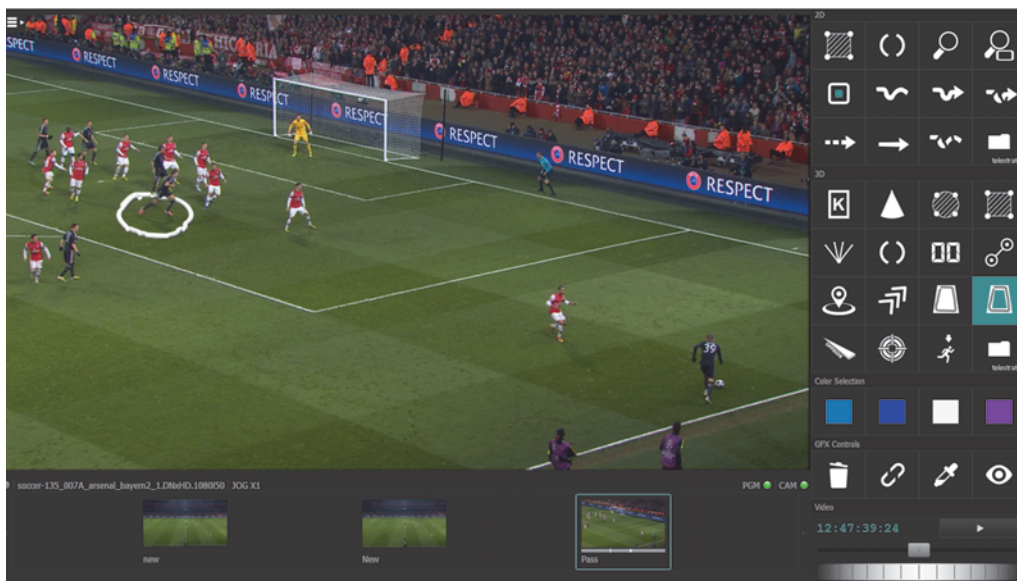


When applying the Snap to Shape feature with a 3D graphic tool, such as the 3D Snap to Area element, the result is more realistic thanks to Spark's embedded chromakeyer.

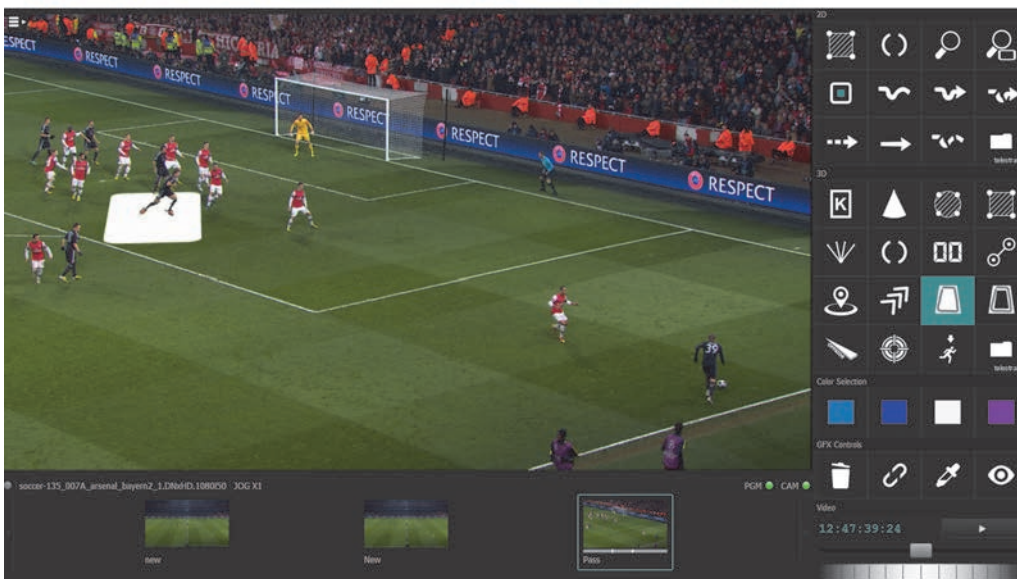


The images below present examples of the Snap to Shape and Snap to Area assets.

Snap to Shape



Snap to Area



The Live Arrow

The Live Arrow mode allows to create arrows on a clip, which are going to disappear as soon as you stop drawing and can be applied only to 2D lines and curves. This ensures fast operation, which is especially useful during live sports productions.



NOTE:

This feature is available in the Replay Telestration and the Live Telestration mode.

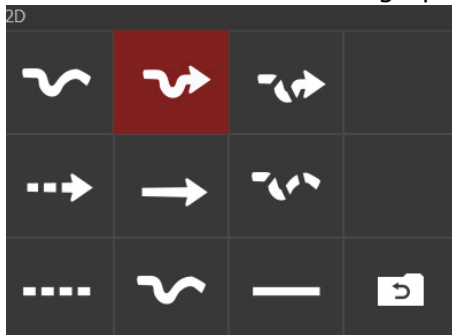


NOTE:

The Live Arrow cannot be used with 3D assets.

▶▶ To enable the Live Arrow:

1. Make sure your 2D toolbox contains the chosen arrow and curve graphic tools, set with the necessary properties. For more information, see [Populating the Toolboxes](#) on page 63.
2. Double-click on the chosen graphic tool. The color of the icon turns **red**.



3. Now you can draw the desired arrow or line on the video by holding the left mouse button or directly on the touch screen using your fingers. As soon as you as release the left mouse button or lift the finger off the screen, the drawn shape fades.



NOTE:

You can use the Live Arrow on a playing clip or on a paused video (available only in the Replay Telestration mode).

Fully Customizable Arrows

Spark is now equipped with fully customizable arrows. You can emphasize a particular play, area, or player using arrows with personalized attributes, including the arrow's head, body, tail, color and width.

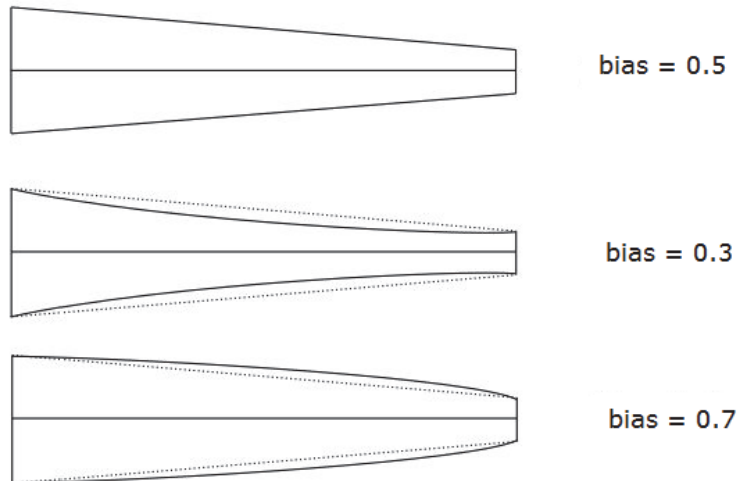
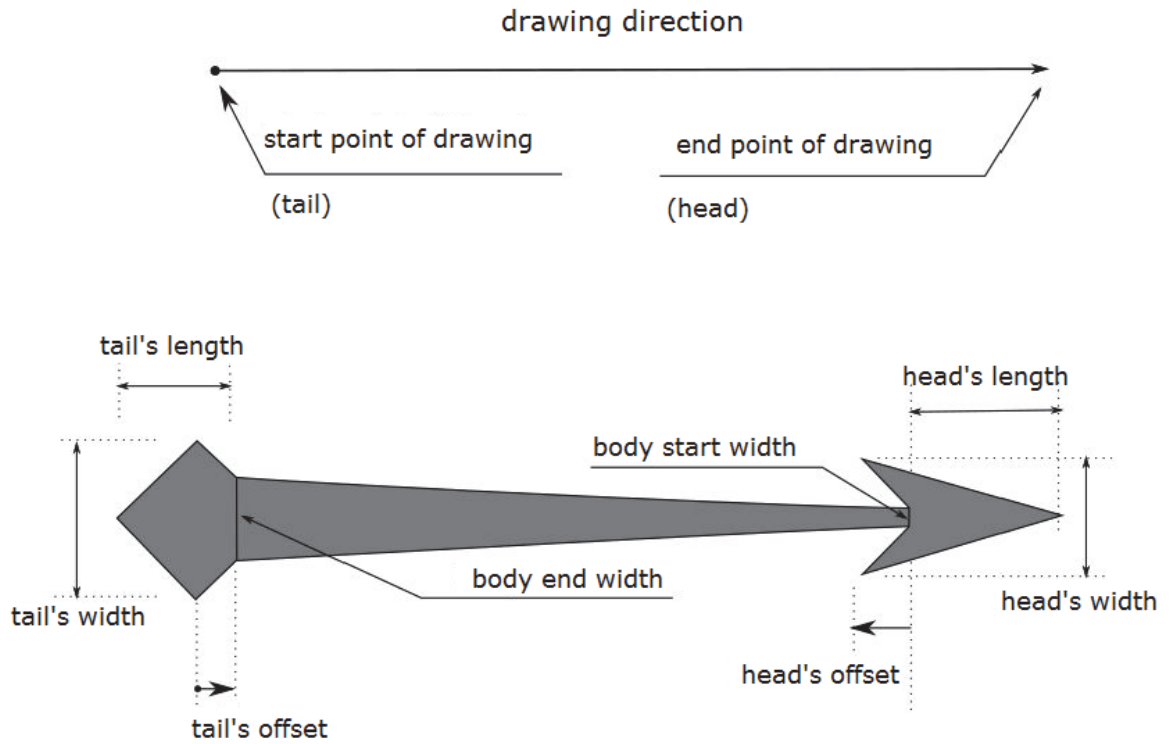


There is a total of 25 available parameters, which can be adjusted individually to create various styles of arrows and lines.

Label	Set the name of the graphic tool
Type	Select the type: extrusion (solid line) or distribution (dotted line).
Shadow	Enable for the arrow to cast a shadow
Simplify	Enable to convert the drawn shape into a raster graphic
Straight	Enable to draw straight lines
Shaded material	Enable for the arrow to be shaded
Width	Set the width of the arrow
Body start width	Set the width of the body close to the head
Body end width	Set the width of the body close to the tail
Body bias	Set to define the curve of the body
Body distribution distance	Set the distance between the dots in dotted lines and curves.
Head width	Set to define the width of the head
Head length	Set to define the length of the head

Head bias	Set to define the outer curve of the head
Head back bias	Set to define the back curve of the head
Head back offset	Set to define how far the arrow's head is shifted back
Head back division	Set to define the amount of divisions along the back of the head
Tail width	Set to define the width of the tail
Tail length	Set to define the length of the tail
Tail bias	Set to define the outer curve of the tail
Tail back bias	Set to define the back curve of the tail
Tail back offset	Set to define how far the arrow's tail is shifted back
Tail back division	Set to define the amount of divisions along the back of the tail
Segment division	Set the number of divisions in a segment. Increasing the number improves the object resolution, but can slow down the rendering.
Width division	Set the number of divisions along the width of the arrow. Increasing the number improves the object resolution, but can slow down the rendering.
Snap to Shape	Enable to use the Snap to Shape feature. For more information, see Snap to Shape and Snap to Area on page 67
Snap to Shape 3D height	Set the height of the created 3D shapes

The image below depicts the meaning of the main properties of an arrow:




2D Graphic Elements

2D graphics can be added to a scene from the 2D toolbox without prior calibration or sampling. They can also be added at any frame, without having a POI setup beforehand. However, they will only be saved when added on a point of interest.

Area

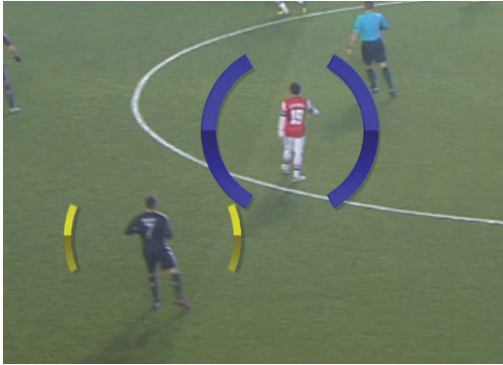
The **Area** element can be used to highlight an interesting region of the field.




Name	Area
Icon	
Available Properties	<ul style="list-style-type: none"> • Button label • Inner cut factor • Skew angle
Usage	<ul style="list-style-type: none"> • Click the point on the video • Drag to move it • Pinch to resize
Notes	<ul style="list-style-type: none"> • You can use several Area elements in the same scene. • Area elements will remain with the POI even after you switch scenes.

Brackets

The **Brackets** element can be applied to place focus on a particular player.




Name	Brackets
Icon	
Available Properties	<ul style="list-style-type: none">• Button Label• Opening Angle• Thickness
Usage	<ul style="list-style-type: none">• Click the point on the video• Drag to move• Pinch to resize
Notes	<ul style="list-style-type: none">• You can use several elements in the same scene.• The elements will remain with the POI even after you switch scenes.

Folder

Folders can be used to organize graphic elements.




Name	Folder
Icon	
Available Properties	<ul style="list-style-type: none">• Button Label
Usage	<ul style="list-style-type: none">• Double-click to open in the Effects Editor• Single-click to open in the Main Screen.• Drag 2D graphic tools to be included in the folder.

Magnifier

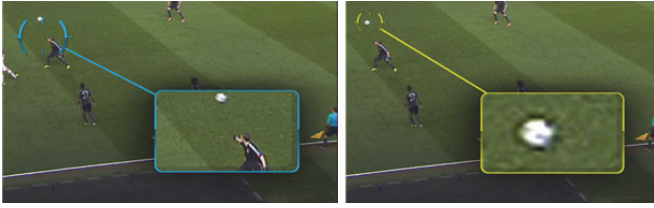
The **Magnifier** tool allows you to magnify a selected area of the field.




Name	Magnifier
Icon	
Available Properties	<ul style="list-style-type: none">• Button Label• Background blurring• Background darkening• Zoom• Zooming Sharpness
Usage	<ul style="list-style-type: none">• Click a point on the video• Drag to move• Pinch to resize
Note	<ul style="list-style-type: none">• Using the Magnifier consecutively will delete any previous magnifier used.• Monochrome and Magnifier cannot be used simultaneously.

Magnifier Corner

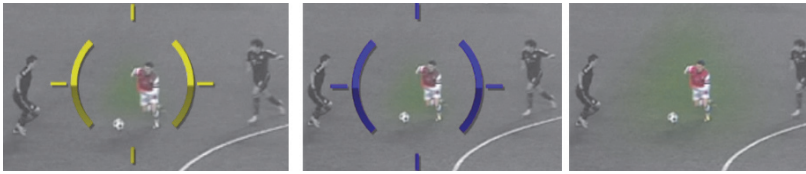
The **Magnifier Corner** tool allows you to magnify a selected area of the field.




Name	Magnifier Corner
Icon	
Available Properties	<ul style="list-style-type: none"> • Button Label • Zoom • Zooming Sharpness
Usage	<ul style="list-style-type: none"> • Click the point on the video • Drag to move • Pinch to resize
Note	<ul style="list-style-type: none"> • Using the Magnifier Corner consecutively will delete any previous magnifier used.

Monochrome

The **Monochrome** tool allows to create a focus on a particular area of play.




Name	Monochrome
Icon	
Available Properties	<ul style="list-style-type: none">• Button Label• Draw target• Shape style
Usage	<ul style="list-style-type: none">• Click the point on the video• Drag to move• Pinch to resize
Notes	<ul style="list-style-type: none">• Using the Monochrome consecutively will delete any previous Monochrome used.• Monochrome and Magnifier cannot be used simultaneously.• The elements will remain with the POI even after you switch scenes.

Pointer

Use the **Pointer** element to highlight and place a name tag for a particular player.




Name	Pointer
Icon	
Available Properties	<ul style="list-style-type: none"> • Button Label • Name
Usage	<ul style="list-style-type: none"> • Click the point on the video • Drag to move • Pinch to resize
Note	<ul style="list-style-type: none"> • You can use several elements in the same scene. • The elements will remain with the POI even after you switch scenes.

Target

Use the **Target** element to highlight a particular player.




Name	Target
Icon	
Available Properties	<ul style="list-style-type: none">• Button label• Opening angle• Thickness
Usage	<ul style="list-style-type: none">• Click the point on the video• Drag to move• Pinch to resize
Note	<ul style="list-style-type: none">• You can use several elements in the same scene.• The elements will remain with the POI even after you switch scenes.

Snap to Area


For more information, see [Snap to Shape and Snap to Area](#) on page 67.



Name	Snap to Area
Icon	
Available Properties	<ul style="list-style-type: none"> • Button label • Type • Shadow • Simplify • Straight • Shaded material • Width • Body start width • Body end width • Body bias • Body distribution distance • Head width • Head length • Head bias • Head back bias • Head back offset • Head back division • Tail width • Tail length • Tail bias • Tail back offset • Tail back division • Segment division • Width division • Snap to Shape
Usage	<ul style="list-style-type: none"> • Click the point on the video • Draw a closed path, which automatically snaps into an area
Note	<ul style="list-style-type: none"> • You can use several elements in the same scene. • The elements will remain with the POI even after you switch scenes.

Snap to Shape



Name	Snap to Shape
Icon	
Available Properties	<ul style="list-style-type: none"> • Button label • Type • Shadow • Simplify • Straight • Shaded material • Width • Body start width • Body end width • Body bias • Body distribution distance • Head width • Head length • Head bias • Head back bias • Head back offset • Head back division • Tail width • Tail length • Tail bias • Tail back offset • Tail back division • Segment division • Width division • Snap to Shape
Usage	<ul style="list-style-type: none"> • Click the point on the video. • Draw a closed path, which automatically snaps into a shape.
Note	<ul style="list-style-type: none"> • You can use several elements in the same scene. • The elements will remain with the POI even after you switch scenes.

2D Lines and Curves



There are 8 types of 2D lines and curve available.

Name	Arrow Curve, Arrow Dotted Curve, Arrow Dotted Line, Arrow Line, Dotted Curve, Dotted Line, Simple Curve, Simple Line
Icon	
Available Properties	<ul style="list-style-type: none"> • Button label • Type • Shadow • Simplify • Straight • Shaded material • Width • Body start width • Body end width • Body bias • Body distribution distance • Head width • Head length • Head bias • Head back bias • Head back offset • Head back division • Tail width • Tail length • Tail bias • Tail back offset • Tail back division • Segment division • Width division • Snap to Shape
Usage	<ul style="list-style-type: none"> • Click the point on the video for the line to start and drag to where you want it to end. • Double-click on the icon to enable the live arrow mode. For more information, see The Live Arrow on page 70.
Note	<ul style="list-style-type: none"> • You can use several lines in the same scene.


3D Graphic Elements

3D Tools require chroma key and field dimensions to be calibrated in order to blend correctly with the playing field dimension and texture. For more information on this process see [Calibrating Arena Dimensions](#) on page 57 and [Adjusting Chroma Key](#) on page 59.

K-zone

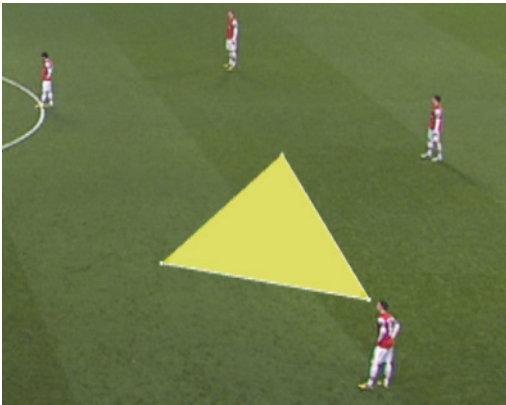
The **K-zone** element can be used to highlight a specific player or an area of the field.




Name	K-zone
Icon	
Available Properties	<ul style="list-style-type: none">• Button label• Thickness
Usage	<ul style="list-style-type: none">• Click the point on the video• Drag to move it• Pinch to resize
Notes	<ul style="list-style-type: none">• You can use several elements in the same scene.• The elements will remain with the POI even after you switch scenes.

FOV (Field of View)

The **FOV** graphic element can be used to present the approximate field of view of a player.




Name	FOV
Icon	
Available Properties	<ul style="list-style-type: none"> • Button label • Fill area's CK zone • Thickness • Opacity
Usage	<ul style="list-style-type: none"> • Click the point on the video • Grab the corners to resize
Notes	<ul style="list-style-type: none"> • You can use several elements in the same scene. • The elements will remain with the POI even after you switch scenes.

Area

Use the **Area** tool to highlight an area of the field.




Name	Area
Icon	
Available Properties	<ul style="list-style-type: none">• Button label• Inner cut factor• Round Shape
Usage	<ul style="list-style-type: none">• Click the point on the video• Drag to move it• Pinch to resize
Notes	<ul style="list-style-type: none">• You can use several Area elements in the same scene.• Area elements will remain with the POI even after you switch scenes.

Area 3D

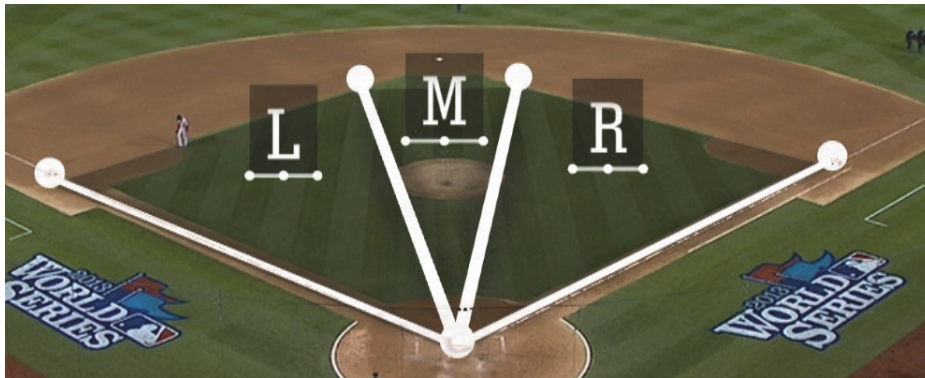
Use the **Area 3D** element to highlight an interesting area of the field.



Name	Area 3D
Icon	
Available Properties	<ul style="list-style-type: none">• Button label• Line Thickness
Usage	<ul style="list-style-type: none">• Click the point on the video• Drag to move it• Pinch to resize
Note	<ul style="list-style-type: none">• You can use several elements in the same scene.• The elements will remain with the POI even after you switch scenes.

Baseball Zones

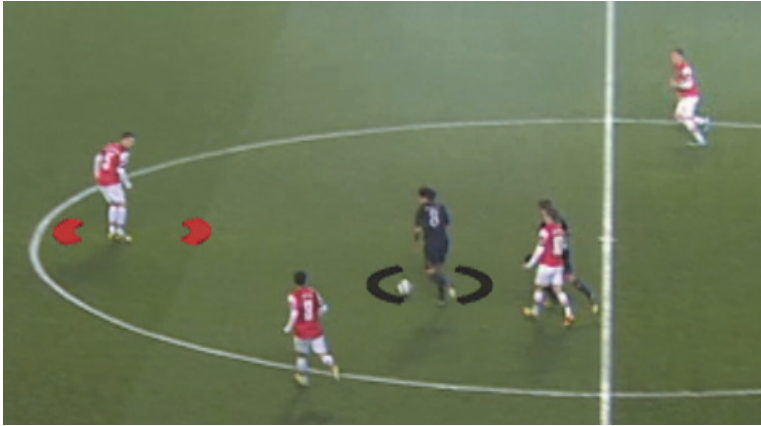
The **Baseball Zones** element is used to divide the field into individual zones.




Name	Baseball Zones
Icon	
Available Properties	<ul style="list-style-type: none">• Button label• Area Intensity• Object Separation• Show tags• Tag 1, Tag 2, Tag 3• Tag's CK zone• Tag's size• Tags on field
Usage	<ul style="list-style-type: none">• Click the point on the video• Grab the corners to resize
Notes	<ul style="list-style-type: none">• You can use several elements in the same scene.• The elements will remain with the POI even after you switch scenes.

Brackets

Use the **Brackets** graphic element to emphasize an element of the field.




Name	Brackets
Icon	
Available Properties	<ul style="list-style-type: none">• Button label• Opening Angle• Spacing• Thickness
Usage	<ul style="list-style-type: none">• Click the point on the video• Drag to move it• Pinch to resize
Note	<ul style="list-style-type: none">• You can use several elements in the same scene.• The elements will remain with the POI even after you switch scenes.

Counter

Use the **Counter** element to illustrate an interesting pass sequence.




Name	Counter
Icon	
Available Properties	<ul style="list-style-type: none">• Button label• Echo
Usage	<ul style="list-style-type: none">• Click the point on the video, Next click will increase the counter.• Drag to move it• Pinch to resize
Note	<ul style="list-style-type: none">• The counter element starts with 1.

Distance

With this tool you can measure a distance on the field.




Name	Distance
Icon	
Available Properties	<ul style="list-style-type: none">• Button label• Multiplier• Text Flip• Text Size• Thickness• US notation• Units
Usage	<ul style="list-style-type: none">• Click the point on the video• Grab the corners to resize
Notes	<ul style="list-style-type: none">• You can use several elements in the same scene.• The elements will remain with the POI even after you switch scenes.

Folder

Use the **Folder** to organize graphic elements.




Name	Folder
Icon	
Available Properties	<ul style="list-style-type: none">• Button Label
Usage	<ul style="list-style-type: none">• Double-click to open in the Effects Editor.• Single-click to open in the Main Screen.• Drag 3D graphic tools to be included in the folder.

Marker

Use the **Marker** element to highlight and place a name tag for a particular player.



Name	Marker
Icon	
Available Properties	<ul style="list-style-type: none">• Button label• Name• Name size• Thickness
Usage	<ul style="list-style-type: none">• Click the point on the video• Drag to move it• Pinch to resize
Note	<ul style="list-style-type: none">• You can use several elements in the same scene.• The elements will remain with the POI even after you switch scenes.

Marker 2

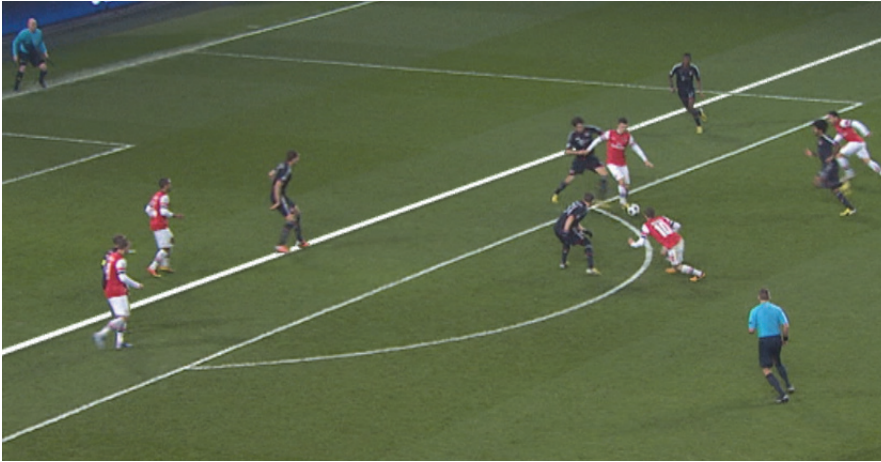
Use the **Marker 2** element to highlight and place a name tag for a particular player.




Name	Marker 2
Icon	
Available Properties	<ul style="list-style-type: none">• Button label• Directional Arrow Color Alpha• Directional Arrow Color Blue• Directional Arrow Color Green• Directional Arrow Color Red• Directional Arrow Size• Directional Arrow Spacing• Directional Arrow Steps• Name• Name Size• Object Separation• Thickness
Usage	<ul style="list-style-type: none">• Click the point on the video• Drag to move it• Pinch to resize
Note	<ul style="list-style-type: none">• You can use several elements in the same scene.• The elements will remain with the POI even after you switch scenes.

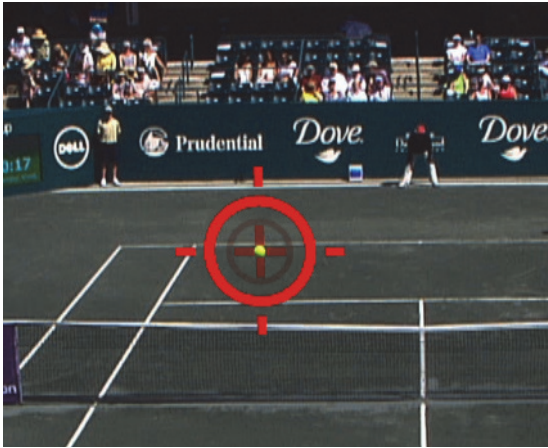
Offside line

With this tool you can illustrate the offside line.



Name	Offside line
Icon	
Available Properties	<ul style="list-style-type: none">• Button label• Thickness
Usage	<ul style="list-style-type: none">• Set the line thickness in the properties of the Offside line graphic tool• Click the point on the video• Drag to move it
Note	<ul style="list-style-type: none">• You can use several elements in the same scene.• In order for Offside line to work properly, a careful and precise field calibration is recommended.• The elements will remain with the POI even after you switch scenes.

Pitch marker




Name	Pitch marker
Icon	
Available Properties	<ul style="list-style-type: none">• Button label• Thickness
Usage	<ul style="list-style-type: none">• Click the point on the video• Drag to move it• Pinch to resize
Note	<ul style="list-style-type: none">• You can use several elements in the same scene.• The elements will remain with the POI even after you switch scenes.

Pointer

Use the **Pointer** element to highlight and place a name tag for a particular player.




Name	Pointer
Icon	
Available Properties	<ul style="list-style-type: none"> • Button label • Name
Usage	<ul style="list-style-type: none"> • Click the point on the video • Drag to move • Pinch to resize
Note	<ul style="list-style-type: none"> • You can use several elements in the same scene. • The elements will remain with the POI even after you switch scenes.

Spotlight

With this tool you can place a **Spotlight** on a particular player.




Name	Spotlight
Icon	
Available Properties	<ul style="list-style-type: none">• Button label• Hotspot transparency• Source height• Source size
Usage	<ul style="list-style-type: none">• Click the point on the video• Drag to move it
Notes	<ul style="list-style-type: none">• You can use several elements in the same scene.• The elements will remain with the POI even after you switch scenes.

Target

Use the **Target** element to point to a specific player.




Name	Target
Icon	
Available Properties	<ul style="list-style-type: none">• Button label• Opening angle• Thickness
Usage	<ul style="list-style-type: none">• Click the point on the video• Drag to move• Pinch to resize
Note	<ul style="list-style-type: none">• You can use several elements in the same scene.• The elements will remain with the POI even after you switch scenes.

Snap to Area

For more information, see [Snap to Shape and Snap to Area](#) on page 67.



Name	Snap to Area
Icon	
Available Properties	<ul style="list-style-type: none"> • Button label • Type • Shadow • Simplify • Straight • Shaded material • Width • Body start width • Body end width • Body bias • Body distribution distance • Head width • Head length • Head bias • Head back bias • Head back offset • Head back division • Tail width • Tail length • Tail bias • Tail back offset • Tail back division • Segment division • Width division • Snap to Shape • Snap to Shape 3D Height
Usage	<ul style="list-style-type: none"> • Click the point on the video • Draw a closed path, which automatically snaps into an area
Note	<ul style="list-style-type: none"> • You can use several elements in the same scene. • The elements will remain with the POI even after you switch scenes.

3D Line and Curves



There are eight types of 3D lines and curves available

Name	Arrow Curve, Arrow Dotted Curve, Arrow Dotted Line, Dotted Curve, Dotted line, 3 Simple curve, Simple Line
Icon	
Available Properties	<ul style="list-style-type: none"> • Button label • Type • Shadow • Simplify • Straight • Shaded material • Width • Body start width • Body end width • Body bias • Body distribution distance • Head width • Head length • Head bias • Head back bias • Head back offset • Head back division • Tail width • Tail length • Tail bias • Tail back offset • Tail back division • Segment division • Width division • Snap to Shape • Snap to Shape 3D height
Usage	<ul style="list-style-type: none"> • Click and drag
Notes	<ul style="list-style-type: none"> • You can use several elements of different type in the same scene.

7. Telestration

This chapter describes the on-air telestration process.

In this section:

Using the Telestration Graphic Elements on page 104

Using the Telestration Graphic Elements

Once the video and graphic elements of your scene are set up, telestration is straightforward:

▶▶ To add a 2D or 3D graphic:

1. From the scene gallery, select the required scene.
2. Using the media controller or the on-screen controls, play the video to the point that you want to illustrate from. For more information, see [Creating Scenes](#) on page 49.
3. Select the required graphic tool from its toolbox.

For more information, see [Populating the Toolboxes](#) on page 63.

4. If applicable, select the color from the **Color Selection** pallet on screen.
5. In the preview window, click the spot on which to draw.

For tools such as lines use drag and drop.


The graphic is drawn on the video.




TIP:

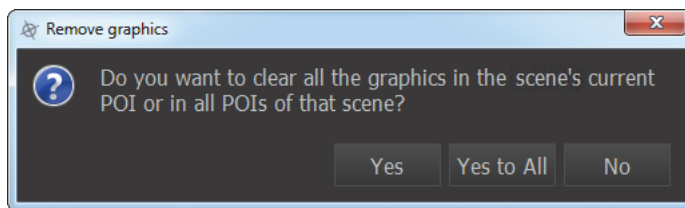
Some graphics elements have unique controls for example changing size or angle once drawn. For information on specific tools see [2D Graphic Elements](#) on page 74 and see [3D Graphic Elements](#) on page 85

▶▶ To delete a graphic:

1. Select  from the **GFX Controls** tools.
2. Select the graphic drawn on the video.
The graphic is removed.

▶▶ To delete all graphics in a scene:

1. Double-click on  from the **GFX Controls** tools.
2. A confirmation window appears asking whether to remove the graphic tools in the current POI or in all POIs of that particular scene:



3. Select the preferred option: **Yes** to remove graphics from the current POI; **Yes to All** to remove the graphic tools from all POIs of that scene.

▶▶ To show or hide all graphics in the scene:

- Select Show or Hide .
- All graphic elements are hidden or shown.

Regulatory and Safety Notices

Warnings and Cautions

- Never install equipment if it appears damaged.
- This unit employs two separate power supplies; verify that both power cords are disconnected before servicing the unit.
- Only perform the services explicitly described in this document. For services or procedures not outlined in this document, speak with authorized Avid service personnel.
- Follow all warnings and cautions in the procedures.
- Operate the device within its marked electrical ratings and product usage instructions.
- This unit contains no user serviceable parts. If you need to replace a battery in an Avid hardware unit, please contact an authorized Avid Service Person.

EMC (Electromagnetic Compliance) and Safety

Avid declares that this product complies with the following standards regulating emissions, immunity and product safety:

- FCC Part 15 Class A
- ICES-003 Class A
- EN55022 Class A
- EN55103-1 E4
- EN55024
- EN55103-2 E4
- AS/NZS CISPR 22 Class A
- CISPR 22 Class A
- VCCI Class A
- IEC/EN/UL60950-1
- CAN/CSA-C22.2 No. 60950-1-07

This equipment has been tested to comply with USA and Canadian safety certification in accordance with the specifications of UL Standards: IEC/UL60950-1 and Canadian CAN/CSA-C22.2 No. 60950-1-07. Avid Inc. has been authorized to apply the appropriate UL & CUL mark on its compliant equipment.



Avid is authorized to apply the CE (Conformité Européenne) mark on this compliant equipment thereby declaring conformity to EMC Directive 2014/30/EU, Low Voltage Directive 2014/35/EU and RoHS Recast Directive 2011/65/EU.

FCC Notice

Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

Cables

Connections to Avid hardware must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

Canadian ICES-003

Class A Equipment

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

South Korean Warning Statement

Class A ITE

이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

Environmental Compliance

Disposal of Waste Equipment by Users in the European Union



This symbol on the product or its packaging indicates that this product must not be disposed of with other waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city recycling office or the dealer from whom you purchased the product.

Proposition 65 Warning

This product contains Chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.

This product may contain a lithium coin battery. The State of California requires the following disclosure statement: "Perchlorate Material – special handling may apply, See www.dtsc.ca.gov/hazardouswaste/perchlorate."

Rack-Mount Requirements

The following rack-mount requirements are listed below:

- Elevated Operating Ambient — If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment might be greater than room ambient. Therefore, consider installing the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) specified by the manufacturer.
- Reduced Air Flow — Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised. AirSpeed Multi Stream airflow is from the front of the chassis enclosure to the rear.
- Make allowances for cooling air to be available to the front panel surface and no restrictions at the rear.
- Mechanical Loading — Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- Circuit Overloading — Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- Reliable Earthing — Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (for example, use of power strips).

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