KeyShot 7 Manual

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Overview

What is KeyShot?

KeyShot is a stand-alone, real-time ray tracing and global illumination program used to create 3D renderings, animations and interactive visuals. With its CPU-based architecture, photorealistic real-time rendering can be achieved on both Mac and PC, even on laptops, without the need for special graphics cards.

KeyShot supports more 3D file formats than any other rendering software, importing over 25 different file types. It has a simple user interface with drag-n-drop material and environment presets, interactive labeling, texture mapping, physical lighting, animation and much more.

KeyShot is…

Fast
Everything inside KeyShot happens in real-time. KeyShot uses unique rendering technology which makes it possible to see all changes to materials, lighting, and cameras instantly.

Easy
You don't have to be a rendering expert to create photorealistic images of your 3D models. Simply import your data, assign materials by dragging and dropping them onto the model, adjust the lighting, and move the camera. Done.

Accurate
KeyShot is the most accurate rendering solution for your 3D data. KeyShot is built on Luxion's internally developed, physically correct render engine based on research in the areas of scientifically accurate material representation and global illumination.

What's New

KeyShot 7 is our biggest release to date with more of what you love across five areas we've focused on to make the 3D rendering process faster and more flexible while providing more possibilities, more control and more ways for you to create.

More Ways to Create

Create the way you want right from the beginning. Use KeyShot Studios to set up different Camera, Environment, Model Set, and Multi-Material combinations in one scene, then present your model and material variations in the new KeyShot Configurator.

More Material Possibilities

New options are available for many existing materials and new Cloudy Plastic and Measured materials are here. Textures now offer Tri-planar and Tiled UV mapping, while more control is added with new 2D Procedural Texture options.

More Lighting Control

With the new Environment list, HDR export and improved Ground, you have more control over your lighting. Take care of everything in one place with the integrated HDRI Editor full of new enhancements.

More Flexible User Interface

You have more flexibility in the KeyShot user interface with the ability to create your own Workspaces, reorder tabs, preview parts in the scene tree, and enjoy an improved experience on a 4k display.

More Workflow Options

You love KeyShot for the speed and KeyShot 7 brings you more. Introducing a completely new sampling method, re-tessellate, an adaptive performance mode and new output capabilities that has you producing visuals faster than ever before.

The new Cloudy Plastic material type in KeyShot 7 - Rendered by John Seymour

Product Updates

With KeyShot 7, we have the following product updates:

Windows 32-bit Version End of Life

With KeyShot 7, we are ending support of Windows 32-bit systems and installations. Support for customers with 32-bit installations of KeyShot 6 is available until the release of KeyShot 7.

KeyShot 7 for Education

Education licenses of KeyShot 7 will now have all features of KeyShot Pro. Previously, KeyShot for Education contained only KeyShot HD features. You can see a comparison of KeyShot versions here.

New Library Presets

The KeyShot Library has been completely updated to take advantage of the latest KeyShot material, texture and environment capabilities. Learn more about the new KeyShot Library presets.

To obtain the new library presets, the full version of KeyShot 7 must first be installed. The full install of KeyShot 7 is available here. Note: For a clean install of the new KeyShot 7 material presets, remove the contents of any previous KeyShot 7 resource folder installation (except the keyshot7.lic file). All assets which have been removed from the previous KeyShot Library are available on KeyShot Cloud.

New Texture Mapping

Old KeyShot scenes will still use the legacy texture mapping for existing textures and labels when opened in KeyShot 7. Click the Upgrade to New Node button to convert the legacy texture mapping to the new mapping technique. Some shifts may occur when doing so.

Feature Highlights

KeyShot 7 is our biggest update yet with new features an enhancements that cover every area of KeyShot. Below you'll find the top features in this release with short description on how it works and a link to more information.

Workspaces

Workspaces allow you to select preset UI arrangements or save your own custom arrangements of the KeyShot UI to best suit the way you work. Workspaces remember window dock state, position and size, Library and Project tab order, tab visibility, torn-off tab state, Toolbar and Ribbon position and Ribbon icon visibility. Learn more in the manual on the Workspace page.

How it Works
The Ribbon at the top of the KeyShot UI now contains a dropdown menu at the far left where you can select, add, and manage Workspaces. To create your own custom Workspace make adjustments to any of the items mentioned above click the Workspaces dropdown and select Add… to launch a name entry field and save. To save changes to an existing Workspace click Apply Changes… To adjust display order, import, export, or delete Workspaces click Manage...

Custom Hotkeys

KeyShot 7 now allows you to assign custom hotkeys for many KeyShot commands. Learn more in the manual about the new Hotkeys.

How it Works
The Hotkeys preferences can be accessed by selecting Edit, Preferences and selecting the Hotkeys section or by pressing the K-key to show the Hotkeys Overview where you will see a button for Setup/Details... in the bottom right corner. This will take you to the Hotkeys section of the Preferences page. Here you can set custom Hotkeys for any of the listed actions.

New Material Types

The **Plastic (Cloudy)** material type contains light-scattering particles to replicate complex, scientifically accurate materials such as Polycarbonate or ABS. This material has settings to control light Transmission, Cloudiness, and Scattering Directionality. Read more about Plastic (Cloudy) material type here.

The **Measured** material type allows you to load measured material files in .axf or .xml format. Read more about measured materials here.

How it Works
When editing an existing material select Plastic (Cloudy) or Measured from the Material Type drop-down.

Material Enhancements

Dielectric-based material types - **Glass (Solid)**, **Liquid**, **Dielectric**, **Gem** - have been updated with a unit-aware *Transparency Distance* setting that allows you to specify the

distance through the material at which the defined color is achieved. Learn more about the Glass (Solid), Liquid, Dielectric and Gem material types.

The **Metal** material type now includes options for *Color* and 13 scientifically accurate metal presets including *Aluminum, Brass, Chromium, Copper, Gold, Iron Magnesium, Nickel, Niobium, Platinum, Silver, Titanium*, and *Zinc.* These, along with the ability to load Complex IOR files (.ior, .nk, .csv), may be chosen for custom metal appearances. All metal preset provide the additional ability to add an anodized coating with control of *Film Refractive Index, Film Extinction Coefficient*, and *Film Thickness.* The *Anodized* se ttings are available for all metal presets selected from the *Metal Type* drop-down. Learn more in the manual on the Metal material type page.

The **Metallic Paint** material type now has settings for Clear-coat Color, which allows you to create deep rich candy coats and can be further controlled by a Clear-coat Thickness. In addition, the new Clear-coat settings may have a textured applied, which does not affect the Base coat. Learn more in the manual on the Metallic Paint material type page.

Translucent and **Translucent (Advanced)** material types have been updated with a unit-aware *Translucency* setting, which defined the distance light is able to penetrate the material. Learn more about the Translucent and Translucent (Advanced) material types.

The **Toon** material type now has control of *Shadow Color* and the ability to control the visibility of shadows produced by *Light Source Materials.* The *Shadow Color* setting can be textured to achieve sketch-like shading effects and much more. Learn more about the Toon material type.

The **Ground** material type now has control of *Reflection Contrast* in order to easily increase visibility of ground reflections.

How it Works
When editing an existing material select *Metal, Glass (Solid), Liquid, Dielectric, Gem, Metallic Paint, Translucent, Translucent (Advanced)* or *Toon* from the *Material Type* dro p-down. Note: When opening KeyShot 6 scenes in KeyShot 7 the material types listed above will automatically be updated to include the listed enhancements.

Texture Mapping

Texture Mapping has been completely refreshed for KeyShot 7. Updates include an improved interactive mapping tool, and the ability to specify Center On: Model or Part. The new Planar mapping type is highly versatile - replacing Normal Projection, Planar X, Y and Z. This now gives you the ability to control Depth for Planar projections. Cylindrical Mapping has also been vastly improved.

Note: Old KeyShot scenes will still use the legacy texture mapping for existing textures and labels when opened in KeyShot 7. Click the Upgrade to New Node button to convert the legacy texture mapping to the new mapping technique. Some shifts may occur when doing so.

New Texture Types
KeyShot 7 features three new Image Texture types and three new 2D Texture procedural types. Learn more about the new Texture Types.

- Tri-Planar - project textures to each plan independent of the other
- Tiled UV - apply and filter multiple UV texture tiles
- Video Map - apply a video as an animation
- Brushed - new procedural with more brushed appearance options
- Mesh - consolidated and improved mesh texture capabilities
- Weave - new procedural for fiber and cloth textures

Other Texture Improvements

Other improvements to Textures include:

- Unit-aware size parameters across all Texture Types
- Unit-aware Radius setting for Occlusion and Curvature Procedural Texture
- Color Map support for Area Light Diffuse material

Environment List

The Environment tab of the Project window now includes the ability to save

Environments and their settings to a list in order to quickly access and toggle. Learn more in the manual about the Environment List.

How it Works
When a new scene is opened the Environment list is populated with the startup environment at default settings. All changes made to the settings will be recorded and saved with that environment. To create a new environment based on the current settings click the Add Environment icon at the top left of the dialog. Alternatively, you can populate the list with environments by dragging-and-dropping one or more from the Environment Library.

Copy/Paste Position

You can now copy and paste the position of one object to the position of another object. You will find *Copy Position* and *Paste Position* options when you right-click a model in the *Scene* tab.

Multi-Material (PRO)

Any material can be turned into a Multi-Material to facilitate non-destructive material swapping, variations and color studies. The Multi-Material allows you to cycle through a variety of materials within a single "container" material. Learn more in the manual on the Multi-Material page.

How it Works
When editing a material click on the three-arrow Multi-Material icon above the Material Type dropdown to convert a single material to a Multi-Material. Once you have done so a list will be displayed that can be populated by drag and drop or by using the buttons along the left side of the list. Simply select a sub-material in the Multi-Material list to make it active in the Real-time View.

Video Map Textures (PRO)

Image sequences can now be set as Textures or Labels to animate device displays and much more. The supported formats at the moment include avi, mp4, mpeg, flv, webm, dv, f4v, mov, mlv, m4v, hevc, ogg, and ogv. Note: Some formats may have variants encoding which are not supported (for example, avi may include encodings which may not be directly supported.) Learn more in the manual on Video Map Textures.

How it Works
From Project > Materials > Textures select "Video Map" from the Texture dropdown menu or Add Label (Video) from the Labels tab. Select an image sequence in the file browser or a video file to extract the frames. This will create a node in the Animation Timeline in which you can position and adjust similar to other Animation types.

Panoramic Camera (PRO)

The Panoramic Lens Setting for Cameras allows you to render a Spherical or Cube Map image in real-time or rendered output. This feature can be used to render out your own spherical EXR images to use as Environments to light KeyShot scenes or to load in your VR headset image viewer. Learn more in the manual about the Panoramic Lens Setting.

How it Works
In the Camera tab, under Lens Settings, select Panoramic. Select your desired format of Spherical or Cube Map from the Mode drop-down menu. The Real-time View will display a Panoramic Preview message at the top to indicate you are Panoramic mode. This means that you can mouse around the Real-time View and the image will not re-render. Click the Reset View button at the bottom of the screen to do just that. Click the Preview Map button in the Lens Settings to see a flat preview of your Panoramic image. When using the Spherical Mode the Resolution in the Image tab will be locked to a 2:1 ratio. Cube Map Mode will be locked to an 8:1 resolution. Try increasing the pixel resolution if the image does not appear clear.

Real-time VR Rendering (PRO)

Real-time VR rendering and output is available with the support for Stereo Perspective Cameras, Stereo Spherical Maps, and Stereo Cube Maps. These can viewed within KeyShot in real-time or output as still images and animations. Spherical and Cube Maps offer a 360-degree stereo viewing experience while Stereo Perspective shows a stereoscopic image of the viewport. Read more in the manual about Stereo VR Support.

How it Works
Support has been added for real-time Oculus Rift and HTC Vive Head Mounted Display (HMD) viewing. From the Camera menu click Enable VR to add a new VR camera. Or do so manually from the Camera tab by enabling the Stereo accordion for your Perspective or Panoramic Camera. Click the Head-Mounted Display button to select Oculus Rift or OpenVR for HTC Vive to open the HMD viewing window.

Configurator (PRO)

KeyShot 7 introduces the KeyShot Configurator - a tool for presenting Model and Material variations in real-time for design reviews and interactive point-of-sale displays.

How it Works
To access the Configurator Wizard click Window > Configurator Wizard or select the Configurator Wizard icon 🖳 on the Ribbon. Here you can define Parent Models, Components, and Material Variations. Enter Presentation Mode and use the toolbar to control the Model and Material being displayed. Read more about the KeyShot Configurator.

Studios (PRO)

KeyShot Studios is the new way to combine and save scene variations in one file for quick creation and presentation. Studios may contain any combination of Camera, Environment, Models Sets or Multi-Materials. Learn more in the manual about KeyShot Studios.

How it Works
View the Studios window from the main menu under Window, Studios... The Studios window is a dockable window and may also be accessed from the Ribbon at the top of the KeyShot interface by selecting the Studios icon .

Within the dialog there are four dropdown menus that display the currently active Camera, Environment, Model Sets or Multi-Materials. Click the Add Studio icon in the top left corner to add a new Studio with the active elements added to that Studio.

Inline with the Studio name are icons that indicate what elements are included in that Studio. By default the active Camera and Environment are included when a new Studio is created. With a Studio active, uncheck any checkbox to exclude that element from the Studio. To modify a Studio simply select a different Camera, Environment, Model Set or Multi-Material from the dropdown menus. Multiple Model Sets can be added to a Studio by checking the corresponding boxes within the Model Sets dropdown menu.

To copy a Studio, select an existing Studio in the Studio window and select Add Studio. This will copy the elements into a new Studio where you can change the selection as needed.

Re-Tessellate (PRO)

Models that have been imported with NURBS included can be re-tessellated directly in the scene without having to re-import the model. This tool allows you to fine tune tessellation quality of entire models or individual parts in a scene to optimize appearance and file size. Learn more in the manual about Re-Tessellate.

How it Works
In order for Re-Tessellate to be available for a model or its parts the Include NURBS Data checkbox must have been enabled upon import from the Geometry section of the Import dialog.

Access the Re-Tesselate function by right-clicking on a model, part, or multi-selection of parts in the Project window, Scene Tree or Real-time View and selecting Re-Tessellate. This will open the Tessellation Settings dialog where you can adjust the overall Tessellation Quality or drill down to access finer adjustments including Angle Tolerance, Distance Tolerance, and Maximum Edge Length. Click the Tessellate button to show a

preview in the Tessellation Settings dialog, which can be displayed as a Wireframe or Glossy representation. Click Apply to commit the changes to the scene. Cancel will revert all changes and exit the dialog.

Move Active Camera (PRO)

The Active Camera in the Geometry View can now be manipulated with a move tool. This features makes positioning cameras in interiors especially easy.

How it Works
Hit the O-key or select Window, Geometry View... to activate. Set Camera Type in Geometry View to Perspective or Orthographic. Right-click and select a Move Active Camera option. As the camera is moved in the Geometry View, the Real-time View and camera properties in the Project window update as well. Note: If a camera is locked, you will need to select Unlock Camera to unlock the camera prior to moving it.

Move Active Camera Position
This changes the actual position of the camera. With the camera unlocked, right-click in the Geometry View and select Move Active Camera Position. Use the Move Tool to change the position.

Move Active Camera Target
This changes the 'look at' point of the camera. With the camera unlocked, right-click in the Geometry View and select Move Active Camera Target. The Move Tool will appear on the 'look at' point. Use the Move Tool to change the position.

Right-click and select Save Camera to update the current camera position or target, or select Add Camera to create a new camera. The new camera will appear in the Project window, Camera tab where the camera changes may be saved or added as well.

Integrated HDRI Editor (PRO)

The KeyShot HDRI Editor is now fully integrated into the Environment tab of the Project window. All Pins and Adjustments are embedded in the KeyShot file so there is no need to save an individual .HDZ for each custom Environment you create. This provides a huge convenience and asset management benefit while greatly reducing the amount of data necessary to store locally and in .KSP files. Learn more in the manual about the HDRI Editor.

The HDRI Editor is also much more flexible with new features including:

- Export of HDR/EXR
- Gradient Background
- Draggable interactive Sun & Sky
- Sun & Sky Ground Color
- Sun Size parameter
- Rectangular Pin Rounded Corners
- Gradient Pins
- Image Pin Color Adjustments
- Extract pins from previous version HDZ files

How it Works
The HDRI Editor can be accessed from it's sub-tab in Project > Environment. All pins and adjustments will be added to the Environment currently selected in the Environment list.

Deformation Animation Support (PRO)

Deformation animations may be imported as Alembic cache files, played back in real-time, and rendered. Learn more in the manual about Deformation Animations.

How it Works
Start by importing an .ABC file. On the KeyShot Import dialogue, in the Animation section, select the Deformable Meshes option and select Import. The file will import and appear as an animation on the Animation Timeline where it may be positioned and adjusted similar to other Animation Types.

All New Network Rendering (ADD-ON)

KeyShot Network Rendering has been rewritten from the ground up. To see the complete list of new features, along with how to install and use the new features please see the KeyShot 7 Network Rendering Manual.

Additional Features

Adaptive Performance Mode - When enabled from the *Camera* menu performance intensive settings will automatically be turned off when the FPS drops below 20 providing a smoother real-time experience. When the mouse is released the settings will turn on again.

Rounded Edges - Rounded edges has been greatly improved to get better results.

Updated Primitives - The KeyShot primitives have been updated so they may be rendered as NURBS and Re-tessellated (both Pro features). Add KeyShot primitives via Edit, Add Geometry.

Move Tool - Updated to add planar XY, YZ and XZ handles. The Move Tool now shows automatically when a primitive is added via Edit, Add Geometry.

New Render Passes - Ambient Occlusion, Diffuse, Direct Lighting, Indirect Lighting, Caustics, Shadow

Improved 3Dconnexion support - Improved defaults to better match viewing in 3D modeling software.

Improved First Person Camera - Collision Detection option to prevent walking through objects, i.e. prevent walking through walls with sensitivity control.

FBX Export - Ability to export objects and cameras as an FBX file.

Improved Absolute Camera Controls

Material Template Improvements

Co-planar surfaces - Support for co-planar surfaces with layering of objects determined by Scene Tree structure

Flatten Ground - Improved appearance with less distortion

Preferences - Real-time Rendering Samples Cap

Preferences - Set Default Startup Scene

Camera Path Animation - Set Target

Environment - Occlusion Ground Shadows

Isolate Materials to Selection - Creates a new linked material instance within a selection

Selective NURBS Rendering (Pro) - Available in the *Tessellation* accordion of the *Proj ect > Scene > Properties* tab when an object with NURBS is selected.

KeyShot Library Updates

The KeyShot Library has been completely updated to take advantage of the latest KeyShot material, texture and environment capabilities. Below is a summary of changes made to the KeyShot 7 library items.

Obtaining the New Resources

To obtain the new library presets, **the full version of KeyShot 7 must first be installed**. Note: For a clean install of the new KeyShot 7 material presets, remove the contents of any previous KeyShot 7 resource folder installation (except the keyshot7.lic file). All assets which have been removed from the previous KeyShot Library are available on KeyShot Cloud.

Materials

- General
  - Material samples increased for highly specular/textured materials
  - Low-resolution legacy materials retired to KeyShot Cloud
  - Repetitive or lackluster materials retired to KeyShot Cloud
  - Optimized default settings for materials with unit-aware parameters
  - Many materials with image-based textures replaced with procedural versions
- Organization
  - New Architectural folder with sub-folders for popular architectural materials such as tile, brick, concrete, glass
  - "Material Graph" folders removed
- Cloth and Leather
  - Updated mesh texture materials
- Glass
  - Color Density folder replaced with Solid Glass
  - All refractive glass using Glass (Solid) material type
- Light
  - Redundant IES files moved to KeyShot Cloud
  - Area & Point light output adjusted to fit real world light values
- Metal
  - Anodized - renamed 'Basic' sub-folder to 'Polished' to better reflect the application
- Mold-Tech
  - Previous samples replaced with Spray Dot #11000 series Mold-Tech texture materials
  - Updated to use Tri-Planar mapping
- Paint
  - Textured folder added
- Plastic
  - Textured folder added for Clear, Cloudy, Hard, and Soft plastics
  - Optical folder added with accurate material settings including dispersive variants
  - Rubber re-added
- Stone
  - Concrete materials either moved or retired to KeyShot Cloud
  - Improved procedural materials
  - Surface materials moved to Architectural folder
- Toon
  - New Shaded and Transparent presets added
  - All presets improved with contour, part, and quality settings
- Wood
  - All-new procedural wood materials
  - Improved image-based materials

Textures

- Some low-resolution image-based textures have been retired to KeyShot Cloud
- Some image-based textures re-created procedural textures
- Gradient textures moved to Opacity Maps folder
- Solid opacity maps retired to KeyShot Cloud
- Added three additional KeyShot icons (without color gradient) White, Black & Bump

Environments

- All .HDZ studio environments have been replaced with procedural 4K .KLF environments
- 4K resolution offers crisp highlights and smooth reflection gradients, can be scaled up to 8K with no quality loss
- Procedural environments are fully editable, allowing fewer environments to replace multiple image-based environments
- 2 new zebra stripe environments added to help evaluate surface continuity
- 22 image-based studio environments have been retired to KeyShot Cloud
- Updated Sun & Sky environments

Backplates

- Studio Backdrop added with matching environment
- Backplates for previous HDRI locations moved to KeyShot Cloud

Favorites

- New Categories: Architectural, Automotive, Jewelry, KeyShot 7, Product
- Precious Metals with complex IOR values added to Jewelry folder

Additional Resources

A KeyShot Content installer is available for KeyShot 7 users on both Windows and Mac. The installer contains Environments from Aversis as well as textures from Poliigon. Download the installer here:

Content Download

KeyShot 7 Content (Win) 700 MB
KeyShot 7 Content (Mac) 710 MB

Content Installation

After downloading, run the installer. During installation, the new resources will be added to your KeyShot Resource folder and visible in your KeyShot library. The new Aversis environments are located in the Indoor and Outdoor Environments folders and a new Poliigon folder will be added to your Textures folder.

The installer contains the following resources:

Environments - by **Aversis**

Find more environments from Aversis at aversis.be/hdri/

Textures - by **Poliigon**

Find more textures by Poliigon at poliigon.com/

User Interface Updates

The KeyShot 7 user interface has a clean, new look with completely new ways to customize menus, windows, hotkeys and create workspaces. Among this, there are some commands/options that have been added, renamed or have changed location compared to KeyShot 6. This section captures those changes.

- "Show Only" for animations in the Timeline.
- Name field removed from Camera tab.
- Delete key shortcut in Scene Tree (parts, cameras, animations, Model Sets)
- Search field in part selection dialog
- Parts renamed to "Item" in Scene Tree
- Collapse/expand in Scene Tree is now recursive, removal of Collapse All
- Automatically expand models when a Scene Tree filter is selected
- Edit Geometry command in Edit menu
- Scene Tree object preview tooltips
- Scene Tree visibility icons
- Ability to name nodes in Material Graph
- Preferences "Lock Pivot to Target" option for camera.
- Real-time View Background Brightness moved from Preferences to right-click menu
- Move Tool on Ribbon and Geometry View Ribbon
- Region button on Ribbon.

- Preview of old color in color picker while maintaining new color
- Added tumble, pan and dolly to the camera menu.
- Add to Queue button in Render Output and Options pages.
- Ability to Move Active Camera and Move Active Camera Target in Geometry View
- Update of Texture Type categories
- Right click on material graph node connector to insert utility
- Samples count in status bar of render output window for Maximum Samples and Maximum Time render modes.
- Updated Lighting Presets
- Hotkey to activate Free Camera (Cmd/Ctrl+Shift+F)
- Hotkey to move a selected object (Cmd/Ctrl+D)
- Hotkey to copy paste in Scene Tree or Animation Timeline (Cmd/Ctrl+C, Cmd/Ctrl+V)
- Hotkey to add Ground Plane (Cmd/Ctrl+G)
- Hotkey to toggle Region Render (Shift+Ctrl/Cmd+R)
- Copy/Paste Position in Scene Tree context menu
- Select "*Look At*" *Point* is now called *Set Camera Target*.
- *Enter First Person Mode* has been renamed to *Walkthrough Mode.*
- Walkthrough Mode HUD has a new layout to include Collision Detection and Sensitivity

Getting Started

How Easy is KeyShot?

KeyShot's drag and drop based workflow will have you rendering images in minutes. With a simple interface providing many advanced features and instant real-time feedback, you save time while focusing on your design.

Step 1: Import Your 3D Model

Launch KeyShot. Import your 3D model via *File, Import...* KeyShot supports over 20 3D file formats, including SketchUp, SolidWorks, Solid Edge, Pro/ENGINEER, PTC Creo, Rhinoceros, Maya, 3ds Max, IGES, STEP, OBJ, 3ds, Collada, and FBX. KeyShot also features many plugins with more features, including KeyShot BIP export and LiveLinking. Learn More
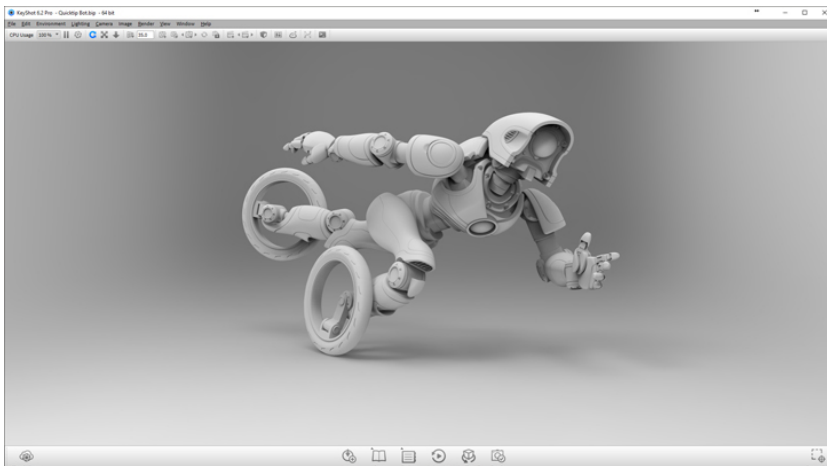
Step 2: Assign Your Materials

From the *Library* Window, select the *Materials* tab. Apply any of the 600+ scientifically accurate materials from the material library by simply dragging and dropping them onto your model in the *Real-time View*. Changes appear on your model instantly with accurate color and lighting under the current lighting conditions. Learn More

Step 3: Choose Your Environment

Now select the *Environment* tab. Drag and drop an Interior, Outdoor or Studio lighting environment (HDRI) into your scene. You will see the change in the scientifically accurate, real world lighting immediately and how it affects the appearance of your colors, materials and finishes.
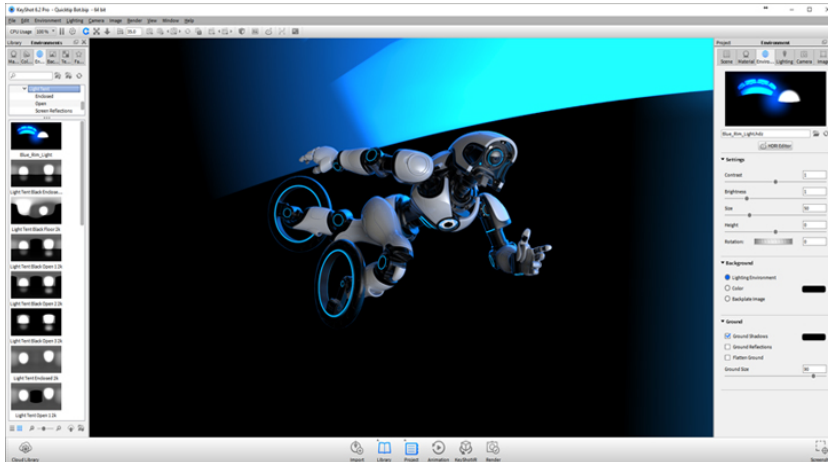
Step 4: Adjust Your Camera

Use your mouse to adjust the camera. Additional settings are available in the *Project, Camera* tab. Adjust the angle and distance, control perspective with focal length and field of view settings, and easily add depth of field to your scene. Learn More
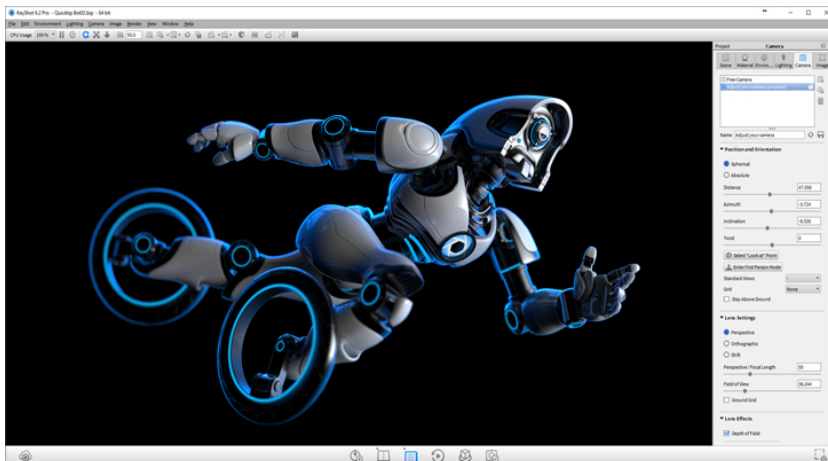
Step 5: Enjoy the Perfect Image

Hit *Render* on the main toolbar. Use the default setting or adjust the output options. Select the *Render* button to watch your image render right before your eyes. Learn More

Installation

Installing Your License

The standard node-locked license of KeyShot can only be active on one machine at a time. However, you can transfer your license repeatedly between up to three machines of mixed platforms.

Automatic Install

When you receive your *keyshot6.lic* file save it to your computer. Next, start KeyShot, and select *Install a license file (*.lic)* and browse to the *keyshot6.lic* file. If your license fails to install, check to ensure you have full permissions set on your *KeyShot 6* resources folder for PC, or full permissions set on the KeyShot application *package contents* for Mac.

Manual Install

When you receive your *keyshot6.lic* file, you can manually copy it to the *Keyshot 6* resources folder on PC or Mac.

Transferring Your License

During the license transfer process, an internet connection is required. Once the license has been successfully transferred, KeyShot can run without being connected to the internet.

How to Transfer Your License

To transfer your license, ensure you are connected to the internet on the active machine. Start KeyShot and go to *Help, Deactivate License on this Computer...*
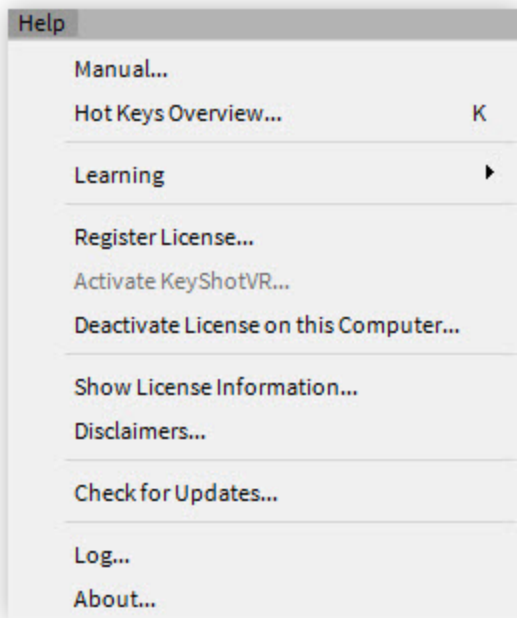
Next, ensure the new machine is connected to the internet and KeyShot is installed. Start the software, fill out your information on the activation screen, and press *Next*.

On the following screen you will be asked for your KeyShot serial code(s). Type in your information and press *Next* to finalize the activation.
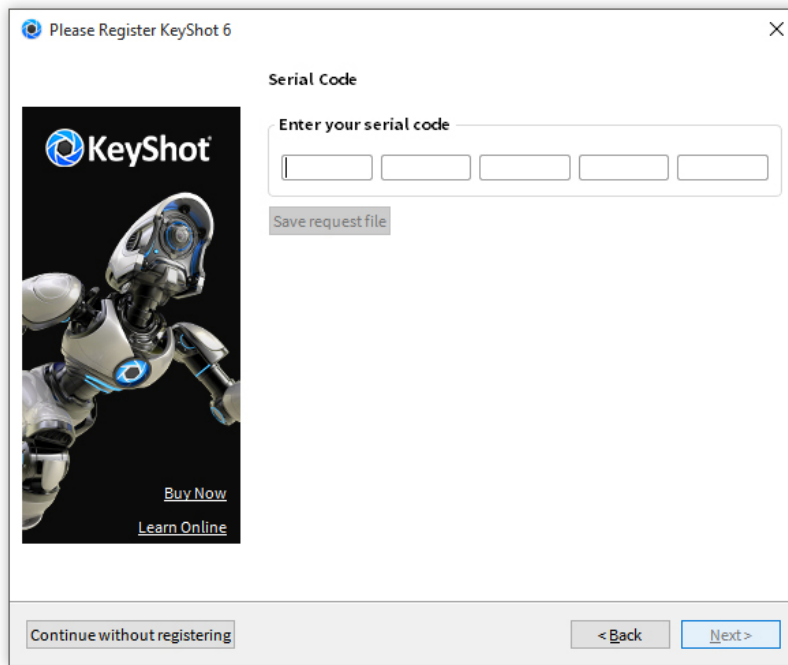
Resource Folder

KeyShot Resource Folder

Your KeyShot installation contains a folder of preset KeyShot resources (or assets). Resources such as materials, environments, and textures are stored here. When you open a .bip file, KeyShot references the KeyShot resources folder location and loads any files that apply to the scene. You can specify the location of the KeyShot resources folder from *Edit, Preferences* under the *Folder Preferences* tab.

The KeyShot resources folder contains the following sub-folders:

Animations

Animations will be saved to this folder by default. At render time, other locations can be specified in the Render Options window.

Backplates

The KeyShot Library loads backplates from the this location and saves imported backplates to this folder by default.

Colors

The KeyShot Library loads color library files from the this location and saves imported color library files to this folder by default.

Downloads

Resources downloaded from the KeyShot Cloud will be saved to this location .

Environments

The KeyShot Library loads environments from this location and saves imported environments to this folder by default.

Favorites

This folder is empty until a favorite list of resources is created. Once created, the favorite list is saved to this location as a XML file.

Materials

The KeyShot Library loads materials this location and saves imported materials to this location by default.

Material Templates

This folder is empty until a material template is created. Once created, the material template is saved to this location.

Models

This folder contains standard primitives that you can import into KeyShot.

Renderings

Renderings will be saved to this folder by default. At render time, other locations can be specified inside the Render Options window.

Scenes

This folder contains sample scenes that you can only open with KeyShot. These scenes are saved as BIP files.

Scripts

This folder contains sample scripts that you can use with KeyShot.

Textures

The Keyshot Library loads textures from this location and saves imported textures to this folder by default.

You can specify the location of the KeyShot Resources folder *Preferences, Folder Locations*.

PC Location

After KeyShot 6 is installed, a "KeyShot 6 Resources" shortcut will be created on your desktop. By default, this shortcut points to: *Documents/KeyShot 6.*

Setting Permissions

You must have read and write permissions for your KeyShot 6 folder in order to save renders, animations, and more. Here's how to set permissions:

- Right click the KeyShot 6 resources folder and select "Properties".
- Go to the Security tab and highlight your group or user name.
- Click the "Edit" button.
- Set permissions to "Full Control."
- Click "Apply" and "OK."
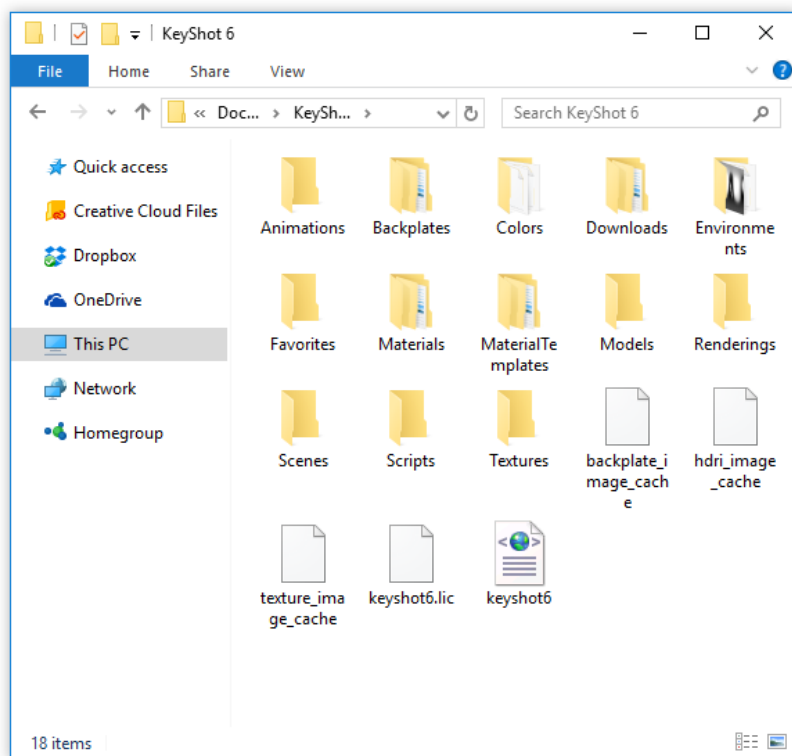
Mac Location

On a Mac your KeyShot 6 resources folder is saved inside the "Application Support":
Library/Application Support/KeyShot 6

Setting Permissions

You must have read and write permissions to your KeyShot 6 folder in order to save renders, animations, and more. Here's how to set permissions:

1. Right click the KeyShot 6 resources folder and select "Get Info."
2. Expand "Sharing & Permissions" and unlock access.
3. Change all privileges to "Read & Write."
4. Click the settings button and select "Apply to enclosed items…"
5. Click "OK" and close the window.
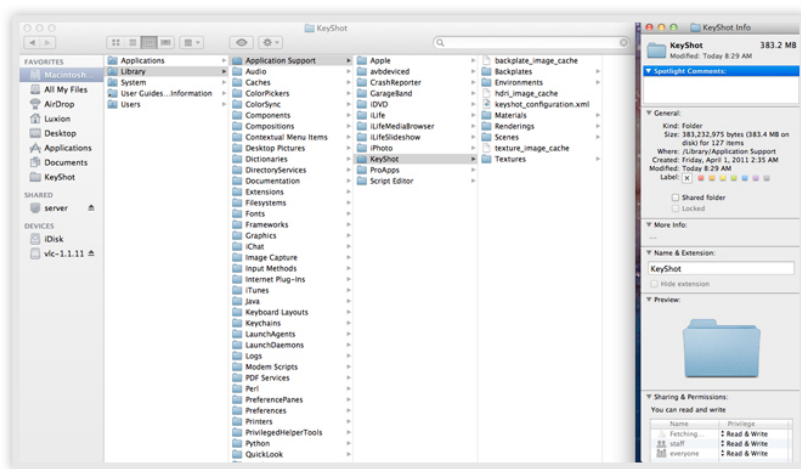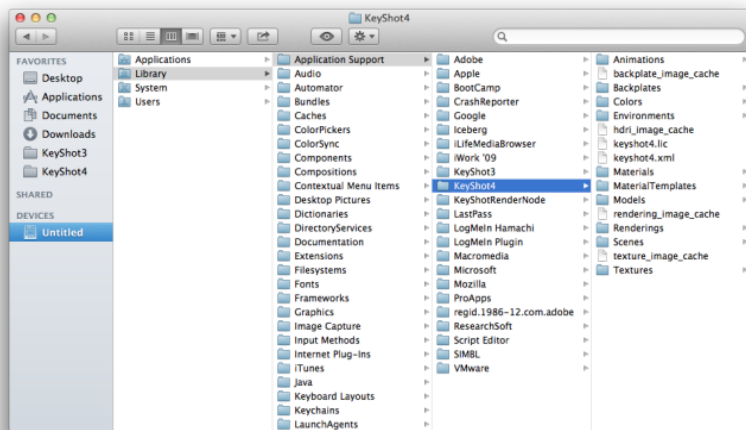
Pro Floating Installation

Welcome to the KeyShot Pro Floating Installation Guide! This guide will walk you trough the installation process starting with the license management application: LMTools (PC), KeyShot License Manager (Mac), or lmgrd (Linux). You will then install and configure the client application, KeyShot! We have also included a list of features and add-ons, a troubleshooting guide, and licensing terminology with definitions.

LMTools (PC)	KeyShot License Manager (Mac)	lmgrd (Linux)

In this section:
- Pro Floating Quick Start Setup
- Windows PC Setup
- Mac OS X Setup
- Linux Setup
- Pro Floating Features
- Pro Floating Troubleshooting
- Pro Floating Server Changes
- Pro Floating Technical Info

Windows PC Setup	Mac OS X Setup	Linux Setup
LMTools is the license management application for PC. Requires Windows Server 2008 and later.	KeyShot License Manager is the license management application for Mac. Requires Mac OSX 10.7 and later.	The lmgrd (unix executable file) is the license management process for Linux.

All license management applications utilize the latest FlexNet licensing tools (v11.13.1.3) by Flexera Software LLC. KeyShot Pro Floating and KeyShot License Manager are both provided by Luxion Inc.

Pro Floating Quick Start Setup

KeyShot Pro Floating - Server Installation

All license management applications utilize the latest FlexNet licensing tools (v11.13.1.3) by Flexera Software LLC. KeyShot Pro Floating and KeyShot License Manager are both provided by Luxion Inc. Please follow the instructions below to install the license server and have your license file issued.

During license setup, you will install the server on a single computer in your network. This computer will host your license file and will be referred to as the license server. *Note: The server must be a local central server--a dedicated machine for the FlexNet server software to be installed on and powered on and connected to the network at all times.*

Before You Begin
Your KeyShot Pro Floating license will be sent via email. If you have a previous installation, please save the license file to your license server folder (e.g. *C:\FlexLM* on Windows) overwriting the previous file. If you changed the port number in the original file, please make sure your new license reflects that. It is important to note that the latest client software installation requires the latest KeyShot license server software. Without the latest license server software, KeyShot will display an "unknown error".

1. Download the license server software
KeyShot License Server - Windows
KeyShot License Server - Mac OS X
KeyShot License Server - Linux

2. Install the license server

1. Download and unpack the server software on the machine that will host the licenses.
2. Start the server software.
3. The server software will automatically provide the *Host name* and the *Host ID*.
4. Send the following information to license@luxion.com.
   - Company name
   - Serial code
   - Computer Hostname
   - Computer MAC Address

How to Restart a Windows Server

1. Go to the server's C:\FlexLM folder
2. Launch LMTools.exe
3. Go to the START/STOP/REREAD tab
4. Enable Force Server Shutdown

5. Click Stop Server and wait for the server to stop
6. After a minute, click Start Server

The service will restart. Client computers will be able to connect as usual.

How to Restart a Mac Server

1. Launch KeyShot License Manager.app
2. Make sure to select Install License File
3. Click Browse and browse to your new license file
4. Click Stop
5. Click Start/Restart

The service will restart. Client computers will be able to connect as usual.

How to Restart a Linux Server
Using the command line on a Windows system running the FLEXlm license server:

1. Stop server: Enter
   ```
   lmutil lmdown -c [path to license file]
   ```

2. Start server: Enter
   ```
   lmutil lmgrd -c [path to license file]
   ```

The service will restart. Client computers will be able to connect as usual.

How to move the license server
Should you need to move the KeyShot Floating license server to a new computer, please follow the following instructions to ensure you are up and running quickly.

1. Follow the steps above for installing the license server on the new machine.
2. Send the following information to license@luxion.com.
   - Old license file
   - New Computer Hostname
   - New Computer MAC Address
   - Letter on company letterhead stating the old license server will be removed.

We will usually send your license file within 24 hours during business days (Mon-Fri). Should you have any questions please contact us at license@luxion.com.

KeyShot Pro Floating - Client Installation

1. Gather Server Information
Before installing, make sure that the KeyShot Floating license server has been installed on a computer in the network and gather the following information from that computer:

- Computer Hostname
- Computer IP Address

2. Install KeyShot Pro Floating
Install the KeyShot Pro Floating (FL) client software on all the user's computers. You may download the KeyShot Floating client application here:

KeyShot Pro Floating - Windows
KeyShot Pro Floating - Mac OS X

3. Enter Server Information
When first installed, the KeyShot Floating client application will ask you to *Specify the License Server System*.

Windows - Enter the *Computer Name* at the first prompt
Mac - Enter *[port number]@[server's IP address]* (e.g. 27000@192.168.1.123)

KeyShot Pro Floating will remember the server location from now on. For more information please refer to the relevant section for your installation:

Pro Floating Installation - Mac OS X
Pro Floating Installation - Windows PC
Pro Floating Installation - Linux

Should you have any questions, please contact us at license@luxion.com.

Windows PC Setup

Before you can run KeyShot Pro Floating, it is important that your license server is configured properly. The following section will walk you through the process starting with the license server setup: automatic or custom. You will then install and configure KeyShot Pro on your client machines.

License Server Installation (PC) - Automatic

The instructions below will walk you through the typical first-time license service setup. Our licensing team will provide you with a license file and the appropriate software links. You may reach our licensing team at license@luxion.com. If you already have a license server set up you can then make changes.

Automatic License Server Setup Instructions

1. Download and run the "keyshot_floating_license_server.exe" installer. Follow the prompts and finish the installation.
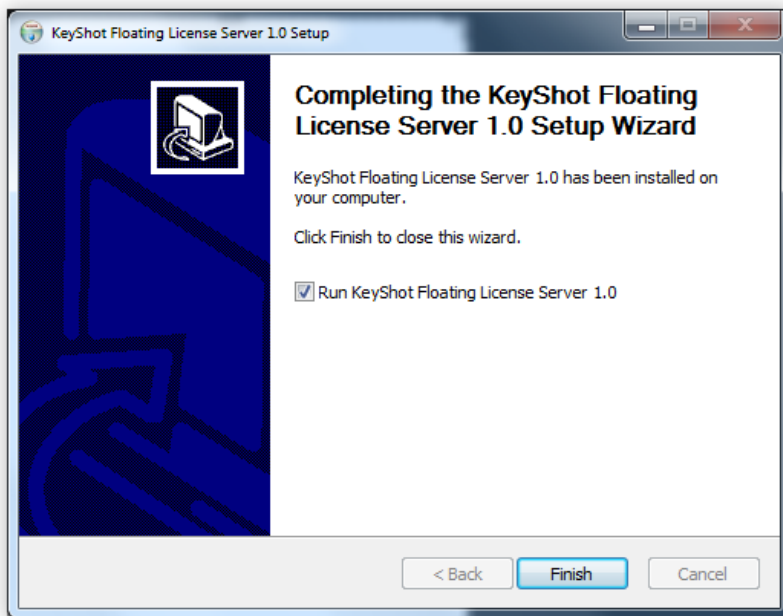
2. Launch the *Floating License Configurator.* Select *Has received a license file from Luxion.* If the configurator doesn't launch or if you receive an error, then you may perform a custom license service setup instead.
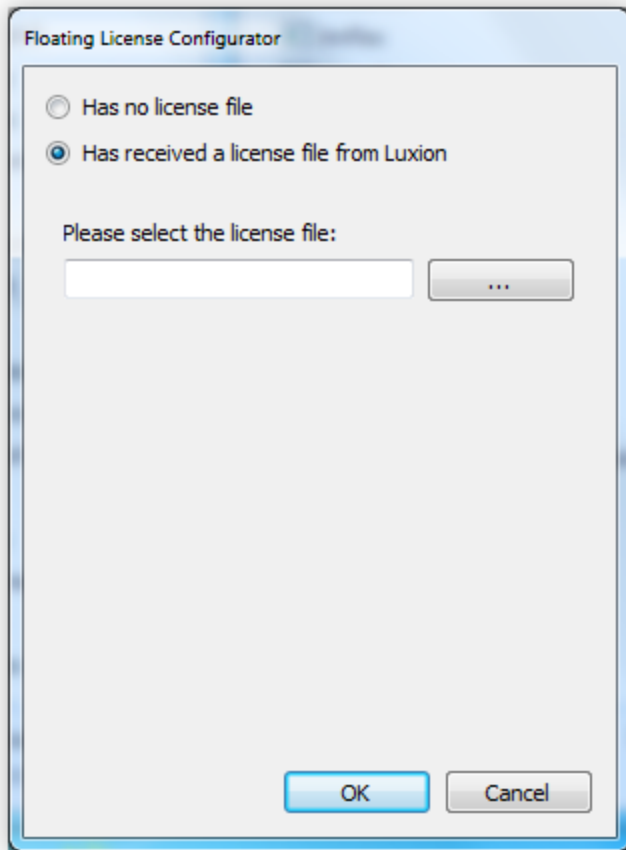
3. Click the Browse button (…) and browse to your license file in Windows Explorer.
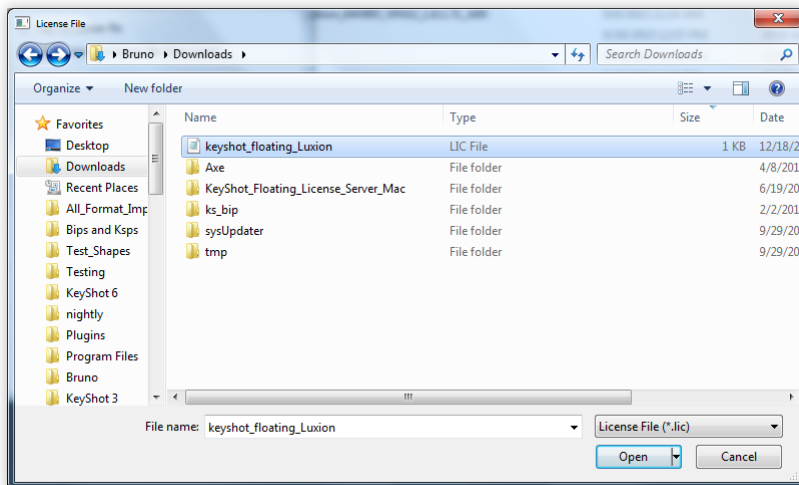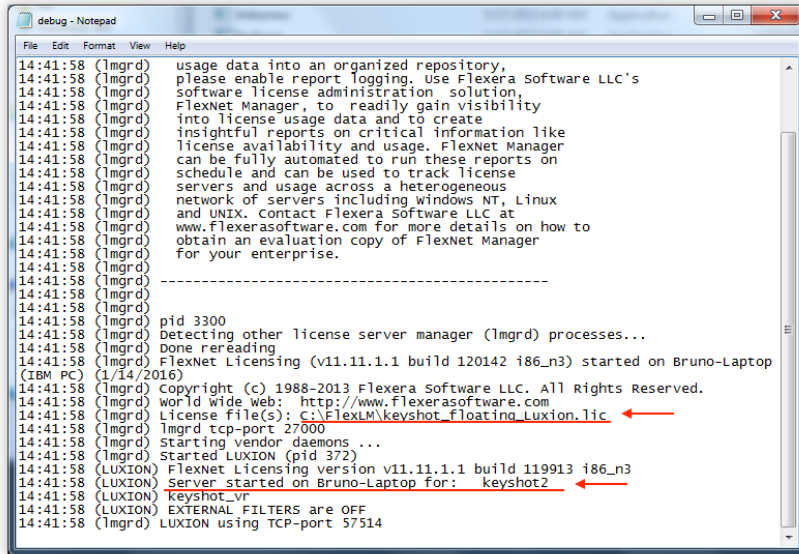
4. Click *Open*. Your license file will be loaded into the configurator. Click *OK*.

Floating License Configurator

○ Has no license file

◉ Has received a license file from Luxion

Please select the license file:

`vnloads/keyshot_floating_Luxion.lic`   [...]

[OK]   [Cancel]
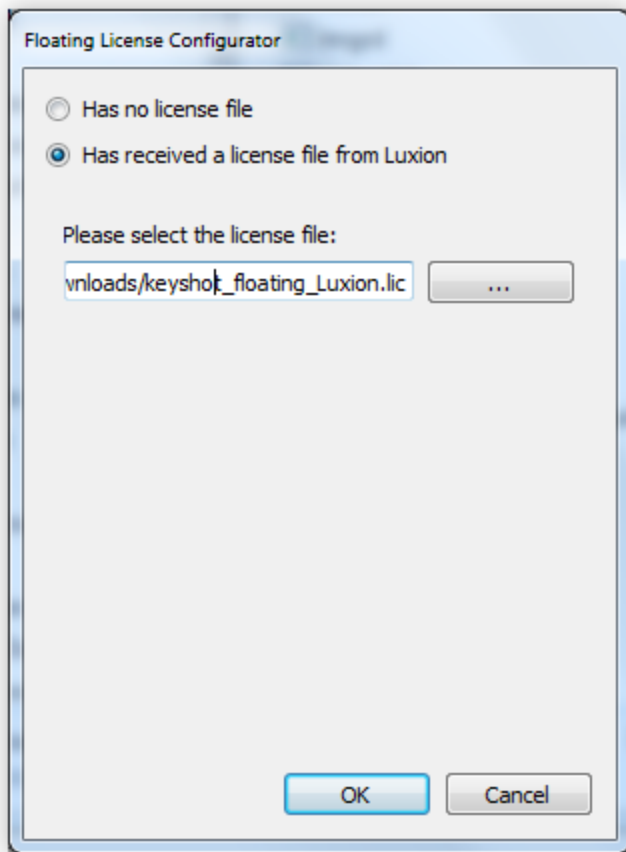
5. A dialog will tell you that the server has started. Click *OK*. If you run into any errors here, then you may perform a custom license service setup instead.
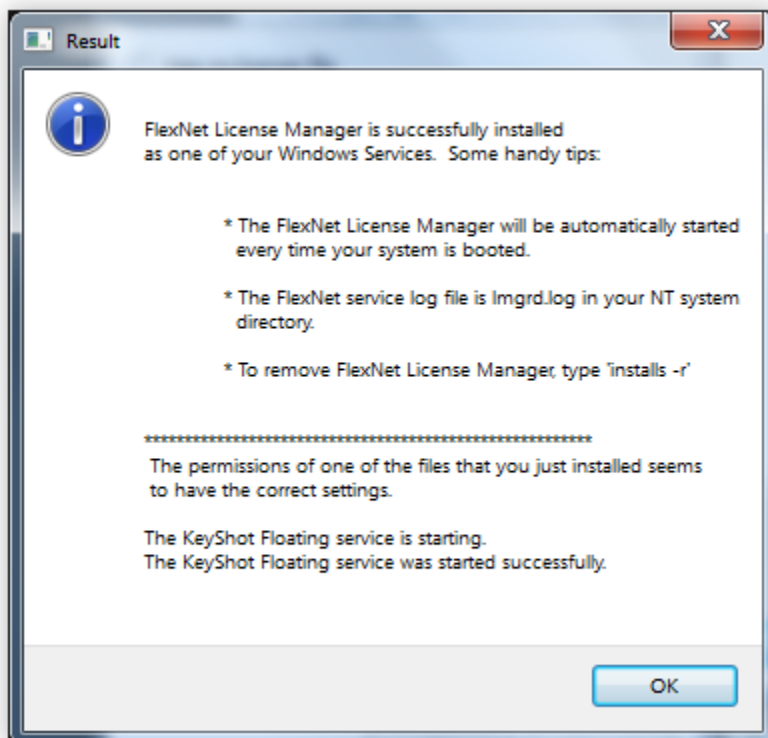
Result

FlexNet License Manager is successfully installed as one of your Windows Services. Some handy tips:

    * The FlexNet License Manager will be automatically started every time your system is booted.

    * The FlexNet service log file is lmgrd.log in your NT system directory.

    * To remove FlexNet License Manager, type 'installs -r'

****

The permissions of one of the files that you just installed seems to have the correct settings.

The KeyShot Floating service is starting.
The KeyShot Floating service was started successfully.

[OK]

6. Open the "debug.log" file inside your C:\FlexLM folder (this folder contains the licensing software). The debug log will reference your license file and tell you that the server started on your computer system. If you don't see any errors, then your license service is up an running.

Technical Tip: If your debug log does not look similar to the above image or if you are getting an error message inside *Floating License Configurator*, then you can use the tro ubleshooting guide for diagnosis or perform a custom license service setup. You may also contact Luxion Customer Support at support@luxion.com for assistance.

License Server Installation (PC) - Custom

The *Floating License Configurator* application automatically creates a service in *LMTool s*. But what if you wish to create a custom license service? Then, you will need to understand *LMTools* in greater detail. The instructions below will walk you through creating your very own custom license service. Our licensing team will provide you with a license file and the appropriate software links. You may reach our licensing team at lic ense@luxion.com. If you already have a license server set up you can then make changes.

Custom License Server Setup Instructions

1. Download and run the "keyshot_floating_license_server.exe" installer. Follow the prompts and make sure that "Run KeyShot Floating License Server 1.0" is disabled. Click Finish.
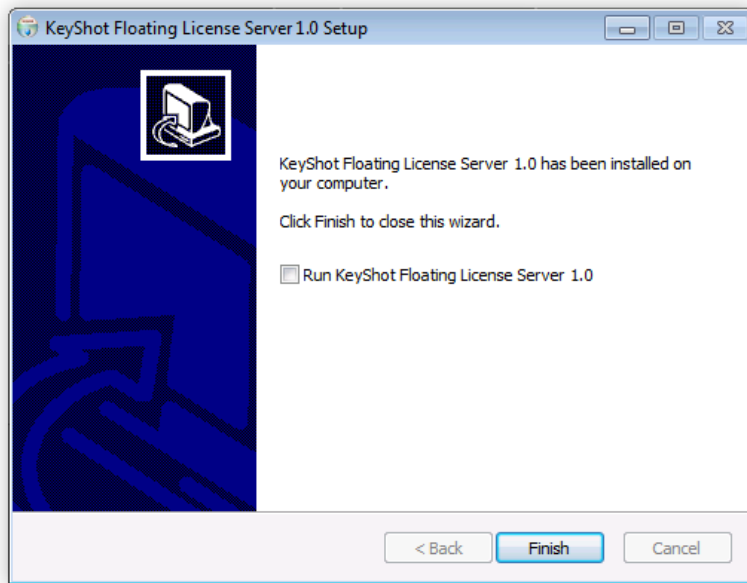
2. Launch the *LMTools* application (found inside *C:\FlexLM*) and go to the Config Services tab.

3. Write a new service name.
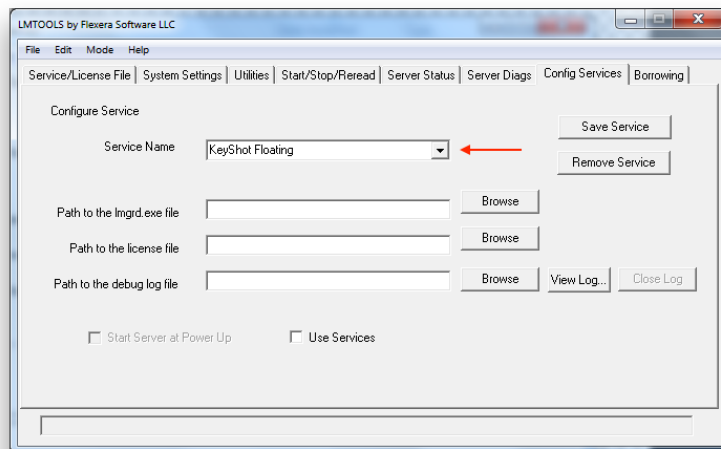
4. Browse to the *lmgrd.exe*, license (*.lic*), and *debug.log* files. You should be able to find all of these files in your *C:\FlexLM* folder. Note that the *debug.log* is created after you start the service. For now, you can simply specify the correct path: *C:\FlexLM\debug.log*
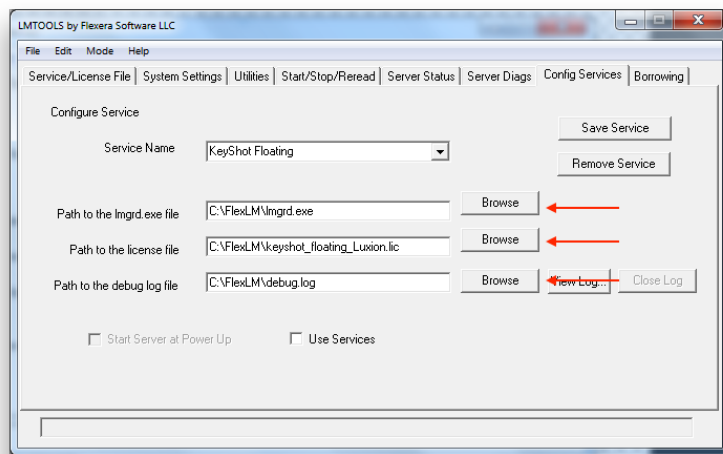
5. Enable *Start Server at Power Up* and *Use Services.* Then click *Save Service* and confirm.
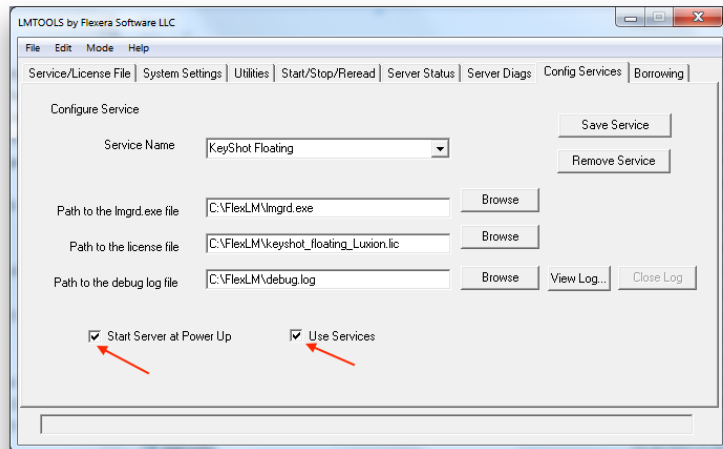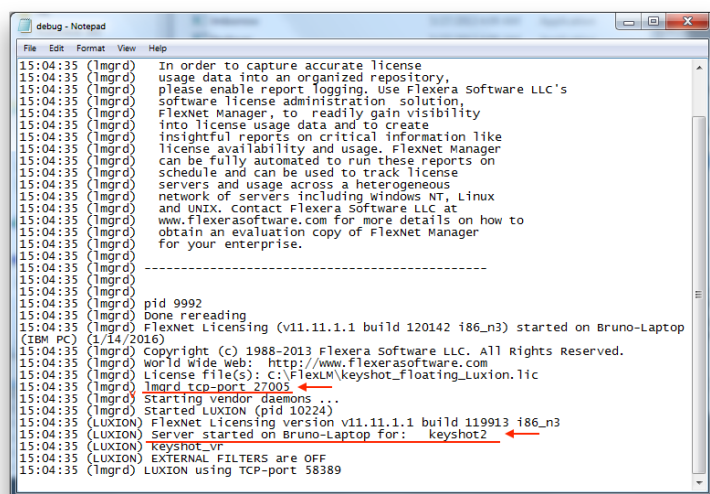
6. Launch *LMTools* and go to the *Start/Stop/Reread* tab. Enable *Force Server Shutdown* and click *Stop Server.* You may also stop the *KeyShot Floating* service within the *Windows Services* dialog (*services.exe*).
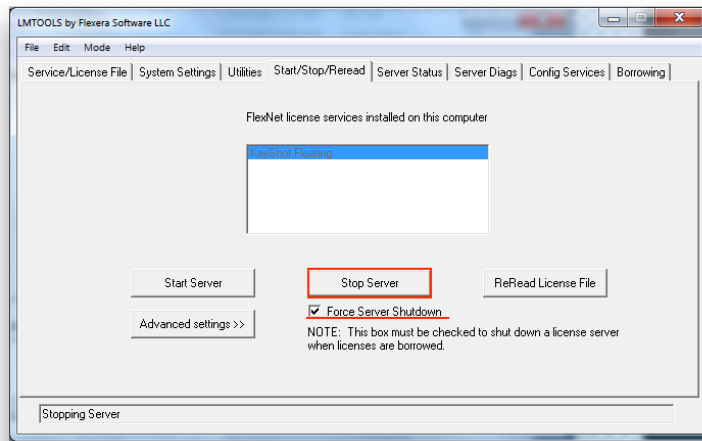
7. Click *Start Server*. You may also start the *KeyShot Floating* service within the *Windows Services* dialog (services.exe).

8. Open the *debug.log* file inside your *C:\FlexLM* folder (this folder contains the licensing software). The debug log will reference your license file and tell you that the server started on your computer system.

Technical Tip: If your debug log does not look similar to the above image or if you are getting an error message inside *Floating License Configurator*, then you can use the troubleshooting guide for guidance. You may also contact Luxion Customer Support at support@luxion.com for assistance.

KeyShot Pro Floating Installation (PC)

Now that your server is up and running, you are ready for the client setup. The instructions below will walk you through setting up your PC clients. For setting up your Mac clients, click here.

License Client Setup Instructions

1. Download and install the KeyShot Pro Floating application. To download KeyShot, click here.

2. Launch KeyShot 7.

On this page:

- License Client Setup Instructions
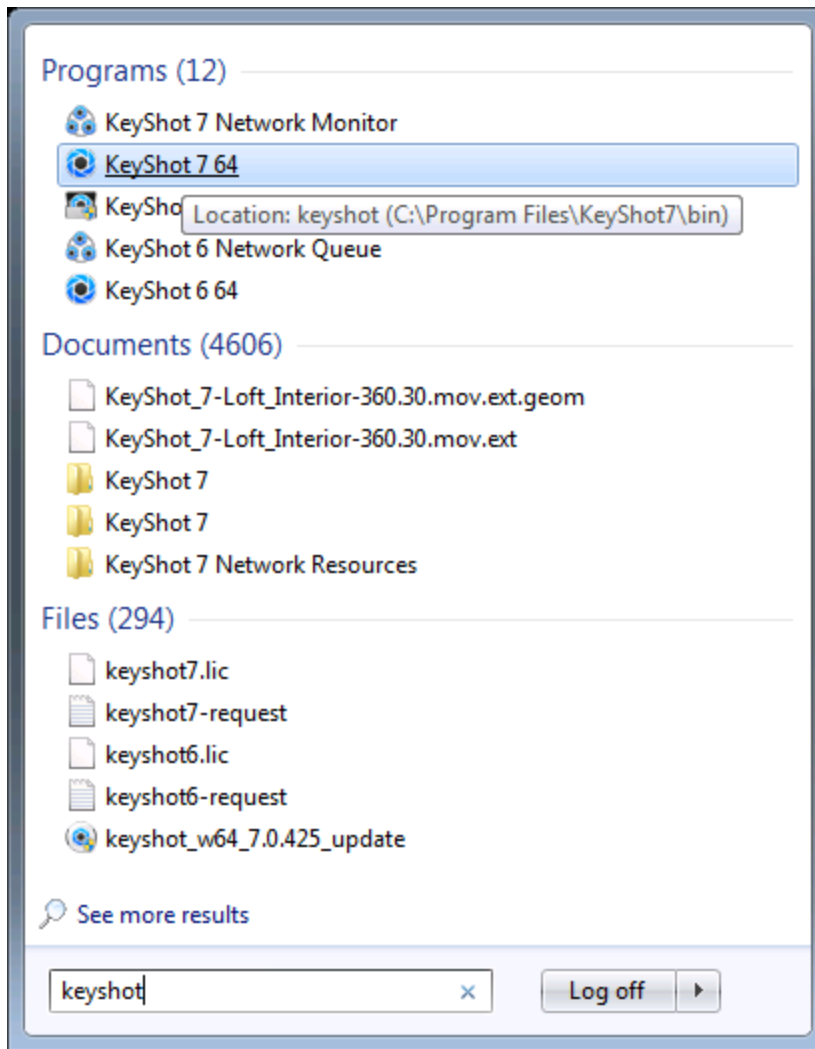
3. Select *Floating License.* If you are currently in demo mode, then open the registration wizard from *Help > Register License* (PC) or *KeyShot > Register License* (Mac) first. Click *Continue.*
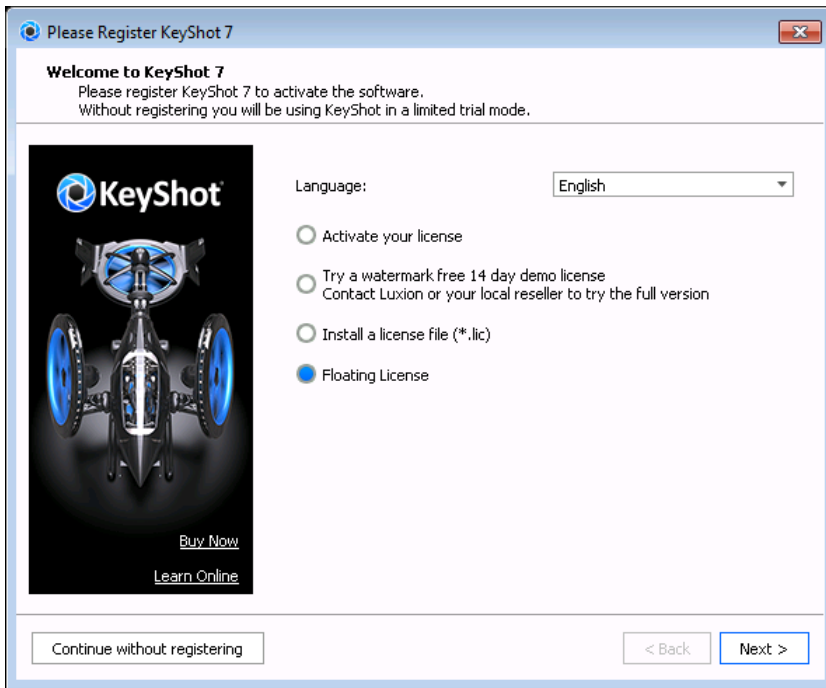
4. Specify the port number, followed by the "@" sign and the server's hostname (for example, 27000@KeyShotServer.local). Click *Connect.*
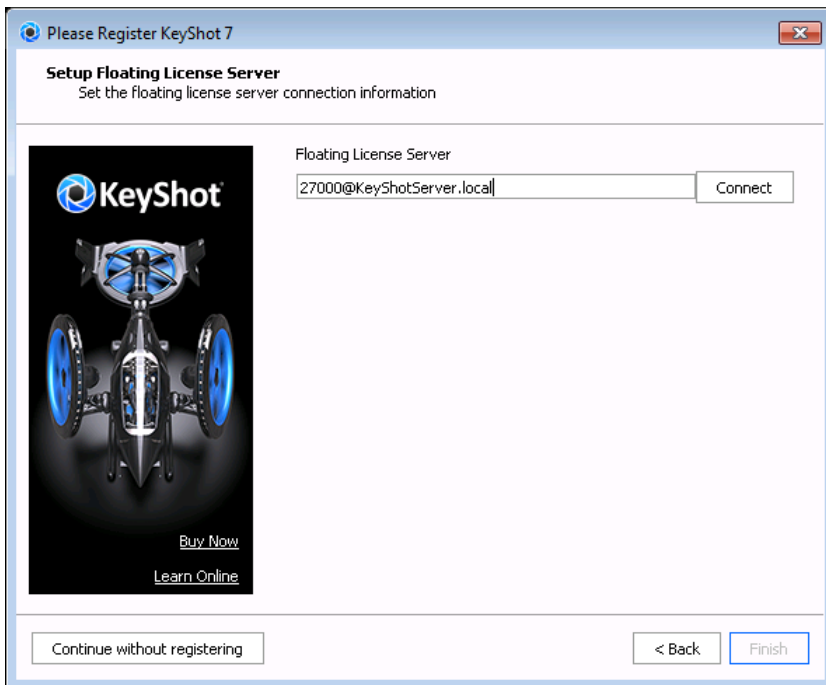
You may also use the server's IP Address (use the IP Address if your license server is a PC). For example, 27000@192.168.1.123. Click *Connect.*
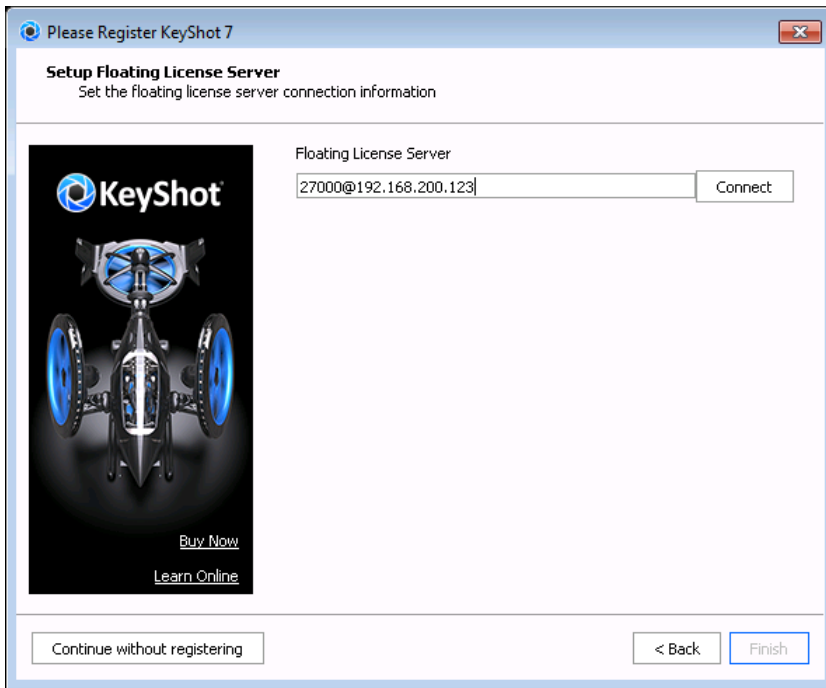
4. Review your license features and Click *Finish*.
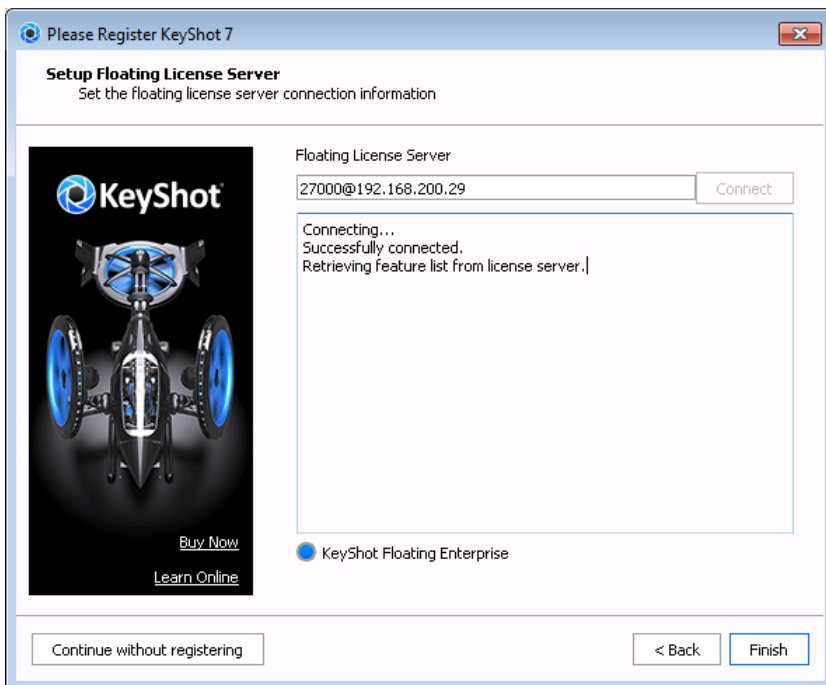
KeyShot Pro Floating will start. From now on, KeyShot will remember the server information. You will be able to check out the license as long as your system can connect to the computer acting as the license server.
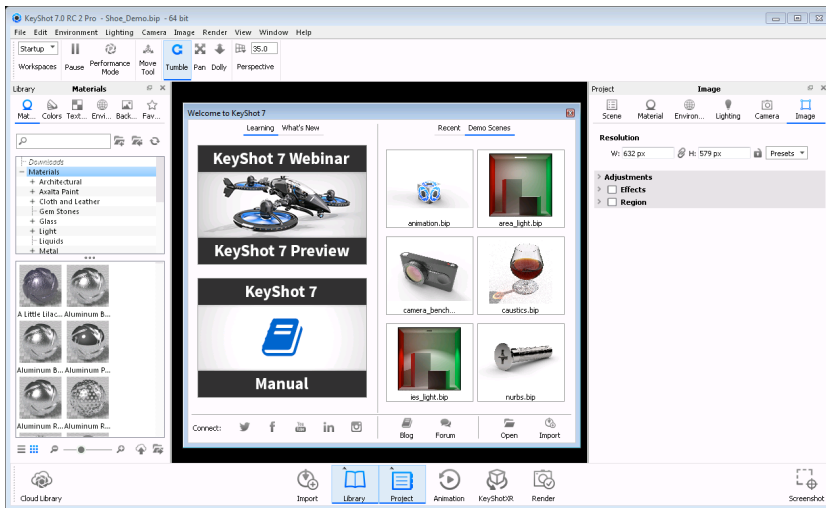
Technical Tip: If your service status window does not look similar to the above image or if you are getting an error message when you start the server, then you can use the tr oubleshooting guide for diagnosis. You may also contact Luxion Customer Support at s upport@luxion.com for assistance.

Mac OS X Setup

Before you can run KeyShot Pro Floating, it is important that your license server is configured properly. The following sections will walk you through the process starting with the license server setup. You will then install and configure KeyShot Pro Floating on your client machines.

License Server Installation (Mac) - Automatic

The instructions below will walk you through a typical first-time license service setup. Our licensing team will provide you with a license file and the appropriate software links. You may reach our licensing team at license@luxion.com. If you already have a license server set up, you can then make changes.

License Server Setup Instructions

1. Download and unzip KeyShot License Manager folder into your **Downloads** folder first. Then, drag and drop the *KeyShotLicenseManager.app* to your Application's folder.*

2. Launch the *KeyShot License Manager* application.
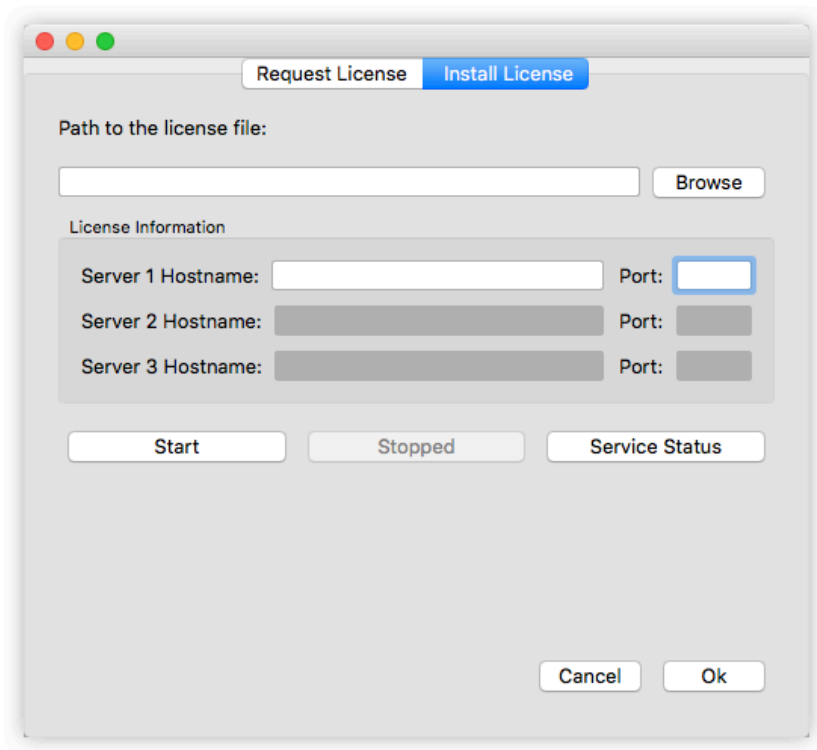
3. Click *Browse* and browse to your license file in the Finder app.
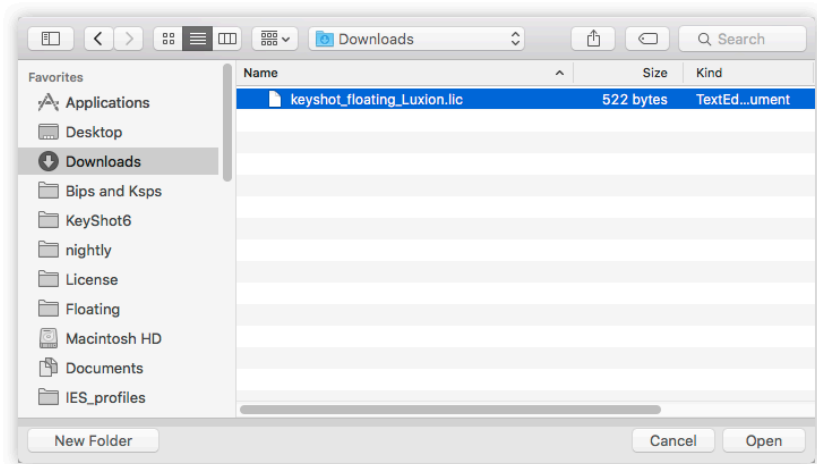
4. Click *Open*. Your license file will be loaded into *KeyShot License Manager*.
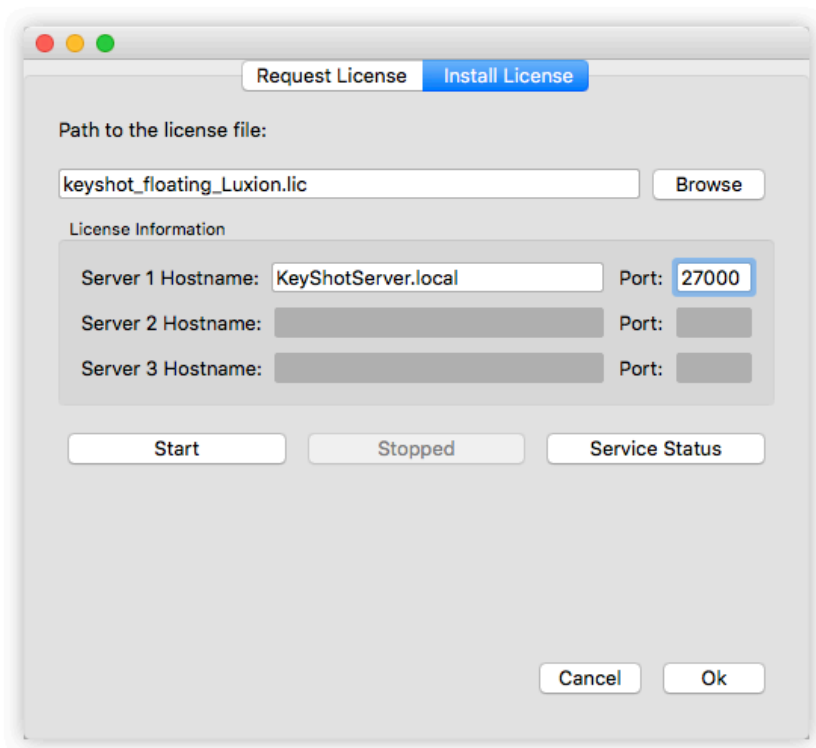
5. Check that the correct hostname appears in the appropriate field and click *Start*. A dialog will tell you that the server has started. Click *Ok*.
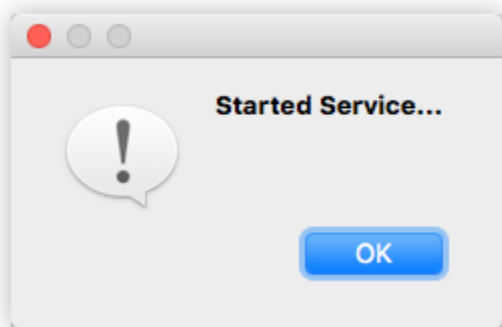
6. Click *Service Status*. Your license server's status will appear in the service status window. The service status window will tell you how many seats are available and how many seats have been issued.

lmstat - Copyright (c) 1989-2014 Flexera Software LLC. All Rights Reserved. Flexible License Manager status on Wed 12/23/2015 15:54

License server status: 27000@KeyShotServer.local
    License file(s) on KeyShotServer.local: /Applications/KeyShotLicenseManager/KeyShotLicenseManager.app/Contents/MacOS/keyshot_floating_Luxion.lic:

KeyShotServer.local: license server UP (MASTER) v11.13.0

Vendor daemon status (on KeyShotServer.local):

    LUXION: UP v11.13.0
Feature usage info:

Users of keyshot2: (Total of 2 licenses issued; Total of 0 licenses in use)

Users of keyshot_vr: (Total of 2 licenses issued; Total of 0 licenses in use)

OK

* It is important that you manually drag and drop the KeyShotLicenseManager.app (for Mac OSX) into your Applications folder before running it. This prevent Gatekeeper from translocating it.

Technical Tip: If your service status window does not look similar to the above image or if you are getting an error message when you start the server, then you can use the troubleshooting guide for diagnosis. You may also contact Luxion Customer Support at support@luxion.com for assistance.

License Server Installation (Mac) - Custom

The *KeyShot License Manager* application is just a graphical user interface to FlexNet licensing tools. KeyShot License Manager is great for quick setups. However, for better troubleshooting and customization your IT department may prefer to have direct access to the license manager (lmgrd) and the license manager status application (lmstat). In that case, you can create your license service manually.

Custom License Server Setup Instructions

1. Launch the Activity Monitor.app. Organize your processes by name. Find the *lmgrd* process and click *Force Quit* (click the crossed-stop-sign button). This will stop any existing license services.

On this page:
- Custom License Server Setup Instructions
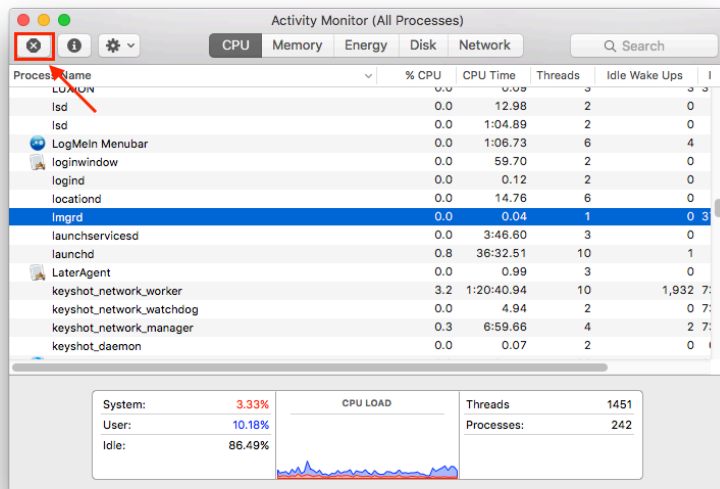
2. Download the latest FlexLM license server update from here.

3. Once downloaded, move the FlexLM.zip file to your Applications folder and unzip it. Your FlexLM folder contains the main license management application, *lmgrd* and other useful applications that help you check the status of your service such as *lmstat*. Inside the FlexLM folder you will also be able to find the installation guide PDF.
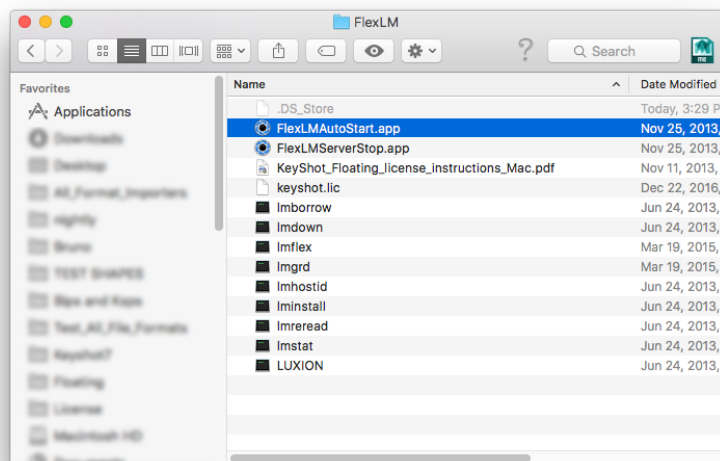
4. Rename your KeyShot license file to "keyshot.lic" and move it into the FlexLM folder. This is very important.
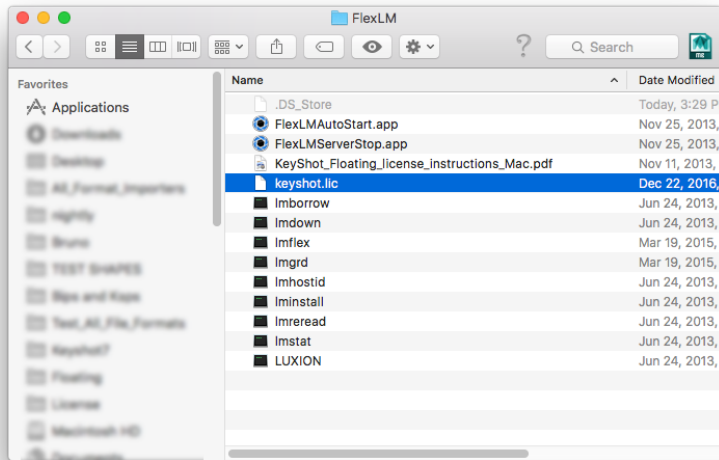
5. Right-click the FlexLMAutostart.app and select *Open.* If you are asked to confirm, then click Open once more. Your KeyShot license service will start right up.
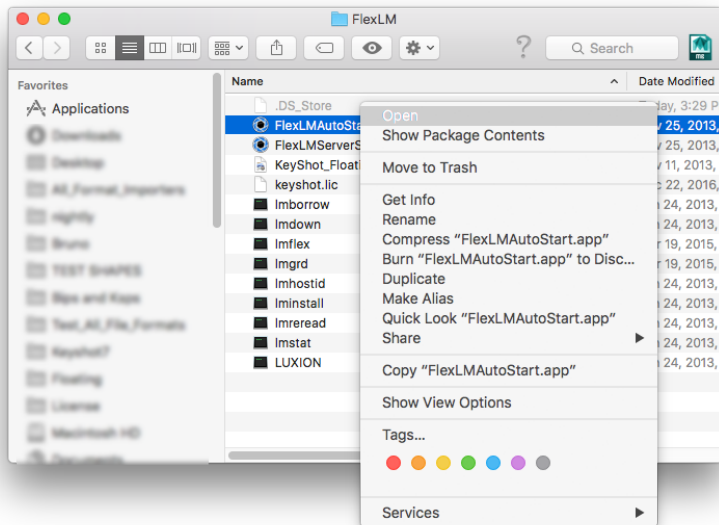
6. To confirm that your service is up an running, you can run the *lmstat* application inside the FlexLM folder.
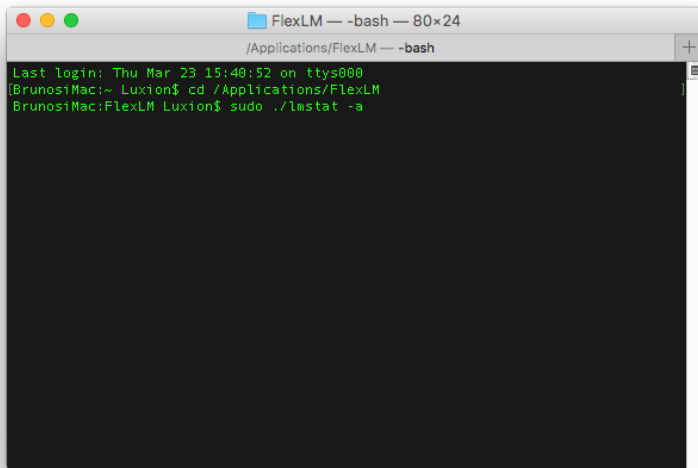
Launch Terminal.app and change the directory to /Applications/FlexLM :

cd /Applications/FlexLM

Press *Enter.* Then, type:
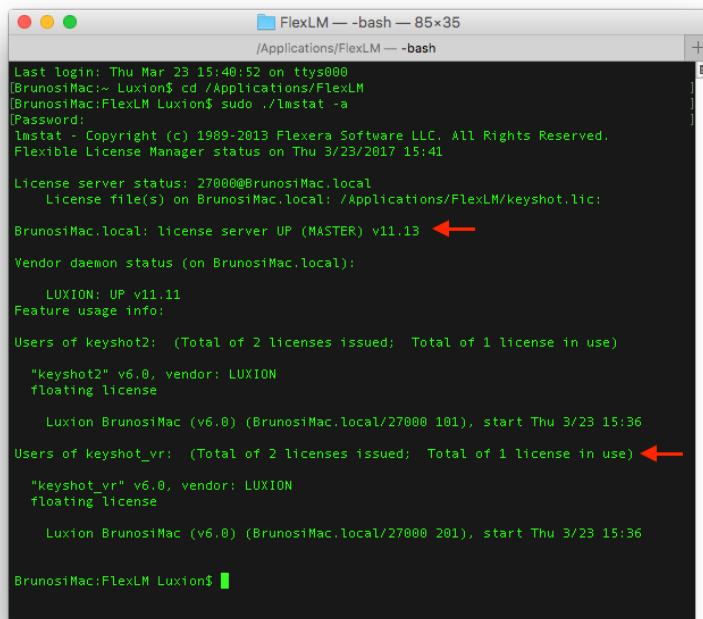
sudo ./lmstat -a

Press *Enter and type your password* (no characters will appear as you type). If you think you made a mistake, simply delete and start over.

Presse Enter one more time. If your service is running, *lmstat* will return a message stating that the "license server is UP (MASTER)…" and it will tell you the number of license issued as well as the number of licenses in use. Otherwise, please send a screenshot of the lmstat output to support@luxion.com for further assistance.

7. To ensure that your license service starts every time that you restart your computer, open your System Preferences.app and go to Users&Groups > Login Items. Click the Add button (+) and browse to your Applications/FlexLM folder. Select the FlexLMAutostart.app and click Add.
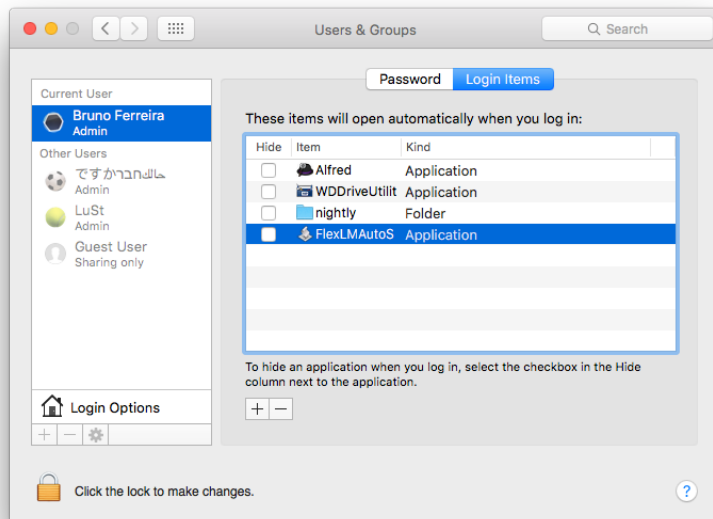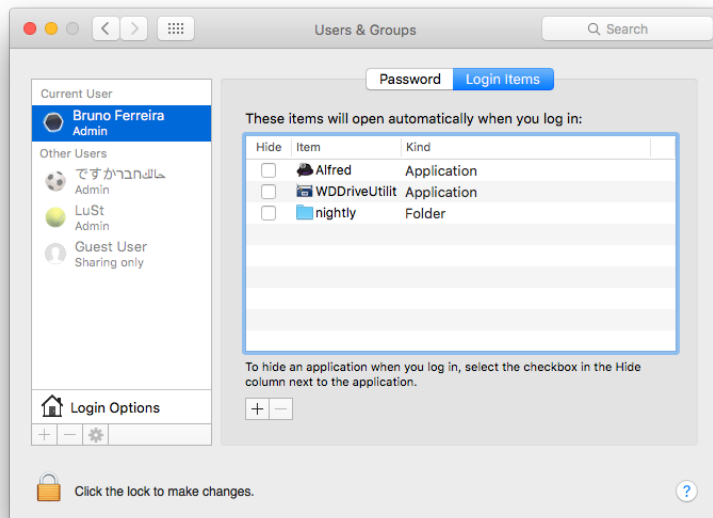
8. Close System Preferences.app. You can now launch KeyShot and point it to the server as outlined in the KeyShot Pro Floating Installation.

KeyShot Pro Floating Installation (Mac)

Now that your server is up and running, you are ready for the client setup on your. The instructions below will walk you through setting up your Mac clients. For setting up your PC clients, click here.

KeyShot Pro Floating Setup Instructions

1. Download and install the KeyShot Pro Floating application. To download KeyShot, click here.

2. Launch KeyShot 7.

On this page:

- KeyShot Pro Floating Setup Instructions
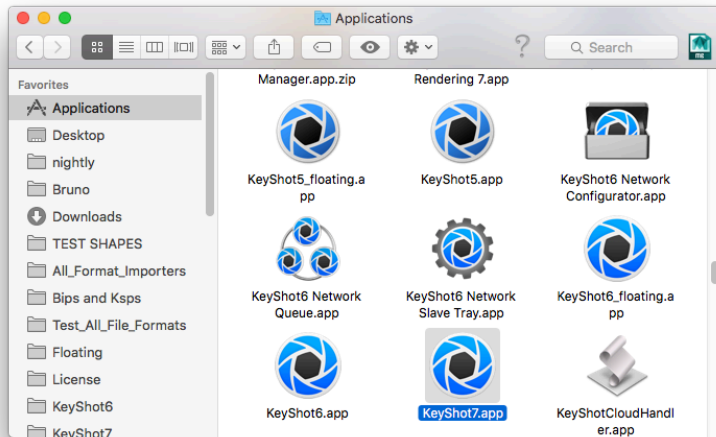
3. Select *Floating License.* If you are currently in demo mode, then open the registration wizard from *Help > Register License* (PC) or *KeyShot > Register License* (Mac) first. Click *Continue.*

4. Specify the port number, followed by the "@" sign and the server's hostname (for example, 27000@KeyShotServer.local). Click *Connect.*
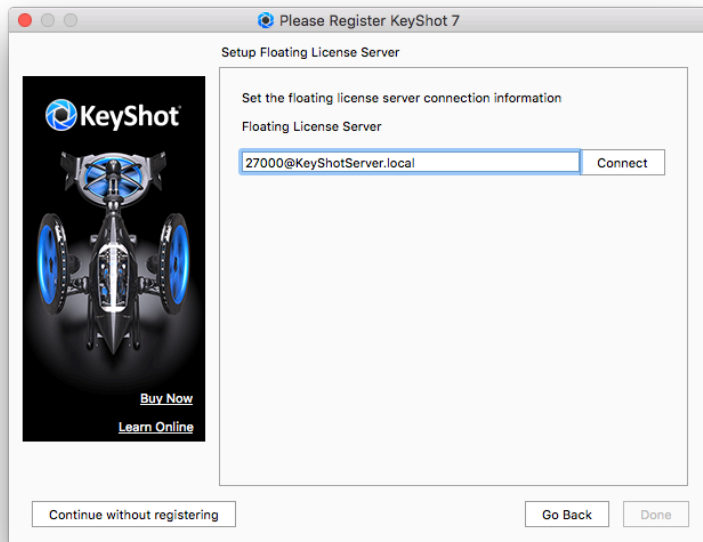
You may also use the server's IP Address (use the IP Address if your license server is a PC). For example, *27000@192.168.1.123.* Click *Connect.*
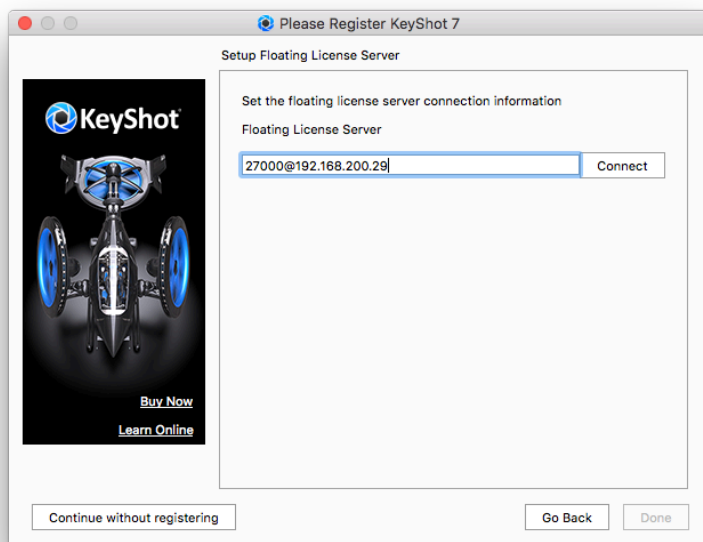
4. Review your license features and Click *Done.*
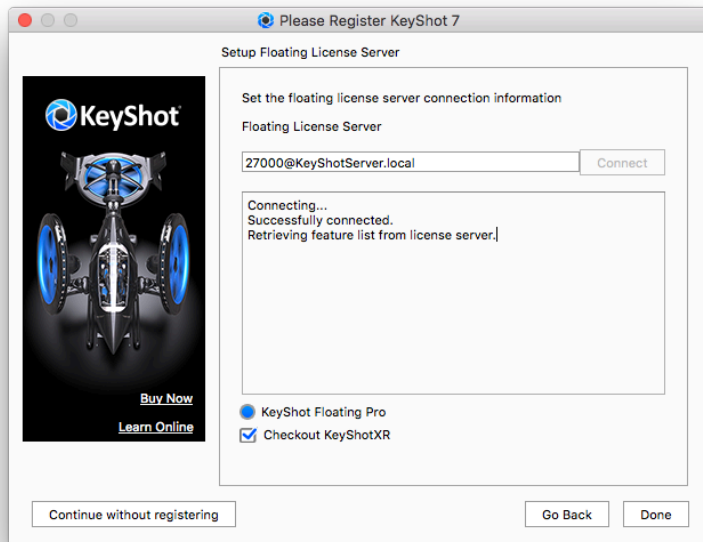
KeyShot Pro Floating will start. From now on, KeyShot will remember the server information. You will be able to check out the license as long as your system can connect to the computer acting as the license server.
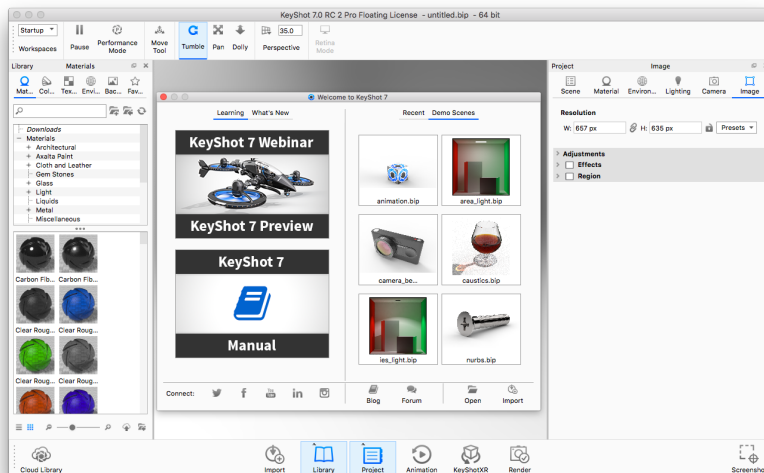
Technical Tip: If your service status window does not look similar to the above image or if you are getting an error message when you start the server, then you can use the troubleshooting guide for diagnosis. You may also contact Luxion Customer Support at support@luxion.com for assistance.

Linux Setup

Before you can run KeyShot Pro Floating, it is important that your license server is configured properly. The following sections will walk you through the process starting with the license server setup. You will then install and configure KeyShot Pro Floating on your PC or Mac client machines.

After installation, install KeyShot following the:

1. KeyShot Pro Floating Installation (PC)
2. KeyShot Pro Floating Installation (Mac)

License Server Installation (Linux)

The instructions below will walk you through the typical first-time license service setup on Linux. Our licensing team will provide you with a license file and the appropriate software links. You may reach our licensing team at license@luxion.com.
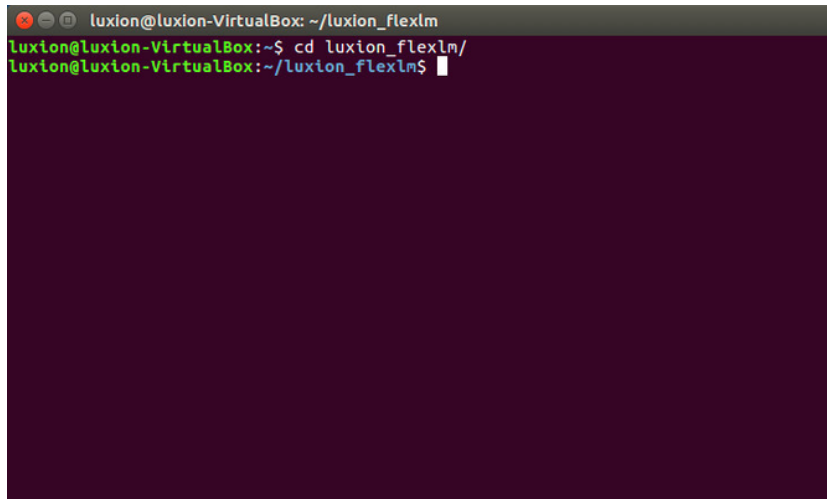
License Server Setup Instructions

If you are running RedHat Linux skip steps 3, 4 and 5.

1. Download and unzip the "KeyShot_Floating_License_Server_Linux.zip" file into the your home folder ("/home/<your username>" or "~/")

2. Open the terminal (usually *Ctrl + Alt + T*) and change your current directory to the *luxion_flexlm* folder ("~/luxion_flexlm")
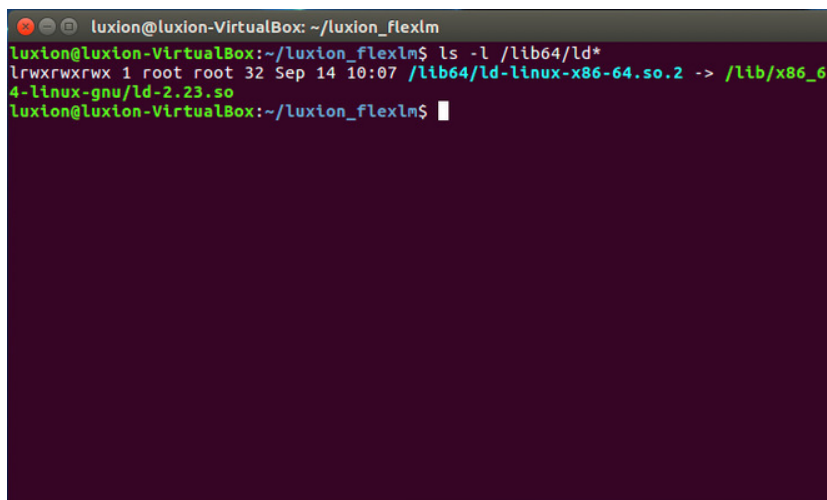
```
cd luxion_flexlm/
```


If you are running RedHat Linux skip the next 3 steps.

3. Run the following command:

```
ls -l /lib64/ld*
```

4. Take note of the return value before the arrow (highlighted in the picture).

5. Run the following command where <value from step three before the arrow> is the value from step 8 before the arrow.

```
sudo ln -s <value from step 8>
/lib64/ld-lsb-x86-64.so.3
```


6. Move your license file to your luxion_flexlm folder, where your file would have your computer name instead of *MyCompany*.
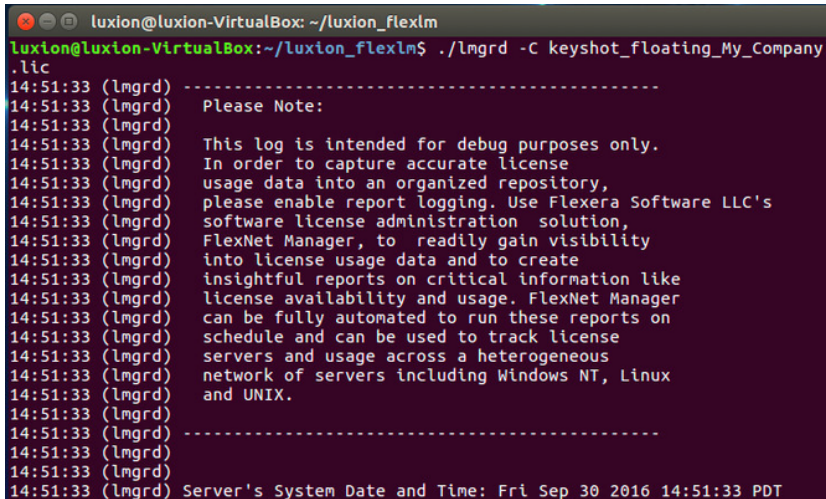
```
mv
~/Desktop/keyshot_floating_MyCompany.lic
~/luxion_flexlm/
```


7. Run the following command to star the service, where your file would have your computer name instead of *MyCompany*.

```
./lmgrd -C
keyshot_floating_MyCompany.lic
```


8. Run the following command to check the service status:

```
./lmstat -a
```

The lmstat output will confirm that the license server is up. The output message will also show you how many license seats are issued (available).

Pro Floating Features

In this section we'll go over some of the licensing features and add-ons available for KeyShot Pro Floating. First we'll explore how KeyShot Pro Floating handles the KeyShotXR feature in terms of licensing. We'll then learn about license borrowing and how to change the server connection.

KeyShot Pro Floating is available as an single license or as a bundle with KeyShot Enterprise. Refer to the KeyShot Comparison for a look at all features.

KeyShot Pro Floating	KeyShot Enterprise
KeyShot Pro Floating is the floating license version of KeyShot Pro. It allows for KeyShot to be run on several machines (purchase multiple licenses to run simultaneously) while the license(s) is (are) served from a central server using FlexNet from Flexera. It also includes the Animation add-on:	**KeyShot Enterprise is all encompassing solution, including KeyShot Pro Floating, Animation, KeyShotXR, Siemens NX plugin and Network Rendering (32 cores):**

KeyShot Pro Floating features:
- All KeyShot Pro features
- KeyShot Animation
- FlexNet based server license
- Floating license manager
- Floating license borrowing
- Camera animation
- Part and object animation
- Multiple turntable animations
- Interactive setup, editing and playback in realtime
- Individual frame output
- Compiled movie output (Quicktime, AVI, FLV)

KeyShot Enterprise features:
- All KeyShot Pro features
- KeyShot Animation
- FlexNet based server license
- Floating license manager
- Floating license borrowing
- Camera animation
- Part and object animation
- Multiple turntable animations
- Interactive setup, editing and playback in realtime
- Individual frame output
- Compiled movie output (Quicktime, AVI, FLV)
- Interactive, touch-enabled KeyShotXR
- 32 Cores Network rendering
- Plugin for Siemens NX

Enabling KeyShotXR

KeyShotXR is included with your KeyShot Enterprise license. Otherwise, it is sold separately as an add-on. KeyShotXR allows you to create interactive (touch-enabled) visuals for your website. Please refer to the KeyShotXR section for additional information regarding KeyShotXR features.

How To Enable KeyShotXR

On Windows PC	On Mac OS X
1. Go to the top menu and click *Help, Select Floating License Type*.	**1.** Go to the top menu and click *KeyShot, Select Floating License Type*.
2. Enable *Check out KeyShotXR feature from license server*.	**2.** Enable *Check out KeyShotXR feature from license server*.
3. Click *OK*. KeyShot will restart and KeyShotXR will be enabled.	**3.** Click *OK*. KeyShot will restart and KeyShotXR will be enabled.

Note: If your license does not contain the KeyShoXR feature, then KeyShot will tell you that there are "no additional options available".

Borrowing A License

As you know, to check out a KeyShot Pro Floating license, your computer must be connected to the license server. To continue using KeyShot Pro Floating, the connection must be maintained at all times. But what if you want to work from a remote location and take KeyShot with you? Well, then you borrow the license.

The client and server must be connected during the borrowing process. Once you've borrowed the license, you can take your laptop and KeyShot anywhere for up to 30 days. Educational license holders must submit a request with their IT staff to activate this feature.

How To Borrow A License

On Windows PC	On Mac OS X
1. Ensure that your client computer can connect to the server, then open KeyShot Pro Floating.	**1.** Ensure that your client computer can connect to the server, then open KeyShot Pro Floating.
2. Go to the top menu and click *Help, Borrow Floating License.*	**2.** Go to the top menu and click *KeyShot, Borrow Floating License.*
3. Select a return date and click *OK.*	**3.** Select a return date and click *OK.*
4. You will receive a confirmation message. Click *OK.*	**4.** You will receive a confirmation message. Click *OK.*

Technical Tip: Please note that other clients cannot checkout or borrow a license seat that has already been borrowed. The borrowed license seat remains with the client that borrowed it until the return date expires or until the client manually returns the license seat. If your license server holds more than one license seat, the remaining seats can still be checked out normally.

How To Return A Borrowed License

On Windows PC	On Mac OS X
1. Ensure that your client computer can connect to the server (otherwise, this will not work). Then, open KeyShot Pro Floating.	**1.** Ensure that your client computer can connect to the server (otherwise, this will not work). Then, open KeyShot Pro Floating.
2. Go to the top menu and click *Help, Return Borrowed Floating License.*	**2.** Go to the top menu and click *KeyShot, Return Borrowed Floating License.*
3. You will be asked to confirm this action. Click *Yes.*	**3.** You will be asked to confirm this action. Click *Yes.*
KeyShot will close and your borrowed license will return to the license server.	KeyShot will close and your borrowed license will return to the license server.

Changing Server Connection

In larger companies, there may be more than one KeyShot license server in the same location or in other locations. KeyShot allows you to choose between different license servers. Below you will find instructions for changing the license server connection within KeyShot. Please contact your IT department for VPN connection instructions when trying to connect to a remote license server.

How To Change Your License Server Connection

On Windows PC	On Mac OS X
1. Ensure that your client computer can connect to the current server, then open KeyShot Pro Floating.	**1.** Ensure that your client computer can connect to the current server, then open KeyShot Pro Floating.
2. Go to the top menu and click *Help, Change Floating License Server.*	**2.** Go to the top menu and click *KeyShot, Change Floating License Server.*
3. Change the port number and the hostname/IP address as needed. Click *OK.*	**3.** Change the port number and the hostname/IP address as needed. Click *OK.*

Technical Tip: Please refer to the included troubleshooting section if you are unable to establish your new client-server connection.

Pro Floating Troubleshooting
This troubleshooting guide will help you diagnose the cause of an

error message and assist you in finding a solution. Below, we list errors under two main categories: server errors and client errors. Errors inside KeyShot License Manager are server errors. Errors from KeyShot Pro Floating are client errors. Please find your error in the categories shown below.

Server Error: Invalid Hostname

Reason: The hostname in your license file does not match your computer's hostname. LMTools assumes that the hostname inside your license file is correct. However, this is not always the case.

How To Fix It:

On Windows PC	On Mac OS X
1. Launch the Windows command prompt (*cmd.exe*), by right-clicking on the Windows Start menu and selecting *Run*. Type *cmd* and hit *Enter* to open the command prompt, then type the following command: hostname Press *Enter*. Make a note of the correct hostname. 2. Open your license file with any text editor (e.g. Notepad, Notedpad ++). Add the correct hostname to the SERVER line and save your changes. **3.** Launch LMTools and go to the *Start/Stop/Reread* tab. Enable *Force Server Shutdown* and click *Stop Server*. You may also stop the *KeyShot Floating* service within the Windows Services dialog (*services.exe*). **4.** Click *Start Server*. You may also start the *KeyShot Floating* service within the Windows Services dialog (*services.exe*). **5.** Open the *debug.log* file inside your *C:\FlexLM* folder (this folder contains the licensing software). The debug log will reference your license file and tell you that the server started on your computer system.	**1.** Open your System Preferences application and go to *Sharing*. In your Sharing preferences you will find your computer's hostname. Make a note of this hostname. **2.** Inside the *KeyShot License Manager*, click *OK* and correct the Hostname. **3.** Click *Stop* and *OK*. Then click *Start* and *OK*. The service will start. **4.** Click *Service Status*. You should see a dialog box with license server and status information. If correcting the hostname in the license file did not fix this issue, then you can proceed to step 5. **5.** Open the Terminal app. Type the following command inside the terminal and press *Enter/Return*: *sudo scutil --set HostName computer_hostname* In the command above, substitute *computer_hostname* with your server's hostname. **6.** Type your password and press *Enter/Return*. **7.** Type *hostname* and press *Enter/Return* to check that the change took effect. Your hostnames should now match and you can attempt **steps 3** and **4** again.

Technical Tip: If results are not consistent with the above, please reference other possible solutions in the troubleshooting guide. You may also contact Luxion Customer Support at support@luxion.com for assistance.

Server Error: Invalid Mac Address

Reason: The Mac Address (or HostID) in the license file does not match your computer's **active** mac address (or HostID).

How To Fix It:

On Windows PC	On Mac OS X
1. Open your license file with any text editor (e.g. Notepad, Notedpad ++) and look at the SERVER line. Make a note of the expected Mac Address. This is a 12-digit hexadecimal number. **2.** Launch the Command prompt (*cmd.exe*) and type the following command: *ipconfig /all* Press *Enter* and you will see a list of devices; each listed with its corresponding mac address (aka Physical Address). **3**. Once you find a match for the mac address in your license file, you will want to turn on/connect that device (i.e. turn on Wi-Fi and connect to a network or connect ethernet cable). **Note:** If you found a typo in the license file or wish to use another device, then skip to **step 7** below. **4.** Launch LMTools and go to the *Start/Stop/Reread* tab. *Enable Force Server Shutdown* and click *Stop Server.* You may also stop the *KeyShot Floating* service within the Windows Services dialog (*services.exe*). **5.** Click *Start Server.* You may also start the *KeyShot Floating* service within the Windows Services dialog (*services.exe*). **6.** Open the *debug.log* file inside your *C:\FlexLM* folder (this folder contains the licensing software). The debug log will reference your license file and tell you that the server started on your computer system. You can now open KeyShot on your client computer (ignore **steps 7 and 8** below). **7.** If it does not start, you will need a new license file. Send an email to license@luxion.com describing the error. Please make sure to specify which Mac Address to use in your new license. Also, you will want to attach your current license file to your email. **8.** Once you receive your new license file, you can follow the license replacement instructions.	**1.** Click *OK* and go to the *Request License* tab. Make a note of the Mac Address. **2.** Open your *System Preferences* application. **3.** Go to *Network* and select a device: *Ethernet* or *Wi-Fi.* **4.** Click *Advanced, Hardware* for that device and check the Mac Address. Once you find a match for the mac address in **Step 1** above, you will want to turn on/connect that device (i.e. turn on Wi-Fi and connect to a network or connect ethernet cable). **Note:** If you found a typo in the license file or wish to use another device, then skip to **step 7** below. **5.** Close and re-open KeyShot License Manager. Then, click *Start Server* in the *Install License* tab. **6.** Click *Service Status.* Your license server's status will appear in the service status window. The service status window will tell you how many seats are available and how many seats have been issued. You can now open KeyShot on your client computer (ignore **steps 7** and **8** below). **7.** If it does not start, you will need a new license file. Go back to *KeyShot License Manager* and fill the request form. Click *Email* and send an email to license@luxion.com describing the error. Please make sure to specify which Mac Address to use in your new license. Also, you will want to attach your current license file to your email. **8.** Once you receive your new license file, you can follow the license replacement instructions.

Technical Tip: If results are not consistent with the above, please reference other possible solutions in the troubleshooting guide. You may also contact Luxion Customer Support at support@luxion.com for assistance.

Server Error: Expired License

Reason: An *EXPIRED* (PC) or *vendor daemon is down* (Mac) error means that your license has expired. It is common practice for the licensing team to issue a temporary license while a purchase order is paid. Once the payment is processed, the licensing team will send you your permanent license file. Please consult your IT staff or your sales representative for any questions regarding payment.

How To Fix It:

On Windows PC	On Mac OS X
1. Send an email to license@luxion.com describing the situation. You will want to attach the *debug.log* and your current license file. **2.** Once you receive your new license file, you can follow the license replacement instructions.	**1.** Send an email to license@luxion.com describing the situation. You will want to attach the *debug.log* and your current license file. **2.** Once you receive your new license file, you can follow the license replacement instructions.

Technical Tip: If results are not consistent with the above, please reference other possible solutions in the troubleshooting guide. You may also

contact Luxion Customer Support at support@luxion.com for assistance.

Server Error: Cannot Connect

Reason: There are multiple reasons this error may be seen:

1. The service has not started
2. One of the required files is missing: LUXION.exe, lmgrd.exe, or license (.lic) file (PC)
3. The user changed the server's port number on the server after launching KeyShot Pro Floating on that same computer (Mac)

How To Fix It:

On Windows PC	On Mac OS X
1. Make sure that the *C:\FlexLM* folder contains all the required files: *LUXION.exe, lmgrd.exe*, and your license *(.lic)* file. You can always re-install these files using the provided server software. **2.** Launch *LMTools* and go to the *Start/Stop/Reread* tab. Enable *Force Server Shutdown* and click *Stop Server*. You may also stop the *KeyShot Floating* service within the Windows Services dialog (*services.exe*). **3.** Click *Start Server*. You may also start the *KeyShot Floating* service within the Windows Services dialog (*services.exe*). **4.** Open the *debug.log* file inside your *C:\FlexLM* folder (this folder contains the licensing software). The debug log will reference your license file and tell you that the server started on your computer system.	**1.** Make sure that you have started the service and that you receive a confirmation prompt when you click *Start* inside the *KeyShot License Manger* application. Press *OK*. You can now click *Service Status*. If your status window doesn't show any errors, then your license service is running properly. You can skip the instructions below and start KeyShot. **2.** If it doesn't start, Open KeyShot Pro Floating **3.** Edit the port number so that it matches with KeyShot License Manager. Click *OK*. **4.** KeyShot will launch. You can click *Server Status* once more on the *KeyShot License Manager* application. The server status window will tell you that your service is up and running.

Technical Tip: If results are not consistent with the above, please reference other possible solutions in the troubleshooting guide. You may also contact Luxion Customer Support at support@luxion.com for assistance.

Server Error: Unknown Hostname

Reason: The licensing software (lmgrd) is unable to read the computer's hostname within your Mac's /etc/hosts file.

How To Fix It:

1. Open Terminal. app.

2. Type the following command *cd /etc/*

3. Press Enter.

4. Type the following command: *sudo vi hosts*

5. Enter password (no characters will appear as you type). If you think you made a mistake, simply delete and start over.

6. Press Enter.

7. Press the "i" key to go into "insert" mode.

8. There are two columns here, IP on the left and hostname on right. Move the cursor to the end of the last entry and press Enter to enter a new row.

9. Enter the IP address of the local machine. If you are not sure of your local machine's IP address, please consult your IT department.

10. Add a couple spaces until your cursor is under the previous hostname and enter the hostname. To find your computer hostname go to System Preferences.app > Sharing.

11. When you are through editing press the "esc" key.

12. Type the following command: *:wq*

13. Press Enter. You need to type the colon "":: and WQ stands for "Write" and "Quit".

14. With the computer's IP address and hostname in place, you can now try to stop and start your license service once more.

Technical Tip: You may also contact Luxion Customer Support at support@luxion.com for assistance.

Server Error: License File Not Found

Reason: The licensing software (lmgrd) is unable to read the license file in your FlexLM folder.

How To Fix It:

1. Browse to C:/FlexLM.

2. Right-click the FlexLM folder and select Permissions.

3. Select "Properties"

4. Disable "Read only"

5. Go to the Security tab

6. Click the Edit button. Ensure that all users have read and write permissions

7. Click Apply and OK

8. Click Apply and OK once more.

9. Once all users have read and write permissions into the FlexLM folder and its contents, re-start the license service from LMTools.

Technical Tip: You may also contact Luxion Customer Support at support@luxion.com for assistance.

Client Error: Looping Prompt

Reason: This means that KeyShot is unable to connect to KeyShot License Manager on your license server.

How To Fix It:

On Windows PC	On Mac OS X
1. Server status - Is your license server running properly? You can check the service status within the debug.log file (found inside your *C:\FlexLM* folder). If you find any problems, see server errors for troubleshooting. **2. Computer connection -** Make sure that your client computer can ping the license server and that your client computer can "see" the server in your office network. Contact your IT department if you are using a VPN connection. **3. Port conflict -** Remember that KeyShot uses port number 27000 by default. It is possible that another application in your computer is using this port. You can try to change the port number in the license first and then inside KeyShot Pro Floating. Please refer to instructions on how to change the port number. **4. Firewall/Anti-virus settings -** Turn off the firewall on the server and the client. If this is already the case, then you can try to add LUXION.exe and lmgrd.exe to the list of programs allowed through the firewall and through the anti-virus. Please consult your IT representative for further assistance with firewall/anti-virus settings. **5. Client Environment Variable/Registry -** Depending on your system's restrictions, it is possible that KeyShot is unable to write into the registry. If so, you can manually edit this registry entry.	**1. Server status -** Is your license server running properly? You can check the service status inside KeyShot License Manager. If you find any problems on the server, see server errors for troubleshooting. **2. Computer connection -** Make sure that your client computer can ping the license server and that your client computer can "see" the server in your office network. Contact your IT department if you are using a VPN connection. **3. Port conflict -** Remember that KeyShot uses port number 27000 by default. It is possible that another application in your computer is using this port. You can try to change the port number in KeyShot License Manager first and then inside KeyShot Pro Floating. Please refer to instructions on how to change the port number. **4. Firewall/Anti-virus settings -** Turn off the firewall on the server and the client. Please consult your IT representative for further assistance with firewall/anti-virus settings. **5. Client Environment Variable/Registry -** Depending on your system's restrictions, it is possible that KeyShot is unable to create the correct environment variable. If so, you can manually edit this environment variable.

Technical Tip: If results are not consistent with the above, please reference other possible solutions in the troubleshooting guide. You may also contact Luxion Customer Support at support@luxion.com for assistance.

Client Error: No Licenses Available

Reason: There are no more licenses available on the server. This means that the license server has issued all the available license seats to other clients in your office network.

How To Fix It:

On Windows PC	On Mac OS X
1. Close KeyShot Pro Floating on one of your other clients. **2.** Re-open KeyShot Pro Floating on the desired client.	**1.** Close KeyShot Pro Floating on one of your other clients. **2.** Re-open KeyShot Pro Floating on the desired client.

Technical Tip: If results are not consistent with the above, please reference other possible solutions in the troubleshooting guide. You may also contact Luxion Customer Support at support@luxion.com for assistance.

Client Error: Unsupported KeyShot Version

Reason: Your current floating license does not support the version of KeyShot that you are trying to open.

How To Fix It:

On Windows PC	On Mac OS X
1. Send an email to license@luxion.com describing the error message. You will want to attach the *debug.log* and your current license file.	**1.** Send an email to license@luxion.com describing the error message. You will want to attach the *debug.log* and your current license file.
2. Once you receive your new license file, follow the license replacement instructions.	**2.** Once you receive your new license file, follow the license replacement instructions.
3. Edit the registry entry.	**3.** Edit the environment variable.

Technical Tip: If results are not consistent with the above, please reference other possible solutions in the troubleshooting guide. You may also contact Luxion Customer Support at support@luxion.com for assistance.

Client Error: Unknown Error

Reason: The Unknown Error error means that your license server is running outdated software.

How To Fix It:

On Windows PC	On Mac OS X
1. Download the latest FlexLM license server update (version 11.13.1.3). You can find the latest software here.	1. Download the latest FlexLM license server update (version 11.13.1.3). You can find the latest software here.
2. Run the installer file and follow the prompts on the installation wizard. Your destination folder path should point to your existing license server FlexLM folder. Once the destination path is set, click "Install" to finish the software update.	2. Extract zip file contents into your Downloads folder first. Then, replace the old KeyShotLicenseManager.app with the new KeyShotLicenseManager.app.
3. Go into the C:\FlexLM folder and launch LMTools.exe. Under the Start/Stop/Reread tab, click *Stop*. Then click *Start* to re-start the license service.	3. Launch KeyShotLicenseManager.app (new). Browse to your license file, and start the service as outlined in the License Server Installation.
4. It is also a good idea to update KeyShot itself. You can check for updates from the Help menu inside KeyShot.	4. It is also a good idea to update KeyShot itself. You can check for updates from the Help menu inside KeyShot.
5. Once your server is up to date and running, KeyShot will start properly.	5. Once your server is up to date and running, KeyShot will start properly.

Pro Floating Server Changes

In the corporate world, software licensing practices vary. Companies replace hardware, move license servers, and restrict ports every so often. The KeyShot Pro Floating license server system provides you with tools for making adjustments to your license.

Change Port Number

When you upload your license file into KeyShot License Manager, the port number is displayed next to the hostname. KeyShot uses port number 27000 by default. We recommend leaving the port number at default if KeyShot is the only FlexNet based application in your office network. Otherwise, you can change this number to any free port on your server computer system.

How To Change The Port Number:

On Windows PC	On Mac OS X
1. Open windows explorer and browse to *C:\FlexLM* (this folder contains the licensing software).	**1.** Launch KeyShot License Manager. Click the "Install License" tab.
2. Open your license file with any text editor (e.g. Notepad, Notedpad ++).	**2**. Enter a different number in the Port box.
3. Add a new port number to the SERVER line, put a space after the mac address and then type the new port number. Say 27005, and save your changes.	**3.** Click *Stop* and then click *OK.*
	4. Click *Start* and then click *OK.*
4. Launch LMTools and go to the *Start/Stop/Reread* tab. Enable *Force Server Shutdown* and click *Stop Server.* You may also stop the *KeyShot Floating* service within the Windows Services dialog (*services.exe*)	**5.** Click *Service Status* to confirm that your new port number is in use.
5. Click *Start Server.* You may also start the *KeyShot Floating* service within the Windows Services dialog (*services.exe*).	
6. Open the *debug.log* file inside your *C:\FlexLM* folder (this folder contains the licensing software). The debug log will reference your license file and tell you that the server started on your computer system.	

Technical Tip: If results are not consistent with the above, please reference other possible solutions in the troubleshooting guide. You may also contact Luxion Customer Support at support@luxion.com for assistance.

Replace License File

If you've received a new license file from us, you can easily replace the old license and update the license server.

How To Replace The License File:

On Windows PC	On Mac OS X
1. Open windows explorer and browse to *C:\FlexLM* (this folder contains the licensing software).	**1.** Launch *KeyShot License Manager*. Click the Install License tab.
2. Make sure that the new license file has the exact same file name as your previous license. Replace the old license file in *C:\FlexLM* with the new license file.	**2.** Click *Stop* and then Click *OK.*
	3. Click *Browse* and browse to your new license file in the Finder app.
3. Launch *LMTools* and go to the *Start/Stop/Reread* tab. Enable *Force Server Shutdown* and click *Stop Server.* You may also stop the *KeyShot Floating* service within the Windows Services dialog (*services.exe*).	**4.** Click *Open*. Your license file will be loaded into *KeyShot License Manager*.
4. Click *Start Server.* You may also start the *KeyShot Floating* service within the Windows Services dialog (*services.exe*).	**5.** Check that the license information is correct and click *Start*. A dialog will tell you that the server has started. Click *Ok.*
5. Open the *debug.log* file inside your *C:\FlexLM* folder (this folder contains the licensing software). The debug log will reference your license file and tell you that the server started on your computer system.	**6.** Click *Service Status*. Your license server's status will appear in the service status window. The service status window will tell you how many seats are available and how many seats have been issued.

Technical Tip: If results are not consistent with the above, please reference other possible solutions in the troubleshooting guide. You may also

contact Luxion Customer Support at support@luxion.com for assistance.

Pro Floating Technical Info

FlexNet licensing tools and methods are commonly utilized in the software industry. This licensing method includes a myriad of different advanced features. In fact, there is an entire FlexNet licensing manual on the web. In this section, you will find definitions to common terminology and useful information for your advanced IT specialist.

Silent Install (PC)

You or your IT department may wish to run the KeyShot Pro Floating installer for PC as a silent installation. The KeyShot Pro Floating installer takes the following arguments.

Commands

/S – for a silent installation.

/AllUsers – installs for all users with shortcuts in start menu.

/USERNAME=somepath – changes the destination folder for the KeyShot Resources folder.

/FLEXLM=27000@myserver – set the FlexLM server's port and hostname.

/D=C:\Program Files\KeyShot 7 – set the program files destination. This must be placed at the end of the command line.

/FloatingFeature=feature – set the feature to check out (if more than one is available): keyshot2, keyshot_enterprise, or keyshot_base.

/NO_AUTOUPDATE – disable updates.

/NO_CLOUD – disable KeyShot Cloud Library.

Example

keyshot_w64_7.x.x.exe /S /USERNAME=C:\Users\Luxion\Documents /FLEXLM=27000@myserver /D=C:\Program Files\KeyShot 7

Unattended Uninstall

C:\Program Files\KeyShot 7\uninst.exe /S _?=C:\Program Files\KeyShot 7

Edit Registry (PC)

Earlier you learned how to connected KeyShot Pro Floating to the license server system. When you specify the server name in KeyShot, a registry entry is created. Depending on your system's restrictions, it is possible that KeyShot is unable to write into the Windows registry. If so, you can manually edit this registry entry.

How To Edit The Registry Entry

1. Click the Windows Start button and search for "regedit.exe".

2. Launch the *Registry Editor* (*regedit.exe*)

3. Go to *HKEY_CURRENT_USER > Software > FlexLM License Manager*.

4. While the *FlexLM License Manager* key is selected you will see a string called *LUXION_LICENSE_FILE*. If you don't see this string, then create a new string. You can go to *Edit > New > String Value* and name it *LUXION_LICENSE_FILE*.

Note: You may also create the *FlexLM License Manager* key inside *HKEY_CURRENT_USER, Software* (i.e. *Edit > New > Key*).

5. Right-click the LUXION_LICENSE_FILE string and select "Modify".

6. Change the *Value data* to the correct port number at the server's IP Address (e.g. 27000@192.168.1.123). Click *OK*, then close the *Registry Editor*.

7. You may now open KeyShot on your client computer.

Environment Variable (Mac)

Earlier, you learned how to connected KeyShot Pro Floating to the license server system. When you specify the server name in KeyShot, an environment variable is created. Depending on your system's restrictions, it is possible that KeyShot is unable to write into the environment variable. If so, you can manually edit this file.

How To Edit The Environment Variable

1. Open up the terminal. Make sure you are in the home directory.

2. Type the following command to open the environment variable in vim (text editor): *vim .flexlmrc*

3. Press *Enter*.

4. Press the *"i"* key to start insert mode.

5. Change the IP Address or hostname to the correct server location (e.g. 27000@192.168.1.123). Once done, Press *ESC* on your keyboard to exit insert mode.

6. Hold *Shift* and press the *semicolon/colon* key.

7. Type the following command to write and quit: *wq*

8. Press *Enter*. You will be brought back to the screen shown in **step 2** above.

9. You may now open KeyShot on your client computer.

Floating License Definitions

Floating License: This is a type of license that can be accessed by various computer systems. The actual license file is saved on the license server system. Your license file is an encoded text file that tells the license server which port to use, how many seats are available for checkout, and when will the license expire.

Seat: The number of seats in a license file tells the license server how many client computers can check out the floating license at the same time. This number is displayed and encoded in the license file.

License Server: The computer that hosts and manages the license file. Any Windows PC or Mac computer can be a license server. We recommend that you select a desktop computer in your ofice network that your design team can access during regular business hours or later if needed.

Client: In this manual, we refer to any computer in which KeyShot Pro Floating is installed as the client. If KeyShot Pro Floating is installed on your license server, then your license server computer is also a client.

Server Hostname: This is the name of your computer as listed under your computer network. The hostname is a label used for identification.

Server Mac Address: Your computer has various ways to connect to other computers on your network and to the internet. The most common connections are the ethernet adapter and the wireless adapter. Each of your adapters has a unique physical address also known as the mac address. The KeyShot Pro Floating license is tied to your server's mac address.

User Interface

This section provides information on the KeyShot user interface and its elements (windows, menus and commands). Its purpose is to explain 1) the location of elements 2) purpose of elements 3) menus and commands and 4) customization. Information on the function of elements and how they work are located in the latter sections.

KeyShot is a single interface built around the Real-time View of your scene. The docking windows allow scene authoring capabilities while the floating windows contain setting and output options.

Main Interface	Docking Windows	Floating Windows	Extras
• Real-time View • Main Menu • Toolbar • Ribbon • Workspaces	• Library Window • Project Window • Animation Timeline • Geometry View • Material Templates	• Preferences • Render Options • Image Editor	• Welcome Window • Hotkeys • Multi-Touch

Real-time View

The KeyShot *Real-time View* is the main viewport in the KeyShot user interface. All real-time rendering of your 3D model will occur here. You can navigate your scene using the camera controls, multi-select objects and right-click directly on your model or in the area around it to view more options.

Main Menu

File

New...
Open a new blank scene in KeyShot.

Import...
Import a 3D file into an open or new scene. See Importing section for more details.

Open…
This will open a KeyShot scene, or opens the import panel.

Open Recent
KeyShot lists the last 10 scenes that were opened/saved so you can quickly open them.

Save
Save the currently open scene in KeyShot (.bip).

Save As…
Save the current scene in Keyshot (.bip) with the option to change the name of the file.

Save Package...
Save a KeyShot Package (.ksp) which includes the model, materials, environments, textures, cameras, and backplates used in a given scene.

It is very important to use this saving method when sharing or moving a scene across different computers.

Save Active Model Sets...
Save only the Model Set(s) displayed in order to share Model Sets with non-Pro users.

Revisions Manager...
Opens Revision Manager to preview, revert to or delete revisions. To enabled the Revision Manager, enable *Backup Revisions* under *Edit >Preferences > General (PC)* o r *KeyShot > Preferences > General (Mac).*

Export (Pro)

On this page:

- File
- Edit
- Environment
- Lighting
- Camera
- Image
- Render
- View
- Window
- Help

Export model file to OBJ, FBX, STL, and ZPR file formats.

Connect to Onshape...
Launch the Onshape integration dialog. Onshape account required.

Exit
Quit and leave KeyShot.

Edit

Undo
Undo previous actions.

Redo
Redo an action that was undone.

Add Geometry
Add pre-installed primitives into your scene. You can also place commonly used models into the "Models" folder in your KeyShot Resources directory.

Edit Geometry
Opens the Geometry Editor. See Geometry Editor for more details.

Clear Geometry
Clears all geometry in the scene.

Set Scene Units
Change the set units used in the scene. For accurate results, use the same units the model was created in.

Preferences
Set KeyShot preferences. See Preferences for more details.

Environment

Background
Toggle background mode between lighting environment, color, and backplate image. See Background for more information.

Ground Shadows
Toggle Ground Shadows on and off.

Occlusion Ground Shadows
Toggle Occlusion Ground Shadows on and off. Ground Shadows must be enabled for this option to be available.

Ground Reflections
Toggle Ground Reflections on and off.

Flatten Ground
Toggle Flatten Ground on and off.

Lighting

Performance Mode
Toggle the performance mode on/off.

Basic, Product, Interior, Jewelry, Custom
Choose a lighting preset that best suits your scene. if you have a created a custom preset, this option becomes available under *Custom*.

Self Shadows, Global Illumination, Ground Illumination, Caustics, Interior Mode
Toggle these settings on/off. See Lighting for more information.

Camera

Cameras
Choose a saved camera. Cameras that are saved from your list of saved cameras is populated here.

Lock Camera
Lock the camera in the Real-time View.

Add Camera
Add a Camera to your saved camera list.

Tumble/Pan/Dolly
Toggle the default left mouse button action.

Perspective/Orthographic/Shift
Toggle camera lens settings. See Lens Settings for more information.

Standard Views
Choose from the preset orthographic camera views.

Stay Above Ground
Toggle camera to stay above ground.

Grid
Enable grid.

Ground Grid
Enable ground grid.

Match Backplate Perspective
Enable the match backplate tool.

Walkthrough Mode
Adds a new camera and enables *Real-time View* navigation controls.

Image

Resolution Presets
Select from a list of *Real-time View* Resolution Presets.

Lock Aspect
Toggle Lock Aspect of the *Real-time View*.

Lock Resolution
Toggle Lock Resolution of the *Real-time View*.

Render

Pause Real-time Render
Toggle pause of the *Real-time View*.

Render NURBS
Toggle on/off the display of NURBS in the *Real-time View*.

Motion Blur
Toggle on/off the display of Motion Blur when animations are present in the scene.

Save Screenshot
Create an image file of the current *Real-time View*.

Add to Queue
Create a render job in the *Render Queue* using the current Render Options.

Render
Open the *Render Options* window.

View

Model Sets
Cycle Model Sets or select a specific Model Set from the list.

Show Fullscreen
Toggle fullscreen mode.

Presentation Mode
Toggle presentation mode.

Heads-Up Display
Hide or show the heads-up display which contains frames per second, time and number of samples the *Real-time View* has been rendering, the amount of triangles and NURBS in the scene, the *Real-time View* resolution, and the current focal length of the camera.

Show Coordinate Legend
Hide or show the coordinate legend on the lower left corner of the real-time render window.

Selection Outlines
Toggle selection outlines to be shown.

Show Light Sources
Hide or show physical light sources.

Window

Toolbar
Hide or show the *Toolbar*.

Ribbon
Hide or show the *Ribbon*.

Cloud Library...
Hide or show the *Cloud Library* in your default browser.

Library
Hide or show the *Library* window.

Project
Hide or show the *Project* window.

Animation...
Hide or show the *Animation* window.

KeyShotXR...
Open the *KeyShotXR* wizard (only available with applicable licenses).

Show Geometry View
Hide or show the *Geometry View* window.

Material Templates...
Hide or show the *Material Templates* window.

Studios
Hide or show the *Studios* window.

Configurator Wizard
Hide or show the *Configurator Wizard*.

Scripting Console...
Hide or show the *Scripting* console window.

Enable Docking
Toggle to allow window docking in the Real-time Viewer.

Dock Windows
Auto-docks all open windows to default locations.

Restore Tab Order
Restores the default tab order for the Library and Project windows.

Help

Help...
Loads https://help.keyshot.com/ for quick access to the Luxion Support staff, FAQs, Troubleshooting and more.

Manual...
Loads the KeyShot online manual, which also contains links to download the PDF manual.

Hotkeys Overview...

Displays the KeyShot hotkeys panel (or toggle off/on using the *K-key*).

Welcome Dialog...
Displays the Welcome Window for access to the latest learning and 'What's New' content along with recent and demo scenes.

Learning
Opens the "Keyshot Learning" page for tutorials, webinars and quick tips.

Register License...
Opens the KeyShot license registration window.

Activate KeyShotXR...
If you have purchased the KeyShotXR add-on separately, click here to activate it.

Deactivate License on this Computer...
Deactivate your license so it can be used on a different computer.

Show License Information...
Shows KeyShot version and active licenses.

Disclaimers...
Opens disclaimers pertaining to KeyShot partners.

Check for Updates...
Checks online for the latest version of KeyShot. Requires an internet connection.

Log...
Opens log window to view the source of any errors.

About...
Displays the KeyShot About window, including KeyShot version number and link to Disclaimers

Related pages:

There are no related labels.

Toolbar

KeyShot Toolbar

The Toolbar provides quick and easy access to the most common windows and features in KeyShot. The center grouping of icons provides a general order of operations when working in KeyShot from Import to Render. You can right-click on the Toolbar for icon size options and the ability to disable text. Click and drag on the handle on the left side of the Toolbar to tear it off from the main window to leave it floating or to dock along the top or either side.
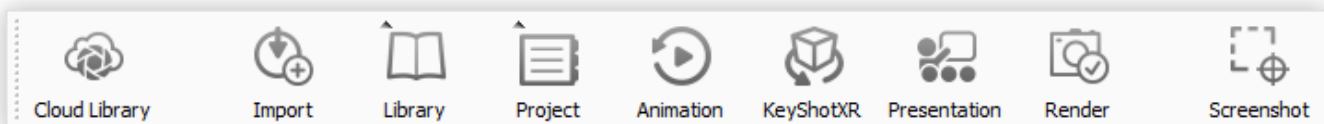
Cloud Library
Opens https://cloud.keyshot.com/ in your default browser. See Cloud Libary for more details.

Import
Opens the browse to file dialog to import scenes and 3D data into KeyShot. See Import and Model Setup for more details.

Library
Opens the Library window. See Library Window section for more details.

Project
Opens the Project window. See Project Window for more details.

Animation
Opens the Animation Timeline and Animation Properties window. See Animation Timeline for more details.

KeyShotXR

Opens the KeyShotXR Wizard. See KeyShotXR for more details.

Presentation
Enters full-screen Presentation Mode. This button is only displayed on the Toolbar for KeyShot Pro users if the Configurator has been set up in the scene. See Configurator for more details.

Render
Opens the Render window. See Render for more details.

Screenshot
Takes a Screenshot of the real-time view and saves it to your Renderings resources folder.

Ribbon

The KeyShot Ribbon

The Ribbon provides quick access to commonly used settings, tools, commands, and windows in KeyShot.
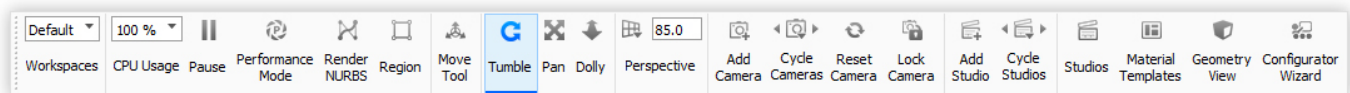
Workspaces
Select a predefined Workspace, create and manager your own, or select between the Light and Dark theme interface.

CPU Usage
Select the number of cores used for the real-time render window.

Pause
Pauses real-time rendering.

Performance Mode
Toggle on to lower real-time render settings for faster performance. Performance Mode is also accessible via the Lighting tab.

NURBS Mode (Pro Only)
Enables NURBS Data to be rendered in the realtime rendering window.

Region (Pro Only)
Enables Region rendering.

Move Tool
Enables the Move Tool and prompts to make a selection if nothing is already selected.

Tumble, Pan, Dolly Camera
Select the default left mouse button behavior. This is especially helpful when working on a laptop with only a trackpad.

Perspective
Quick access to the Camera Perspective value.

Add Camera
Add a new Camera to your saved Camera list.

Cycle Cameras
Cycle through saved Cameras.

Reset Camera
Reset the current Camera to its saved state.

Lock Camera
Lock the properties of the current Camera.

Add Studio
Add a new Camera to your saved Camera list.

Cycle Studios
Cycle through saved Studios.

Studios

Show/hide the Studios window.

Material Templates
Show/hide the Material Templates window.

Geometry View
Show/hide the Geometry View window.

Configurator Wizard
Opens Configurator Wizard.

Workspaces

Workspaces allow you to select preset user interface (UI) arrangements or save your
own custom arrangements of the KeyShot UI to best suit the way you work.
Workspaces remember window dock state, position and size, Library and Project tab
order, tab visibility, torn-off tab state, Toolbar and Ribbon position and Ribbon icon
visibility.

Using Workspaces

The *Ribbon* at the top of the KeyShot UI now contains a dropdown menu at the far left
where you can select, add, and manage Workspaces. To create your own custom
Workspace make adjustments to any of the items mentioned above, click the *Workspac
es* dropdown and select *Add…* to launch a name entry field and save. To save changes
to an existing Workspace click Apply Changes… To adjust display order, import, export,
or delete Workspaces click *Manage...*

Theme Options

KeyShot has both light and dark theme options. From the *Workspace* dropdown, select
Light Theme or *Dark Theme*.

Library Window

This KeyShot *Library* is where preset resources such as *Materials, Colors,
Environments, Textures,* and *Backplates* are stored. Any content displayed here
is sourced from the locations set for KeyShot resources in *Preferences, Folder
Locations*. Click on any of the upper tabs to display related assets. The Library is set up
to work like a file browser in an operating system. You can add folders by manually
placing them in the KeyShot resources folder through your OS, or by clicking the "Add
Folder" button. You can refresh content by clicking the refresh button, and you can
import or export content by clicking either the import or export button. You can also
search the Library by typing in the search field in the upper right corner.

The Library is split horizontally into two view panes. The top pane shows the folder
structure and the bottom pane shows the content of the currently highlighted folder as
thumbnails. The thumbnail sizes can be scaled up or down with the scale slider at the
bottom of the Library window. You can drag and drop content from the Library by
clicking and dragging any item from the lower pane into the real-time window.

More Material, Textures, Environments, and Backplates are available on KeyShot Cloud
.

Materials Tab

The *Materials* tab in located in the *Library* window and contains all the preset and saved materials in your library.

1. **Search**
   Type in any keyword to search for a material by name.
2. **Add Folder**
   Click this button to add custom material folders.
3. **Import**
   Import a KMP material file.
4. **Refresh**

Refresh material list if any changes were made.
5. **Folder Tree**
   Contains the folder structure of the material folders.
6. **Material Thumbnails**
   Mat ball swatches of materials within the selected folder.
7. **List/Thumbnail Toggle**
   Switch displaying the materials with thumbnails and in a list view.
8. **Zoom Slider**
   Slide to change the size of the tthumbnails. You can also use +/- to change in steps.
9. **Upload to Cloud Library**
   Click this button to upload a custom material to the Cloud Library.
10. **Export**
    Export a saved material as a KMP file.
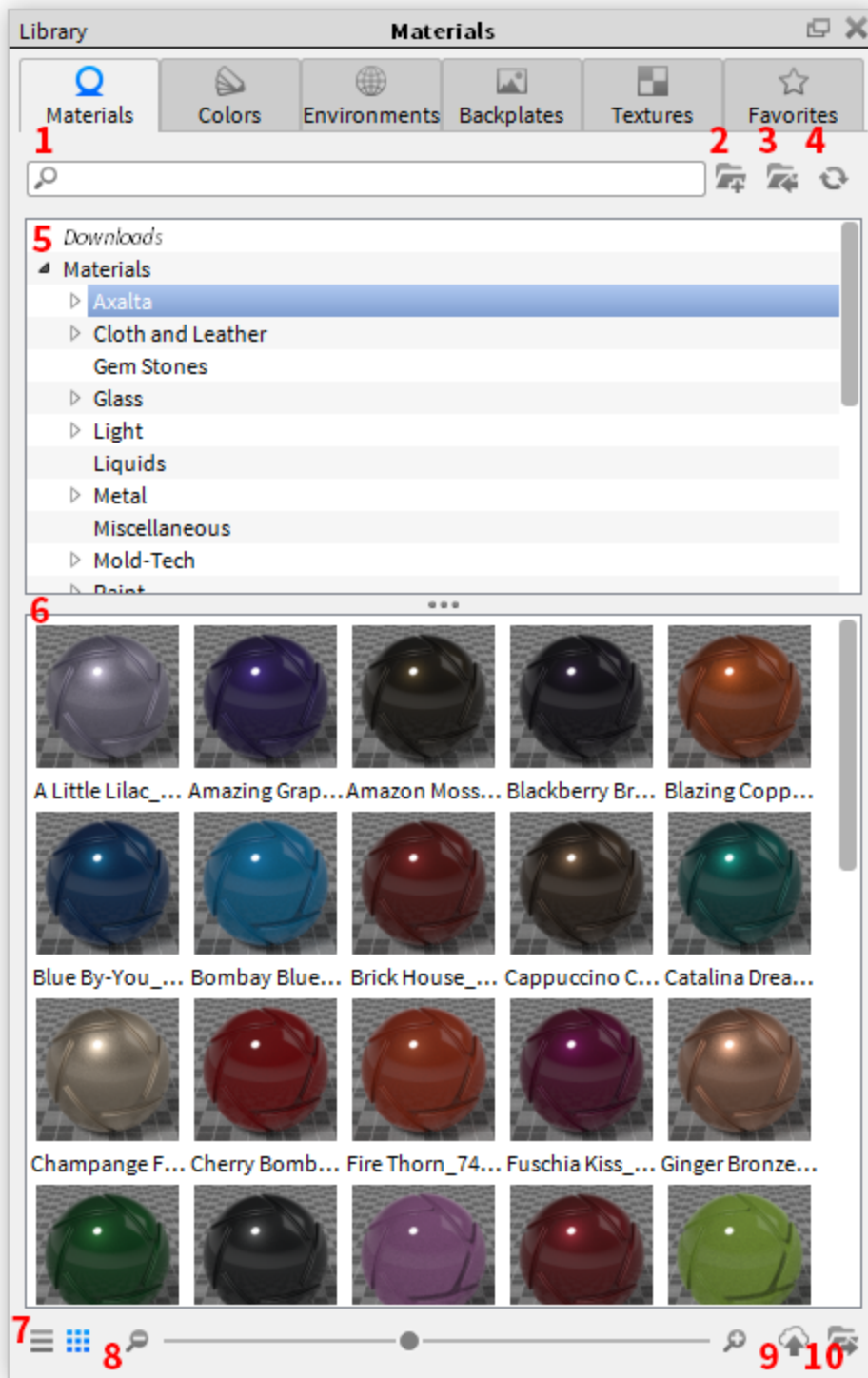
Colors Tab

The *Colors* tab contains all preset color libraries and saved colors.

1. **Search**
   Type in any keyword to search for a color by name.
2. **Add Folder**
   Click this button to add custom color folders.
3. **Import**
   Import a KCP or CSV color file.
4. **Refresh**
   Refresh color list if any changes were made.
5. **Color Search**

Opens color picker panel to search by closest color match.

6. **Folder Tree**
   Contains the folder structure of the color folders. It contains folders for RAL and Pantone Color Libraries.
7. **Color Swatches**
   Displays color swatches within the selected folder.
8. **List/Thumbnail Toggle**
   Switch between displaying the color with thumbnails and in a list view.
9. **Zoom Slider**
   Slide to change the size of the thumbnails. Use +/- to change in steps
10. **Export**
    Export a KCP color file.
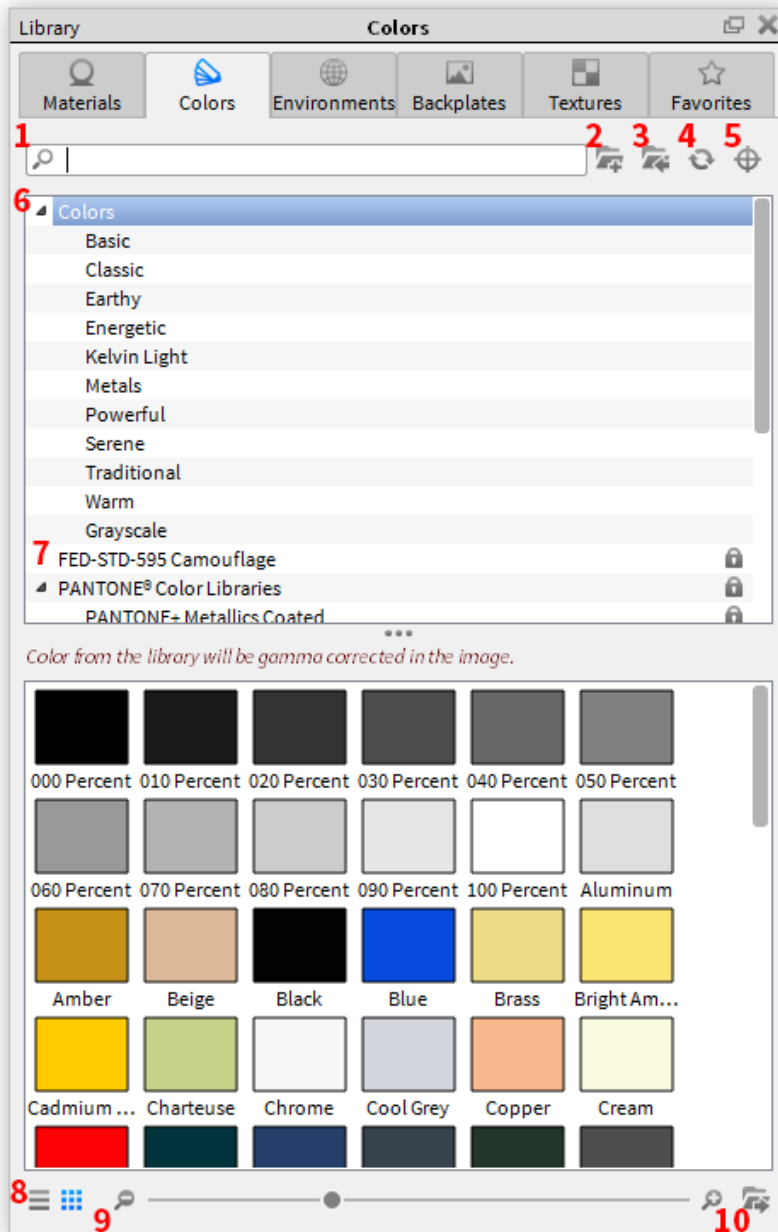
Environments Tab

The *Environments* tab contains all preset environments and any saved environments in your library.

1. **Search**
   Type in any keyword to search for an environment by name.
2. **Add Folder**
   Click this button to add custom environments folders.

3. **Import**
   Import a HDR, HDZ, EXR, DDS file.
4. **Refresh**
   Refresh environments list if any changes were made.
5. **Folder Tree**
   Contains the folder structure of the environment folders.
6. **Environment Thumbnails**
   Thumbnails of environments within the selected folder.
7. **List/Thumbnail Toggle**
   Switch displaying the environments with thumbnails and a list view.
8. **Zoom Slider**
   Slide to change the size of the thumbnails. Use +/- to change in steps.
9. **Upload to Cloud Library**
   Click this button to upload a custom environment to the Cloud Library.
10. **Export**
    Export environment file.
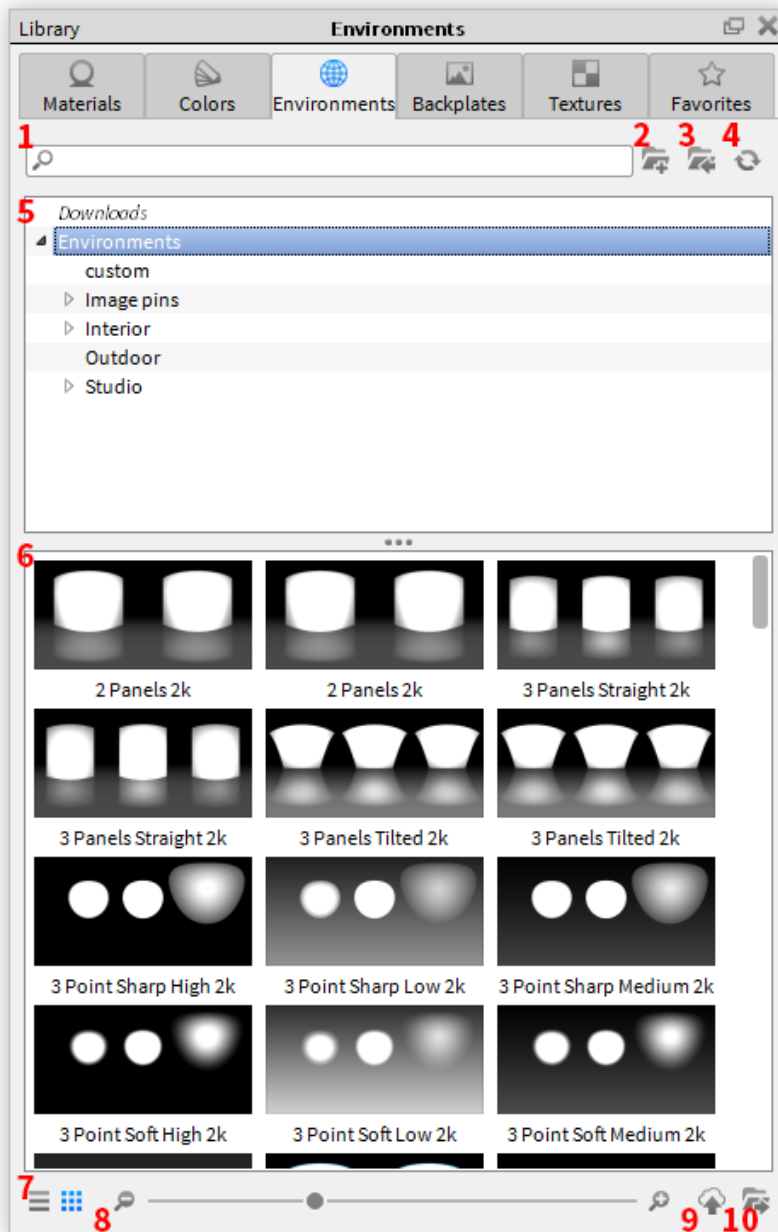
Textures Tab

The *Textures* tab contains all preset and saved textures in your library.

1. **Search**
   Type in any keyword to search for a texture by name.
2. **Add Folder**
   Click this button to add custom texture folders.
3. **Import**
   Import an image file.
4. **Refresh**
   Refresh texture list if any changes were made.
5. **Folder Tree**
   Contains the folder structure of the texture folders.
6. **Texture Thumbnails**
   Thumbnails of textures within the selected folder.
7. **List/Thumbnail Toggle**
   Switch between displaying the textures with thumbnails, or a list view.
8. **Zoom Slider**
   Slide to change the size of the thumbnails use +/- to change in steps.
9. **Upload to Cloud Library**
   Click this button to upload a custom texture to the Cloud Library.
10. **Export**
    Export an image file.
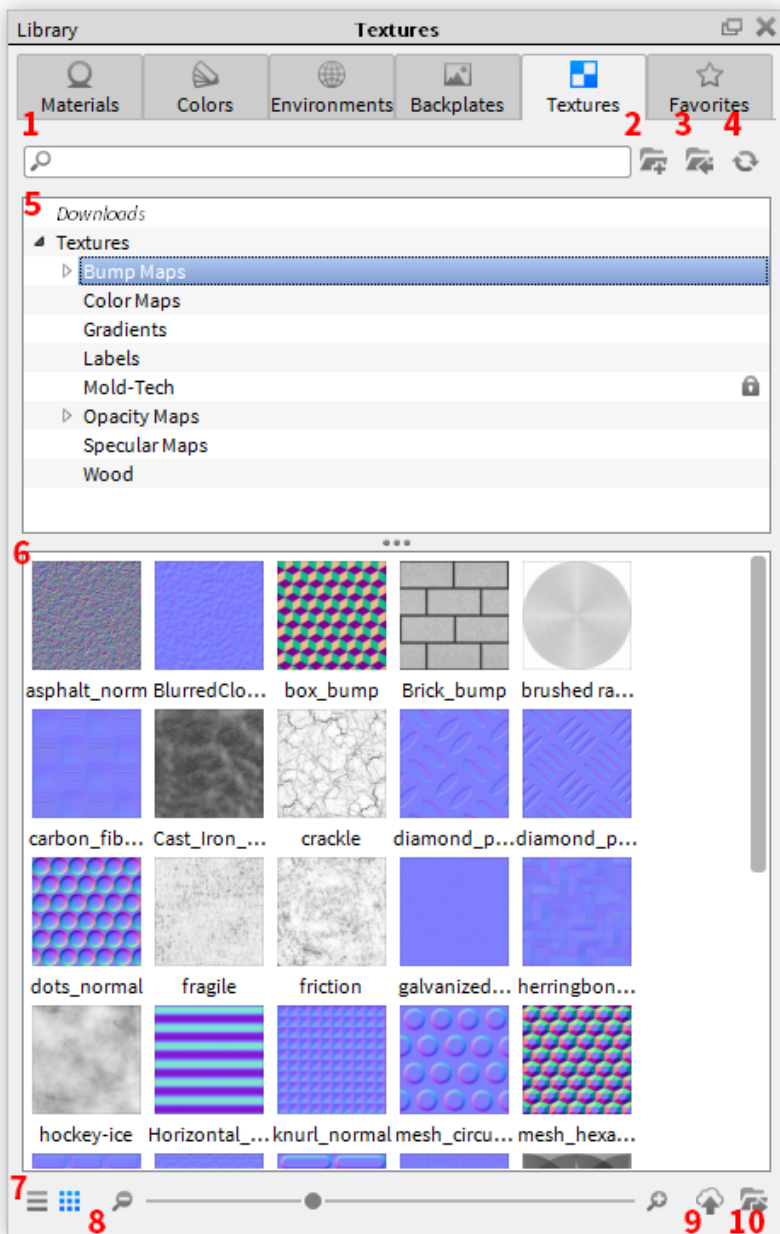
Backplates Tab

The *Backplates* tab contains all preset or saved backplates in your library.

1. **Search**
   Type in any keyword to search for a backplate by name.
2. **Add Folder**
   Click this button to add custom backplate folders.
3. **Import**
   Import an image file.
4. **Refresh**
   Refresh backplate list if any changes were made.
5. **Folder Tree**
   Contains the folder structure of the backplate folders.
6. **Backplate Thumbnails**
   Thumbnails of backplates within the selected folder.
7. **List/Thumbnail Toggle**
   Switch between displaying the backplates with thumbnails, or a list view.
8. **Zoom Slider**
   Slide to change the size of the thumbnails use +/- to change in steps.
9. **Upload to Cloud Library**
   Click this button to upload a custom backplate to the Cloud Library.
10. **Export**
    Export an image file.
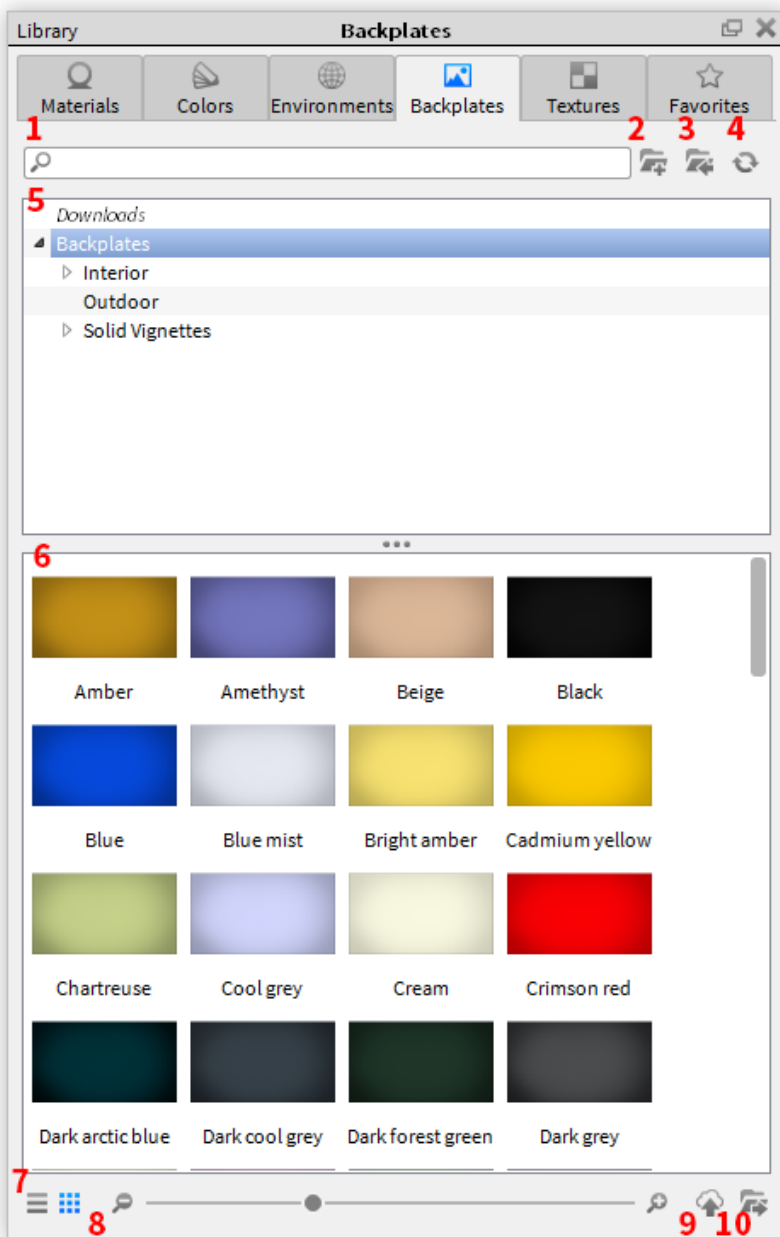
Favorites Tab

The *Favorites* tab allows you to organize commonly used resources into collections for a faster workflow. Right-click a resource in your library, select *Add to Favorite*, and select the folder you would like to add the resource to or select *Add to new Favorite* to create a new collection.

1. **Search**
   Type in any keyword to search for a resource by name.
2. **Add Folder**
   Click this button to add a favorites folders.
3. **Refresh**
   Refresh favorites list if any changes were made.
4. **Folder Tree**
   Contains the folder structure of the favorites folders. Each favorites folder contains categories for backplates, colors, environments, materials, and textures.
5. **Favorites Thumbnails**
   Thumbnails of resources within the selected folder.
6. **List/Thumbnail Toggle**
   Switch between displaying the favorites with thumbnails, or a list view.

7. **Zoom Slider**
   Slide to change the size of the thumbnails use +/- to change in steps.
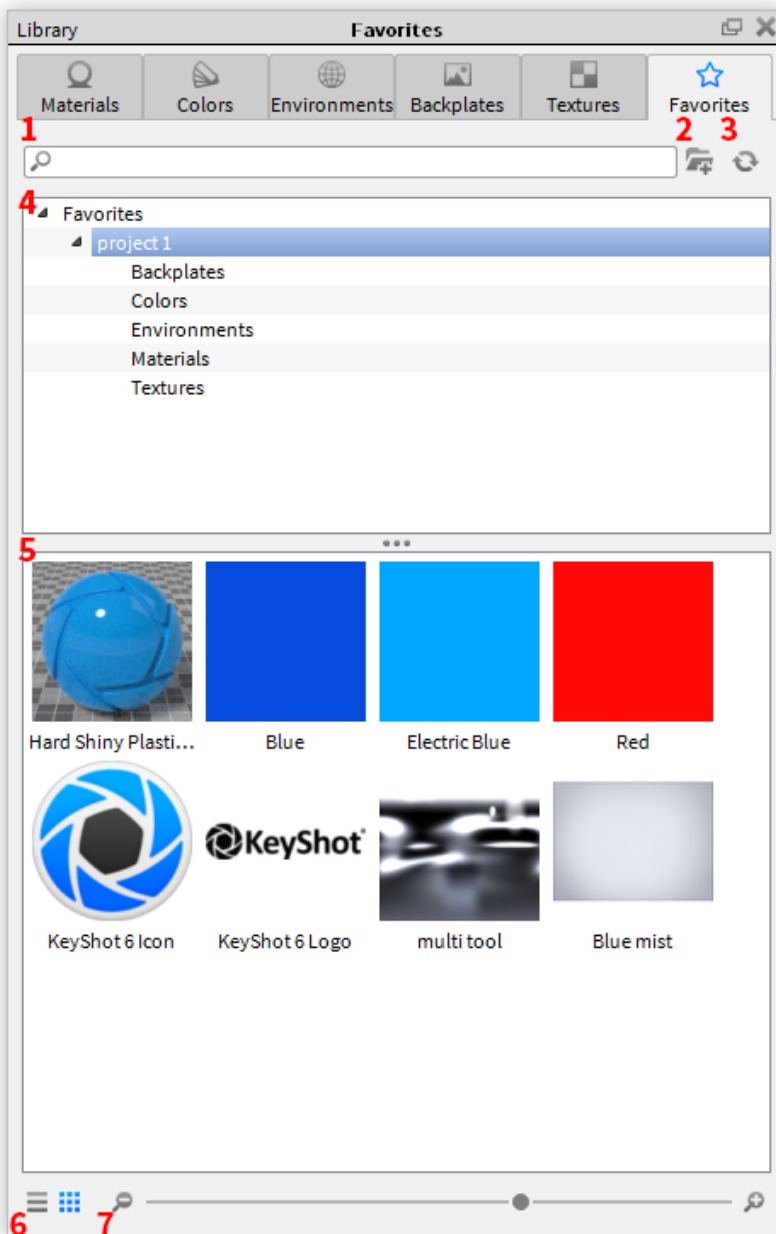
Project Window

The *Project* window contains all the setup and setting for everything in your scene, organized into six tabs: *Scene, Material, Environment, Lighting, Camera* and *Image*. Show/hide the Project window with the Space bar.

In this section:

- Scene Tab
- Material Tab
- Environment Tab
- Lighting Tab
- Camera Tab
- Image Tab

Scene Tab

The *Scene* tab contains all the items in your scene: Models, Cameras and Scene Sets.

Material Tab

The *Material* tab is where you can edit the properties of your material such as changing

the roughness, adding textures or labels. The texture icon ![icon] denotes settings that are able to have textures applied.

Environment Tab

The *Environment* tab is located in the *Project* window and is where you can add and edit the HDR lighting of your scene as well as the background and ground properties.

Settings

The *Settings* tab located below the *Environment List* and HDRI preview allows you to control the properties of the selected Environment.

HDRI Editor

The *HDRI Editor* tab located below the *Environment List* and HDRI preview allows you to edit the selected HDRI, add light pins and change background options.

Lighting Tab

The *Lighting* tab contains different Lighting Presets to make applying global light settings faster. Five presets options are included with an additional option to save your own custom preset. The presets include:

Performance
This preset disables light source materials and shadows with reduced bounces for the fastest performance possible. This is useful for scene setup and quick manipulation.

Basic
This preset provides simple, direct lighting with shadows for basic scenes and fast performance. This is useful for rendering simple models illuminated by the environment.

Product
This preset provides direct and indirect lighting with shadows. This is useful for products with transparent materials illuminated by the environment and local lighting.

Interior
This setting features direct and indirect lighting with shadows that is optimized for interior illumination. This is intended for complex interior illumination with indirect lighting; although it can also be used to avoid noise created by local lights and provide more accurate sampling of HDRIs with very small and strong light sources such as Sun & Sky.

Jewelry
This setting features the same settings as the Interior preset with the addition of Ground Illumination, increased Ray Bounces, and Caustics.

Custom
This preset allows complete control over lighting options with the ability to save and load presets. To add a new preset, adjust your settings, then select the '+' symbol.
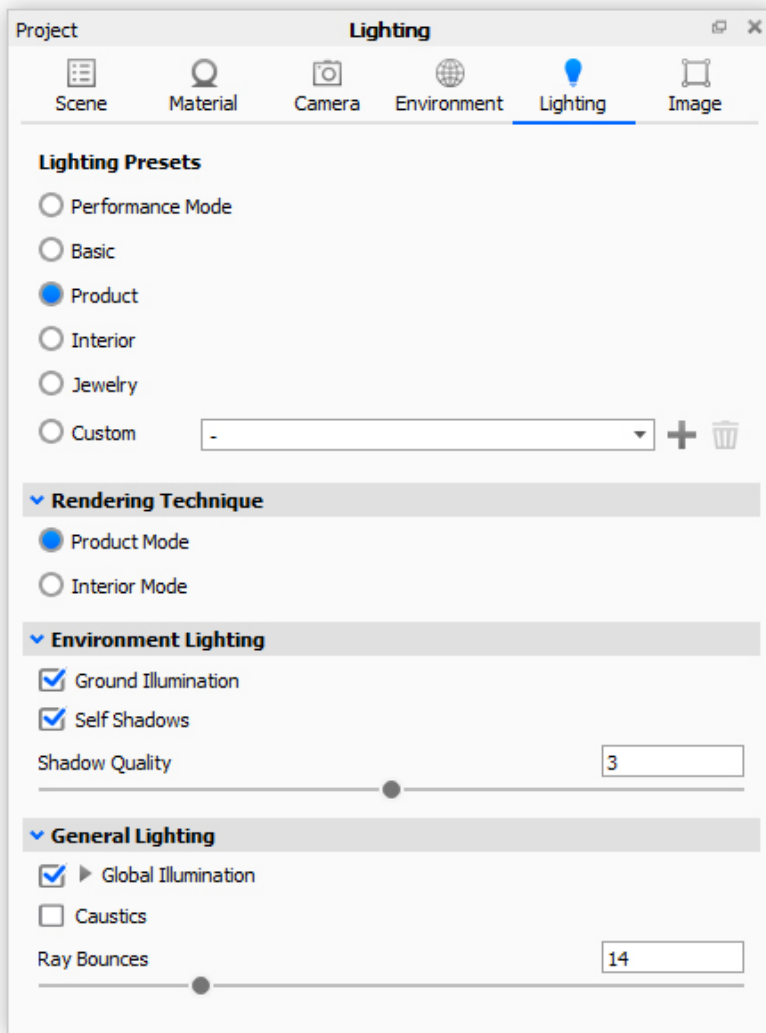
Camera Tab

The *Camera* tab is used to create cameras to capture the desired area of your project as well as various effects to enhance your camera view.

Camera List

The camera list is the space where you can find all the cameras and studios that you have created.
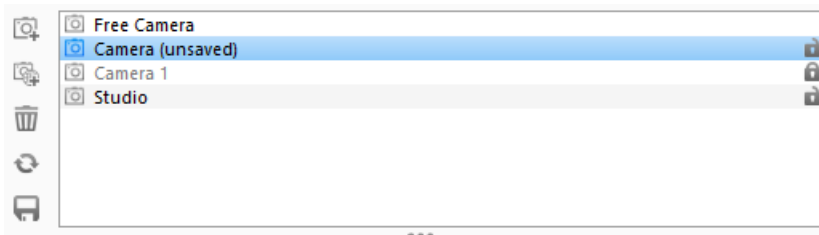
By default camera list only has the *Free Camera.* Once more cameras are added, clicking on any of them will make it active. The list will also let you know whether the camera is in an *unsaved* state.

On the right side of each camera the lock icon will enable you to lock or unlock the camera. When locked, no changes can be made to that camera.

Add new camera button

The add camera button can be found on the left of the *Camera List.* As its name indicates, you can use the button to add a new camera.

Add Camera and Environment Studio

The *Add Camera and Environment Studio* can be found on the left of the *Camera List.* As its name indicates, you can use the button to add a new camera and add it to a new studio.

Remove current camera

The *Remove current camera* button will delete the camera or studio that is selected in the list.

Reset camera

The *Reset camera* button will move the camera back to its last saved location.
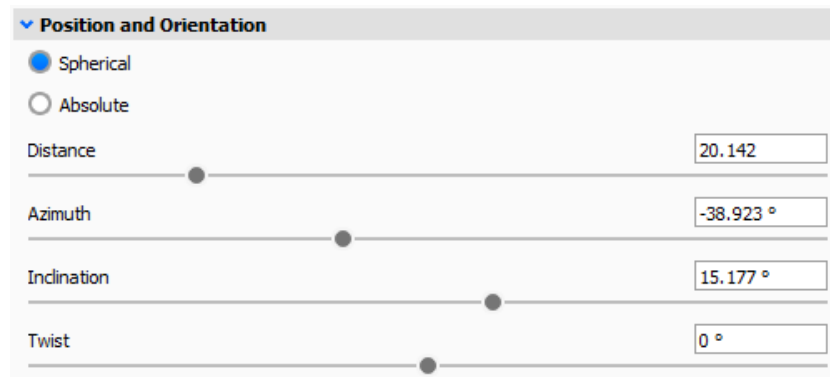
Save current camera

The *Save current camera* button saves the camera or studio that is currently selected in the list.

Position and Orientation

While the camera position can be changed by clicking and dragging the scene, this section will give you a more precise way of editing the camera.

Spherical

Choosing the *Spherical* radio button will give you the camera adjustments relative to the "target" (looks-at point).

You can imagine the camera being positioned on a sphere around the target.

The *Distance* is the radius of that sphere.

The *Azimuth* is when the center of the camera lens is pointed to the right or the left of the target (global Y-axis).

The *Inclination* is when the center of the camera lens is pointed higher or lower than the target (global X-axis and Y-axis).

The *Twist* is when the camera is rolled to the right or the left without changing the position.

Absolute

Choosing the *Absolute* radio button will give you the camera adjustments relative to the global X-axis, Y-axis, and Z-axis.

Position

You can use the *Position* adjustments to change the camera position relative to the global axis (X-axis, Y-axis, Z-axis).

Target

You can adjust the target manually by changing these values. They are relative to the global axis as well but with (0,0,0) set to the selected target.

Keep View Direction

If the checkbox is not checked, the camera will keep looking at the target while the *Posit ion* values are changed. If the checkbox is checked, the camera direction will be kept and therefore the *Target* point will change as the *Position* is changed numerically.

Twist

The *Twist* is when the camera is rolled to the right or the left without changing the position.

Set Camera Target

This button will enable you to click on a surface of the model to set the camera target.

On the right of the button, the position of the selected point is displayed as coordinate values.

Walkthrough Mode

The Walkthrough Mode widget has controls for navigating your KeyShot scene in first-person.

Eye height

The eye height indicates the height of the camera in relation to the lower object.

Lock Eye Height
Locking the eye height will keep the camera at a constant height and will ignore the ground detection setting covered below.

Ground Detection

Ground detection will automatically adjust the camera height in order to keep it at the set Eye Height specified above. If you move towards an object such as stairs, the camera will appear to be going up the stairs and will respect the "new ground".

Collision Detection
Selecting this setting will keep you from moving through objects. This is used to make the walkthrough more realistic by not allowing you to move through objects that you should not be able to go through.

Arrows
Click and hold the arrows to "walk" around your scene in the arrow's direction.

Sensitivity
Like its name describes it, this adjustment will control the sensitivity of the controls in order to move around the scene in Walkthrough mode. You can either move the slider around or type a value in the box.

Accept/Cancel

- Clicking the *X* at the bottom right cancels any changes and deletes the camera from the list.
- Clicking the *V* at the bottom right accepts any changes and saves the Walkthrough camera.

Standard Views

The standard views dropdown will let you quickly choose from one of the predefined camera positions.

Grid

This dropdown will let you display the composition grid on the camera lens.

Stay Above Ground

As its name indicates the *Stay Above Ground* checkbox enables you to control whether or not you would like the camera to be able to go beneath the ground plane imaginary ground.

Lens Settings

As the title indicates, this section allows you to change the camera lens settings.

Perspective

The perspective lens settings allow you to change the focal length of the camera along with the Field of view. For that you can use the sliders or input your own value into the editing box.

Perspective lens settings also gives you the ability to turn on Stereo mode and Depth of Field (More about this below).

Orthographic

Orthographic lens settings gives you the ability to enable the *Depth of Field* option (More about this below).

Shift

The *Shift* lens settings allow you to shift the lens without moving the camera in order to control the view. This mode enables you to control the *Focal length,* the *Field of View,* the *Vertical Shift,* and the *Horizontal Shift.*

Ground Grid

The *Ground Grid* as its name gives away will turn on a ground grid to help with composition of the scene.

Panoramic

This option gives you the ability to create a *Spherical* lens in order to output environment that can be used in other scenes or to render out a spherical image to use in certain VR headsets. For more information please go to the *Virtual Reality* page.

Stereo

The *Stereo* mode will allow you to either render a VR-ready image that can be viewed through a head-mounted VR display or to see the scene in real-time through a VR headset such as the Oculus Rift or the HTC vive. For more information please go to the *Virtual Reality* page.

Image Tab

The *Image* tab allows you to set the resolution of your scene as well as change the brightness, gamma and other effects.

Animation Timeline

Animation Timeline Interface

Time Stamp
This will show where the preview line currently is on the timeline.

Current Time Indicator Line
This line is the marker for the where in the timeline the real-time render window is rendering from. When you play a real-time preview, this line will move with in time with the animation. Click and drag the line to scrub to a point in the animation you would like to preview.

Start/End Markers
Use this to designate the actual animation to be rendered. The space between these markers is called the "work area."

Ruler
This shows the timeline in the units chosen (seconds or frames.)

Nodes
Each animation is represented in the timeline as a colored bar called a "Node." Most nodes can be selected at the ends and dragged to change the duration of the animation. Click on the body of the node to move along the timeline. Hold SHIFT while dragging to snap to another node.

Folder Nodes
Yellow Nodes are "Folder Nodes." Changing the duration and location of a folder node affects all animation nodes contained within it.

Node List
This lists all animation nodes and folders. Use the checkboxes to toggle the active state of the animation nodes.

Timeline Toolbar

Animation Wizard
This opens the Animation Wizard.

FPS pull down
Select from common frame rates used in video production.

Real-time Preview Buttons
These buttons will allow you to quickly jump to the beginning or end of your animation, scrub through the animation one frame at a time, and play a real-time preview of your animation in the real-time render window. To see a more accurate portrayal of materials and motion, click the "preview" button on the animation toolbar.

Loop
Enable this to loop the animation when playing in the real-time window.

Motion Blur
Enable this create motion blur in your rendered animation output.

Timeline Settings
Click the settings icon to open the settings panel where you can select from *Max seconds per frame* to limit the render time of the preview, or choose *Max samples per frames* to limit the quality of the preview.
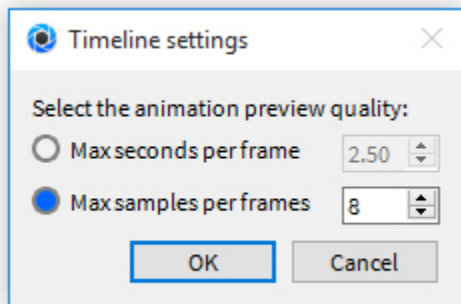
Render Preview
Click this button to begin rendering a small video file of your animation with more accurate results than the realtime preview.

Zoom Slider
Use this to change the scale of the Animation Timeline.

Geometry View Window

The Geometry View window provides a secondary OpenGL viewer for use as a secondary view for lighting, camera or animation setup.
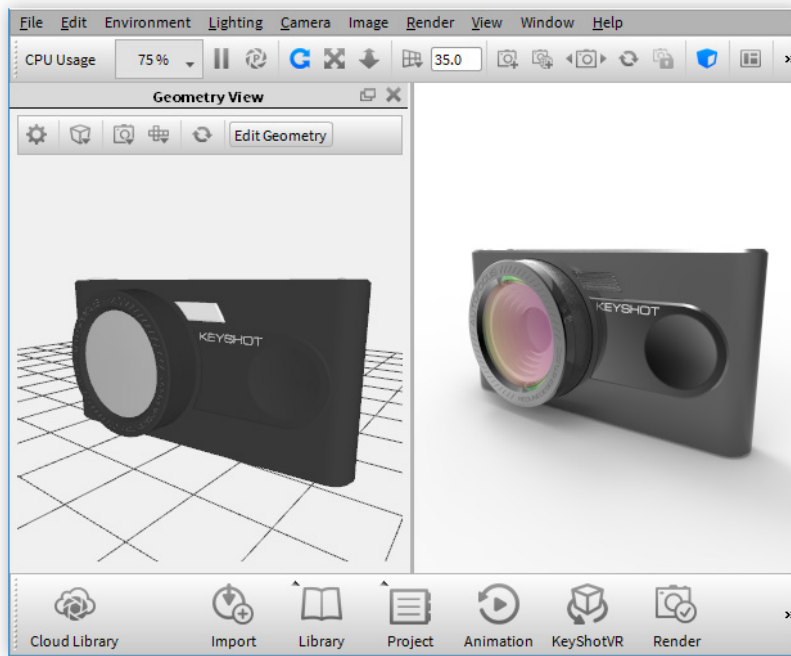
Geometry View Toolbar

1. **Settings**
   Set the background color and customize what is visible: ground grid, lights, cameras, etc.
2. **Display Style**
   Controls your model's display style: shaded, flat, wireframe, shaded wireframe, and bounding.
3. **Camera Type**
   Choose to sync with the active camera or navigate independently in this view.
4. **Standard Views**
   Snap to a pre-defined standard camera view: front, right, top, etc.
5. **Move Tool**
   Click this button to launch the Move Tool.
6. **Edit Geometry**
   Click this button to launch the Geometry Editor.
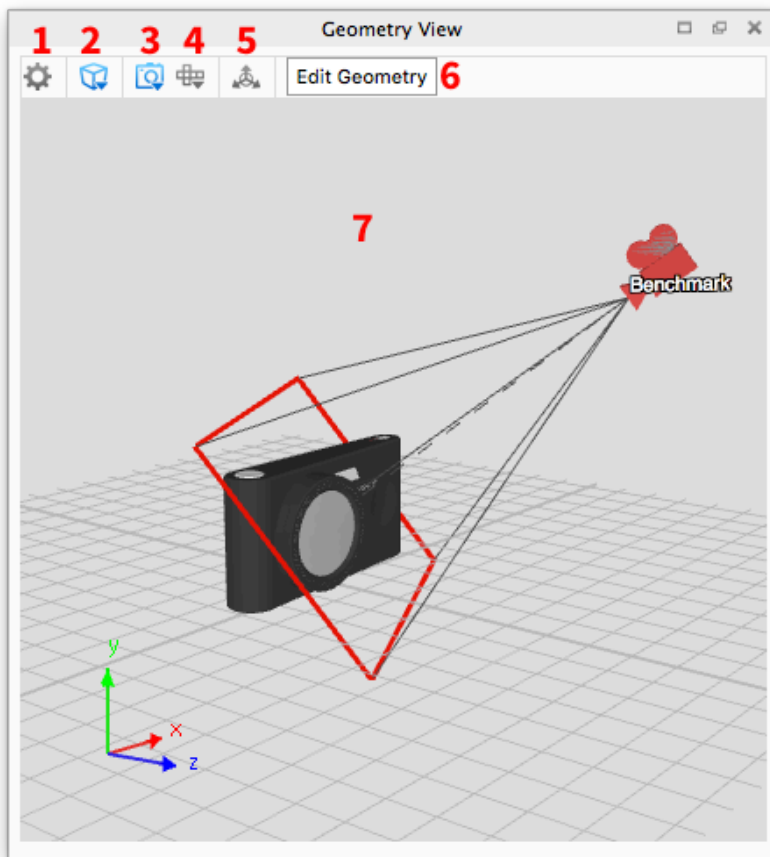
Material Template Window

The *Material Templates* window can be accessed from *Window* under the *Main Menu*.

1. **Search**
   Type in any keyword to search for a material template.
2. **Add Template**
   Click this button to add a material template.
3. **Import**
   Import a KMTP material template file.
4. **Export**
   Export a KMTP material template file.
5. **Delete**
   Click this button to delete a material template.
6. **Material Templates List**
   Contains a list of all material templates available in your resources folder.
7. **Add Rule**
   Click this button to add a rule.
8. **Delete Rule**
   Click this button to delete a rule.
9. **Template Rules**
   Contains a list of all the rules in the template.
10. **Apply**
    Applies the template to your scene or selection.
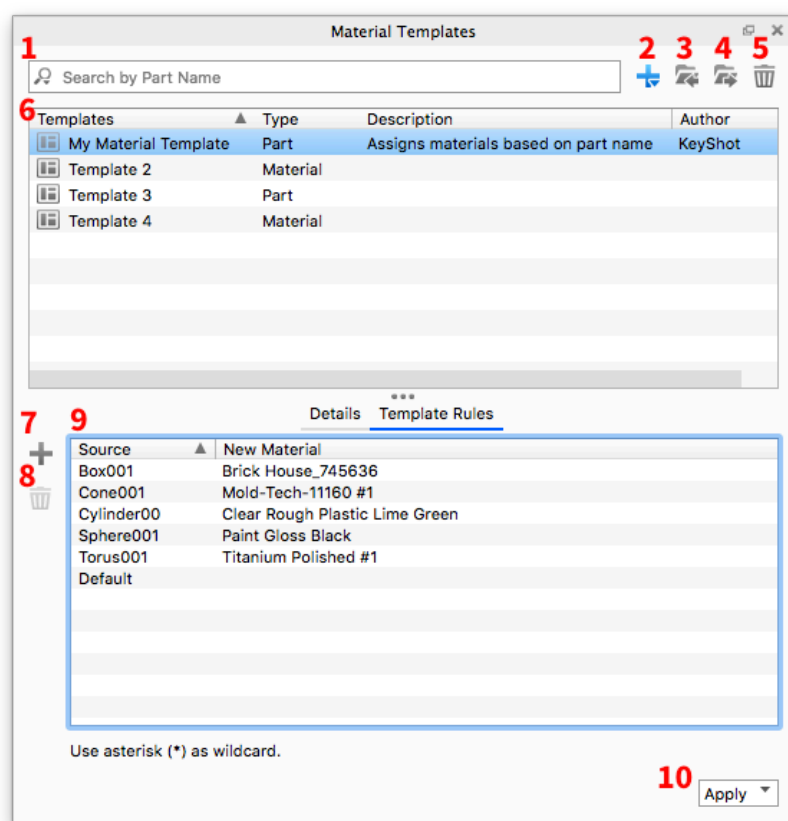
Welcome Window

The KeyShot Welcome Window will appear after you launch KeyShot. The Welcome Window will display:

- Recently opened scenes
- Latest KeyShot News
- Latest KeyShot Tips

Click on a recently open scene to open it immediately or select *Import Model* or *Open Scene* to load another model or scene.

To disable the Welcome Window on startup, uncheck *Show at Startup* in the lower left hand corner. To display the window again at startup, go to *Edit, Preferences* and in the *General* section, select *Show news window at application start up*.

Hotkeys

Hotkeys

Learning and using the KeyShot hotkeys will speed up the process of working inside KeyShot. You can access the list of hotkeys and their functionality by pressing the *K-key* on PC or Mac. A downloadable version of hotkeys for Mac and PC is available here.

Hotkey Overview

Display the *Hotkey Overview* window by hitting the *K-key* or selecting *Help, Hotkeys Overview...* (Windows) or *KeyShot, Hotkeys Overview...* (Mac).

Setup/Details...
Opens the Hotkeys Preference window to set custom hotkeys.

Save as Image...
Allows you to save an image of the Hotkey Overview for reference or print.

Customizing KeyShot Hotkeys

KeyShot also allows you to assign custom hotkeys for many KeyShot commands. The Hotkeys preferences can be accessed by selecting *Edit, Preferences* and selecting the *Hotkeys* section or by pressing the *K-key* to show the *Hotkeys Overview* where you will see a button for *Setup/Details...* in the bottom right corner. This will take you to the *Hotkeys* section of the *Preferences* page. Here you can set custom Hotkeys for any of the listed actions.

Multi-touch

KeyShot supports multi-touch input for touch-enabled screens and tablets. The following gestures can be used on the touch screen when running KeyShot:

- **1 Finger** – Tumble camera
- **2 Finger Pinch** – Zoom
- **3 Finger Drag** – Pan
- **5 Finger Touch** – Reset camera
- **Tap and Hold** – Access right mouse button menu
- **Single Finger Drag and Drop** – Access Library assets

Tessellation Settings Window

The Tessellation Settings window can be accessed by right-clicking your model or part and selecting *Re-Tessellate*.

1. **Tessellation Quality**
   The quality of your surfaces. A lower value will yield rough surfaces. A higher value will yield smooth surfaces.
2. **Angle Tolerance**
   The maximum allowed angle measurement between adjacent triangles on your model's surface.
3. **Distance Tolerance**
   The maximum allowed distance deviation – expressed as a percentage of the model's bounding box – measured from any triangle to the actual NURBS surface. A lower value with yield smooth surfaces.
4. **Maximum Edge Length**
   The maximum side length – expressed as a percentage of the model's bounding box – for any one triangle on your model's surface. A lower value will yield smooth surfaces.
5. **Tessellate**
   Click to make your model appear in the Tessellation Preview at the specified Tessellation Quality.
6. **Apply**
   Click to Apply the Tessellation Quality to your model in the real-time view.
7. **Tessellation Preview**
   Shows you a preview of the detail on your model's surface.

8. **Triangles**
   Displays the total number of triangles that make up your model's surface.
9. **Appearance**
   Select Wireframe for a polygon view or Glossy to see how smooth the surfaces will look.
10. **Cancel**
    Click to undo any changes to your model's tessellation and close the Tessellation Settings window.
11. **Done**
    Click to accept your changes and apply them to your scene. Note that you cannot undo the changes once you click Done.
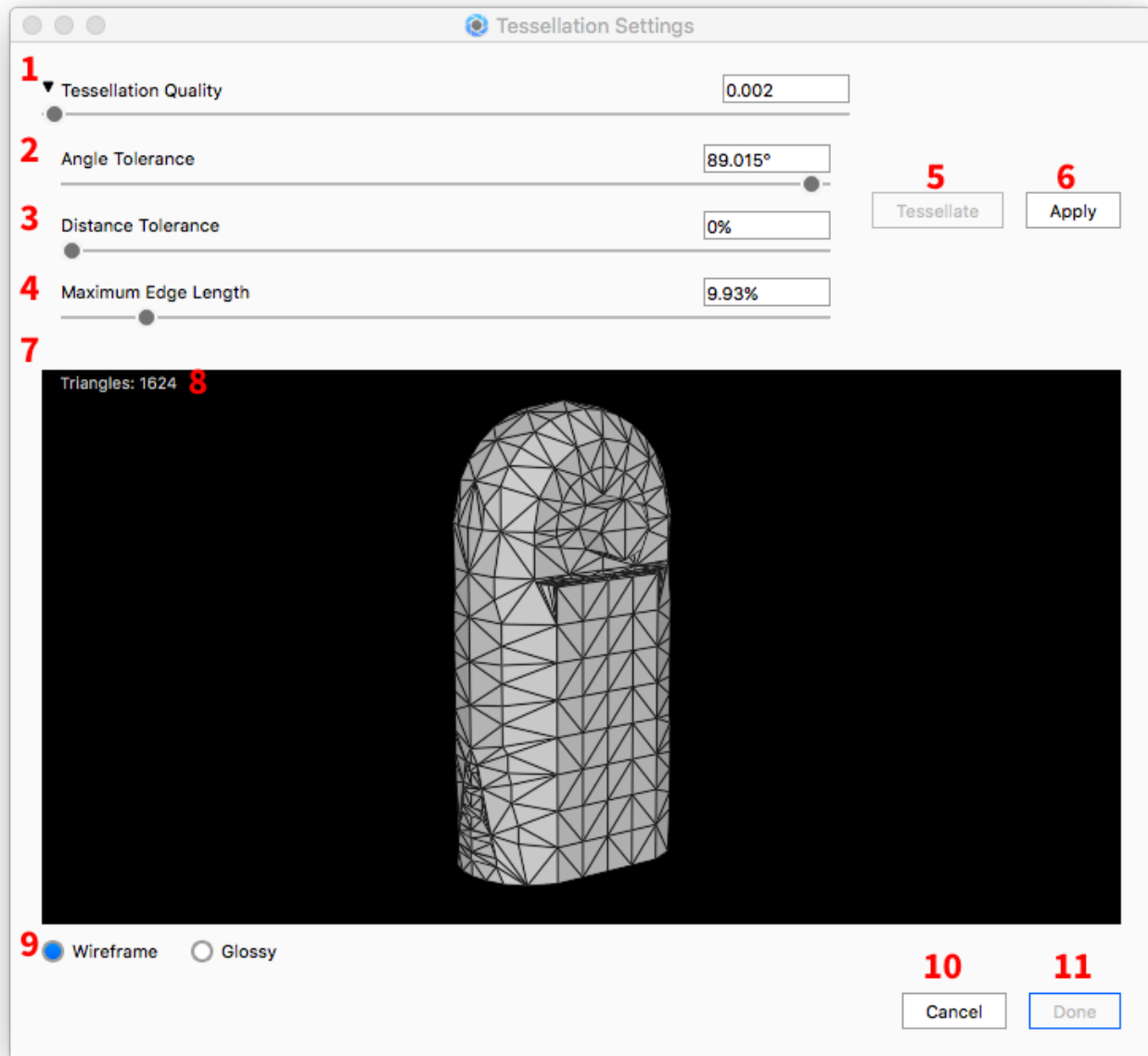
Import and Model Setup

Overview

This section covers import, model setup and working with 3D CAD data. With KeyShot, you can directly import all major 3D file formats, plus KeyShot has many free plugins for 3D modeling software. On import, KeyShot will automatically recognize your model's up orientation and match it. Other import options allow you to quickly adjust the location and import quality.

KeyShot allows you to control the model units, show/hide parts, group, duplicate parts/assemblies and create patterns of your imported data. We'll start with bringing

your model in, then go over navigation and manipulating the models in your scene.

Supported File Formats

KeyShot supports the following 3D file formats on both Mac and PC.

- 3Ds Max (plugin for Windows only)
- ALIAS 2017 and prior (needs to be installed)
- AutoCAD (.dwg and .dxf)
- CATIA v4-6 (.crg, .catpart, .catproduct, and .catdrawing)
- Cinema 4D R18 (.c4d) and prior
- Creo 4.0 and prior
- Inventor 2017 and prior
- Maya 2017 and prior (needs to be licensed)
- NX 11 and prior
- Onshape (plugin only)
- Pro/ENGINEER Wildfire 2-5
- Rhinoceros 5 and prior
- SketchUp 2017 and prior
- Solid Edge ST9 and prior
- SolidWorks 2017 and prior
- IGES
- JT
- STEP AP203/214
- STL
- OBJ
- Parasolid (.x_t)
- Revit (plugin only)
- FBX including part and camera animation
- 3DXML
- 3DS
- Collada
- Alembic (including deformable meshes)
- Acis

Import Dialog

Supported file types can be imported into the KeyShot interface by pressing *Import* on the Toolbar.

Files can also be imported by dragging and dropping them into the Real-time View, or by selecting *File, Import…* from the main menu. When a file is designated for import, the *KeyShot Import* window will be displayed on the screen.

KeyShot Import

The KeyShot Import dialogue will appear after a file is selected for import. The following options are available.

Location

Center Geometry

When checked, "Center Geometry" will import the model and place it in the very center of the environment. Any original 3D coordinates for the model are removed when center geometry is selected. If this option is not selected, the model will be placed in the same position in 3D space where it was originally created.

Snap to Ground
When checked, "Snap to Ground" will import the model and position it directly on the ground plane. This will also remove any original 3d coordinate information.

Keep Original
When Checked, "Keep Original" will import the model and retain the location of the model in relation to the original origin point. Use this for multi-import assemblies with a shared CAD origin.

Geometry Unit

Use this dropdown menu to choose the correct units the geometry was modeled in for the first import. The model scale witll be adjusted accordingly upon second import if a different unit is selected. Available only for .wire, .3ds, .obj and .stl file formats.

Not all modeling applications define the up-axis in the same manner. Depending on your application, you may need to set a different orientation other than the default "Y Up" setting. Although KeyShot will recognize the up orientation of the 3D modeling software, your model may have been built in a different orientation. If your model comes in on its side, try setting a different orientation.

Adjust Camera to Look at Geometry

When checked, the camera will center to fit the imported geometry in the scene upon import.

Adjust Environment to Fit Geometry

When checked, the environment will size to fit the imported geometry in the scene upon import.

Import Cameras

This will add native CAD cameras to the KeyShot camera list. Only available for .fbx, .ma, .mb.

Materials and Structure

Group by

Use this dropdown box to group the Scene Tree structure by Object (name), Material (type), Layer, Shader. Different options will show depending on file format. Group by Object/Layer retains assembly structure and naming for accuracy and flexibility. Group by Material/Shader flattens the hierarchy for a simpler tree structure by creating a single part for each material/shader.

Separate Materials by Part/Layer

This option will isolate linked materials to each part by prefixing a part name to each material name.

Keep Individual Parts

This option avoids merging of objects for troubleshooting purposes. It is recommended to try importing with this option disabled first to avoid excess separation of surfaces. Only available for .wire, .dwg, .dxf, .igs, .obj and .skp.

Retain Materials

This option appears for Update and Add to Scene imports to ensure that materials that have already been assigned in the scene will be applied to the new import if the native CAD materials names match.

Import Layers as Groups

Uses Layers setup in Maya to define tree structure. Available for .ma and .mb only.

Collapse Hierarchy

Flattens tree structure to simplify Scene Tree. Available for .ma and .mb only.

Assign Materials from Library

When this is enabled materials will be auto-assigned upon import if the native CAD materials have the same name as materials in the KeyShot Library.

Geometry

Tessellation Quality

Use this slider or input box to input the tessellation quality of the geometry. Lower values will import faster and higher values will import slower. It is recommended to use the default value of .2.

Accurate Tessellation

This option will optimize tessellation triangle size for improved performance. It is suggested to enable this option if available for your import format.

Import NURBS Data (Pro)

This option will bring in NURBS geometry that ensures no faceting on the model for completely smooth curves.

Cached Geometry

This option allows importing of an assembly without the contained part files. Available for SolidWorks and SolidEdge only.

Calculate Normals

Available for .obj only. It is recommended to try importing first with this option disabled as normals may already be included in the file.

Additional Options

Animation

Keyframed Transforms imports non-deformation animations. Specific Frame imports i.e. deformations at a specified frame and does not import animations to the Timeline. Available for .abc, .ma and .mb only.

Curve Import Options

Curve Radius Modified adjusts imported curve thickness. Available for .abc, .fbx, .ma and .mb only.

Importing a Second Model

The import dialogue parameters change slightly when a model is already loaded in a scene and another model is selected for import or dragged and dropped onto the Real-time View. You will see three available options:
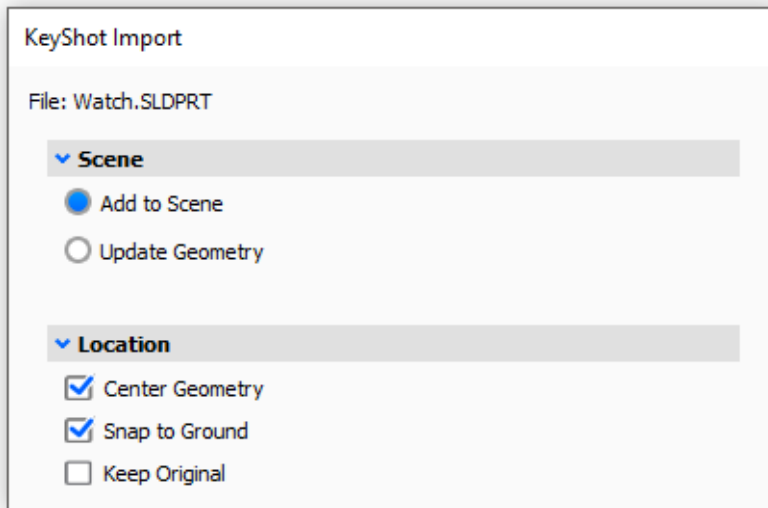
Add to Scene
When checked, this will add your model to the existing scene.

Update Geometry
With this checked, the newly added geometry will update the existing geometry, if part names match, replacing the old geometry.

Importing a KeyShot BIP File

A KeyShot BIP file may also be imported. In addition to the options above, you will see new keyshot BIP options.

KeyShot BIP Import

Open File

Select this if you want to open the scene in its original scene.

Import File

Select this option if you want to import the scene into the currently open scene.

Environment and Camera

Import Cameras

Since a BIP file is a KeyShot scene, you also have the option to import any saved cameras within the scene. Select this option if you want to import cameras in the KeyShot BIP.

KeyShot Plugins

KeyShot offers free plugins to make your workflow from CAD to KeyShot as seamless and effortless as possible. By installing a plugin for your chosen CAD package, you can export your active geometry from within the CAD application directly into KeyShot. To download a plugin and to find the most up to date information of the plugins we offer, please visit the KeyShot Plugins page.

> **On this page:**
> - LiveLinking
> - KeyShot Plugins
> - Third-Party Plugins

LiveLinking

Plugins developed by Luxion (and some third-party plugins) include Luxion's LiveLinking

technology. LiveLinking connects your modeling application with KeyShot, and allows you to update the model inside KeyShot without losing any material assignments, animations, lighting, and camera settings.

KeyShot Plugins

- 3DS Max 2014-2017
- Cinema 4D 17 and prior
- Creo 3.0 and prior
- Fusion 360
- Maya 2014-2016
- NX 10 and prior
- Pro/ENGINEER Wildfire 4-5
- Rhinoceros 5 and prior
- SketchUp 2016 and prior
- SolidWorks 2016 and prior

Note: All KeyShot plugins include LiveLinking

Third-Party Plugins

- Geomagic Control
- Geomagic Design
- Geomagic Design X
- Geomagic Freeform
- Geomagic Freeform Plus
- Geomagic Sculpt
- Geomagic Studio
- Geomagic Wrap
- IronCAD
- JewelCAD
- Siemens Solid Edge*
- SolidThinking Evolve
- SpaceClaim
- Pixologic ZBrush 4.7*
- ZWSoft ZW3D

*Include LiveLinking

LiveLinking

Luxion's LiveLinking technology allows you to establish a link between your 3D modeling software and KeyShot. This keeps the software separate, allowing you to continue working and refining your model in the CAD application, then send all changes over to KeyShot with the click of a button. All without losing any views, materials, textures or animations already applied.

To establish LiveLinking between your CAD application and KeyShot, you must first download and install the KeyShot plugin for your CAD application. Each plugin comes with its own installer and unique setup instructions. For specific setup instructions, click here.

LiveLinking is enabled by default and this setting is found in the Preferences window.
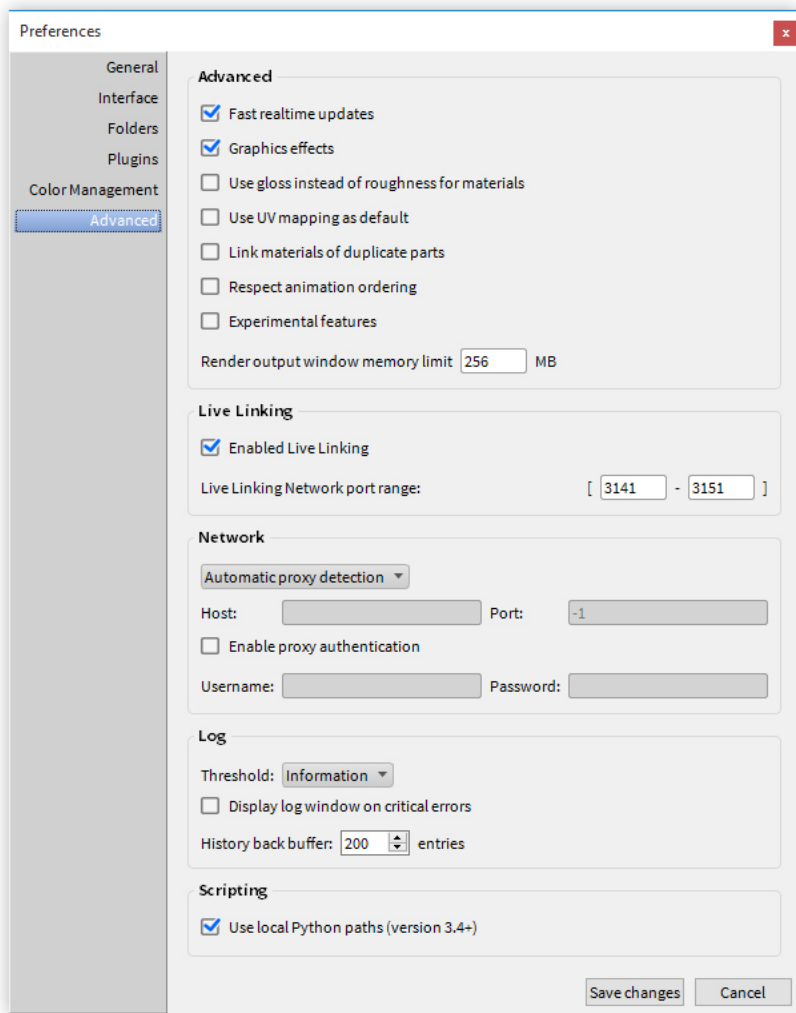
Scene Units

Scene units control model scale, light intensity, color density, and texture mapping. To achieve physical accuracy and better control over your material and texture settings, the scene units should match the scale of your model. For example, if you wish to render a car, then you should set the scene units to meters or feet. On the other hand, if you wish to render a pair of sunglasses, then you should set the scene units to centimeters or inches.
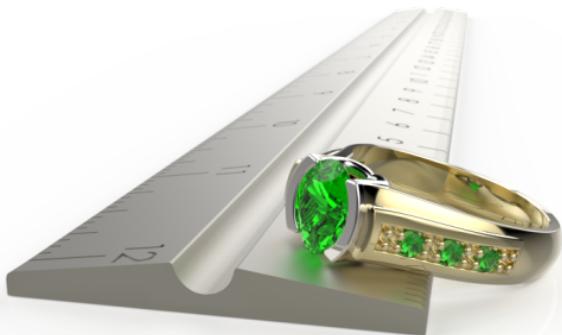
On this page:

- Changing the Scene Units

In KeyShot there are two ways to change the scene unit: *Keep Scene Size* or *Scale Scene*.

Keep Scene Size
Applies the proper unit-conversion multiplier to your model and the KeyShot environment. When you convert scene units, say from centimeter to millimeter, you are telling KeyShot to make your 1 centimeter model into a 10 millimeter model. Yes, mathematically they are both equivalent to each other. However, in KeyShot your model will occupy ten times as much space as it did before. Use this option when you wish to correct model size, light intensity, color density in glass, or your camera distance slider.

Scale Scene
Re-calibrates texture mapping on your model. When you correlate scene units, say from centimeter to millimeter, you are telling texture maps that one centimeter along your model is now treated as one millimeter along your model. Your model will keep its size, but texture images will re-size according to the new scale. Use this option when you wish to correct texture units.

Changing the Scene Units

1. To change the model units, go to *Edit > Set Scene Units* and choose the new unit.

2. Select one of the two options: *Keep Scene Size* or *Scale Scene.*

Scene Tree

The scene tree displays models and their hierarchies along with any cameras that exist in a scene. Animations are also represented in the scene tree in versions of the software that include the animation add-on. Models and parts can be hidden and shown using the check box next to the name. The check box displayed next to animations can be used to disable and re-enable animations that are applied.

Collapsing the scene tree hierarchy can be very useful if your model has a lot of parts. This can be achieved by right-clicking the section you would like to collapse and select "Collapse." The full hierarchy can be collapsed when you select "Collapse All."
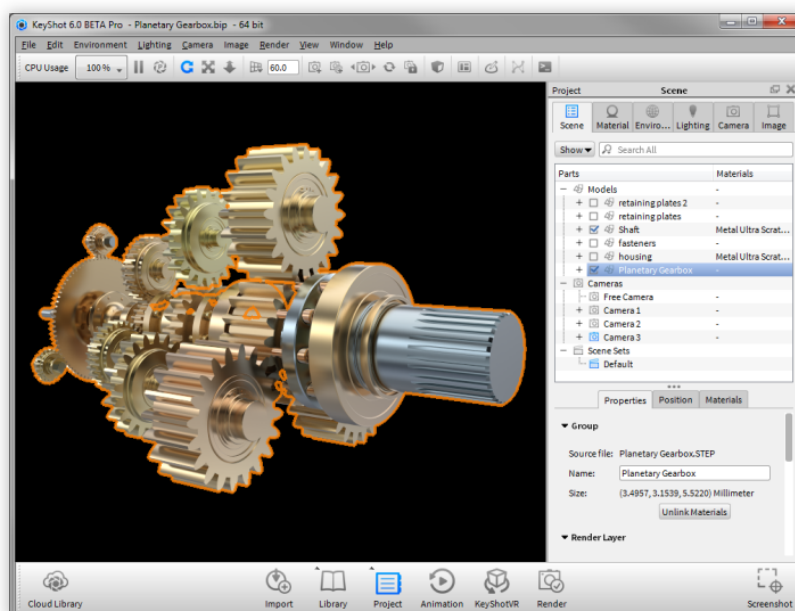
Hiding And Showing Parts

In some cases, materials may need to be assigned to parts that are enclosed in or hidden behind other pieces of geometry.

Hiding Parts

To hide parts, right click on the part and select *Hide Part*. A single part of a model can be shown when you right click on a part and select *Show Only This Part*. Parts can also be hidden through the Scene Tree.

Showing Parts

To display a hidden part, right click in the interface and select *Undo Hide Part*. To bring back all previously hidden parts select *Show All Parts*. Parts can also be shown through the Scene Tree.
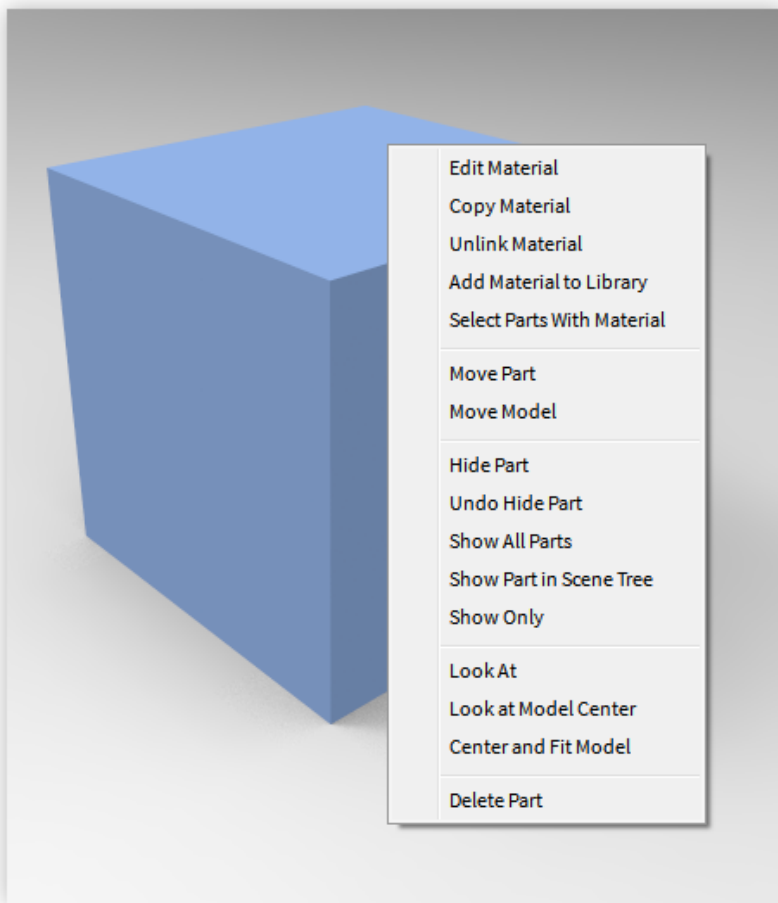
Regrouping Parts

Regrouping gives you the ability to organize the scene tree. Adding a group is done by right-clicking on the top level and selecting *Add to Group* or *Add Sub-Group*. Parts and sub-assemblies can be dragged and dropped into new groups in the Scene Tree.

Important: Reordering parts and sub-assemblies will disable LiveLinking and Update Geometry.
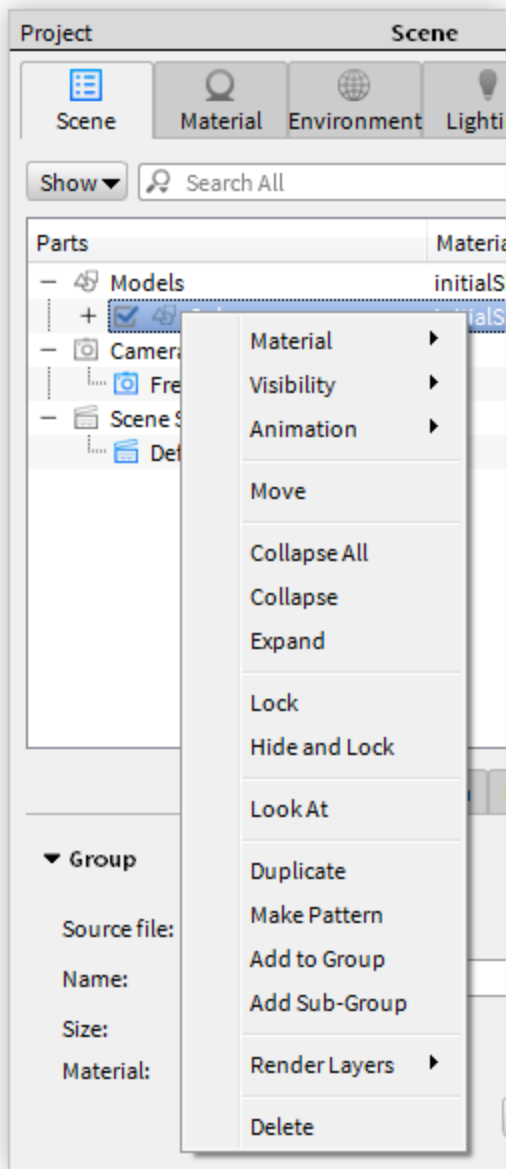
Moving Models and Parts

Models and parts can be moved by right-clicking on the model or part and selecting *Move Part* or *Move Model*. This will display the Move Tool. Highlight the different handles, then click and drag to translate, rotate, and scale in the X, Y, and Z directions. Click on the check boxes that enable/disable the Translate, Rotate, and Scale options.

Snap to Pivot
The *Snap to Pivot* option allows you to set a pivot point for rotation; simply click *Pick* to launch the Pivot Selection dialog.

Once you have chosen a pivot, you can use Snap to Pivot to align the object to the pivot point selected.
Choose an axis from which to reference your transformations. "Local" uses the axis inherent in the part or model, while "Global" uses the XYZ coordinates from the KeyShot scene.

Select the desired part then select *Done* to update the position of the Move Tool.

Snap to Lower Object
The *Snap to Lower Object* option will automatically move the bottom edge of the object's bounding box to the top edge of the bounding box of the part located below.

Snap to Ground

The *Snap to Ground* quickly moves the model in the Y-direction (up-down) to snap the lowest point on the model tangent to the ground plane. This is useful when the model has been moved and is no longer touching the ground plane.

Snap Increments

To snap in 15 degree increments, hold *Shift* as you drag a rotate handle.

To save your transforms, click the *green check*. To undo all transformations, click the *red X* and the model will revert to the state before starting the move tool.
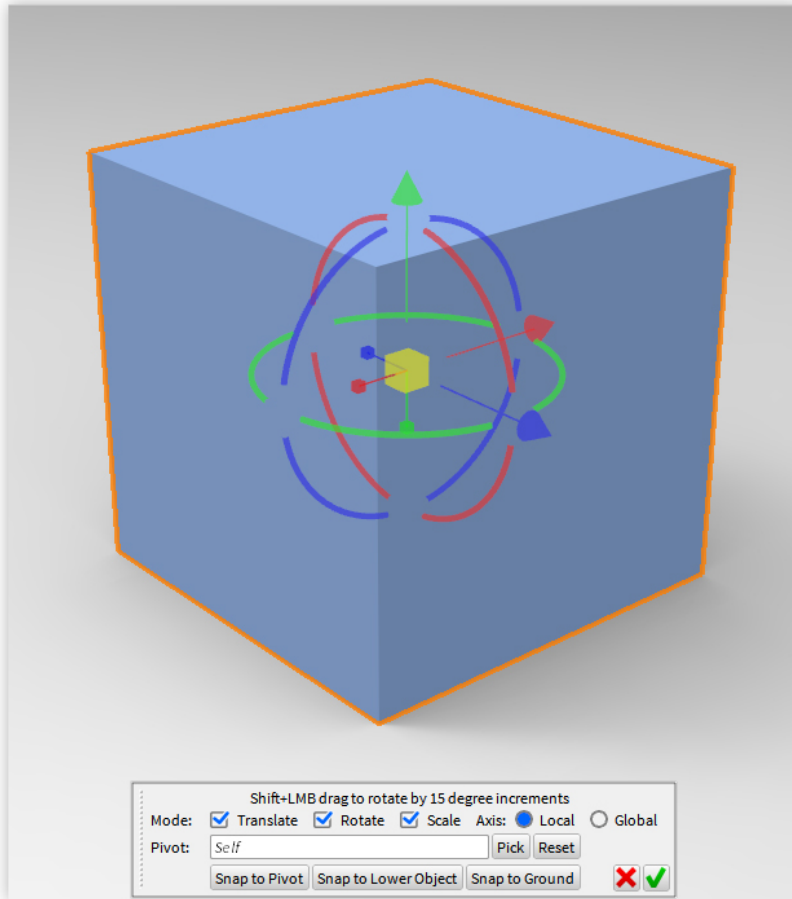
Duplicating Models

Models and parts can be duplicated by right clicking on them in the scene tree and selecting 'Duplicate'. This action duplicates the model along with any assigned materials and animations.

On this page:
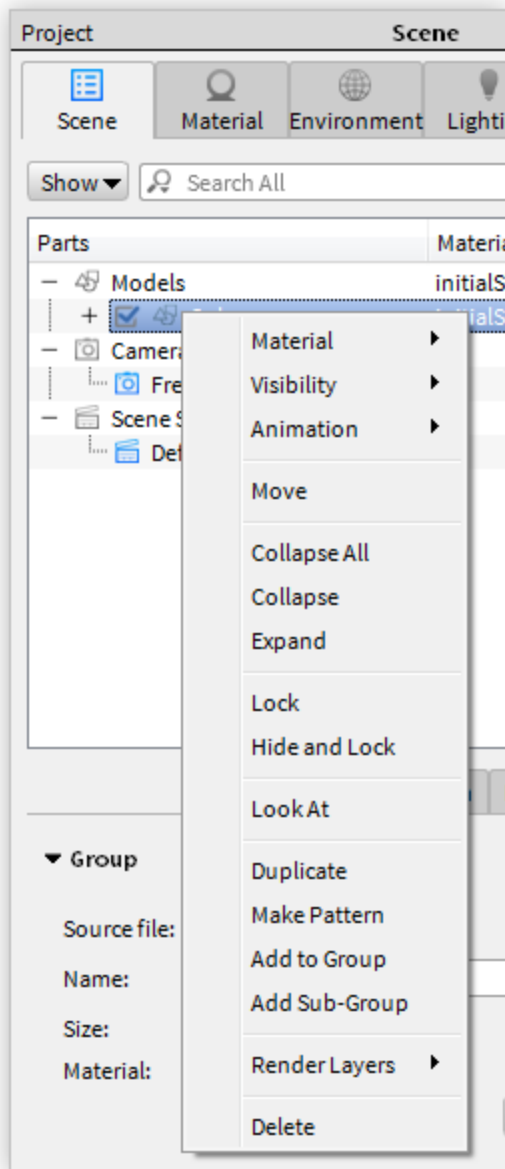
Physical Lighting

In addition to the accurate environment lighting in KeyShot, physical lighting allow you to add different types of lighting wherever you need it. Implemented as a KeyShot Material Type, they can be applied to any piece of geometry to turn it into a local light source. It's a completely different approach from traditional rendering applications allowing more flexibility for rendering light accurately in your scene.

Light Sources

There are three Material Types Light Sources that provide different lighting capabilities:

Area Light Diffuse

Turn any object into an array of light. View and adjust the position in the real-time window. Control the intensity of the light using Power (Watts) or Lumens.

Point Light Diffuse

Turn any object into a point light. View and adjust the position in the real-time window.

On this page:

- Light Sources
    - Area Light Diffuse
    - Point Light Diffuse
    - Point Light IES Profile
- Adding Lights

Control the intensity either using Power (Watts) or Lumens.

Point Light IES Profile

Load an IES profile by clicking on the folder icon in the editor and see the shape of the IES profile load in the material preview and in the form of a mesh in the real-time window.

Adding Lights

A light source may be added to any objects you like. Import new geometry or use existing geometry as a light source allowing you to easily control multiple, identical light sources simultaneously without requiring you to import and place additional objects in the scene.

When you drag and drop a "light material" onto an object, KeyShot will identify the light source by adding a light bulb icon next to the object. Simply double-click on an object, select Type, and choose one of the following three light sources from the list.

Pattern Tool

Right click a model on the scene tree, and select *Make Pattern* to open the *Pattern Tool* dialog. The *Pattern Tool* allows you to create instances of models instead of duplicates, which increases speed and decreases file size.

On this page:
- Pattern Tool Settings

Pattern Tool Settings

Linear/Circular
Create patterns in a linear or circular formation.

Instances (Linear)
This allows you to set how many instances are created along the X, Y, and Z axes.

Count (Circular)
This allows you to sethow many instances are arrayed around an axis.

Spacing (Linear)
This allows you to set the spacing of the instances for X, Y, and Z.

Radius (Circular)
This allows you to set the distance from the instances to center or pattern axis.

Fill Angle (Circular)
The angle at which to array the instances. 360 is a full circle.

Rotate Objects

Instances can be rotated along the Y of each local access to dynamically position them in the scene. Use this field to choose how far instances will be rotated along the Y axis.

Scattering
Use this to randomly place patterned objects. useful for scenes where a more random distribution of objects is desired.

Displacement
This controls the amount of deviation occurs from the original pattern matrix.

Y Rotation
This changes the amount an object is randomly rotated by in the Y axis.

Center
Centers the pattern to the scene.

Resize Environment
Automatically increase the environment size to accommodate all instances.

Adjust Camera
Enable this to have the camera automatically shift to include all instance within the field of view.

Editing Patterns
In the scene tree, right click on patterned object and select "edit pattern" to open the Pattern window to make changes.

Rounded Edges

The Rounded Edges feature allows you to simulate fillets on parts. The adjustment sliders can be accessed by selecting one or more part-level objects in the Scene Tree, which will then display the Rounded Edges accordion in the Properties sub-tab below. The *Radius* slider is unit-aware to your Scene Units. It is recommended to use a value between .01-.03 for the best results. The Minimum Edge Angle slider allows you to limit Rounded Edges to corners greater than the set degree value.
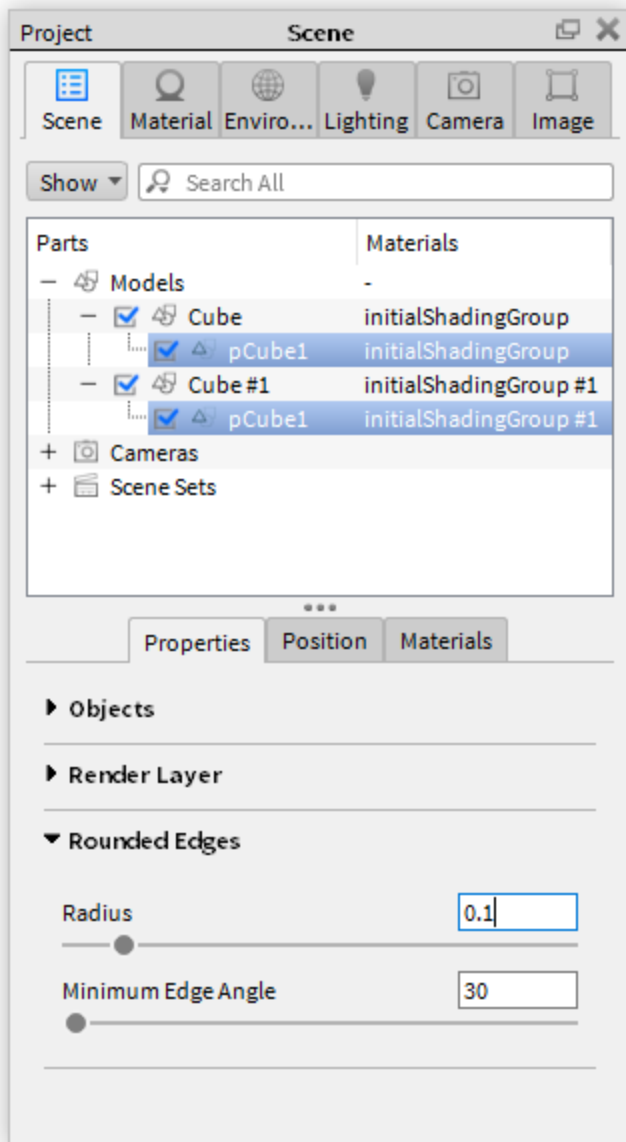
Re-Tessellate

Models that contain NURBS data can be re-tessellated directly in the scene without having to import the model all over again. *Re-Tessellate* allows you to fine tune tessellation quality of entire models or individual parts in your scene. Increasing the tessellation value will yield smoother surfaces on your model and increase scene file size. In order to *Re-Tessellate*, you must enable the *Import NURBS Data* checkbox at import (*Geometry* section inside the *Import* dialog).

How to Re-Tessellate:

1. Right-clicking on a model, part, or multi-selection of parts in the scene tree or real-time view. Then, select *Re-Tessellate*.

2. This will open the *Tessellation Settings* dialog. Change the *Tessellation Quality* or drill down to access finer adjustments including *Angle Tolerance*, *Distance Tolerance*, and *Maximum Edge Length*. For more information about settings, click here.

3. Click the *Tessellate* button to show a preview in the *Tessellation Settings* dialog , which can be displayed as a *Wireframe* or *Glossy* representation.

4. Click *Apply* and *Done* to commit the changes to the scene. *Cancel* will revert all changes and exit the dialog.

Revision Manager

Instead of overwriting the BIP file, the Revision Manager will create a serialized backup every time that you save your scene. The result is a .BIP.XX file (where "XX" is the revision index number) every time that you save. This allows you to revert to any saved version of your BIP file or delete revisions that you don't need anymore.

The instructions below assume that you've enabled *Backup Revisions* under *Edit >Preferences > General (PC)* or *KeyShot > Preferences > General (Mac)* and that you've saved your scene at least twice.

How to manage your revisions:

1. With your scene open, go to *File > Revision Manager.* The Revision Manager window appears.
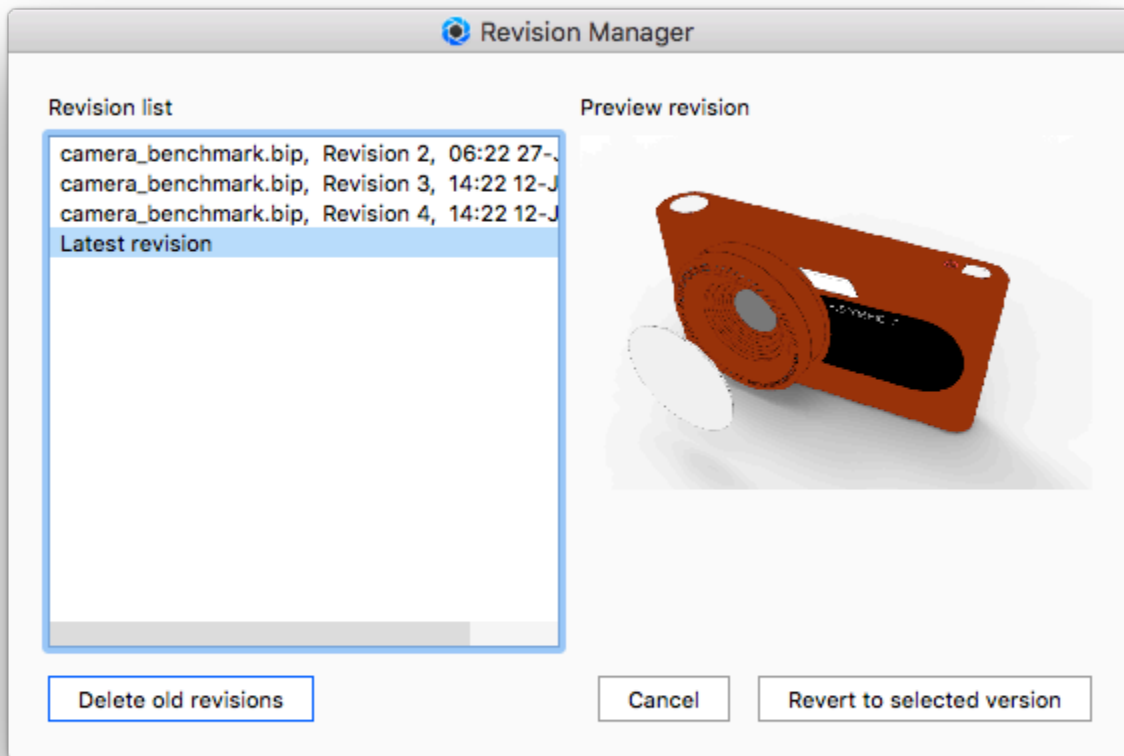
2. From the Revisions list, select the version (revision) of your scene to which you wish to revert. Then, click *Revert to selected version.*
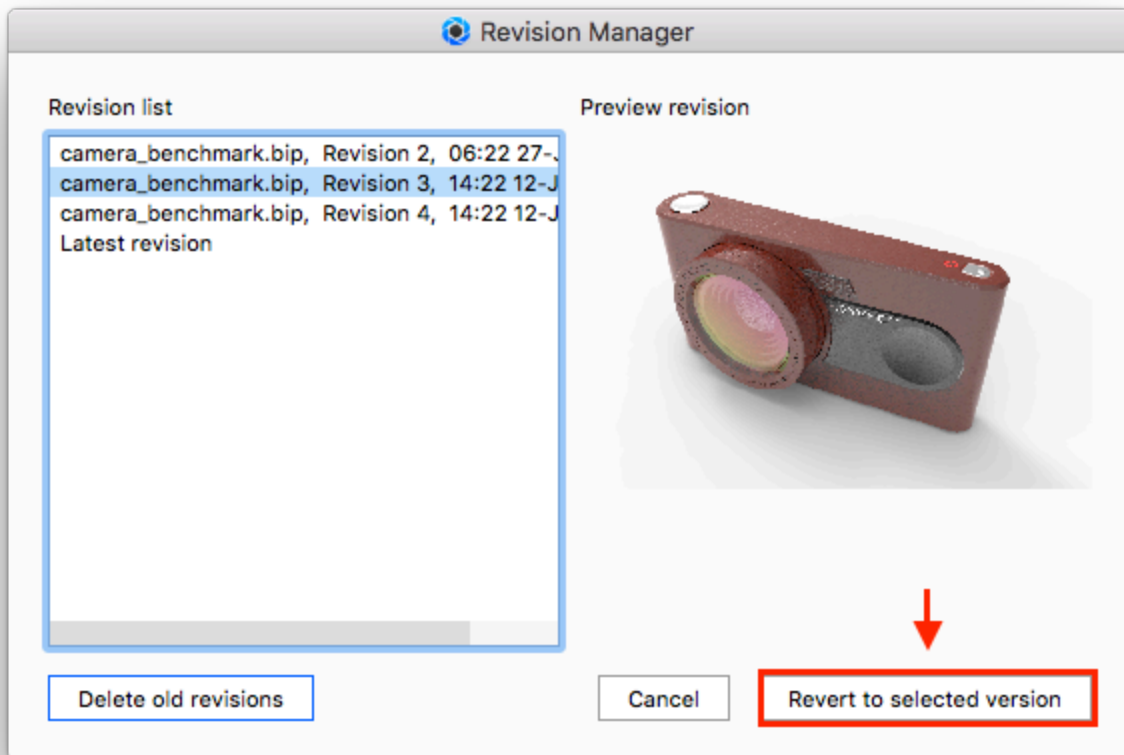
3. To delete a revision, simply select it and click *Delete old revisions.*
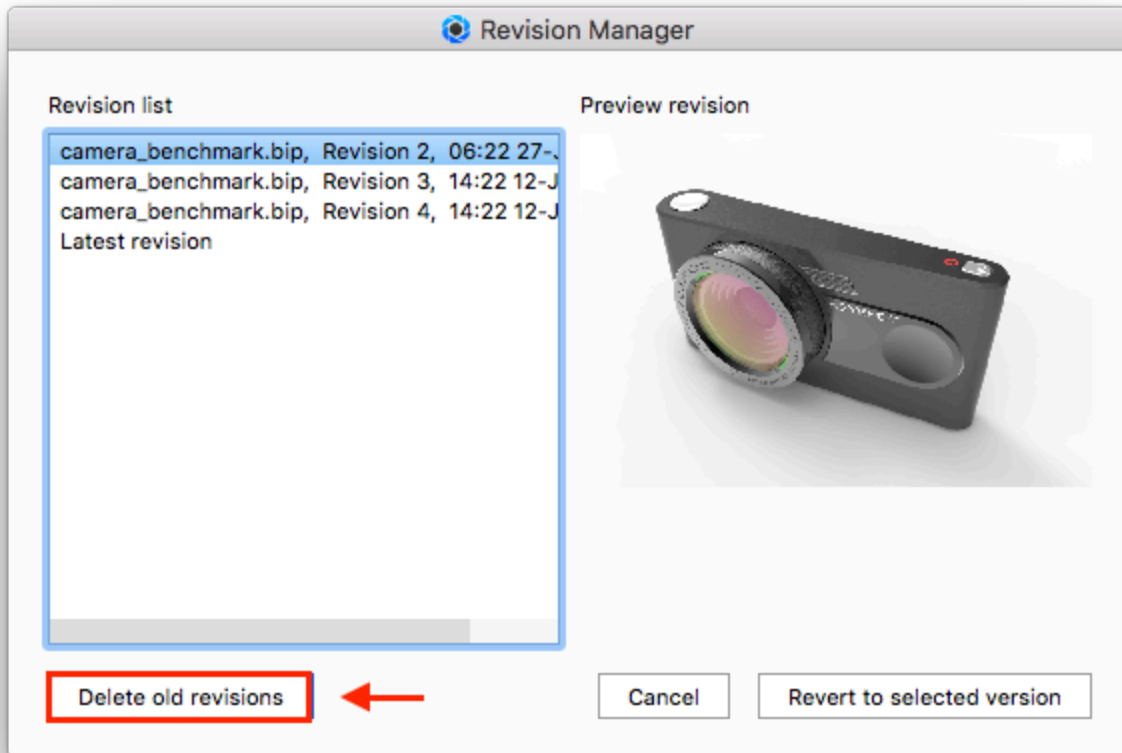
Geometry View

This highly responsive OpenGL secondary viewer complements the *Real-time View* to add more capabilities and a faster workflow for setting up your scene. Some benefits of the *Geometry View* are:

- Animations can be played back at a true 1:1 speed.
- A secondary camera can be used to position physical lights easily in a scene.
- Scene transformations and composition setup are faster.
- All Camera Path Animations can be viewed and edited.

In this section:

- Geometry View Settings
- Display Style
- Camera Type
- Standard Views
- Geometry Editor

Geometry View Settings

On the *Geometry View Ribbon*, click on the gear icon to access the *Geometry View Settings* panel.

Background Color allows you change the color of the *Geometry View* background by selecting the color swatch. Click each checkbox to toggle the display of the different elements in the *Geometry View*.
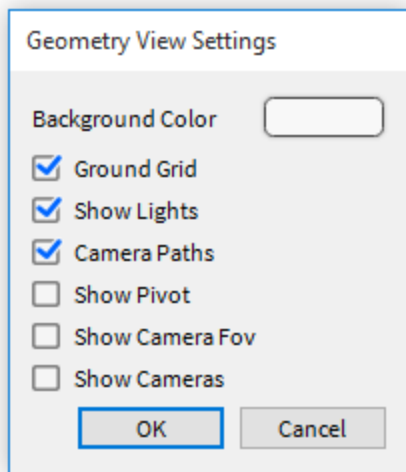
Display Style

On the *Geometry View Ribbon*, click on the *Display Style* dropdown to change the *Display Style* of models in the *Geometry View*. The style choices are: *Shaded*, *Flat*, *Shaded Wireframe*, *Wireframe*, or *Bounding*.

Shaded The *Shaded Display State* displays the geometry with solid colors and shaded areas.	
Flat The Flat Display State displays the geometry with solid colors and no shading.	
Shaded Wireframe The Shaded Wireframe Display State displays the geometry with solid colors and shaded areas with the geometry wireframe on top.	
Wireframe The Wireframe Display State displays the geometry with only a representation of the wireframe.	
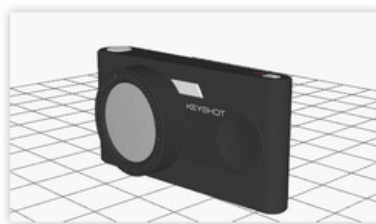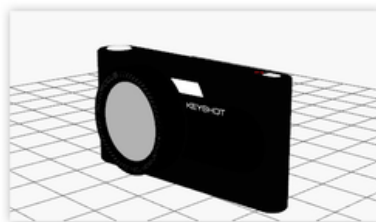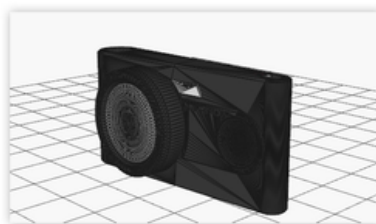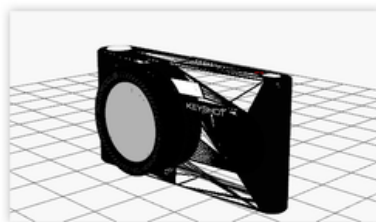
Bounding Box The Bound Box Display State displays the geometry with wirefrme box representations of the extents of the model and part geometry.	
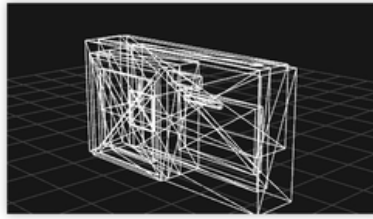
Camera Type

The Camera Type options change the view mode in the Geometry View. From the *Cam era Type* drop-down ⌷ choose a camera from these available options—*Active Camera*, *Perspective*, or *Orthographic*.

Active Camera

The Active Camera option changes the view mode to display what is seen in the frame of the current active camera. This is the camera that is active in the Real-Time View as well. This allows you to adjust the camera just as you would in the Real-time View.

Perspective

The Perspective option changes the view mode to display a perspective view of the entire scene.

Orthographic

The Orthographic option changes the view mode to display an orthographic view of the entire scene.

> **Note**
> Selecting *Perspective* or *Orthographic* will unlink the *Real-time View* from the *Geometry View* allowing you to control the two views independently of each other. However, you will still see the real-time movement and position of the active camera.

Move Active Camera Options

The Active Camera can be manipulated with a move tool inside the Geometry View. This features makes positioning cameras in interiors much easier.

To move the camera, hit the O-key or select *Window, Geometry View...* to activate the Geometry View. Set *Camera Type* in the Geometry View to *Perspective* or *Orthographic*. Right-click and select a *Move Active Camera* option. As the camera is moved in the Geometry View, the Real-time View and camera properties in the Project window update as well. Note: If a camera is locked, you will need to select *Unlock Camera* to unlock the camera prior to moving it.

Move Active Camera Position

This changes the actual position of the camera. With the camera unlocked, right-click in the Geometry View and select *Move Active Camera Position*. Use the Move Tool to change the position.

Move Active Camera Target

This changes the 'look at' point of the camera. With the camera unlocked, right-click in the Geometry View and select *Move Active Camera Target*. The Move Tool will appear on the 'look at' point. Use the Move Tool to change the position.

Saving Active Camera Changes

Right-click and select Save Camera to update the current camera position or target, or select Add Camera to create a new camera. The new camera will appear in the Project window, Camera tab where the camera changes may be saved or added as well.

Standard Views

From the *Standard Views* dropdown ⊞, you can also select a display orientation of *Front*, *Back*, *Left*, *Right*, *Top*, *Bottom* or *Isometric*.

Note: Selecting a *Standard View* when the *Active Camera Type* is selected will also update the *Real-Time View*. Choose the *Perspective* or *Orthographic Camera Type* to unlink the real-time viewing mode from the *Geometry View* allowing you to control the two views independantly of each other. However, you will still see the real-time movement and postion of the active camera.

Geometry Editor

Enjoy the freedom of splitting surfaces, calculating vertex normals, and closing open boundaries directly inside of the KeyShot OpenGL View.

Click *Edit Geometry* on the *Geometry View* ribbon and select a part from the part list. You can also right-click on a part in the Scene Tree or Real-time View and select *Edit Geometry* to launch the *Geometry View* and the *Geometry Editor* dialog.

Geometry Editor Mode

> **On this page:**
>
> - Geometry Editor Mode
>   - Split Object Surfaces
>   - Split Separate Objects
>   - Edit Normals
>   - Close Mesh

Split Object Surfaces

Use the "Split Object Surfaces" option if you would like to split specific polygons from a single part. This is useful if you would like to apply separate materials to a single part, or when parts are modeled together and you would like to work with the separately.

Splitting Angle
Use this to let KeyShot automatically determine where you would like to split the part based on the angle adjacent polygons. Any polygon that has a face at an angle that is less than the value entered will be highlighted. This is useful when the split is a clear crease or angle in the part.

Polygons
Use this to select individual polygons from the surface. Hold control while you click on the part to highlight the individual polygons.

Show Wireframe
Enable this to show the wireframe of the part.

Split All / Split Object / Merge Selection
Once the polygons you want split are selected, click "Split All" to create a part for each individual polygon selected, or click "Split Object" to group the selected polygons into a single part. If you would like to merge certain split parts back, hold shift and select the parts you would like to merge and click "Merge Selection." To finalize the split, click done to create the new parts in the scene tree.

Split Separate Objects

Use "Split Object" when a your model has separate objects grouped into a single part.

KeyShot 6

Split Separate Objects

Select an object in the list or Geometry View.

☐ Show Wireframe

Name	Triangles	Locked	Visible
Default	24	☐	☑

[Split All] [Split Object] [Merge Selection]

[Cancel] [Back] [Done]
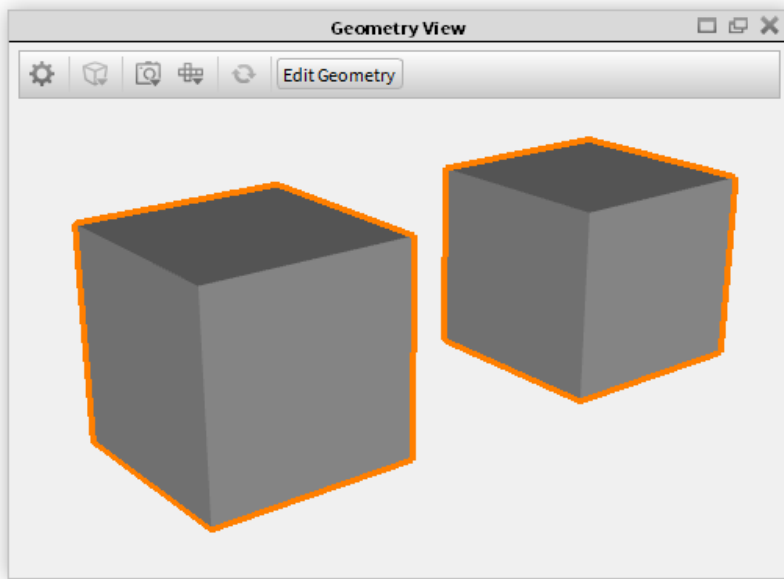
Edit Normals

A normal is the direction that is perpendicular to a mesh surface. In a 3D model, the directions of your normals should all be facing the same direction, other wise holes might appear. Also if your vertex normals are not aligned, flat spots might appear on what you thought would be a curved surface.

If your model appears to have a hole or flat areas, try to unify the normals by using the "Edit Normals" tool. Select the faulty part, and enable the "Show Vertex Normals" and "Show Face Normals. If you see the normal of the missing polygon pointing in the opposite direction or if the vertex normals from adjacent polygons are not aligned, use the "Calculate Vertex Normals".

"Adjust the "Minimum Edge Angle" to ensure that edges that do have a crease are not aligned as well.

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Edit Normals

Indicate the desired vertex normals calculation angle.

☑ Show Vertex Normals   ☑ Show Face Normals   1.00 ⏶⏷

Minimum Edge Angle: 45.00 ⏶⏷   Calculate Vertex Normals

Name	Triangles	Locked	Visible
body	13814	☐	☑

Cancel   Back   Done
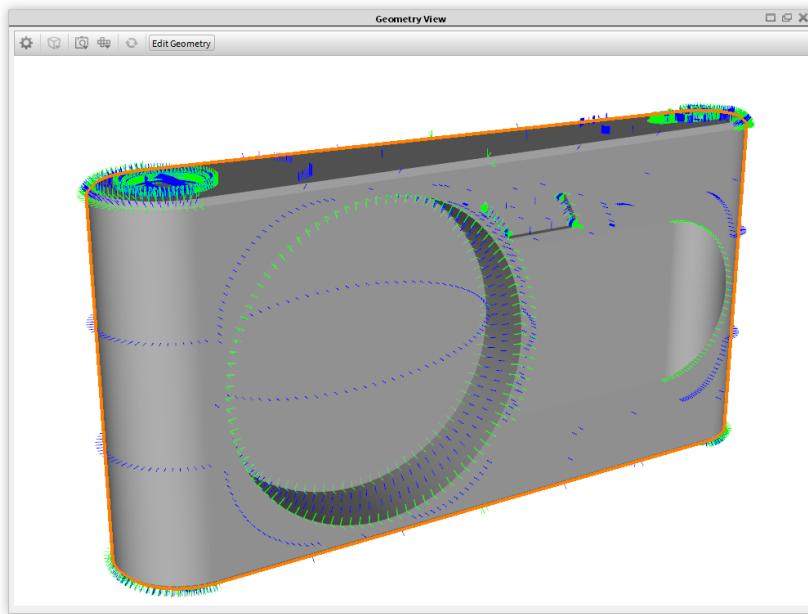
Close Mesh

If you have an open polygon with a hole, Use "Close Mesh" to fill in missing polygons.

In the "Close Mesh" window, KeyShot will list the open edges of the part you selected. You can select individual continuous holes and click "Close Selected Edges" and KeyShot will create the polygons to fill in the hole. If you have 2 holes in a part and want to create a solid connection between those two holes like a donut, select the 2 holes and click "Join Selected Edges."

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Close Mesh

Select a continuous edge boundary to close
or a group of edges to connect.

Index	Edges
2	4
1	117
0	71

[Close Selected Edges]   Connect Selected Edges

[Cancel]   [Back]   [Done]
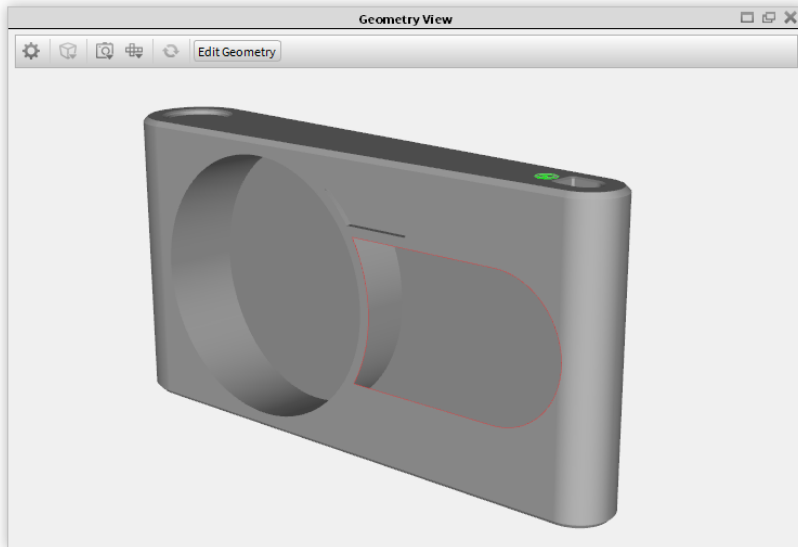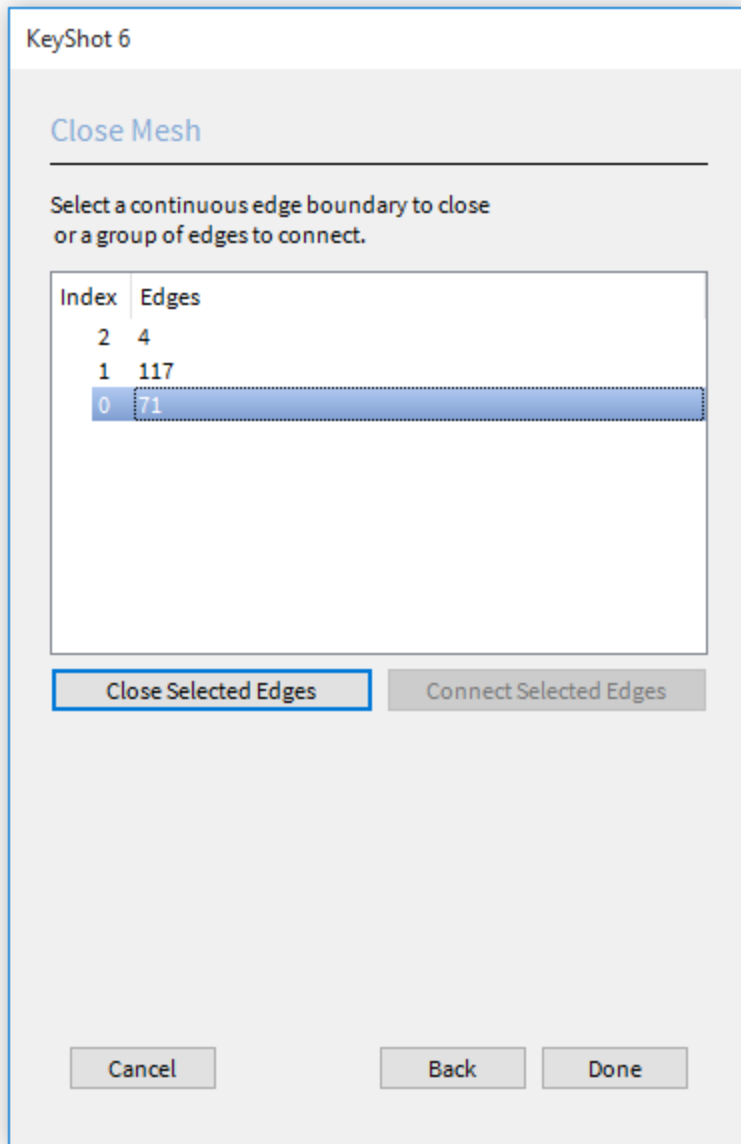
Model Sets

Model Sets allow you to save independent Scene Tree variations in a single .bip file. The Model Sets interface is located in the *Project > Scene* ta
b as a sidebar on the left side of the panel. When a Model Set is selected in the sidebar it's properties will be displayed in the sub-tab below and
the contained Models will be listed in the Scene Tree. Visibility of Model Sets can be toggled via the checkbox in the sidebar. Double-clicking a
Model Set in the sidebar will make it active. More than one Model Set can be made active at a time via the checkbox or right-click menu. Locking
a Model Set will lock all contained models and parts.
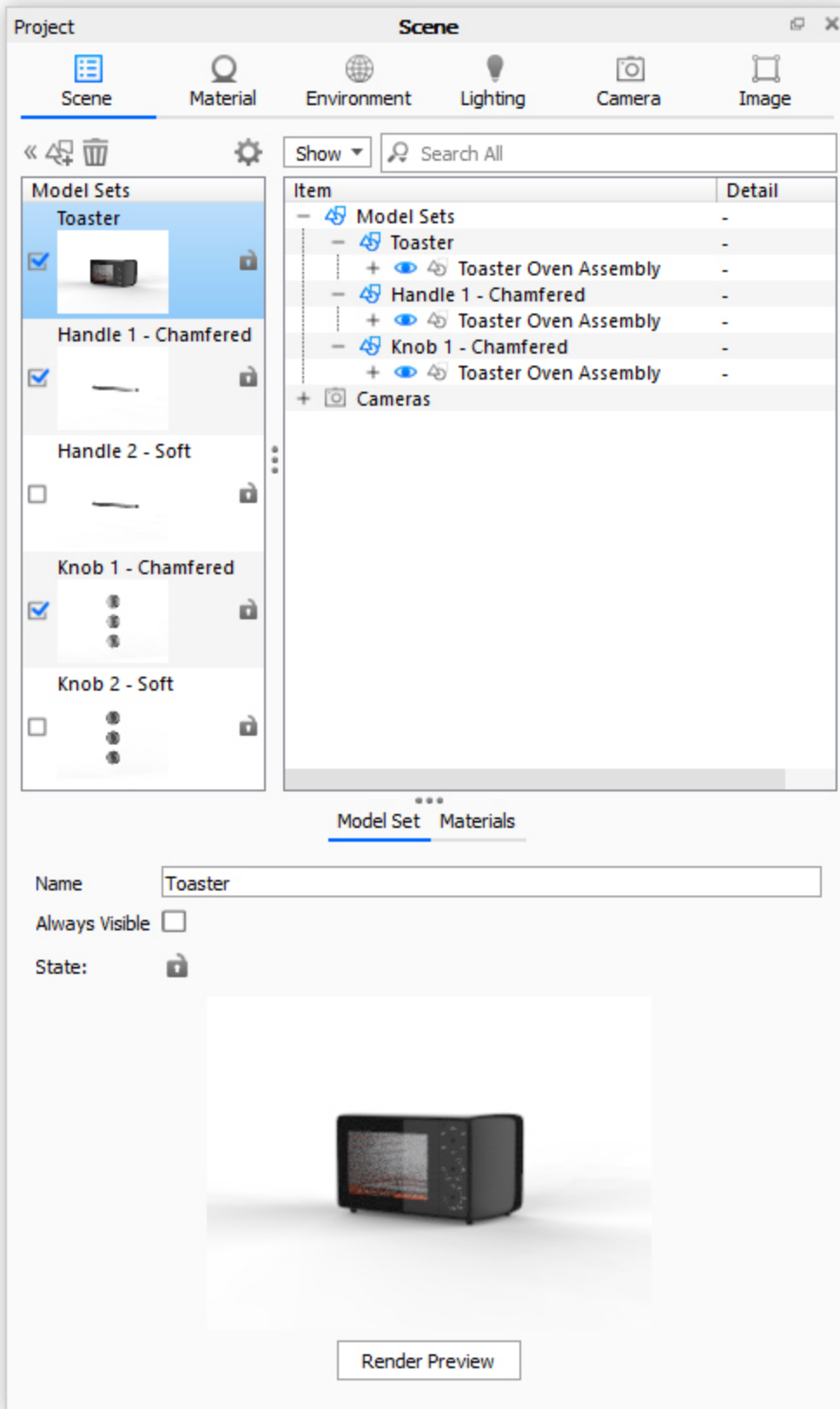
A new Model Set can be added by clicking the *Add Model Set* icon above the Model Sets sidebar, which will launch the Add Model Set dialog. Here you can give it a name, specify some options and see an overview of the models to be cloned into the new Model Set. You can also access this dialog by selecting the models/parts in the Scene Tree you wish to include in the new Model Set > right-click and select *Create Model Set from Selection*.

Materials

The material presets you see in the KeyShot library are created using a KeyShot *Material Type*. Each material type has been designed to be easy to use with as few parameters as possible. For example, the *Metal* material type will only display the parameters needed to create metals, and the *Plastic* material type will have only the parameters necessary to create plastics. The following sections will cover all of the material types and their parameters.

The first four sections cover some common parameters that are found throughout several material types. Since KeyShot is designed for the user to be able to create realistic visuals with little to no experience, an understanding of these concepts is not necessary, but can help you gain a deeper understanding of how rendering and material creation work.

In this section:

- Assigning Materials
- In-Project Library
- Copying Materials
- Editing Material
- General Parameters
- Material Types
- Saving Materials
- Color Library
- Color Picker
- Material Graph
- Multi-Materials
- Material Templates
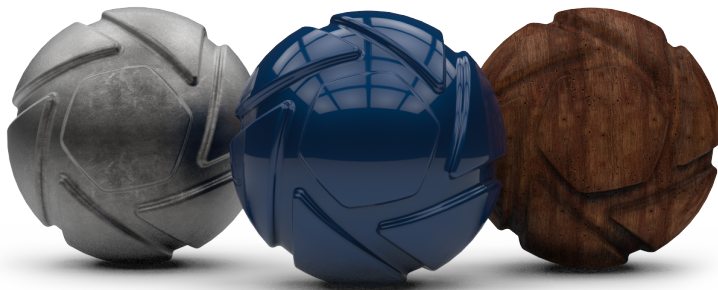
Assigning Materials

To assign materials to models, drag and drop them from the *Materials* library onto a part in the *Real-time View*. Before you drop the material onto the part, you will see a preview of the material on the part beneath the mouse cursor. The material will not be assigned until you let go of the left mouse button.

Once the material has been loaded from the library, a copy will be placed into the "In-Project Library." Any additional materials assigned to the model will also be added to the "in-Project Library." If the same material already exists in the "In-Project Library", a copy will be created and a number will be appended to that material.

In some cases a user may want to have one material assigned to multiple parts to be able to make changes to that material, and to have the changes affect all parts. To do this, assign the same material from the "In-Project Library" to those multiple parts. Since it is the same material from the "In-Project Library", any edits made to that material will affect all parts that it is assigned to. Another method of accomplishing this is to copy and paste the material from one part to another.

Retaining Textures and Labels

If you are dragging a material onto a part that has an existing texture or label, you can retain them and apply them to the new material by holding *Alt* for textures, or *Ctrl* for labels.
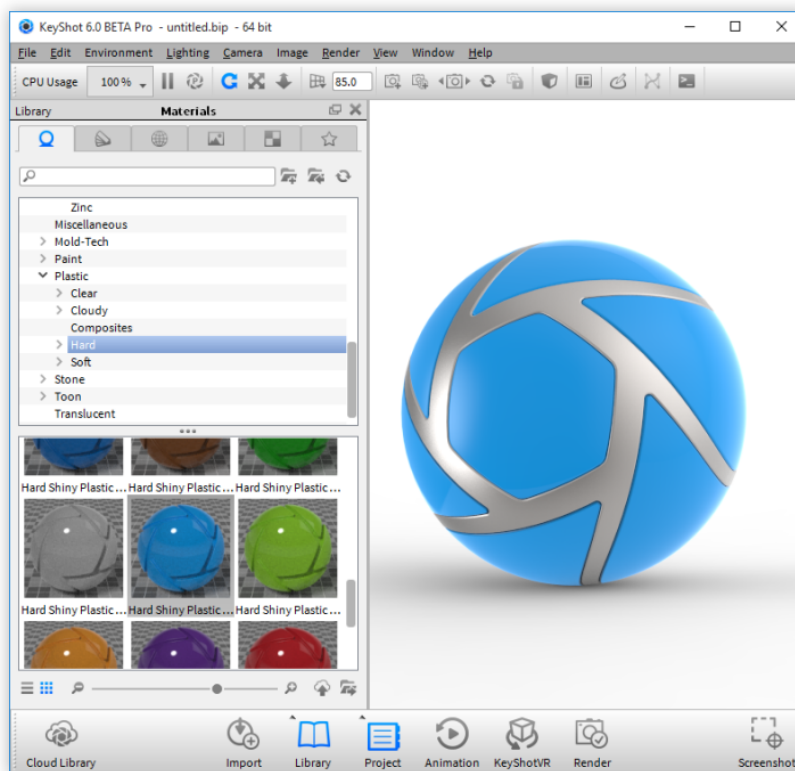
In-Project Library

The "In-Project Library" is found in the lower half of the scene tab under materials. When a material is pulled from the material library and assigned to a model, a copy of that material is placed in the "In-Project Library." All materials will be represented in the form of material ball thumbnails or in a list view.

This window will show all materials that are active within a scene. If a material is no longer being used in the scene, it will be automatically removed from the "In-Project Library." For example, if a material is assigned to only one part and a new material is assigned to that part, the previous material will be removed from the "In-Project Library" since it is no longer used in the scene.
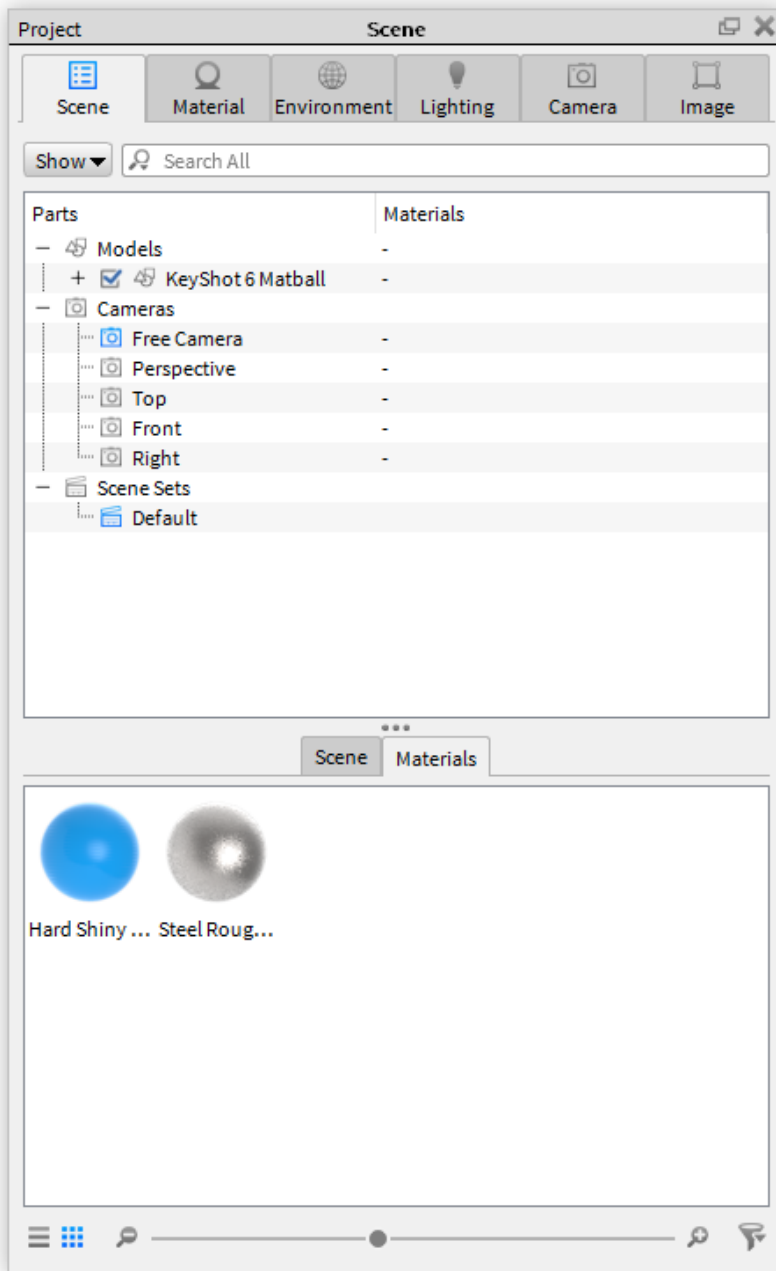
Copying Materials

There are two methods of copying and pasting materials. The most important concept to understand when copying and pasting is that when a material is copied from one part to another, any future edits to that material will affect both parts.

The first method is to press "Shift + Left Click" on a material assigned to a model. That will copy the material. Next, to paste the material, press "Shift + Right Click" on another part. That will copy the same material from the "In-Project Library" and paste it to another part. Now, any edits made to that material will affect both parts.

The second method is to drag and drop a material from the "In-Project Library" onto a part that does not already have that material assigned.

Shift + Left Click – Copy Material
Shift + Right Click – Paste Material

Editing Material

There are multiple methods of navigating to the material properties to make changes, but all editing is done through the materials tab found in the project window.

The first method of accessing the material properties is to double click a part on a model in the real-time view. That will pull up the material properties for the material assigned to that part.

The second method of accessing material properties is to double click the material thumbnail in the "In-Project Library."

The third method of accessing material properties is to right click a part in the scene tree and select "Edit Material."

The fourth method of accessing material properties is to select the part in the scene tree, and then in the second pane select "Edit Material."

All material edits made will update interactively in the real-time view. For more detailed information on material settings and types please see the Material Types.
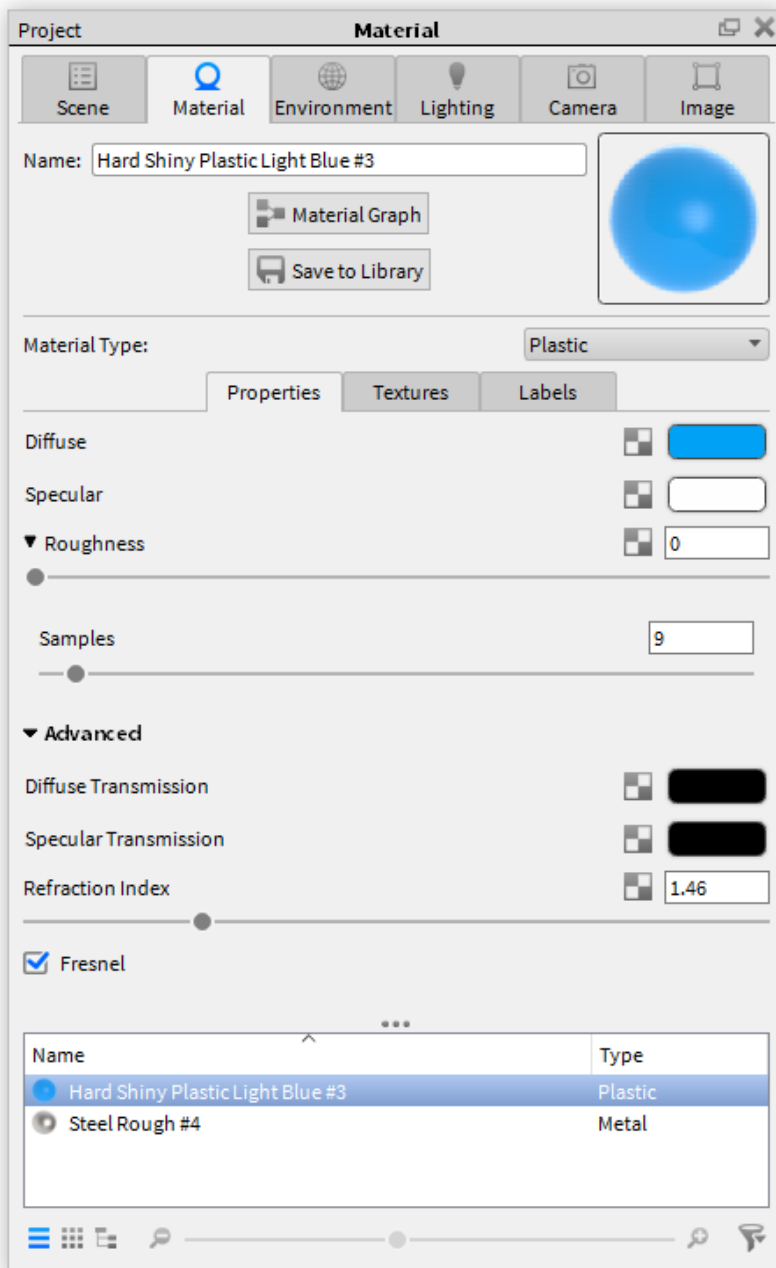
General Parameters

There are four general parameters to understand about KeyShot Materials.

- Diffuse Parameter
- Specular Parameter
- Refractive Index
- Roughness Parameter

Diffuse Parameter

The *Diffuse* parameter will be found throughout many of the material types. The most basic way to think of diffuse when working in KeyShot is a material's overall color. However, there is a more technical explanation of what this is that can help when creating materials "scattered" or "spread out." Diffuse in the rendering world refers to how light reflects off of materials. Depending on the surface of a material, light rays will behave differently when they hit the surface. If a surface has few or no imperfections, like a polished surface, light rays will bounce straight off. This will produce a shiny or reflective surface. If the surface has many imperfections, like concrete, light rays will be scattered across the surface creating a matte look. This is why concrete is not reflective or shiny.

The diffuse slider on many materials will control the color of the diffuse rays (left diagram) on a material.

Light rays

Diffuse reflections (rough)

Irregular surface (concrete)

Light rays are scattered creating diffused (scattered) light reflections
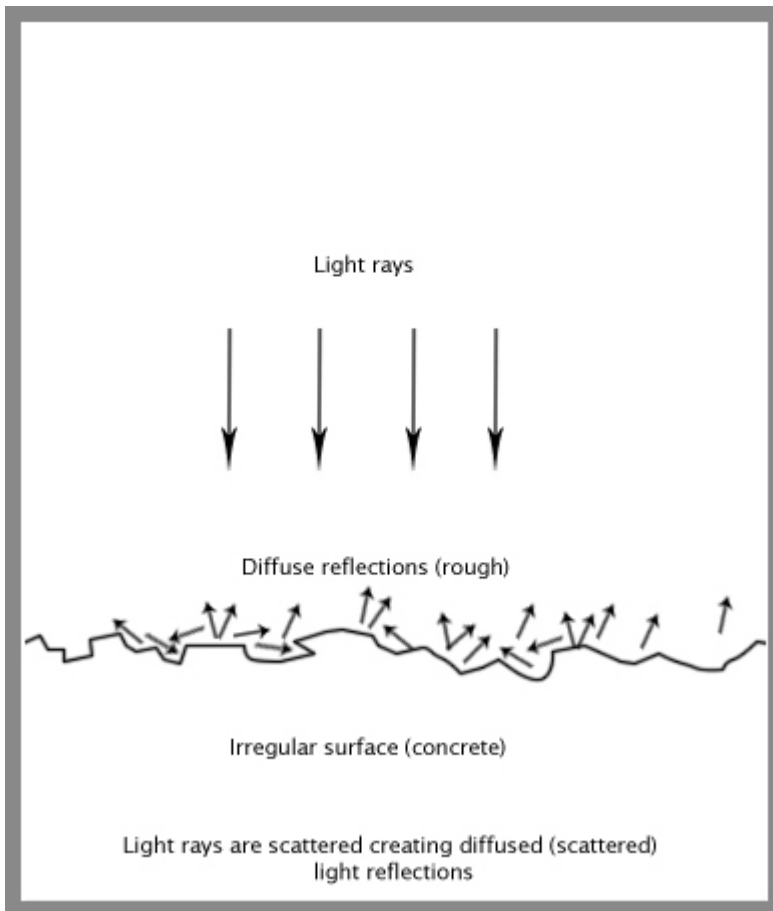
Specular Parameter

The *Specular* parameter is another parameter that will be found with many material types. Specular reflections are reflections that are bounced off a material surface

without scattering. Materials appear reflective or shiny when a surface is polished and has few to no imperfections. When the specular color is set to black, a material will have no specular reflections and will not appear reflective or shiny. Specular color set to white will give 100% reflectivity for that material. Metals do not have diffuse color so any color will be derived entirely from the specular color. The specular color of plastics should be set to a grayscale value.

The specular parameter will control the color and intensity of the specular light reflections on a material.

Light rays

Specular reflections (shiny)

Polished surface (mirror)

Light rays are bounced off polished surfaces creating
specular reflections
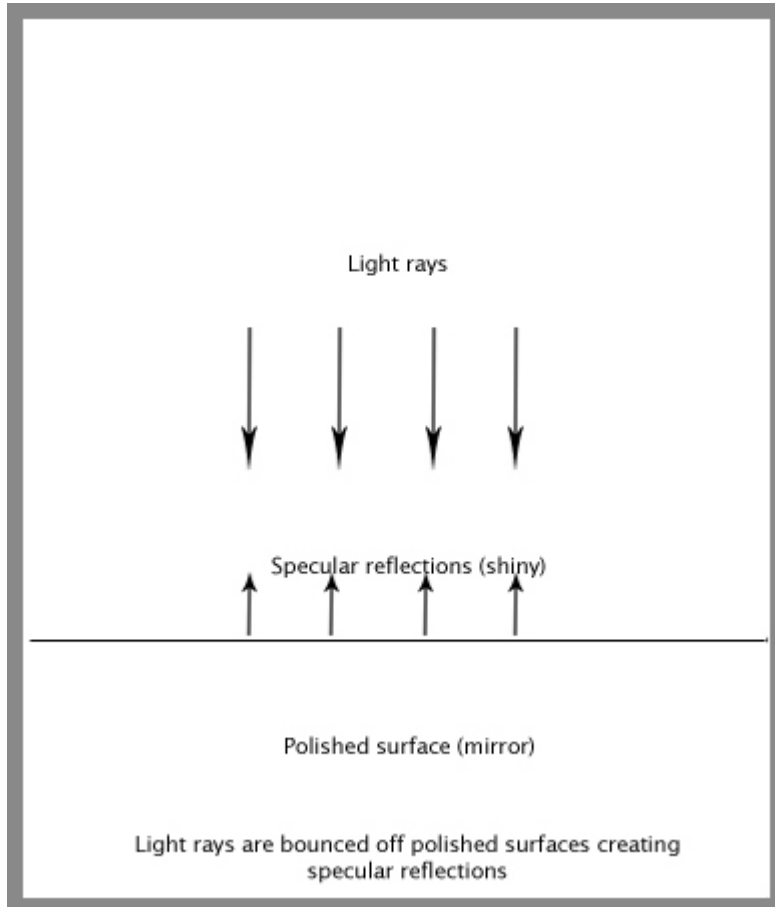
Refractive Index

Refractive Index is a material parameter that is found in multiple KeyShot material types. The term might not be familiar, but refraction is something that is seen every day. A good example is when a person sticks their hand in a pool. The light is bent, or "refracted" and the arm looks broken.

Refraction occurs because light travels through different media at different speeds. This reduction in speed is referred to as a material's refractive index (or index of refraction) and is represented by a number. For example, water has an index of refraction of 1.33, glass has an index of refraction of 1.5 and diamonds have an index of refraction of 2.4. This means that light travels through water 1.33 times slower than it does through a vacuum. Light travels through glass 1.5 times slower, through diamonds 2.4 times slower and so on. The slower light travels, the more it is bent and distorted.

Refractive indices for different materials can be easily found online. Once the value is found, it may be entered into the *Refractive Index* property of a material, and will be accurately represented in KeyShot.
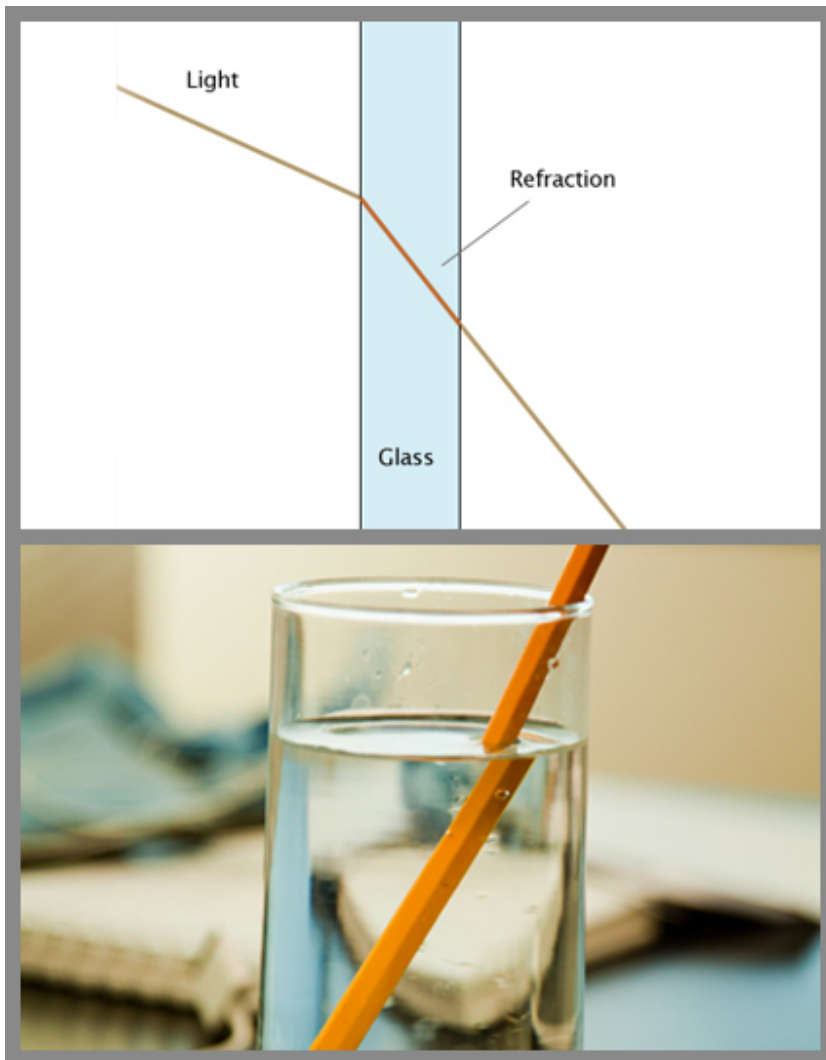
Roughness Parameter

The *Roughness* parameter is another setting that will be found on multiple material types in KeyShot. This is a slider that will add microscopic levels of imperfections to surfaces to create rough materials. The diagram that explains the Diffuse parameter can also help explain why materials appear rough. When roughness is added, light rays are scattered across the surface which causes specular reflections to break up. Due to the additional light scattering, rough materials are more challenging and take more processing power to render than perfectly reflective surfaces.

Samples

Since glossy materials with some roughness are more complex to render, KeyShot has a setting built in that can improve the accuracy of these rough materials. This setting is called *Samples.* This allows you to set how many rays are emitted from a pixel in a rendered image. Each ray collects information from its surrounding environment and returns this information back to the pixel to determine the final appearance. You will see the *Samples* slider when you click the expand arrow next to the *Roughness* slider.
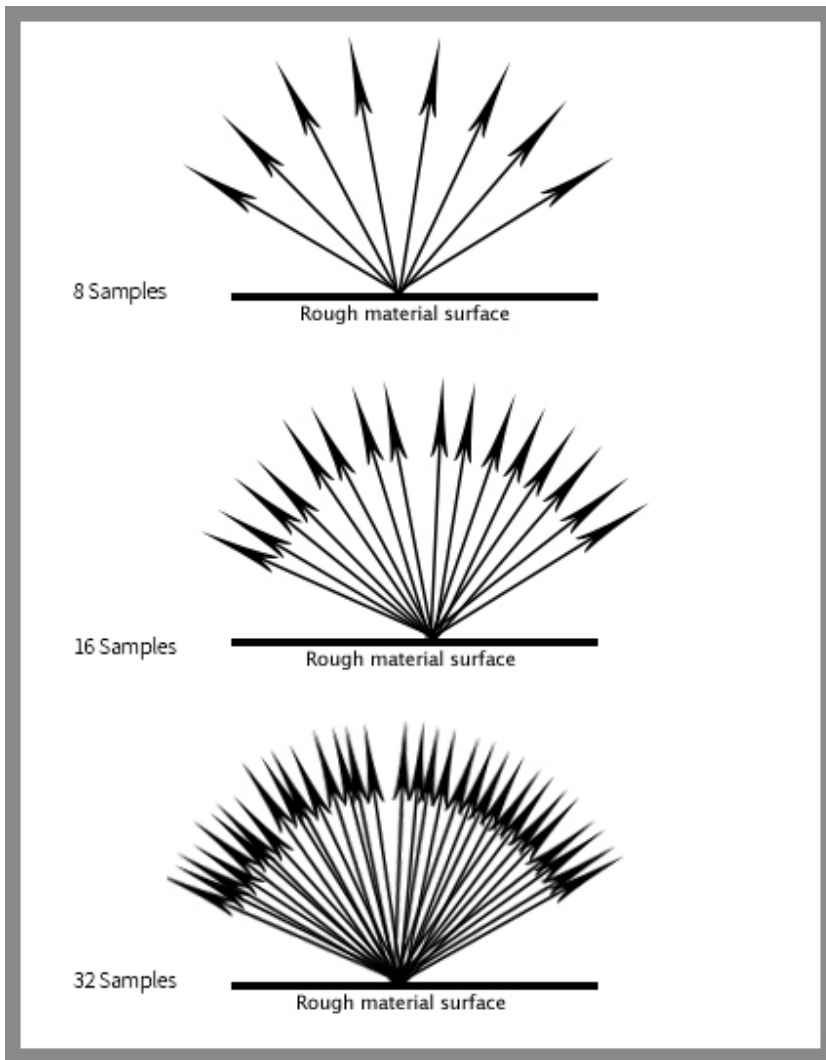
Roughness Texture

If the Roughness parameter has a checkered box next to it, this means a texture can be applied to control the glossy appearance of the surface. When a texture is applied, dark areas of the texture will have a glossy appearance and white areas of the texture will have a matte appearance. Read more on the difference between Roughness Textures and Bump Maps here.

Material Types

Material Types bring the power to quickly apply real world, physically accurate material properties to your parts. Each Material Type comes preset with settings to quickly apply or change material with the option to adjust each setting as desired. There are five categories of KeyShot Material Types:

Basic	Advanced	Light Sources	Special	Other
- Diffuse - Flat - Glass - Glass (Solid) - Liquid - Metal - Paint - Plastic - Thin Film - Translucent	- Advanced - Anisotropic - Dielectric - Gem - Measured - Metallic Paint - Plastic (Cloudy) - Plastic (Transparent) - Translucent (Advanced) - Velvet	- Area Light Diffuse - Point Light Diffuse - Point Light IES Profile	- Emissive - Ground - Toon - Wireframe - Xray	Axalta Paint

Diffuse

The *Diffuse* material type is useful for easily creating any kind of matte or non-reflective material. It has only one setting, the diffuse color. Since it is an entirely diffuse material, specular maps are not available.

Diffuse
This setting controls the color of the diffuse material. Select the color box to display the Color Picker and select the desired color.

Flat

The *Flat* Material Type is a very simple material type that produces an unshaded, perfectly even color over the entire part to which it is applied. This material is often used as a black-out material behind car grills or other meshes. It is also useful to create "Clown Pass" areas, which has uniquely colored flat materials applied to the different parts of a model so that these solid colors can be used to easily create selections in an image editing software. See Render Passes to automatically create a Clown Pass.

Color
Click the color thumbnail to launch the Color Picker, which allows you to select the color of the material. The flat material has no shading or other surface properties. It will show the solid color you have selected over the entire part that the material is applied to.

Glass

This is a simple Material Type for creating glass materials.

Compared to the Solid Glass material, this material type lacks the roughness and color density settings. However, it adds the two-sided option which is very useful when you have a part that is just a single surface (no thickness) and you want to make it reflective and transparent, but not refractive. This is commonly used for car windshields.

Color
This sets the overall color of the glass material. Click the color box to open the Color Picker and select your desired color.

Refractive Index
This controls how much light will bend or "refract" as it passes through parts that have this type of material. The default of 1.5 is accurate for simulating most types of glass, but you can increase the value to create a more dramatic refraction within the surface.

Two-Sided
This can enable or disable the refractive property of the material. When enabled, the material will appear refractive. When it is disabled, the material will not be refractive. You will see reflections on the surface and the surface will be transparent, but light will not bend as it passes through the surface. Disabling this option is very useful when you want to see things that lay behind a surface without the distorted effect that results from refraction.

Glass (Solid)

The *Glass (Solid)* Material Type provides a physically accurate glass material. unlike the simpler glass material type, you will find that solid glass simulates the effect color in the glass accurately as it takes into account the thickness of your model.

Color
This controls the overall color of this material type. When light enters the surface, it will

take on the color set here. The amount of color that you see in this material is highly dependent on the transparency setting as well. If you have set a color, but it looks too faint, skip down to the transparency section.

Transparency Distance
(Formerly *Color Density*) This slider controls the depth of the color selected in the *Color* setting, depending on the thickness of the part to which the material is applied. After setting a color in the *Color* setting, use *Transparency Distance* to make that color more or less saturated and prominent. A lower setting will show the color more in thin areas of the model, and a high setting will make the color faint in the thin areas.

This physically accurate parameter simulates the effect you can observe by looking at the color of the shallow water at a beach versus the deep blue of a deep ocean. Without this you would see through to the bottom of the deepest ocean as easily as to the bottom of a swimming pool.

Refraction Index
This controls how much light will bend or "refract" as it passes through parts on your model that have this type of material. The default of 1.5 is accurate for simulating most types of glass, but you can increase the value to create a more dramatic refraction within the surface.

Roughness
Roughness on this type of material will spread out highlights on the surface similar to what you see on other, non-transparent, materials. However, it also spreads out the light that is transmitted through the material. This is used to create a frosted glass look. Expand this parameter and you will see a samples setting. This can be set to a low value to produce a more imperfect/noisy result or to a higher value to smooth out the noise/grain for a smoother frosted look.

Liquid

The *Liquid* Material Type is a variant of the Solid Glass material that has the added ability to set the outside refractive index. This allows you to accurately create surfaces that represent the interface between, for example, a glass container and water.

Color
This controls the overall color of this material type. When light enters the surface, it will take on the color set here. The amount of color that you see in this material is highly dependent on the transparency setting as well.

Refractive Index
This controls how much light will bend or "refract" as it passes through parts that have this type of material.

Transparency Distance
(Formerly *Transparency*) This slider controls the depth of the color selected in the *Color* setting, depending on the thickness of the part to which the material is applied. After setting a color in the *Color* setting, use *Transparency Distance* to make that color more or less saturated and prominent. A lower setting will show the color more in thin areas of the model, and a high setting will make the color faint in the thin areas.

This physically accurate parameter simulates the effect you can observe by looking at the color of the shallow water at a beach versus the deep blue of a deep ocean. Without this you would see through to the bottom of the deepest ocean as easily as to the bottom of a swimming pool.

Refractive Index Outside
This is an advanced, but powerful, setting that allows you to accurately simulate the interface between two different refracting materials. The most common use for this is when you are working on a container with liquid inside, like a water glass. In such a scene you will need a single surface to represent where the glass and water meet. On this surface, you have the liquid on the "inside" and therefore, you should set the refractive index to 1.33. On the "outside," you have the glass, and you should set the refractive index outside to 1.5.

Transmission Out
This option controls the color of the light on the outside of the material. It is an advanced and complex setting, but it is needed when rendering containers with liquid. In the example of a water glass, you will need to have a dedicated surface for where the liquid and glass meet. On this surface, you should set the color of the glass with the

transmission out setting and control the color of the liquid with the transmission setting. If the glass and liquid are both clear, set both transmission and transmission out to white.

Metal

The *Metal* material type is a simple way to create polished or rough looking metal materials. It provides quick color adjustment, metal presets and simple settings for quick creation of metal materials.

Metal Type

The Metal material type gives you the option to control the metal by *Color* or by *Measured* material preset or complex IO file.

Color

The Color option provides a quick preset metal appearance with control over *Color* and *Roughness*.

Color
This setting is visible when *Metal Type* is set to *Color*. This controls the color of reflected light on the metal surface. Select the color box to display the Color Picker and select the desired color.

Roughness
This adds microscopic levels of imperfections to the surface of the material when the values are increased. When this is set to 0, a material will appear perfectly smooth and polished. When the value is increased, the material will appear more rough as light is diffused across the surface. Note: If a slider icon ⬛ appears next to the Roughness setting, adjustment control has been added for finer tuning pf the roughness. Click on the slider icon ⬛ to view and adjust the settings, or right-click and select *Delete* to remove them and use the *Roughness* slider.

> **Samples**
> A low samples setting (8 or lower) will tend to make the surface look more noisy, which will give a more imperfect and rough look. As you increase the value, the noise will even out more and provide a more evenly distributed roughness.

Measured

Metal Presets
The *Measured* options includes 13 scientifically accurate metal presets including *Aluminum, Brass, Chromium, Copper, Gold, Iron Magnesium, Nickel, Niobium, Platinum, Silver, Titanium,* and *Zinc*, along with the ability to load Complex IOR files (.ior, .nk, .csv). All metal presets and Custom IOR files provide the additional ability to add an anodized coating with control of *Film Refractive Index, Film Extinction Coefficient,* and *Film Thickne*ss.

Roughness
This adds microscopic levels of imperfections to the surface of the material when the values are increased. When this is set to 0, a material will appear perfectly smooth and polished. When the value is increased, the material will appear more rough as light is diffused across the surface.

> **Samples**
> A low samples setting (8 or lower) will tend to make the surface look more noisy, which will give a more imperfect and rough look. As you increase the value, the noise will even out more and provide a more evenly distributed roughness.

Anodized
Anodized settings are available for all metal presets selected from the *Metal Type* dropdown as well as loaded Complex IOR files. The colors you see when *Anodized* is

enabled are the result of light interfering with itself in the anodized film and can therefore be hard to predict the outcome. However, the following setting descriptions will help you learn better how to control it.

Film Refractive Index

The *Film Refractive Index* setting for anodized metals provides more or less reflection on the surface. Increase the value to get more reflection intensity. The actual film color will be affected by the *Refractive Index.* However, you can shift the colors with the *Film Thickness* setting, so typically you will focus only on finding the desired amount of reflection with the *Film Refractive Index* setting.

Film Extinction Coefficient

The *Film Refractive Index* and *Film Extinction Coefficient* determines how light reflects and refracts through the thin film on the metal. The *Film Extinction Coefficient* controls the absorption of light through the film. For small to moderate values, a positive extinction coefficient will darken the color but large values will lead to a bright white metallic reflection. Use an extinction coefficient of 0 for dielectric coatings and use a non-zero extinction coefficient for metallic coatings.

Film Thickness

Changing the *Film Thickness* setting will shift the colors you see for the metal with *Anodized* enabled. Increasing the setting to a very high value will result in the effect of layers of colored rings on the surface. It is generally a good idea to stay within a range of 100-1000 nm.

Controlling Anodized Color

In general, a larger *Film Thickness/Refractive Index* leads to more colors and an *Film Extinction Coefficient* will darken colors and dampen variation. For all the metal presets, even if anodized is enabled or not, the color can depend on the viewing angle (just as with the color of real-world metals). You will notice slight color tints at grazing angles, especially for Gold and Aluminum.

Paint

The *Paint* Material Type is used when a plain, non-metallic paint appearance is desired. It provides a quick way to set a base color and then control the clear-coat on top.

Color

Color is your base layer of paint and the overall color of the material. Click the color thumbnail to open the Color Picker and select your desired color.

Roughness

This will add microscopic levels of imperfections to the surface of the material when the values are increased. When this is set to 0, a material will appear perfectly smooth and polished. When the value is increased, the material will appear more rough as light is diffused across the surface.

Samples

A low samples setting (8 or lower) will tend to make the surface look more noisy, which will give a more imperfect and rough look. As you increase the value, the noise will smooth out and provide a more evenly distributed roughness.

Refractive Index

This controls the intensity of the clear-coat. 1.5 is a good general starting point. If a more shiny paint is desired, increase the value. Bringing the value down closer to 1 reduces the clear coat effect. This can be useful for making a matte finish.

Plastic

The *Plastic* Material Type provides the basic settings needed to create simple plastic materials. Set the diffuse (overall color) and add some specular (reflections), then adjust the roughness. This is a very versatile material type that is used for anything from concrete to woods.

Diffuse

This can be thought of as the overall color of the material. Transparent materials will have little or no diffuse color applied. Click the color box to open the Color Picker and select your desired color.

Specular
This is the color and intensity of the reflection of light sources within the scene. Black will completely turn off reflections, while white will provide a very shiny plastic look. Realistic plastic does not have color in the specular value, so generally you should use some level of gray or white. However, adding color can give the plastic material a metallic effect.

Roughness
This will add microscopic levels of imperfections to the surface of the material when the values are increased. When set to 0, a material will appear perfectly smooth and polished. When the value is increased, the material will appear more rough as light is diffused across the surface. Within the roughness parameter, you will find a samples setting. A low samples setting (8 or lower) will tend to make the surface look more noisy, which will give a more imperfect and rough look. As you increase the value, the noise will smooth out and provide a more evenly distributed roughness.

Refractive Index
This controls how much light will bend or "refract" as it passes through parts that have this type of material. The default of 1.5 is accurate for simulating most types of plstics, but you can increase the value to create a more dramatic refraction within the surface.

Thin Film

Thin Film
The *Thin Film* material type produces an iridescent effect similar to a soap bubble.

Refractive Index
The *Refractive Index* setting for *Thin Film* provides more or less reflection on the surface. Increase the value to get more reflection intensity. The actual colors you see in the thin film will be affected by the *Refractive Index*. However, you can shift the colors with the *Thickness* setting, so typically you will focus only on finding the desired amount of reflection with the *Refractive Index* setting.

Thickness
Changing the *Thickness* setting will shift the colors that you see on the surface set as *Thin Film*. Increasing the setting to a very high value will result in the effect of layers of colored rings on the surface. It is generally a good idea to stay within a range of 100-1000.

Color Filter
The *Color Filter* setting acts as a color multiplier for the *Thin Film* material type. When the *Color Filter* is set to white the color of the material will be determined by the *Thickness* setting. Less saturated colors can be used to add subtle hue shifts while fully saturated colors have a greater influence. The *Color Filter* setting can be textured with color maps to create material breakups such as those seen on solar cells or to add surface imperfections to an optical lens or automotive headlight.

Translucent

The *Translucent* material type provides control over subsurface scattering properties that are found in many skin, plastic and other materials.

Surface Color
This controls the diffuse color of the outer surface of the material. Consider this the overall color of the material. Something to be aware of with this unique material type is that you will not see the translucent effect of the subsurface color if the surface color is completely black.

Subsurface Color
This setting controls the color that light will take on as it passes through the material. Your own skin is a great example of the subsurface scattering effect. When a bright light shines through the thin parts of an ear or the thin skin between fingers, the light is colored by what lies beneath the surface and comes back more red.

While the light is passing through the surface, it is bounced around in many random directions. This creates the soft translucent effect rather than the direct refraction effect

of glass and similar materials.

For plastic materials, you will often set this color to something very similar to the surface color, but perhaps a a bit brighter.

Translucency
This controls how deep light penetrates into and through the surface depending on the units set under *Edit, Set Scene Units*. The higher your translucency value, the more of the subsurface color you will see coming through the surface. Higher translucency values will also create a softer looking material.

Texture
This affects the *Surface Color* setting. This color multiplies and blends the surface color. For instance, when the *Surface Color* is yellow and the *Texture Color* is blue, the result will be green. When set to white, it will not affect the surface color.

Specular
This controls the intensity of the reflections on the surface. This works together with the *Refractive Index* setting to further increase or decrease the strength of the reflections on the surface.

Roughness
Increasing roughness will spread and distribute reflections over the surface and create a more matte surface.

Refractive Index
This controls how much light will bend or refract as it hits and passes through parts that have this type of material. The default of 1.4 is a good starting point, but you can increase the value to create a more dramatic refraction within the surface.

Samples
A low samples setting (8 or lower) will tend to make the surface look more noisy, which will give a more imperfect and rough look. As you increase the value, the noise will even out more and provide a more evenly distributed roughness.

Global Illumination
This options enables *Global Illumination* for the material independent of the *General Lighting* setting for *Global Illumination*.

Advanced

The *Advanced* material is the most versatile of all KeyShot material types. There are more parameters in this material than in any other. With this variety of parameters, materials such as metals, plastics, transparent or cloudy plastics, glass, leathers and diffuse materials can all be created from this single material type. Material types that cannot be created are translucent materials and metallic paints.

Diffuse
This can be thought of as the overall color of the material. Transparent materials will have little or no diffuse. Metals will have no diffuse with all the color derived from the specular. To fully understand this parameter see the section on diffuse.

Specular
This is the color and intensity of the reflection of light sources within the scene. Black will be 0% intensity and the material will not be reflective. White will be 100% intensity and will be completely reflective. If a plastic material is being created, the specular color should be gray to reduce reflectivity.

Specular Transmission
This can be thought of as the transparency of the material. Black will be 100% opaque and white will be 100% transparent.

If a transparent glass or plastic is being created, the diffuse should be black with all the color derived from this parameter. Transparent glasses or plastics should also have the specular set to white. If a cloudy plastic is desired, the diffuse can be set to a very dark version of the color set here.

Diffuse Transmission
This will cause additional light to be scattered across the surface of the material, which can simulate a translucent effect. It will increase render time, so if it is not needed, the recommendation is to leave it at black.

f shadowing on the material in areas that are not receiving direct light. It can produce unrealistic looks, so it is recommended to keep this set to black unless it is needed.

Roughness

This will add microscopic levels of imperfections to the surface of the material when the values are increased. When set to 0, a material will appear perfectly smooth and polished. When the value is increased, the material will appear more rough as light is diffused across the surface.

Roughness Transmission

This will control the roughness of the refractions. The main difference between this parameter and roughness is that the roughness is on the internal portion of the material. This can be used to create a frosted look while still maintaining a shiny surface. The material needs to have some transparency through the specular transmission for the effect to show.

Refraction Index

This will control the level of refraction on the material.

Fresnel (pronounced frah-nel)

This will control the intensity of the reflections that are perpendicular to the camera. In the real world, materials are more reflective around the edges of objects than they are on areas of objects that are directly facing the viewer or camera. This is enabled by default. Different materials have different

Glossy Samples
This will control the accuracy of glossy (rough) reflections by increasing the samples that are used.

Anisotropic

The *Anisotropic* material type gives you advanced control over the highlights on the material surface. On other material types that have a single "Roughness" slider, increasing this value causes the highlights on the surface spread out evenly in all directions. Anisotropic gives you control over the highlight shape by controlling the roughness in two directions with two independent sliders. This material type is often used to simulate a finely brushed metal surface.

Color
When trying to create a metal, the diffuse should be set to black. When set to anything other than pure black, this material type will take on more a plastic look.

Specular
This is the color and intensity of the reflection of light sources within the scene. Black will be 0 intensity and the material will not be reflective. White will be 100% intensity and will be completely reflective.

If a metal material is being created, this is where the color is set.

Roughness X and Y
These sliders control the spread of the highlights on the surface. The X and Y roughness sliders control the highlight spread in independent directions. As you offset the values, the highlights on the surface will stretch out and give a finely brushed effect.

Setting both sliders to the same value will yield reflections that are spread evenly in all

directions. In the image, the ball on the left has offset values and the right has equal values.

Angle

This rotates the stretched highlights that are produced when the roughness x and y values are offset. The value is in degrees and goes from 0 to 360.
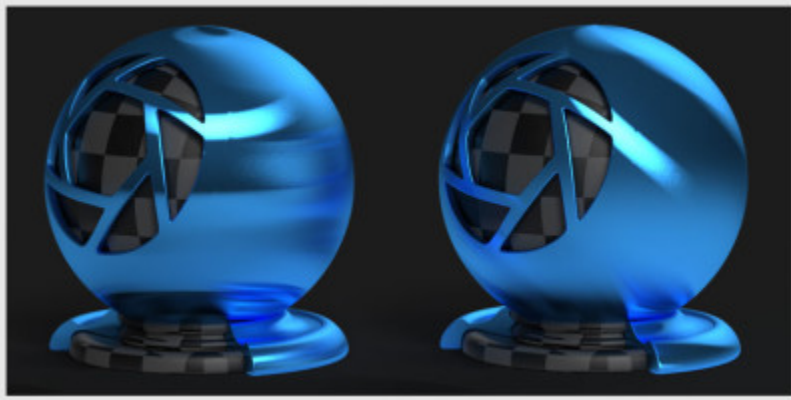
Mode

This advanced setting controls how the highlights are stretched. There are three unique modes. The default mode is Linear, which will stretch highlights in a linear way, and is independent of any UV coordinate mapping you may have on the model. Radial mode is an anisotropic method which simulates the effect you might observe on the play side of a CD. Enabling this mode allows you to choose the center point of the radial roughness. UV mode is dependent on your UV coordinates. You can use this to manipulate the anisotropic highlights based on the mapping from your modeling software.

Samples

A low samples setting (8 or lower) will tend to make the surface look more noisy which will give a more imperfect and rough look. As you increase the value the noise will even out more and provide a more evenly distributed roughness.

Dielectric

The *Dielectric* material type is a more advanced way to create glass materials. Compared to the Solid Glass Material Type, you will find additional settings for dispersion (*Abbe Number*) and it can also be used to create an accurate interface between glass and liquid.

Transmission

This option controls the overall color of this material type. When light enters the surface it will take on the color set here. The amount of color that you see in this material is highly dependent on the color density setting as well. If you have set a color in the transmission, but it looks too faint, skip down to the color density section.

Refractive Index

This slider controls how much light will bend or refract as it passes through parts on your model that have this type of material. The default of 1.5 is accurate for simulating most types of glass, but you can increase the value to create a more dramatic refraction within the surface.

Transmission Out

This option controls the color of the light on the outside of the material. It is an advanced and complex setting, but it is needed when rendering containers with liquid. In the example of a water glass, you will need to have a dedicated surface for where the liquid and glass meet. On this surface, you should set the color of the glass with the transmission out setting and control the color of the liquid with the transmission setting. If the glass and liquid are both clear, set both transmission and transmission out to white.

Refractive Index Outside

This slider is an advanced but powerful setting that allows you to accurately simulate the interface between two different refracting materials. The most common use for this is when you are working on a container with liquid inside, like a water glass. In such a scene, you will need a single surface to represent where the glass and water meet. On this surface, you have the liquid on the "inside," and therefore you should set the refractive index to 1.33. On the "outside," the glass the refractive index outside should be set to 1.5.

Transparency Distance

(Formerly Color Density) This slider controls the depth of the color selected in the *Transmission* setting, depending on the thickness of the part to which the material is applied. After setting a color in the *Transmission* setting, use *Transparency Distance* to make that color more or less saturated and prominent. A lower setting will show the color more in thin areas of the model, and a high setting will make the color faint in the thin areas.

This physically accurate parameter simulates the effect you can observe by looking at the color of the shallow water at a beach versus the deep blue of a deep ocean. Without this you would see through to the bottom of the deepest ocean as easily as to the bottom of a swimming pool.

Roughness

Roughness on this type of material will spread out highlights on the surface similar to what you see on non-transparent, materials. However, it also spreads out the light that is transmitted through the material. This is used to create a frosted glass look.

Expand this parameter, and you will see a samples setting. This can be used with a low setting to produce a more imperfect/noisy result or a higher value to smooth out the noise/grain for a smoother frosted look.

Abbe Number (Dispersion)

The Abbe number slider controls dispersion of light as it is transmitted through the surface and produces a prismatic effect. This prismatic color effect can be used to create the "fire" effect often desired when rendering gem stones.

A value of zero will disable the dispersion effect entirely. A low value will show heavy dispersion, and as you increase the value, the effect will become more subtle. A setting around 35-55 is a good starting point if a subtle dispersion effect is desired.

Expand this parameter and you will see a samples setting. This can be used with a low setting to produce a more imperfect/noisy result or a higher value to smooth out the noise/grain for a smoother look.

Roughness Transmission

This will control the roughness of the refractions. The main difference between this parameter and roughness is that the roughness is on the internal portion of the material. This can be used to create a frosted look while still maintaining a shiny surface. The material needs to have some transparency through the specular transmission for the effect to show.

Gem

The *Gem* Material Type is related to the Solid Glass, Dielectric, and Liquid Material Type. The settings have been optimized to be relevant to rendering gem stones. The *Abbe Number* (dispersion) control is especially important for gem stone rendering as it produces the "fire" effect that is often desired.

Color
This controls the overall color of the gemstone. When light enters the surface it will take on the color set here. The amount of color you see in this material is highly dependent on the transparency setting as well.

Refractive Index
This controls how much light will bend or "refract" as it passes through parts on your model that have this type of material. The default of 1.5 (the Refractive Index of Lapis Lazuli) is a general setting and will need adjusted depending on the gem you desire. A Table of Refractive Index for Gemstones can be found on the International Gem Society website.

Transparency Distance
(Formerly *Transparency*) This slider controls the depth of the color selected in the *Color* setting, depending on the thickness of the part to which the material is applied. After setting a color in the *Color* setting, use *Transparency Distance* to make that color more or less saturated and prominent. A lower setting will show the color more in thin areas of the model, and a high setting will make the color faint in the thin areas.

This physically accurate parameter simulates the effect you can observe by looking at the color of the shallow water at a beach versus the deep blue of a deep ocean. Without this you would see through to the bottom of the deepest ocean as easily as to the bottom of a swimming pool.

Roughness
Roughness on this type of material will spread out highlights on the surface similar to what you see on other, non-transparent, materials. However, it also spreads out the light that is transmitted through the material. This is used to create a frosted glass look. Expand this parameter and you will see a samples slider. This can be used with a low setting to produce a more imperfect/noisy result or a high setting to smooth out the noise/grain for a smoother frosted look.

Abbe Number (Dispersion)
The Abbe number controls dispersion of light as it is transmitted through the surface and produces a prismatic effect. This prismatic color effect can be used to create the "fire" effect often desired when rendering gem stones. A value of zero will disable the dispersion effect entirely. A low value will show heavy dispersion, and as you increase the value, the effect will become more subtle. A setting around 35-55 is a good starting point if a subtle dispersion effect is desired. Expand this parameter and you will see a samples slider. This can be used with a low setting to produce a more imperfect/noisy result or a higher value to smooth out the noise/grain for a smoother look.

Measured

The *Measured* material type supports the import of the X-Rite Appearance exchange Format (AxF) and Radiance BSDF format. These formats contain vendor neutral digital material representations that captures the light scattering characteristics for specific physical materials.

- The X-Rite AxF Material Format
- The Radiance XML BSDF Format
- Importing Measured Materials

The X-Rite AxF Material Format

AxF is a digital file format developed by X-Rite that delivers a standardized appearance representation. AxF materials are created from physical material samples scanned using an X-Rite TAC7 Scanner which captures and creates the accurate digital material specifications in the AxF file. AxF files can be accessed from digital material catalogs

such as the PatoneLIVE Cloud and imported directly into KeyShot using a Measured material type. Learn more about AxF and how to create them at xrite.com/axf/.

➕ **Download AxF sample files from X-Rite**

The Radiance XML BSDF Format

BSDF (bidirectional scattering distribution function) is a mathematical model used to describe light interactions with surfaces. Developed for the Radiance Renderer, the BSDF file format supported in KeyShot is an XML format containing measured BSDFs defining the distribution function that dictates how the light is scattered and how the material appears.

Importing Measured Materials

While editing a material in the *Projects*, *Material* tab, select *Measured* from the *Material Type* dropdown, the part will appear black and a *File* location field will appear in the *Properties* tab. Select the folder icon 📁 to select a Measured file format. The .axf and .xml file extensions are supported.

Metallic Paint

The *Metallic Paint* material type simulates a two-layer paint job: a base coat and a clear-coat that provides a clean reflection over the entire material.

Paint Settings

Base Color
This is the overall color of the material for the base coat of paint.

Metal Color
This can be thought of as a coat of metal "flakes" sprayed over the base coat. You can choose a color that is similar to base color to get a subtle metal flake effect, or you can choose a contrasting color to get some interesting results. A white or gray metal color is also commonly used for realistic paints. The metal color in the material will show more in the directly lit or brightly highlighted areas of the surface while the base color will show more in the less illuminated areas.

Metal Coverage
This controls the ratio of base color to metal color. When it is set to 0, you will see only the base color. When it is set to 1, the surface will be almost entirely covered in the metal color. For most metallic paint materials, you will want this value set close to 0. A setting of 0.25 is the default and a good starting point.

Metal Roughness
This controls the spread of the metal color over the surface. When it is set to a low value, you will see the metal color only in small areas around the highlight areas. When it is set higher, the metal will spread more evenly across the entire surface. A setting of 0.15 is the default and a good starting point. Within the metal roughness parameter, you will find a samples setting. This will control how imperfect or refined the metal effect in the paint will look. A low setting will result in a more noticeable "flake" effect. A higher setting will smooth out the distribution of the metal effect, and it will have less noise/grain. When seeking a pearl effect, , use a higher setting.

Clear-coat Settings

The clear-coat settings control the top clear-coat layer. Settings are unit-aware and can have a bump map applied that does not affect the base coat.

Clear-coat Color
Sets the color for the clear-coat layer. The lighter the color, the lighter the clear-coat. The default is white (completely clear).

Clear-coat Roughness
The metallic paint clear-coat layer, by default, provides perfectly clean reflections.

However, if a satin or matte paint effect is desired, the clear-coat roughness value may be increased. This will spread out the reflections on the surface for a matte look.

Clear-coat Refractive Index
This slider controls the intensity of the clear-coat. 1.5 is the default and a good starting point. If a more shiny paint is desired, increase the value. Bringing the value down, closer to 1, reduces the clear-coat effect. This can be useful for making a matte finish or simulating plastics that have a metallic flake effect.

Clear-coat Thickness
Sets the thickness of the clear-coat. This is set as a thickness multiplier that can be textured. A higher value will darken the clear-coat. This setting can be textured by clicking on the texture icon next to the setting. This will override the value and provide additional settings for the texture type selected.

Plastic (Cloudy)

The *Plastic (Cloudy)* material contains light-scattering particles to replicate complex, scientifically accurate materials such as Polycarbonate or ABS. This material has parameters to control light *Transmission*, *Roughness*, *Refractive Index*, *Transparency Distanc*e and *Cloudiness*. When editing an existing material select *Plastic (Cloudy)* from the *Material Type* dropdown.

Transmission
This sets the overall light transmission of the cloudy plastic material. A lighter color will allow more transmission. A darker color will provide less transmission. Click the color thumbnail to open the color picker then select your desired color.

Roughness
This will add microscopic levels of imperfections to the surface of the material when the values are increased. When set to 0, a material will appear perfectly smooth and polished. When the value is increased, the material will appear more rough as light is diffused across the surface. Within the roughness parameter, you will find a samples setting. A low samples setting (8 or lower) will tend to make the surface look more noisy, which will give a more imperfect and rough look. As you increase the value, the noise will smooth out and provide a more evenly distributed roughness.

Refractive Index
This controls how much light will bend or "refract" as it passes through parts that have this type of material. The default of 1.5 is accurate for simulating most types of plastic, but you can increase the value to create a more dramatic refraction within the surface.

Transparency Distance
Controls the distance at which the transparency is affected.

Cloudiness
This setting affects the overall cloudiness of the plastics. A value of 0 is no cloudiness at all.

Scattering Directionality
Controls how the light is scattered. A value of 0 is uniform scattering, a negative value will scatter light backwards, a positive value with scatter light forwards.

Cloudiness Color
This sets a specific color for the internal cloudiness of the plastic.

Samples
A low samples setting (8 or lower) will tend to make the surface look more noisy, which will give a more imperfect and rough look. As you increase the value, the noise will even out more and provide a more evenly distributed roughness.

Plastic (Transparent)

The *Plastic (Transparent)* material provides the basic settings needed to create simple plastic materials. Set the diffuse (overall color) and add some specular (reflections), then adjust the roughness. This is a very versatile material type that is used for anything from concrete to woods.

Diffuse
This can be thought of as the overall color of the material. Transparent materials will have little or no diffuse color applied.

Specular
This is the color and intensity of the reflection of light sources within the scene. Black will completely turn off reflections, while white will provide a very shiny plastic look. Realistic plastic does not have color in the specular value, so generally you should use some level of gray or white. However, adding color can give the plastic material a metallic effect.

Roughness

This will add microscopic levels of imperfections to the surface of the material when the values are increased. When set to 0, a material will appear perfectly smooth and polished. When the value is increased, the material will appear more rough as light is diffused across the surface. Within the roughness parameter, you will find a samples setting. A low samples setting (8 or lower) will tend to make the surface look more noisy, which will give a more imperfect and rough look. As you increase the value, the noise will smooth out and provide a more evenly distributed roughness.

Diffuse Transmission
This will cause additional light to be scattered across the surface of the material which can simulate a translucent effect. It will increase render time, so if it is not needed, the recommendation is to leave it at black.

Specular Transmission
This can be thought of as the transparency of the material. Black will be 100% opaque and white will be 100% transparent. If a transparent glass or plastic is being created, the diffuse should be black with all the color derived from this parameter. Transparent glasses or plastics should also have the specular set to white. If a cloudy plastic is desired, the diffuse can be set to a very dark version of the color set here.

Translucent (Advanced)

The *Translucent* material type provides control over subsurface scattering properties that are found in many skin, plastic and other materials. Compared to the *Translucent* m aterial type, this generally will resolve faster.

Surface Color
This controls the diffuse color of the outer surface of the material. Consider this the overall color of the material. Something to be aware of with this unique material type is that you will not see the translucent effect of the subsurface color if the surface color is completely black.

Subsurface Color
This setting controls the color that light will take on as it passes through the material. Your own skin is a great example of the subsurface scattering effect. When a bright light shines through the thin parts of an ear or the thin skin between fingers, the light is colored by what lies beneath the surface and comes back more red.

While the light is passing through the surface, it is bounced around in many random directions. This creates the soft translucent effect rather than the direct refraction effect of glass and similar materials.

For plastic materials, you will often set this color to something very similar to the surface color, but perhaps a a bit brighter.

Translucency
This controls how deep light penetrates into and through the surface depending on the units set under *Edit, Set Scene Units*. The higher your translucency value, the more of the subsurface color you will see coming through the surface. Higher translucency values will also create a softer looking material.

Specular
This controls the intensity of the reflections on the surface. This works together with the *Refractive Index* setting to further increase or decrease the strength of the reflections on the surface.

Roughness
Increasing *Roughness* will spread and distribute reflections over the surface and create a more matte surface.

Refractive Index

This controls how much light will bend or refract as it hits and passes through parts that have this type of material. The default of 1.4 is a good starting point, but you can increase the value to create a more dramatic refraction within the surface.
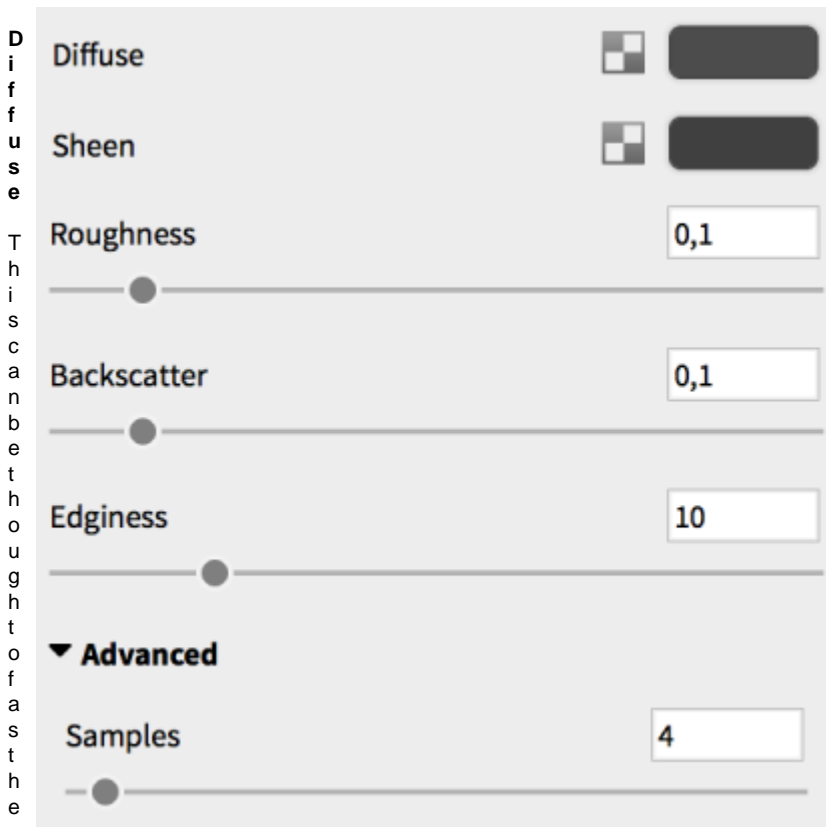
Samples
A low samples setting (8 or lower) will tend to make the surface look more noisy, which will give a more imperfect and rough look. As you increase the value, the noise will even out more and provide a more evenly distributed roughness.

Velvet

The *Velvet* material is very useful for creating soft fabrics that have the distinct light catching effects that result from the soft fibers in finely woven fabrics.

This is a complicated material by KeyShot standards, and you will generally be able to do fabric materials well enough with the plastic or advanced material types. However, this material type does provide control over parameters not found in other material types.

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Diffuse

Sheen

Roughness   0,1

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Backscatter   0,1

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Edginess   10

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▼ **Advanced**

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Samples   4

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erall color of the material. A dark color is generally preferred for both the diffuse and sheen settings as this material can become unnaturally bright when light colors are used.

Sheen
The sheen color is observed as light that appears to be reflected back across the surface from behind, almost as though the surface is backlit. This setting is combined with the edginess control to add a soft sheen across the entire material. The backscatter parameter also gets its color from the sheen setting. Generally, this should be set to a color very similar to the diffuse color, but a bit brighter.

Roughness
The roughness setting determines how evenly the backscatter effect is distributed across the surface. When this is set to a low value, the backscattered light will stay contained within smaller areas. A high value will spread the light across the entire object evenly.

Backscatter
This is light that is scattered across the entire object and is especially apparent in the

shadowed areas of the object. It can be used to give an overall soft look to the surface. The color of the backscatter light is set with the sheen control.

Edginess
This controls how far the sheen effect spreads over the surface. A low value will cause the sheen to fade out gradually, while a high value will produce a bright border of sheen around the edges of the surface. A setting of zero disables the sheen effect.

Samples
The samples setting controls how imperfect or refined the backscatter effect appears. A higher value will smooth out this scattered light and will cause it to appear more even. A low value will show a coarser grain/noisiness in the backscattered light. A higher setting, around 32, is often preferred for this setting as it provides a smoother result.

Light Sources

In KeyShot, physical lights are designed as materials that may be applied to parts. Any geometry can be turned into a light source. You can either import new geometry, use existing geometry or add a primitive (*Edit, Add Geometry...*). Light sources are labeled in the *Project* window, *Scene Tree* by a light bulb icon next to the part name.

Light Source Material Types

There are three types of physical light source material types:

- Area Light Diffuse
- Point Light Diffuse
- Point Light IES Profile

Applying a Light

Applying a light material is similar to applying other materials. Drag and drop a light material preset from the Material library or select a light material type from the *Project* window, *Material* tab, *Material Type* dropdown. KeyShot will change the object to a physical light.

Moving a Light

Right-click the part that is assigned as a light and select *Move Model*. This will activate the Move Tool. You can also select the light source in the *Properties* window, *Scene* tab, then select *Move Tool* from the *Position* tab. Additionally, the input boxes may be used for more precise positioning.

Animating a Light

Since light sources are materials applied to a part, they can be animated just like any other part. Simply select the light in the Scene Tree that you would like to animate, right-click and apply the animation you would like.

Area Light Diffuse

Area Light Diffuse is a material type that will give you a wide range of light dispersion. This will function similarly to a flood light.

Color
Here you can choose the color the light will cast.

Power
The power of the light can be controlled by either Watt, Lumen, or Lux. Lumen or lux are recommended for best results; 1 Lux equals 1 lumen per square meter.

Apply to Front of Geometry

Color

Power   100   Watt

▼ **Advanced**

☑ Apply to front of geometry

☑ Apply to back of geometry

☑ Visible to Camera

☑ Visible in reflections

☑ Visible in Shadows

Samples   9

to the front of the surface geometry.

Apply to Back of Geometry
Apply the light source to the backside of the surface geometry.

Visible to Camera
Here, you can toggle whether or not the light source geometry is shown in realtime window and renderings.

Visible in Reflections
Here, you can toggle whether or not the reflection of the light source is shown in realtime window and renderings.

Visible in Shadows
Here, you can toggle whether or not the light source geometry casts a shadow in realtime window. Disable for more accurate results.

Samples
Use this slider to control the amount of samples used in the render.

Point Light Diffuse

Applying a *Point Light Diffuse* to geometry replaces it with a point located in the parts center.

Color
Here, you can choose the color the light will cast. For accurate lighting colors, use the Kelvin scale to select accurate lighting temperatures.

Power
The power of the light can be set to either Watts or Lumen.

Radius
Adjust the radius to control the "Falloff" from shadows cast from this light.

Color		
Power	100	Watt
Radius	0	

Point Light IES Profile

When using IES light, you will need to load an IES profile by clicking on the folder icon in the editor. As soon as you load the profile you will see the shape of the IES profile in the material preview. You will also see the shape in form of a mesh in the realtime window.

File

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Color		
Multiplier	1	
Radius	0	

This displays the name and location of the IES profile being used. Click the folder icon to change to a different IES profile.

Color
Here, you can choose the color the light will cast. Use the Kelvin scale to select accurate lighting temperatures.

Multiplier
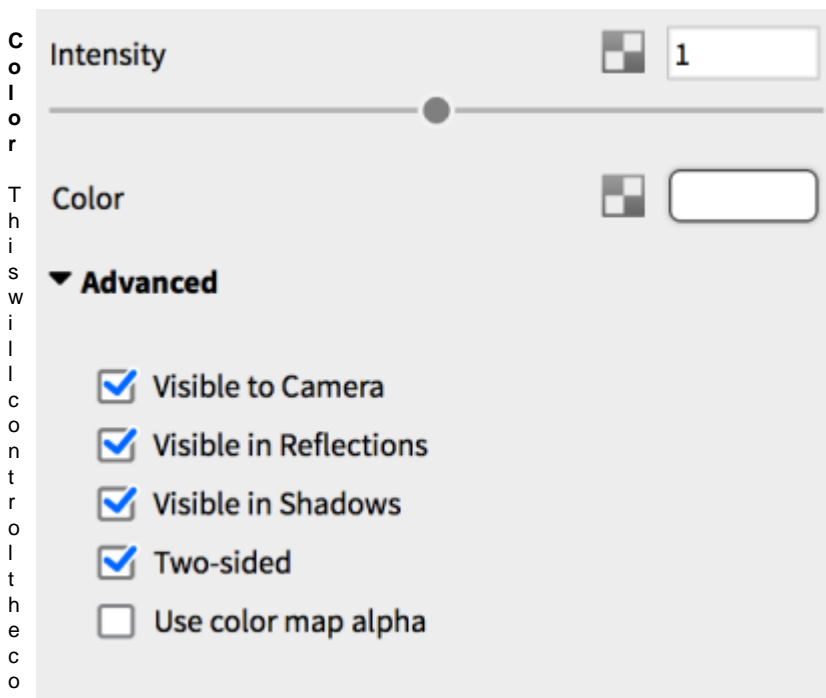Adjust the intensity of the light with this slider.

Radius
Here, you can adjust the radius to control the falloff from shadows cast from this light.

Emissive

The *Emissive* material type can be used for small light sources such as LEDs, lamps or even illuminated screen displays. It is not meant to illuminate scenes as a main light source. The emissive material will need "Global illumination" enabled in "lighting" to illuminate other geometry in the realtime view. It will also need ground illumination to illuminate the ground plane as shown. Color textures can be mapped to the material

and any colors included in the texture will be emitted as light. When using emissives, it is a good idea to enable "Bloom" under effects in realtime settings. This will create the glowing effect shown in the image.

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Color

▼ Advanced

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☑ Visible in Reflections

☑ Visible in Shadows

☑ Two-sided

☐ Use color map alpha

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r of the light emitted from the material.

Intensity
This will control the intensity of the light that is emitted.

Visible to Camera
Hide the emissive material from the camera, but the emissive material will still emit light.

Visible in Reflections
Hide the emissive material from any specular reflections. The effect of the emissive will only be seen on the diffuse component of materials.

Two-Sided
This will cause the emissive light to display on both side of the surface.

Use Color Map Alpha
This will allow you to use the alpha channel in the color map.

Ground

The *Ground* material type is a simplified material type for creating ground material.

Simply click *Edit* and select *Add Ground Plane*. This will add a ground plane into your KeyShot scene. The ground material can also be applied to imported geometry.

Shadow Color
The shadow that is being cast from the object will be displayed in this color. Clicking the color block will allow you to edit the color.
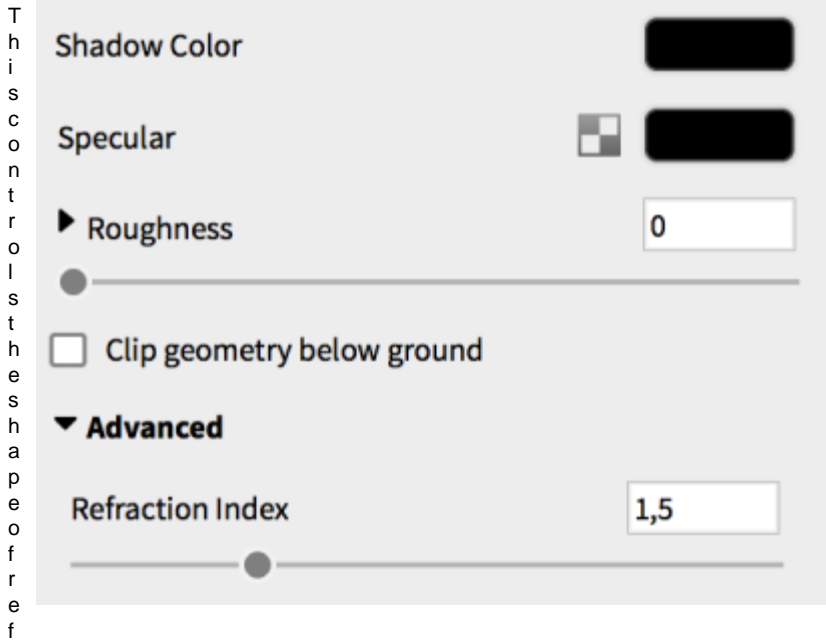
Specular
The ground material supports specular parameters.

Clip geometry below ground
If any geometry is being displayed below the ground plane material , this option will clip the geometry below the ground plane, hiding it from the camera.

Refraction Index

lected objects on the surface.

Toon

The *Toon* material type allows you to apply a solid color with contour lines to your 3D model. You are able to control the contour width, the number of contour lines, and whether or not shadows are cast onto surfaces. This is useful for creating sketches, product concepts, or technical illustrations. The Toon material type contains the following properties:

Color
This will control the fill color of the Toon material.

Contour Color
This will control the outline of the model.

Contour Angle
This will control the number of interior contour lines in the toon sketch. A lower value will increase the number of interior contour lines and a higher value will decrease the number of interior contour lines.

Contour Width
This will control how thin or how thick your contour lines will be.

Contour Quality
This will control the quality of the contour lines. Use a lower value to obtain a rough sketch look, or a higher value for a more clean and precise stroke.

Transparency
Increasing this value will allow light to pass through the geometry. Use this feature on transparent parts, or to show interior views of your model.

Shadow Color
This controls the color of the shadows on the model. Activated when the *Environment Shadows* under *Advanced* settings setting is enabled. A texture may be applied to control the appearance of the shadow,

Advanced

> **Contour width is in pixels**
> When enabled, the contour lines are defined using pixels. When this setting is disabled, the contour lines are defined using scene units.

> **Outline Contour**
> This will allow you to show or hide the outline in your sketch.

Interior Edge Contour
This will show or hide the interior contour lines in your sketch.

Material Contour
This will allow you to show or hide the contour line that separates each unlinked Toon material. If the Toon materials are linked, this setting will not have an effect.

Environment Shadows
This will reveal the shadows cast by the model onto itself due to the selected lighting environment.

Shadow Strength
When the *Environment Shadows* or *Light Source Shadows* setting is enabled, this controls the strength of each shadow type cast onto the Toon material.

Outline Width Multiplier
Increase this value to create a "perimeter line" effect with your Toon material. This will help pop the part from your scene and create a stronger visual contrast.

Part Width Multiplier
Use this to increase the line width of part contours and interior edge contours. It will not affect the scene unless *Part Contour* is enabled.

Part Contour
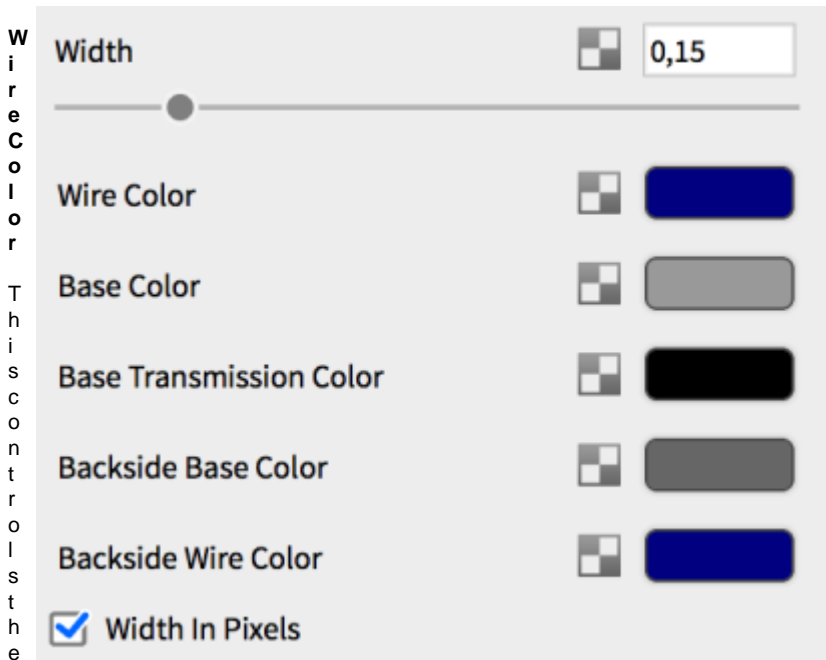Enable this to allow the use of the *Part Width Multiplier* setting.

Light Source Shadows
Controls the visibility of shadows produced by a Light Source (Point Light Diffuse, Point Light IES Profile, or Area Light Diffuse). The shadow appearance will change depending on the settings of your light source.

The following video shows how to quickly switch all materials in your scene to a single material.

Wireframe

The *Wireframe* material type exposes the lines and vertices of each polygon of a surface.

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Wire Color		
Base Color		

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Base Transmission Color		
Backside Base Color		
Backside Wire Color		
☑ Width In Pixels		

olor of the lines of the wireframe

Base Color
This controls the overall color of material, excluding the lines (Wire).

Base Transmission Color
This value controls the base color transmission. A lighter color will give the appearance of transparency.
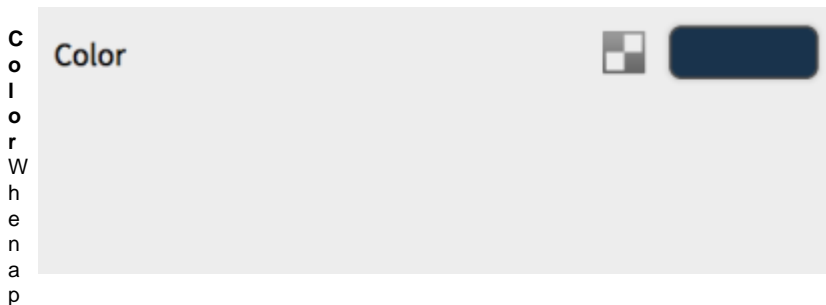
Backside Base Color
This controls the backside of the base color. On a cube this would be the inside of the cube.

Backside Wire Color
This controls the backside of the wire color.

Xray

The *Xray* material type provides a useful tool for illustrative renderings. It is often used to create a faded view through an outer shell.

Color

Color When a

plied to a part, the Xray effect works by showing more of the material color on areas of the surface that are being viewed at more of an angle. The surface is nearly completely transparent where it is viewed at a direct angle.

Axalta Paints

As the leading manufacturer of auto body paints, Axalta has created several collections of KeyShot materials that are an accurate representation of the real world paints they provide. Below you will find information and tips on how to use Axalta paints.

Saving Materials

There are two ways to save materials.

The first way to save materials is to right-click a material directly on the model and select *Add Material to Library*.

The second way to save materials is to click the *Save to Library* icon 💾 on the *Project* window, *Material* tab.

Once you have gone through either step, a dialogue will prompt you to designate a destination folder in the material library. After the folder location has been selected, the new material will be saved to the library.

Note: You may create your own folder to save custom materials by adding a folder to the *KeyShot Resources, Material* directory.

Color Library

The KeyShot Color Library lets you drag and drop predefined colors onto any part or object inside the realtime window.

PANTONE® and RAL® color libraries are included for use.

Searching for colors can be done by clicking in the search box in the top right and typing the name of the color. This allows you to search the entire selected folder for the specific color.

Searching can also be achieved by selecting the crosshair in the top right area of the dialog. This will open a window with a color picker that allows you to select the color you are looking for.

Color libraries can also be imported from a CSV file by using the import button and browsing to the file. When creating a CSV file, the color entries need to follow this format when using RGB:

name,r,g,b

The values can be separated by comma, semicolon, or tab. Other color spaces supported are: RGB (0-1), HEX, CMYK, HSV, CIE-L*ab

You can create colors manually within KeyShot by right-clicking inside the color library and selecting "Add Color."
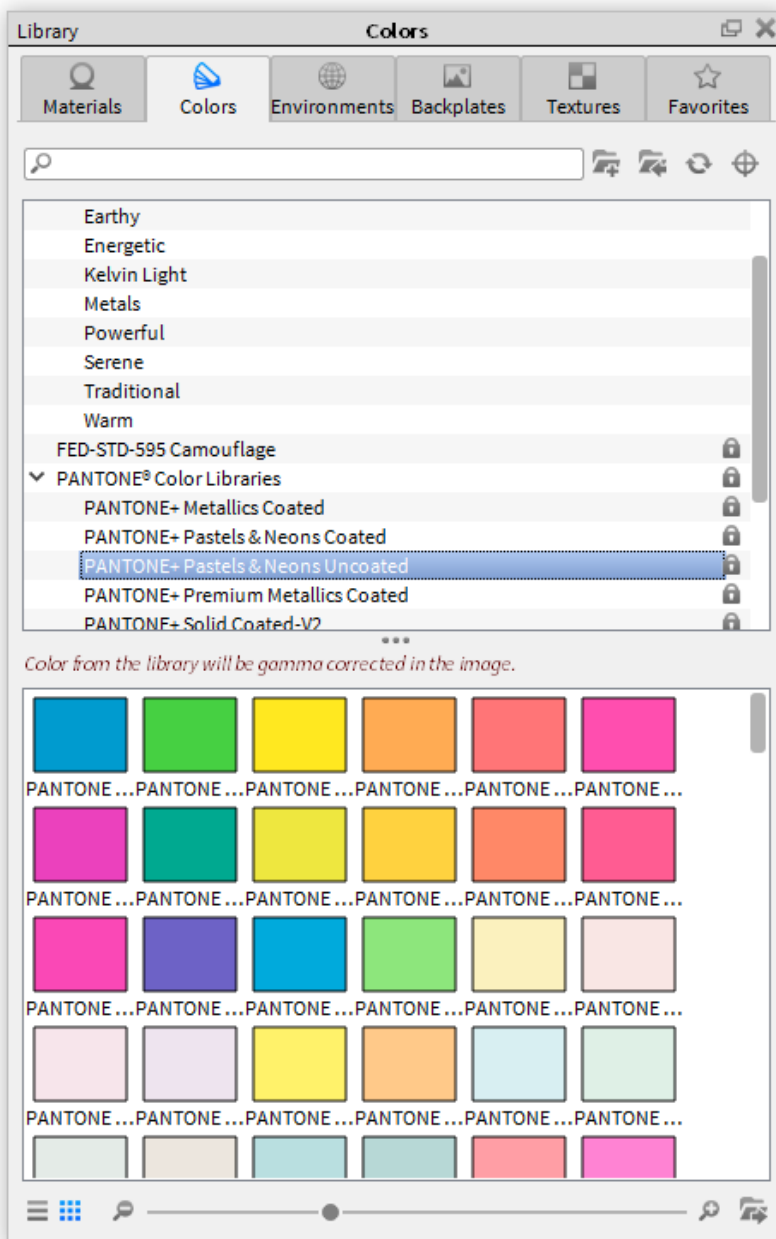
Color Picker

The color picker can be accessed anytime a color box is clicked as well as through the eyedropper tool in the color library. The color picker gives you the ability to test and view your colors visually, or by numerically entering in specific values. The color picker supports rectangular and triangular color map representations.

The color picker supports the following color formats:

- RGB
- CMYK
- HSV
- Grayscale
- CIE-L*ab
- Kelvin

Swatch colors (both new and old) can be dragged and dropped from the top color bars, to the bottom squares. This will set the color in the square. Swatches can be overwritten by simply dragging and dropping new colors onto existing ones.

The eye dropper button gives you the ability to select any color on your display, and the color picker will update with the selected color from the eye dropper.

To save colors to your library, click the save icon. This will prompt you to pick a folder where you would like to save your chosen color.
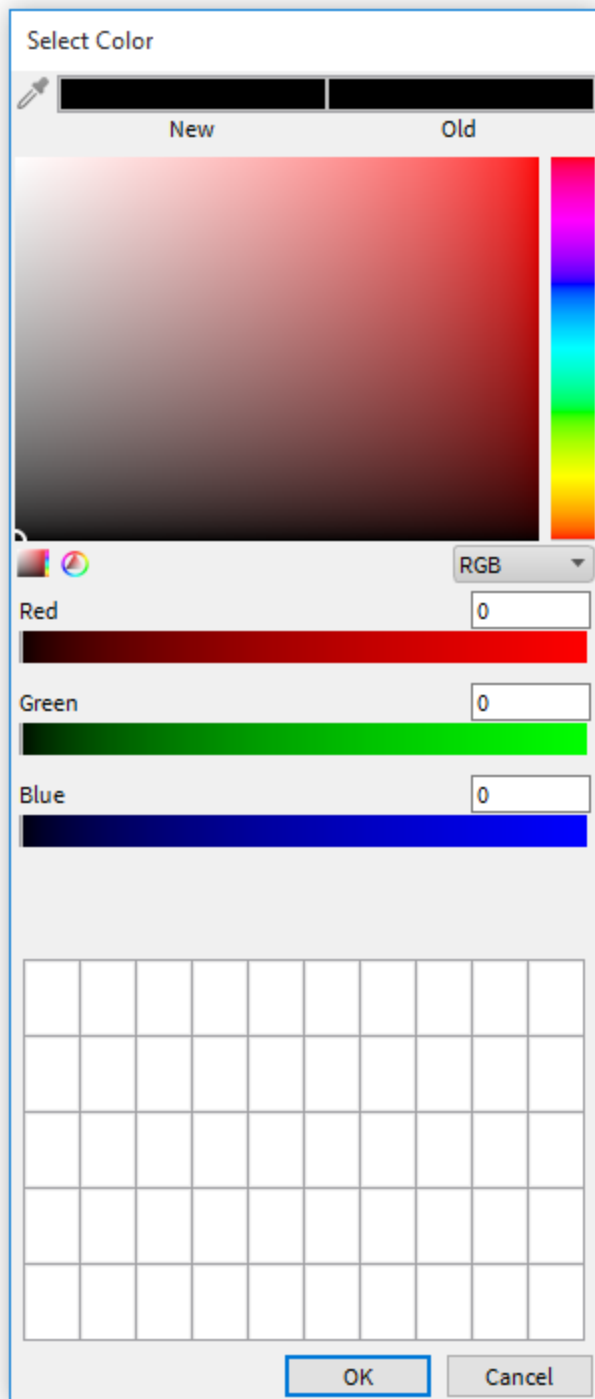
Material Graph

Advanced material editing is available through the KeyShot Material Graph. The Material Graph opens in a separate window and displays materials, textures, labels and more as nodes in a graph view to visualize connections and relationships within complex materials.

The Material Graph can be accessed through the Project window Material tab by KeyShot Pro users only. Click the Material Graph button at the top of the dialog to launch the Material Graph window. There are five components of the Material Graph window: menu bar, Ribbon, Materials & Textures Library, Material Properties, and the work area.
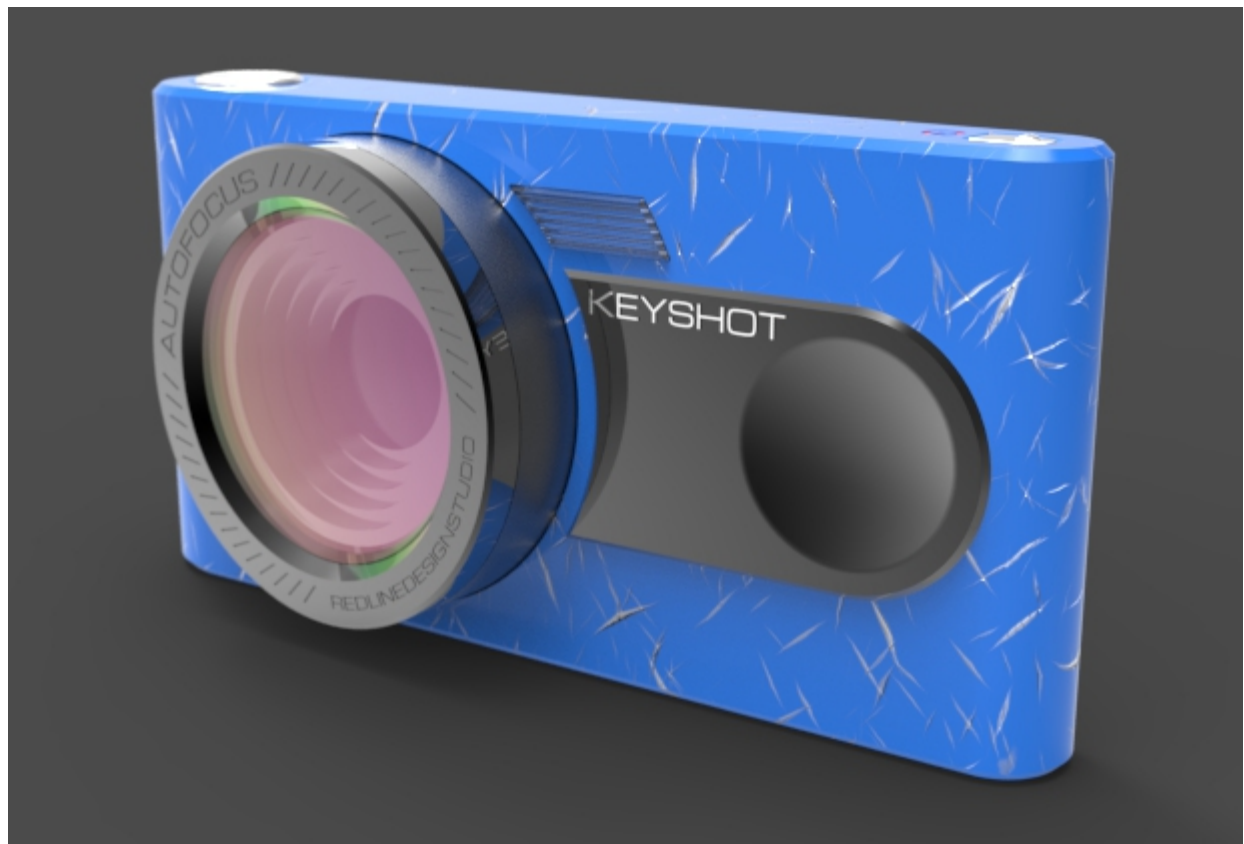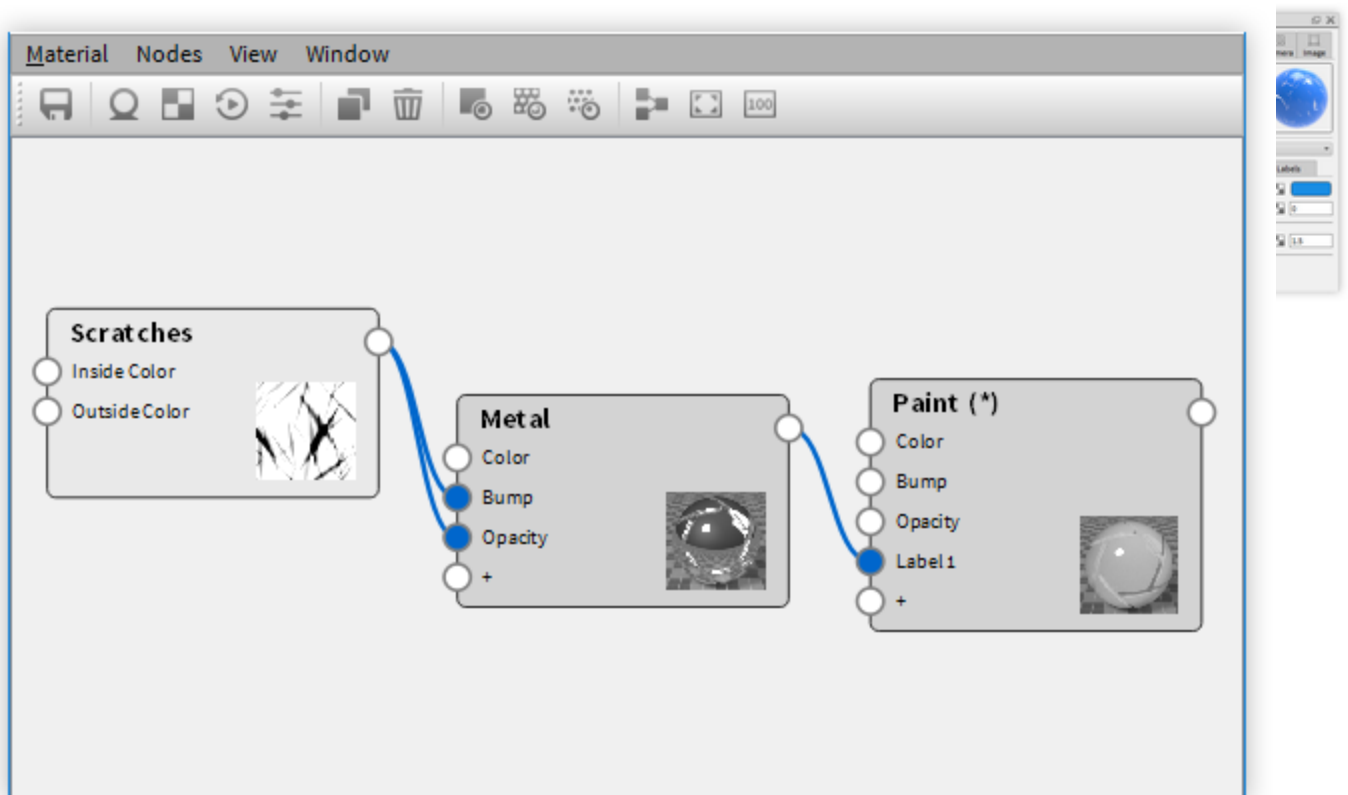
Material Graph User Interface

Material

New
This will replace the working material and any textures with a basic diffuse material to start from scratch.

Save to Library
will save the working material to the specified folder in your KeyShot Library. Export will save an .mtl file to the specified location. The Nodes menu provides quick addition of Material, Texture, Animation, and Utility nodes to the work area. The View menu gives you access to Layout Graph, which automatically arranges connected nodes in the work area. The Window menu gives access to hide/show the Materials & Textures Library and the Material Properties window.

Export

This will allow you to export your material as a KeyShot MTL file type in a specified folder.

Nodes

This provides quick addition of Material, Texture, Animation, and Utility nodes to the work area.
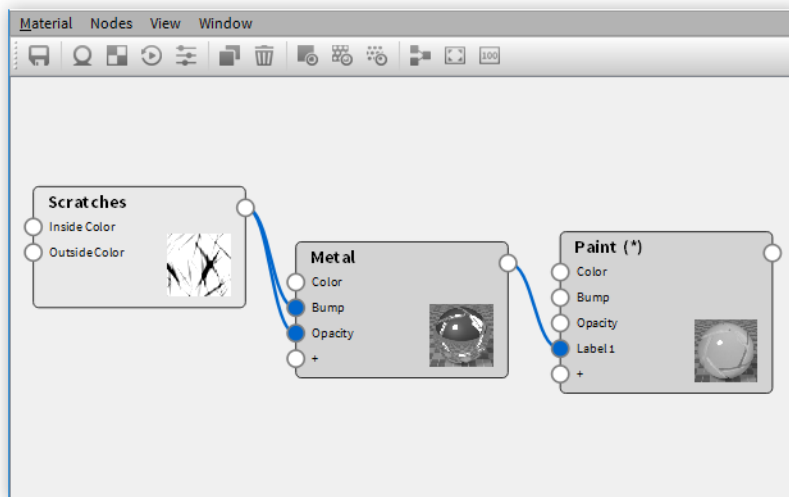
View

This gives you access to Layout Graph, which automatically arranges connected nodes in the work area. It also has the options for previewing individual node settings in the realtime window such as color, alpha, and bump. You can also stop the preview within this menu as well.

Window

This gives access to hide/show the Material Properties window, Materials & Textures Library, and the Material Graph Ribbon.

Material Graph Ribbon

The ribbon provides quick access to the same functions found in the menu bar with the addition of "Duplicate" and "Delete" selected nodes.

The quick-access node action icons add default nodes for each category. The Material icon adds an "Advanced Material" node. The Texture icon adds a traditional texture map and opens the file browser window to select your image file. The Animation icon adds a

Color Fade node. The Utility icon adds a Bump Add node.

Preview Modes

The ribbon also includes toggles for showing the preview modes found in "View" on the menu bar. To active a preview mode, select a node you would like to preview. After selecting a node, the available preview modes will become selectable. click on a preview mode to activate it, which will make the selected node red in the work area. To disable the preview mode, click on the activated preview mode again on the ribbon.

Work Area Controls

At the end of the Material Graph ribbon, you will find buttons for aligning the nodes within the work area, fitting all the nodes within the work area, and viewing the nodes at 100% zoom level.

Material Graph Libraries

The Materials and Textures Library contains an organized thumbnail display of all the same nodes found in the Nodes menu and the Work Area right-click menu.

Material Graph Properties

The Material Properties dialog shows the associated properties for the current node being edited—similar to the Material tab in the Project window but with access to all nodes.

Material Graph Work Area

The Work Area displays all nodes and connections of materials, textures, labels, material animations and utilities. Right click in the work area for access to the same nodes as those found in the Nodes menu. Select a node by left clicking. Select multiple nodes by left-clicking and holding *Ctrl* (*Cmd* on Mac). Use the marquee selection to select a group of nodes by holding Shift while clicking and dragging. Right click on a selection of nodes to delete or duplicate that selection. Zoom in or out of the Work Area using the middle mouse wheel and pan using the left mouse button.

Material Graph Nodes

Nodes are displayed as gray boxes in the Work Area. Each node has different input and output channels depending on the type.

Channel connections are made by clicking on an output channel and dragging and releasing directly onto an input channel or onto the node itself. When it is released onto the node, a context menu will show all the available channel options. Once a connection is made, a blue line will appear connecting the 2 nodes. Right click the line to remove or disable the connection. A disabled connection will be displayed as a grey dashed line. If you select a connection, it will turn light blue.

On this page:

Material Node Types

See Material Types covered in our Materials section.

Texture Node Types

See our Texture Types covered in our Textures section.

Animation Node Types

Animation nodes allow the manipulation of material color and settings.

Color Fade Node

The Color Fade animation node is unique in that it allows you to create changing parameters of any of your custom material color swatches. when you add a Color Fade node, an animation node will automatically be created in the animation timeline. Like other animation nodes, you can select the node and change the settings in the animation properties window.

Color Bar
Here you can set what colors will fade from one to the the next. Click on the dropper circle to select it, then use the color swatch to choose a color. If you would like to add more than 2 color to fade to, click on an empty area below the color bar to create another color swatch. click and drag the color pins and the gradient apex slider to your desired animation effect.

Time
With a color selected on the color bar, you can enter in where in the timeline it will become the selected color.
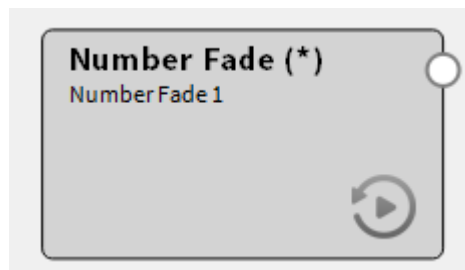
Time Settings
Use these settings to fine tune your Color Fade animation in your scene.

For more details about time animation and time settings, click HERE.
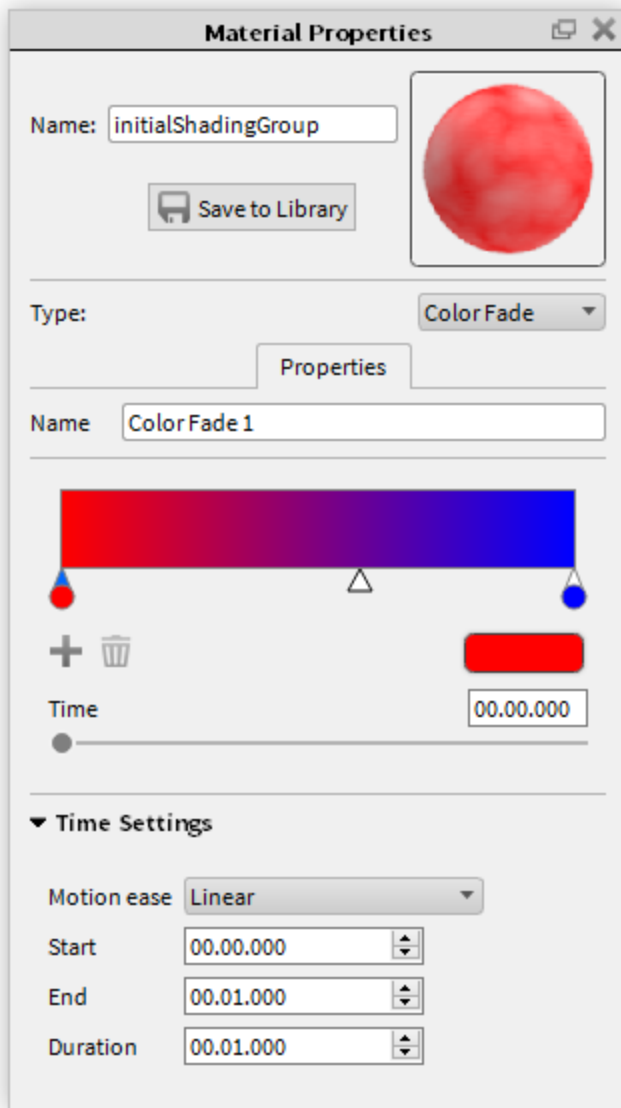
Number Fade Node

The Number Fade animation node is unique in that it allows you to create changing parameters of any of your numerical properties within your custom material. when you add a Number Fade node, an animation node will automatically be created in the animation timeline. Like other animation nodes, you can select the node and change the settings in the animation properties window.

From
Enter the numerical value you would like the animation to start at. use the sliders, or type in a specific value.

Time
Enter the numerical value you would like the animation to end at. use the sliders, or type in a specific value.

Time Settings
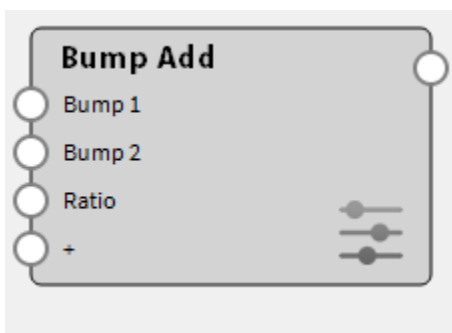Use these settings to fine tune your Number Fade animation in your scene.

For more details about time animation and time settings, click HERE.

Material Properties

Name: initialShadingGroup

[Save to Library]

Type: Number Fade

Properties

Name   Number Fade 1

From   0

To   1

▼ Time Settings

Motion ease Linear

Start   00.00.000

End   00.01.000

Duration   00.01.000
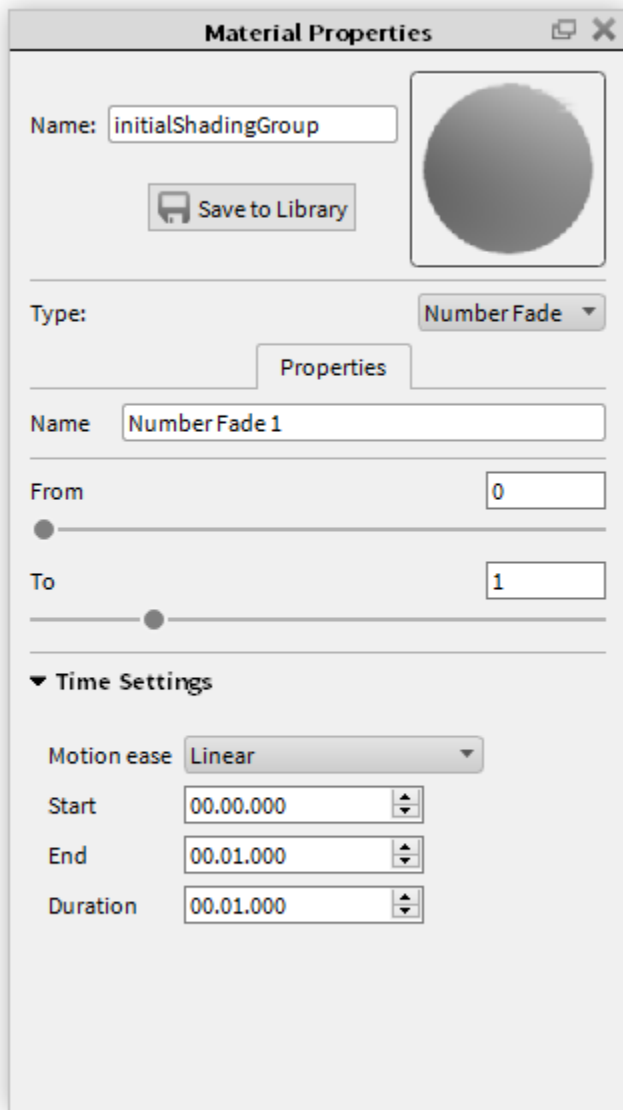
Utility Node Types

Bump Add

Combine two bump texture maps or procedural textures. Control their interaction by defining the Ratio and Weight in which the two bumps are visible.

Bump Add
- Bump 1
- Bump 2
- Ratio
- +

Ratio		0,5

Weight 1		1

Weight 2		1

Color Adjust

Colorize and/or modify the existing color of a texture map or procedural texture by adjusting Hue, Saturation, Value, and Contrast.

Color Adjust (*)
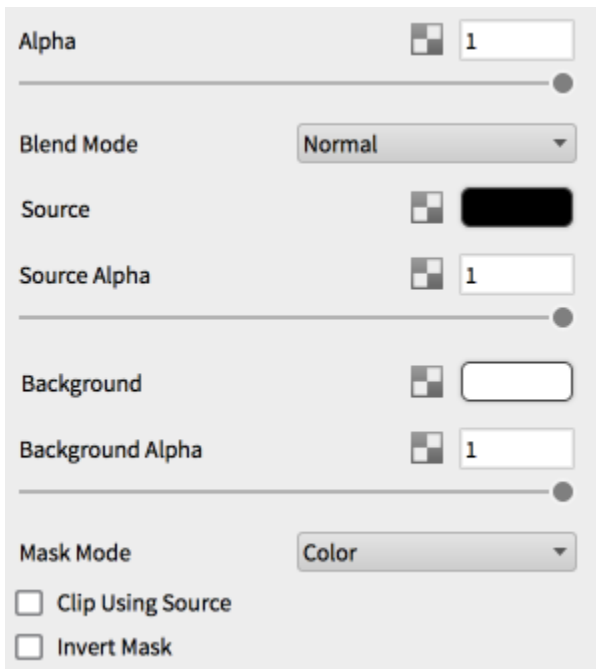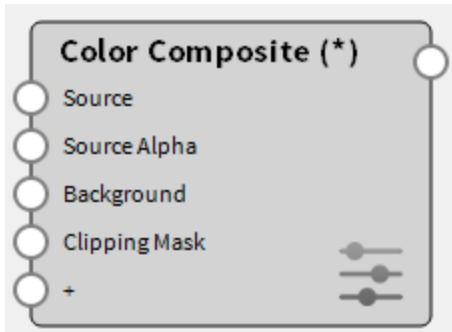- Color
- Colorize
- Value
- Contrast
- +

Color		⬛

Colorize		⬜

Hue		0

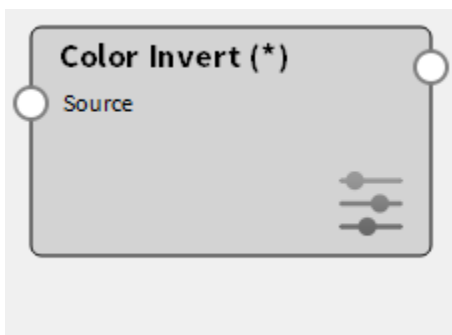| Saturation		1

Value		1

Contrast		1

Color Composite

Layer and combine two texture maps or procedural textures with control of Blend Mode and Alpha (transparency).

Color Invert Utility Node

Invert the color of a source texture map or procedural texture.
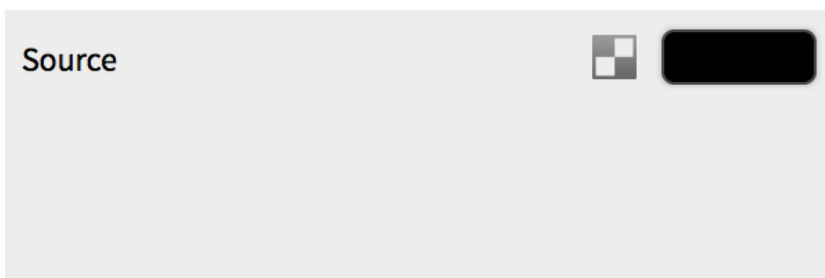
Color Key Mask Utility Node

Mask a specified color within a texture map or procedural texture. Control the strength of the mask by adjusting Threshold and Fuzziness.
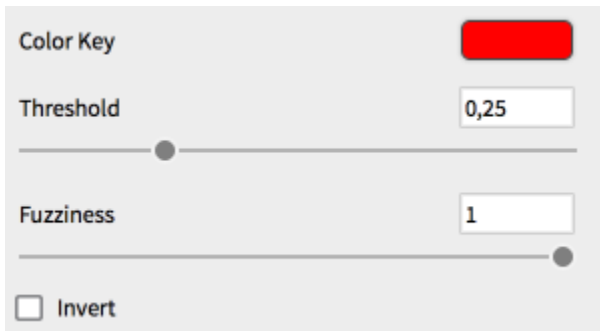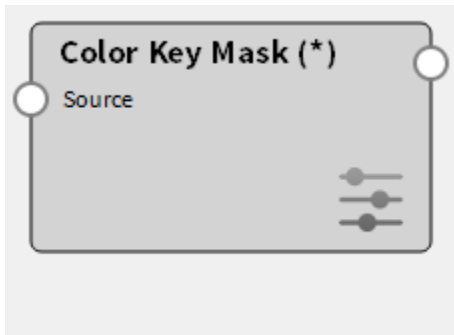

Color To Number

The Color to Number node converts a Color to a single number. This is usually done implicitly such that black is zero and white is 1, however there are times where you need more control. This is quite useful e.g. for roughness maps where you can use Color to Number to easily map a black/white image to go from e.g. 0.05 to 0.10 – this would be hard to do otherwise.

Mode	Value ▾
Input From	0
Input To	1
Output From	0
Output To	1
☐ Smooth	
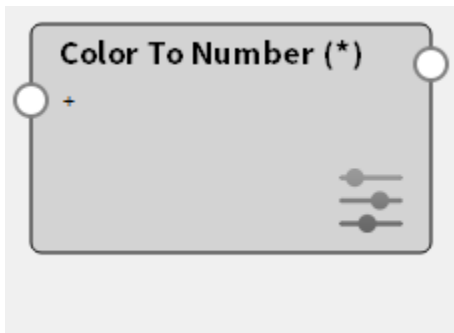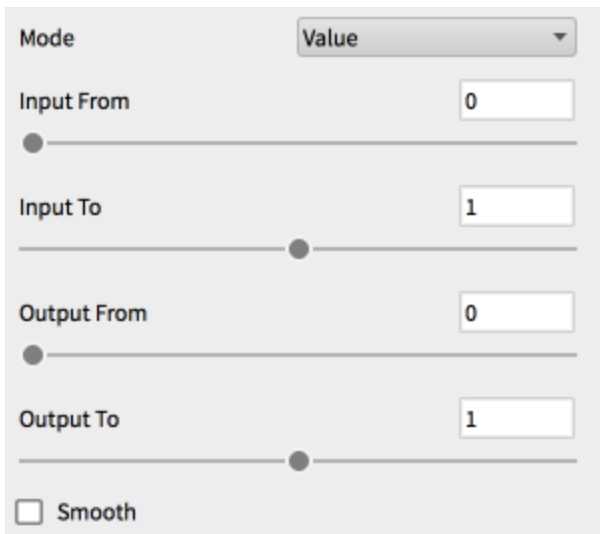
Color Curve Randomize

Add color randomness to curves that are assigned a solid color, texture map, or procedural texture.

Map	
Hue	0
Saturation	0,3
Value	0,3
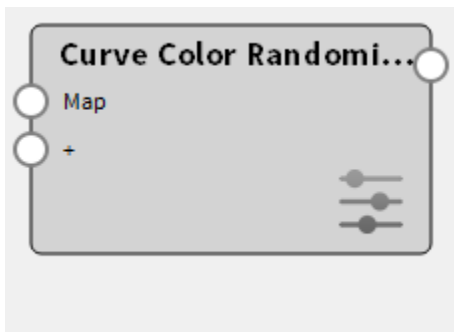
Multi-Materials

Any material can be turned into a Multi-Material to facilitate non-destructive material swapping, variations or color studies. The Multi-Material allows you to cycle through a variety of materials within a single "container" material.

Converting to Multi-Materials

In this section:

- Converting to Multi-Materials
- Adding Multi-Materials
- Viewing Multi-Materials
- Saving Multi-Materials
- Removing Multi-Materials

When editing a material select the three-arrow *Multi-Material* icon above the *Material Type* dropdown to convert a single material to a Multi-Material.

Warning: Dragging and dropping a material from the library onto the part will overwrite the multi-materials applied. Use *Ctrl-Z/Cmd-Z* to Undo.

Adding Multi-Materials

There are several ways to add a new material to the Multi-Material list:

Drag-and-drop
Simply drag-and-drop a material preset from the Materials library into the Multi-Material list.

New Plastic

Select the *New Plastic* icon on the left of *Multi-Material* list. This will add a standard Plastic material.

Duplicate Material

Select the *Duplicate Material* icon on the left of the *Multi-Material* list. This will duplicate the material selected along with any texture and/or label, but keep the textures and labels unlinked.

Duplicate Material and Link Textures

Select the *Duplicate Material and Link Textures* icon on the left of the *Multi-M aterial* list. This will duplicate the material selected along with any texture and/or label, but keep the textures and labels linked.
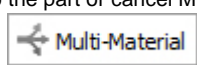
Viewing Multi-Materials

To view or edit the different materials in your list, simply select a material to make it active in the *Real-time View*. You may also use the arrow keys to cycle up or down through the list.

Saving Multi-Materials

Like regular materials you create, you can also save Multi-Materials. To save a

Multi-Material, select the save icon and select the folder you would like to save it in.

Removing Multi-Materials

To remove a material from the *Multi-Material* list, select the trashcan icon or hit *Del ete*. Additionally, you may overwrite all materials added to the list by dragging and dropping another material onto the part or cancel Multi-Material setup by selecting the

three-arrow *Multi-Material* icon to close the Multi-Material list.

Material Templates

Material templates automate the material application process. Materials from the KeyShot library are applied to parts based on the name of each part's original materials. The material template menu is found in the *Window* menu bar.

Create/Delete Templates

Create a new template by clicking on the add icon. Two methods can be used in creating a material template, "Automatic" and "Manual".

Automatic – If a model is in KeyShot when you create a new template, the source and
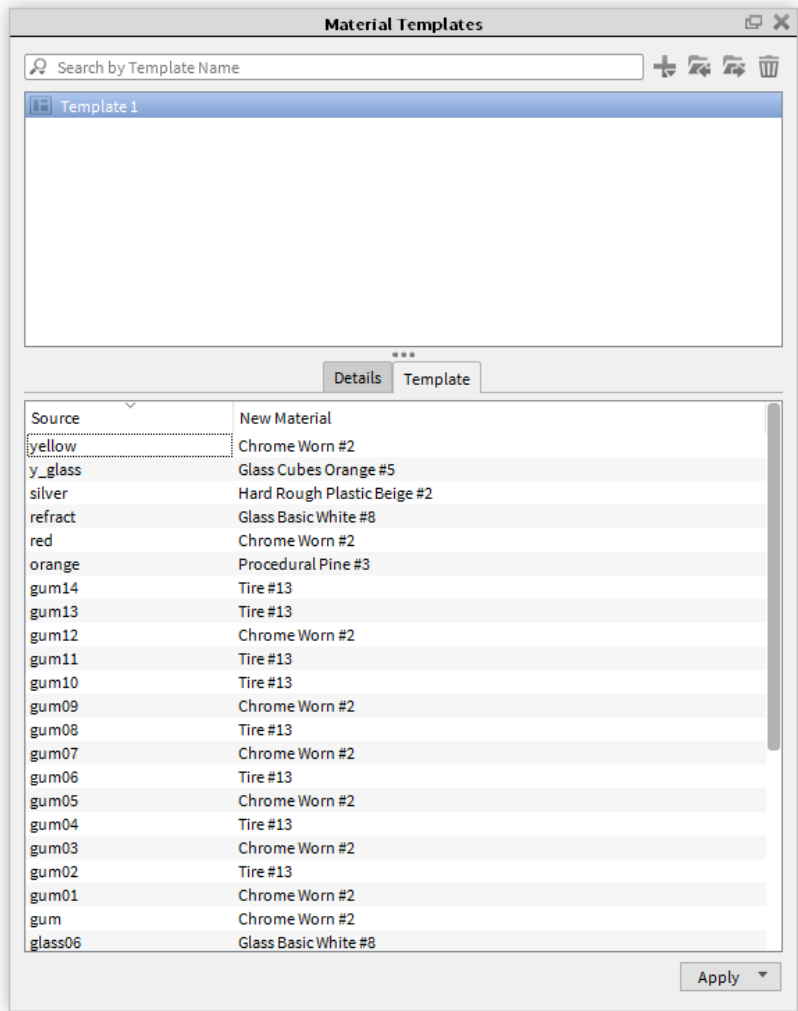
material names are automatically populated based on the material applications in the current scene.

Manual – An empty template is created and you can add template items manually.

Each new template is added to the template list, which can be accessed with any scene opened in KeyShot.

Template Items

A template item consists of a source name and material name.

Use the " + " button to create a new item.

Click an item to select the item from list and edit its source and destination name. You may also change the source type.

Source Type
The source type can be "Part" or "Material." The part type considers the part names in the scene. The material type considers the material names in the scene.

Source Name
Depending on the source type, the source name is the name of the part or the name given to the default material applied to parts of your models. The naming of your default materials is controlled in the modeling software.

Destination Name
The destination name is the name of the material from the KeyShot library that is to be applied to all parts that match the source name. When editing the destination name, you can type the name or drag and drop a material from the library into the templates menu.
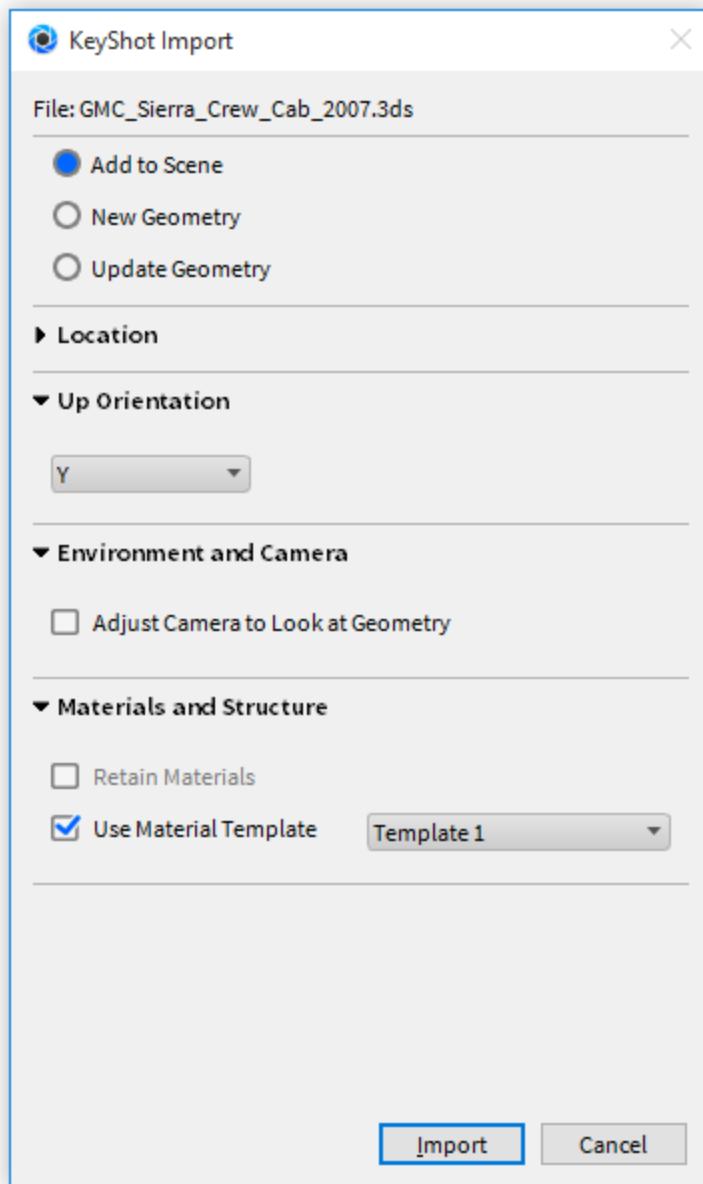
Applying Templates

Applying templates can be done through the "Material Templates" window or the import window.

- **Material Template Dialog**
  Templates can be applied using the "Apply" button. This will give you two options: "To Scene" or "To Selection."
- **To Scene**
  Apply the current template to the selected model or part.
- **To Selection**
  Apply the current template to the selected model or part.
- **Import Dialog**
  Expand the "Materials and Structure" section to reveal the "Use material template" checkbox. Enable this setting and select the desired template from the list. Click "Import" to complete the import.

Wild-Card Assignment

The wild card refers to the practice of applying a material to several parts using the source name. This can be activated by inserting asterisks (*) to the source name (e.g. *Inner*) this will apply the material in the destination to all the parts containing "inner" when the material template is applied.

KeyShot Import   ✕

File: GMC_Sierra_Crew_Cab_2007.3ds

● Add to Scene
○ New Geometry
○ Update Geometry

▶ Location

▼ Up Orientation

    [Y   ▼]

▼ Environment and Camera

    ☐ Adjust Camera to Look at Geometry

▼ Materials and Structure

    ☐ Retain Materials
    ☑ Use Material Template   [Template 1   ▼]

                        [Import]   [Cancel]

Textures

Textures allows images to be mapped to materials to create detailed effects such as wood grain, meshes tile as well as fine imperfections such as brushed metals. Textures are applied in the *Material* properties tab under the *Texture* tab. The following sections outline the types of textures in KeyShot and how to work with each.

Texture Library

Access the KeyShot *Textures* Library by clicking the *Library* button on the main toolbar, selecting *Window, Library* from the main menu or by hitting the '*M-key*'. The textures located here provide a range of textures to use for bump maps, color maps, gradients, labels and more. These textures provide a fast way to start applying textures to your materials for added realism or a starting point for developing your own textures.

More textures are available on KeyShot Cloud.

Texture Types

KeyShot has three primary types of Textures that can be applied to materials: I*mage Textures, 2D Textures,* and *3D Textures.* Each of these are accessible from the *Project* window, *Material* tab*, Texture* tab. Image Textures use an image file as a texture. 2D and 3D Textures are procedurally generated textures. The three types of Textures include:

Non-Procedural	Procedural		Other
Image Textures	**2D Textures**	**3D Textures**	**Animations**
• Texture Map • Tiled UV • Tri-Planar • Video Map	• Brushed • Mesh • Weave	• Brushed (Radial) • Camouflage • Cellular • Granite • Leather • Marble • Noise (Fractal) • Noise (Texture) • Scratches • Spots • Wood • Wood (Advanced)	• Color Fade • Number Fade

About Procedural Textures

Procedural textures are computer-generated, customizable textures that allow you to control the values and color of the texture. KeyShot allows you to create textures in real-time viewing the changes as you make them. In comparison to traditional texture mapping, procedural textures wrap around your model without leaving seams or stretching, regardless of the model's shape. Use the *Texture* type dropdown to choose the procedural texture you would like to use.

Texture Map

A *Texture Map* is an type of Image Map. Texture maps and their settings can be viewed in the *Project* window, *Materials, Textures* tab.

Adding a Texture Map

Double-click the texture Map Type (e.g. Color, Specular, Bump) you would like to add a texture to. This will open a window where you can choose the image file to apply as a texture map. You may also drag and drop textures from the Textures library.

Removing a Texture Map

If you want to delete a Texture Map, right-click on the texture *Map Type* and select *Dele*

te or select the trashcan icon 🗑 next to the *Texture* dropdown. This will remove the selected texture from your material. If you make changes to the image file used for the

Texture Map, select the Refresh icon 🔄 to update the *Texture Map* and see the changes. If you would like to replace the image file used for the *Texture Map*, select the

File icon 📁 to choose a new image file.

Tiled UV

A *Tiled UV* texture is an type of Image Map. *Tiled UV* textures and their settings can be viewed in the *Project* window, *Materials, Textures* tab.

More details on this new feature soon...

Tri-Planar

Tri-Planar texture is an type of Image Map. Tri-Planar textures and their settings can be viewed in the *Project* window, *Materials, Textures* tab.

More details on this new feature soon...

Video Map

A *Video Map* texture is an type of Image Map. *Video Map* textures and their settings

On this page:

- Adding a Texture Map
- Removing a Texture Map

can be viewed in the *Project* window, *Materials, Textures* tab.

With a Video Map textures, image sequences can be set as Textures (or Labels) to animate device displays and much more. The supported formats at the moment include avi, mp4, mpeg, flv, webm, dv, f4v, mov, mlv, m4v, hevc, ogg, and ogv. Note: Some formats may have variants encoding which are not supported (for example, avi may include encodings which may not be directly supported.)

Adding a Video Map

From *Project, Materials, Textures* select *Video Map* from the *Texture* dropdown menu or *Add Label (Video)* from the *Labels* tab. Select an image sequence in the file browser or a video file to extract the frames. This will create a node in the *Animation Timeline* in which you can position and adjust the animation similar to other Animation types.

Brushed

The Brushed procedural texture simulates the effects of brushed metal. It is best used as a bump on a metal material with low a roughness value.

Color 1/2
Use this to set the color for the highlights and shadows of the texture.

Bump Height
Use this to set the depth of the brushed texture

Length
Use this to control the length of the brush strokes.

Contrast
Use this to control how defined the brush stokes are.

Mesh

Create a pattern of shapes that can be used for meshes in the opacity map, or a shape pattern in color maps.

Color 1
This sets the background color. Set the color to white if using "Lattice Polygon"as an opacity map.

Color 2
This sets the shape color. Set the color to black to create holes if using "Lattice Polygon" as an opacity map.

Lattice Parameters

- **Lattice Angle**
  Choose the type of projection used.
- **Spacing U/V**
  Change the scale of the overall texture.

Shape Parameters

- **Radius**
  This allows you to change the size of the shape in the pattern.
- **Sides**
  Increase this value to change from a square (4), Pentagon (5), and hexagon (6).
- **Shape Rotation**
  Use this to rotate the shape within the pattern.
- **Falloff**
  Increase this value to feather the edge of the shape.

Noise Parameters

- **Jitter**
  Increase this value to add deviation to the pattern.
- **Distort**
  Increase this value to randomly distort the shape.
- **Distort Scale**
  A greater than one value decreases the distortion scale. A less than one value increases the distortion scale.
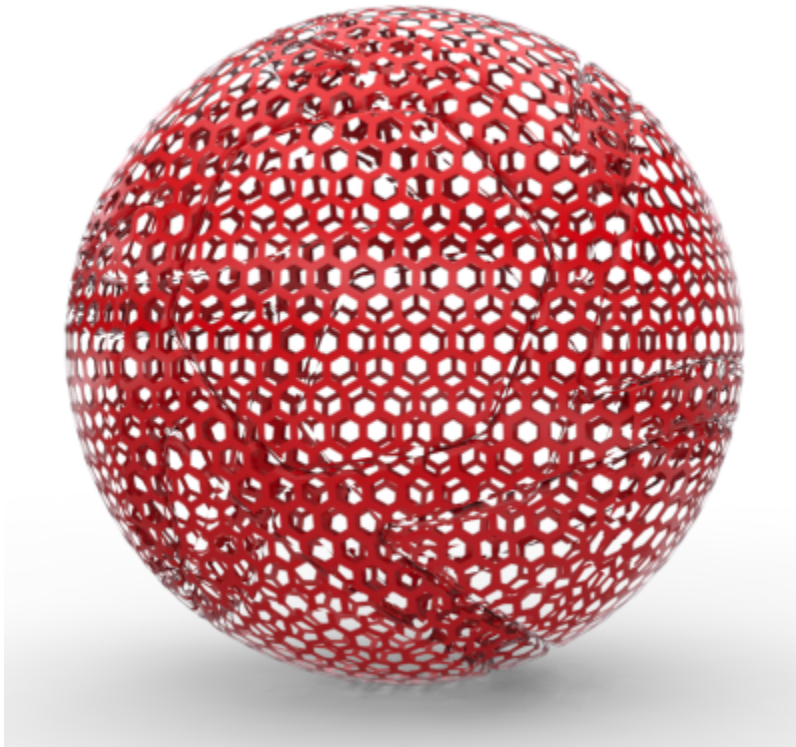
Weave

Weave simulates many types of fabrics and fine woven meshes.

Gap Color
This will designate the color in between the woven colors.

U/V Thread Colors
Assign the colors of your threads to affect the overall color of the weave.

U/V Width
Controls the thickness of the threads.

U/V Wave
Changes the direction of the threads within the weave to simulate different types of woven patterns.

Contrast
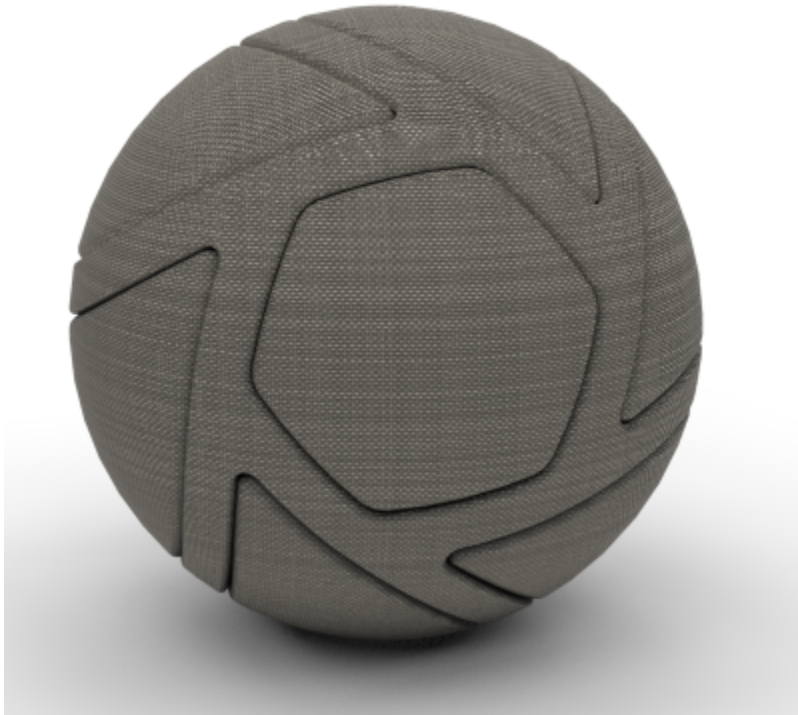Increase or decrease the contrast of the threads.

Width Noise
Controls the uniformity of the thread widths.

Color Noise
Controls the uniformity of the thread colors.

Distortion Noise
Controls the uniformity of the thread straightness.

Brushed (Radial)

Use the Brushed (Radial) procudural texture for a spun brushed metal finish.

Mapping Tool
Use the mapping tool to place the center of the brushed texture.

Color 1/Color 2
Choose contrasting colors here to create a ringed brushed pattern.

Scale
Use this to control the over all scale of the texture.

Angle Noise
Increase this value to vary the width of the rings.

Distortion Noise
Increase this value to deviate the rings from a perfect circle. For a traditional spun brushed finish, you will want to leave this parameter at 0.

Radius
Use this to control the amount of rings are generated.

Falloff
Increase this value to reduce the contrast between the colors selected.

Radial Axial Blend
Use this to create continuous textures on a cylindar that continues into a rounded cap. For most applications you will leave this at default.

Camouflage

Use the Camouflage procedural texture to simulate camouflage textures used in the real world.

Color 1/2/3/4
Set the mix of colors to be used in the texture.

Scale
Change the scale of the overall texture.

Color Balance
Colors 1-4 are disperesed through the pattern in decending order, so there there are more spots of color 1 than color 3 or 4. Increase this parameter to balance the ratio of colors, or reduce the parameter to increase the difference.

Distortion
Change this parameter to control the amount of shape complexity the spots have.

Spray
Increase this parameter to feather the edges of the spots.

Mix Colors
Enable this option to allow the colors to blend as they overlap.

Cellular

The Cellular procedural texture is an advanced tool that can create a wide variety of texture maps. You can create a hammered texture as seen here, or you can create cracked surfaces, orange peel paint, crumpled paper, and more.

Scale
Use this to set the scale of the scale of the texture.

Bump Height
Use this to control the overall intensity of the texture map

Contrast
Contrast refers the to the difference in the peaks and valleys of the bump map. Control them globally, or expand for finer controls.
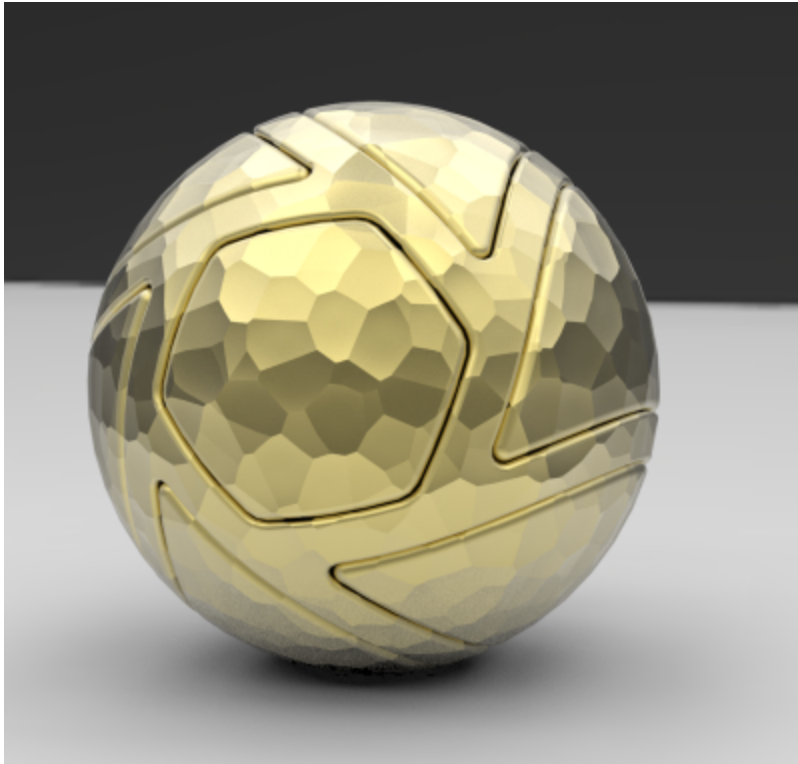
Shape
Control the fractal shapes generated with this slider. Control them globally, or expand for finer controls.

Levels
Increase or decrease the levels of fractals being generated. Control them globally, or expand for finer controls.

Noise
Use this slider to add noise to the line quality of the fractal shapes

Color Gradient

The Color Gradient Procedural Texture allows you to mix two separate colors on a surface without having to create a custom texture map.

Mapping Tool
Use this to move the center line of the gradient.

Colors
Double click a color slider to select what color will be applied to the color gradient. Use the triangle slider to determine the midpoint of the gradient. To add another color to the gradient, click the "+" icon. To delete a color, select the color slider to be deleted, and click the "Trash" icon.

Location
Adjust this to numerically control the selected color slider.

Gradient Type
Use the dropdown to choose a gradient type that suits your needs.

Scale
Use this to set the scale of the texture.

Angle
Use this to incrementally rotate the texture on the surface in degrees.

Shift
use this to incrementally shift the texture on the surface.

Invert
Reverse the direction of the gradient.

Curvature

Use the Curvature procedural texture to analyse surface curavature in your model and parts.

Negative Curvature
Choose a color to display when surface curvature is going into the negative direction. The more severe the the angle, the closer to the set color the texture will be.

Zero Curvature
Choose a color to display where there is zero curvature. The closer to flat a surface is on the model, the closer color will become to the the chosen color.

Positive Curvature
Choose a color to display where the surface curvature is going into the positive direction.

Cutoff
Control the scale of the curvature. Decrease the value to have a smaller range of curvature. Increase to have a larger range of curvature.
Radius
Radius refers to the radius around each point on the surface in which curvature is estimated.
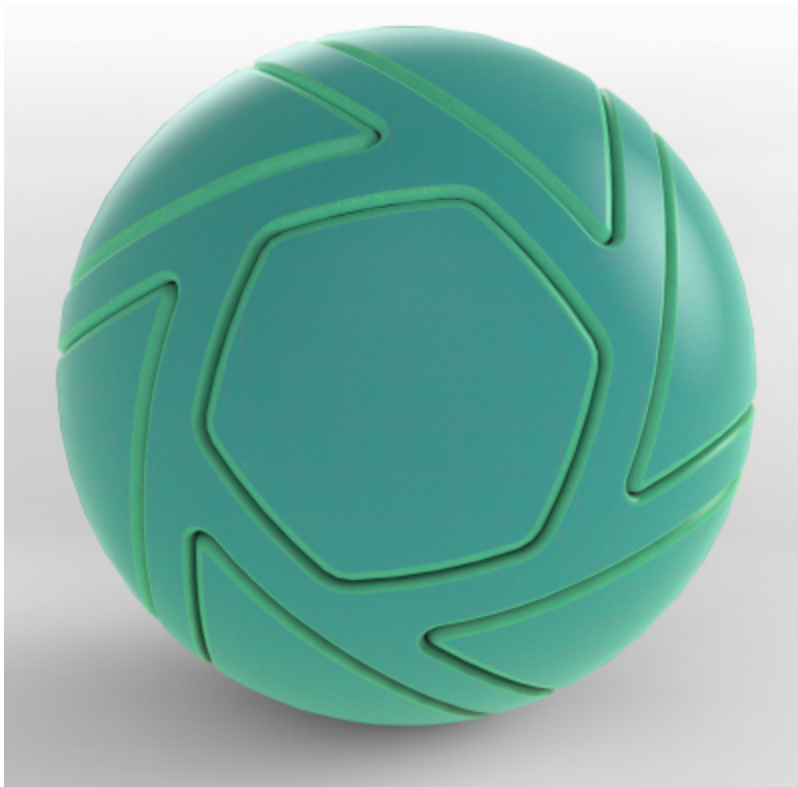
Samples
Increase the samples to improve the quality of the gradations. Increasing this parameter also increases render time.

Adaptive Radius
Enable this toggle to even out surface gradations.

Sample Same Material Only
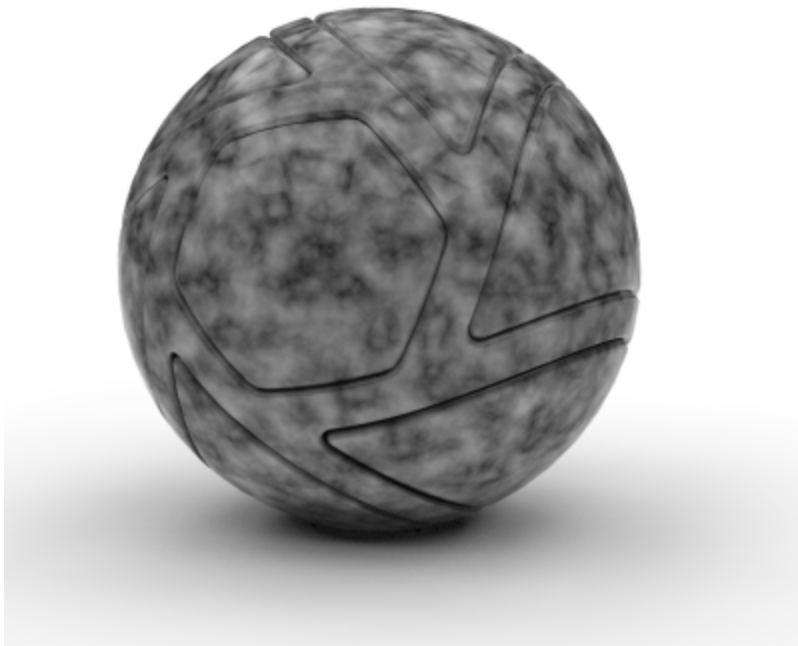Enable this toggle to use the curvature data from this material only.

Granite

The Granite procedural texture allows you to simulate the granite texture of a counter top, tile, or stone.

Color
This is the overall color of your granite texture.

Scale
This controls the scale of the grain in the granite.

Leather

The Leather procedural texture allows you to easily replicate a leather textured material.

Color 1
This is the color of the high points (bumps) in leather. This color should be lighter than color 2, but it should be as close to color 2 as possible for realistic looking leather.

Color 2
This is the color of the low points in leather. This color should be darker than color 1, but it should be as close to color 1 as possible for realistic looking leather.

Scale
This controls the scale of the leather grain.
It is highly suggested that you add a synced procedural leather bump to further simulate realistic leather.

Marble

The Marble procedural texture allows you to simulate the marble material on a counter top, tile, or stone.

Color 1
This is the overall color of your marble texture.

Color 2
This is the color of the veins in the marble texture.

Vein Thickness
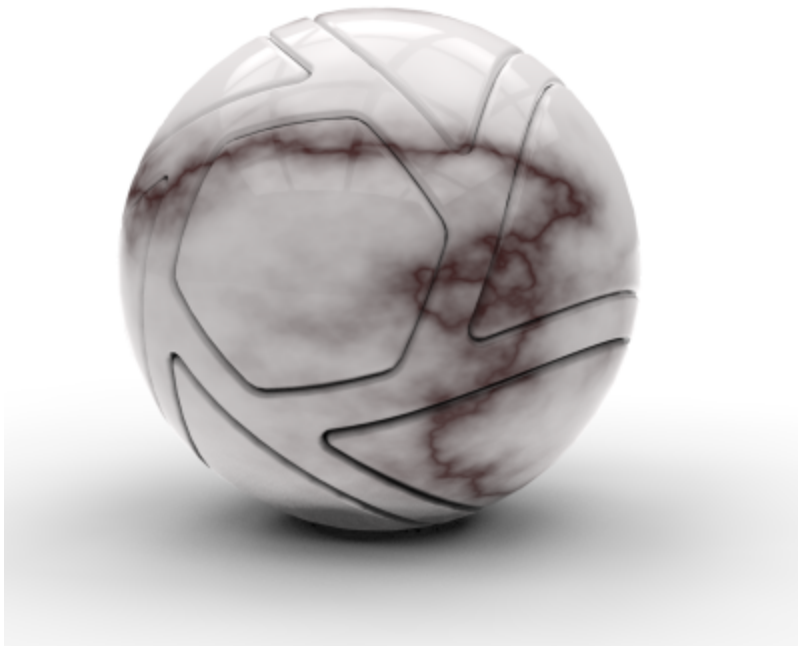This allows you to adjust the thickness of the marble veins.

Vein Noise
This adds random fluctuations to the marble veins.

Vein Noise Scale
This adds fluctuations to the overall direction of the marble veins.

Scale
This controls the scale of the veins in your marble texture.

Noise (Fractal)

The Noise (Fractal) procedural texture also allows you to simulate ripples and bumps in your material.

Colors 1 and 2

The noise procedural has light and dark colors that you can modify using these two settings.

Scale

This controls the scale of the fractal noise.

Levels

This adds more detail to the fractal noise.

Fall-off

This controls the color balance. Low values accentuate color 2, and high values accentuate color 1.

Noise (Texture)

The Noise (Texture) procedural texture is very similar to the stock noise texture in the textures library, and it allows you to simulate ripples in glass and liquid materials when used as bump.

Colors 1 and 2
The noise procedural has light and dark colors that you can modify using these two settings.

Scale
This controls the scale of the noise.

Magnitude
This increases the intensity of color 2 and the contrast between the two colors.

Occlusion

This new procedural texture type allows for the addition of proximity-based shading on a material. It can be used to accentuate or augment the self shadows cast on a material and along with the Material Graph, create interesting texture effects based on occluded and unoccluded areas.

Unocludded

Choose a color that will be used where there is least amount of surfaces near each other. this will most likely be the base color, although there are other creative applications of this procedural texture.

Occluded

Choose a color that will be used where there are surface near each other. Examples would be a parting line, a fold of skin, or a narrow alley. For more natural results, choose a color that is a darker value of your "Unoccluded" color to create deeper shadows.

Radius

It is the maximum distance towards any occluding object. If an object is further away it will not be considered in the occlusion computation. This value will control how deep or far the shaded "Occluded" color will reach on the model.

Falloff

This value controls how blended the two color are.

Bias

The bias settings control the intensity of the occlusion on the model.

Normal

This setting adjusts the contrast between the "Unoccluded" and "Occluded" colors on the model

X/Y/Z Bias

These settings increase the intensity of the "Occluded" color in relation the X, Y, and Z directions of your scene.

Advanced

- **Samples**
  this setting controls the quality of rendered image.
- **Sample Same Material Only**
  Enabling this option with only calculate the occlusion in relation to parts with

this material applied, ignoring other parts.

- **Inside**
  This will invert the normal values to determine occlusion. this is useful when applying this material on a part that was not modeled with interior surfaces.
- **Fast**
  Since the Occlusion procedural texture emulates what is happening with global illumination, you can choose to ignore GI calculations on this material for faster renders.

Scratches

Scratches is great way to add weathering to materials, and to metal materials in particular.

Scale
Use this to set the correct scale of the pattern generated.

Bump Height
Increase this value to have deeper scratches.

Density
Use this to control the number of scratches generated.

Size
Use this to set the size of the individual scratches. Expand to control the scratch width and scratch falloff.

Directional Noise
This controls the randomness of the direction of the scratches. Decrease this value to have scratches in a more aligned direction. Expand to choose mapping.

Noise
Controls the straightness of the scratches. Increase the value to have more irregularly shaped scratches. OR irregular scratches. Expand to access the noise scale slider.

Levels
Controls the number of unique scratches that are generated. Expand to access the level scale.

Spots

The Spots procedural texture is a an interactive method of creating a texture map of scattered spots on a surface.

Inside Color
Use this to set the color of the spots generated.

Outside Color
Use this to set the color of the background.

Scale
Use this to control the overall scale of the texture map.

Density
Use this to control the number of spots that appear on your surface.

Radius
Use this to change the overall size of the spots generated.

Falloff
Feather the edges of your shapes with this parameter.

Distortion
Increase this parameter to randomly warp the shape of the spots.

Distortion Scale
Use this parameter to change the amount of distortion is applied to the spots.

Levels
Increase the amount levels of sizes that appears.

Levels Scale
This changes the difference in sizes between the various levels. Increase the value to greater than one to decrease the smallest spot size.
Decrease the value to less than one to increase the largest spot size.

Intensity Modifier
Increase this parameter to have the spots decrease in opacity as they decrease in size.

Invert
Enable this option to have the spots feather in to the outside color, creating rings or bubble like silhouettes.

Vertex Color

The Vertex Color texture is used only with geometry imported from other 3D
applications that supports vertex color texture maps. Do not use this texture if you are
not importing from a compatible 3D application as it will have no affect.

Default color
controls the background color that is used for the alpha channel from an imported
vertex texture.

Multiplier
Blend a color with the imported vertex color texture.

Wood

The Wood procedural texture allows you to customize the look of your wood materials.
Most often, you will want to start out with the plastic material type and change the
specular color to white.

Ring Width
This adjusts the thickness of the wood rings.

Ring Noise
This adds random fluctuations in each ring.

Axial Noise
This adds fluctuations or waviness of the overall direction of the grain.

Color Noise
This creates random thick and thin areas to give a more organic look to the wood ring.

Scale
Use this to increase size of the grain. For best results, keep the scale small.

Wood (Advanced)

The Wood (Advanced) procedural texture gives finer control than the basic wood
procedural texture, and creates more realism in the map.

Winter/Spring/Summer/Fall
New wood formed in a tree during spring and summer is light in color. Toward the end
of a growing season, new cells formed are smaller and have darker, thicker walls.
Choose the color swatches to accurately color the rings in accordance with the
seasons.

Scale
Use this to control the overall scale of the texture map.

Ring Width
This adjusts the thickness of the wood ring.

Ring Spacing Variation
This parameter controls the contrast of thick and thin ring shapes to represent different rates of annual growth.

Ring Noise
This adds fluctuations or waviness to the rings.

Axial Noise
Increase this parameter to add variations to the circular shapes of the rings.

Color Noise
Increase this parameter to add more splotches of color in the rings.

Seasonal Color Noise
Add variation to each color swatch as it blends from each color.

Knots
Knot Color/Border
The knot color is blended into the main colors of the texture. Choose a grey value to darken the knots. The knot border should be darker than any of the other colors.

Knot Density
This parameter controls how many knots appear in the texture.

Knot Age
Increase this parameter to increase the number of rings that appear in the knots.

Knot Border Size
This parameter changes the thickness of the knot borders.

Knot Distortion
Use this to control the fluctuations and add irregularites in the knot shape.

Branch Scale
Control the overal size of the knots with this parameter.

Grain
Grain Color Bleed
This parameter controls the amount of color each ring blends into the rings on either side. Decrease to have very clearly defined rings or increase to give the rings a more blended appearance.

Axial Graniness
Increase this parameter to blur the texture.

Ring Graininess
This adjusts the thickness of the wood rings.

Grain Scale
This adjust the size of the grain striations between the rings.

Grain Thinness
Control the size of the grain striations with this parameter.

Advanced

Seed
Scrub through this parameter to add randomness to all of the previous parameters to create a more natural look.

Color Fade

The *Color Fade* texture is a unique Texture Type that allows you to quickly animate color changes. A color fade transition can be made between two colors or any combination of colors by adding addition color stops on the Color Gradient Editor.

See Color Fade Node to see how to use this texture type in the Material Graph.

Number Fade

The *Number Fade* texture is a unique Texture Type that allows you to quickly animate Map Types. Fore example, a number fade transition can be used on an Opacity map type to fade a material from opaque to transparent.

See Number Fade Node to see how to use this texture type in the Material Graph and control even more settings.

Map Types

KeyShot has four primary Map Types along with a number of material and texture settings that can also accept textures. Each Material Type uses texture map types depending on the material type and settings. You will see the available map types in the *Project* window, *Material, Textures* tab. The four primary Map Types are:

Diffuse Map
Specular Map
Bump Map
Opacity Map

> You can easily drag and drop textures from one Map Type to another.(e.g. from Bump to Specular) by simply holding *Ctrl* (Windows) or *Command* (OS X) and dragging the texture to another Map Type.

Diffuse Map

The *Diffuse* (also seen as *Color* or *Transmission*) map type allows an Image texture or 2D/3D procedural texture to be applied to replace the basic solid Diffuse/Color/Transmission setting. This map type provides full color information and will show transparency when a PNG with alpha transparency is used.

Specular Map

The *Specular* map type can use black and white values to indicate areas that have varying levels of specular intensity. Black will indicate areas of 0% specular reflectivity, whereas white will indicate areas of 100% specular reflectivity. Notice on the example that the metal portions are reflective and emitting specular reflections, whereas the rust area does not. The rust area has black mapped to it, whereas the metal area has white.

Bump Map

The *Bump* map type are used to create fine details in materials that would be unrealistic to include in the model, like the hammered chrome and brushed nickel in the example. There are two methods of applying bump maps. The first and easiest is using a black and white image. The second way is by using a normal map.

Black and White Image
When using a black and white image for a bump map, the black values are interpreted as lower and the white values are interpreted as raised.

Normal Maps
Normal maps contain more colors than the standard black and white bump maps. These additional colors represent different levels of distortion on X, Y and Z coordinates. This can create more complex bump effects than a black and white bump map which represents only two dimensions. However, most bump effects can look very realistic without the need for normal maps. Enable this setting when a Bump map is selected by checking *Normal Map*.

Bump Height
With Bump maps, *Bump Height* controls the effect of the map. Increasing this raises the peaks of the bumps, and helps exaggerate the bump when the texture needs to be more visible.

Opacity Map

The *Opacity* map type can use black and white values or alpha channels to make areas of a material transparent. This is useful for creating materials like the mesh material shown, without actually modeling the holes.

Opacity Mode
The opacity mode can be set to three different methods:

- **Alpha**
  This will use any alpha channel that is embedded in the image to create the transparency. If no alpha channel is present, no transparency will be shown.
- **Color**
  This will interpret black areas as completely transparent and white areas as completely opaque. 50% gray will be 50% transparent. This method is available to avoid the need for alpha channels.
- **Inverse Color**
  Inverse color is the opposite of color. White will be completely transparent, black will be completely opaque and 50% gray will be 50% transparent.

Mapping Types

Image Textures and 2D Textures allow you to take 2D images and place them onto 3D objects. How they are applied will affect how they appear. KeyShot provides seven different mapping types for these types of textures. When an Image Texture or 2D Texture is active, you will see a Mapping Type option with the following mapping types.

Planar

The *Planar* mapping type will project a texture on the X, Y or Z axis. The orientation is set in the Interactive *Move Texture* tool. Surfaces of 3D models that are not oriented on

the chosen axis will show stretching of the texture in the other two axes.

Box

The *Box* mapping type will project a texture from six sides of a cube in towards a 3D model. A texture will be projected from a side of the cube until stretching occurs, then the next best projection side will take over. Box mapping is a quick and easy solution that will work in most cases because there will be minimal stretching of textures.

Sphere

The *Sphere* mapping type will project a texture inwards from a sphere. The texture will resemble the original image the most at the equator. The texture will start to converge as it reaches the poles of the sphere. As with box mapping, stretching is less of an issue when working on multi sided objects than it is with any of the planar mapping modes.

Cylinder

The *Cylinder* mapping type will project a texture inwards from a cylinder. The texture will project the best on surfaces that are facing the inside of the cylinder. The texture on surfaces that do not face the inner walls of the cylinder will stretch inwards.

UV

The *UV* mapping type is a completely different method of applying 2D textures to 3D models. Using 3D applications such as 3D Studio Max or Maya, you can design how the texture map is applied to each surface. It is more time consuming and is much more widely used in the entertainment industry as opposed to the design/engineering world.

Camera

The *Camera* mapping type will keep the texture oriented with respect to the camera. This will provide a consistent texture appearance on the surface regardless of the position of the camera.

Node

...

Move Texture Tool

In addition to the automatic mapping modes, KeyShot has an interactive mapping tool that will allow scaling, translating and orienting of any of the automatic mapping types interactively.

The interactive mapping tool is used to fine tune the position of textures as they are mapped to your model. The tool is accessed from the texture mapping tab within the material editing menu, and it is available when in box, spherical and cylindrical mapping modes.

Translate
Use arrow handles to move the texture mapping position on the XYZ axes. To translate the mapping, click on any of the three axis arrows. The red, green and blue arrows correspond to the X, Y and Z axes.

Rotate
Use circle handles to rotate and align the texture mapping to your model. Hold SHIFT to constrain the rotation to 15 degree increments.

Scale
Use cube handles to change the size of the texture mapping. Click on red, green or blue boxes to scale the texture on only one axis, or click on the center yellow box to scale

the texture uniformly.

Position

Use this to establish exactly where you want the center of your texture image to project. Once in position mode, you can simply click on the surface of the model to change the where your texture is projecting.

Cancel or Confirm Changes

After adjusting the texture mapping with the mapping tool, click the green check mark to confirm the changes and close the mapping tool. Click the red X to cancel the changes and close the mapping tool.
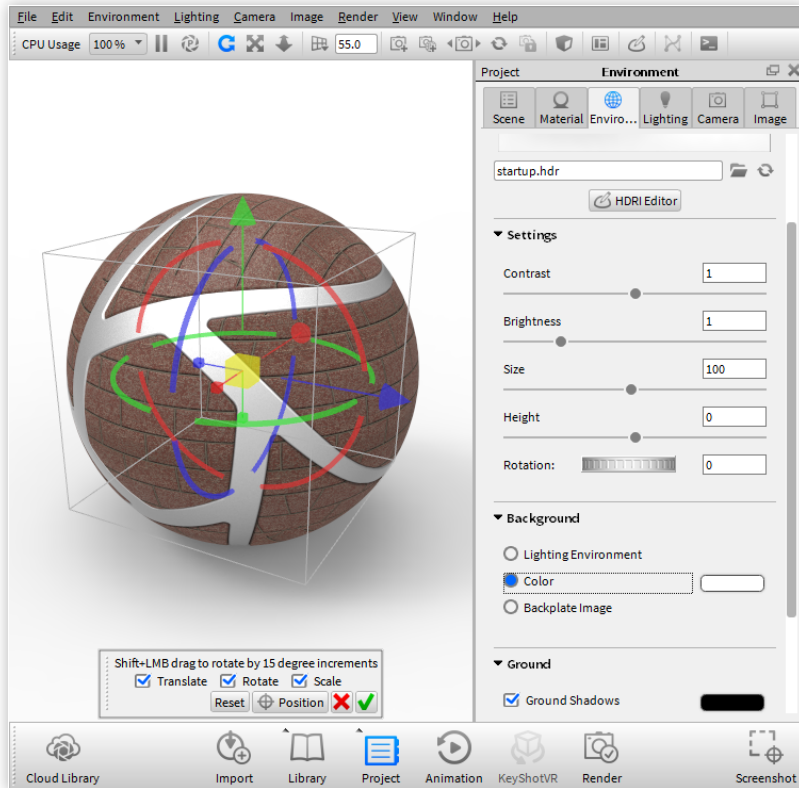
Labels

Labels are designed for easy placement of logos, stickers or images that need to be placed freely onto a 3D model. Labels are added through the labels tab in a material's properties.

Any common image format will be supported such as JPG, TIFF, TGA, PNG, EXR and HDR. An unlimited number of labels can be added to a material and each label can have it's own mapping type. If an image has an alpha channel embedded, it will be retained and areas of transparency will not show. The sample image uses a PNG with transparency so that the square border of the image does not show.

In this section:
- Label Properties
- Label Textures
- Label Mapping

Label Properties

Adding Labels

Labels are added by either clicking the "+" Icon and selecting "Add Label." Once added, the label name will be displayed in the list. You can also choose "Duplicate" to create copies of existing labels.

Deleting Labels

Labels can be deleted by selecting the label in the list and clicking the Trash Icon

Duplicating Labels

Labels can be duplicated by selecting the label in the list and clicking the Add Icon, and select duplicate.

Layering
Labels will be layered as they are added. If labels overlap on the model, they will stack in the same order as ordered in the Labels list. The label order can be shifted by pressing the up and down arrow buttons.

Label Type
Each label can be assigned a material type. The default material applied to a label is plastic, but it can be changed to Advanced, Anisotropic, Diffuse, Emissive, Metal, Metallic Paint, Paint, Translucent, Toon, and Xray. The Properties Tab will show the contextual settings for the label type selected. See the Materials section for more.

Label Textures

In the *Label Textures* tab you can add other maps to your label similarly to the *Textures* tab for Materials. The type of texture maps available to a label type will be similar to the type of textures available to the material type. Use the check boxes in the list of texture types to enable or disable a texture map.

Reload

Use the *Reload* button 🔄 if you made changes to the image file and need to update the Label on your model.

Load

Use the Load button 📂 to replace the label map image file with a different file. The name of the file will appear in the text box.

To learn more about the label capabilities in KeyShot watch the video below.

Label Mapping

The default mapping type for labels is Normal Projection. This allows labels to be projected on surfaces interactively. Change the mapping type by using the Mapping Type dropdown menu.

To position the label, click the mapping tool button and then click on the model to move the label. When the label is in the desired position,

Confirm the placement by clicking the green check button in the bottom of the realtime window. That will deactivate the interactive positioning.

To scale the label, move the scale slider. This will adjust the size of the label and maintain height to width proportions. To scale the label vertically or horizontally, expand the scale parameter to scale independently on the X or Y axis.

To rotate the label, use the angle slider which will rotate the label in degrees.

Labels can also be flipped vertically, horizontally and repeated by checking any of those options.

Enabling the "Two Sided" option will display the label on both sides of the surface it is applied to.

The "Sync" option will sync the mapping settings across all texture maps applied to the the label.

Brightness and Contrast sliders adjust the label image qualities.

Environments

The primary method of lighting a scene in KeyShot is through Environment Lighting. Environment Lighting uses spherical High-dynamic-range imaging (HDRI) to represent the full, physically accurate lighting of an interior or exterior space.

Environment Presets

KeyShot comes with many environment lighting presets to get you on your way fast. Access all environment preset from the *Library* window, *Environments* tab. Additional environments may be accessed on KeyShot Cloud.

Environment Tab

The *Environment* tab is where you control all the settings for your environment lighting. Access the settings from the *Project* window, *Environment* tab.

HDRI Editor

KeyShot Pro users will see the HDRI Editor button on the Environment tab directly beneath the HDRI preview.

Adding Environments

KeyShot is designed to provide real-world lighting right out of the box. Through environment presets and the ability to modify them or create your own, your scene can be lit just the way you need with everything visible in real-time.

Environment List

The *Environment* tab of the *Project* window includes the ability to save different Environments and their settings to a list for fast access and navigation.

When a new scene is opened the Environment List is populated with the environment used in the Default Startup Scene specified in the General Preferences. All changes made to the settings will be recorded and saved with that environment.

Creating a New Environment

To create a new Environment based your current settings, click the *Add Environment* icon at the top left of the pane. Alternatively, you can populate the list with environments by dragging-and-dropping one or more from the *Environments* Library.

Adjusting Environments

KeyShot allows you to adjust your HDRI lighting through a set of easily adjustable settings.

Changing the Background

In KeyShot you have 3 options of showing the environment

HDRI Editor

The KeyShot *HDRI Editor* is a simple way to make adjustments to lighting environments or create your own. The *HDRI Editor* provides a unique system of adjustable light, image and gradient *Pins* to light your scene.

HDRI Editor Overview

The KeyShot HDRI Editor is fully integrated into the *Environment* tab located in the *Project* window. All *Pins* and settings for *Color*, *Adjustments* and *Transforms* are embedded in the KeyShot file eliminating the need to save an individual .HDZ for each custom Environment you create. This provides a huge convenience and asset management benefit while greatly reducing the amount of data necessary to store locally and in KeyShot .KSP files.

The HDRI Editor has flexible features including:

- Export of HDR/EXR
- Gradient Background
- Draggable interactive Sun & Sky
- Sun & Sky Ground Color
- Sun Size parameter
- Rectangular Pin Rounded Corners
- Gradient Pins
- Image Pin Color Adjustments
- Extract pins from previous version HDZ files
- Pop out HDRI Editor canvas

HDRI Editor Pins

Pins are light sources that can be placed into the HDRI to further enhance the image file, and give the desired lighting effect on the object scene.

Pin List

Contains all the pins created in the HDRI editor. You can enable or disable a pin by clicking the checkbox to the left of its name. You can rename a pin by double clicking its name. Right click pins for options to delete or duplicate. The icon to the right of the name denotes the type of pin it is. The active pin being edited will be highlighted blue in the list and will be marked by a blue dot in the preview window.

Pin Options

Add Pin

The *Add Pin* options include *Add Pin*, *Add Gradient Pin*, *Add Image Pin*, and *Add Copy Pin.* Click on the "+" icon to add a pin. Select a pin type to place in the HDRI. The new pin will be displayed in the pin list as well as the preview window. To make a pin active for editing, select it in the pin list or click on the pin handle in the preview window. Drag the pins by their handles to position them. The "Add Highlight"-pin is explained below in the "Set Highlight" section.

Delete Pin
Click on the trash can icon to delete the active pin.

Move Pin Up/Down
Click on the arrows to change the pin order in the pin list. The order is important as it will display and layer pins from the top down.

Pin Folders
Use pin folders to organize all your pins in your HDRI. Click on the "Add Folder" icon to add a folder to the list and drag pins into the folder.

Set Highlight
Adding and setting highlights can be achieved by clicking "Set Highlight." This will bring forward the KeyShot realtime window where you can position your pin by selecting a region on the model you want to highlight. CTRL+Click (CMD+Click on Mac) anywhere on the surface of the model and a pin will be generated facing that point on the surface. When finished, click "Done." Pins added this way can be edited as normal.

To set an existing highlight click onto "Set Highlight", and then select an existing pin in the editor. Click on the object to set the highlight using the selected pin, and use your left mouse button to drag it into the right position.

Pin Types Explained

Standard Pin
Add Pin places a pin into the center of the unfolded HDRI. Grab it to place it in the desired location. Use the controls explained in section "Adjusting Pins" to get achieve the desired effect.

Gradient Pin
A Gradient Pin allows you to place a light source with color and opacity variations.

Copy Pin

When this options is selected, a snapshot is taken of the HDRI image and used as a new pin. After you select "Add Copy Pin," a pin handle with an orange outline will appear on the preview window. This outline shows the area of the image that will be copied to be used as a pin. Toggle between circular and rectangular for shape you want, then set the size and angle with the adjustment sliders. When on the green check to create the copy pin.

After creating the copy pin, move the pin by the handle to place it where desired. Adjustment sliders similar to those used with the regular pin will be available with the same effects.

Image Pin

The image pin allows you to use HDR, HDZ, EXR, JPG, PNG, JPEG, and BMP as a pin. There are limitless usages for this pin, such as creating specific reflections, simulating a lighting array and using part of an HDR with another HDR among others.

When adding an image pin, you will prompted to select an image to be used. Once selected, the image will be placed in the preview window.

Adjustment sliders will be available to edit the image pin. These sliders are similar to the regular pin sliders.

Additional Settings

Circular/Rectangular

This will toggle the shape of the pin. This is crucial when creating very specific shapes and reflections in your renderings.

Half

For either pin shape you can select the shape to be cut in half. This will cut the pin in half. All adjustments will work the same except that you are now only seeing half of the pin.

Radius (Circular)

This determines the pin size of circular pins.

Width/Height/Angle (Rectangular)

This determines the shape and size of rectangular pins.

Color

Use this to set what color the pin will project. For accurate real-world lighting, use the Kelvin scale.

Blend Mode

With this option, choose different ways to have the pins blend and interact with each other. Pin order becomes very important with this function.

Falloff Mode

This controls the falloff of the light from the center of the pin. Different modes have different behaviors. You can see the effect of the various modes both in the editor as well as in the KeyShot realtime window.

Falloff

This controls the softness of edge of the pin light. Increase the falloff for more blended, softer edges.

Brightness

Use this to adjust the overall intensity of the pin light.

HDRI Editor Background

When you select the *Background* item in the *HDRI Editor Pin List* you have four options for your HDRI Editor Background: *Color*, *Gradient*, *Sun & Sky* and *Image*.

Color

Resolution
Here, set the resolution of the sun and sky that will be generated. A smaller resolution has better performance, but a larger resolution has better shadow and reflection quality.

Location
Here, you can choose a preset city that is closest to where the scene is taking place for accurate portrayal of the sun and seasons at location.

Coordinates
Another option is to choose "Custom Location" and enter the geo coordinates of a location.

Date
Use this to set the date to the day the scene will be taking place for accurate portrayal of color temperatures of the seasons.

Time
Use this to set the time the scene takes place for correct placement of the sun.

Turbidity
Increase this setting to add more haze to the sky. This will tint the sky with a warm tone and filter the sunlight that is cast in the scene.

Keep Pins
Enable this feature to keep any pins already created when generating a sun and sky HDRI.

Keep Environment Settings
Enable this feature to retain environment settings when generating a sun and sky HDRI.
Keep Adjustments
Enable this feature to retain adjustments to the normal HDRI when generating a sun and sky HDRI.

Generate HDRI
Once your settings are complete, click this button to replace the existing HDRI with a sun and sky HDRI. Caution: Clicking this will remove the previous HDRI. If you want to save your previous HDRI, make sure to save it first before you click "Generate HDRI."

Image

Cameras

The *Camera* tab controls the settings for all camera views in KeyShot nand allows you to set the active KeyShot camera. It also allows you to save different camera views of your scene, which allows cameras to be re-used, modified, or animated. Cameras can be adjusted much like a real camera and include advanced functionality such as shift lenses, walkthrough mode and Depth of Field, along with KeyShot Pro features such as panoramic lenses, to produce cube or spherical maps for real-time VR rendering and output.

This section explains how to work with the different types of cameras and their respective settings.

In this section:
- Navigating Your Scene
- Camera List
- Position and Orientation
- Lens Settings
- Perspective Matching
- Stereo (VR)
- Depth of Field
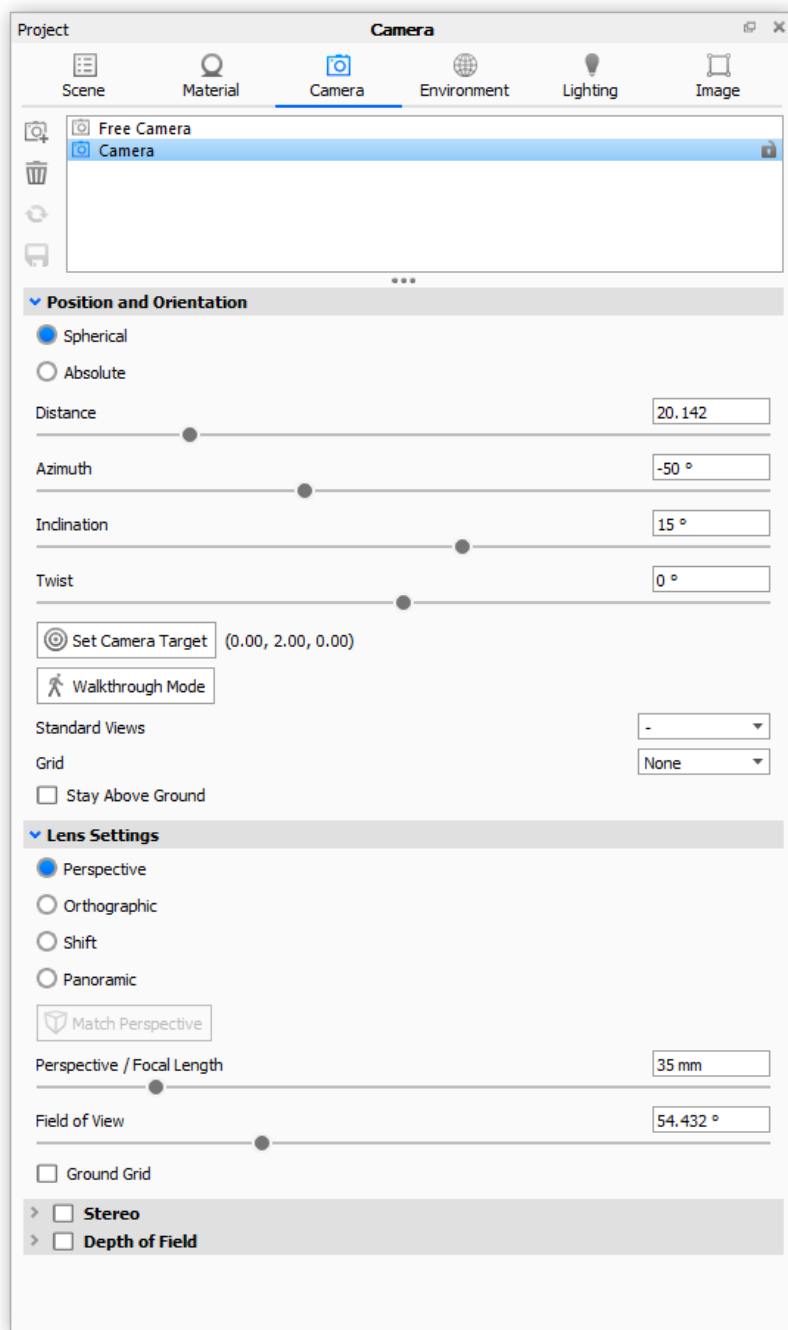
Navigating Your Scene

The following explains how to use your mouse to change the view of your camera. It's important to realize that the mouse is moving the camera and not the model, unlike a 3D modeling application. In other words, when you use Left Mouse Button (LMB) to rotate, the camera is rotating around the model. To change the position of the models, see Moving Models and Parts.

Mouse Controls

The mouse is the main method for controlling the position and orientation of the camera. With it, you can rotate, pan and change distance

Camera Tumble (Rotate)
To tumble your camera, press and hold LMB while moving the mouse. This changes both the azimuth and inclination of the camera.

Camera Pan
To pan your camera press and hold the MMB while moving the mouse. This changes the position of the camera.

Camera Dolly (Distance)
To dolly your camera, roll the scroll wheel forward to increase distance or back to decrease distance.

Keyboard Controls

KeyShot also provides additional ways to navigate your scene and control your camera using the keyboard.

Camera Dolly (Distance)
To dolly your camera, press Alt + RMB (Windows/Mac) while moving the mouse. This changes the distance of your camera.

Camera Perspective
To change camera perspective, press Shift, Alt + RMB (Windows/Mac). This will adjust perspective and field of view.

Camera Twist
To twist the camera, press Ctrl, Alt + Wheel (Windows) or , Alt + Wheel (Mac).

Standard Views
To cycle through the standard view (front, back, left, right, top, bottom, isometric select Ctrl, Alt + 1-7 (Windows) or , Alt + 1-7 (Mac)

Focal Length
To change Focal Length press Alt + Wheel (Windows/Mac).

Set Camera Target
To quickly center the camera on an area, select Ctrl, Alt + RMB (Windows) or , Alt + RMB (Mac).

Next Camera/Viewset
To toggle through cameras and viewsets, press Shift + N.

Toggle DOF
To toggle Depth of Field (DOF) press D.

All KeyShot hotkeys can be seen here.

Multi-touch Controls

Basic touch controls allow you to orient the camera on touch-enabled devices.

- **1 Finger** – Tumble camera
- **2 Finger Pinch** – Zoom
- **3 Finger Drag** – Pan
- **5 Finger Touch** – Reset camera

Learn more about multi-touch input here.

Camera List

The camera list at the top of the Camera tab contains all the cameras for the scene. In the camera list, the *Free Camera* is always available and cannot be locked or overwritten. It can always be selected and remains independent of camera animations.

> **On this page:**
> - Saving a Camera

Saving a Camera

To save a new camera, select *Add new camera* to the left of the camera list. Cameras can be renamed for easy identification and better organization, simply right-click and select *Rename*.

The *Add Camera and Environment Studio* is a Pro feature that allows you to add

a Studio along with the currently active camera and environment.

Note: This replaces the Viewset functionality from KeyShot 5/6. Read more information about the Studio feature and Viewset to Studio conversion here.

After a camera is saved, any change while that camera is active will display *(unsaved)* after the camera name. If you want to save the changes you can select *Save Current Camera* 🖫 which overwrites the active camera settings. If you do not want to apply changes, select *Reset Camera* to revert the active camera back to its last saved state.

Select *Add new camera* 📷 will add a new camera to the list, and the previously selected camera view will be preserved.

Additionally, any camera can be locked by right-clicking on the name or by selecting the lock icon .

Any unlocked camera can be deleted using the *Remove current camera* 🗑 .

Position and Orientation

All KeyShot cameras are defined by their position in 3D space in relation to the *Camera Target*. The Camera Target specifies the exact mathematical point or location the camera is "looking at." This relationship is critical to understand, especially when fine-tuning settings and creating camera animations.

Position and Orientation Settings

When the camera is moved in the Real-time View, the *Position and Orientation* settings will update to reflect the current camera position. Using the default Spherical definition; the Distance, Azimuth, Inclination, and Twist are all measurements from the Camera Target location.

Camera Modes

There are two modes for defining Position and Orientation: Spherical and Absolute.

1. **Spherical**
   Default setting for defining position and orientation of the camera. All values reflect camera position in relation to the static Camera Target.
   - *Distance* - Distance between the Camera Target and Camera in scene units. Setting this value too low can lead to the camera being "inside" the 3D model. This can be controlled with the mouse scroll wheel. The direction can be inverted in Preferences.
   - *Azimuth* - Rotation around KeyShot up (Y) axis, measured in degrees.
   - *Inclination* - Defines camera tilt, or vertical rotation from horizontal plane.
   - *Twist* - Defines camera twist.
2. **Absolute**
   - *Position* - Defines X/Y/Z coordinates of camera location in scene units.
   - *Target* - Defines X/Y/Z coordinates of Camera Target in scene units.
   - *Keep View Direction* - Locks View Direction for Position/Target changes.
   - *Twist* - Defines camera twist.

Set Camera Target

Press the *Set Camera Target* button to define a new location that the camera will be referencing as its target by clicking on an object in the scene. The default Camera Target is always the center of geometry in the scene.

Walkthrough Mode

See Walkthrough Mode.

Quickly access camera presets based on common orthographic directions.

Enables on-screen grid (not visible in rendered output) which can be helpful for image composition and camera placement.

This option allows all camera movements to be restricted to the upper hemisphere. This is useful for scenes where bottom views are undesirable.

Walkthrough Mode

Walkthrough Mode allows you to move around inside your scene and see it from a "first-person" point of view.

To enter Walkthrough Mode go to *Project* window, *Camera* tab, *Position and Orientation*. Select *Walkthrough Mode* and the Walkthrough Mode HUD will appear and a camera called *First Person* will be added to the camera list.

On this page:
• Walkthrough Navigation

Walkthrough Navigation

To navigate within the scene in Walkthrough Mode, you can:

1. Use the arrows on your keyboard or the arrows in the widget.
2. Hold the left mouse button and drag in the direction you would like to move.
3. Hold the right mouse button and drag to rotate in place.
4. Hold the middle mouse button to pan the camera.

Lens Settings

The various Lens Settings can be found in the *Projects* window, under *Camera* tab, *Lens Settings*. The four types include:

- Perspective
- Orthographic
- Shift
- Panoramic

In this section:
• Perspective
• Orthographic
• Shift
• Panoramic

Orthographic

An *Orthographic* lens uses parallel projection to view the scene: all lines parallel to each other appear parallel regardless of camera distance or position. An orthographic lens is most commonly found in CAD modelers and is not affected by perspective distortion, foreshortening, or parallax. This means that relative distance in the realtime view is always accurate for any parallel or perpendicular lines.

Panoramic

The *Panoramic Lens Setting* for Cameras allows you to render a Spherical or Cube Map image in real-time or rendered output. This feature can be used to render out your own spherical EXR images to use as environments to light KeyShot scenes or to load in your VR headset image viewer. Whenever a *Panoramic lens* is used, the camera position will be limited to spherical 360 degree viewing and the camera target is used as a position reference.

Using the Panoramic Camera

In the *Camera* tab, under *Lens Settings,* select *Panoramic*. Select your desired format of *Spherical* or *Cube Map* from the *Mode* radio buttons. The *Real-time View* will display

a *Panoramic Preview* message at the top to indicate you are Panoramic mode. This means the camera can be rotated spherically and the real-time rendering in the *Real-ti me View* will not occur.

Reset Panoramic Camera

Click the *Reset View* button at the bottom of the screen to return the camera to the original view.

Preview Map

Click the *Preview Map* button in the *Lens Settings* to open a flat preview of your Panoramic image.

Panoramic Camera Resolution

When using the *Spherical Mode* the *Resolution* in the *Image* tab will be locked at a 2:1 ratio. *Cube Map Mode* will be locked to an 6:1 ratio. Try increasing the pixel resolution if the image does not appear clear.

Moving a Panoramic Camera

Since the Camera Position is limited to spherical 360 degree viewing, there may be times where you want to adjust the camera position. There are two way to move a Panoramic Camera.

Position and Orientation

You can use the *Position and Orientation* sliders or input boxes in the *Camera* tab to adjust *Distance, Azimuth, Inclination* and *Twist*. Grab the slider to make fast adjustments or enter a value into the input box for more precision.

Geometry View

If you are using KeyShot Pro, You can open the Geometry View (*Window, Geometry View...*), select the Geometry View icon on the Ribbon or hit the *O-key*. In the Geometry View, you can right-click the active camera and select *Move Active Camera Position* to adjust the camera. When you move the active camera, you will see it automatically adjust to keep the same camera target.

Related Pages

- Render VR Images

Perspective

A *Perspective* lens closely represents how physical camera lenses work. The *Perspecti ve / Focal Length* controls the amount of distortion (convergence) seen in the realtime view; real world values can be used here to replicate camera lens focal lengths.

Popular focal lengths (Source: Wikipedia).

14 to 21mm: Ultra-Wide — Dramatic distortion due to very short focal length.

24 to 35mm: Wide — Wider field of view than a standard lens. The resulting perspective can show some distortion.

50 mm: Standard — Some distortion but generally acceptable for most use.

85 mm: Portrait — Less distortion than standard lenses.

135 mm: Telephoto — Commonly used to capture faraway objects or in product photography for

200 to 500 mm: Super Telephoto — Specialized lenses for minimal distortion.

When trying to match perspective in an backplate image, it is recommended to set the Perspective value to the camera lens focal length which is often included in the Exif data.

Field of View is inversely related to Perspective and controls the "cone of vision" seen in the realtime view. Larger Perspective values will result in a smaller Field of View, while smaller Perspective values increase the amount that's visible in the realtime view.

Ground grid will overlay a 1:1 grid on the KeyShot ground plane; the density of the grid is controlled by the Environment size. This grid is useful for matching perspective and camera angles and will not be visible in rendered output.

Shift

A *Shift* lens is useful for recreating two-point perspective camera views. It allows you to keep a camera's position while shifting the viewing plane to eliminate vertical distortion. Most commonly seen in architectural photography, a Shift lens can be used to remove the third (vertical) vanishing point in product photography. A blog post showing the use of the Shift lens can be found here: https://blog.keyshot.com/2016/use-shift-lens-setting -keyshot

To use the Shift lens, press the *Estimate Vertical Shift* button and KeyShot will calculate the values needed to achieve a 2 point perspective lens. The Perspective/Focal Length and Field of View can still be adjusted to control the amount of perspective distortion.

Vertical Shift and *Horizontal Shift* control the vertical and horizontal movement of the camera's viewing plane; these values can be adjusted beyond the slider extents (including negative values!) to control what's visible in the realtime view.

Any time the camera position is changed, it is necessary to re-calculate the shift values by pressing the "*stimate Vertical Shift*"button. This ensures that the values are correct for the current camera position and orientation.

Perspective Matching

Perspective Matching allows you to interactively match the *Perspective* camera to the camera with which a background image was taken. In order to activate *Match Perspective*, please load a *Backplate*. Refer to Changing the Background for further information on this topic.

When clicking on the *Match Perspective* button, you will notice 2 or 3 sets of lines in different colors along with a dialog.

For best results we recommend to turn on *Show Coordinate Legend*, found under the *View* menu. It can also be toggled on and off using the *Z* ho tkey. This will help you identify the orientation of the model in the scene.

How it works:

Decide whether you want to use 2 or 3 point perspective, i.e. 2 or 3 vanishing points. In most cases you want to use a 2 point perspective. 3 point perspective is most commonly used when trying to place building or object when the camera is placed at a low of high eye level. When using 2 point perspective, you will only adjust the vanishing according to the plane on which the object is placed. 3 point perspective adds another set of lines allowing you to adjust the vanishing point in the vertical direction.

Notice that the lines and colors correspond to the scene's coordinate system. X is blue, Z is red, and Y is green. Move the end points of the lines according to the coordinate layout to reference points in the background image. Notice the camera values update accordingly. Once aligned, pan and dolly the camera to position the object so it fits properly inside the scene.

Two-Point Perspective
Adjust the perspective with 2 sets of orthogonal lines to match the vanishing points of a background image.

Three-Point Perspective
Adjust the perspective with 3 sets of orthogonal lines to match the vanishing points of a background image.

Ground Grid
Turn on ground grid in the scene to help match the perspective.

Reset lines
Reset all sets of lines to their default position. The camera will update accordingly.

Stereo (VR)

Stereo mode will display when *Perspective*, *Panoramic Cube Map* or *Panoramic Spherical* is selected. This setting allows a scene to be viewed in real-time or output as still images and animations using virtual reality (VR) hardware.

Spherical and Cube Maps offer a 360-degree stereo viewing experience while Stereo Perspective shows a stereoscopic image of the viewport. For more information on using KeyShot with VR devices, please see the Virtual Reality section.

Head-Mounted Display (HMD)

Support is available for real-time viewing using Oculus Rift and HTC Vive Head-Mounted Display (HMD) viewing (currently Windows only). From the *Camera* tab, enable the *Stereo* option for your *Perspective* or *Panoramic* camera. Click the *Head-Mounted Display* button to select Oculus Rift or OpenVR for HTC Vive to open the HMD viewing window.

> **Note**
> An HMD must be connected for the Head-Mounted Display button to be enabled and viewing window to be activated.
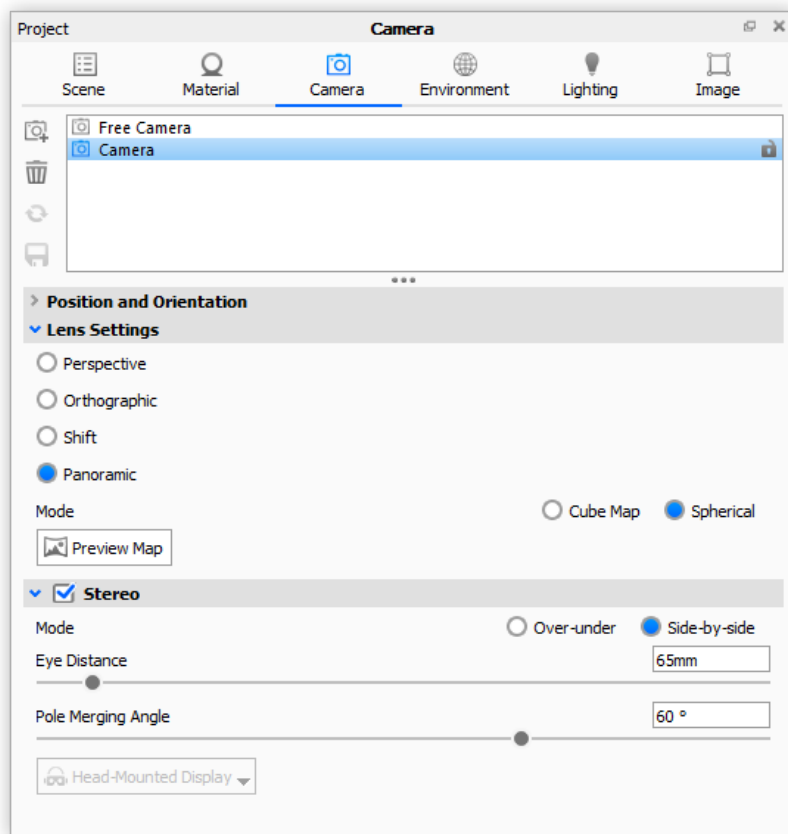
Depth of Field

Depth of Field allows you to set the focus distance and the f-stop of the camera just like you would with a regular camera.

To enable the depth of field, go to Project Camera and click on the Depth of Field check box. Once enabled you can either use the *Select Focal Point* button or use the manual values.

By clicking on the *Select Focal Point* button you can then click on any part of the real-time view and *KeyShot* will focus on that point and blur out rest of the scene in accordance with the F-stop.
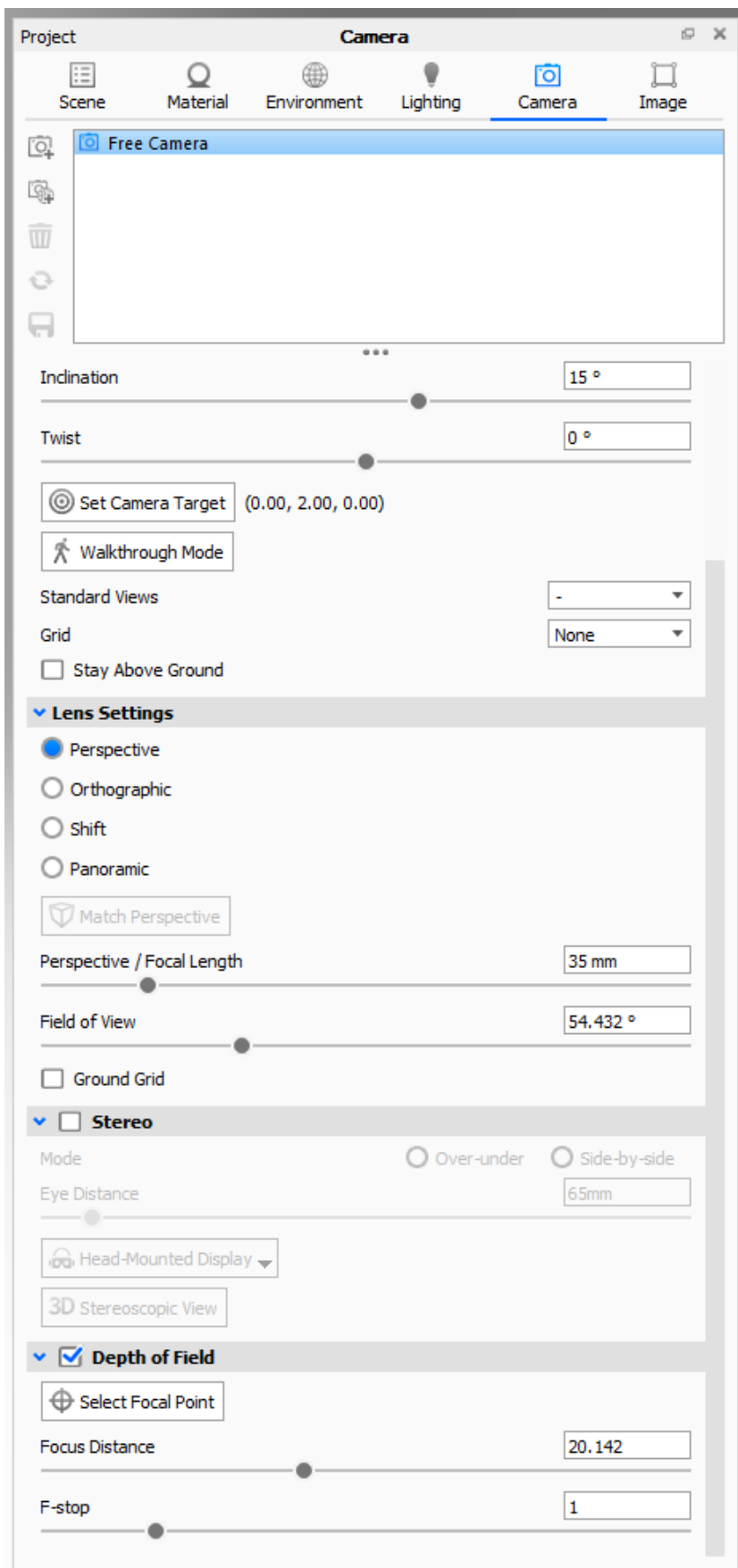
Image

This section covers all items found in the *Image* tab of the *Project* window.
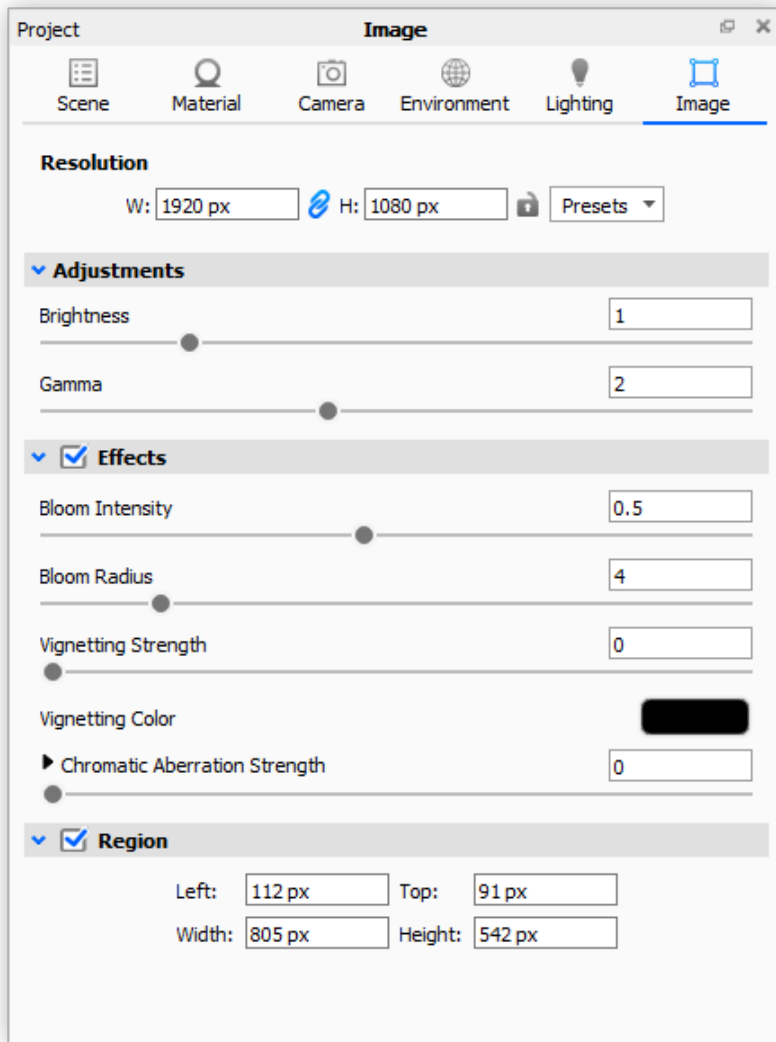
Resolution

Resolution is the first item found in the *Project > Image* tab. This resolution defines the width and height in pixels of the real-time view and changes dynamically as you adjust the application size and docked window size.
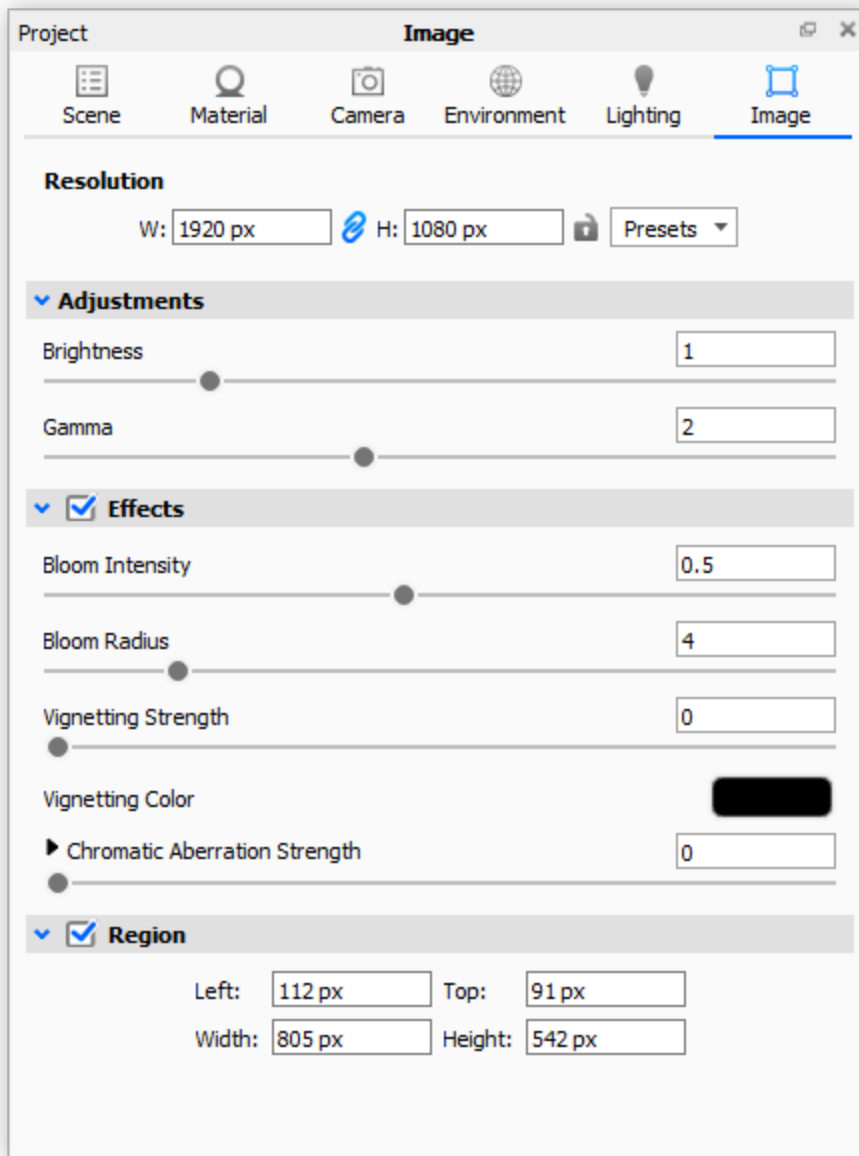
How it Works

Whatever aspect is set here defines the aspect for final image output. For example, if you plan to render at 1920X1080px you want to make sure the resolution set in the *Image* tab has the same aspect. The easiest way to do this is to select from the *Presets* dropdown. This will automatically lock the aspect to the selected preset. A locked aspect is indicated by the chain-link icon located in between width and height set to a blue state. When this is the case you will be able to change the size of the application window and maintain the correct image aspect for output. If you do not want the real-time view to adjust size as you resize the docked windows and application window you can enable the lock icon to the right of the height field.

If your desired output resolution is not populated in the *Presets* dropdown you can manually type in the values or you can create a custom resolution or aspect preset by selecting *Edit Custom* from the *Presets* dropdown. Once created, you can access your custom presets through the *Custom* flyout menu in the *Presets* dropdown.

Image Adjustments

Brightness and Gamma are post processing image effects.

Image Effects

The parameters found in the Effects accordion are post processing image effects that do not affect render performance or time.

Bloom

Vignette

Chromatic Aberration

Region Rendering

When working on scenes in KeyShot with complex lighting or materials, you may notice the Real-time View can take longer to resolve. Real-time Region Render can help maintain a fast workflow by allowing to render specific regions of your scene in real-time.

To initiate Real-time Region Rendering, select the *Image* tab, located in the *Project* window. At the bottom, click the *Region* checkbox as shown in the image below.

In the Real-time Viewer, drag the corners of the region render box to focus all of KeyShot's render power on the area you're want to resolve. The smaller the Real-time Region is, the faster the image will resolve, allowing you to maintain that speedy workflow. You can see a side-by-side comparison of a layered glass material with and without enabling Real-time Region Rendering below. In this example, the Region render image resolves 300% faster.

**Realtime Window
1 Sample at 10 seconds**

**Realtime Region Rendering
3 Samples at 10 seconds**

When it's time to start your final render, be sure to uncheck the Region Render box if you want to render the extents of the Real-time View.

KeyShot is known for being a tool that offers great results in very little time. Real-time Region Rendering is one of the many features that allows you to maximize your creative output and reduce the time it takes to produce that final shot.

Studios

KeyShot *Studios* allow you to combine and save scene variations in one file for quick creation and presentation. *Studios* may contain any combination of *Camera*, *Environment*, *Models Sets* or *Multi-Materials.*

On this page:
- Working with Studios
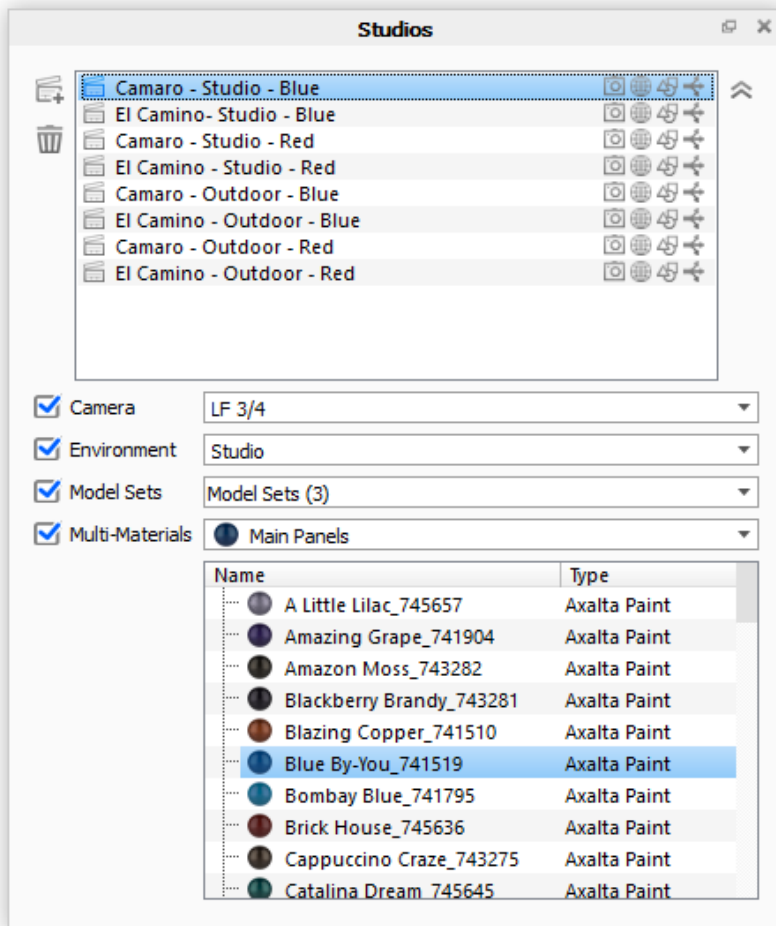
Working with Studios

View the *Studios* window from the main menu under *Window, Studios...* The *Studios* window is a dockable window and may also be accessed from the *Ribbon* at the top of the KeyShot interface by selecting the Studios icon .

Within the dialog there are four dropdown menus that display the currently active *Camera*, *Environment*, *Model Sets* or *Multi-Materials*. Click the *Add Studio* icon in the top left corner to add a new Studio with the active elements added to that Studio.

Inline with the Studio name are icons that indicate what elements are included in that Studio. By default the active *Camera* and *Environment* are included when a new Studio is created. With a Studio active, uncheck any checkbox to exclude that element from the Studio. To modify a Studio simply select a different *Camera*, *Environment*, *Model Set* or *Multi-Material* from the dropdown menus. Multiple Model Sets can be added to a Studio by checking the corresponding boxes within the *Model Sets* dropdown menu.

Viewset to Studio Conversion

Viewset to Studio Overview

Prior to KeyShot 7, you could create a **Viewset**, a combination of a Camera and Environment, or a **Scene Set,** a combination of Camera/Viewset and Models. A **Studio** simplifies this by combining options for Camera, Environment, Models and Materials in one window.

Opening Scenes with Viewsets

In KeyShot 7, when a scene with Viewsets and/or Scene Sets is imported, each Viewset and Scene Set is converted to a Studio. When you import a scene that contains Viewsets or Scene Sets, you will see this message:
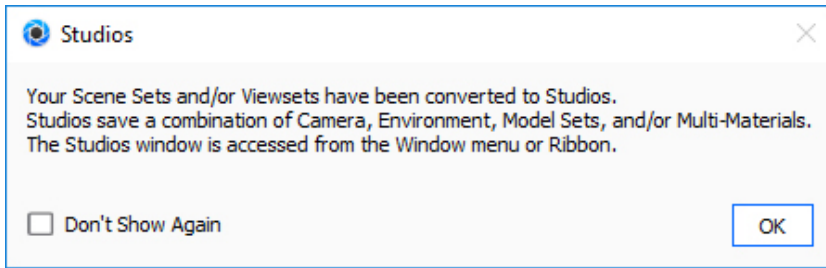
The Studio window should appear after you open the scene. If you do not see it, select *Windows, Studios...* or hit the *U-key*. Any previous Viewset or Scene Set will appear with the same name in the list of Studios.

Studio Workflow for Adding Camera/Environment Combos

Prior to KeyShot 7, when selecting 'Add new viewset' a Viewset would appear in the camera list with a unique Camera and Environment. The same can be done using Studios using the following workflow:

1. Adjust Camera to desired position.
2. Select *Add Camera and Environment Studio* , *Add Locked.*
3. Drag-and-drop an Environment into the Real-time View and repeat step 2.

Another approach is to set a Camera and Environment, then Add a Studio.

1. Select an existing Camera or *Add New Camera* .
2. Select an existing Environment in list or drag-and-drop an Environment into Environment list and select.
3. Select *Add Studio* from Ribbon or Studios dialog.

You can now cycle through the Studios to view the different Camera and Environment combinations you've created.

Notes on Studios

- When you add a Studio, it enables the active Camera and Environment
- If you add a new camera to the camera list, it will use the camera selected
- If the Free Camera is active when a Studio is created, Camera will not be enabled for the Studio
- If you add an Environment to the Environment list, it will use the environment selected

Render

Taking a screenshot of the Real-time View may be adequate for the initial design iteration process but eventually you will need to output high-resolution Still Images, Animations or a KeyShotXR. You can do this through the *Render* dialog, which is found on the KeyShot *Toolbar*.

In this section:

- Render Output
- Render Options
- Render Queue
- Image Editor

Render Output

The *Output* page is where you define the file specifications. The first step is to select the type of output you desire. There are three types of output:

Still Image
A static image and the default rendering output. View options.

Animation
An animation with optional video and individual frame output. Note: This option is only available if there are animations in the scene. View options. Learn more about Animation.

KeyShotXR
An interactive KeyShotXR with all code and images. Note: This option is only available if you have the KeyShotXR add-on. View options. Learn more about KeyShotXR.

Still Image Output

The *Still Image* output option provides output of a single static image as well as options for render layers, render passes and region rendering.

Output Options

Name

Set the file name of the render in the text field. If one is not entered, the default name will be the scene name with an incremental suffix.

Folder
Choose where the render will be saved. Unless a specific folder is chosen, it will be saved in your KeyShot 6 renders folder.

Format
Choose from JPG, TIF, EXR, TIF 32 Bit, PNG, PSD, and PSD 32 bit. All formats other than JPG can include an alpha channel. The PSD format will output a single layer PSD file.

Resolution
Set the resolution of the render. Type it in or select from the presets.

Print Size
If final output is for print quality, enter in the dimensions of the print size as well as the desired DPI. After size has been set, the resolution will update with the correct dimensions.

Layers and Passes

See Layers and Passes section.

Region

Select the *Region* render checkbox to enable rendering a smaller portion of your overall image. Rendering a smaller region speeds up the rendering time. This is useful when only a small change to one part of a scene is needed. After enabling region render, select and move the drag points to resize the region in the Real-time View window or enter a specific *Left* and *Top* location, or *Width* and *Height*. Note: Units are in pixels.

Animation Output

Output Options

Resolution
Set the resolution for the animation being rendered. Choose from the preset pulldown, or enter in your own custom dimensions.

Time Range
Specify the range of the animation to be rendered. Default is "Entire Duration." You can also set the designated work area to be rendered, as well a specific frame range. The "duration" and "frames" auto updates when time range is changed.

Video Output

Set the name and Folder location where the animation will be saved. Choose a file format with the pulldown.

Frame Output

Enable to output every frame used to create the animation. Designate the file name and folder where the frames will be saved. See Settings for Still Image output for settings. In order to modify the frame number postfix change the "%d" to i.e. "%04d" if you want the frames to have the format frame.0001.jpg.

Layers and Passes

See Layers and Passes section.

KeyShotXR Output

The *KeyShotXR* output option is available if the KeyShotXR Add-on is installed. These options provide setup and output of a KeyShotXR as well as options for render layers and render passes.All the parameters set in the KeyShotXR Wzard can be edited in the KeyShotXR Render Output options as well. Additionally, there are other options for file format, file size, and iBooks output for viewing on iOS devices. There are also Advanced options for KeyShotXR control, customization and direct upload to a website via FTP. This section describes these settings in detail.

Output Options

This section allows you to set up the resolution as well as the destination of the KeyShotXR.

Image Quality
Selecting the "Preview" button will render one frame from the KeyShotXR and has a compression slider that allows adjustments to the quality of the image, and updates in real-time. Be aware that a larger file size could increase the time to load the KeyShotXR in the browser.

iBook Widget
If this is enabled, an HTML5 widget will be output in the same folder as your KeyShotXR which can be embedded in an iBook using iAuthor. Choose the Ppad model that you will be creating the iBook for from the drop-down options.

KeyShotXR Control

Rotation Control

...

Smoothness Control

Animation Frames
If animation is applied to the scene, you will be able to create a KeyShotXR from this animation. Additional parameters will be shown if enabled. See previous page for

animation frames settings.

Horizontal Frames
This controls the number of frames in the "X" direction. The higher the number of frames, the more smoothly your model will rotate.

Vertical Frames
This controls the number of frames in the "Y" direction. The higher the number of frames the more smoothly your model will rotate.

Number of Images to be Rendered
This shows the number of images to render based on the number of horizontal and vertical frames.

Horizontal/Vertical Angle Increments
This shows the degrees between each frame. This value will change depending on the number of vertical and horizontal frames and the starting and ending angles.

Angle Control

Use these sliders to control the beginning and ending of the KeyShotXR.

Horizontal
This controls the beginning and end of the rotation on the "X" plane.

Vertical
This controls the beginning and end of the rotation on the "Y" plane.

Advanced

Advanced settings for KeyShotXR are located in a drop-down menu on the same window as the custom settings. This menu controls how your KeyShotXR interacts in the web browser.

Rotation Damping
Increasing this value will increase the smoothness of the camera rotation when panning inside the web browser.

Mouse Sensitivity
This controls the overall mouse sensitivity in the KeyShotXR . Increasing this value will increase the model movement with less mouse movement.

Zoom-In
Enabling zoom-in will allow you to zoom into the KeyShotXR when inside the browser. Use the "Maximum Allowed Zoom-In Percent" slider to control the amount the user can zoom in your KeyShotXR.

Preserve Image Quality
Enable this option to render the frames at larger resolution for optimal image quality when zooming in. The image quality will be preserved when zooming in by enlarging the rendered frame resolution accordingly. This is separate from the viewport resolution setting for each frame. This will also increase the KeyShotXR file size.

Download on interaction
Enabling this option will set the KeyShotXR to only load the images into the browser after the user interacts with the KeyShotXR .

Allow Fullscreen Mode By Double-Click
Double-clicking the left mouse button will enter full-screen mode.

Show Loading Icon
enabling this will allow the loading icon to be shown when the KeyShotXR is loading in the browser. This image can be changed by selecting "Browse" and browsing to the image file you prefer.

Name of Div
This defines the KeyShotXR section in the HTML code.

FTP Deployment
Enable this option to allow KeyShot to load the rendered KeyShotXR directly into your FTP address.

Confirm Before Deployment
When the KeyShotXR is finished rendering, you will be prompted to accept the deployment to the FTP site.

Generate Embeddable HTML Code
This will give you the code necessary for implementing your KeyShotVR in a website using the iframe tag.

Embed FTP Settings in BIP File
This will save all the FTP credentials inside your KeyShot BIP file for easy deployment by another user.

Layers and Passes

See Layers and Passes section.

Layers and Passes

KeyShot supports output of render layers and render passes. Render layers output specific parts and models assigned to layers, while a render pass outputs a specific attribute of the scene on its own layer. For example, a Lighting pass will output all the lighting on a single layer while a Shadow pass will output all the shadows on a single layer.

Output of layers and passes is used to separate out all the various aspects of the scene to provide more control in post processing operations. For example, you may want to adjust the intensity of light, shadows or a materials color. Having any of these on a separate layer gives you this control.

Render Layer Output

This option is only available if you have assigned parts and models to a render layer.

Select *All Render Layers* checkbox to enable layer ouput. Select the gear icon to show the *Render Layer Settings* dialog and select the *Alpha (Transparency) Mode* for the layers. Alpha types include:

Straight Alpha - Unmatted - This alpha type...

Premultiplied Alpha - Matted with Black - This alpha type...

Aliased - Opaque Fringe - This alpha type...

> **Note**
> Enabling the render layers option will render all render layers created. To create a render layer go to the Project window, Scene tab. Go Properties, Render Layer to create a render layer. Select a part or group of parts and select the render layer you would like it to be on.

Render Pass Output

Select *All Render Passes* checkbox or the checkbox next to the individual pass type to enable pass output. Doing so will render the selected pass(es), along with the original image format specified on the output tab. Select the *PSD* or *PSD 32 BIT* option from the *Format* drop-down menu to enable the *Add to PSD* checkbox. This will compile all your passes into a single PSD file.

KeyShot supports 11 types of render pass output, including:

Diffuse Pass

Lighting Pass

Global Illumination Pass

Caustics Pass

Reflection Pass

Refraction Pass

Shadow Pass

Ambient Occlusion Pass

Depth Pass
Depth pass creates a depth map, which is an image that contains information relating to the distance of surfaces to the camera. Depth maps are used in other applications like Adobe Photoshop & Adobe After effects to simulate effects like depth of field.

Geometric Normal Pass
Create a normal map image of your scene.

Clown Pass
Clown pass creates an image where individual parts are rendered with flat colors. This is an easy way to create and save selections in Photoshop for post-rendering work. To use a clown pass, import it to the actual image in Photoshop. This creates another layer. Use the color range tool to select each of the colors in the clown pass and create a mask for each group.

Normals Pass

Render Options

The Render Options window contains all settings for Render Mode, CPU Usage, and Render Quality. These options are specific for the Still Image, Animation and KeyShotXR output.

Mode

Default

The *Default* render mode simply allows you to render immediately after adjusting your render output settings or, if using KeyShot Pro, to send your render to the render queue.

Background

The *Background* render mode option allows you to run the render in the background and continue working. Note: the Real-time View will be paused by default when the render is started. Select *Render* and un-check *Pause Real-time Render* to un-pause the Real-time View and continue working.

Send to Network

If you use KeyShot Network Rendering, the *Send to Network* render mode allows you to send your render to the KeyShot Network Rendering Monitor. Make sure the Monitor is installed and running to send a job to be rendered on the network. Visit the KeyShot Network Rendering Overview for more information.

CPU Usage

For *Default* and *Background* render modes, the *CPU Usage* setting allows you to specify how many CPU cores you want to utilize for rendering your project. Selecting *Use Realtime CPU Settings* will use the *CPU Usage* settings defined on the *KeyShot Ribbon*.

Quality

KeyShot has three output options for quality based on your needs.

Maximum Samples

The *Maximum Samples* option controls how many times the image or animation frame will be calculated and refined. Each additional sample will further smooth out noise/grain in the image. This option uses the same rendering technique as you see when working in the Real-time View. (This technique is also used in *Maximum Time* option, but differs from the method used in *Custom Control* option.)

Samples
This controls how many times each pixel in the rendered image is calculated for increased accuracy. Too low of a value will result in an image that has excessive noise. Increasing samples will reduce the noise, however, increasing this setting too high will increase render times without a noticeable difference in quality.

Samples Per Frame
The *Maximum Samples* option will read *Samples Per Frame* when the *Animation* tab is selected under the *Output* section. This option is ideal for animation output as it guarant ees that each frame will be rendered at the same quality. Therefore, as the animation plays through the frames you will not see changes/flickering in shadows or noise patterns on materials.

> **How many samples should I use?**
> Generally speaking, a simple scene will require fewer samples and a scene with more complex lighting and materials will require more samples. Start low and increase the samples if you still see noise or the render looks grainy. Before rendering out an animation using Maximum Samples, test your samples with a still image render first.
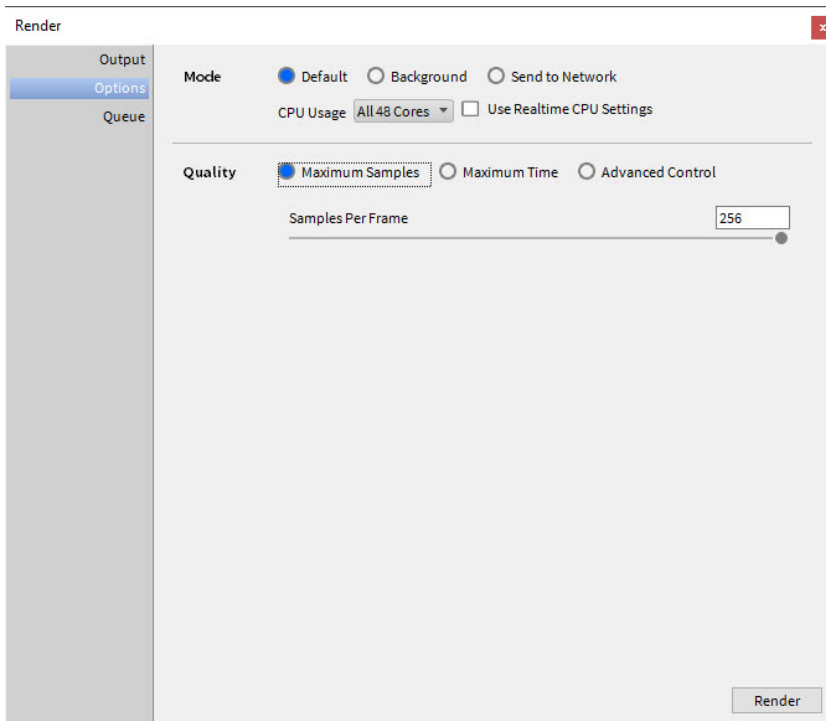
> **Samples and Resolution**
> A sample calculates the color of a pixel. There is a point of diminishing returns where you increase samples past the point of added quality, and just increase the render time.

> Something important to be aware of is that **as you increase the resolution of your image or animation, each pixel covers relatively less area of the image**. This means you can use a lower samples setting when rendering at higher resolutions. Note that this does not apply to rendering with area lights, caustics or interior mode as increasing samples while using those features will still increase the quality.

This method is typically preferred over the time-based output for animations, as some frames may require substantially more time to reach the same quality level as levels of detail and complexity change through the course of your animation. Using the time-based output will lead to more noise in the more complicated frames.

Maximum Time

The *Maximum Time* option for render quality will progressively refine the render for the amount of time set. This option uses the same rendering technique as what you see in the Real-time View. This technique is also used in Maximum Samples option, but differs from the method used in *Custom Control* option.

When rendering an animation, you may set the maximum time for each frame to render, or set a total duration for the entire animation.
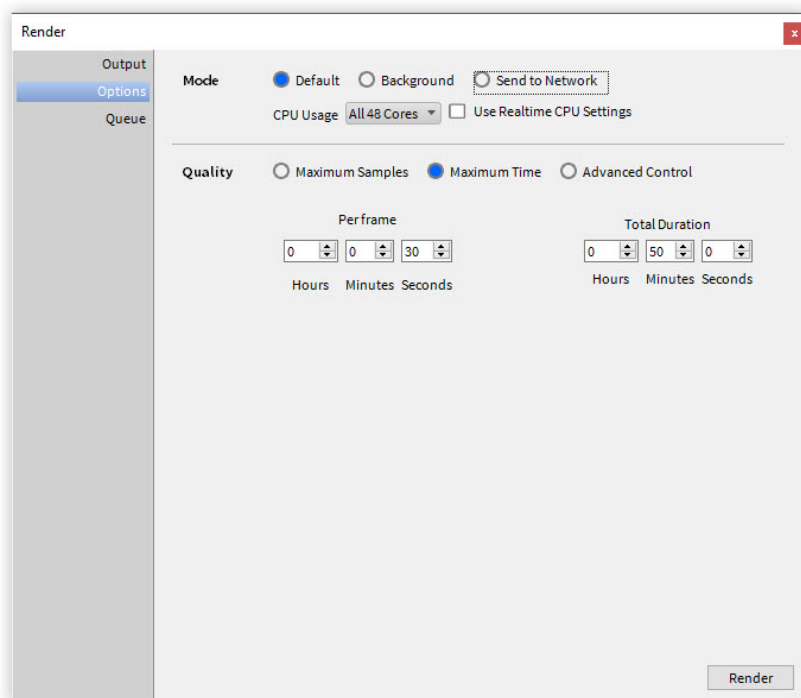
Custom Control

The *Custom Control* option allows control over all quality settings available in KeyShot. This mode typically produces smoother results in areas of high noise or shadow.

Samples
This will control the amount of rays per pixel that will be sent into the environment to gather information to determine that pixel's final shade. It is best to control this setting per material and set a value between 8 and 16 in the render settings. For information on samples and setting samples per material, please see the section on roughness and glossy samples.

Ray Bounces
Ray bounces are the number of times rays of light are calculated as they bounce around a scene. For a detailed explanation and examples please see the section that covers ray bounces in the Real-time settings.

Anti Aliasing
Anti aliasing is a method for smoothing out jagged edges that are created by pixels. Since pixels are made up of squares, they can produce a jagged look where edges meet. Anti aliasing smooths out these edges. In most cases, the default value of 1 is sufficient.

Shadow Quality
Shadow quality will control the shadow quality for ground shadows. This can be tuned in real-time to determine what value is necessary. Please see the section on shadow quality found in the real-time settings.

Global Illumination Quality
This will control the quality of all indirect light. Increasing this value can dramatically increase render time. It is rarely necessary to set a value above the default value of 1. If Global Illumination is turned off, this parameter will be grayed out. For more information and please see the section on detailed indirect illumination in real-time settings.

Pixel Blur
This will apply a slight blur to the image to reduce the overly sharp look that computer generated images can have. Higher values will have more blur. This does not increase render time.

DOF (Depth of Field)
This will control the quality of depth of field if it is enabled in the camera tab. Increasing this value will have an effect on render time. For production quality a value between 3 – 5 is recommended. If Depth of Field is not activated, this parameter will be grayed out. Please see the section on cameras for more information on depth of field.

Caustics
Increasing this value will improve the samples and quality of the caustics. If caustics are not enabled, this parameter will be grayed out. Please see the section on caustics for more information.

Sharp Shadows
This will allow sharp shadows to be cast across 3D geometry when the lighting scenario would create a sharp shadow. It is more accurate to have this checked and it is enabled by default. It is generally recommended to leave this on.

Sharper Texture Filtering
This will attempt to preserve detail in textures when viewed at grazing angles. For example, imagine being eye level with a wood table and seeing the wood grain compress together. Detail can get lost in the compressed areas. This setting reduces the loss of detail. This feature can increase render time so enable only when using textures with glancing angles.

Global Illumination Cache
Disabling GI Cache replaces the potential dirty shadows and black spots with noise. Increasing GI quality will reduce the noise. Increasing the samples will also help in reducing the noise.
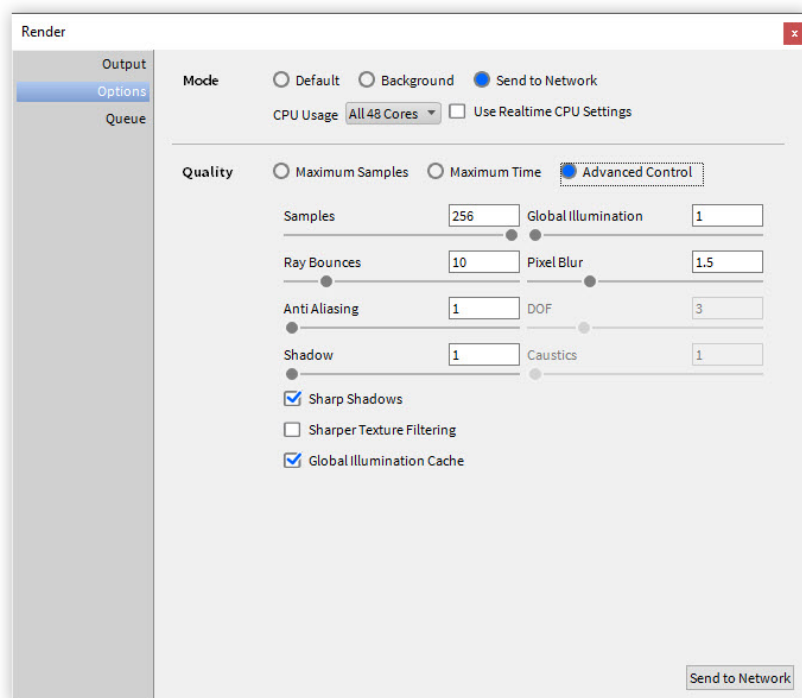
Render Queue

The *Queue* section contains setting for the render queue used in batch processing your still image and animation renderings.

Add/Delete Job
Use these buttons to add and remove jobs from the queue list. When a job is added, you are recording the exact state of your scene. This includes all render settings. Each job can have unique settings.

Add Camera
Send saved Cameras to the Render Queue. This button is active if more than one Camera exists. Click the *Add Cameras* button to open the Camera Queue window and check the Cameras you want to add to the queue.

Add Model Sets
Send saved Model Sets to the Render Queue. This button is active if more than one Model Set exists. Click the *Add Model Sets* button to open the Model Sets Queue window and check the Model Sets you want to add to the queue.

Add Studios
Send saved Studios to the Render Queue. This button is active if more than one Studio exists. Click the *Add Studios* button to open the Studios Queue window and check the Studios you want to add to the queue.

Move Up/Down
You can select a job in the list and click *Move Up* or *Move Down* to change the order of the job in the list. Jobs at the top render first. You can use the check box next to the job to turn off that job. The job will then be skipped during processing of the queue.

Send to Network
If you have KeyShot Network Rendering installed, the option to *Send to Network* will become available. Highlight one or more jobs in the Queue and click the *Send to Network* button.

Process Queue
When you are ready to start the queue, click the *Process Queue* button.
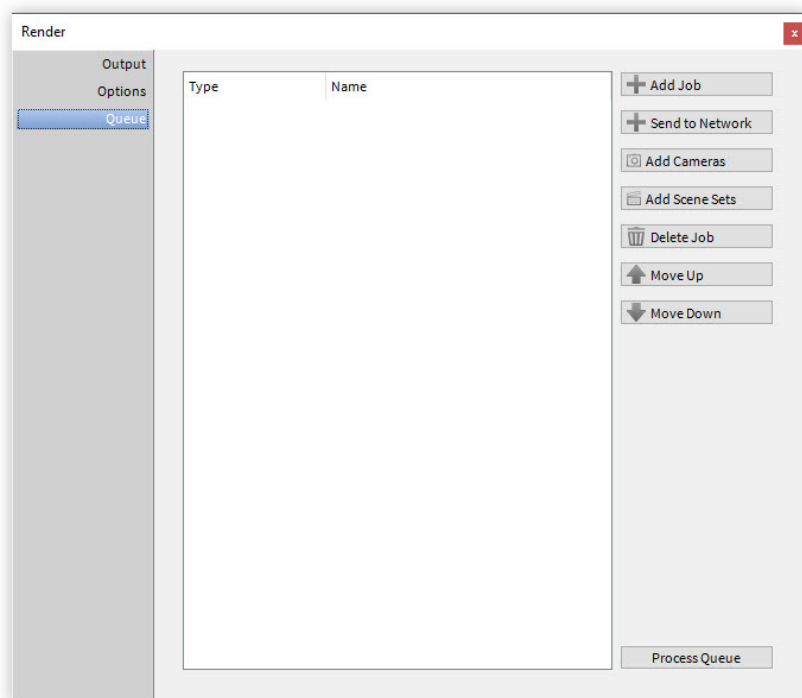
Image Editor

The Image Editor is a post-process utility that allows you to make tweaks to your render while it is rendering. Click the pencil icon to open the image editor in the render output window.

Close Render
Click this to close the render output window. CAUTION: all unsaved adjustments made in the image editor will be lost. Be sure to save your render after making adjustments before closing the render output window.

Save
Saves the current state of the render. Be sure to save after completing adjustments in the image editor in order to keep changes.

Gamma
Gamma compensates the way colors are displayed for optimal color range for human vision. Lower values will increase contrast and higher values will decrease contrast.

Brightness
Control the brightness on the rendered image.

Saturation
Increase or decrease the color intensity in the render.

Hue
Shift the colors in the render. This can be a quick way to create multiple color studies from a single render.

Bloom Intensity
Bloom will add glow around emissive materials and add an overall softening to the image. Increase the slider to create a brighter glow.

Bloom Radius
Affects how far a bloom extends from the edges.

Vignetting Strength
Darken the corners and edges of your frame.

Vignetting Color
Choose the color of your vignette with the color picker window.

Scripting

Scripting allows you to unleash the power of KeyShot for automation, batch processing and more. Scripting functionality includes control for camera, lighting presets, materials and material templates, environment, background and backplates, rendering (images, animations, and VR) and opening, saving and importing files.

KeyShot scripting uses Python 3.4. To access the *Scripting* console go to *Window, Scripting Console.* You can use KeyShot's predefined scripts or create your own custom scripts inside the *Scripts* tab. You can also input one-line commands inside the python interpreter, located at the bottom of the *Console* tab. For additional documentation that includes a quick start guide, click here.
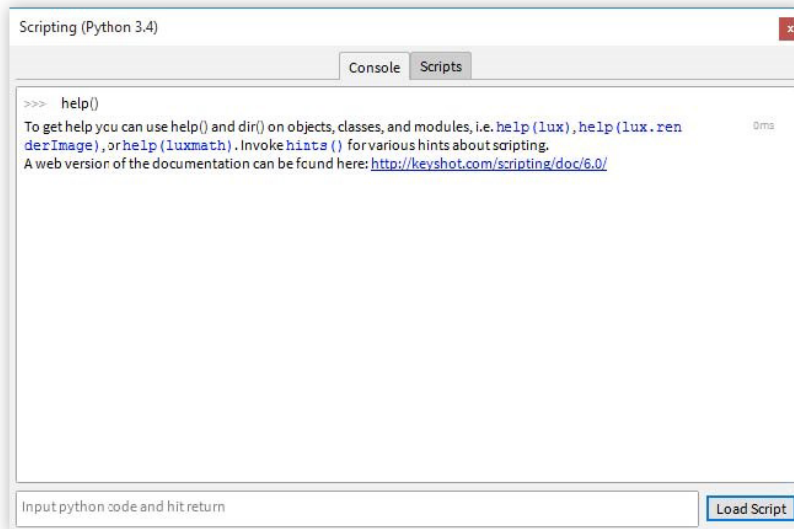
Script Location

Scripts are located in the KeyShot Resource folder, e.g. \KeyShot 7\Scripts. To change this location or add another location, select *Edit, Preferences, Folders* and change the path for the *Scripts* folder. Scripts in the folder will be visible in the *Scripts* tab of the *Scripting* window.
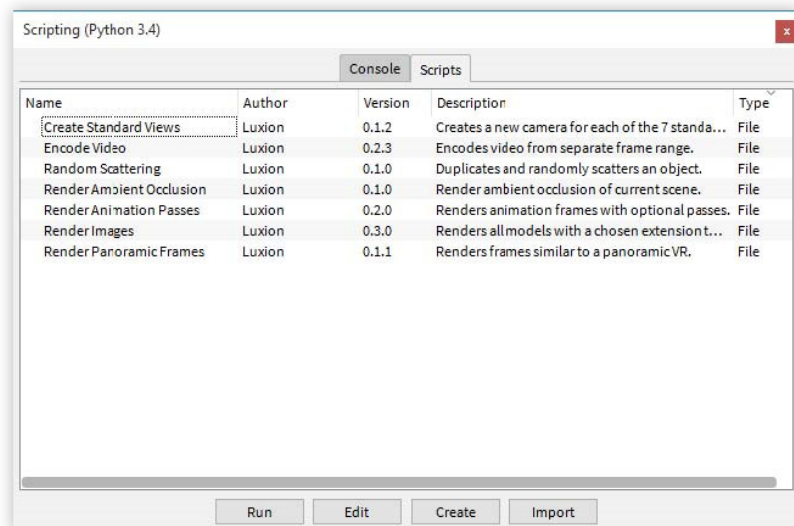
Creating A Script

To create a script, select *Create* from the *Scripts* tab. Provide a name for the script and the author.

If Python 3.4 is installed locally on the machine, then KeyShot will detect Python and all of the installed modules, such as `NumPy`, `SciPy`, `PIL`, etc., that can then be freely used for scripting in KeyShot (this can be disabled in the advanced preferences section). You may also import a script or edit an existing script using the corresponding buttons on the *Scripts* tab.

Vector and matrix classes are made available in the `luxmath` module to help with doing calculations. They are named `luxmath.Vector` and `luxmath.Matrix` respectively.
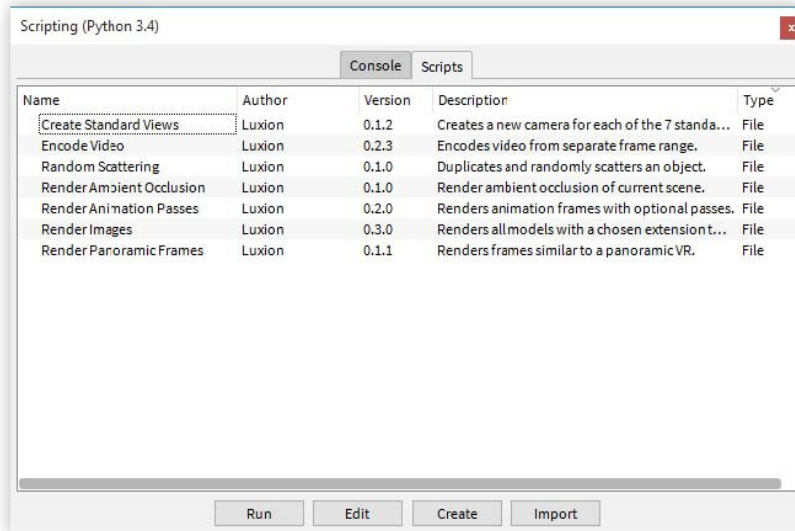
Script Examples

In this page you will find KeyShot's predefined scripts and instructions on how to use them. These scripts are listed under the Scripts tab inside the Scripting window.

On this page:
- Create Standard Views
- Encode Video
- Render Ambient Occlusion
- Render Animation Passes
- Render Images
- Render Panoramic Frames
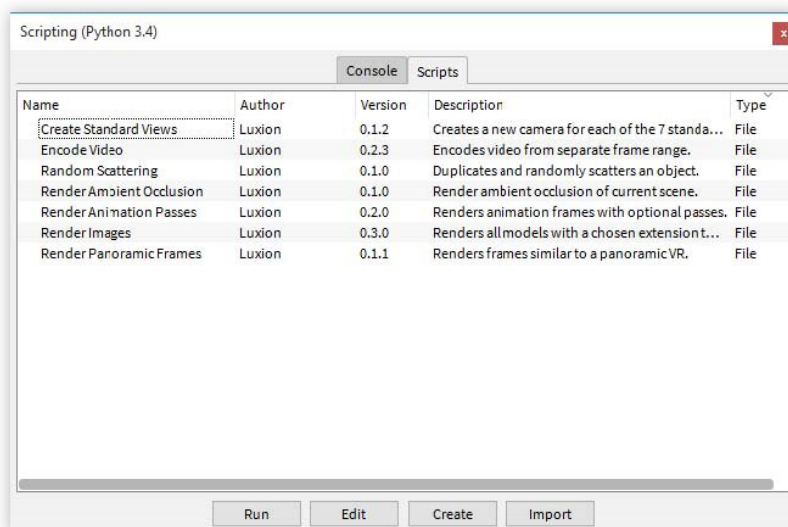
Create Standard Views

Creates seven standard view cameras: front, back, top, bottom, left, right, and isometric.

How to use:

- Select script and press Run. You will receive confirmation message: *Successful!*
- Click OK.
- You will find the seven standard views under *Project* > *Camera*.

Encode Video

Encodes video using an image sequence over a specific range of frames.

How to use:

- Select script and press Run. The user prompt appears.
- Click the browse button and select a folder with the image frames.
- For frame format, copy the name of the file, replacing the frame number with %d, e.g. my_new_animation.%d.jpg.
- Enter the start frame – the number in the name of the first image, e.g. 1 on my_new_animation.0001.jpg.
- Enter the end frame – the number in the name of the last image, e.g. 60 on my_new_animation.0060.jpg.
- Enter FPS for the video.
- Enter the video name.
- Click OK to begin the process.

Render Ambient Occlusion

Renders an ambient occlusion pass of your scene.

How to use:

- Select script and press Run. The user prompt appears.
- Click the browse button and if you wish to change your output folder.
- Set the output image name.
- Set the output width and height.
- Set the render time. The default value is 20 seconds. Increase the render time better quality.
- Add to queue should be enabled if you wish to add your job to the local render queue. Otherwise your job will be rendered according to your render mode options: default, background, or network.
- Decide if you wish to process your local queue after adding the job. If you disabled the "Add to queue" checbox, then this box should also be disabled.
- Click OK to begin the process.

Render Animation Passes

Renders your animation frames with the option to output "ambient occlusion" and/or "toon outline shading" passes. Please note that in order to run this script, you must first apply animations to your scene.*

How to use:

- Select script and press Run. The user prompt appears.
- Click the browse button and if you wish to change your output folder.
- Set the output file format. KeyShot uses %d to keep track of the frame number and you should leave this symbol in the name (e.g. my_new_animation.%d.jpg).
- Set the output width and height.
- Enter the start frame – the number in the name of the first image, e.g. 1 on my_new_animation.0001.jpg.
- Enter the end frame – the number in the name of the last image, e.g. 60 on my_new_animation.0060.jpg.
- Select the passes that you wish to render.
- Add to queue should be enabled if you wish to add your job to the local render

queue. Otherwise your job will be rendered according to your render mode options: default, background, or network.
- Decide if you wish to process your local queue after adding the job. If you disabled the "Add to queue" checbox, then this box should also be disabled.
- Click OK to begin the process.

Render Images

Imports all CAD files within a folder and renders them one at a time. This script can be used to render an animation from an obj file sequence. Once your images are rendered, you may stitch them up and compile the video with the Encode Video script above.

How to use:

- Select script and press Run. The user prompt appears.
- Click the browse button and select the folder with the geometry (.obj) sequence.
- For input, type the extension of the geometry without the dot (obj).
- For output, type the extension of the image format without the dot (png).
- Input the width and height of the output images in pixels.
- If you created a material template for automatic material assignment, then select your template. Otherwise, use "None".
- Click OK to begin the process.

Render Panoramic Frames

Renders a series of frames that can be used to create a panoramic view of the product (that is, 360 degrees along the vertical axis Y). Once your images are rendered, you may stitch them up and compile the video with the Encode Video script above.

How to use:

- Select script and press Run. The user prompt appears.
- Select which camera you'd like to use. The center of the camera will be the pivot of rotation.
- Set the number of frames to render. The default number of frames is 50. Since the camera rotates a full 360 degrees, this comes out to about 7 degrees per frame (360 / 50).
- Set the output file format. KeyShot uses %d to keep track of the frame number and you should leave this symbol in the name (e.g. my_new_animation.%d.jpg).
- Click the browse button and if you wish to change your output folder.
- Set the output width and height.
- Add to queue should be enabled if you wish to add your job to the local render queue. Otherwise your job will be rendered according to your render mode options: default, background, or network.
- Decide if you wish to process your local queue after adding the job. If you disabled the "Add to queue" checbox, then this box should also be disabled.
- Choose the direction of rotation: clockwise (checkbox ON) or counterclockwise (checkbox OFF).
- Click OK to begin the process.

*Animation is only available in KeyShot Pro edition.

Animation

KeyShot Animation allows you to animate your models and cameras in no time.

To translate a part across the scene, simply right-click the part in the scene tree, select *Animation > Translation*, and tweak the animation settings. Similarly, to animate a camera: right-click a camera in the scene tree, select your animation type, and make the desired changes. You may also launch the Animation Wizard (*Animation > Animation Wizard*) and follow the prompts.

Animations in KeyShot are represented by rectangular nodes in the animation timeline. Each node has a start time (left side), an end time (right side) and a duration (the rectagle's length). You may move them around, scale them, stack them, or line them up in sequence to achieve different effects.

In this section:
- Animation Types
- Animation Wizard
- Working with Animations
- Deformation Animations
- Animation Effects
- Animation Properties
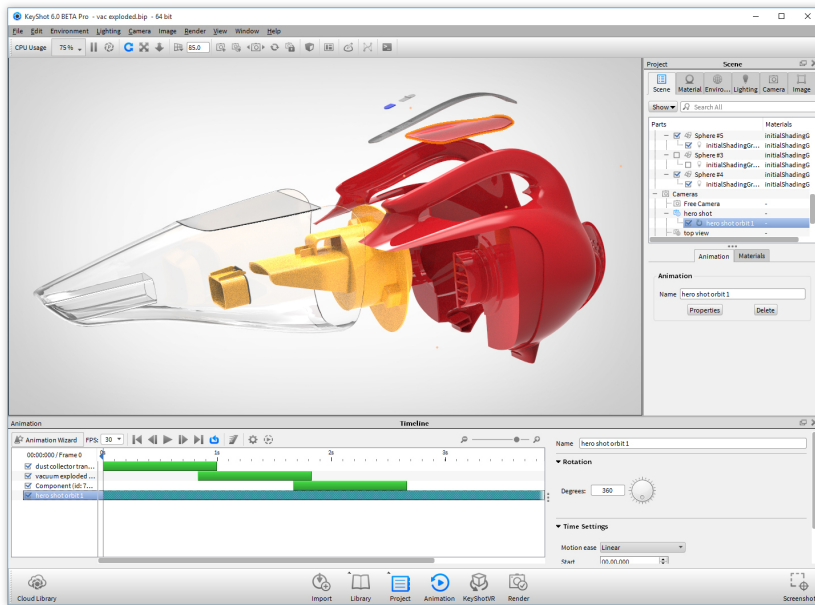
Animation Types

There are three types of animations in KeyShot:

- Part Animations
- Material Animations
- Camera Animations

Part Animations

Part animations affect your model's position, orientation, and visibility in the scene. They allow you to translate, rotate, and fade all while maintaining your model's hierarchy. Thus, animations applied to your model's top assembly will also affect all parts under that assembly.

- Translation
- Rotation
- Fade

Translation

A Translation is an animation in which a model or any one of its parts moves along the XYZ axis and changes position.
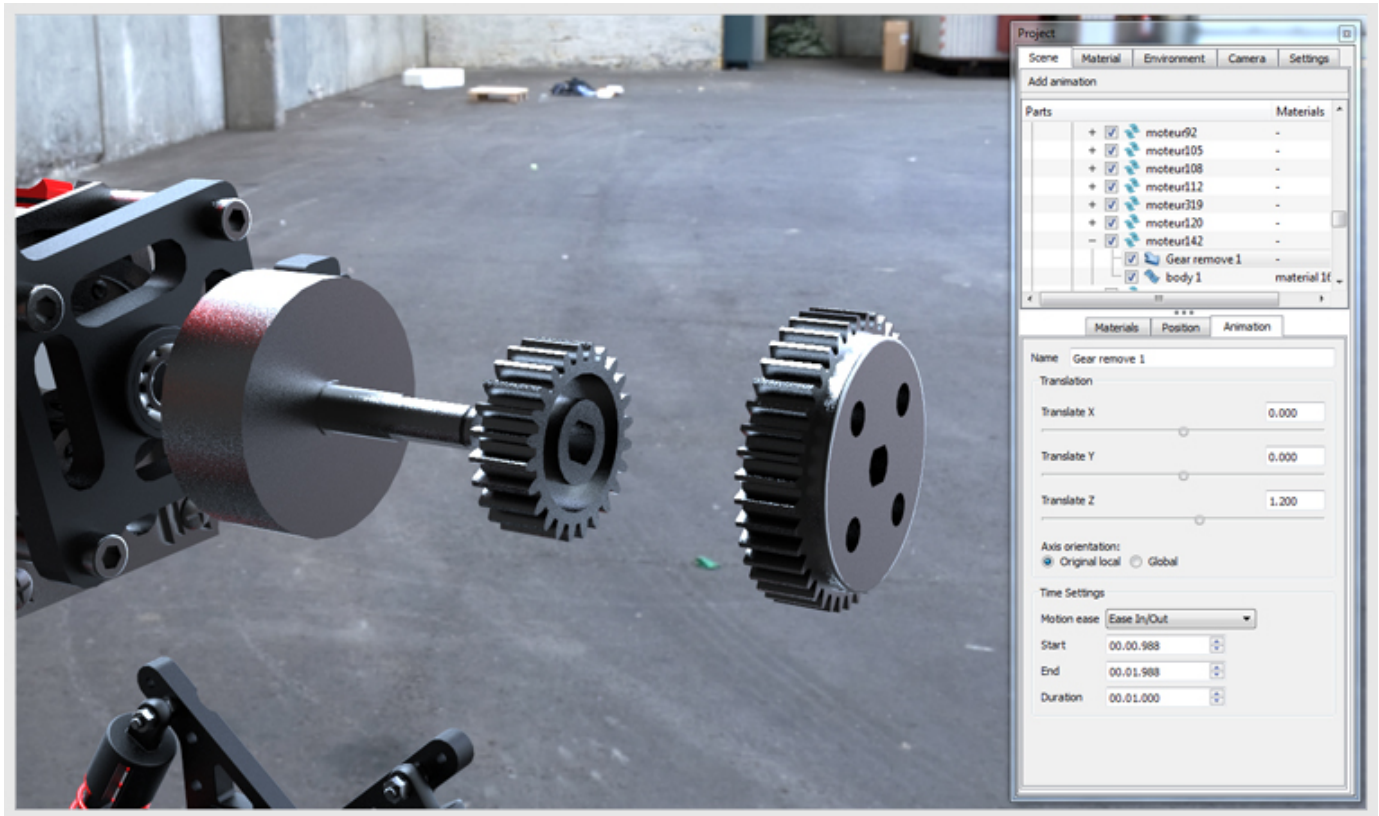
How to add a Translation:

1. Right-click your model/part in the scene tree and select *Animation > Translation.* You may also apply your translation animation via the Animation Wizard.

2. The Translation node will appear in the animation timeline.
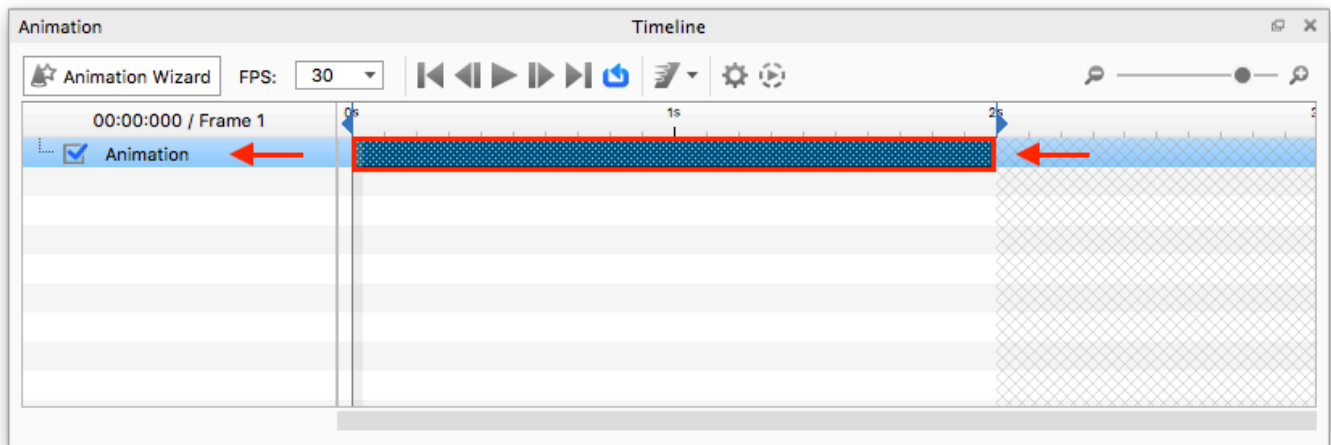
3. Use the Translation Properties window to control your model's movement. For more information about these properties, click here.
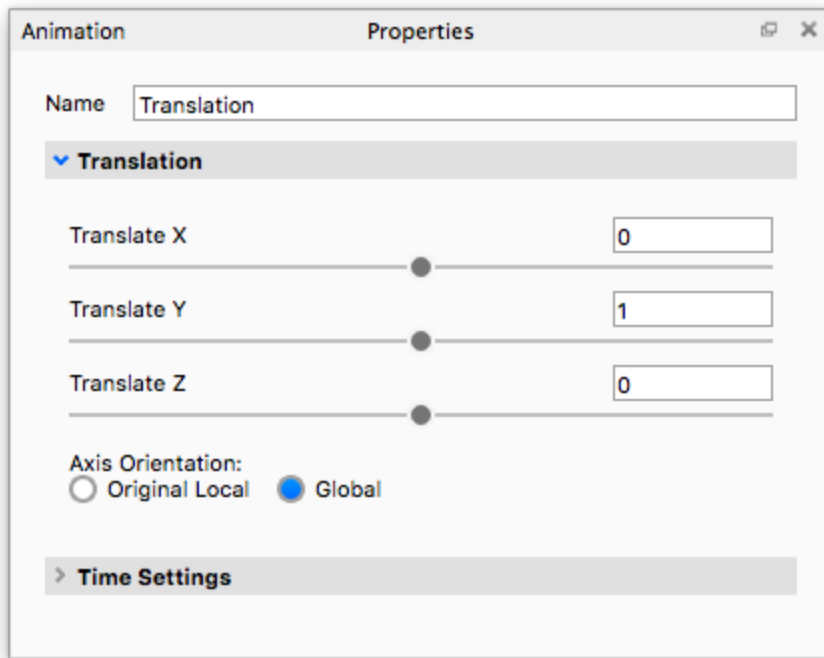
4. Click *Play* in the animation timeline to play a preview in realtime. You may also click and drag the time scrubber in the timeline.
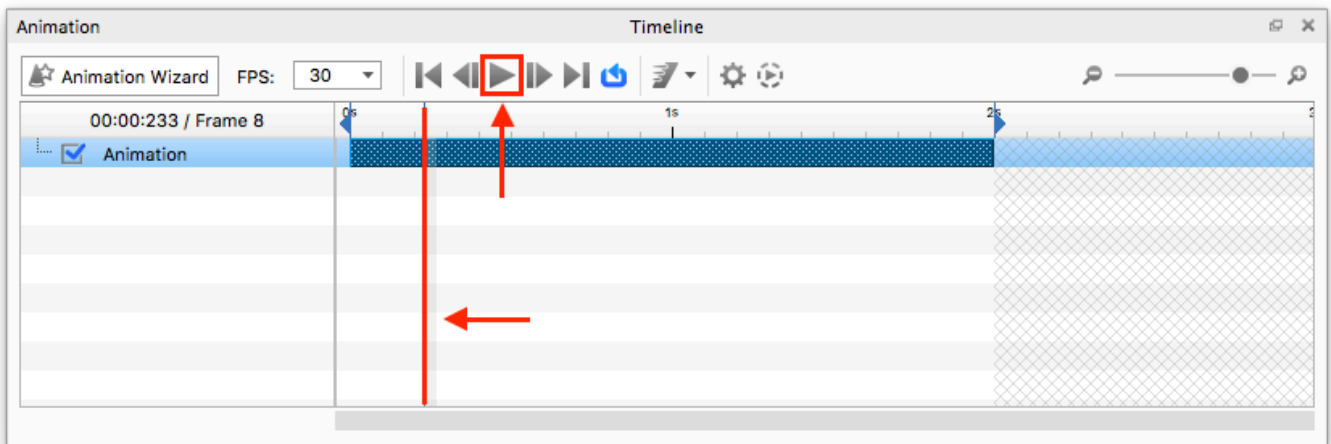

Rotation

A Rotation is an animation in which a model or any one of its parts rotates around its own axis or some other part's axis.
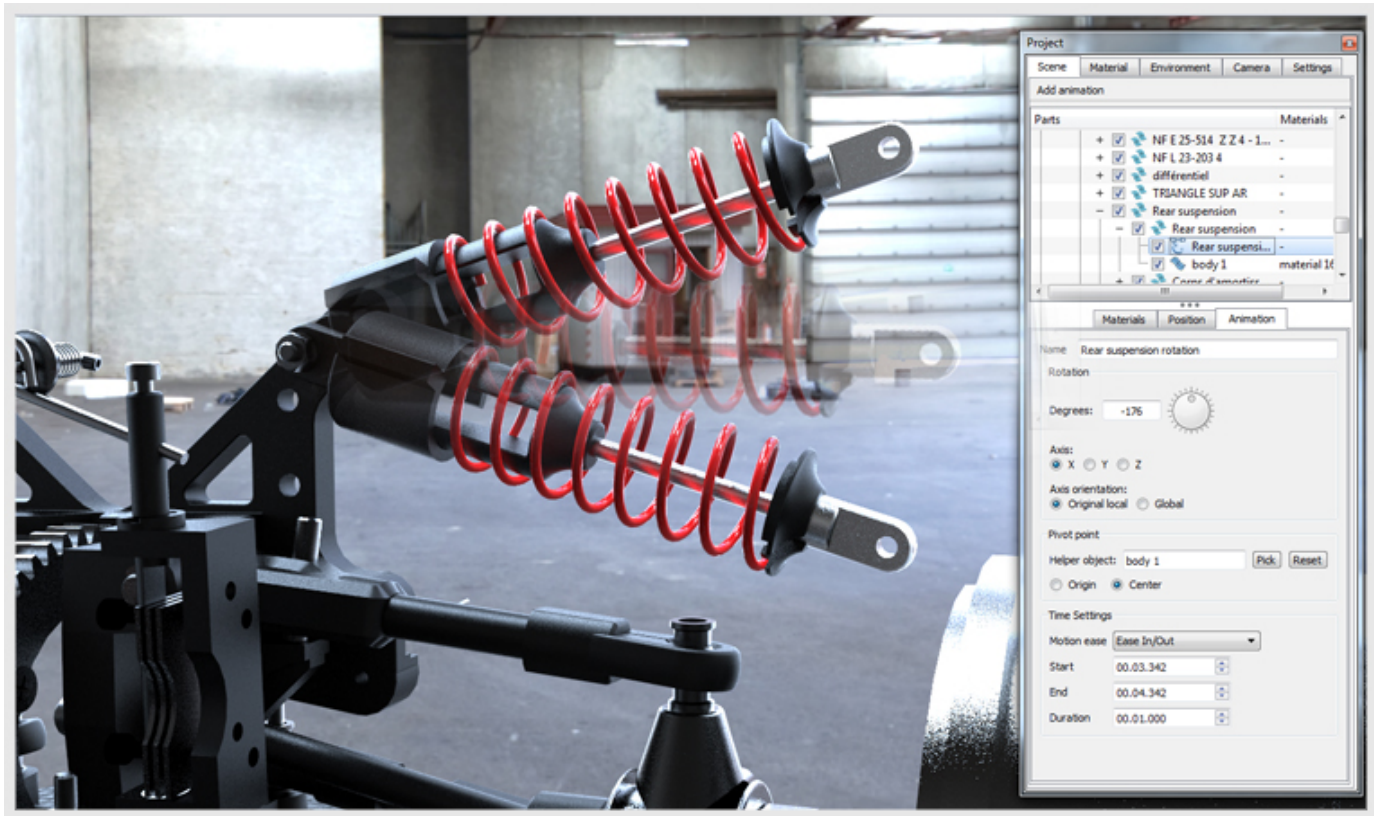
Tip: When dealing with complex animations consisting of multiple pivot points, we recommend a top-down hierarchy structure in your scene tree. Click here for a full article on how to animate hinges and multiple pivot points.

How to add a Rotation:

1. Right-click your model/part in the scene tree and select *Animation > Rotation.* You may also apply your Rotation animation via the Animation Wizard.

2. The Rotation node will appear in the animation timeline.
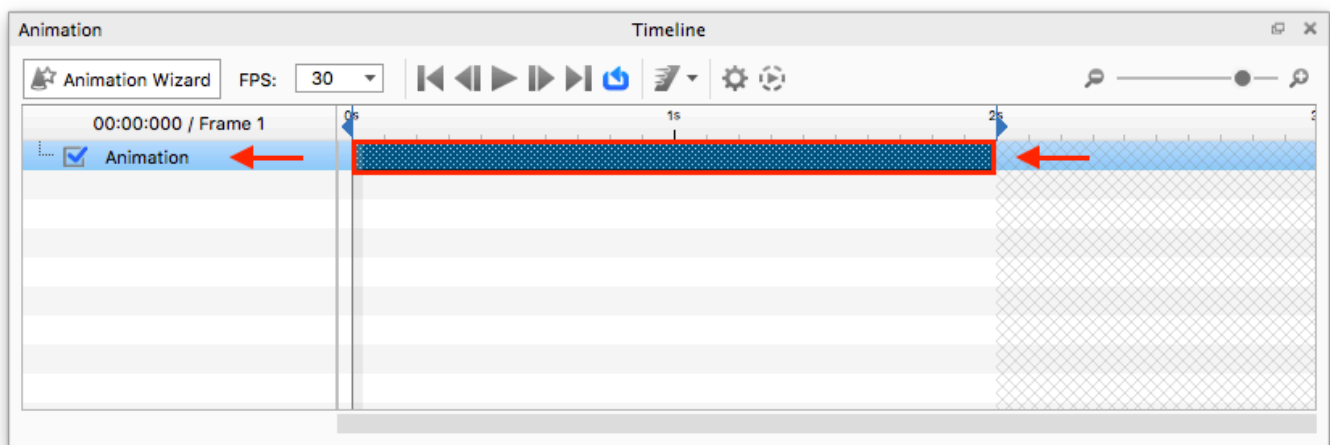
3. Use the Rotation Properties window to control your model's movement. For more information about these properties, click here.
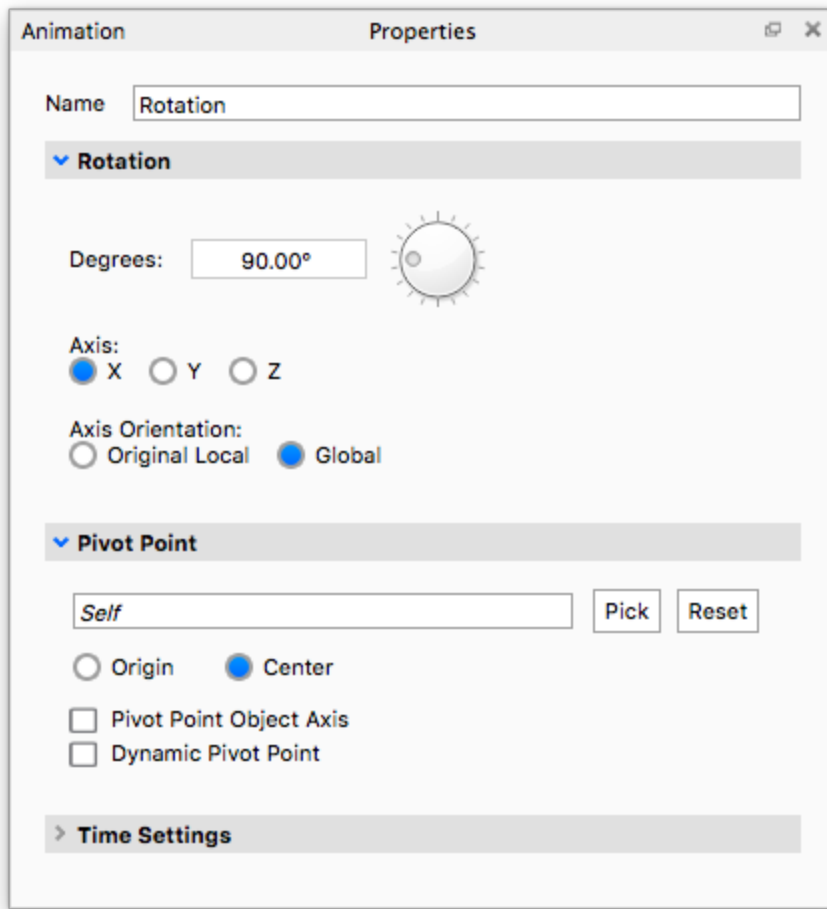
4. Click *Play* in the animation timeline to play a preview in realtime. You may also click and drag the time scrubber in the timeline.
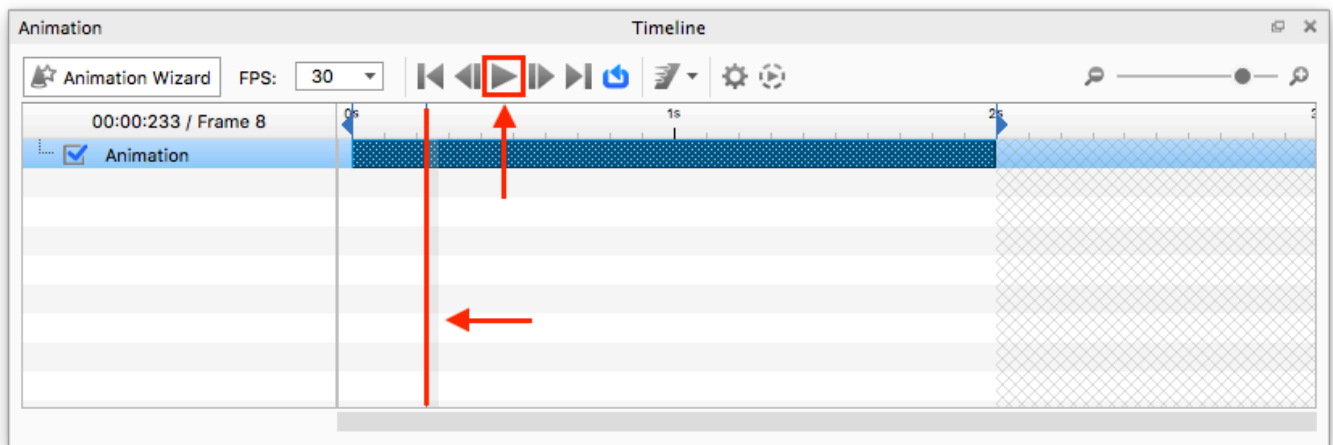

Fade

The Fade animation provides a smooth transition between two opacity values.
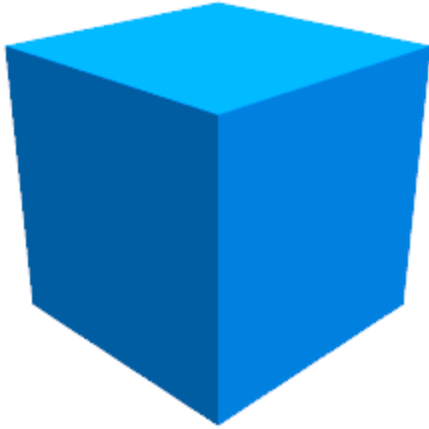
How to add a Fade:

1. Right-click your model/part in the scene tree and select *Animation > Fade.* You may also apply your Fade animation via the Animation Wizard.

2. The Fade node will appear in the animation timeline.
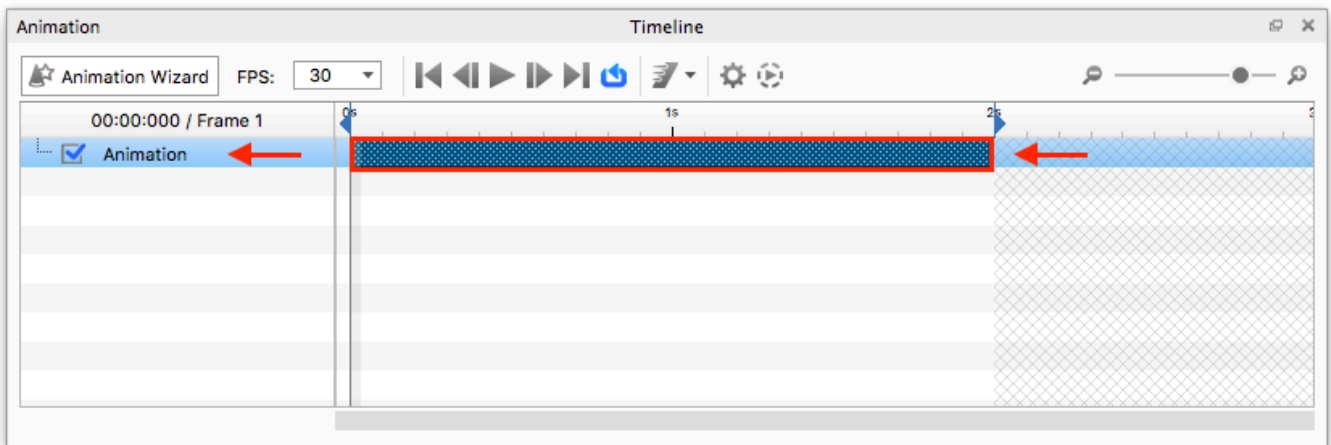
3. Use the Fade Properties window to control your model's opacity level. For more information about these properties, click here.
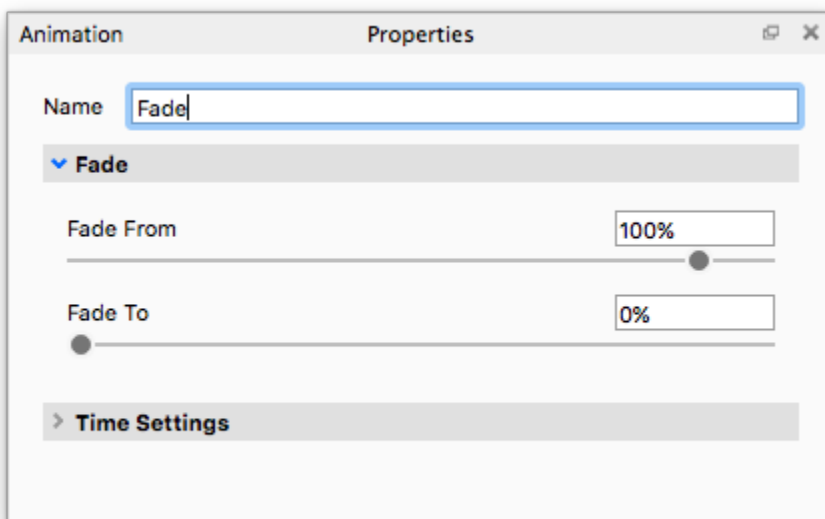
4. Click *Play* in the animation timeline to play a preview in realtime. You may also click and drag the time scrubber in the timeline.
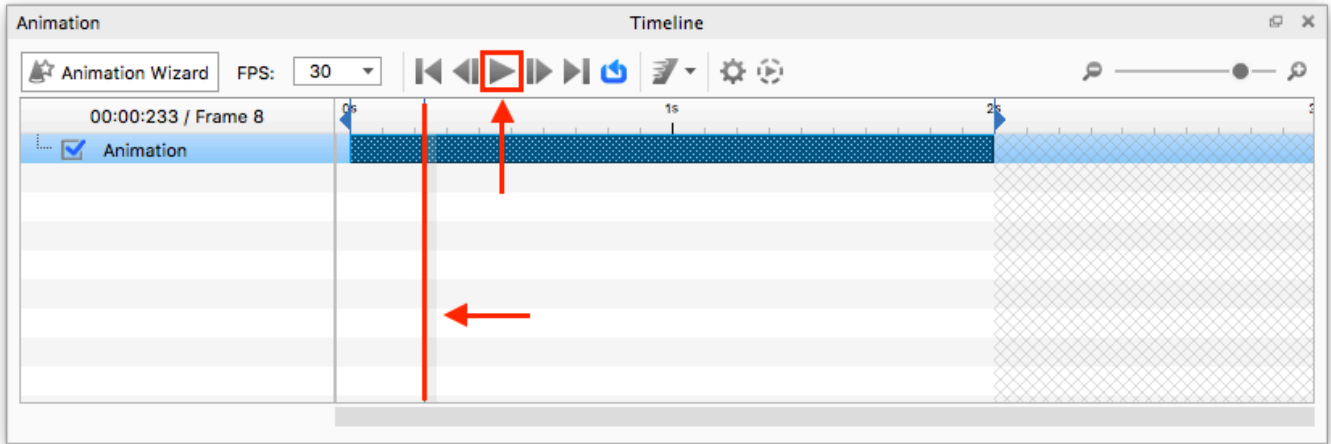
Material Animations

Material animations can only be applied to materials in your in-project library (in your scene). If you apply a material animation onto a material, the animation will not be listed in the scene tree under any group or part. Rather, the material animation "lives" inside the Material Graph. If two parts share the same material, then both parts will be affected by the material animation. Material animations include:

- Color Fade
- Number Fade

Color Fade (Animation)

The *Color Fade* animation provides a smooth transitions between two or more color values. You can apply a *Color Fade* to your material's diffuse, specular, and opacity map. You may also apply a *Color Fade* to any material value like roughness, refraction index, power, contour width, etc.

How To Apply A Color Fade Animation:

1. Select a part in your scene that has the desired material.

2. Right-click and select *Material > Edit Material Graph* from the right-click context menu.

3. Inside the Material Graph go to *Nodes > Animation > Color Fade.*

4. Click and drag from the output channel on the Color Fade node to the desired input channel on your material node. This will connect the Color Fade node to your material node.

5. The *Color Fade* animation node will appear in the animation timeline.

6. Use the Color Fade Properties window to set your color transitions. For more information about these properties, click here.

7. Click *Play* in the animation timeline to play the preview in realtime. You may also click and drag the time scrubber in the timeline.

Number Fade (Animation)

The *Number Fade* animation provides a smooth transitions between two numerical values. You can apply a *Number Fade* to your material's diffuse, specular, and opacity map. You may also apply a *Number Fade* to any material value like roughness, refraction index, power, contour width, etc.

How To Apply A Number Fade Animation:

1. Select a part in your scene that has the desired material.

2. Right-click and select *Material > Edit Material Graph* from the right-click context menu.

3. Inside the Material Graph go to *Nodes > Animation > Number Fade.*

4. Click and drag from the output channel on the Number Fade node to the desired input channel on your material node. This will connect the Number Fade node to your material node.

5. The *Color Fade* animation node will appear in the animation timeline.

6. Use the Color Fade Properties window to set your color transitions. For more information about these properties, click here.

7. Click *Play* in the animation timeline to play the preview in realtime. You may also click and drag the time scrubber in the timeline.

Camera Animations

Camera animations include:

- Orbit
- Panorama
- Inclination
- Dolly
- Translation
- Path
- Depth of Field
- Zoom
- Switch

Orbit

A camera Orbit rotates the camera around its target. The instructions below assume that you've already created a camera in your scene and set its target.
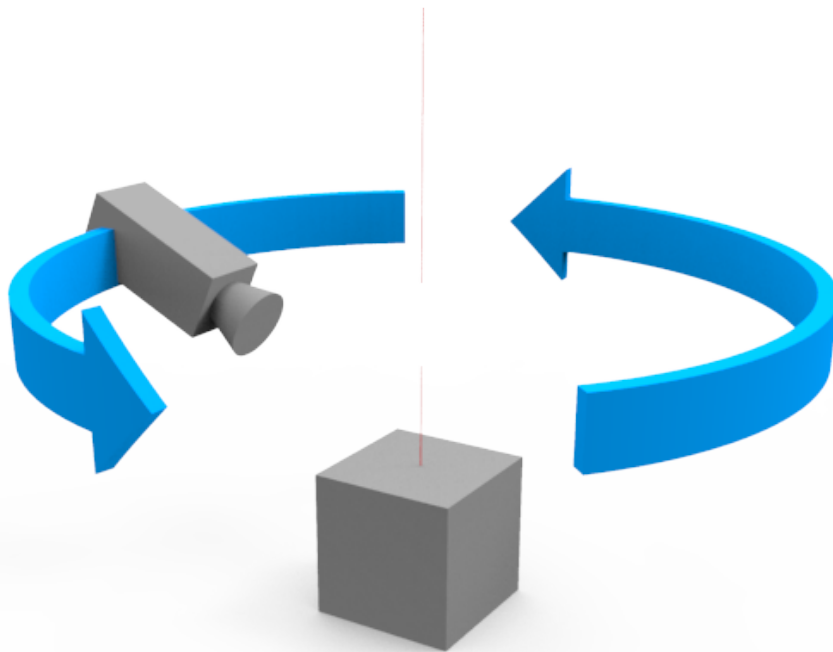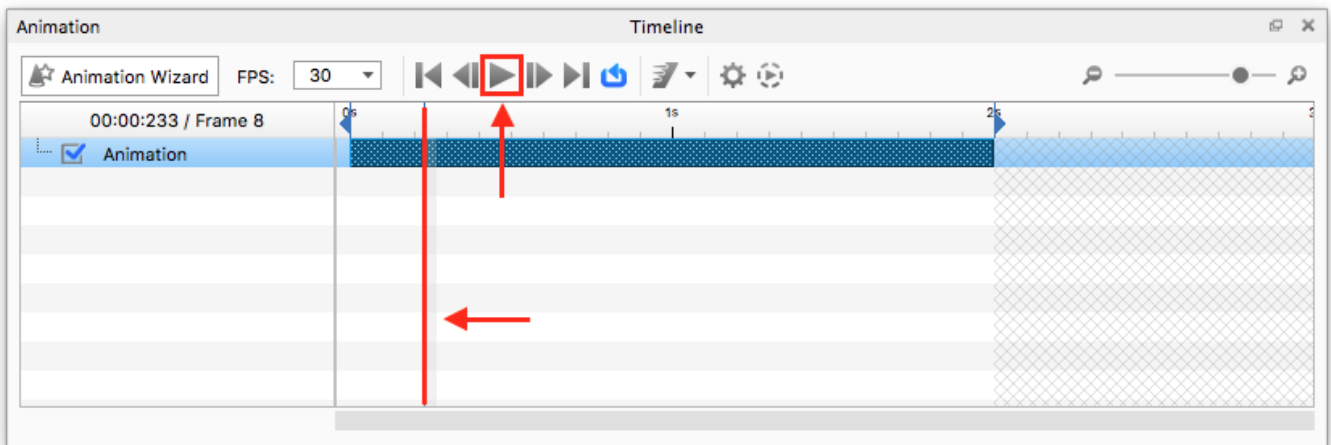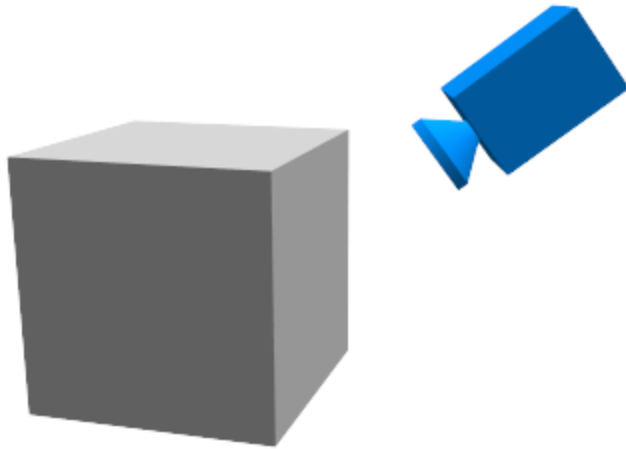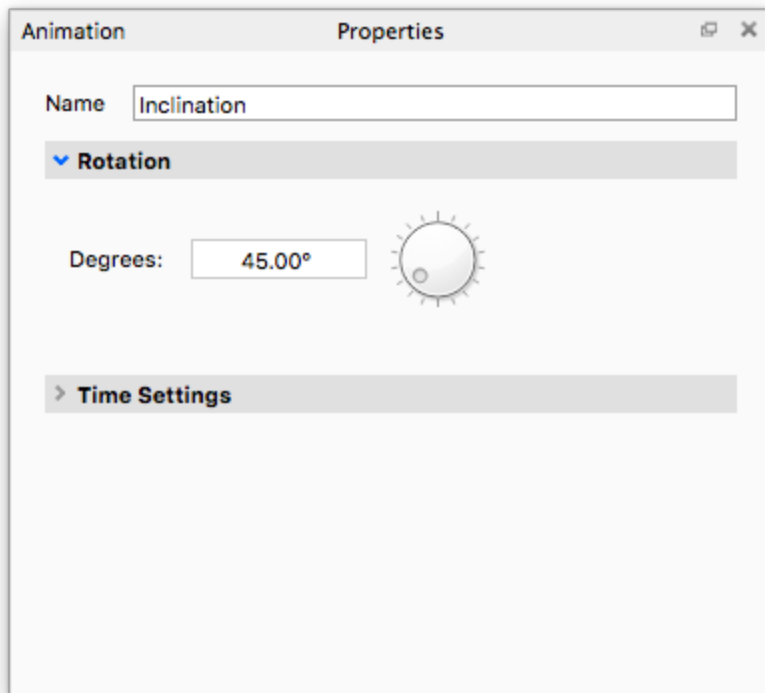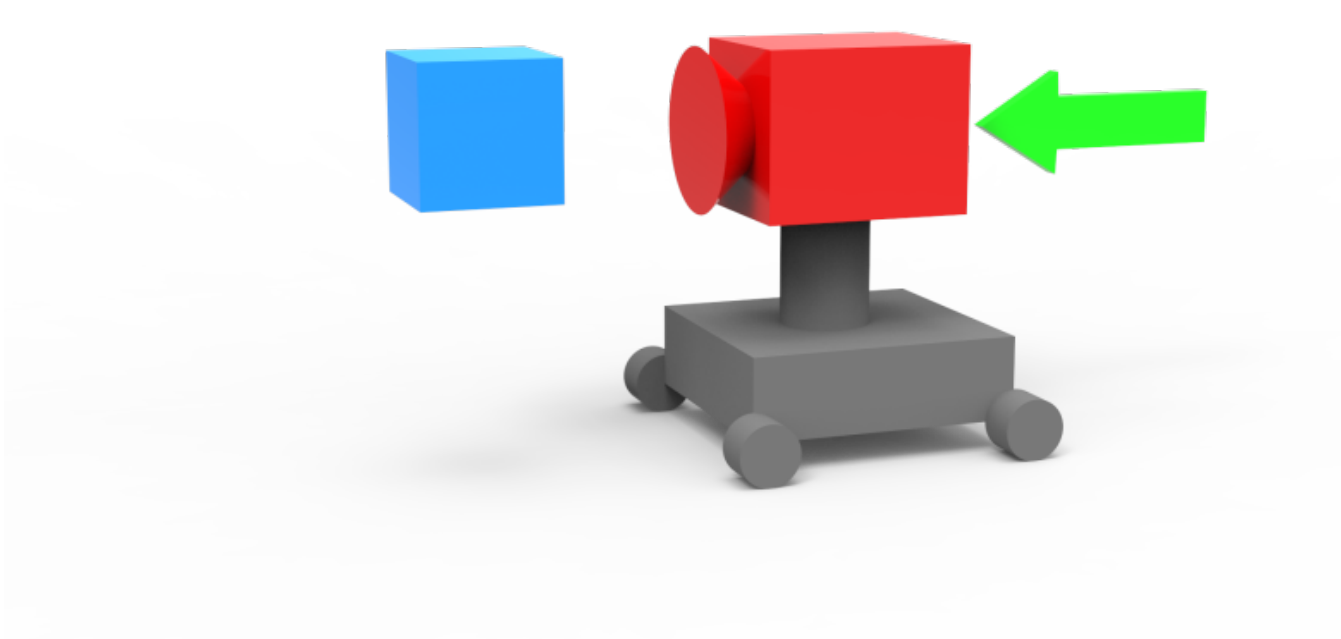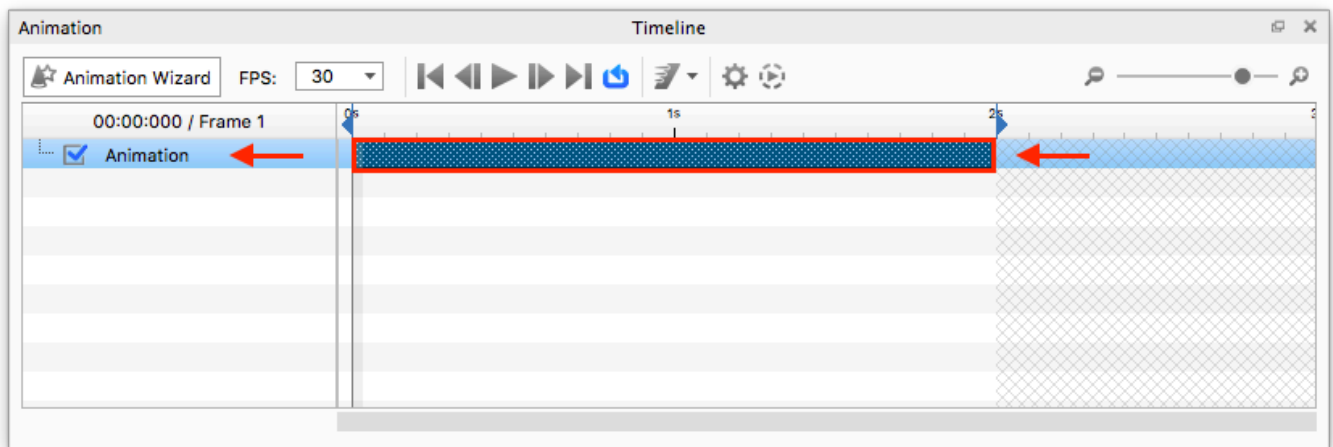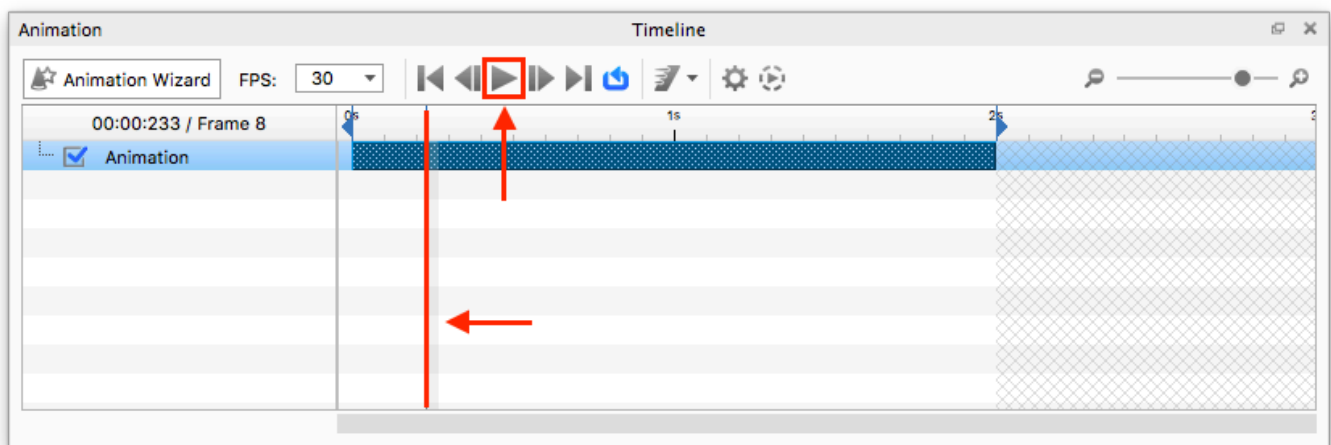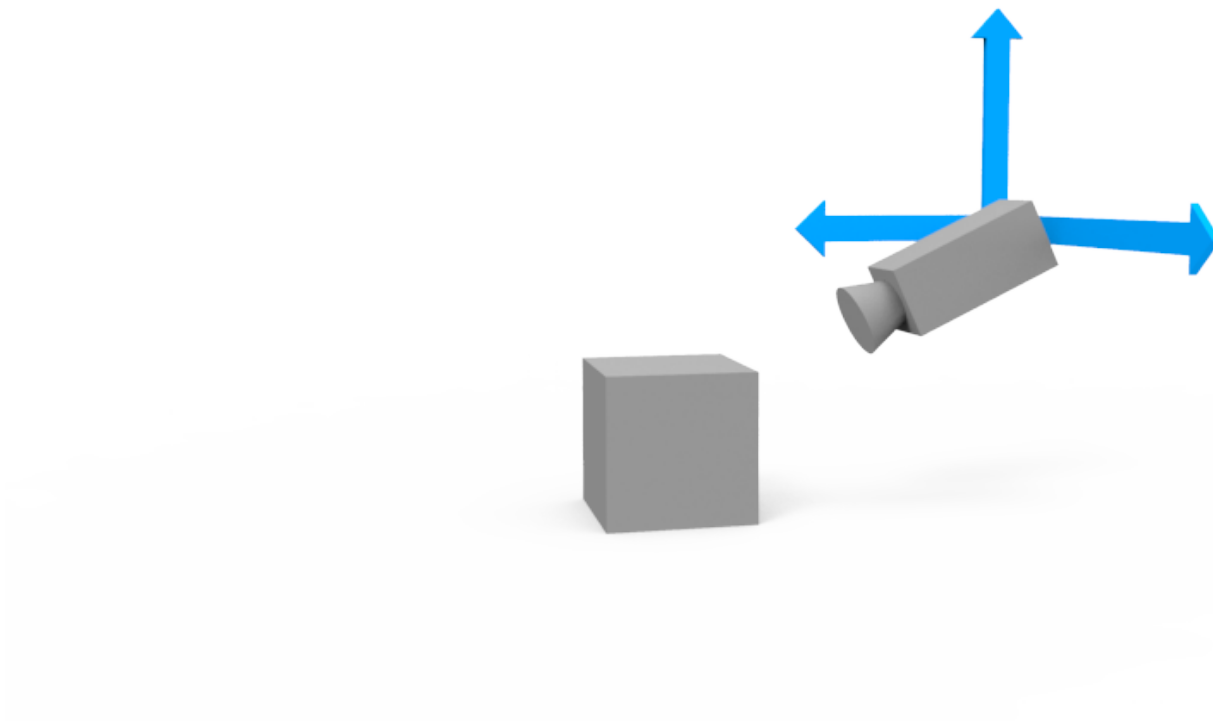

How to add a camera Orbit:

1. Right-click your camera in the scene tree (*Project* > *Scene*) and select *Orbit.* You may also apply your Orbit animation via the Animation Wizard.

2. The Orbit animation will appear inside the animation timeline.

3. Use the *Orbit Properties* window to control your orbit span in degrees.
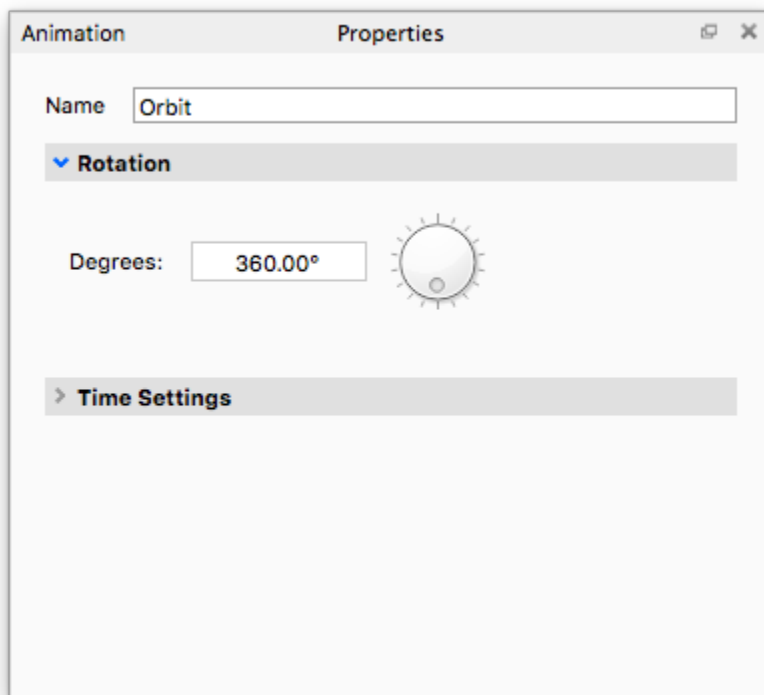
4. Click *Play* in the animation timeline to play the preview in realtime. You may also click and drag the time scrubber in the timeline.
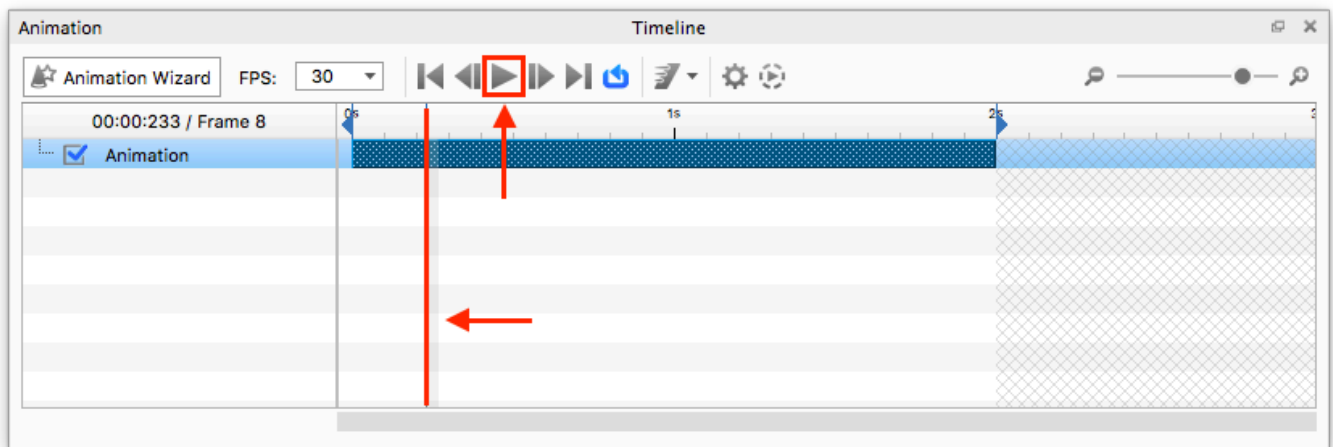
## Panorama

The camera Panorama rotates the camera around its own axis to simulate a full panoramic view. You may use this type of animation for showing a car interior or an architectural interior. The instructions below assume that you've already created a camera in your scene and set its target.
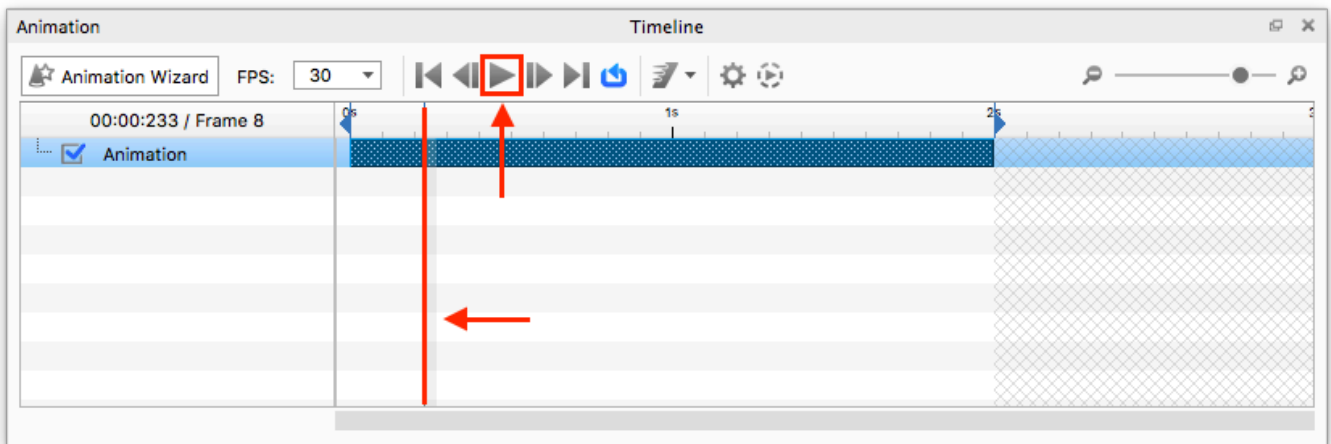
How to add a camera Panorama:

1. Right-click your camera in the scene tree (*Project* > *Scene*) and select *Panorama.* You may also apply your Panorama animation via the Animation Wizard.

2. The Panorama animation will appear inside the animation timeline.
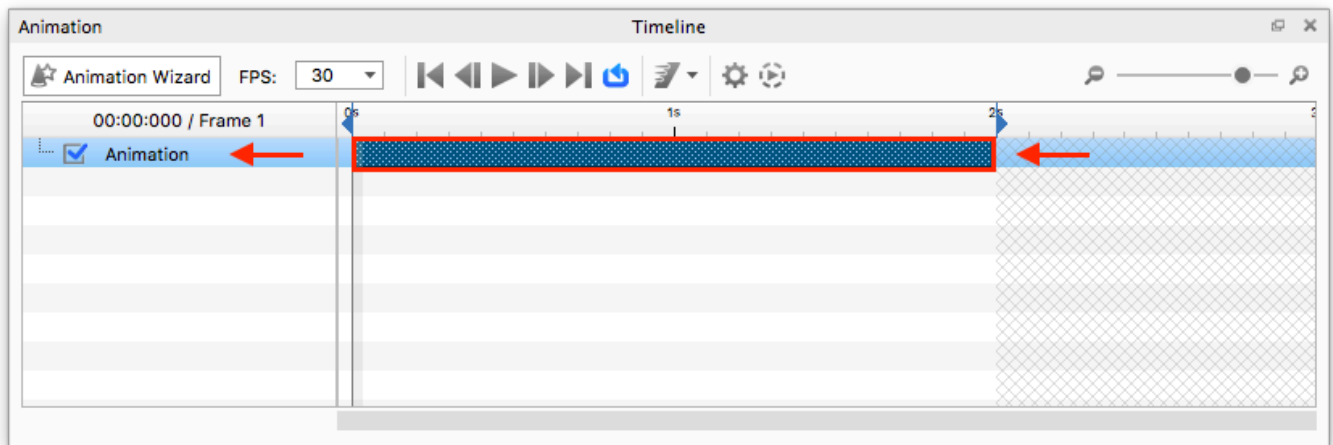
**3.** Use the *Panorama Properties* window to control your Panorama span in degrees.
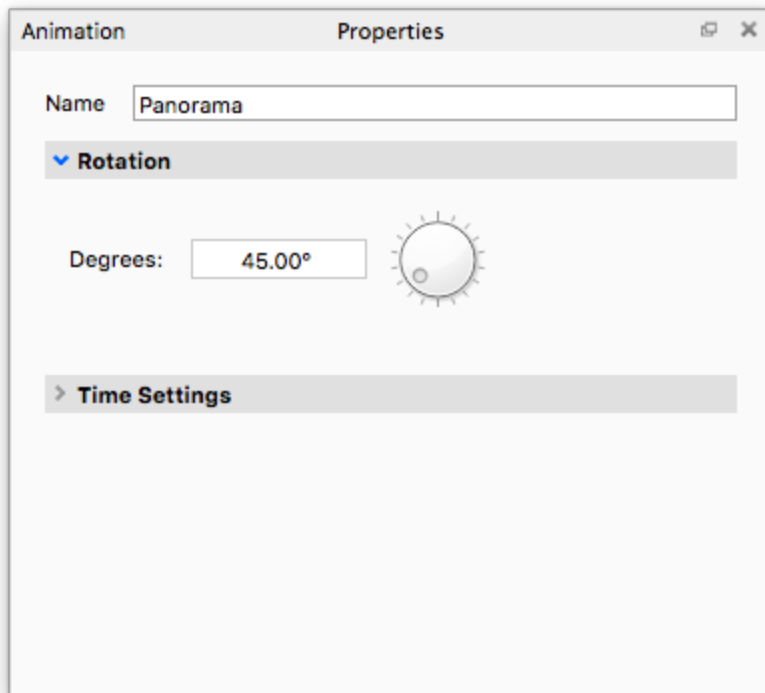
4. Click *Play* in the animation timeline to play the preview in realtime. You may also click and drag the time scrubber in the timeline.


Inclination

The camera Inclination rotates the camera up and down around its target. The instructions below assume that you've already created a camera in your scene and set its target.

How to add a camera Inclination:

1. Right-click your camera in the scene tree (*Project > Scene*) and select *Inclination.* You may also apply your Inclination animation via the Animation Wizard.

2. The Inclination animation will appear inside the animation timeline.
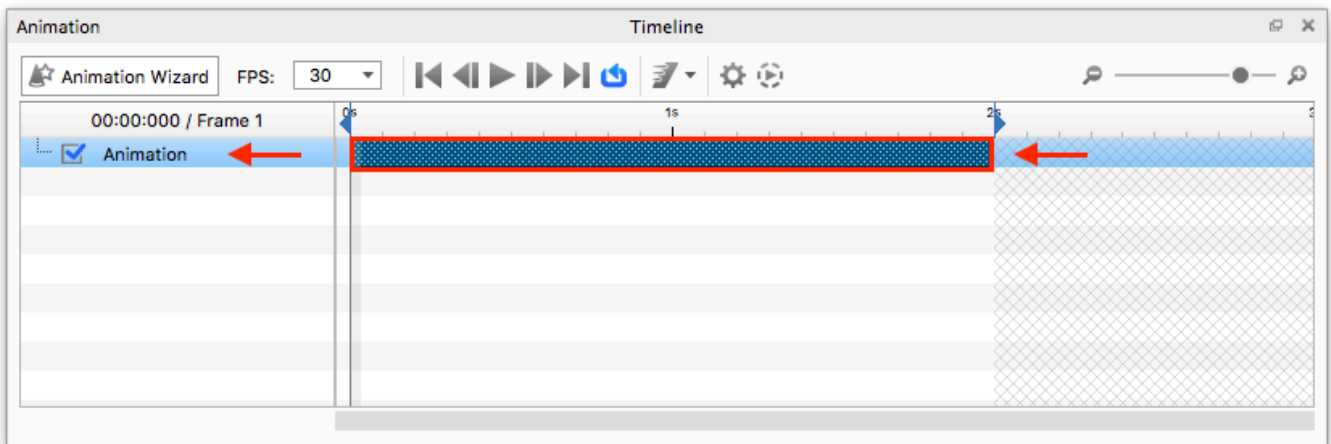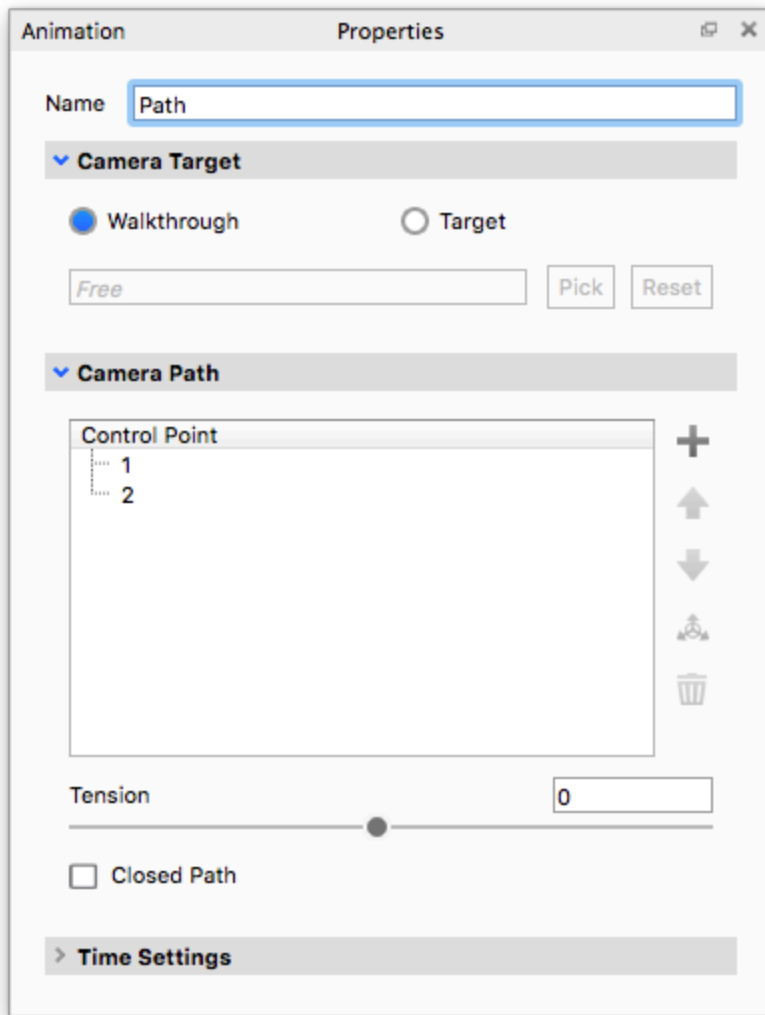

3. Use the *Inclination Properties* window to control your Inclination span in degrees.

4. Click *Play* in the animation timeline to play the preview in realtime. You may also click and drag the time scrubber in the timeline.
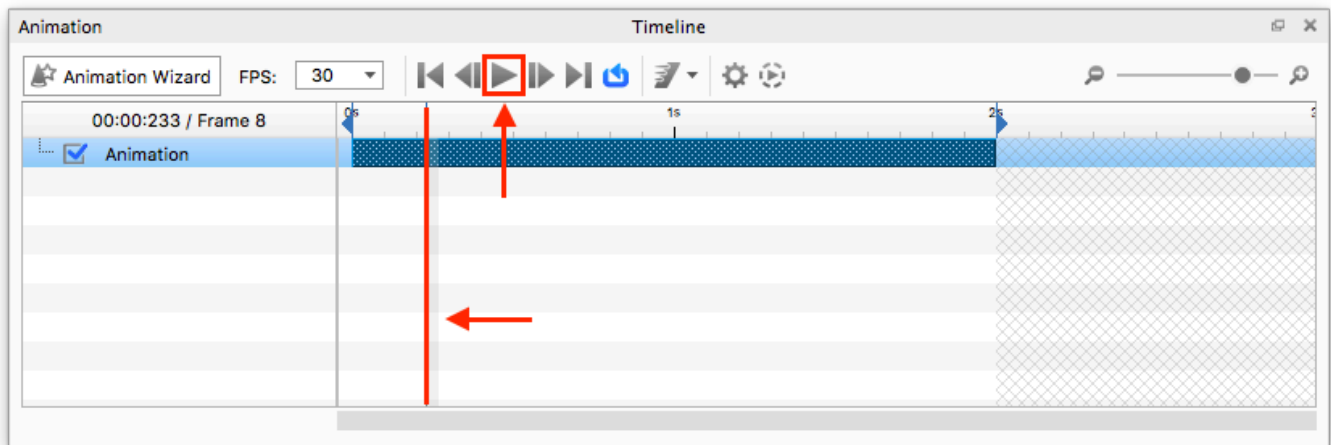
Dolly

While the Zoom animation changes the focal length of the camera to achieve it's effect, the Dolly animation physically moves the camera closer to the subject. Use this camera animation when you want to dynamically change your camera location. The instructions below assume that you've already created a camera in your scene and set its target.

How to add a camera Dolly:

1. Right-click your camera in the scene tree (*Project > Scene*) and select *Dolly.* You may also apply your Dolly animation via the Animation Wizard.

2. The Dolly animation will appear inside the animation timeline.

3. Use the *Dolly Properties* window to control your Dolly distance. The Distance slider is calibrated to your scene units.
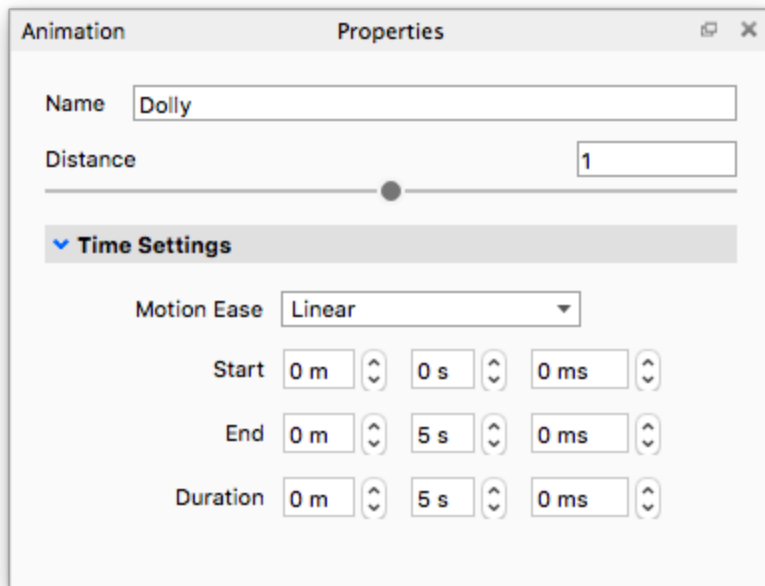
4. Click *Play* in the animation timeline to play the preview in realtime. You may also click and drag the time scrubber in the timeline.


Translation (Camera)

Camera Translation allows the camera to move on the X, Y and Z axes. The instructions below assume that you've already created a camera in your scene and set its target.

How to add a camera Translation:

1. Right-click your camera in the scene tree (*Project* > *Scene*) and select *Translation.* You may also apply your Translation animation via the Animation Wizard.

2. The Translation animation will appear inside the animation timeline.
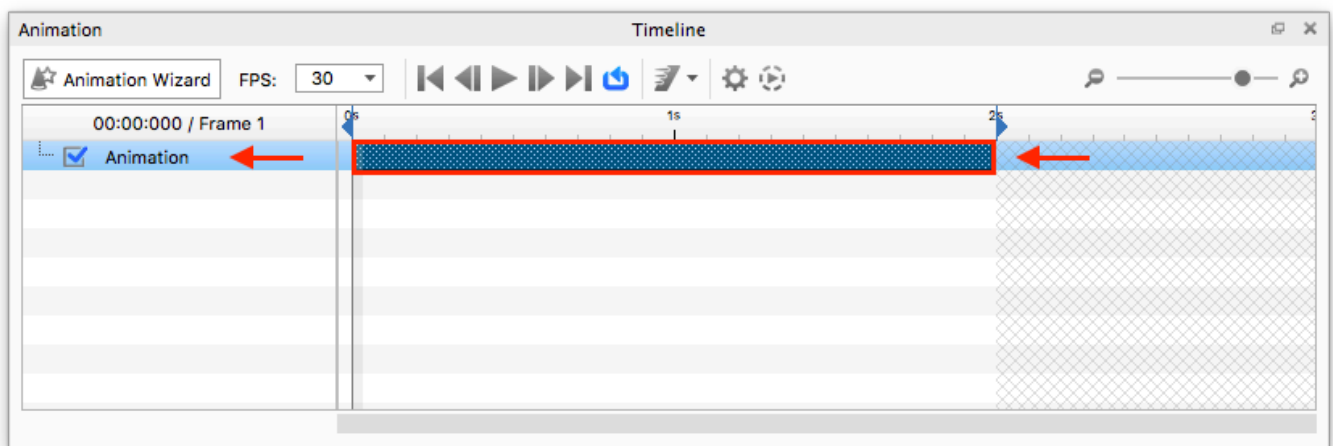
3. Use the *Translation Properties* window to control your Translation. The Translation sliders are calibrated to your scene units.
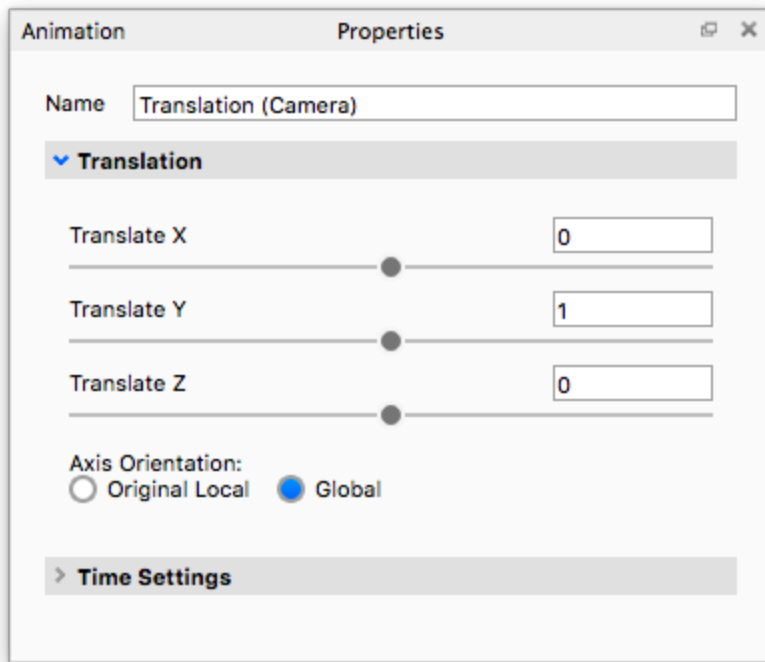
4. Click *Play* in the animation timeline to play the preview in realtime. You may also click and drag the time scrubber in the timeline.

Path

Camera path animation creates a path through which the camera can travel. This is useful for walkthroughs, or for more dynamic camera movements. The instructions below assume that you've already created a camera in your scene and set its target.
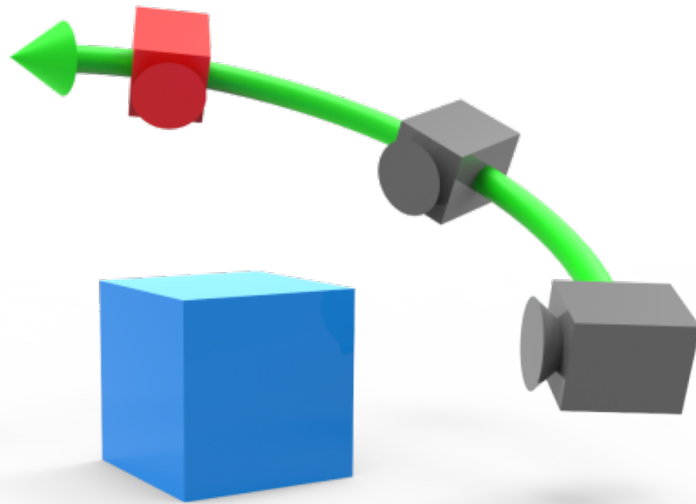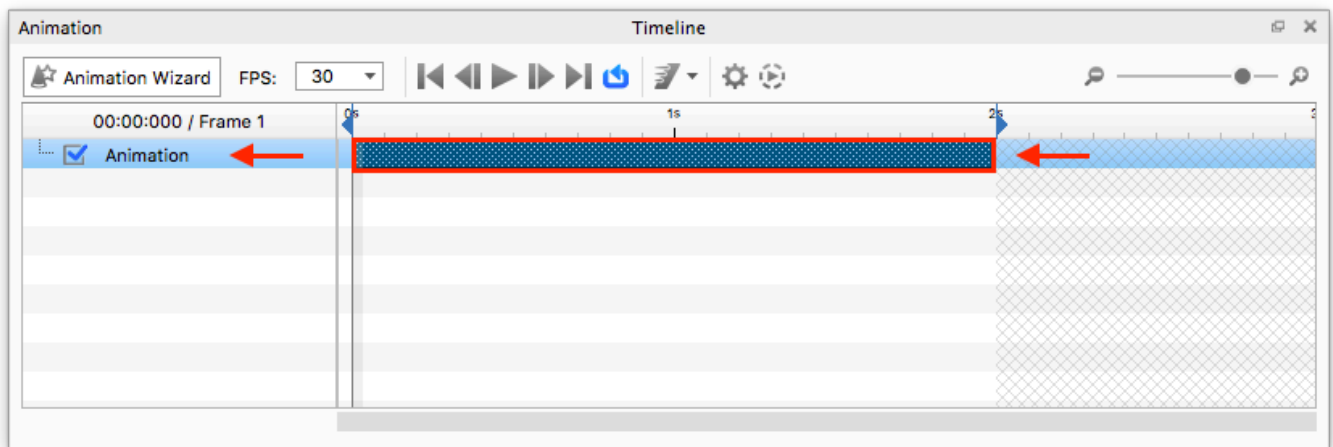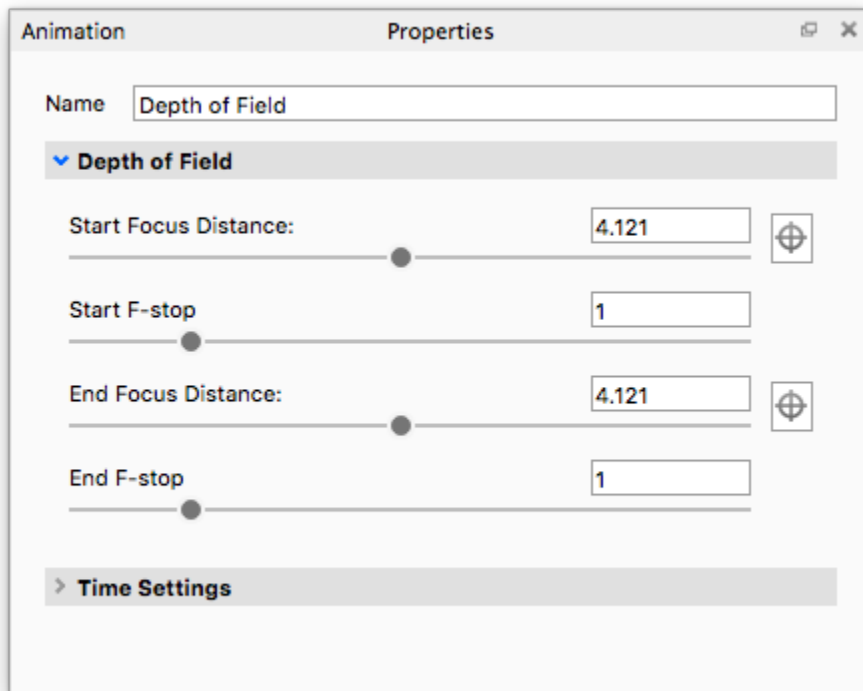
How to add a camera Path:

1. Right-click your camera in the scene tree (*Project > Scene*) and select *Path.* You may also apply your Path animation via the Animation Wizard.

**2.** The Path animation will appear inside the animation timeline.
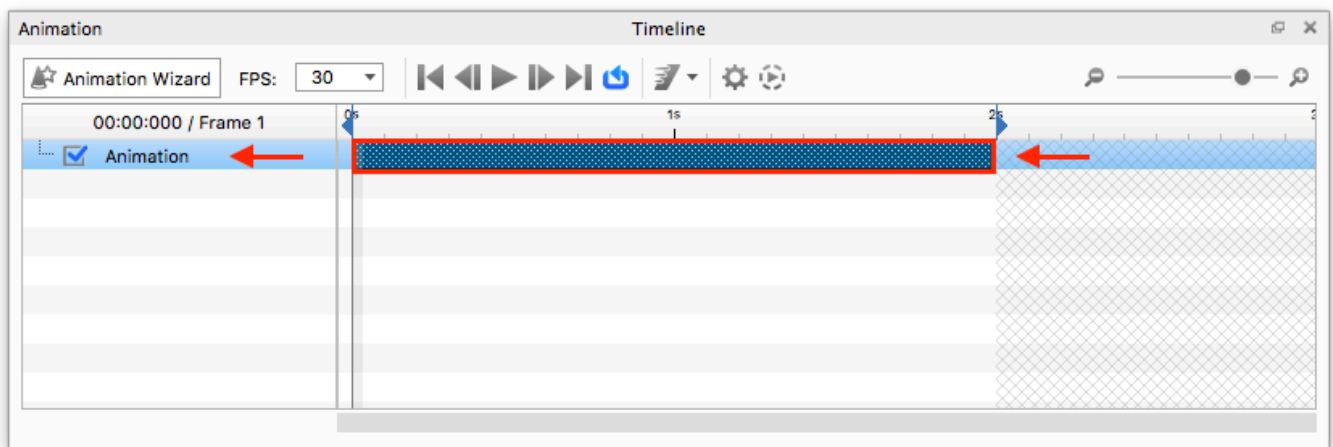
3. Adjust your camera in realtime or select a different camera view from *Project > Camera* and then add your control points. You can think of control points as the dots that connect your camera path from start (point 1) to end (n-th point).
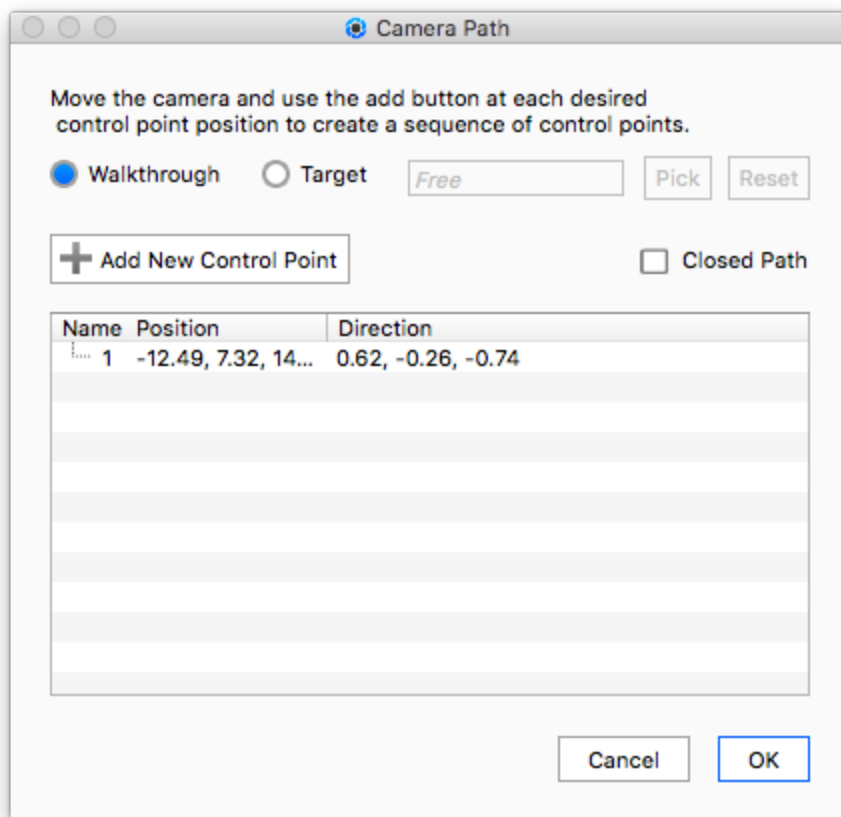
When all control points have been added, you may click OK.

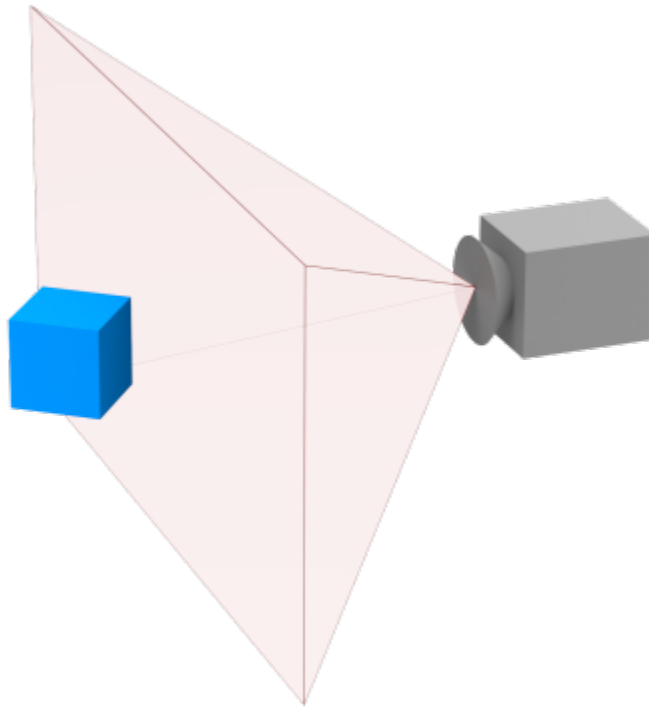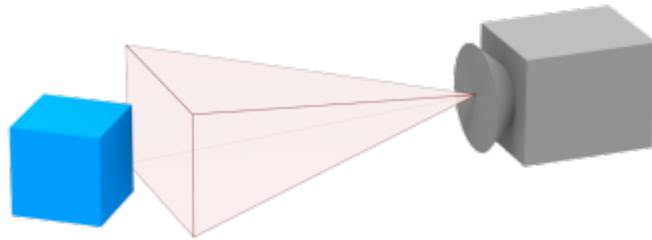**4.** Use the *Path Properties* window to control the camera path.

5. Click *Play* in the animation timeline to play the preview in realtime. You may also click and drag the time scrubber in the timeline.
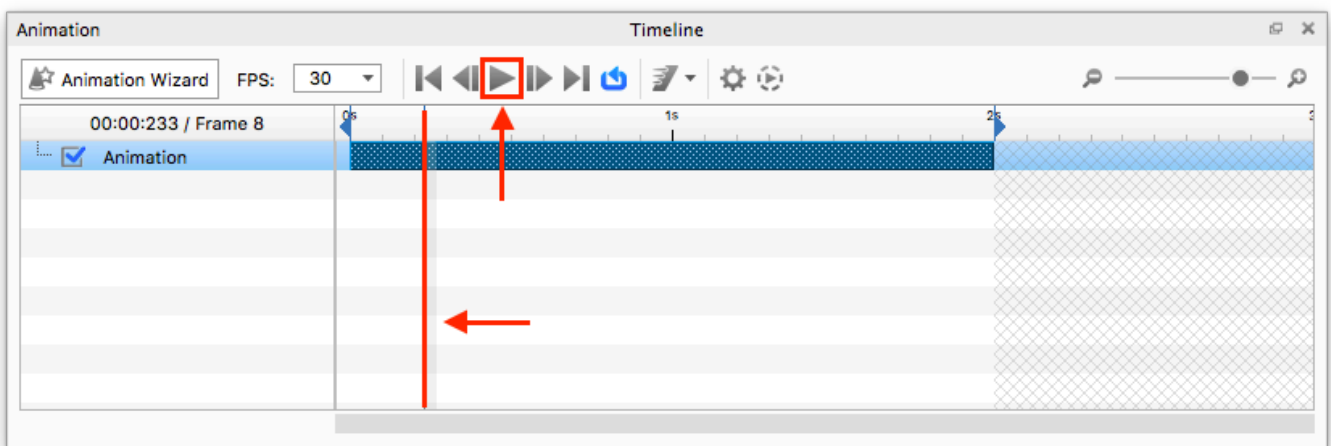

6. To view and edit the camera path, open the *Geometry View* icon from the *Ribbon* or select *Window > Show Geometry View*. The cameras (Control Points) and camera path will be visible. Left-click to select a camera. Right-click to show options to move, add or delete a control point.
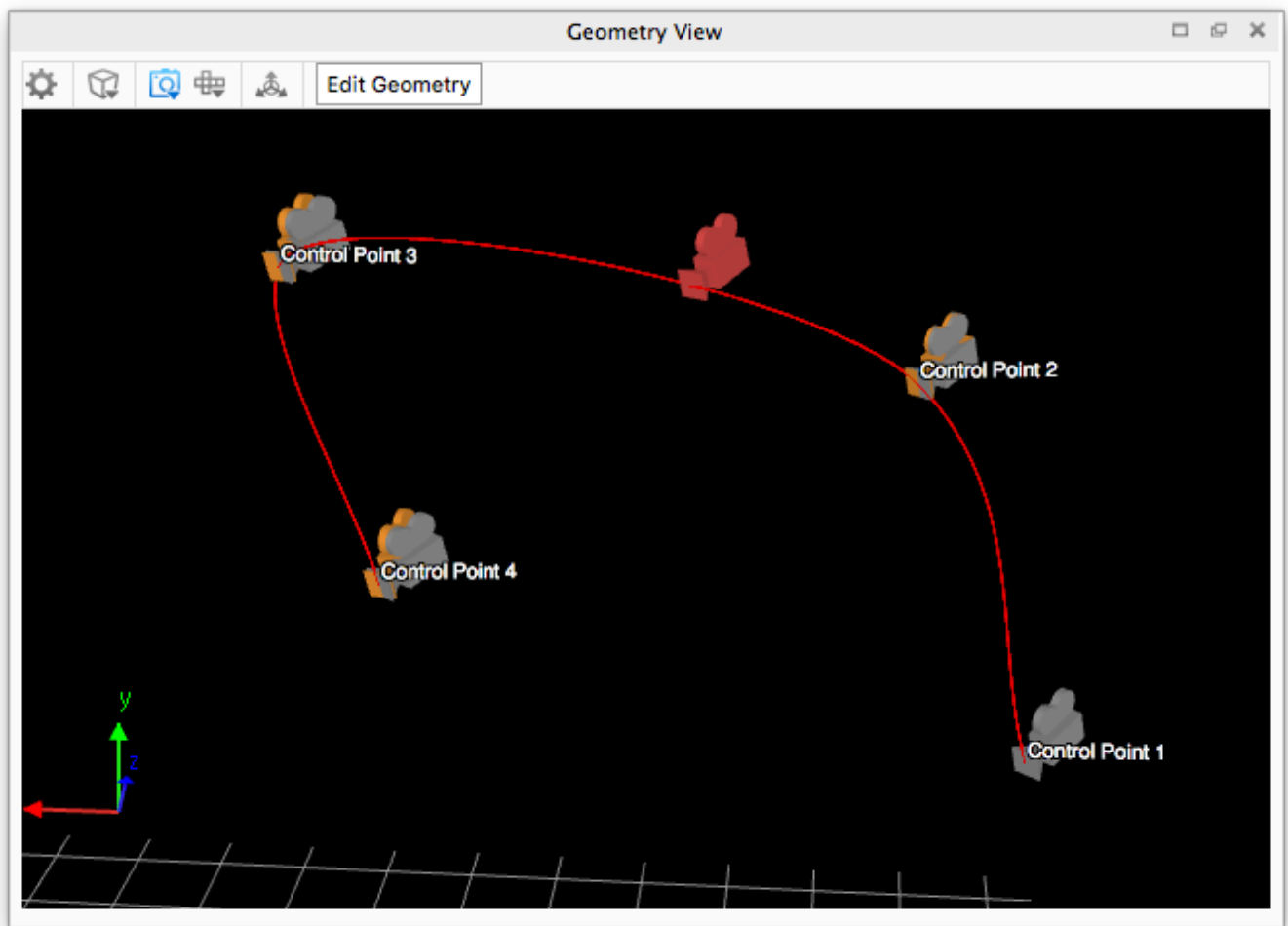
7. To move a Control Point, select a control point, and click the Move Tool button.
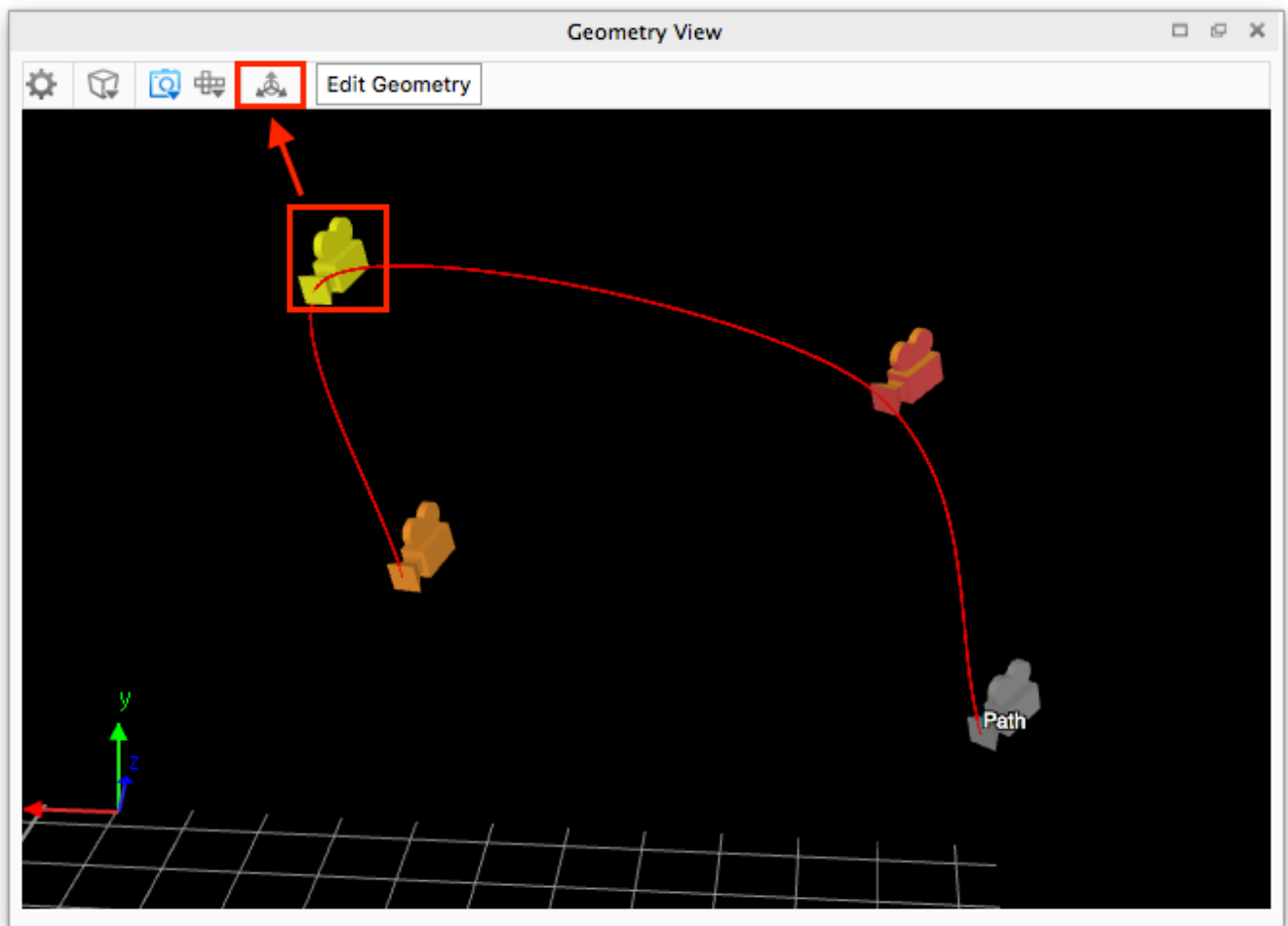
The move tool will appear. Position and confirm.
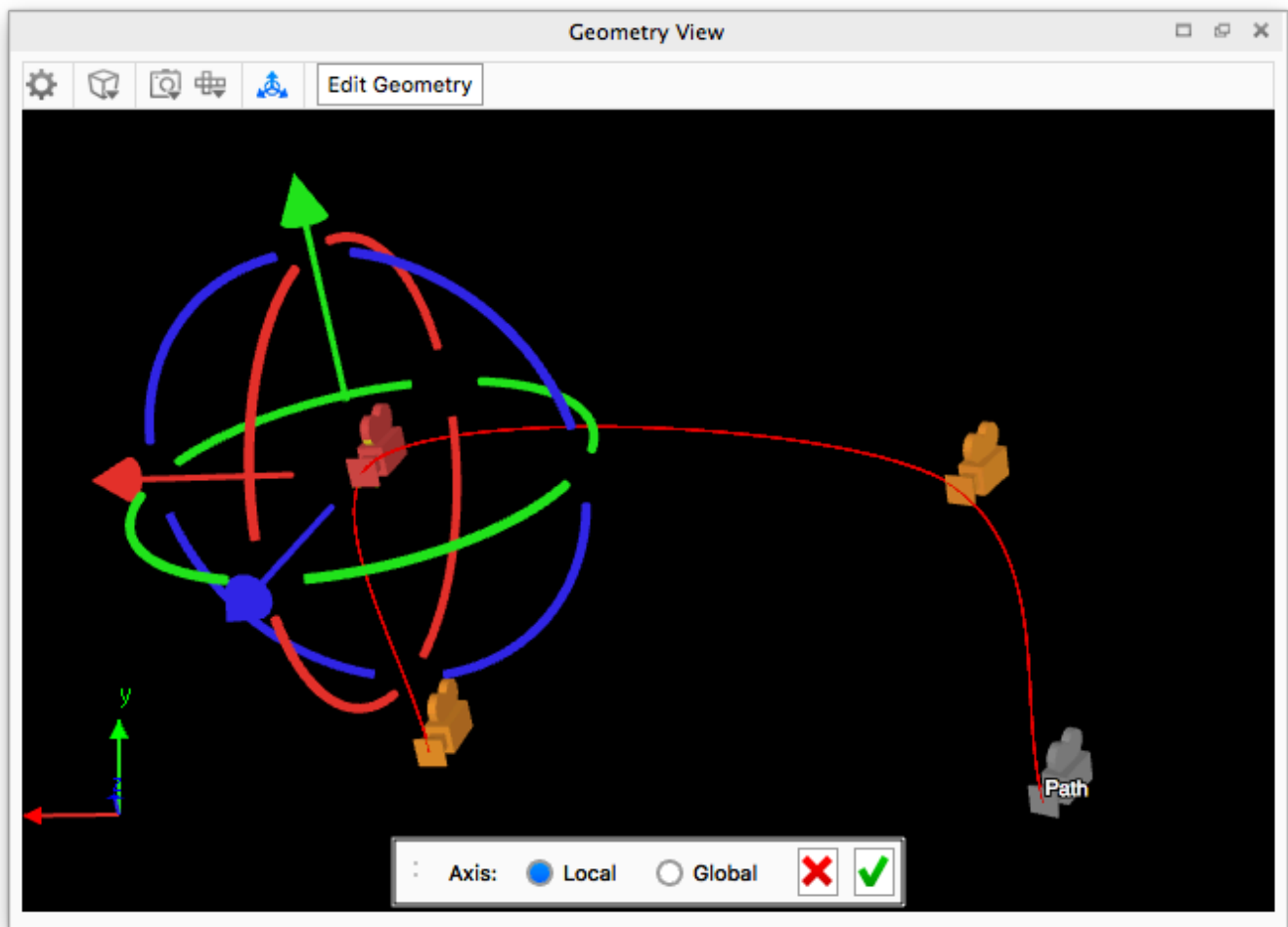
Depth Of Field (Animation)

The camera Depth Of Field animation animates your camera's focus point. The instructions below assume that you've already created a camera in your scene, that you've set its target, and enabled Depth of Field under the camera's settings.

Start
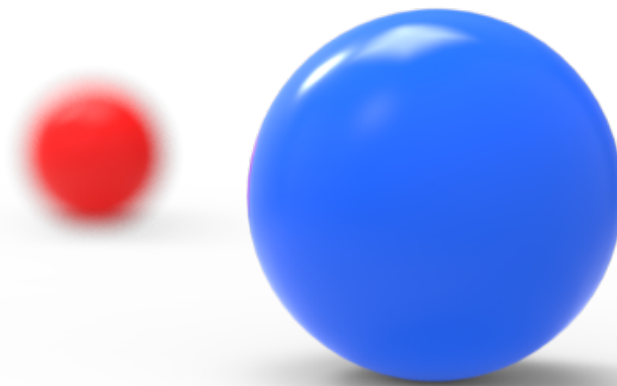
End

How to add a camera Depth of Field:

1. Right-click your camera in the scene tree (*Project > Scene*) and select *Depth of Field.* You may also apply your Depth of Field animation via the Animation Wizard.

2. The Depth of Field animation will appear inside the animation timeline.

3. Use the *Depth of Field Properties* window to control your Depth of Field start and end settings.

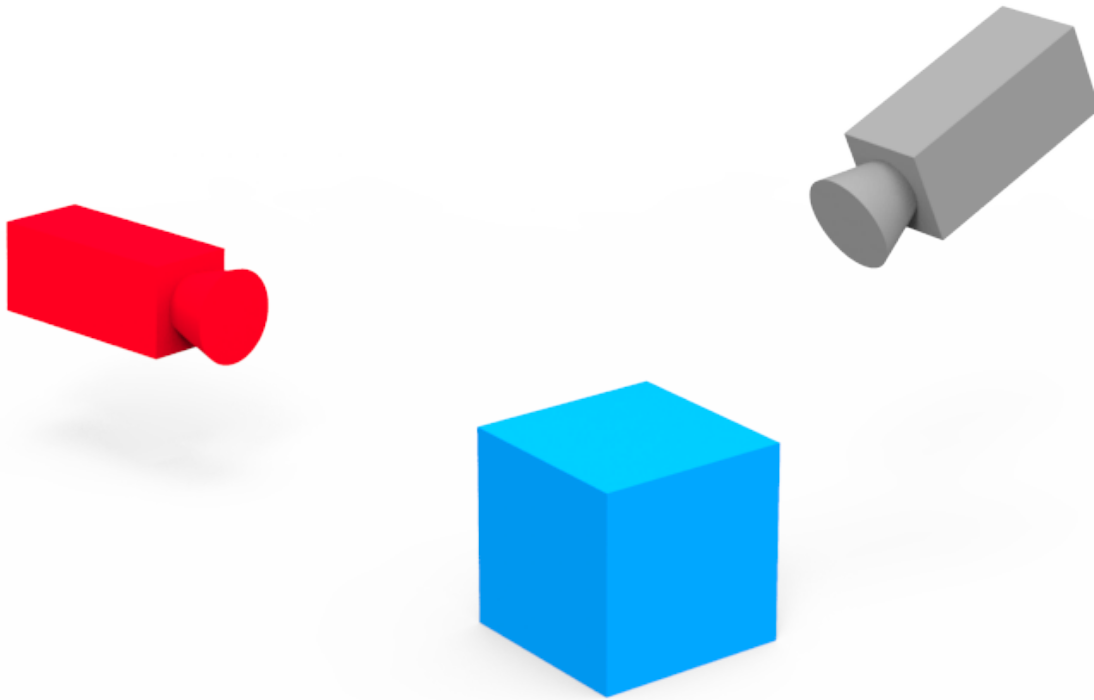**4.** Click *Play* in the animation timeline to play the preview in realtime. You may also click and drag the time scrubber in the timeline.
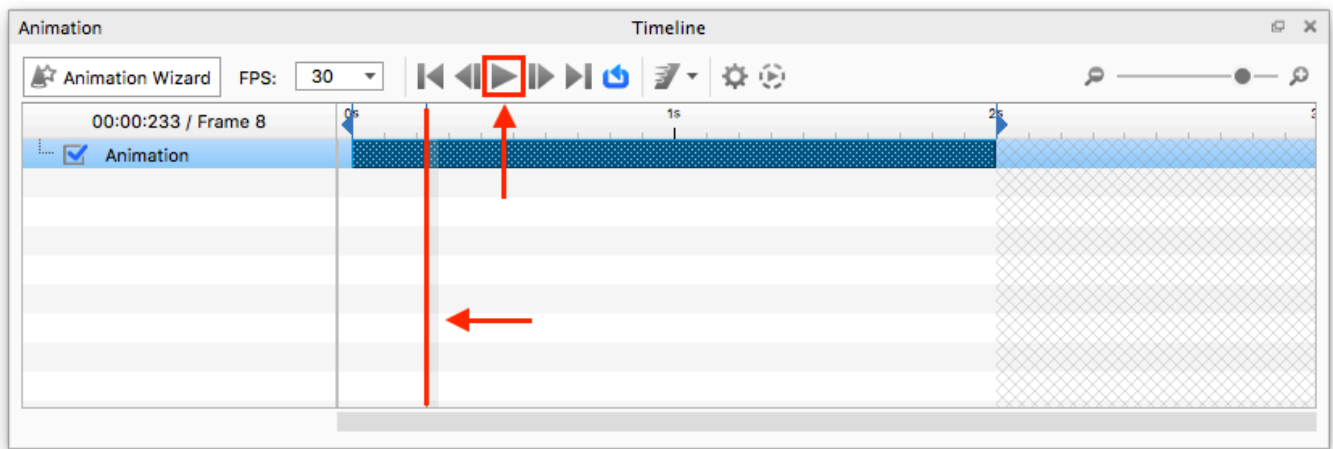
Zoom

The camera Zoom changes the camera's focal length. The instructions below assume that you've already created a camera in your scene and set its target.

How to add a camera Zoom:

1. Right-click your camera in the scene tree (*Project* > *Scene*) and select *Zoom.* You may also apply your Zoom animation via the Animation Wizard.

2. The Zoom animation will appear inside the animation timeline.
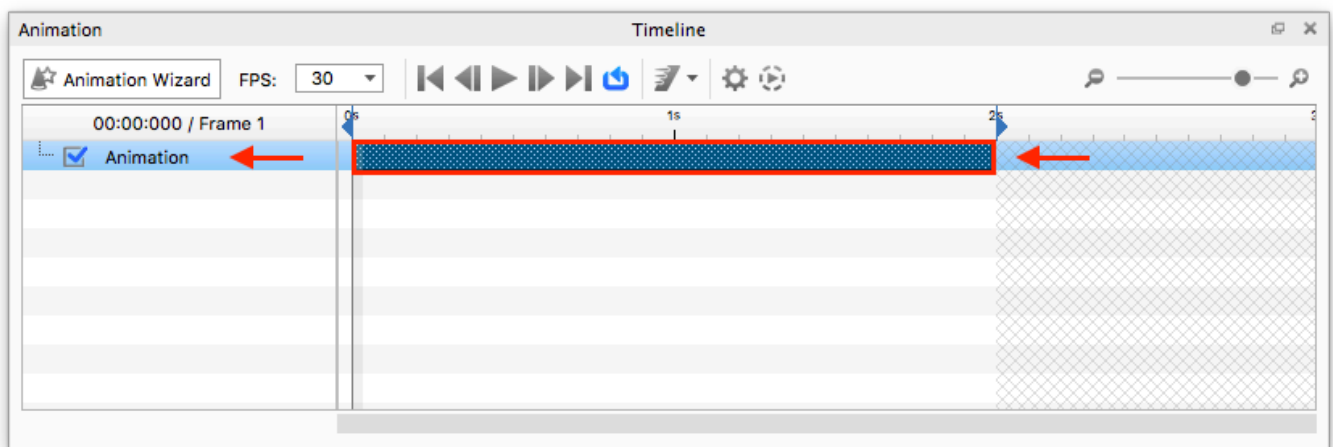
3. Use the *Zoom Properties* window to control your Zoom distance. The Distance slider is calibrated to your scene units.
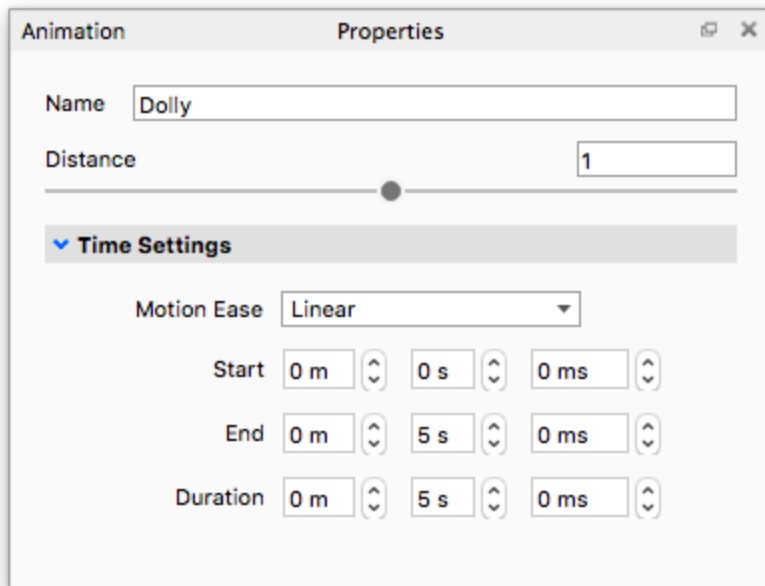
4. Click *Play* in the animation timeline to play the preview in realtime. You may also click and drag the time scrubber in the timeline.
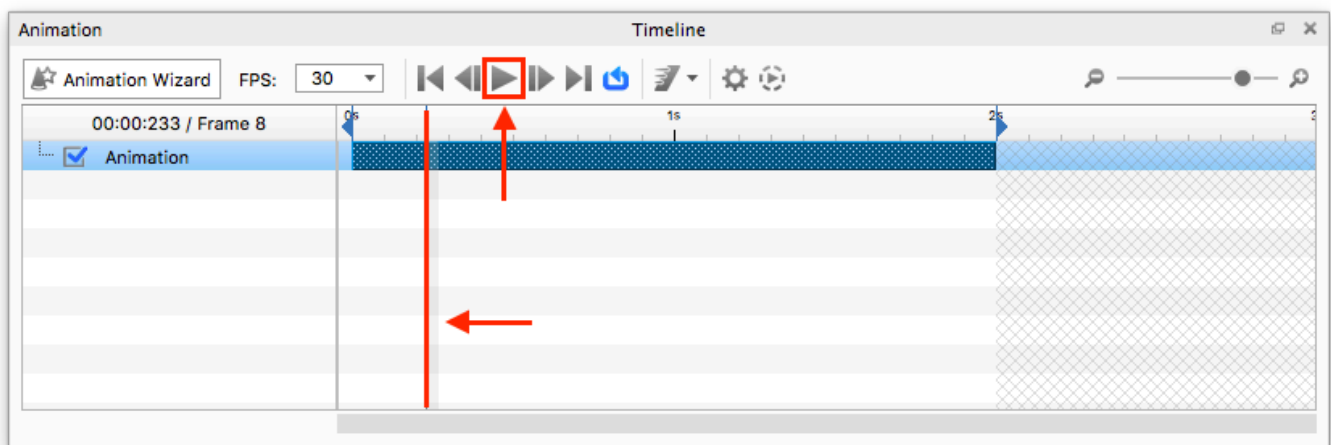
Switch

The camera Switch animation is an instant change between the current camera view and another camera in the scene. The instructions below assume that you've already created a camera in your scene and set its target.

Tip: Camera Switch Event animation can be used to chain multiple camera path animations, created through existing cameras.

How to add a camera Switch:

1. Right-click your camera in the scene tree (*Project* > *Scene*) and select *Switch.* You may also apply your Switch animation via the Animation Wizard.

2. The Switch animation will appear inside the animation timeline. Click and drag or the Switch node to position it at the desired location in the timeline.
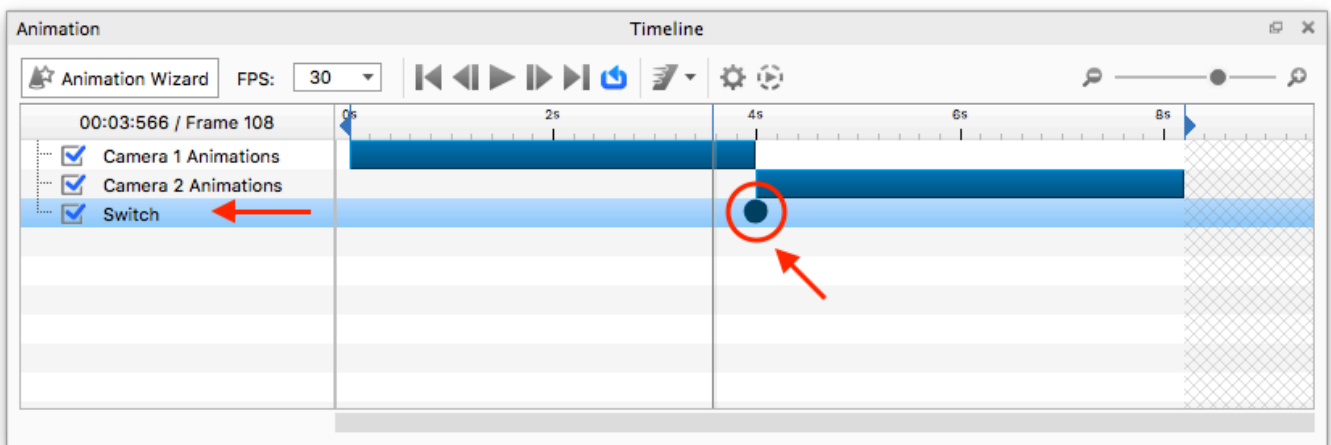
**3.** Use the *Switch Properties* window to change the To Camera.
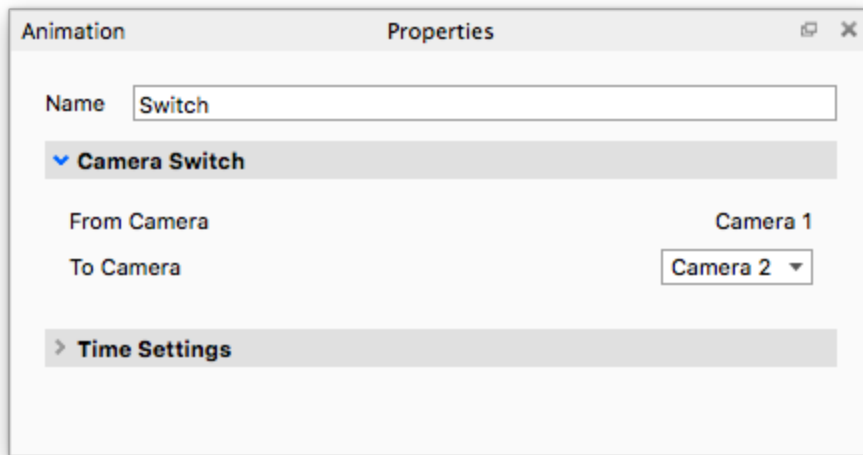
4. Click *Play* in the animation timeline to play the preview in realtime. You may also click and drag the time scrubber in the timeline.
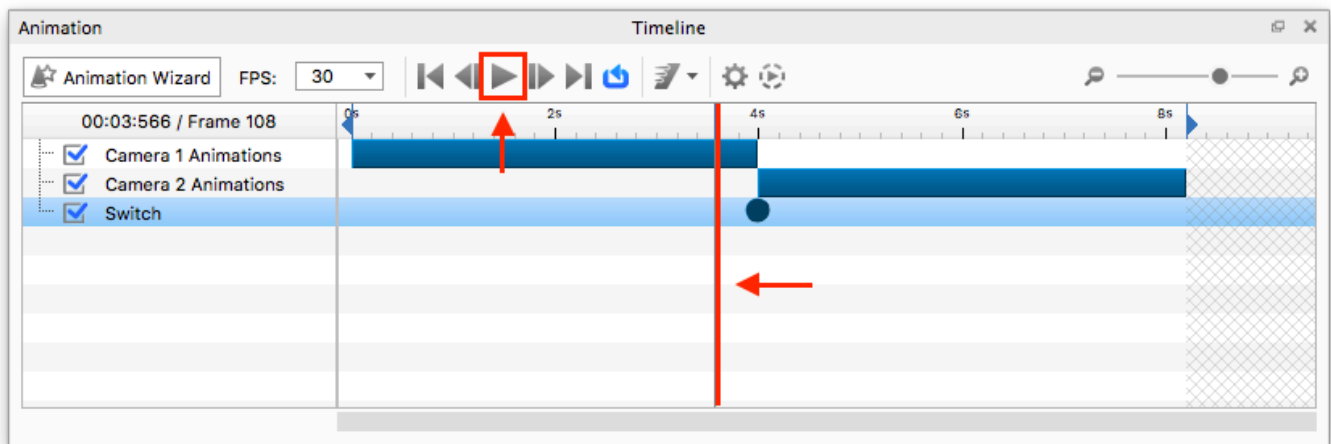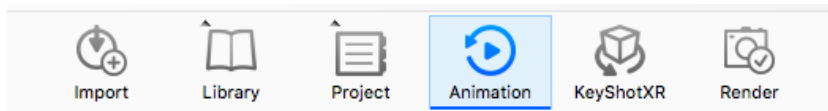

Animation Wizard

The Animation Wizard is the easiest way to create animations step-by-step. You start out by choosing an animation type and the wizard walks you through very step in the animation setup. The instructions below assume that your KeyShot version includes animation. For more information about each animation type, click here.*
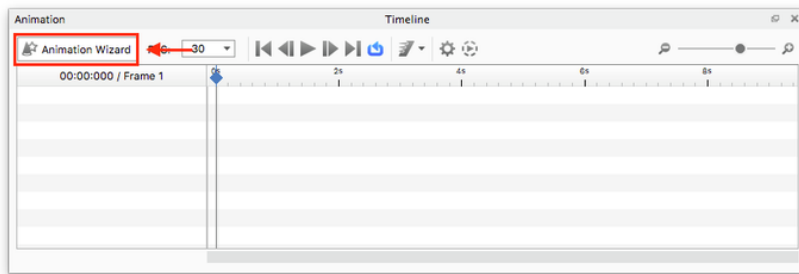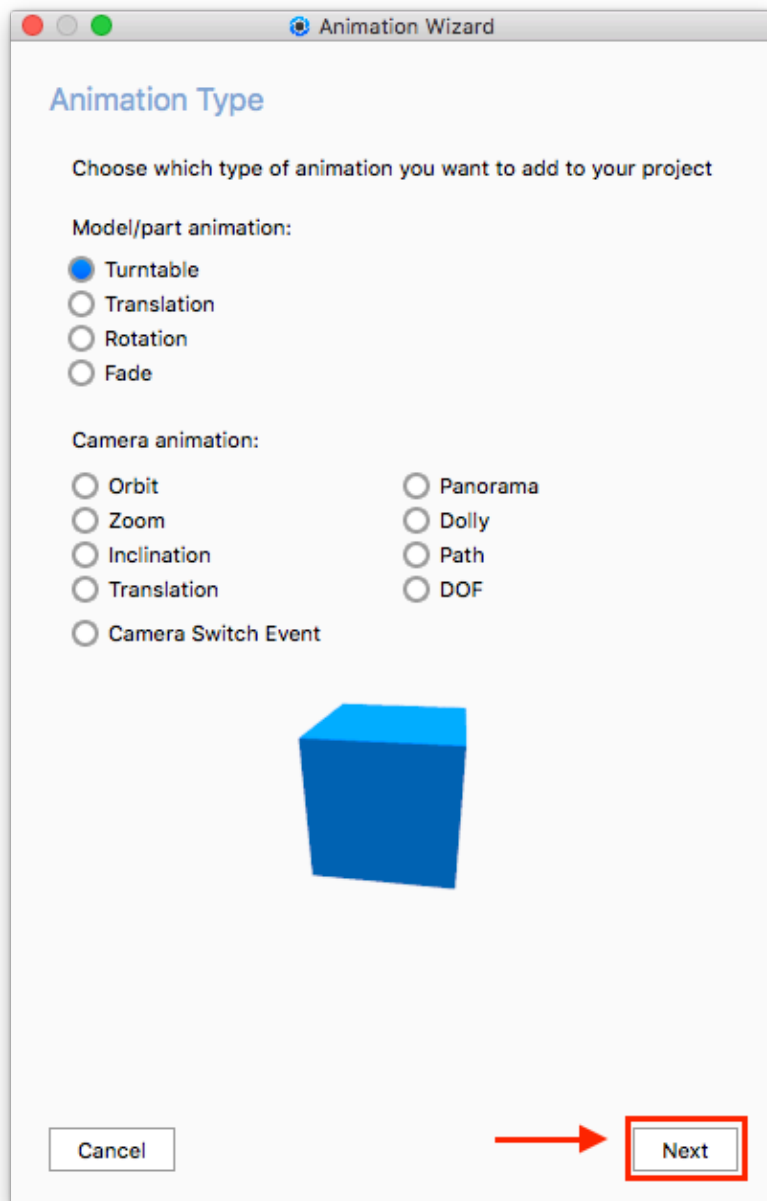
On this page:
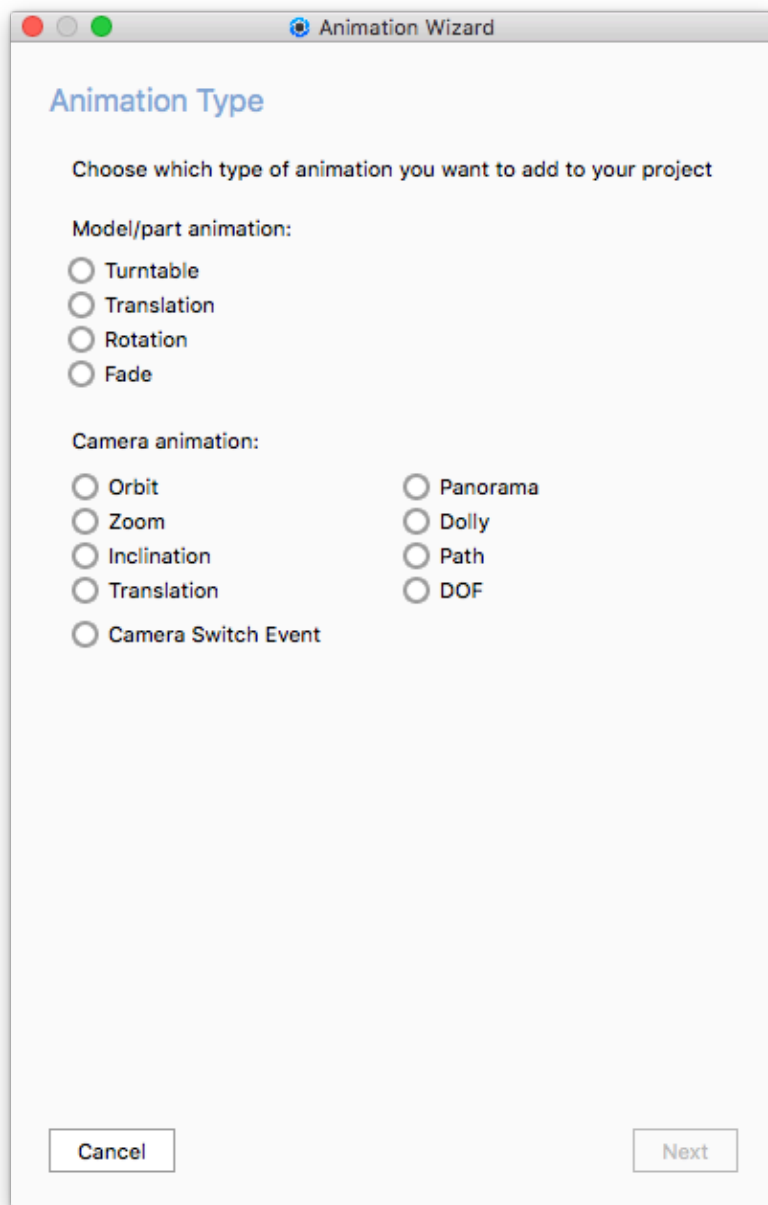
How to launch the Animation Wizard:

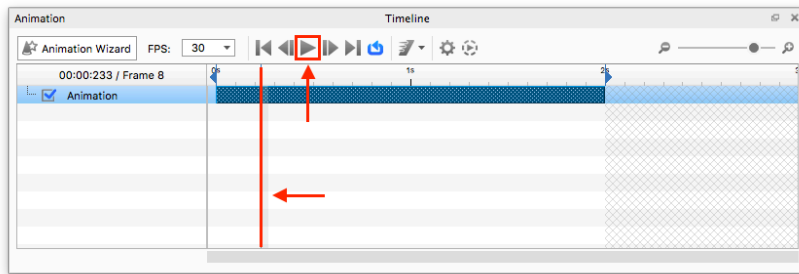**1.** Click the Animation button in the Toolbar.

2. Click the Animation Wizard button in the animation timeline.

3. Choose your animation and click Next.

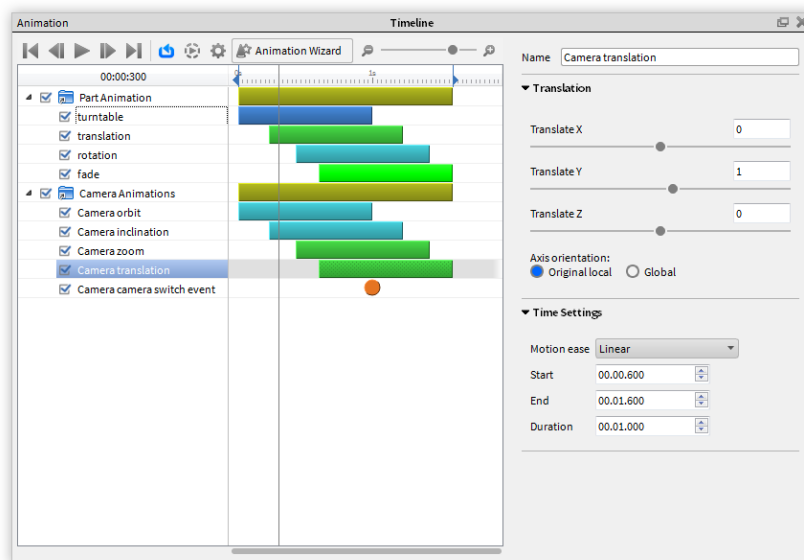**4.** Follow the steps in the wizard and play your animation preview in realtime.

*Currently, the Animation Wizard does not include material animations.

Working with Animations

Animations are represented in the timeline and labeled according to the name set in the animation properties for translations, rotations and camera animations. When an animation node is clicked in the timeline, the properties will be displayed. Animations can be shifted in time and scaled interactively to control timing and duration. Groups of animations can be consolidated in a single folder for organization. These folders can also be scaled and shifted to control timing and duration.

Managing Animations

Animation management utilities can be found by right-clicking on animations in the animation list. To change the animation order or to move an animation into an existing folder, click and drag the animation. To multi-select animations, hold *CTRL* (PC) or Command (Mac) while selecting multiple nodes.

Delete
Select this option to delete one or more animations from the timeline.

Add Folder
Right-click on a blank area in the animation list to display this option.

Duplicate
To duplicate an animation or animations, right-click on the animation(s) you would like to copy and select *Duplicate*.

Mirror
Right-click on the animation(s) you would like to have a reverse duplicate animation of.

This is useful for exploded view animations and for situations where you need to have the animation end where it began, such as for a looping video.
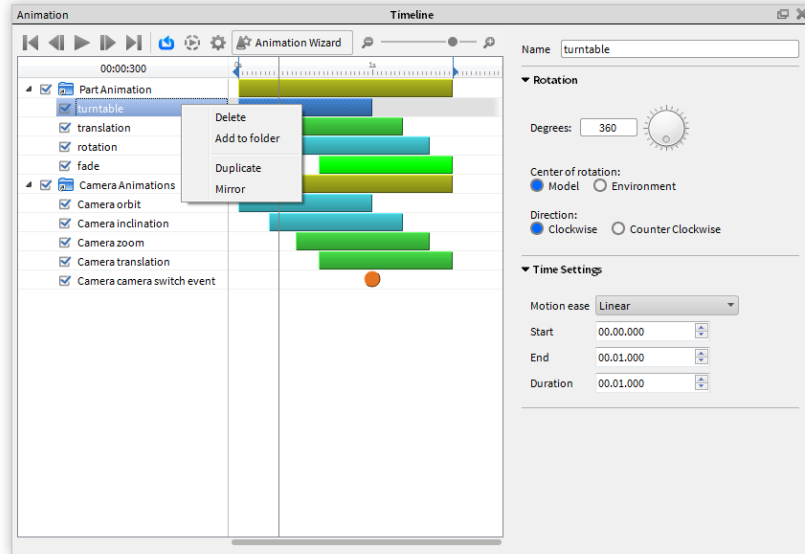
Animation Properties

Selecting an animation will display its properties on the right side of the *Animation* wind ow. These settings are the same used when creating an animation via the *Animation Wizard*. You may change all existing animation settings as well as the name of the animation in the animation properties.

If the *Animation* window is docked, or if you are using the window with a short window, you can compress sections of the properties to see the parameters that are most useful to you at that time.
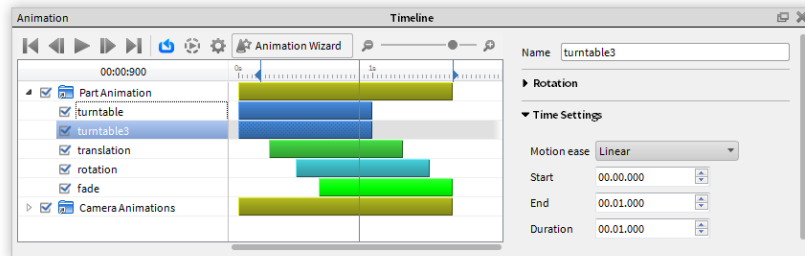
Deformation Animations

A model deformation is any change in the model's shape: twists, expansions, contractions, and character rigging. These types of animations required advanced techniques available in CAD packages such as Maya and 3DS Max. While KeyShot does not offer a "deformation" animation, it does still support deformations set up in CAD and exported to an Alembic (.ABC) file.

How to import your deformation animations from an Alembic file:

1. Click the Import button (or File > Import) in KeyShot.

2. Browse to your Alembic (.ABC) file and click Open.

3. From the *KeyShot Import* dialogue > *Animation* enable *Deformable Meshes and* confi rm your *Import*.

4. Click *Play* in the animation timeline to play a preview in realtime. You may also click and drag the time scrubber in the timeline.

The file will import and appear as an animation node on the *Animation Timeline* where it

may be positioned and re-sized.

Animation Effects

Animation Effects add realism to your animations. These effects include:

- Motion Blur
- Motion Ease

Motion Blur

KeyShot "Motion Blur" provides a real-time preview of motion applied to the scene where movement is blurred. Capture the motion of objects or cameras as they rotate or move across the screen before you even play an animation or render an image.
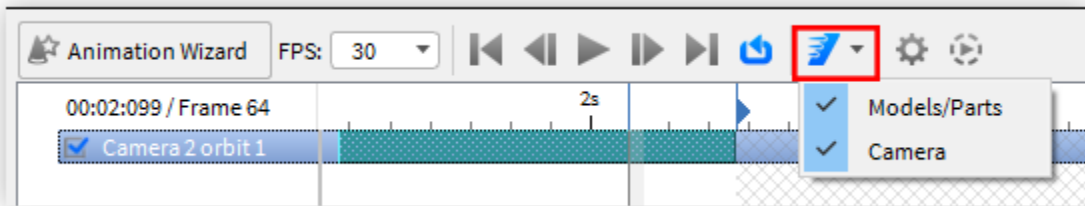
To apply "Motion Blur" to objects in motion, check "Motion Blur" button on the Animation window tool bar. Click the arrow to toggle the motion blur to Model/Part or Camera animation. If you already have objects or cameras with animations applied to them, the real time view will update to show the objects in motion.

"Motion Blur" can be seen quickly after turning the option on by adding a "Translation" animation to an object or an "Orbit" animation to a camera. The amount of motion blur is controlled through the "Animation" settings by adjusting how fast and how far an object or camera is moving. When "Motion Blur" is enabled, the real time preview of the motion is dependent on the FPS setting.

Motion Ease

Motion easing will create a more natural look when applied to rotations, translations and camera animations. This will add acceleration and deceleration to motion. For example, if a car goes from one stop sign to another and reaches a maximum speed of the 35 miles per hour, it is not traveling that speed for the entire time. The car has to start moving, accelerate to its top speed and then slow down as it approaches the next stop sign. Without motion easing, the car would start and stop abruptly and travel 35 miles per hour the entire time it is in motion.

Linear

Ease In

Ease Out

Ease in/Ease Out

Animation Properties

This section goes over the different animation controls inside the Animation Properties window. Each animation has its own controls:

- Translation Properties
- Rotation Properties
- Fade Properties

Translation Properties

Use the translation properties to control direction of movement.

Translation

The translation sliders include: *Translate X*, *Translate Y*, and *Translate Z*.

Translate X
Controls movement along the X axis.
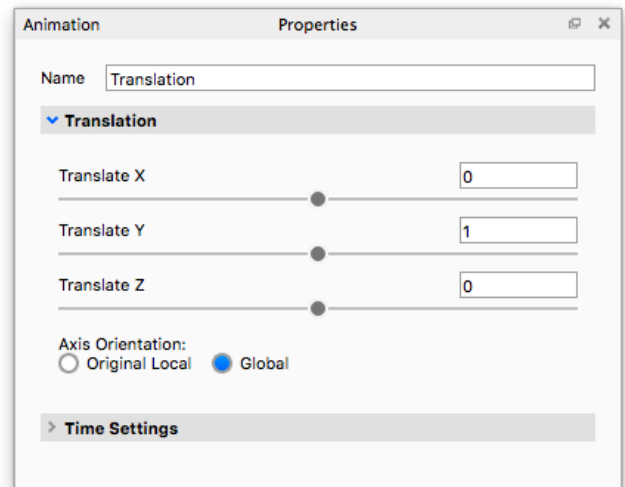
Translate Y

Controls movement along the Y axis.

Translate Z
Controls movement along the Z axis.

Axis Orientation
When you apply a rotation to your model, you must choose the

rotation axis: X, Y, or Z axis. However, these axes have two states: *Original Local* and *Global.*

Original Local
The Original Local state uses the rotating part's local axis. If Y pointed up originally, rotating the part over 45 degrees means that the Y axis is now also tilted 45 degrees. Use this axis state your model's axis orientation is not square (slightly tilted) with KeyShot's global axis. To reveal the global axis, press the "Z" key on your keyboard.

Global
This is KeyShot's global axis. To reveal the global axis, press the "Z" key on your keyboard. Y axis always points up. Even if you have rotated a part using your modeling software.

Rotation Properties
Use the rotation properties to control your rotation.

Rotation

The rotation settings include *Degrees*, *Axis*, and *Axis Orientation*.

Degrees
Controls the angle of rotation in degrees.

Axis
Determines the reference axis of rotation. There are three mutually-exclusive options: X, Y, or Z.

Axis Orientation
When you apply a rotation to your model, you must choose the rotation axis: X, Y, or Z axis. However, these axes have two states: *Original Local* and *Global.*

Original Local
The Original Local state uses the rotating part's local axis. If Y pointed up originally, rotating the part over 45 degrees means that the Y axis is now also tilted 45 degrees. Use this axis state your model's axis orientation is not square (slightly tilted) with KeyShot's global axis. To reveal the global axis, press the "Z" key on your keyboard.

Global
This is KeyShot's global axis. To reveal the global axis, press the "Z" key on your keyboard. Y axis always points up. Even if you have rotated a part using your modeling software.
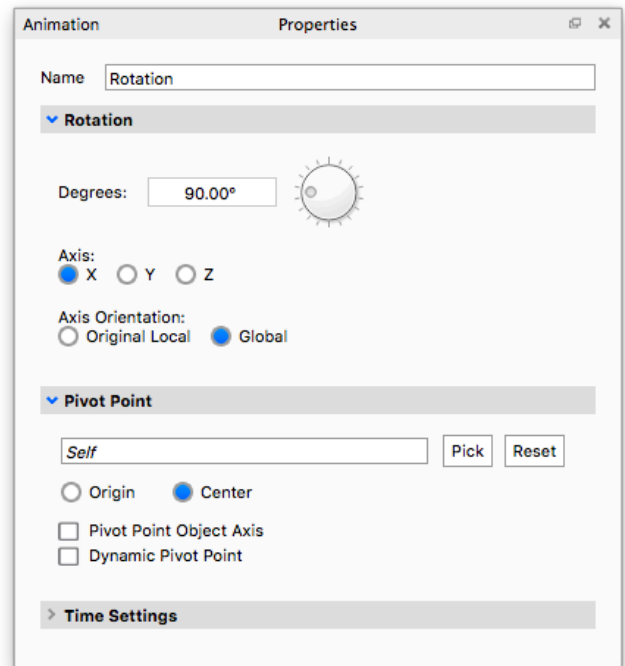
Pivot Point

A pivot point is the point around which a part/model will rotate. When you apply a rotation animation, the pivot point is set to "Self" by default. To select a different pivot point from the scene tree or in your scene, click the *Pick* button.

Center and Origin
By default, the pivot point is always at the center of the model. Change this to *Origin* if your wish to use the model's origin instead. For example, it is possible that a cube's origin lies at one of its eight vertices.

Tip: You may use a helper object for even more control over your pivot point (find useful primitives under *Edit > Add Geometry*). Then, position the primitive and click the *Pick* button to select it from your scene tree or your scene.

Dynamic Pivot Points
This setting will allow the rotating part or model to follow a moving helper object. Dynamic pivot points should also be enabled when there are two or more rotations (each with different helper objects) applied to the same part or model.

Note that not all moving helper objects are dynamic pivot points. For example, let's say that you wish to animate a part orbiting around a helper object while the second is moving. In this case, enabling dynamic pivot point will not provide you with the desired result. Instead, make sure that the orbiting object is a child under the helper object in your scene tree hierarchy.

When dealing with complex animations consisting of multiple pivot points, we recommend a top-down hierarchy structure in your scene tree instead of relying on "Dynamic Pivot Points". Click here for a full article on how to animate hinges and multiple pivot points.

Fade Properties

Fade Properties

Use the fade properties to control the opacity level.

Fade

The fade sliders include: *Fade From* and *Fade To*.

Fade From
This is your model's starting opacity level. Accepted values are between 0% and 100%, where 0% means that the model is invisible and 100% means that the model is 1 entirely visible.

Fade To
This is your model's opacity level by the end of the animation. Accepted values are between 0% and 100%, where 0% means that the model is invisible and 100% means that the model is 1 entirely visible.
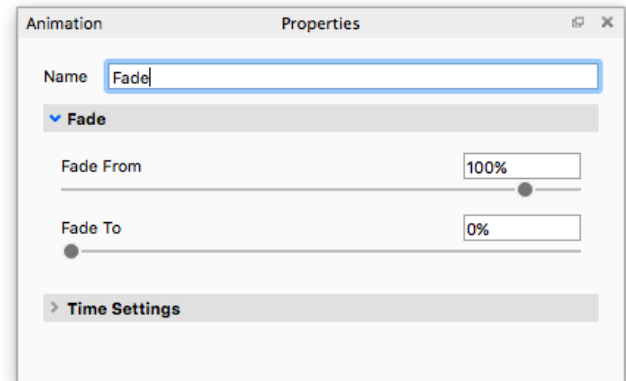
KeyShotXR

Note: KeyShotVR has been renamed to KeyShotXR to avoid confusion with the VR capabilities in KeyShot and better capture the extended, interactive features in KeyShotXR.

KeyShotXR gives you the ability to turn your 3D renderings into interactive visuals. With KeyShotXR, you can create and present high-quality, touch-enabled, 3D content in any web browser. The content can be viewed using touch-enabled devices (or mouse) and does not require a browser plugin to work.

How is KeyShotXR different from other 360° viewers?

KeyShotXR goes beyond the standard 360° turntable viewing capability of other viewers. With KeyShotXR you can:

- Create turntable, spherical, hemispherical, tumble and animated interactive visuals.
- Use the camera as a pivot point to create a first person point-of-view or panoramic shot
- Ensure your visuals provide high-quality, scientifically accurate material and lighting representation
- Have full control over your visual with advanced features and customization
- Export direct to Apple iBooks for use on both iPad Retina and iPad Mini

Learn more and see examples here.

KeyShotXR Wizard

You can set up a KeyShotXR through the KeyShotXR Wizard. The KeyShotXR Wizard is accessed by pressing the KeyShotXR button on the KeyShot Toolbar, or through the main menu by selecting *Window, KeyShotXR...*, or by hitting the *V-key*.

Note: These and other KeyShotXR options are located in the KeyShotXR tab of the Render options window (*Ctrl-P*, *Cmd-P*).

Pick KeyShotXR Mode

There are six KeyShotXR modes to choose from. When you select one of the six modes, you will see a preview of the KeyShotXR view rotation. After choosing a mode, click *Next*.

Turntable

Creates a standard turntable view to rotate a model up to 360 degrees.

Spherical

Creates a fully-spherical view to see all sides of the model.

Hemispherical

Create a half spherical view to rotate around only a portion of the model.

Tumble

Create a view that rotates around the model center.

Custom

Enter values for each KeyShotXR option to create a custom view.

Animation

If an animation is present, create a view using an animation. See KeyShotXR Animation
.

Pick KeyShotXR Rotation Center

Next, you will be able to select the center of rotation for your KeyShotXR. After selecting
a center of rotation, click *Next*.

Environment

This option will set the center of rotation at the center of the scene.

Object

Select an object in the scene as a center of rotation.

Camera

Use the current camera settings to use as your rotation center.

Look At

Use your current "Look At" as your rotation center.

Custom

This option allows you to select the center of rotation from your scene tree items.

Horizontal Environment Rotation

Enable this option to have the environment rotate with the KeyShotXR.

Pick Initial KeyShotXR View

Next, you can fine tune the initial camera view of your KeyShotXR. Set the distance,
azimuth, inclination, and perspective as you would on the camera tab. Use the grid
option to help you center your model for optimal rotation. Once finished choosing your
initial camera angle, click *Next*.

Set KeyShotXR Smoothness

In this step, you will be able to control the smoothness of your KeyShotXR. Once the
number of frames has been set, click *Next*.

Smoothness Control

Allows you to control the smoothness of the model rotation. A higher value of horizontal and/or vertical frames will increase the smoothness of the rotation on the model inside a web browser, but it will also increase the total number of frames to be rendered and may affect load times of the KeyShotXR in the browser.

Angle Control

If a *Custom* KeyShotXR is chosen, you will also see options for Angle Control. Angle Control allows you to enter beginning and end angles for both the horizontal and vertical rotation.

Set KeyShotXR Output

In the final step, you configure the output of the KeyShotXR as well as the image resolution for each frame.

Choose the name of your KeyShotXR and the location of where it will be saved on your computer.

Set the resolution of your KeyShotXR or choose a preset from the pull down.

KeyShotXR has a default image for the loading icon. To change the icon, click "Browse" and select an image file to replace the default image.

Select *Back* to change any of the settings in the previous steps. Select *Render Now* to start rendering the KeyShotXR or select *Render Options* to open the Render dialog KeyShotXR Output options.

KeyShotXR Animation

If an animation is applied in the scene, the *Animation* option will be shown as an available KeyShotXR mode. Any animation type can be included as a KeyShotXR. Select *Animation* in the *KeyShotXR Wizard*.

Frames

Use the slider or input field to set the number of frames to render in the KeyShotXR. If you have a specific section of the timeline you would like to use, select *Work Area*.

Resulting FPS

This determines the overall smoothness of the KeyShotXR when it is used in a browser. Increasing the *Frames* slider increases the frame rate. A higher value will give a smoother transition, but be aware that internet speeds can also affect frame rate.

Loop Animation

This option will provide an infinite looping for the KeyShotXR Animation. Additional options can be accessed by selecting *Render Options* on the final step of the KeyShotXR Wizard.

Interior KeyShotXR

The Interior KeyShotXR is essentially a "look-around" KeyShotXR that uses the camera itself as the rotation center. With this feature, in addition to the option to control Horizontal Environment Rotation, dynamic interior and look-around KeyShotXRs can be

created to help visualize what a space feels like in first person.

How it Works
From the KeyShotXR Wizard or the KeyShotXR Render dialog, you are presented with an option to Pick KeyShotXR Rotation Center. Use Camera as the rotation center to enable the Interior KeyShotXR. Depending on the desired outcome, you can also enable Horizontal Environment Rotation from the same dialog page. If the background is set to Lighting Environment, the Horizontal Environment Rotation should be enabled for the most realistic effect.

KeyShotXR Files

Once the KeyShotXR has finished rendering, a web browser window with the finished KeyShotXR will be displayed. Additional settings can be set in the HTML code that was produced with the KeyShotXR. You can find the HTML code along with all the render frames in a folder at your save location.

...

KeyShotXR Variables

Below is a list of KeyShotXR variables. these variables are set in the *.html* file created by KeyShot when the KeyShotXR is rendered. These variables can be edited after the KeyShotXR is created if minor edits are needed, rather than recreating the KeyShotXR over again. The *.html* file can be edited use a standard text editor.

Variable Location

All KeyShot variables are located in the KeyShotXR *.html* file *<head>* section, within a *<script>* tag, and are called by the *initKeyShotXR()* function.

```
<head>
<script type="text/javascript">
function initKeyShotVR() {
var nameOfDiv = "KeyShotVR";
}
</script>
</head>
```

Variables

nameOfDiv

The div id of the KeyShotXR. This is where the KeyShotXR content is located.

Usage Example:

```
var nameOfDiv = "KeyShotXR";

<body oncontextmenu="return false;">
<div id="KeyShotXR"></div>
</body>
```

folderName

The name of the folder that contains all the files for the KeyShotXR. This is set under *Render, Output* options in the *KeyShotXR* tab, *Name* entry.

Usage Example:

```
var folderName = "material_ball_VR.10";
```

viewPortWidth

The width of the KeyShotXR in pixels. This is set under *Render, Output* options in the *K*

eyShotXR tab, *Viewing Resolution,* first text field entry.

Usage Example:

```
var viewPortWidth = 640;
```

viewPortHeight

The height of the KeyShotXR in pixels. This is set under *Render, Output* options in the *KeyShotXR* tab, *Viewing Resolution,* second text field entry.

Usage Example:

```
var viewPortHeight = 640;
```

backgroundColor

The background color of the .html page in hexidecimal notation. This will be the color behind/surrounding the KeyShotXR. The default is white (#FFFFFF). This option can only be set from in the *.html* file.

Usage Example:

```
var backgroundColor = "#FFFFFF";
```

uCount

This is the number of horizontal frames in the KeyShotXR. This is set under *Render, Ou tput* options in the *KeyShotXR* tab, under *KeyShotXR Control, Smoothness Control.*

Usage Example:

```
var uCount = 18;
```

vCount

This is the number of vertical frames in the KeyShotXR. This is set under *Render, Outp ut* options in the *KeyShotXR* tab, under *KeyShotXR Control, Smoothness Control.*

Usage Example:

```
var vCount = 18;
```

uWrap

This allows the KeyShotXR to continue rotation in the horizontal direction when set to true.

Usage Example:

```
uWrap = true;
```

vWrap

This allows the KeyShotXR to continue rotation in the vertical direction when set to true.

Usage Example:

```
var vWrap = true;
```

uMouseSensitivity

This controls the horizontal mouse/touch sensitivity for the KeyShotXR. Changing the value to/from a negative value will change the direction of the KeyShotXR rotation. This is set under *Render, Output* options in the *KeyShotXR* tab, under *Advanced.*

Usage Example:

```
var uMouseSensitivity = -0.0055;
```

vMouseSensitivity

This controls the vertical mouse/touch sensitivity for the KeyShotXR. Changing the value to/from a negative value will change the direction of the KeyShotXR rotation. This is set under *Render, Output* options in the *KeyShotXR* tab, under *Advanced*.

Usage Example:

```
var vMouseSensitivity = 1;
```

uStartIndex

This controls the horizontal start frame for the KeyShotXR. This is set by viewing angle in the KeyShotXR settings, under *Render, Output* options in the *KeyShotXR* tab, under *KeyShotXR Control, Angle Control*.

Usage Example:

```
var uStartIndex = 1;
```

vStartIndex

This controls the vertical start frame for the KeyShotXR. This is set by viewing angle in the KeyShotXR settings, under *Render, Output* options in the *KeyShotXR* tab, under *KeyShotXR Control, Angle Control*.

Usage Example:

```
var vStartIndex = 0;
```

minZoom

This controls the minimum zoom level for the KeyShotXR. Setting to a negative value will allow Zoom out capability. Increasing the value above 1 will change the zoom level of the KeyShotXR when loaded. This is set in the KeyShotXR settings, under *Render, Output* options in the *KeyShotXR* tab, under *Advanced* by checking the *Zoom-In* checkbox.

Note: KeyShot automatically calculates the resolution when rendering the KeyShotXR based on this setting when 'Preserve image quality' option is enabled. If changed afterward, grainy images may be experienced.

Usage Example:

```
var minZoom = 1;
```

maxZoom

This controls the maximum zoom level for the KeyShotVR. Increasing this number, increases the amount a KeyShotVR can be zoomed in. This is set in the KeyShotVR settings, under *Render, Output* options in the *KeyShotVR* tab, under *Advanced* by checking the *Zoom-In* checkbox.

Note: KeyShot automatically calculates the resolution when rendering the KeyShotVR based on this setting when 'Preserve image quailty' option is enabled. If changed afterward, grainy images may be experienced.

Usage Example:

```
var maxZoom = 1;
```

rotationDamping

This controls the speed at which the rotation slows down when a KeyShotXR is rotated. Increasing this value will increase the duration of rotation before coming to a stop. This

is set in the KeyShotXR settings, under *Render, Output* options in the *KeyShotXR* tab, under *Advanced.*

Usage Example:

```
var rotationDamping = 0.96;
```

downScaleToBrowser

This variable controls the automatic resizing of a KeyShotXR when a browser is resized; it allows a KeyShotXR to be responsive. This is set to true by default and can only be changed in the *.html* file.

Usage Example:

```
var downScaleToBrowser = true;
```

addDownScaleGUIButton *- Deprecated*

With KeyShot 6 this option has been deprecated. The option is still available for legacy KeyShotXRs that require this from in the *.html* file.

Usage Example:

```
var addDownScaleGUIButton = false;
```

downloadOnInteraction

This variable allows a KeyShotXR only to be loaded after it has been clicked. This option is set in the KeyShotXR settings, under *Render, Output* options in the *KeyShotXR* tab, under *Advanced.*

Usage Example:

```
var downloadOnInteraction = false;
```

imageExtension

This variable is the image extension for the frames generated for the KeyShotXR. Only one extension type may be used. This is set in the KeyShotXR settings, under *Render, Output* options in the *KeyShotXR* tab, under *KeyShotXR Control, Format.*

Usage Example:

```
var imageExtension = "jpg";
```

showLoading

If this variable is set to *true*, the loading icon will be shown. If set to *false*, it will not be shown. This option is set in the KeyShotXR settings, under *Render, Output* options in the *KeyShotXR* tab, under *Advanced* by selecting the *Show Loading Screen* option.

Usage Example:

```
var showLoading = true;
```

loadingIcon

This allows a different loading icon to be used. The variable is the filename of the icon located in the the KeyShotXR *files* folder. This option is set in the KeyShotXR settings, under *Render, Output* options in the *KeyShotXR* tab, under *Advanced,* by selecting the *Default loading icon.*

```
var loadingIcon = "ks_logo.png";
```

allowFullscreen

This variable allows a KeyShotXR to be viewed fullscreen when it is double-clicked in desktop browsers. This option is set in the KeyShotXR settings, under *Render, Output* options in the *KeyShotXR* tab, under *Advanced,* by selecting *Allow Fullscreen Mode by Double-Click.*

Usage Example:

```
var allowFullscreen = true;
```

uReverse

Usage Example:

```
var uReverse = false;
```

vReverse

Usage Example:

```
var vReverse = false;
```

Example of KeyShotXR variables in the KeyShotXR .html file

```
<script type="text/javascript">
  var keyshotVR;

  function initKeyShotVR() {
    var nameOfDiv = "KeyShotVR";
    var folderName = "material_ball_VR.10";
    var viewPortWidth = 640;
    var viewPortHeight = 640;
    var backgroundColor = "#FFFFFF";
    var uCount = 2;
    var vCount = 1;
    var uWrap = true;
    var vWrap = false;
    var uMouseSensitivity = -0.00555556;
    var vMouseSensitivity = 1;
    var uStartIndex = 1;
    var vStartIndex = 0;
    var minZoom = 1;
    var maxZoom = 1;
    var rotationDamping = 0.96;
    var downScaleToBrowser = true;
    var addDownScaleGUIButton = false;
    var downloadOnInteraction = false;
    var imageExtension = "jpg";
    var showLoading = true;
    var loadingIcon = "ks_logo.png"; // Set to empty string for default icon.
    var allowFullscreen = true; // Double-click in desktop browsers for fullscreen.
    var uReverse = false;
    var vReverse = false;
    var hotspots = {};

    keyshotVR = new keyshotVR(nameOfDiv,folderName,viewPortWidth,viewPortHeight,
    backgroundColor,uCount,vCount,uWrap,vWrap,uMouseSensitivity,vMouseSensitivity,
    uStartIndex,vStartIndex,minZoom,maxZoom,rotationDamping,downScaleToBrowser,
    addDownScaleGUIButton,downloadOnInteraction,imageExtension,showLoading,
    loadingIcon,allowFullscreen,uReverse,vReverse,hotspots);
  }

  window.onload = initKeyShotVR;
</script>
```

Embedding KeyShotXR

There are several methods for embedding a KeyShotXR. This section will provide the instructions for embedding a KeyShotXR within various media.

In this section:
- Embedding a KeyShotXR in PowerPoint

Embedding a KeyShotXR in PowerPoint

The following instructions describe the process to embed a KeyShotXR in Microsoft PowerPoint.

Embed a KeyShotXR in PowerPoint

1. For PowerPoint 2007 and up download LiveWeb (lwsetup40.zip)
2. Extract the .zip folder contents
3. Run lwsetup.exe
4. Launch PowerPoint
5. Go to the Insert tab
6. Select Web Page from the LiveWeb section (LiveWeb dialogue appears)
7. Add the KeyShotXR url (ex. https://www.keyshot.com/vr/keyshot6/motox/motox.html)
8. Select Add and hit Next >
9. Adjust the settings as needed and select Finish
10. Start the PowerPoint and click on the slide with the KeyShotXR to load it

Position a KeyShotXR in PowerPoint

You may not see the KeyShotXR in the slide while in edit mode. Don't worry, it's still there. Click on the slide in edit mode and a bounding box will appear. This will be the KeyShotXR. By default, KeyShotXRs will appear in the upper left corner. You can position the KeyShotXR in the PowerPoint by adjusting the bounding box, modifying the style of the KeyShotXR html itself, or both.

"Unable to locate Web Browser ActiveX Control"

If this error is received when attempting to embed a KeyShotXR, follow these instructions to allow the KeyShotXR to be embedded.

Open the Windows Registry (right-click start menu, select *Run*, type *regedit*). Go to the following key (or search for COM Compatibility or ClassID {8856F961-340A-11D0-A96B-00C04FD705A2} using Ctrl-F):

HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Office\ClickToRun\REGISTRY \MACHINE\Software\Microsoft\Office\16.0\Common\COM Compatibility\{8856F961-340A-11D0-A96B-00C04FD705A2}

Double-click *Compatibility Flags* entry and change the value to 0.

Configurator

The *KeyShot Configurator* is a tool available in KeyShot Pro for presenting model and material variations in real-time for design reviews and interactive point-of-sale displays.
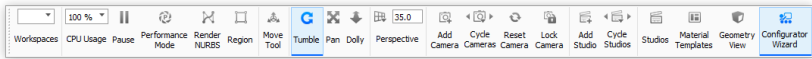
KeyShot Configurator Wizard

The KeyShot Configurator Wizard can be accessed from the KeyShot Ribbon. The Wizard guides your through the setup of Parent Models, Components, and their

relationships. You can also define Material Variations, Studios to include, and Layout options. To view the Configurator, enter Presentation Mode and use the interactive menus to control which model and material is displayed.

The first step of the Configurator Wizard is to select what you want to present - Model Variations, Material Variations, or both.
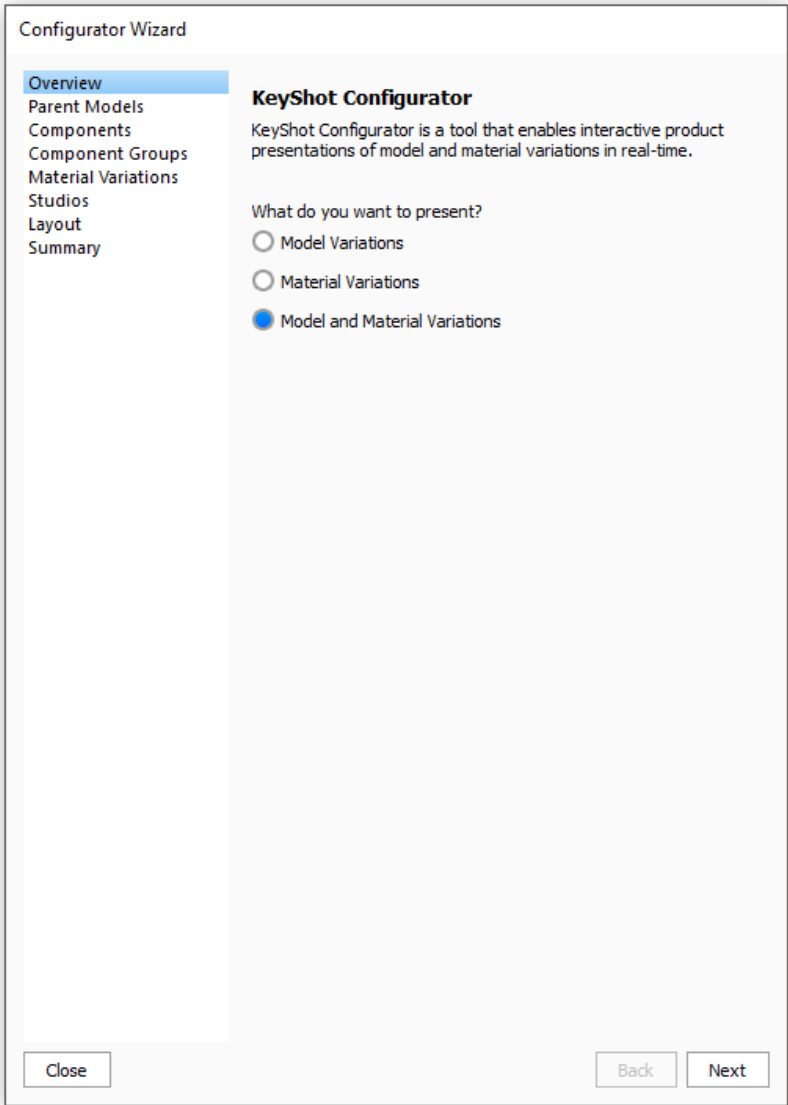
The second step is to define the *Parent Model*, which is the top-level product variation you wish to present. This is required even if you are only presenting Material Variations. If this is the case you can simply select the Default Model Set as your Parent Model.

You can use existing Model Sets if you have already separated them in the Scene Tree or create them here by using the option to *Select geometry from the scene*. To do so, check the box next to the model or parts you want to define as the Parent and click the *Add Model Set* button above the Parent Models list. This will automatically create a Model Set in the Project window. Once one or more Parent Models have been added in the Configurator Wizard you can select in the list and click the Preview button to view and confirm in real-time.

Configurator Wizard

Overview
Parent Models
Components
Component Groups
Material Variations
Studios
Layout
Summary

Add Parent Models

Parent Models are the top-level product variations you wish to present. Only one Parent Model can be displayed at a time. Each Parent Model will be created as an individual Model Set if not already created as one.

How do you want to add Parent Models?

⦿ Select existing Model Sets

◯ Select geometry from the scene

Parent Models
☑ El Camino
☑ Camaro SS

Close   Back   Next

Configurator Wizard

Overview
Parent Models
Components
Component Groups
Material Variations
Studios
Layout
Summary

Add Parent Models

Parent Models are the top-level product variations you wish to present. Only one Parent Model can be displayed at a time. Each Parent Model will be created as an individual Model Set if not already created as one.

How do you want to add Parent Models?

○ Select existing Model Sets

● Select geometry from the scene

Make a selection and add as a Parent Model. Repeat for each Parent Model variation.

🔍 Filter

Geometry	Parent Models
+ ☑ 🔷 El Camino	
+ ☐ 🔷 Ground	
+ ☐ 🔷 Camaro SS	

Close   Back   Next

If you wish to present part or accessory variations that are dependent on Parent Models you will next need to add Components. Once again you can select existing Model Sets if you have already separated them in the Scene tab or select geometry from the scene manually.

Configurator Wizard

Overview
Parent Models
Components
Component Groups
Material Variations
Studios
Layout
Summary

Add Components

Components are part or accessory variations dependent on Parent Models. Each Component will be created as an individual Model Set if not already created as one.

How do you want to add Components?

🔘 Select existing Model Sets

⚪ Select geometry from the scene

Components
☑ Wheels 1
☑ Wheels 2
☑ Wheels 3

Close   Back   Next

Configurator Wizard

Overview
Parent Models
Components
Component Groups
Material Variations
Studios
Layout
Summary

Add Components

Components are part or accessory variations dependent on Parent Models. Each Component will be created as an individual Model Set if not already created as one.

How do you want to add Components?

○ Select existing Model Sets

● Select geometry from the scene

Make a selection and add as a Component. Repeat for each Components variation.

🔍 Filter   ⎙ 🗑   👁 Preview

Geometry
＋ ☐ 🔷 Ground
＋ ☐ 🔷 Wheels 1
＋ ☐ 🔷 Wheels 2
＋ ☐ 🔷 Wheels 3

Components

Close   Back   Next

If you have defined Components you will next need to add Component Groups. These define the relationship between Parent Models and their dependent Components. Simply click the inline link to *Add Component Group* and check the respective Components in the list on the right. Repeat this until all relationships are defined. You can also select *None* as an option if you wish to display the Parent Model with no Component. In this example of a car with wheels it would not make sense to do so.

Configurator Wizard

Overview
Parent Models
Components
Component Groups
Material Variations
Studios
Layout
Summary

Add Component Groups

Component Groups create dependency between Components and their Parent Model. Add a Component Group to a Parent Model and select the respective Components.

- ⬤ El Camino
  - — Wheels
    - ◯ Wheels 1
    - ◯ Wheels 2
    - ⬤ Wheels 3
    - *Add Component Group*
  - — ◯ Camaro SS
    - *Add Component Group*

Components
- ☑ Wheels 1
- ☑ Wheels 2
- ☑ Wheels 3
- ☐ *None*

Close   Back   Next

Material Variations are added by selecting the desired material/object in the *Real-time View* then dragging and dropping materials from the *Library* into the lower list pictured below. You will then see the material spheres populate the list to select and preview. Once materials are in the list you can give the Material Variation a name i.e. Wheel Accent. This material will become a Multi-Material in your scene that can also be accessed and further edited from the *Material tab*.

Configurator Wizard

Overview
Parent Models
Components
Component Groups
Material Variations
Studios
Layout
Summary

Add Material Variations

Material Variations allow you to present non-destructive Material changes. Each Material Variation will be created as a Multi-Material if not already created as one.

- + ○ El Camino
- − ● Camero SS
  - + Ω Main Panels
  - + Ω Side Panels
  - + Ω Stripes
  - − Wheels
    - − ● Wheels 1
      - − Ω Wheel Accent
        - ○ A Little Lilac_745657
        - ○ Amazing Grape_741904
        - ○ Amazon Moss_743282
        - ○ Blackberry Brandy_743281
        - ○ Blazing Copper_741510
        - ● Blue By-You_741519
        - ○ Bombay Blue_741795

Click on a material in the scene and drag and drop from the Library to the list below to assign variations.

Name: Wheel Accent

Name	Type
A Little Lilac_745657	Axalta Paint
Amazing Grape_741904	Axalta Paint
Amazon Moss_743282	Axalta Paint
Blackberry Brandy_743281	Axalta Paint
Blazing Copper_741510	Axalta Paint
Blue By-You_741519	Axalta Paint
Bombay Blue_741795	Axalta Paint

Close   Back   Next

Studios can be enabled in order to change preset Cameras, Environments or prop/scene geometry created as Model Sets. Studios must first be created in the Studios dialog in order for them to show in the Studios section of the Configurator Wizard. The most common use case of Studios in the Configurator is of Studios assigned only an Environment so the scene lighting can be changed without having to reset the Camera.

Configurator Wizard

Overview
Parent Models
Components
Component Groups
Material Variations
Studios
Layout
Summary

Studios

Choose studios for the configurator in presentation mode.

○ All

○ None

● Selected

☑ Studio
☑ Outdoor
☑ Night

Close   Back   Next

The Layout section is where you define the style of Presentation Mode for each given Configurator scene. You can choose between a Compact toolbar or Touch Friendly thumbnail interface. When using the Touch Friendly mode you will need to click the Render Materials button in order for the material thumbnails to show in Presentation Mode. The optimal size values, button and tab visibility, and tab names will vary from scene to scene and also depending on screen resolution so it is best to spend some time going between the Layout section and Presentation Mode to dial in the values and options before your final presentation.

Configurator Wizard

Layout

Adjust the layout for the configurator in presentation mode.

Layout style:

🔘 Compact

⚪ Touch Friendly

☑ Show Exit Button

☑ Show Screenshot Button

Parent Tab Name	Car
Parent Material Tab Name	Car Body
Component Tab Name	Wheels
Component Material Tab Name	Wheel Accent

Close   Back   Next

Configurator Wizard

Overview
Parent Models
Components
Component Groups
Material Variations
Studios
Layout
Summary

Layout

Adjust the layout for the configurator in presentation mode.

Layout style:

○ Compact

● Touch Friendly

[Render Materials]

User Interface Size   `40%`

Material Icon Size   `100`

Model Icon Size   `256`

Studio Icon Size   `102`

☑ Show Exit Button   ☐ Hide Single Top-level Titles
☑ Show Auto-Hide Button   ☑ Hide Single Sub-level Titles
☑ Show Screenshot Button   ☐ Hide Toolbar

Parent Tab Name   `Car`

Parent Material Tab Name   `Car Body`

Component Tab Name   `Wheels`

Component Material Tab Name `Wheel Accent`

Studio Tab Name   `Environment`

[Style Sheet]

[Close]   [Back] [Next]

The Summary section allows you to see an overview of the number of variations in your Configurator and to preview each of the variations in the Real-time View before entering Presentation Mode.

Configurator Wizard

Overview
Parent Models
Components
Component Groups
Material Variations
Studios
Layout
Summary

KeyShot Configurator

This scene contains:
2 - Parent Model Variations
6 - Parent Model Material Variations
2 - Component Group
6 - Component Variations
6 - Component Material Variations

[▦ Presentation Mode]

```
+  ○ El Camino
−  ● Camero SS
      +  Ω Main Panels
      +  Ω Side Panels
      +  Ω Stripes
      −  Wheels
            −  ● Wheels 1
                  −  Ω Wheel Accent
                        ○ A Little Lilac_745657
                        ○ Amazing Grape_741904
                        ○ Amazon Moss_743282
                        ○ Blackberry Brandy_743281
                        ○ Blazing Copper_741510
                        ● Blue By-You_741519
                        ○ Bombay Blue_741795
                        ○ Brick House_745636
                        ○ Cappuccino Craze_743275
                        ○ Catalina Dream_745645
                        ○ Champange Fizz_745649
                        ○ Cherry Bomb_745525
                        ○ Fire Thorn_741798
                        ○ Fuschia Kiss_745641
                        ○ Ginger Bronze_745648
                        ○ Green Xtreme_741515
                        ○ Gun Metal_743406
                        ○ Hot Azalea_745629
                        ○ Hot Poppy_745633
                        ○ Iguana Run_745534
                        ○ Jazzy Blue_745523
```

[Close]   [Back] [Next]

Virtual Reality

KeyShot allows you to experience both real-time rendering mode and rendered visuals in virtual reality (VR) using a VR headset. This section describes how to setup and use VR hardware with KeyShot.

In this section:
- VR Overview
- Render VR Images
- Work In Real-Time VR

VR Overview

The VR capabilities in KeyShot allow you to use VR devices, such as the Oculus Rift and the HTC Vive, to view KeyShot scenes. There are two applications for using VR with KeyShot:

1. **Render VR Images**
   View rendered panoramic images rendered in KeyShot. This mode is compatible with any type of VR device capable of viewing VR images. Please

check with the manufacturer of the device to know what type of image is
necessary. Learn more

2. **Work in Real-time VR**
View and render the Real-time View through the VR headset. This mode is
compatible with the *Oculus Rift* and the *HTC Vive* only. Learn more

Accessing KeyShot VR Settings

VR capabilities are a KeyShot Pro feature. (Compare KeyShot versions.) All VR settings
are accessed from the *Project* window, *Camera* tab, under the *Lens Settings* and *Stere
o* sections.

Terminology

Cube Map

- In this mode, six views will be rendered side by side.
  - The views are: Front, Back, Right, Left, Top, Bottom.
- If your device supports stereo cub maps it will automatically orient the
  images for you to view them correctly.

Spherical

- As described by the name, this image will look like a flattened out sphere.
- This mode will be compatible with most devices out there.

Side-by-side

- In order to see the image in 3D via the headset, you need to have the
  same image played in both eyes. In this mode both images are
  stitched next to each other.

- In order for you to see the image in 3D in the headset, you need to have the same image played in both eyes. In this mode both images are stitched one on top of the other.

Eye Distance

- This is to set the distance between your eyes. This is a setting that you configured when setting up your Oculus Rift or HTC Vive. Use the same distance set when setting up your device.

Pole Merging Angle

- *Details coming soon.*

Render VR Images

This section will guide you through the steps necessary to render out an image to view on a VR head-mounted display:

1. Open and setup the scene of your choice in KeyShot.

2. Go to the *Project* window's *Camera* tab and open the *Lens Settings* accordion.

3. Select *Panoramic* mode.

4. Depending on the type of VR device you have, you may need to select *Cube Map* or *Spherical,* i.e. Oculus Rift and HTC Vive can use both, but Google Daydream needs a Spherical image.

5. Enable the *Stereo* radio button.

6. Go to the *Render* menu by using the *Render* button in the toolbar or by going to the top menu under *Render, Render...*

7. Render the image as you would any other image. Keep in mind that you will be "immersed" in the scene, so the bigger the image resolution the more realistic it will look.

8. Upload your rendered image to your headset to view the VR image. This step can be different for each VR headset device. Please consult the headset manufacturer for specific instructions for loading a VR image.

Related Pages

- Panoramic

Work In Real-Time VR

This section will guide you through the steps necessary to view the real-time window through a VR head-mounted display:

- This will only work with the Oculus Rift and the HTC Vive.
- These instructions assume that you have the Oculus Rift or the HTC Vive already installed and ready to go.

Perspective Realtime View

1. Open and setup the scene of your choice in *KeyShot.*

2. Go to the *Project* window's *Camera* tab and open the *Lens Settings* accordion.

3. Select *Perspective* mode.

4. Enable the *Stereo* radio button.

5. You can change the stereo settings if you know specifically what you need or you can just leave the default settings the way they are.

6. Click on the *Head-Mounted Display* dropdown and choose which VR device you have. For the Oculus choose *Oculus Rift* and for the HTC Vive, choose O*p enVR.*

7. It might take a few seconds for the VR device's software to load but you can now put your headset on to view your scene.

Panoramic Realtime View

Workflow 1:

1. Open and setup the scene of your choice in KeyShot.

2. In the top menu, go to *Camera Enable VR.*

3. Choose between *Cube map mode* or *Spherical mode.*

4. Choose your desired resolution. Keep in mind that the higher you go the more powerful your machine will need to be. For example, if you are working on a laptop, you should stay at lower resolution.

5. Choose which VR device you have. For the Oculus choose *Oculus Rift* and for the HTC Vive, choose O*penVR.*

6. Click *Start.* (It might take a few seconds for the VR software to start)

Workflow 2:

1. Open and setup the scene of your choice in *KeyShot.*

2. Go to the *Project* window's *Camera* tab and open the *Lens Settings* accordion.

3. Select *Panoramic* mode.

4. Choose between *Cube map mode* or *Spherical mode.*

5. Enable the *Stereo* radio button.

6. You can change the stereo settings if you know specifically what you need or you can just leave the default settings the way they are.

7. Click on the *Head-Mounted Display* dropdown and choose which VR device you have. For the Oculus choose *Oculus Rift* and for the HTC Vive, choose O*p enVR.*

8. It might take a few seconds for the VR device's software to load but you can now put your headset on to view your scene.

KeyShot Cloud

KeyShot Cloud is an online library where you can share your own custom materials and resources, as well as having access to resources uploaded by other KeyShot users. When the KeyShot Cloud button is pressed, your default web browser will open and take you to the login page for KeyShot Cloud.
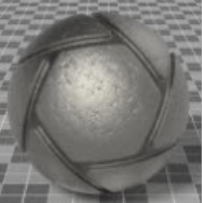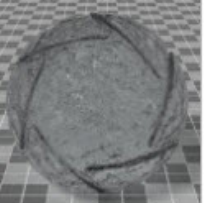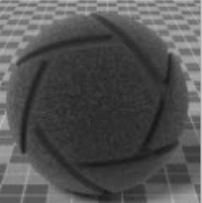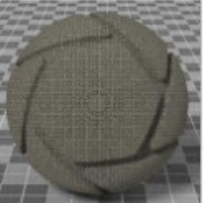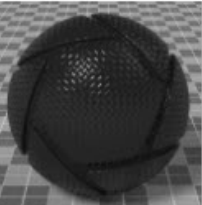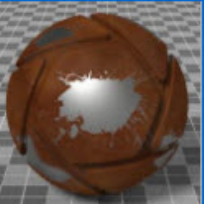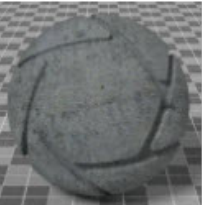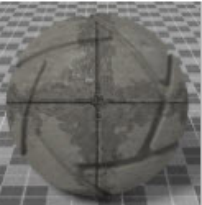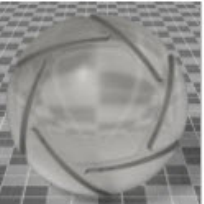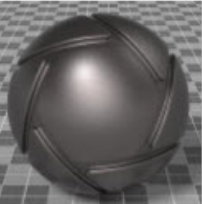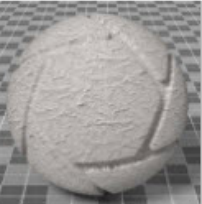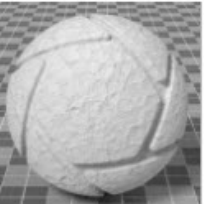
KeyShot Cloud User Interface

1. Search Field
2. View Style / Settings
3. Category Tabs
4. Search Result Counter
5. Search Results
6. Details
7. "Like" Button
8. Download

KeyShot Cloud Account

Click the KeyShot Cloud button on the toolbar, or go directly to https://cloud.keyshot.com.

Before you have access to KeyShot Cloud, you will need to login with an existing account or to create a new one. Click Register and enter your details.

To log out, click the settings icon in the upper right of KeyShot Cloud window and select "Log Out".

KeyShot Cloud Search

KeyShot Cloud has robust search capability. Type any search term or use search syntax (ex. @username) to search for resources.

The search results may be organized using the *Order By* and the *Results Since* dropdown menus.

Click on a resource entry to bring up the details of that specific resource such as the size, description, tags, creator, and more. The details section will also contain the *Download* button to download the resource to your KeyShot Library, as well as a *Report* button to flag any resource as offensive material.
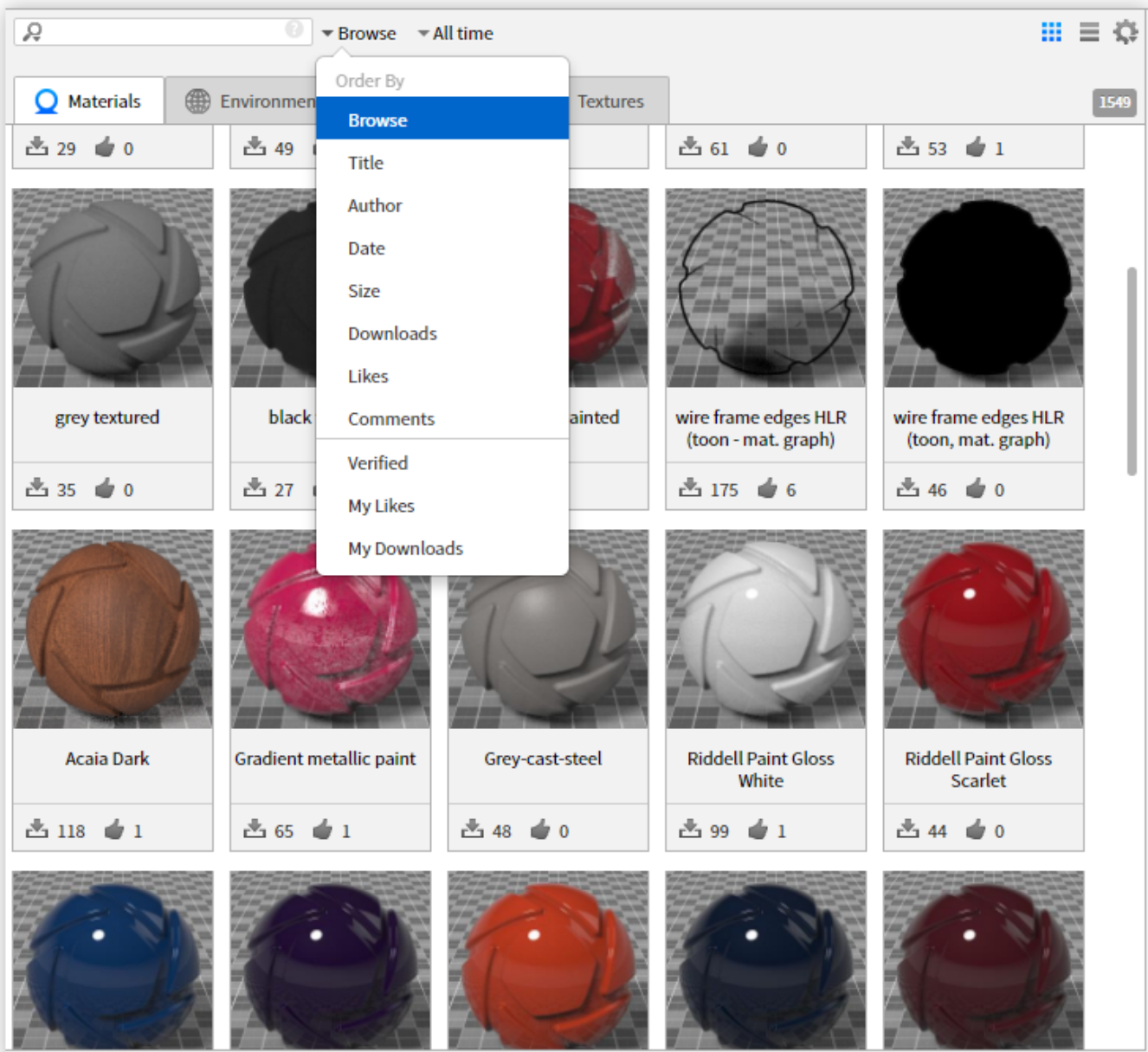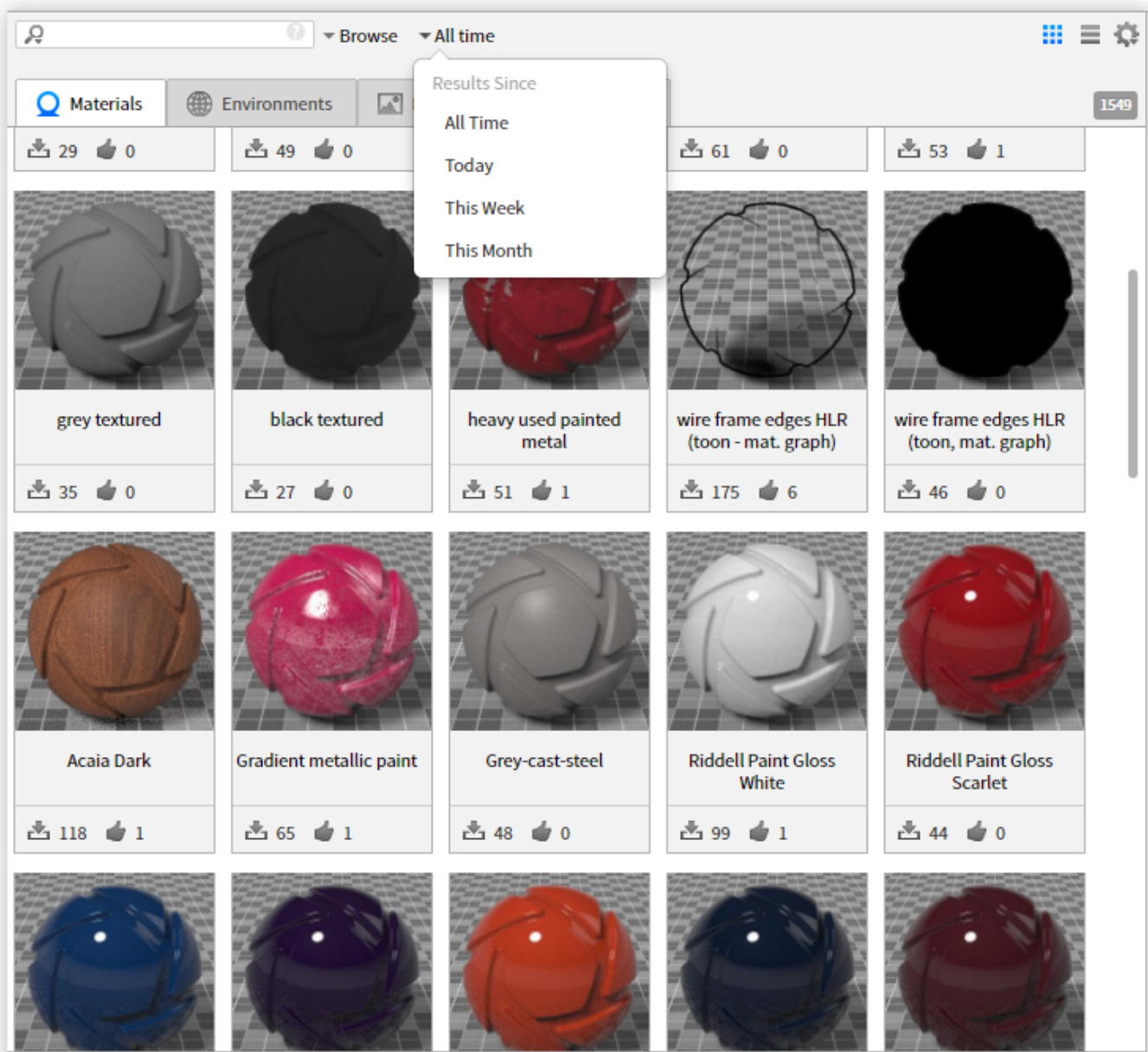
Uploading/Downloading Resources

Uploading Resources

To upload your custom resources to the Cloud Library, click the *Upload* button on the bottom right of the KeyShot library panel.

You will be prompted to edit the name if desired and to add a description and tags to help other users search for your resource. If you don't know what tags to use, you can click *Suggestions* and KeyShot will auto generate tags for you.

After clicking *Next*, a confirmation of resources to be uploaded will be displayed. Click *U pload* to send your resource to the cloud and give other users access.

On this page:

- Uploading Resources
- Downloading Resources
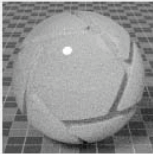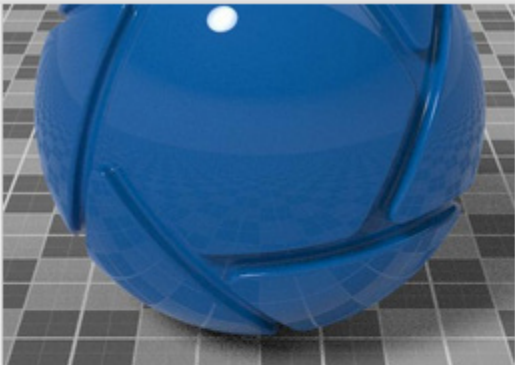
Downloading Resources

To download a resource on the Cloud, click the *Download* button on the resource you would like to download. The resource will be automatically downloaded to your downloads folder in the appropriate tab, and you will then be able to move it to an existing or custom folder.

Network Rendering

KeyShot Network Rendering allows you to connect multiple computer systems in your office network and utilize the available hardware to reduce rendering times significantly. In fact, the correlation between render time and number of cores in your network is approximately linear and inversely proportional. In other words, by doubling the number of cores you potentially cut your render time in half.* In addition, rendering over the network is convenient. You may continue working in KeyShot or any other application without slowing down your system while the designated rendering stations process your render "jobs".

The KeyShot Network Rendering software is compatible with Mac and PC systems.

The more cores you have, the faster your images and animations will render.*
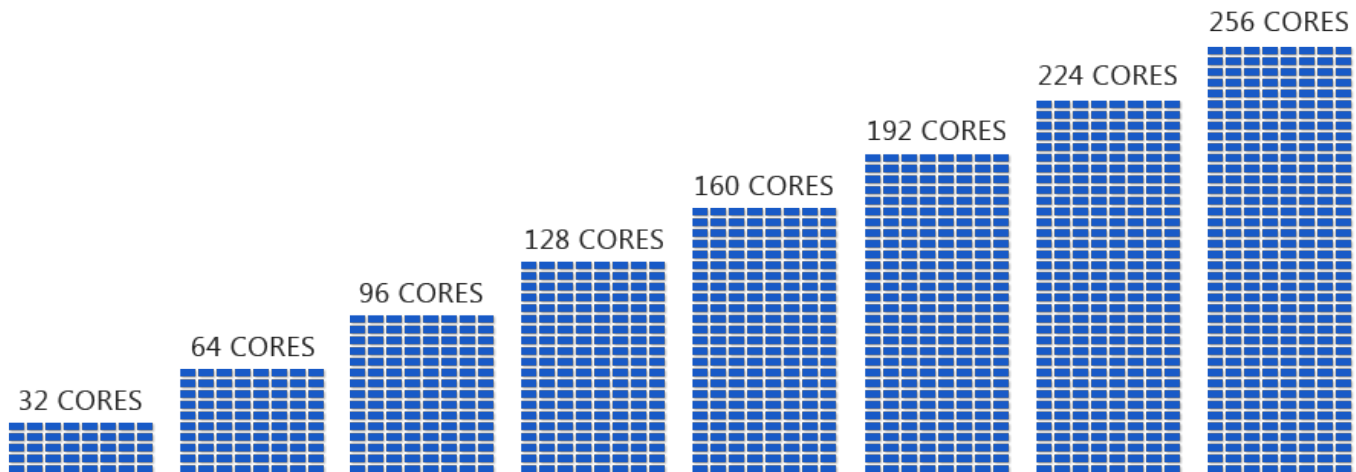
* Please note that this is an approximation under optimal conditions. Render times are subject to hardware specs, core count differences between slaves, scene complexity, unit of time, multi-tasking, and network traffic.

** Please note that Luxion does not sell or rent cores. All computer hardware (i.e. processor cores) is provided by the customer.

More on KeyShot Network Rendering and Network Rendering Installation can be found in the KeyShot 7 Network Rendering Manual.

View KeyShot 7 Network Rendering Manual

Preferences

This section describes where to find the KeyShot *Preferences* (options/settings) and what they do. You will find the KeyShot *Preferences* in the Main Menu under *Edit, Preferences…*

After making changes, make sure to select the *Save Changes* button. In some instances you maybe required to restart KeyShot in order for the changed settings to take effect. To prevent any changes from taking effect simply select the *Cancel* button.

The follow sections describe what preferences are available in each tab of the *Preferences* window.

In this section:
• General Preferences
• Interface Preferences
• Folders Preferences
• Plugins Preferences
• Color Management
• Hotkeys Preferences
• Advanced Preferences

General Preferences

General

Show Welcome Window at Start Up

Displays a splash-screen at startup with recent scenes, demo scenes, news and info.

Adjust aspect ratio to backplate
Automatically resizes the *Real-time View* to the same aspect ratio of any backplate image that is loaded into the *Real-time View*.

Auto Update
Prompts you to download and run the update installer when a newer version becomes available.

Pause KeyShot when sending jobs to Network Rendering
Pause rendering in the Real-time View and stop the usage of your CPU when jobs are submitted to KeyShot Network Rendering.

Pause Real-time Render after time or samples
Select an amount of time or render samples from the dropdowns to automatically pause the rendering in the Real-time View and stop the usage of your CPU.

Screenshots

Format
Select the format for the saved screenshot (JPEG or PNG).

Quality
Determines the compression of the saved image. Higher settings mean less compression yet better quality, but the file size will also increase. The default value is 99.

Ask where to save each screenshot
KeyShot will prompt you to specify a location when saving a screenshot from the *Real-time View*.

Save a camera/viewset with each screenshot
When checked, KeyShot will save a camera view for every screenshot that is saved out. These views can be accessed from the camera tab in the project window.

Default Startup Scene

This lets you set the default startup scene when you start KeyShot. The *startup.bip* scene is set as the default. Any KeyShot scene may be set as a startup scene. To change, simply click on the *Folder* icon 📁 and browse to the scene you want KeyShot to load on startup.

Backup Revision

Create a serialized backup revision with each save
When checked, the Revision Manager will become enabled. KeyShot will create a serialized backup every time that you save rather than overwriting the scene. This results in a full copy of the original scene.

Backup history depth
Determines how many instances of the scene will be saved before the oldest one get overwritten. By default the value is 5. When the scene is saved a 6th time, the first (oldest) version of the scene will be overwritten. The maximum value is 99.

Save Reminder

Display save reminder notification every:
KeyShot will prompt you to to save at the interval selected. These times include every *5, 10, 15, 30* and *60 minutes.* Select *Never* if you do not want a *Save Reminder* to appear.

Cloud Library

This shows the login status for the KeyShot Cloud Library. You log into KeyShot Cloud directly from within KeyShot by clicking the *Cloud Library* icon in the toolbar. A browser

and internet access is required. Once logged in, here you can see the username with which you are logged in with the option to log out. Learn more about KeyShot Cloud.

Interface Preferences

Interface

Language
Select the desired language in the menu.

Theme
Select desired color for the KeyShot interface.

Selection outlines
Displays an orange outline around selected parts.

Use CPU for selection outlines
Enable this if selection outlines are unstable on GPU.

Include camera changes in undo/redo
This will include all camera movements in the undo stack.

Reverse camera distance scrolling
Reverse the scrolling on the camera when dollying the camera.

Enable sub menus in Real-time View
Rather than showing a list of functions in the right click menus, these functions will be logically grouped into sub menus.

Show in-project material list under material properties tab
All in-project materials will be displayed.

Disable scene tree hierarchy changes
Prevents you from making any changes to the scene tree hierarchy by dragging and dropping parts.

Lock pivot to target
When it is enabled the pivot moves with the target when you pan the camera.

Scene Tree object preview tooltips
When checked you will see a spinning OpenGL shaded preview of an object when hovering over it in the scene tree.

3Dconnexion Settings

KeyShot supports input devices from 3Dconnexion on both Windows and Mac. Make sure a 3Dconnexion device is connected in order to be able to change these settings. Learn more about 3Dconnexion.

Restrict to dominant axis
Only allows one axis movement at a time.

Invert axis
Inverts camera movement direction.

Use global up axis
When checked (default) the camera will always rotate around the global up axis, even when tilted.

Folders Preferences

The folders tab allows you to specify folders or shared folders for all of your KeyShot Resources including *Textures, Backplates, Environments, Materials, Renderings, Scenes, Animations* (including KeyShotXR files)*, Material Templates, Colors, Scripts* and *Plugins*.

Specify location for all folders

This option sets the default location for all resource folders

Resources

Select the folder icon [folder icon] to set the default location for all KeyShot Resource folders.

Customize each folder

This option allows you to set the locations for each resource independently or add additional folders or shared directories.

> **Shared Folders**
> Shared folders will allow you to point KeyShot to access files in folders that are shared on a server or local computer. All shared folders will show inside of the KeyShot Library.
>
> To use shared folders you will need to select *Customize each folder* and click the folder icon [folder icon] to the right. The *Configure Folders* dialog will open. From there you can select the plus icon to add a new folder path. Selecting a folder and clicking *Edit* will allow you to edit the folder and change the path or switch to a default folder. At least one default folder is required for each resource.

Plugins Preferences

All 3rd party plugins installed for KeyShot are displayed here. *Note: these are not the KeyShot plugins used with modeling applications.*

Plugins

The *Plugins* window will show all installed KeyShot compatible plugins with checkboxes to enable or disable the plugin when KeyShot starts. Plugins are installed via Windows or Mac OS X installation files and uninstalled through the operating system options.

Color Management

Compensate for Image Gamma when applying Library Colors
Gamma corrects color values when applying them to a material directly from the Color Library. This will try to keep the appearance of the color in the Library. With this option selected, the color of the material in the scene and in the Library will always match, if you don't change the Image Gamma after applying the color.

Apply Image Gamma to colors in Swatches and Color Pickers
Checking this option will apply the set Image Gamma to both the color swatches of materials and the color picker. This will only adjust the actual color preview, not the values.

Enable Color Management

Enable this option to use ICC color profile files in KeyShot. Select the folder icon [folder icon] to load your desired color profile. Both .ICC and .ICM file formats are supported. The status window will show if the color profile was loaded and color profile created. Select *Save Changes* to save your color profile settings. To delete the color profile simply remove the file location or disable by unchecking *Enable Color Management*.

Hotkeys Preferences

You can customize all existing hotkeys inside KeyShot. Hotkeys are categorized as *Simple Hotkeys, Mouse Actions* and *Camera Controls*. Depending on the type of hotkey you select, either the *Simple Hotkey* or the *Mouse Action* input fields will become active. *Camera Controls* are always active.

Filter/Hotkey List

This allows you to search for a specific *Action/Group* or *Hotkey* in the list. The Hotkey List shows all of the KeyShot commands capable of having a key combination

assigned. Actions with empty Hotkey entries do not have a hotkey assigned.

Simple Hotkey

Select a *Simple Hotkey*, i.e a hotkey that doesn't contain any mouse actions from the list of hotkeys. To edit, simply start typing in the input field. You can always change the hotkey back to its default setting by selecting *Change to Default*.

Mouse Action

Select a *Mouse Action* hotkey from the list, and start modifying the hotkey by changing the mouse action from the pull-down menu, and select up to three modifier keys, i.e. *Alt, Shift, Ctrl*.

Camera Control

This function allows you to change the camera controls based on your favorite modeling application. In the hotkey list you can see what application has been selected to change the camera controls.

Hotkey Presets
Simply select the 3D modeling software from the dropdown menu, and all camera controls will adjust accordingly. Support is included for:

- *3ds Max*
- *Alias*
- *Alibre*
- *Fusion 360*
- *Maya*
- *NX*
- *PTC Creo*
- *Rhino*
- *Solid Edge*
- *SOLIDWORKS*
- *SpaceClaim*
- *ZBrush*

Other Options

Reset All
This will reset all hotkeys to their default settings.

Import Hotkeys...
You can import your own custom hotkeys file that has been exported from a KeyShot installation previously. KeyShot hotkey file format is .KSH.

Export Hotkeys...
Choose this function to export your custom hotkeys to use on another machine.

Advanced Preferences

Advanced settings are settings that hardly ever get touched. These settings control some very specific usability settings, Live Linking, Network settings, Log and scripting functions.

Advanced

Fast realtime updates
When checked, KeyShot will down-sample the scene while the camera is moved to enable faster performance. On machines with many cores this function may be turned off to ensure a smooth camera movement without loss of quality.

Graphics effects
When checked, enables the *Bloom*, *Vignetting* and *Chromatic Aberration* effects under *Project* window, *Image* tab, *Effects*.

Use gloss instead of roughness for materials
When checked, This will change all setting names for *Roughness* to *Gloss*. You will need to re-select a material in order for this setting to take effect.

Use UV mapping as default
When checked, this will always apply UV mapping to applied texture maps if available.

Link materials of duplicate parts
When checked, parts that are duplicated will have materials linked automatically.

Link duplicate materials when assigning from Library
When checked, duplicate materials that are being assigned to the scene from the library will be automatically linked. This will avoid having multiple instances of the same material in the scene.

Respect animation ordering
When checked, the next animation origin will match the previous animation origin.

Show Support Tool in help menu
When checked, the *Support Tool* will be available from the *Help* menu. This too will allow you to gather valuable information about your machine, operating system and installed drivers, which can be helpful for our support and development team when troubleshooting potential problems in KeyShot.

Render output window memory limit
This controls the amount of memory reserved for the image buffer in the output window. If the rendered image takes up more memory than this limit, it will be downscaled until it is below the limit. This is useful if you are rendering gigapixel images and your scene takes up a lot of memory. It does not affect the output image itself (as specified in the Render Settings), but does affect images saved directly from the output window.

LiveLinking

LiveLinking connects KeyShot to a modeling application via a custom plugin. When enabled, LiveLinking allows you to run KeyShot in parallel with supported 3D modeling software, and update the geometry inside of KeyShot without losing any of the material assignments, cameras, lighting, etc. All plugins developed by Luxion or a partner company may be found here.

Enable LiveLinking
When checked (default), KeyShot will start and connect to supported 3D modeling software through the installed plugin. Note: these plugins for 3D software are different from plugins for KeyShot explained in the Preferences.

LiveLinking Network port range
This is the port range the installed plugin is using.

Network

This section allows the user to configure the proxy settings in order to communicate with Luxion's software update server and the KeyShot Cloud Library. This may be necessary when KeyShot is installed in environments with tight firewall security.

Proxy type dropdown
This dropdown menu provides four options: *No proxy, Automatic proxy detection* (default)*, HTTP, SOCKS v5*.

Host
This option becomes available when *HTTP* or *SOCKS v5* are selected. Enter the hostname of the proxy server as recognized on the network, or the host's IP address.

Port
Enter the port the proxy server is using to communicate through the firewall.

Enable proxy authentication
It may be necessary to enable proxy authentication on the server. To do so, check this checkbox.

Username
Enter the user name that the user has been assigned to communicate with the proxy server.

Password
Enter the password for the user account on the proxy server.

Log

The log can be accessed under the Help menu in the KeyShot menu bar. It will contain
a log of all errors that occurred while running KeyShot.

Threshold
This dropdown menu contains the lowest level of warning that will be captured in the
log. Warning levels are: *Information* (default)*, Warning, Critical, Fatal.*

Display log window on critical errors
When checked, the log window will open up automatically as soon as a critical error
occurs.

History back buffer
Sets the number of entries in the log.

Scripting

This section provides the setting to take advantage of using local Python library
installations for KeyShot's Scripting capabilities. Learn more about Scripting here.

Use local Python paths
If checked, and if the user has Python libraries like PIL or SciPy installed locally, it will
be possible to use those libraries inside of KeyShot. However, only version 3.4 is
supported which is the same version that is being used inside KeyShot. If not checked,
then only the Python modules exposed inside KeyShot will be available to the scripts
running inside.

Glossary of Terms

Abbe Number (Dispersion)
The variation of refractive index versus wavelength, which produces a rainbow like effect as the value is increased.

ZPR
ZPR is an export option to be used with Zcorp 3d printers.

End-User License Agreement

Luxion KeyShot® 7

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