



# Trackless Studio Software Installation & Virtual Set Project Recommendations

This Trackless studio application note covers the following procedures and information:

Software Installation Virtual Set Project Recommendations 5 Virtual Set Object Naming Definitions 6 Preparing Virtual Set Talent Objects for Trackless Studio 7 Virtual Set Design Recommendations 13 On Camera Graphics 14 Virtual Shadows 15

### Software Installation

Use the following procedure to install the Trackless Studio software.

 $\star$  If your Ross Trackless Studio purchase is not a turnkey edition, ensure that the USB license dongle is installed in the hardware before installing the software.

 $\star$ Ross Trackless Studio is installed on the same server as the XPression software.

1. Once you have obtained the software package double-click the **Ross Trackless Studio.exe** file.

The License Agreement page opens.

cense Agreement	7
Please read the following important information before continuing.	(
Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.	
	^
This End User Software License Agreement is a legal agreement between you (the "Licensee") and Ross Video Limited ("Ross Video") specifying the terms and conditions of your installation and use of the Software and all Documentation (as those terms are defined herein).	
IMPORTANT:	
BY DOWNLOADING, ACCESSING, INSTALLING OR USING THE SOFTWARE AND/OR DOCUMENTATION LICENSEE AGREES TO THE TERMS OF THIS AGREEMENT AND THE LICENSE GRANTED HEREUNDER SHALL BE EFFECTIVE AS OF AND FROM SUCH DATE. IF YOU DO NOT WISH TO ACCEPT THE TERMS AND CONDITIONS OF THIS	
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I accept the agreement	
○ I do not accept the agreement	

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2. Select I accept the terms in the license agreement and select Next.

The Select Destination Location page opens.



3. Accept the default location or use the **Browse** button to navigate to a different location and select **Next**.

The Select Components page opens.



4. Select **Next** to continue with the **Default installation**.









5. Select the **Create a desktop shortcut** checkbox if you want a shortcut icon on your desktop and select **Next**.

The Ready to Install page opens.

Ross - Trackless Studio Setup	-		×
Ready to Install Setup is now ready to begin installing Trackless Studio on your computer.			
Click Install to continue with the installation, or click Back if you want to review or change	any sett	ings.	
Destination location: C:\ROSS\VPression Trackless Studio			^
Setup type: Default installation			
Selected components: Trackless Studio			
Additional tasks: Additional shortcuts: Create a desktop shortcut			
<		>	×
Back	all	Ca	ancel

6. Select Install.

The installation begins.







When the installation has completed, the **InstallShield Wizard Completed** page opens.



- 7. Select Finish.
- 8. If the Launch the Program checkbox is selected, the Trackless Studio Settings dialog will open for initial configuration.

 $\star$  When launching Ross Trackless Studio from the installer, it is recommended that XPression be running with a Trackless Studio project open.

\*When **Save & Launch** is selected in the **Trackless Studio Settings** dialog, a Trackless software configuration file is created (**settings.xml**) and stored in **C:\XPressionApps\Trackless Studio**. Save this configuration file in a safe location and manually replace it after performing a Trackless Studio upgrade in order to restore previous talent camera orientations, effects, network settings and general settings.







# Virtual Set Project Recommendations

The following settings are recommended as a standard for preparing virtual sets for Ross Trackless Studio. They are not requirements.

• In the Object Inspector, in the Rendering tab, set Depth Sorting to Manual mode.

Object Inspector - 2 Box - Scene Object										
Scene	Transition Logic	Roll / Craw	vi Render	ring Take Item	MOS	Tessera	Effects	Metadata	Layer Order	DataLing Keys
Depth Sorting —		Default Scene	e Camera —	Stereoscopic		Tracking / Glo	bal Camera ——			
Automatic ()	transparencies)	FOV (degr.):	45.000	Value Mode: Relati	ve to Project Values 🔻	Full Scene Ler	s Distortion			
O Manual (	static)	Aspect:	1.000	Eye Separation: 0.00	<b>.</b>	Emictum Cullin	-			
O Back To Front		Near:	5.000	Convergence: 0.00	<b>.</b>		y	27)		
O Front To Back	optimal speed)	Far: (	4000.000				In a starri caling (slowe	- /		
		Scene Height: (	0 ••							

- It is recommended that one XPression unit of your virtual set be equal to one inch in the real world.
- You need to have only one camera on each scene and it has to be a perspective camera.
- In the **Object Inspector**, in the **Camera** tab, in the **Flags** section, select the **Active** checkbox.
- Set the **Lens** parameter of each perspective camera as follows: **FOV (degr.)** = 45°, **Near Plane** = 4, **Far Plane** = 4000.

Object Inspector - Pe	rspCamera 1 - Perspective Camera Objective	:t		□ ‡ ×
Camera	Continuous Anim. Template Links	Metadata		
Position —	Direction	Pivot	ר Lens	Flags
X: 960.000	Tilt: 0.000	X: 0.000	FOV (degr.): 45.000 Spherical Distortion Depth Of Field	Active Show Crosshair
Y: 540.000	Pan: 0.000	Y: 0.000	Aspect: 1.000 • K1: 0.00000 • Focal Distance: 180.000 • Focal Distance:	Tracking / Global Camera
Z: 1400.000	Rotate: 0.000	Z: 0.000	Near Plane:         4.000         Image: Second seco	Tracking: Global Tracker 🔻
	Rotation Order:	Center	Far Plane:         4000.000         Image: Max CoC:         3.000         Image: Ma	FOV FOV Direction
	default 👻	X Y Z	CCD Chip Size / Offset	CCD Size CCD Offset
	Direction Fixed Object		Wildli (	Position     Orection     Lens Distortion     Opth Of Field

- The recommended floor coordinate position of the virtual set is Y:0.0.
- The recommended virtual set center position is X:0, Y:0, Z:0.







# Virtual Set Object Naming Definitions

In XPression:

- Set your virtual set scene names to: Scene1, Scene2, Scene3, and Scene4 respectively.
- If you only have one scene for your virtual set, duplicate the scene so that you will get two scenes with exactly the same virtual set and content, but with different names (Scene1 and Scene2). This is useful if you want to do scene (camera) transitions using the same background scenario.
- Set the name of the perspective camera object on each set to vcam.
- Make your perspective camera object (vcam) last in the **Object Manager** list (bottom object).
- Start the name of the talent quad object on each scene with the prefix vtalent\_, such as vtalent\_1, vtalent\_2, vtalent\_3, and vtalent\_4.
- Start the live source materials name for each live camera input with the prefix liveinputcam\_, such as liveinputcam\_1, liveinputcam\_2, liveinputcam\_3, and liveinputcam\_4.
- If you want to control video playing on a virtual display from Trackless Studio, you have to start the material name of each display screen with the prefix mat\_display\_.
- It is strongly recommended to add your virtual set name as a prefix on any material, object, .jpg file, .obj file, etc. being used by that specific virtual set. This is essential if you want to mix two or more virtual sets in just one project. For example, Scene1 could be a news virtual set and Scene2 could be a weather virtual set. If materials (or any objects) in both projects have the same name, the mixed project will not work properly.







# Preparing Virtual Set Talent Objects for Trackless Studio

Configure live source materials for the live camera inputs, create talent quads and adjust texture coordinates for the virtual set.

The following topics are discussed in this section:

Live Source Material 7

Talent Quad 11

Texture Coordinates 12

### Live Source Material

For the live camera inputs you need to create the required live source material (liveinputcam\_1 up to liveinputcam\_4, depending on the XPression hardware) for each input.

#### To create the live source material:



1. In XPression, open the **Material Manager** tab.







2. In the Material Manager, right-click a material in the list and select Edit.

#### OR

Right-click in an empty area of the **Material Manager** and select **Add New > Material**.

#### The Material Editor opens.

Material Editor				×
Preview Quad Quad Cuad Cuad Cuad Cuad Cuad Cuad Cuad C	Name: Canada-Flag Visible No Depthwrite Channels Diffuse Ambient Emissive Specular Spec Pwr: 50.0 ↑ Alpha: 100.0 ↑ Reset Colors	es   Ignore Object Alpha Base Color Adjust Color: Diffuse RGB Lighting / Fill Blending Color Channel Outpu	Dimensions: - X	5L V 0 1 0 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0
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3. Right-click Layer1 and select Add Shader > Live Source.

A **LiveSource** shader is added.







4. With the LiveSource selected, in the Name field, enter liveinputcam\_1.

Preview	Name: [iveinputcam_1 Dimensions: 728 x 485						
	Visible No Depthwrites Ignore Object Alpha Duration: -						
	Video						
	Input Source: <pre></pre>						
	On-Board Scaler Compositing Order: Background						
Quad	(use On-Board Scaler if available)						
	Color Blending						
	Alpha Blending						
Layer1	Texture Coordinates						
	Chroma Keyer						
	Tip riapping						
	Texture Fidepring						
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5. In the Video section, from the Input Source dropdown, select <input 1>.

Preview —				
	Name: liveinput	tcam_1	Dimensi	ions: 728 x 485
	Visible 🗌 No	Depthwrites 📃 Ignore Ol	bject Alpha Dura	tion: -
		Lar.		
		VID	20	
Quad V Quad V V V Quad V V V V V V V V V V V V V V V V V V V	Input Source:	<pre><input 1=""/> <input 1=""/> <input 1=""/> <input 2=""/> <input 3=""/> <input 4=""/> <input 5=""/> <input 6=""/> <input 6=""/> <input 8=""/> </pre>	^  ^  ↓  ↓  ↓	und v
		Mip Ma	pping	
		Texture N	lapping	
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			<u>_</u>	K <u>C</u> ancel







- Preview Name: liveinputcam\_1 Dimensions: 728 x 485 ✓ Visible No Depthwrites Ignore Object Alpha Duration: -Video • Input Source: <input 1> On-Board Scaler Background (use On-Board Scaler if available) Quad -**Color Blending** 👄 🌭 👻 🔶 Blend Mode: Multiply -**≜** - % 50 🗹 👄 Layer 1 Multiply - 🗹 🍉 Texture Previous Stat Addition Current Stage - 🔽 🍉 LiveSource No Subtract odifier: None Dot Product 3 Output Modif Blend Alpha Use Previous Stage 🗌 Saturate Modifier: **Texture Filters** Alpha Blending Texture Mapping Min Mannie Cancel <u>0</u>K
- 6. In the **Color Blending** section, from the **Blend Mode** dropdown, select **Use Current Stage**.

7. In the **Chroma Keyer** section, select the **Active** checkbox and adjust the chroma key settings as necessary.

Preview	Name: [iveinputcam]	_1 thwrites 🔲 Ignore	Dime Object Alpha Di	ensions: - X - uration: -					
	Chroma Keyer								
Quad	Matte Generation Matte Generation Col: #59D655 Matte Post-Proces Soften: Sharpen Range: Sharpen: Luma Clipping Clip Low: Clip Low: Clip Low: Clip Low:	Active: Max. Angle: Edge Width: FG Clipping: Edge Hardness: ssing 0.000 *_ 0.000 *_ 0.000 *_	[16.000 *]     [2.000 *]     [20.0 *]     [0.0 *]	Output Composition Fill Matte Source					
					ncel				

**★** Do not use the **Chroma Keying** effect in the **Keyer** list of the **Effects** Window. This could cause depth rendering issues. Always enable the chroma keyer for the shader inside the **Material Editor**.

8. Repeat steps 2 to 7 for each additional live source material, entering liveinputcam\_2, liveinputcam\_3, etc. for the Name and selecting <input 2>, <input 3>, etc. as the Input Source.







### Talent Quad

- Create required quad objects for the talent/anchor video input, if not already created. Each quad object has to be 1920 pixels width by 1080 pixels height. Do not change the pixel size of the quad. If you want to adjust it to your virtual set, modify the **Scale** value in the **Transform** tab of the **Object Inspector** for each quad object.
- If your camera is physically vertical (rotated 90 degrees to the right), in the **Object Inspector**, in the **Transform** tab for the talent quad object, set the **Z** axis **Rotation** value to **90**.
- Verify that the **Pivot** value in the **Transform** tab of the **Object Inspector** for each of the talent quad objects is set to X:0, Y:0, Z:0. In XPression virtual sets, normally one XPression unit will be one inch, so you may need to scale the quads to approximately 0.043 (between 0.036 and 0.05). Keep the aspect ratio, so the scale is exactly the same value on each axis (X and Y).
- In the **Object Inspector**, in the **Transform** tab, center your talent quad objects' **Position** value where you prefer. The position will be fixed; only the rotation will change automatically on runtime depending on the live camera position and rotation. It is recommended to start with **X**:0, **Y**:0, **Z**:0 and then adjust by fine tuning the positions.



★ It is normal if you do not see the talent quad looking at the camera while designing in XPression Studio **Layout** mode. Trackless Studio will adjust this automatically when running. Of course, you can rotate the corresponding axis for testing while editing: rotate the **Y** axis if you are using a physical vertically rotated camera and rotate the **X** axis if you are using a standard horizontal physical camera setup with no rotation.







### Texture Coordinates

- In the **Object Inspector**, in the **Texture Coords** tab for the quads, always set the **Mode** option in the **Misc** section to **Border**.
- In the **Object Inspector**, in the **Texture Coords** tab for the quads, always center the **Pivot** by setting **X** to 0.500 and **Y** to 0.500.
- Sometimes a line border can appear in your input video. Remove it by scaling the quads in the **Scale** section of the **Texture Coords** tab. Setting **X** and **Y** to **0.990** should be more than enough.

Object Inspector - v	alent_1 - Quad Objec:	t							□ <b>₽</b> ×
Quad	Transform	Rendering	Materials	DataLing	Texture Coords	Lighting	Continuous Anim.	Template Links	
Position ——	Rotation —	Scale —		Pivot	Misc				
X: 0.000	0.000	🖌 🛛 🗙 0.990	▲ ● XY	X: 0.500	Mode: B	order	•		
Y: 0.000		Y: 0.990	None 🔪	Y: 0.500					
	-								







## Virtual Set Design Recommendations

• Always try to keep the XPression performance indicator (**Perf**) below 50%. Always test your virtual set project using a 1080i 29.97 output format with a Matrox XMIO SDI output card. That specific configuration is the one that currently requires more processing, so if your virtual set works fine on that resolution, it will most likely work on other lower configurations.

Testing your virtual set in a virtual output is a not real benchmarking option.

- Try not to use video files inside your virtual set as materials (none, if possible). If you are using video files inside your virtual set, remember to always use the XPression Codec and also be sure to use exactly the same frame rate and format for your video as your XPression virtual set project settings.
- For continuous animated backgrounds or textures, we strongly recommend using render view based materials other than videos.
- Try not to apply XPression Effects on the scene such as DepthOfField.
- Be careful when using advanced materials and textures such as **Reflection Map**; this can lead to stuttering when moving the camera around.
- Try not to use thin lines and small objects. It will require higher anti-aliasing to appear properly.
- Always delete unused materials in your projects.
- Use 3D models that are less than 200.000 polygons.







## On Camera Graphics

If you want to add some GUI fixed position graphics following your cam view on top of all the graphics on your virtual set, do not use the camera layer object in XPression. It is recommend to use quads or any other object as a child of the camera.

For example, if you want to add a "raining" video on top of all your graphics, create a quad object with a size covering all your output (for example, 1920 x 1080). Add the raining video material onto the quad.

#### To create an on-camera graphic:

- set it as a child of the vcam object.
- in the **Object Inspector**, in the **Transform** tab, set the **Rotation** settings to **X**:0, **Y**:0, **Z**:0.
- in the **Object Inspector**, in the **Transform** tab, set the **Position** settings to **X**:0, **Y**:0, and **Z**:-50
- in the **Object Inspector**, in the **Transform** tab, adjust the **Scale** settings to cover the entire camera view (0.015, for example).









## Virtual Shadows

You can create a virtual shadow for the talent. It will be useful only if the talent does not move from the center position of the quad and does not move their legs much.

#### To create a virtual shadow:

- copy and paste the talent quad object, adding a suffix shadow to its name.
- position the new quad as a child of the talent quad object in the **Object Manager**.



- rotate the new quad to floor level, using a plain color material (such as red) for fine tuning.
- duplicate the liveinputcam material, adding a suffix shadow to its name.
- in the Material Editor for the material layer, in the Base Color section, set the Diffuse channel to black (H:0, S:0, L:0).
- in the Material Editor for the material layer, in the Base Color section, set the Alpha value to 10.









• in the **Material Editor** for the material layer, in the **Blending** section, from the **Blending Mode** dropdown, select **Multiply**.

 $\star$  Be aware that virtual shadows can affect the XPression machine performance depending on the virtual set project you are currently using.

