Fly Elise-ng B.V
Waterstad 31
5658RE Eindhoven
The Netherlands
Web: https://fly.elise-ng.net
Email: info@elise-ng.net
Tel: +31 (0)40-7114293

Fly Elise-ng
Immersive Designer PRO v2.7
User Guide

1 Introduction

Designing and realizing a multi-projector immersive display or a multi LED panels setup is not a simple and trivial task. You will have to ask yourself a number of questions whose answer is dependent on many factors:

- What type and size of the projection screen should I choose?
- What projectors type, resolution, throw ratio, contrast etc. should I chose?
- Where to put the projectors with respect to the screen for the best resolution coverage and soft edge blending?
- Will the projectors and screens fit the available space?
- If I put a cockpit or other objects between the projectors and the screen, how will they occlude the projectors and drop shadow on the screen?
- .....

The answer on those questions is not easy and cannot be simply calculated on paper. Curved projection screens introduce image distortions that cannot be simply calculated using the standard projection calculation tools based on planar projection.

Fly Elise-ng presents Immersive Designer PRO. Immersive Designer PRO software is an essential and must have tool for designing single or multi-projector solutions for curved or planar screen.
Immersive Designer PRO completes the Fly Elise-ng immersive projection toolset for Design, Calibration and Display:

DESIGN - Immersive Designer PRO
CALIBRATE - Immersive Calibration PRO
DISPLAY - Immersive Display PRO

The rich user interface provides an immediate 3D visual feedback of the projection environment including the screen, projections, additional objects, environmental light, etc.
Immersive Designer PRO main features include:

- Multi projector and LED panels design and analysis mode
- Different types and shapes of projection screens including cylinder (single curved), dome (double curved), planar, etc.
- Load custom projection screens from 3D CAD model.
- Support for unlimited number of projectors.
- Built-in projectors database including 2800+ projectors models.
- Extend the projectors database with additional projectors models.
- Edit projectors properties: resolution, throw ratio, position, orientation, light intensity, horizontal and vertical flip, etc.
- Unlimited number of cameras to capture the projection.
- Edit cameras properties: resolution, field of view, position, orientation, etc.
- Unlimited number of additional object that can occlude projection.
- Load objects from CAD models.
- Edit objects sizes, positions and orientation, etc.
- Position the object freely in the scene.
- Direct visual feedback of object occlusion and drop-shadows on the screen.
- Analysis module for projector coverage, pixel resolution, pixel size and projection brightness.

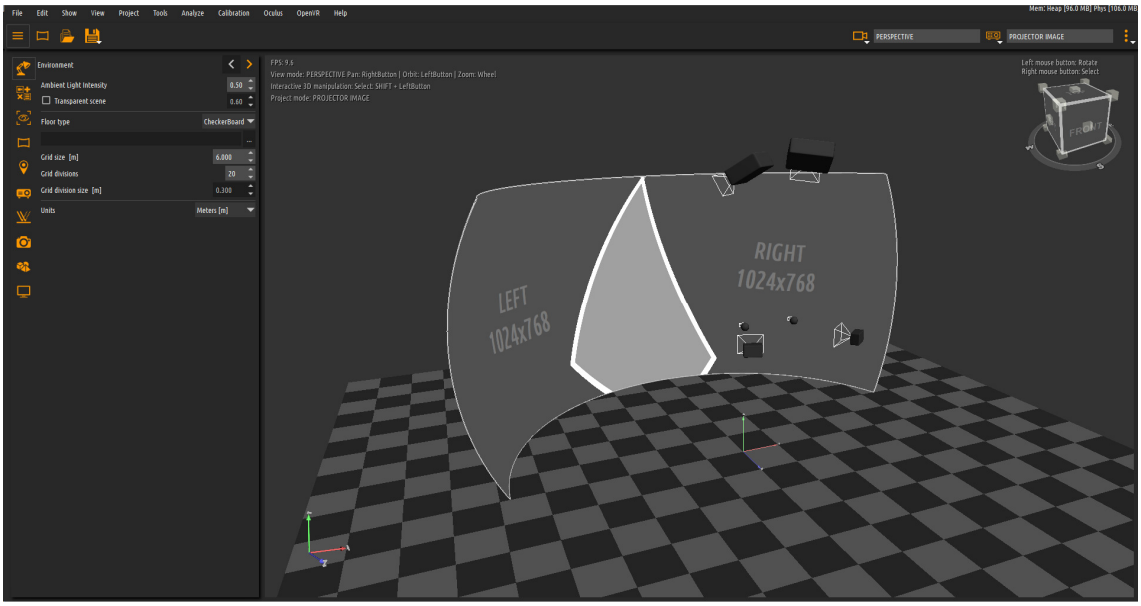
2 System requirements

The following is the required minimal configuration:

- PC with 2.0 GHz or higher processor (32bit or 64 bit)
- 2 Gb or more RAM
- A moderate graphics card (NVIDIA or AMD/ATI) with support for FrameBufferObjects

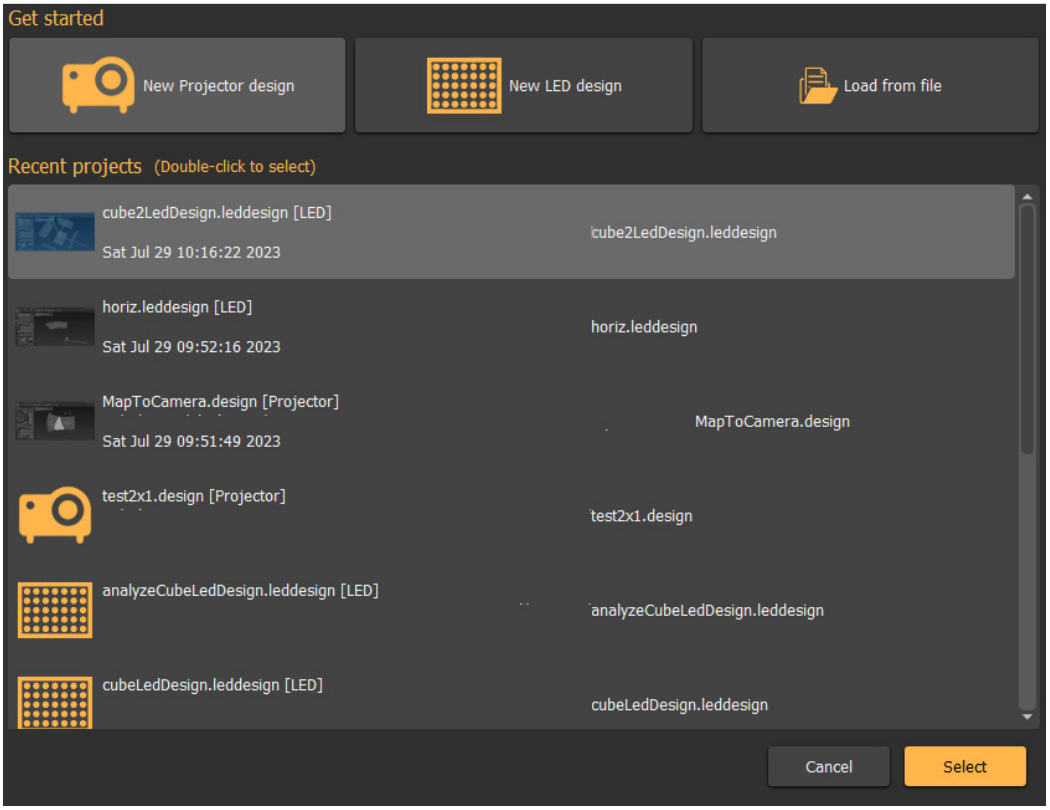
3 User interface

Immersive Designer PRO has simple intuitive user interface for quick and easy design of the projection environment.
The main screen is divided in 3 areas:
The top menu and the toolbar
The elements edit area
The central 3D view area



Immersive Designer PRO GUI

3.1 Startup screen



The startup screen shows the recently saved projects a provides options to load one of the recently used projects or create a project for multi-projector design or a LED design. Depending on the project type (multi-projector or LED) the GUI will adapt to show the relevant options.

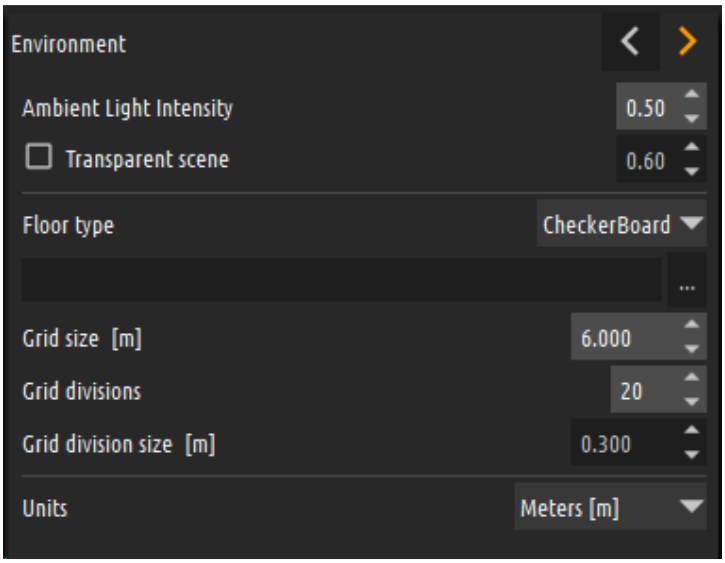
3.2 Top menu and toolbar

The top menu and the toolbar area contain the program menu and the toolbar for quick access of the most common operations (creating a new design project, opening and saving a design project, etc.

3.3 Elements edit area

The elements setup area contains a tabbed dialog for creating and editing the elements of the projection setup (screen, projectors, cameras, displays groups, etc.) as well editing the environmental settings.

3.3.1 Environment tab



Environment tab

In the Environment tab user can enter the intensity of the ambient light that cats on the projection scene including the projection screen.
The ambient light can have an influence on the black/white thresholds of the camera images when cameras are used for camera-assisted calibration.
Also user can enter the size of the ground grid and the number of divisions. The size of a grid division is calculated and can be used as a visual measurement reference.
Users can select among non-transparent checkerboard grid (floor), image based floor or transparent mesh grid.
In the environment tab user can select the units for dimensions and the distances of the screen, projectors, cameras and objects in the scene. Users can select from metric meters or millimeters and imperial feet or inches.

3.3.2 Analyze tab

Analyze tab

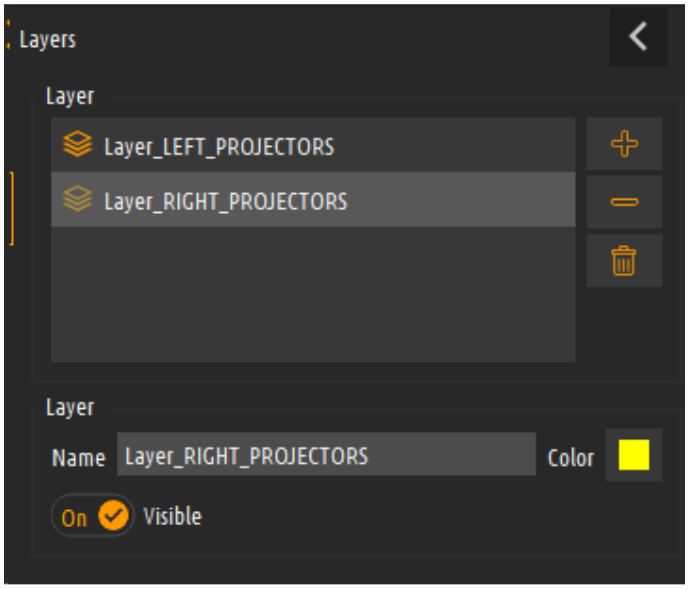
In the Analyze tab user can configure the parameters used by the analysis module. For each analysis calculation a color map can be selected to represent the analysis results. Optionally, the minimum and maximum thresholds can be set to limit the analysis calculation within the minimum and maximum threshold.
For Warp & Blend users can select a SPOUT sender to be used when Warp & Blend Analysis is done with SPOUT source images.
Additionally, users can select a NDI sender to be used when Warp & Blend Analysis.

For pixel resolution analysis, users can configure the Kell factor used for calculation as well the pixel resolution units (arcmin/OLP or arcmin/pixel).
For Brightness calculation user can configure the units for the brightness (ft-L or cd/m^2) as well as the projector brightness factor be applied to the

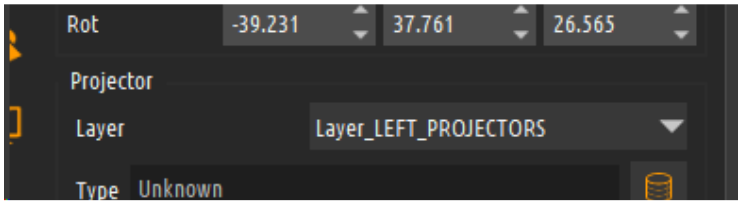
projector ANSI Lumen specification. This factor is used to take into account the decrease of the projector lamp intensity over the time.

3.3.3Layers tab

In the layer tab user can define design layers. Any design element (screen, projector, camera, object, eye-point, etc.) can be assigned to a single layer. This is a convenient wat to group design elements and to change their visibility at once.

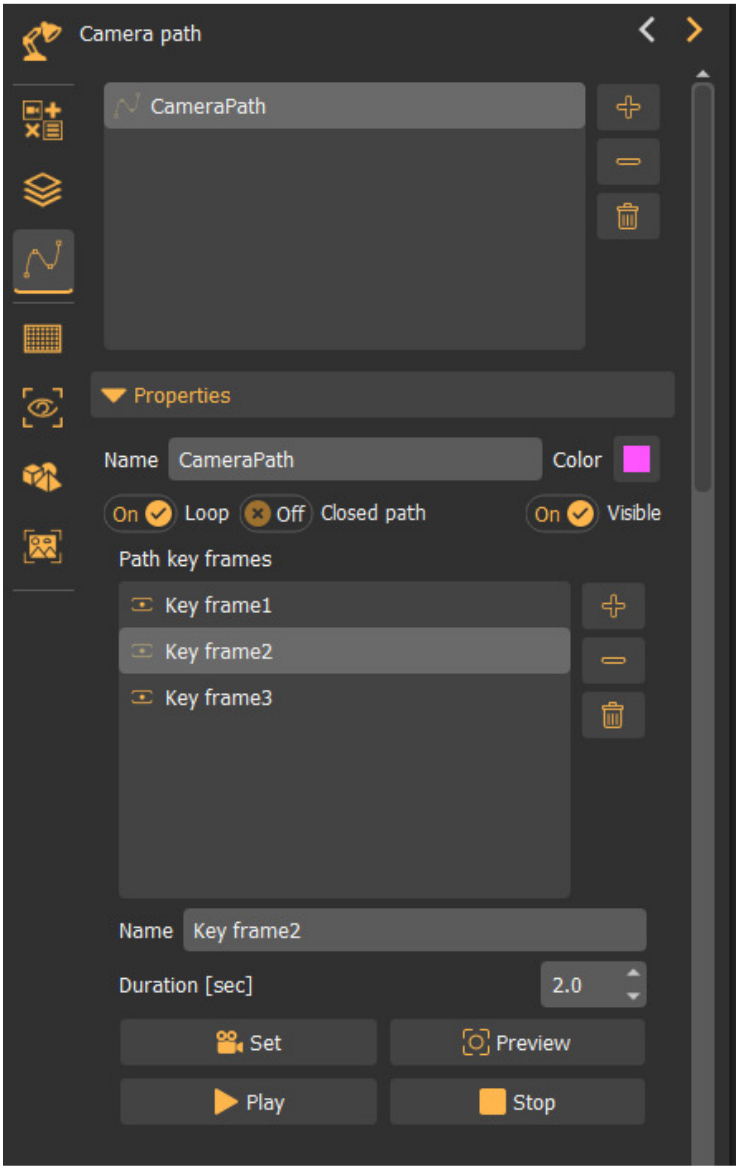


Layers tab



3.3.4Camera paths tab

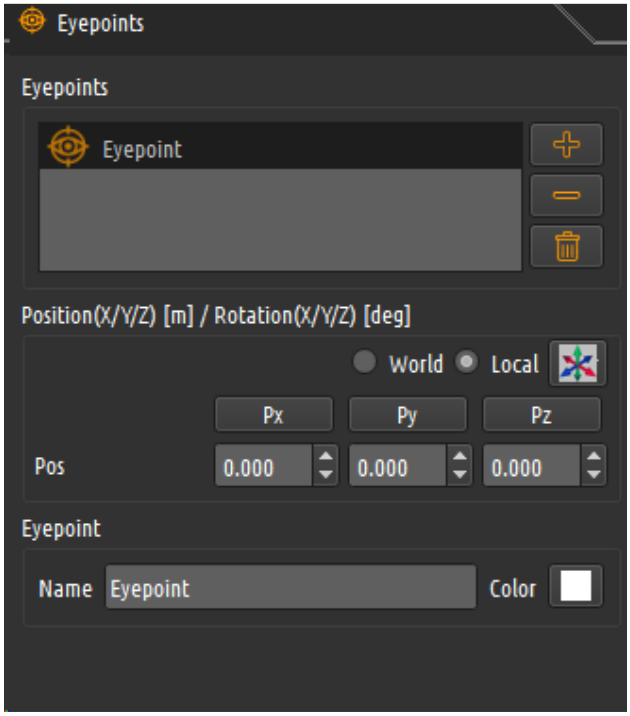
In the cameras path tab user can define one or more camera paths using camera key frames.



Each key frame can be defined (set) from the current camera position and orientation. The camera movement duration from one key-frame to the other can be defined as well.

The software will smoothly interpolate the frames between the defined key frames. This allows creating of smooth animations and presentation videos of the complete design scene.

3.3.5 Eyepoints tab



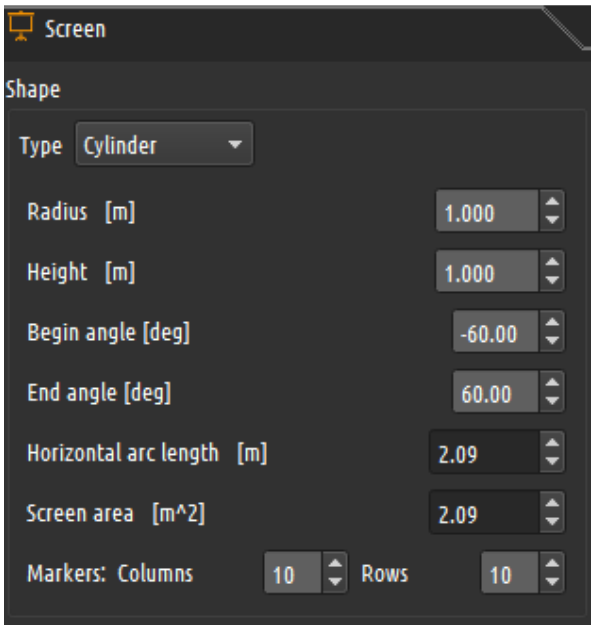
Eyepoints tab

In the Eyepoints tab user can add eyepoints to the setup or remove eyepoints from the setup.
For each eyepoints the position of the eyepoint can be changed.
Eyepoints can be freely moved using the eyepoint Move and control.
Using the  button and the  button user can add and remove eyepoint from the scene. Using the  button user can remove all eyepoints from the scene.
Eyepoints are used as reference point for the analysis module to calculate the projection resolution from a particular eyepoint.
Eyepoints are also used for showing the Aitoff plots from a particular eyepoint.
User can also use the eyepoint to view the scene from the eyepoint perspective. From this perspective, users can use the mouse to look around the scene without moving the view position.

3.3.6Screen tab (multi-projector mode)

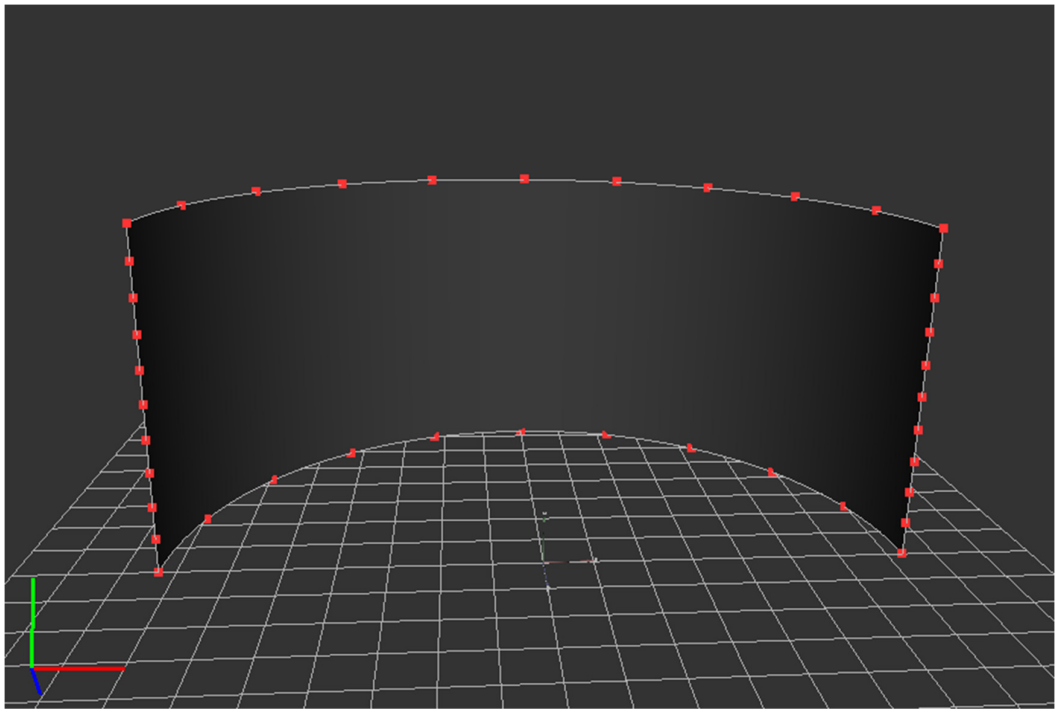
In the screen tab the user can select one of the available screen shapes: cylinder, dome (partial share), full dome, round cave, plane or load a custom shaped screen shape from a CAD model. The current version supports loading of a number of standard 3D model files including Wavefront obj model files.

Cylinder screen:



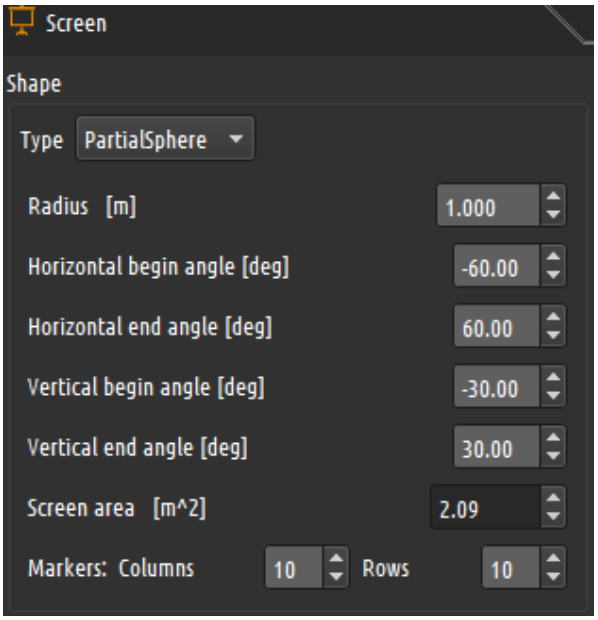
Cylinder projection screen

The cylinder projection screen is a single curved projection screen. User can define the screen by entering the radius and the height of the cylinder as well as the “begin” and “end” angle of the cylinder curvature. The angles are expressed in degrees relative to the center of the cylinder.
For camera assisted multi view calibration simulation, the cylinder screen can be divided in equally sized rows and columns. The rows and columns are marked on the edge of the screen as red screen markers.



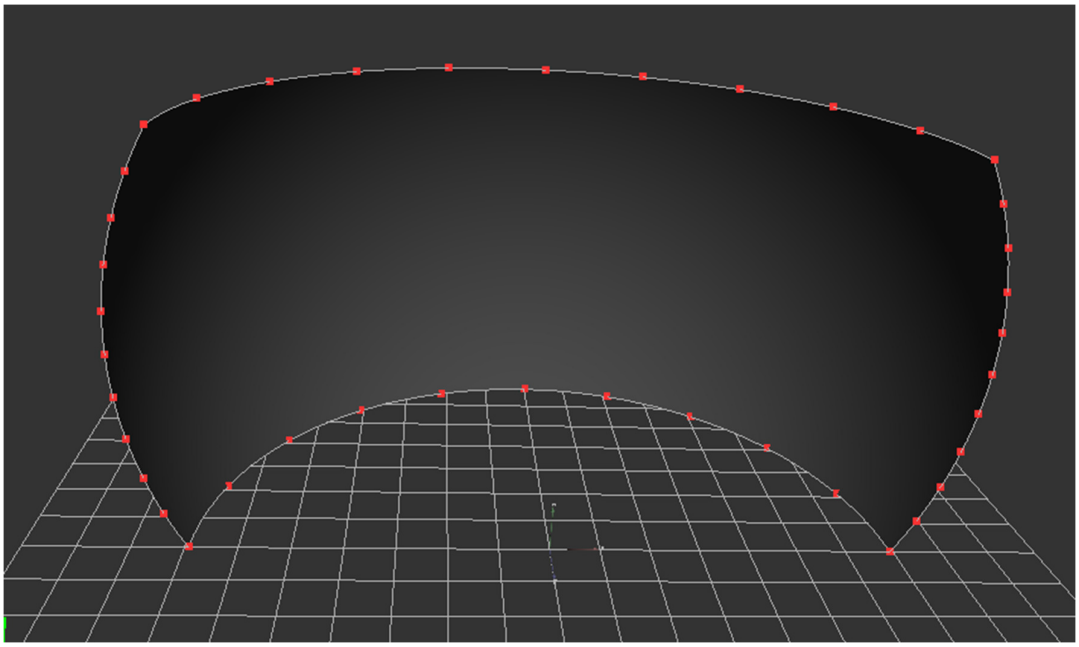
Cylinder screen row and columns markers

Dome (partial sphere) screen:



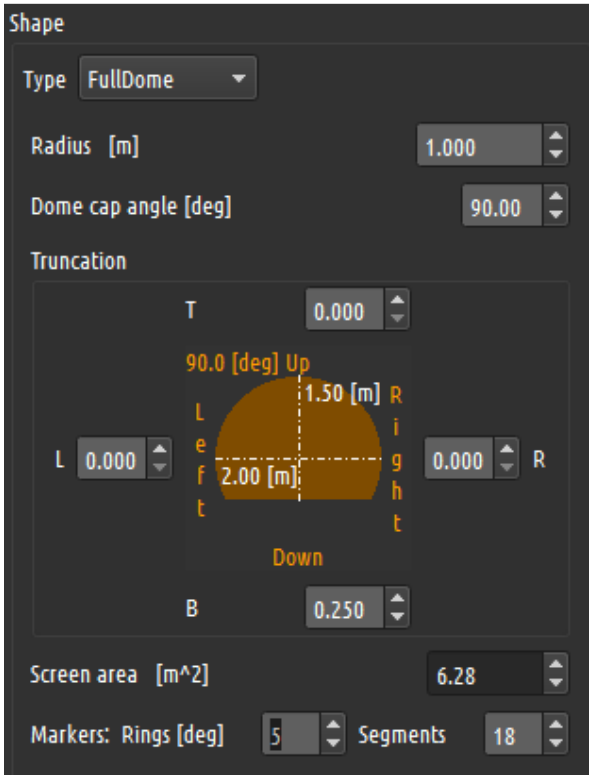
Dome (partial sphere) screen

The dome projection screen is a double curved projection screen along the horizontal and vertical axis. User can define the screen by entering the radius of the sphere as well as the “begin” and “end” angle of the sphere curvature along the horizontal and vertical axis. The angles are expressed in degrees relative to the center of the dome screen.
For camera assisted multi view calibration simulation, the dome screen can be divided in equally sized rows and columns. The rows and columns are marked on the edge of the screen as red screen markers.



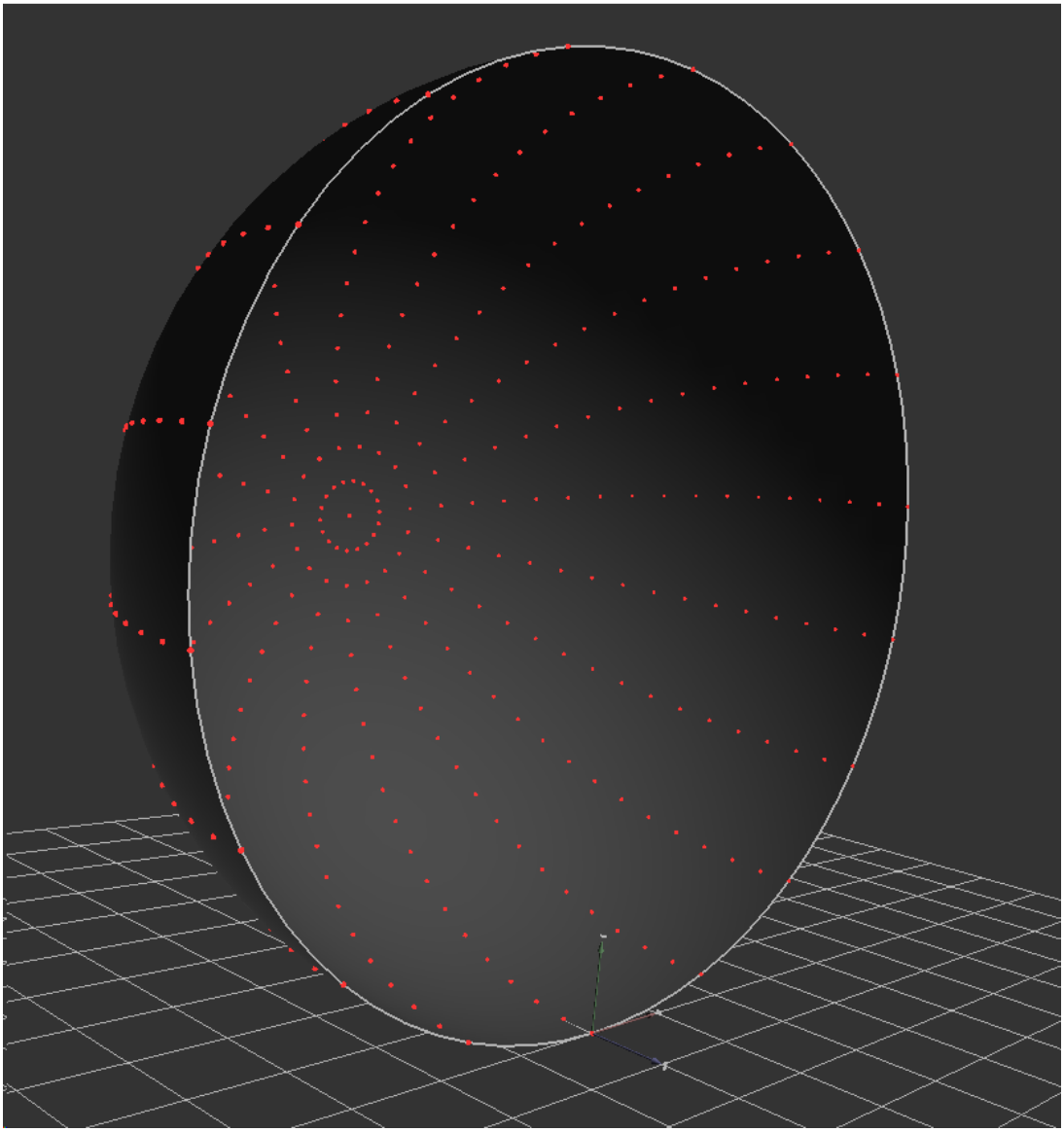
Dome screen row and columns markers

Full Dome screen:



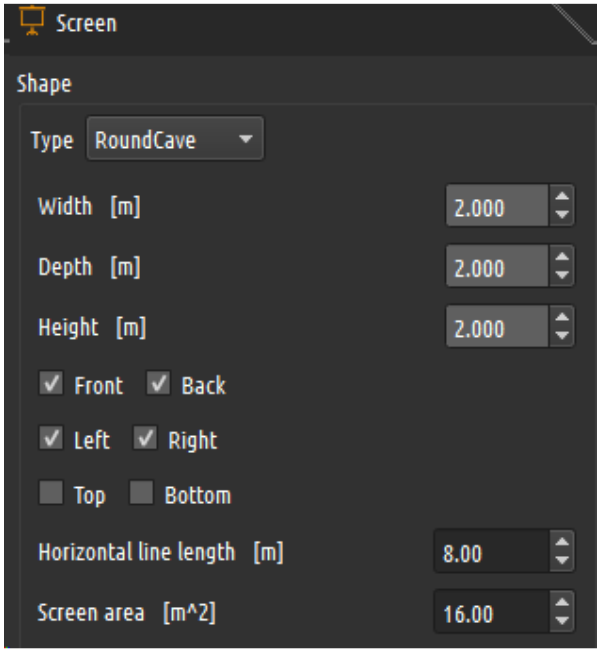
Full Dome screen

The full dome projection screen is a complete 360 degrees dome screen. User can define the screen by entering the radius of the dome as well as the dome "cap angle". The angle is expressed in degrees. For complete half-sphere full dome the cap angle is 90 degrees. Cap angles smaller than 90 degrees, define not complete sphere dome shapes.
Additional truncation can be defined to cut (truncate) the dome from all sides. For camera assisted multi view calibration simulation, the full dome screen can be divided in rings and segments. The rings divide the dome cap from the top (zenith) to the edge of the dome. The Segments are defined by lines that go from the zenith of the dome to the edge of the dome. The rings and segments are marked on the dome screen as red screen markers.



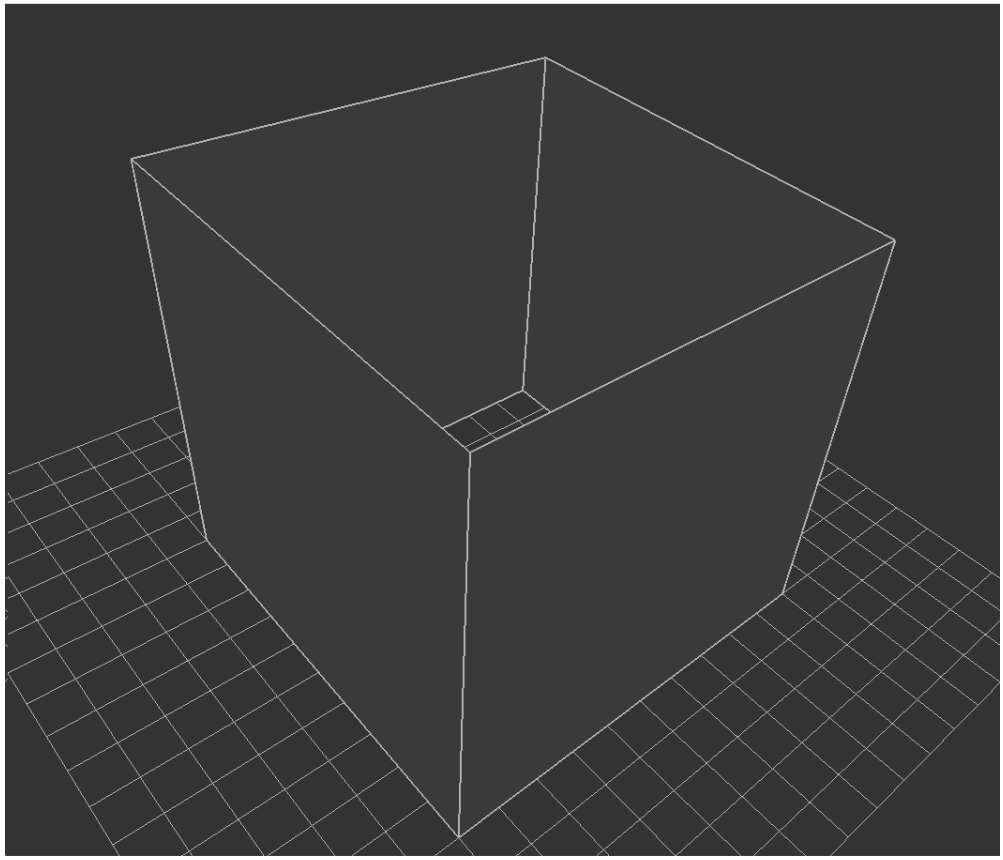
Full Dome screen rings and segments markers

Round Cave screen:



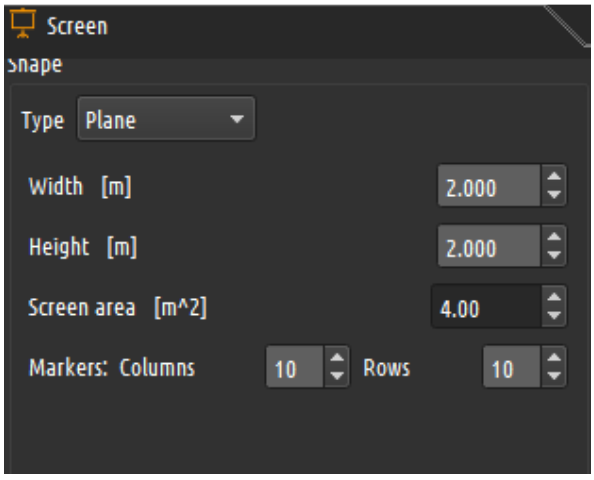
Round Cave screen

A round cave screen is a “box” shape screen. User can define a round cave screen by entering the width, depth and the height of the box, as well as the sides of the box that make the screen.



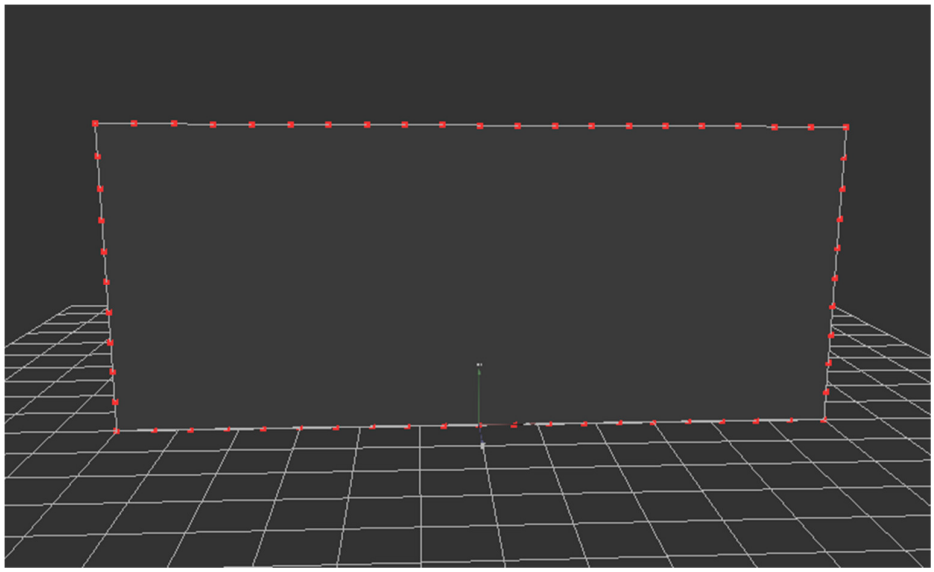
Round Cave screen

Planar screen:



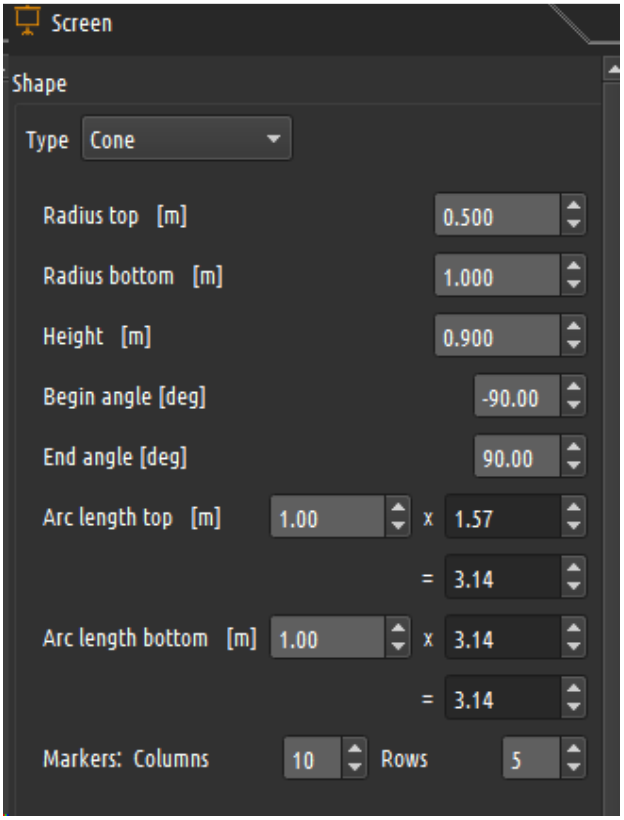
Planar screen

User can define the planar screen by entering the width and the height of the screen.
For camera assisted multi view calibration simulation, the planar screen can be divided in equally sized rows and columns. The rows and columns are marked on the edge of the screen as red screen markers.



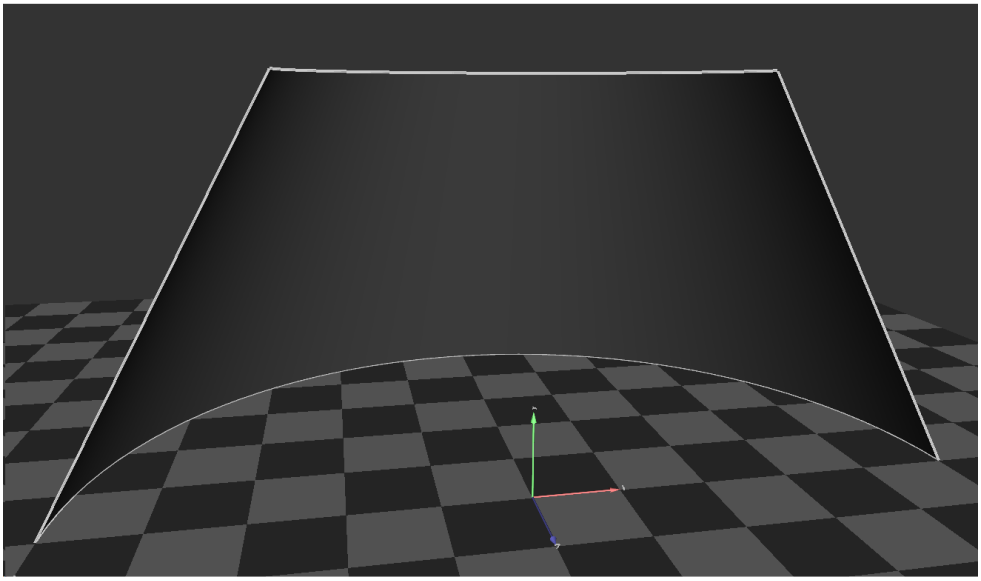
Planar screen row and columns markers

Cone (truncated) screen:



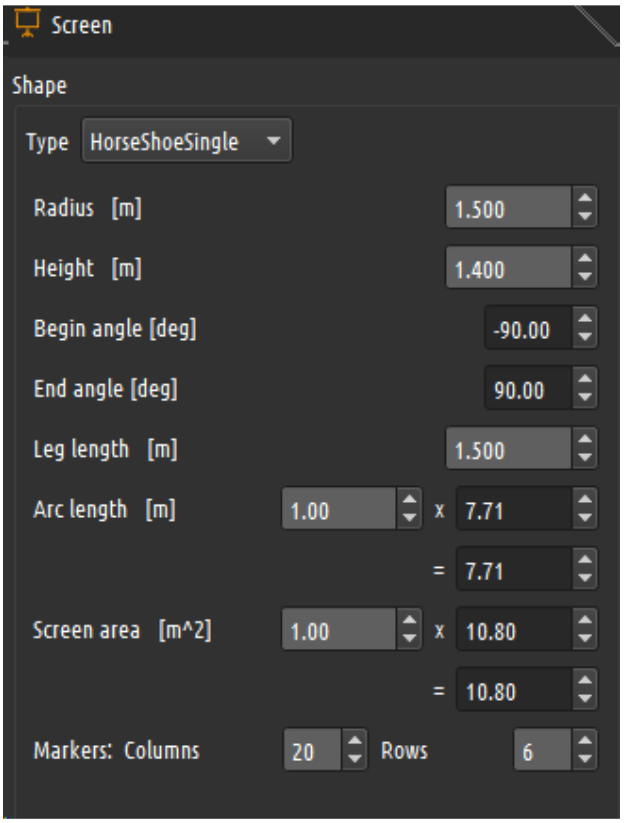
Cone screen

The cone projection screen is a single curved projection screen with different radius at the bottom and the top of the cone. User can define the screen by entering the bottom and top radius and the height of the cone as well as the “begin” and “end” angle of the cone curvature. The angles are expressed in degrees relative to the center of the cylinder.



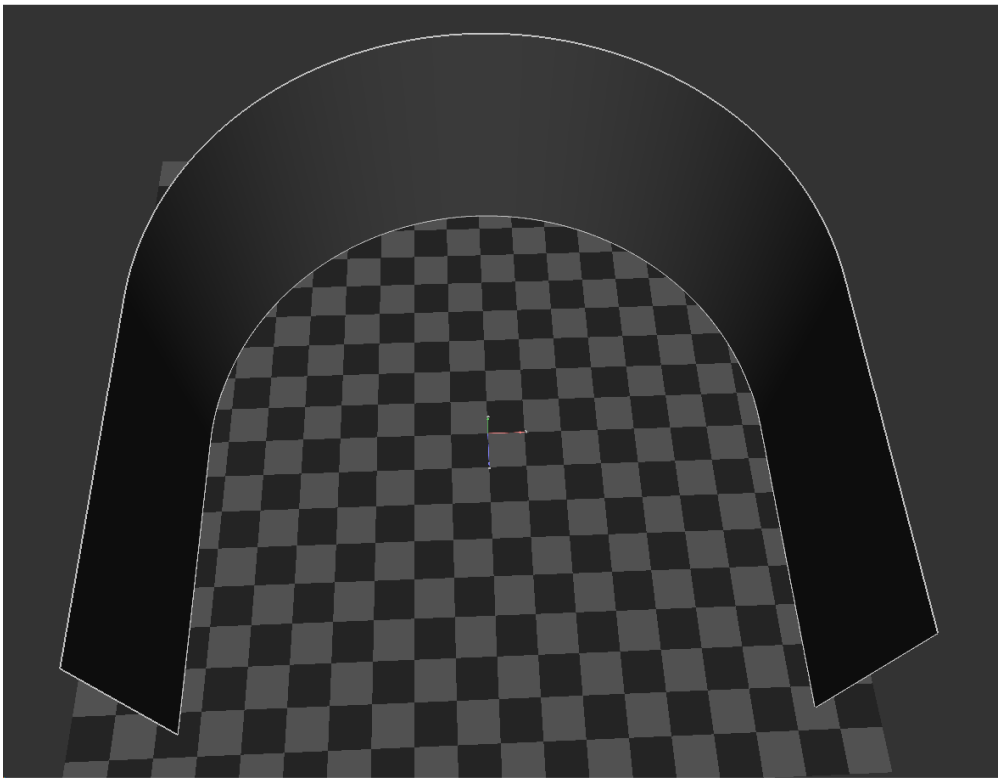
Cone screen

Horseshoe (single curved) screen:



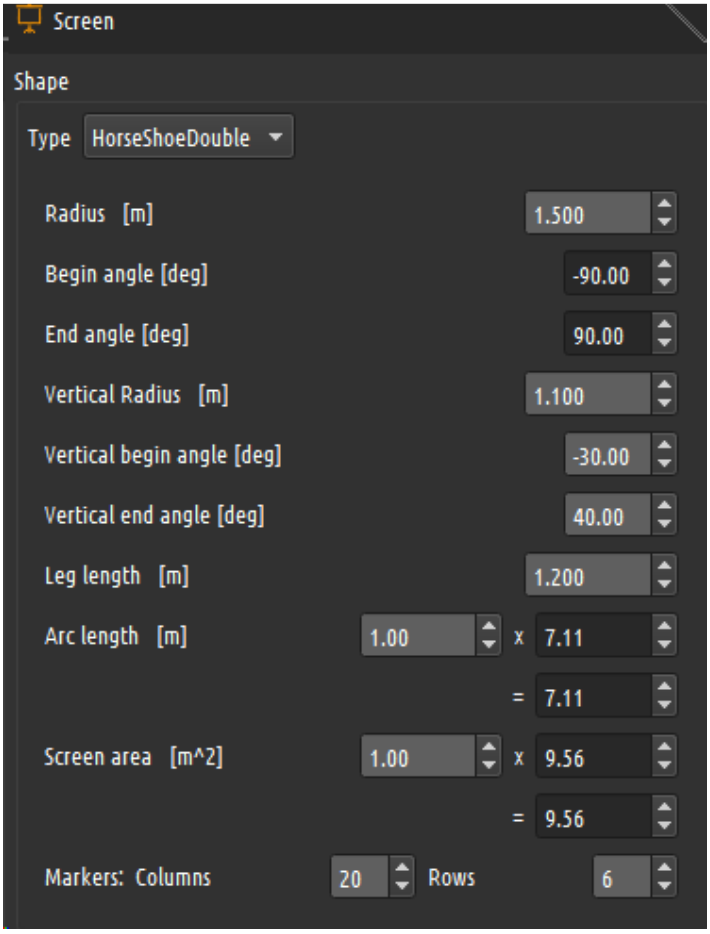
Horseshoe (single curved) screen

The horseshoe (single curved) projection screen is very similar to a cylindrical single curved projection screen. The screen has a cylindrical curvature up to 180 deg and the screen continues with legs extends. User can define the screen by entering the radius and the height of the cylinder, the length of the extension legs as well as the “begin” and “end” angle of the curvature. The angles are expressed in degrees relative to the center of the cylinder.



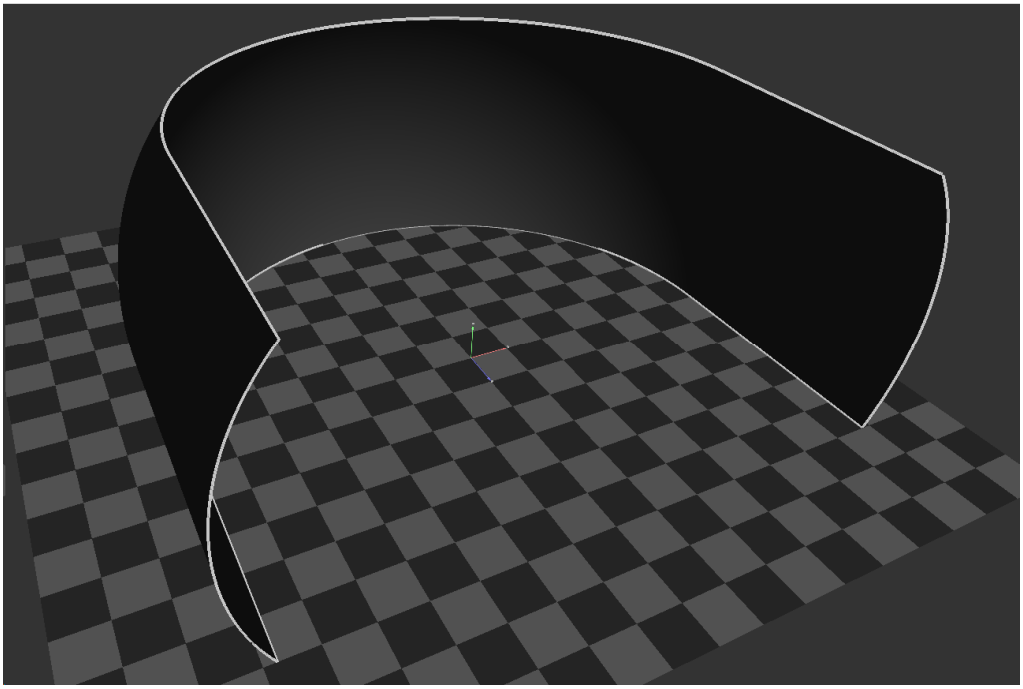
Horseshoe (single curved) screen

Horseshoe (double curved) screen:



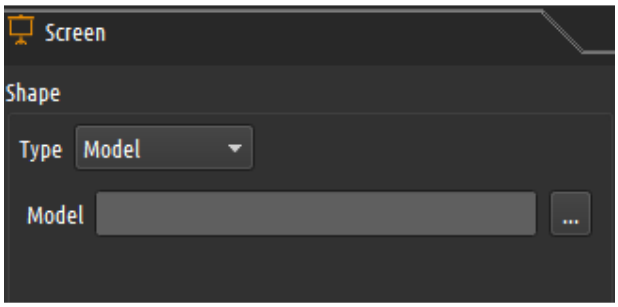
Horseshoe (double curved) screen

The horseshoe (double curved) projection screen is very similar to a horseshoe single curved projection screen. The screen has a cylindrical curvature up to 180 deg and the screen continues with legs extends. The screen is also curved along the vertical axis. User can define the screen by entering the radius and the height of the cylinder, the length of the extension legs as well as the “begin” and “end” angle of the curvature. The curvature along the vertical axis can be defined by the vertical curvature radius and begin and end angle. The angles are expressed in degrees relative to the center of the curvature.



Horseshoe (single curved) screen

Custom 3D model screen:



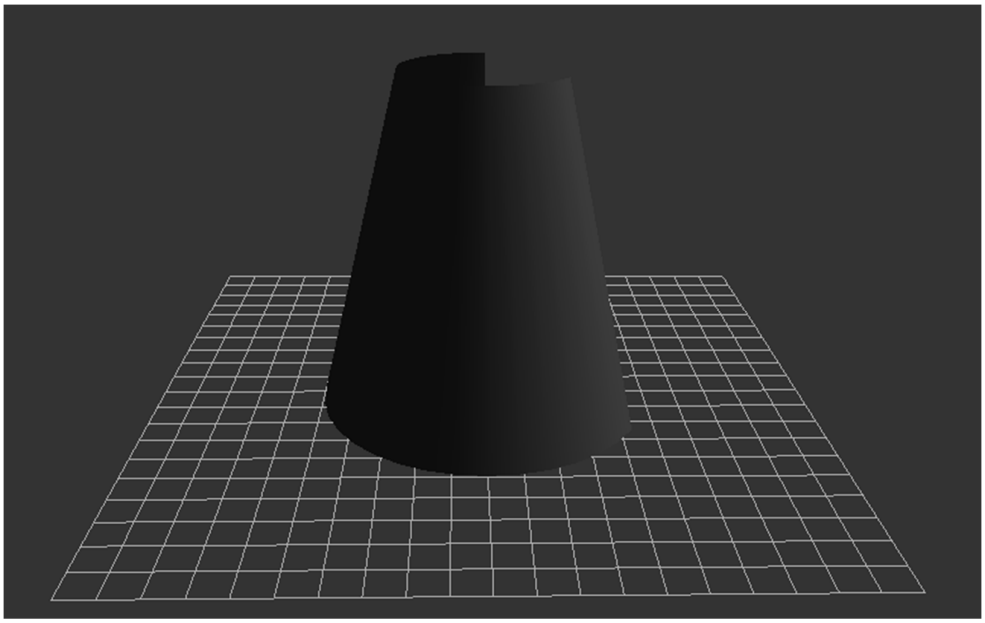
Custom model screen

Most of the projection setups are dome with one of the standard screen shapes: cylinder, dome or planar. However, special projection surfaces can be used for projection mapping, or for other visual effects.
User can design a custom projection screen in any CAD program and import and load the screen shape in Immersive Designer PRO. The current version supports importing of the following 3D formats:

- Collada (.dae)
- Blender 3D (.blend)

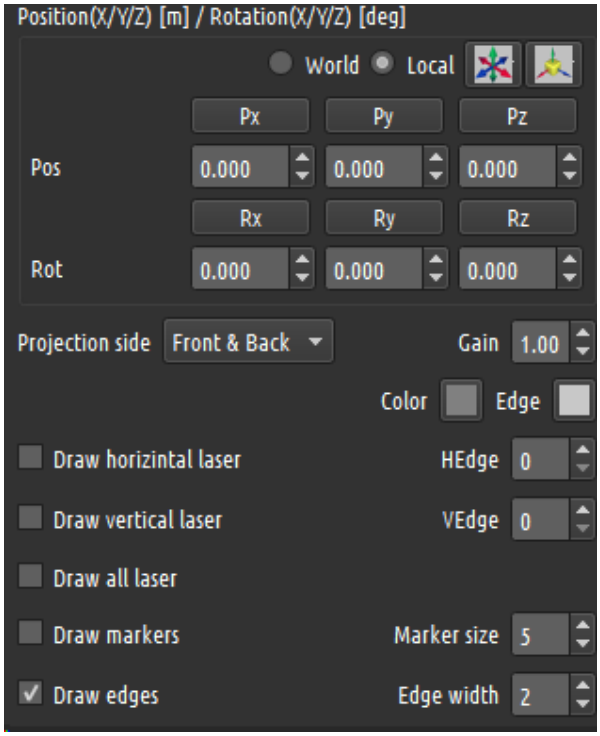
- 3ds Max 3DS (.3ds)
- 3ds Max ASE (.ase)
- Wavefront Object (.obj)
- Industry Foundation Classes (IFC/Step) (.ifc)
- XGL (.xgl,.zgl)
- Stanford Polygon Library (.ply)
- AutoCAD DXF (.dxf)
- LightWave (.lwo)
- LightWave Scene (.lws)
- Modo (.lxo)
- Stereolithography (.stl)
- DirectX X (.x)
- AC3D (.ac)
- Milkshape 3D (.ms3d)
- TrueSpace (.cob,.scn)
- Ogre XML (.xml)
- Irrlicht Mesh (.irrmesh)
- Irrlicht Scene (.irr)
- Quake I (.mdl)
- Quake II (.md2)
- Quake III Mesh (.md3)
- Quake III Map/BSP (.pk3)
- Return to Castle Wolfenstein (.mdc)
- Doom 3 (.md5*)
- Valve Model (.smd,.vta)
- Starcraft II M3 (.m3)
- Unreal (.3d)
- BlitzBasic 3D (.b3d)
- Quick3D (.q3d,.q3s)
- Neutral File Format (.nff)
- Sense8 WorldToolKit (.nff)
- Object File Format (.off)
- PovRAY Raw (.raw)
- Terragen Terrain (.ter)
- 3D GameStudio (3DGS) (.mdl)
- 3D GameStudio (3DGS) Terrain (.hmp)
- Izware Nendo (.ndo)

Custom 3D model screen does not support screen markers and screen edge.



Custom cone shaped projection surface

The projection screen can be freely positioned and rotated in the scene using the screen Move and Rotate control. For more information on using the Move and Rotate control see the Move and Rotate section below.

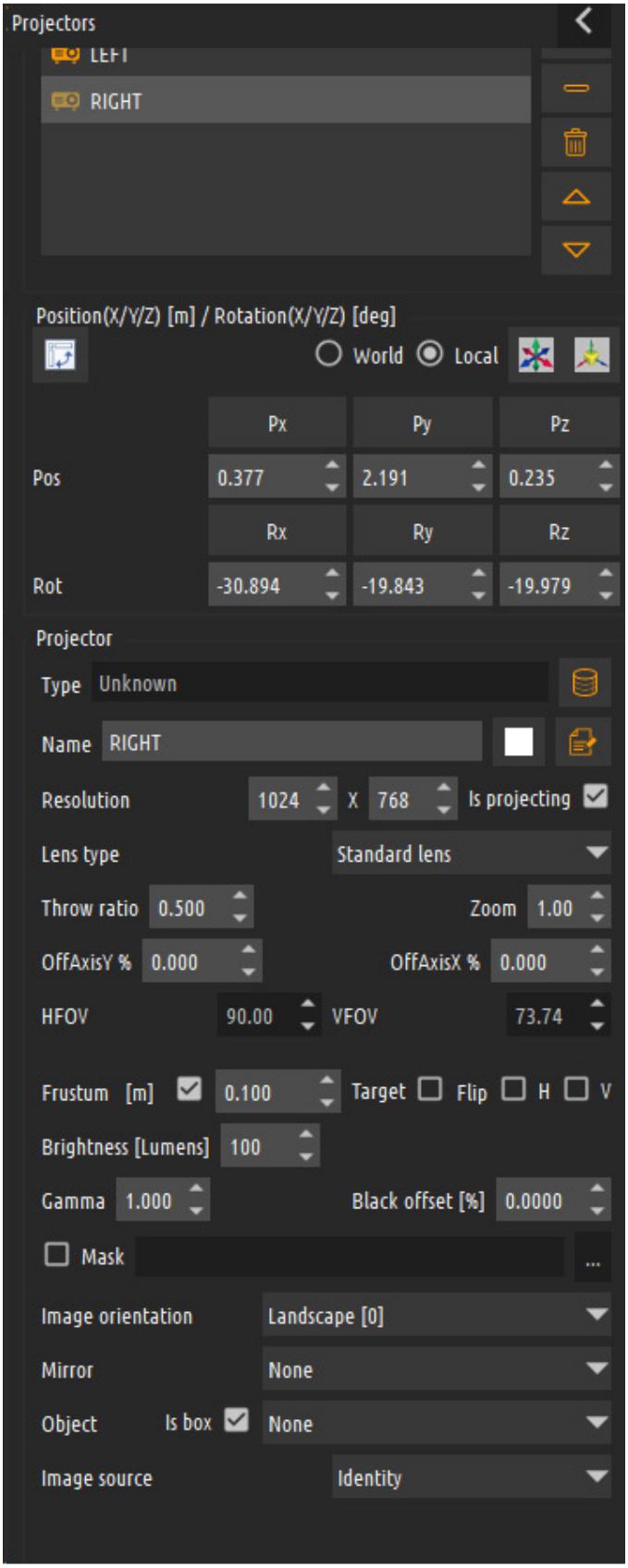


Projection screen properties

Users can choose if the projection on the screen can be viewed from the screen front side, back side or from both sides.
The projection surface gain can be configured for each screen. The gain is used by the analysis module when the projection brightness is calculated.
The color of the projection screen and the projector edge can be set-up using the color button. The color of the projection screen will have an effect on the end color of the projected image.
For all built-in projection screen shapes (cylinder, dome or planar), user can choose to draw the physical markers on the edge of the screen or to draw the horizontal and vertical laser lines for the purpose of the camera assisted calibration and screen mapping.
Optionally the user can select to draw the screen edge using the draw edges check box. The width of the edge can be changed as well.

3.3.7 Projectors tab (multi-projector mode)

In the projectors tab user can add projectors to the setup or remove projectors from the setup.
For each projector the parameters of the projectors can be changed individually or for all projectors at a time.
Projectors can be freely moved and rotated using the projector Move and Rotate control.


Projectors
LEFT
RIGHT
Position(X/Y/Z) [m] / Rotation(X/Y/Z) [deg]
World
Local
Px
Py
Pz
Pos
0.377
2.191
0.235
Rx
Ry
Rz
Rot
-30.894
-19.843
-19.979
Projector
Type
Unknown
Name
RIGHT
Resolution
1024
X
768
Is projecting
Lens type
Standard lens
Throw ratio
0.500
Zoom
1.00
OffAxisY %
0.000
OffAxisX %
0.000
HFOV
90.00
VFOV
73.74
Frustum [m]
0.100
Target
Flip
H
V
Brightness [Lumens]
100
Gamma
1.000
Black offset [%]
0.0000
Mask
Image orientation
Landscape [0]
Mirror
None
Object
Is box
None
Image source
Identity

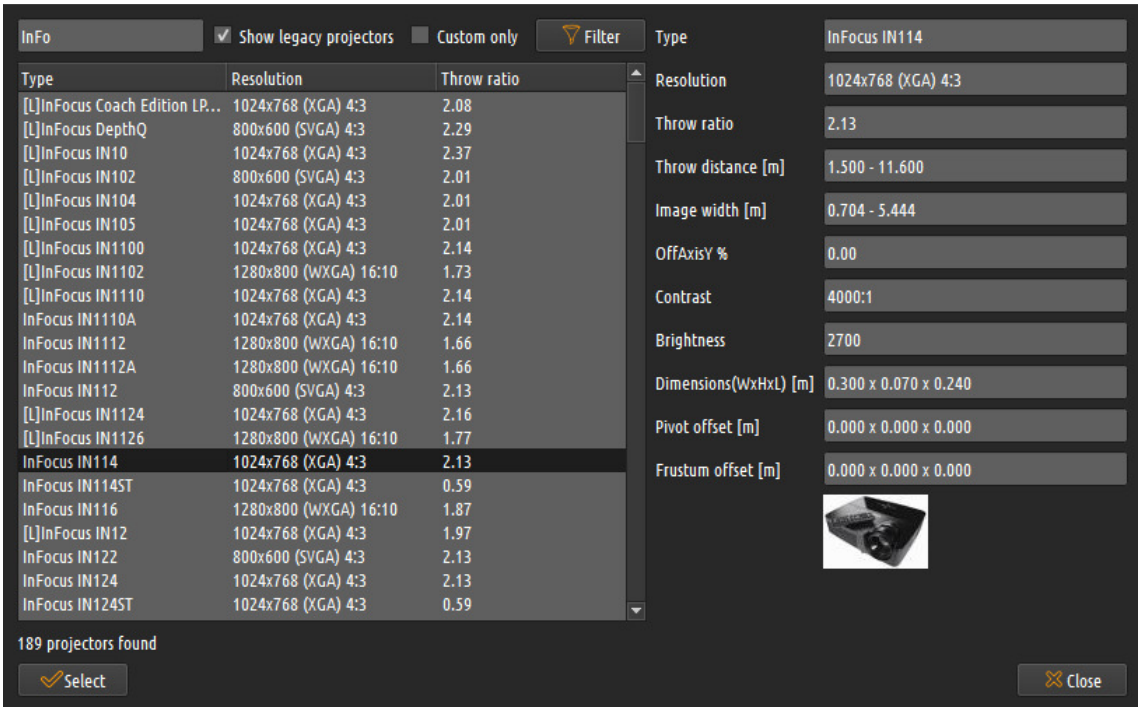
Projectors tab

The top part of the projectors tab lists all projectors in the setup. Using the  button and the  button user can add and remove projectors from the scene. Using the  button user can remove all projectors from the scene.

When adding a projector, the projector properties will be copied from the currently selected projector. The projector names have to be unique and the software will select the next unique name adding a number at the end of the name.

After adding a projector all projector properties can be changed individually.

The model type of the projector can be selected by pressing the  database button next to the projector type field. The software contains a database of 7500+ commercial projectors models including all projector properties (resolution, throw ratio, image size, contrast, box size, etc.).



Select projector dialog

After selecting the projector type, all projector properties will be set to the properties of the selected projector type.

For more information about the built-in and custom projectors database, please see the section Projectors models database.

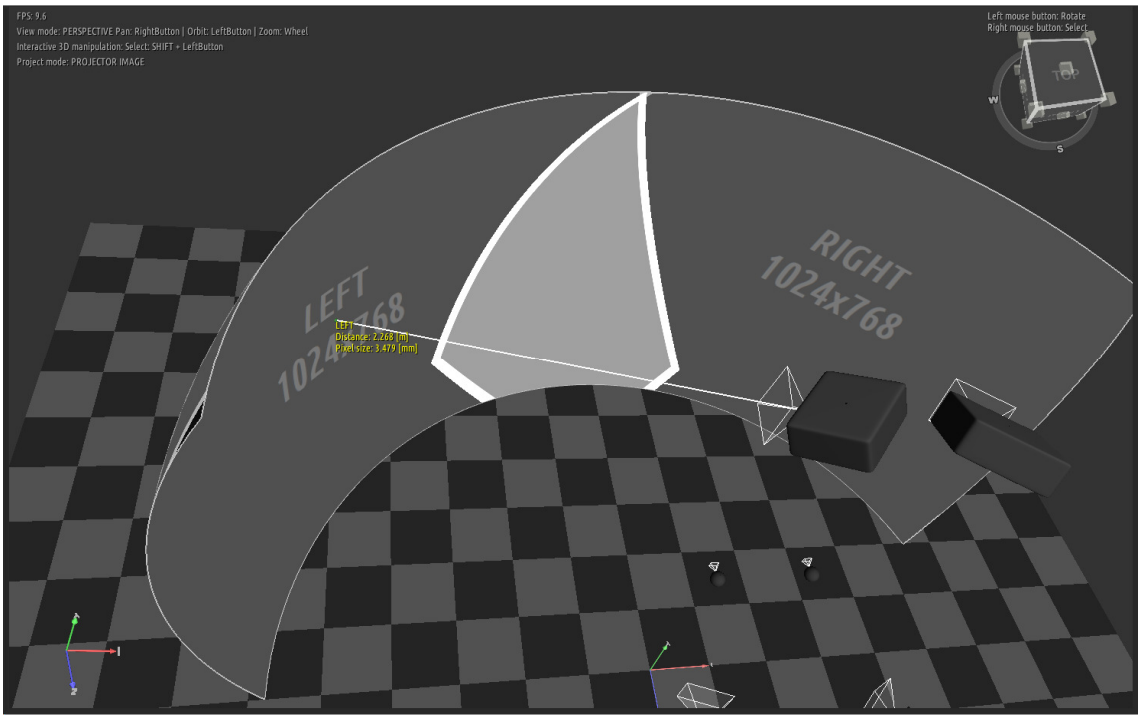
When the frustum depth field is set to a number larger than 0, the projection light frustum will be drawn with the projector. The projector frustum can be shown or hidden using the “Show” check box next to the projector frustum field.

The frustum depth can be adjusted to include the surfaces to be included in the projection.

The color of the projectors frustum can be selected by pressing the color button. Different colors can be chosen for different projectors for easier visual distinctions of the projectors in the 3D scene view.

If the “Target” field is checked, a line of site will be drawn from the projector origin to the first hit point on a surface. Along with the target point, extra information is shown for this hit point.

In projector edit and move mode, users can also grab and drag the target point and move it on any surface. For more information, see the section “Move and Rotate Control”.



The basic projector properties (resolution, brightness, throw ratio and Horizontal and Vertical Axis offset) can be entered directly on the projectors tab. The Horizontal and Vertical field of view (FOV) values will be updated

automatically according to the resolution and the throw ratio. The Horizontal and Vertical OffAxis offset is the horizontal and vertical offset (shift) in percentage of the projected vertical image size. When projectors are mounted on the ceiling or on the floor, they have negative or positive Vertical OffAxisY offset. The Horizontal OffAxisX offset is the horizontal offset (shift) in percentage of the projected horizontal image size.
Some projector lenses have zoom capabilities. The zoom factor of the projector lenses can be adjusted directly to match the actual projector lenses zoom.
The projector can be turned on and off by using the “is projecting” check box. When is projecting is unchecked, the projector is not projecting any image on the projection screen and behaves as if the projector is turned off.
The projected image can be flipped along the horizontal and the vertical axis using the Flip H and Flip V checkboxes.
Projectors can also be equipped with a flat mirror to enable positioning of the projector box in different positions and still projecting on the screen surface. Mirrors can be defined in the Mirrors tab and a mirror can be selected from the available mirrors drop down box. Single mirror can be assigned to a single projector and moving the projector will move the mirror as well.
When a mirror is used, the projector will project the image to the mirror and the image will be reflected to the projection screen. Mirror can also enlarge the image. The software will calculate and present the new projector virtual frustum which result of the virtual image created by the mirror.

Additionally, a 3D object defined in the Objects Tab can be attached to a projector. The attached 3D object will follow the projector position and orientation. This can be used to load a projector box (casing) from a 3D model and attach the 3D model to the projector.

A projector projects the default projector image (identity) on the projection screen. The default projected image contains the name of the projector. User can also enable a custom image to be projected by projector. A custom image can be loaded from the PC file system. PNG and JPEG images are supported.
Also a SPOUT source or NDI source can be selected as a source for the projector image.

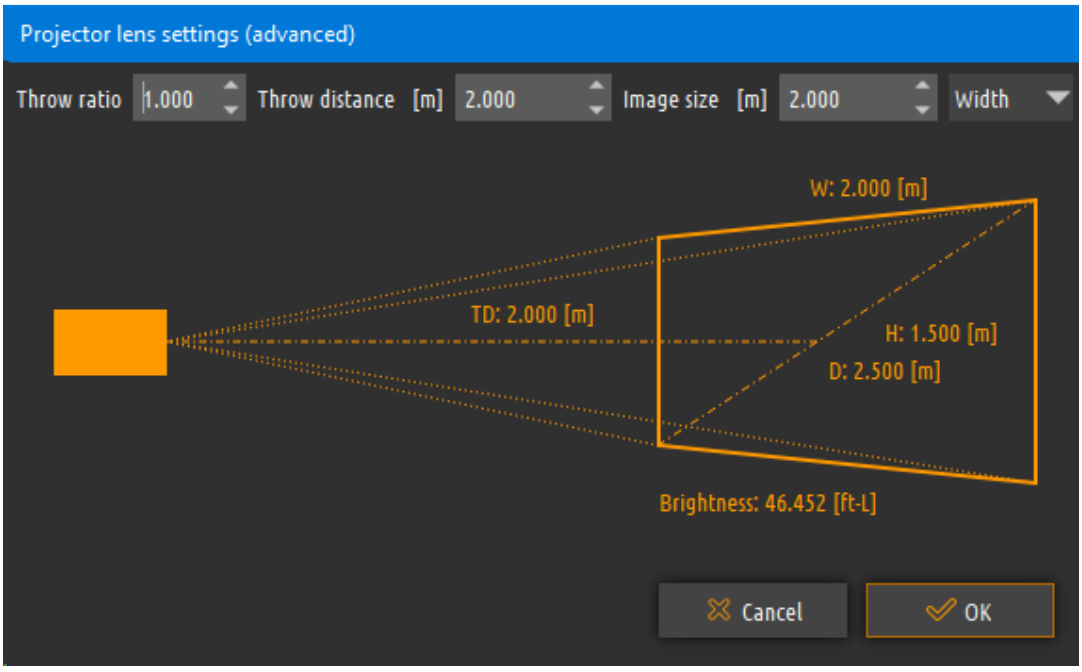
In the same way, a black & white masking image can be used to ”mask” part of the projector output. The black parts of the black & white masking image will mask and block the projector pixels. A custom image can be loaded from the PC file system. PNG and JPEG images are supported.

For editing and adjusting all projector properties user can use the projector properties edit dialog by pressing the edit  button.

Users can choose from a standard “perspective” projector lens or a f-theta projector lens

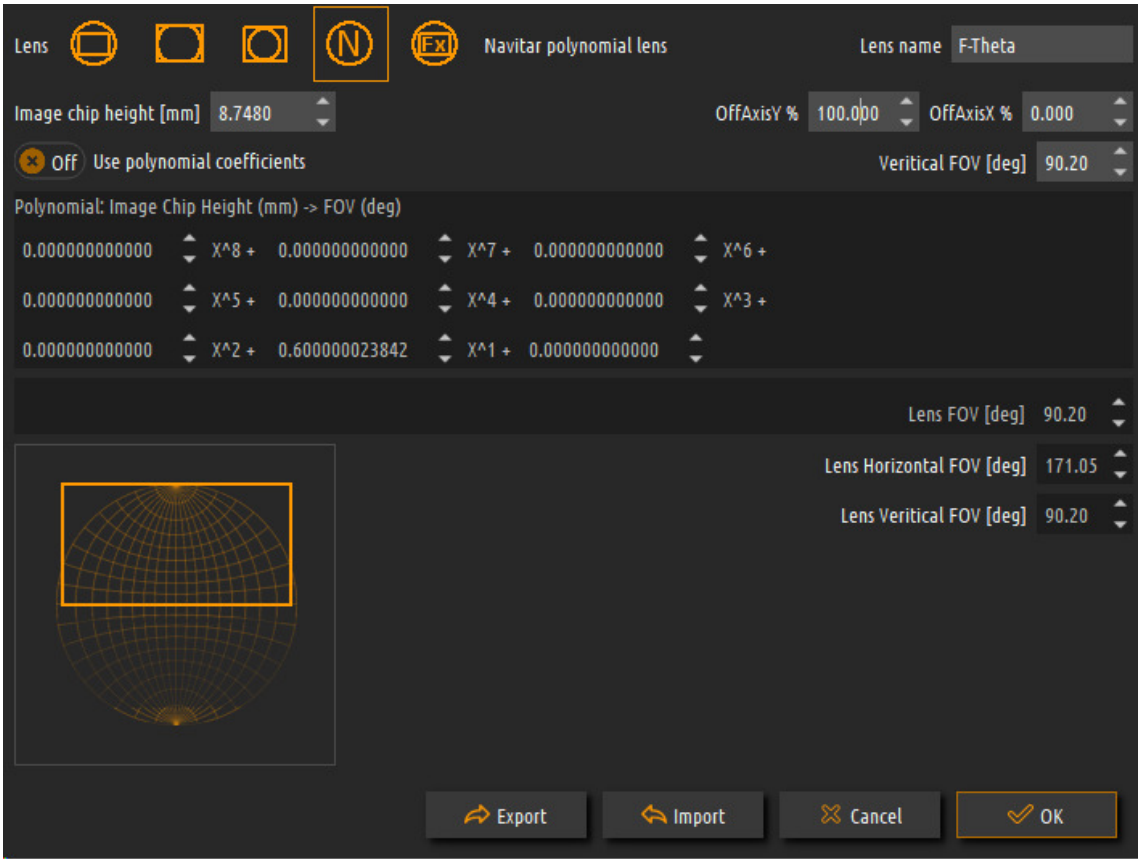
3.3.7.1 Perspective projector lenses

The advanced perspective lens settings window allows the users to define the lens properties based on the throw ratio, throw distance or image size, depending on which parameter is known and available from the lens technical sheet.



3.3.7.2 F-Theta projector lenses

Users can choose from a standard “perspective” projector lens or a f-theta projector lens. F-Theta lenses can be defined as “Full Circle”, “Full Frame”, “General polynomial” or “Navitar Polynomial”.



F-Theta lenses can be used to project to a wide angle screen with one projector.

Depending on the type of the lens, users can enter the vertical FOV, diagonal FOV of the polynomial coefficients of the lens. The software will calculate the horizontal FOV based on the chip height, the focal length of the coefficients.

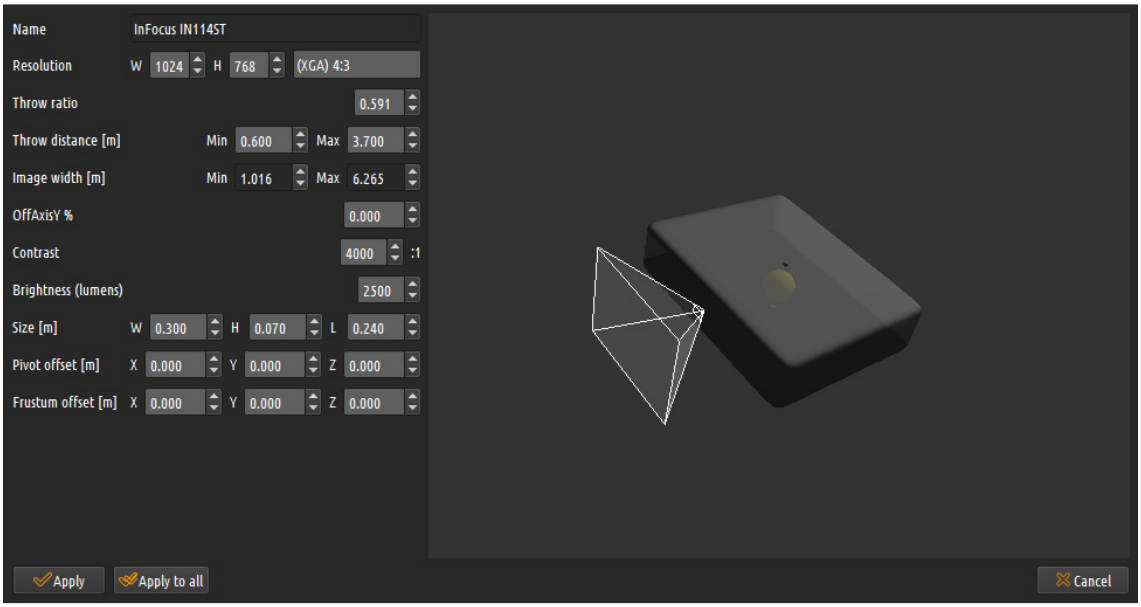
Additionally, users can specify the vertical or horizontal lens offset to match the lens specification.

A lens coverage preview will be presented to verify the F-Theta lens parameters.

3.3.8 Projector properties dialog

The projector properties dialog can be used to edit all visual and geometrical properties of the projector. User can edit the standard visual properties:

resolution, throw ratio, throw distance and Horizontal and Vertical OffAxis offset. Based on the throw ratio and throw distance, the horizontal image size will be calculated for the minimal and the maximal throw distance.



Projector edit dialog

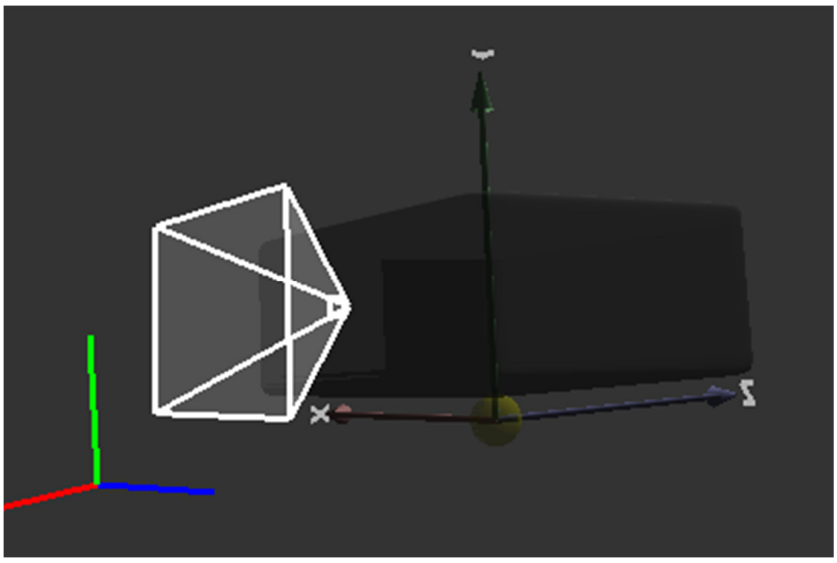
The contrast of the projector and the brightness can also be edited although the values are not used in the current version. All those values can be found from the datasheets of the projectors.

For drawing the projectors correctly in the 3D scene view, the user can also edit the following geometrical characteristics of the projector: size, pivot (reference point) offset and the frustum offset.

The projector is drawn as a gray box using the dimensions WxHxL. The W dimension is the width of the projector (along the X axis). The H is the height of the projector (along the Y axis). And L is the length or the depth of the projector (along the Z axis). The size of the projector box can also be found in the projectors datasheets.

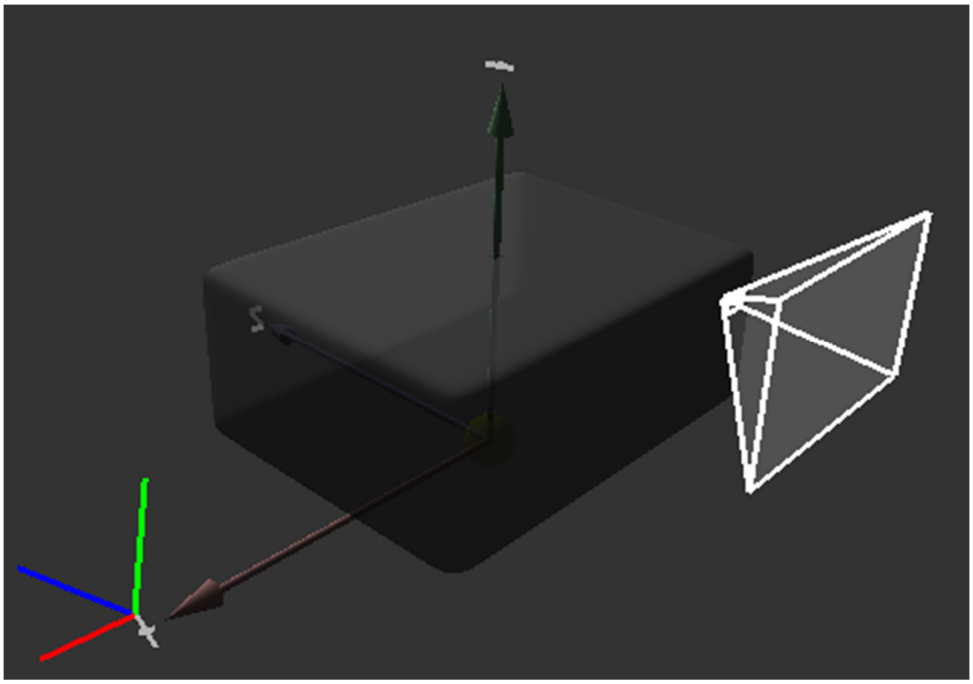
The reference point or the pivot point is initially in the middle of the projector box. This is the point where the projector is attached and the pivot point for all projectors movements and rotations.

The reference pivot point can me moved with respect to the initial center of the projector box using the Pivot Offset X/Y/Z fields for X, Y and Z axis respectively. The reference pivot point is drawn as a yellow point ball in the projectors edit 3D preview.



Projector reference pivot point

Initially the beginning of the projector frustum is in the middle of the front side of the projector box. This is the place where the projector lenses are allocated. However, some projectors have the projector lenses positioned at different location on the front or even on the top plate.
Using the Frustum Offset X/Y/Z fields for X, Y and Z axis respectively user can define the position of the projectors light beam frustum to match the physical projector model.

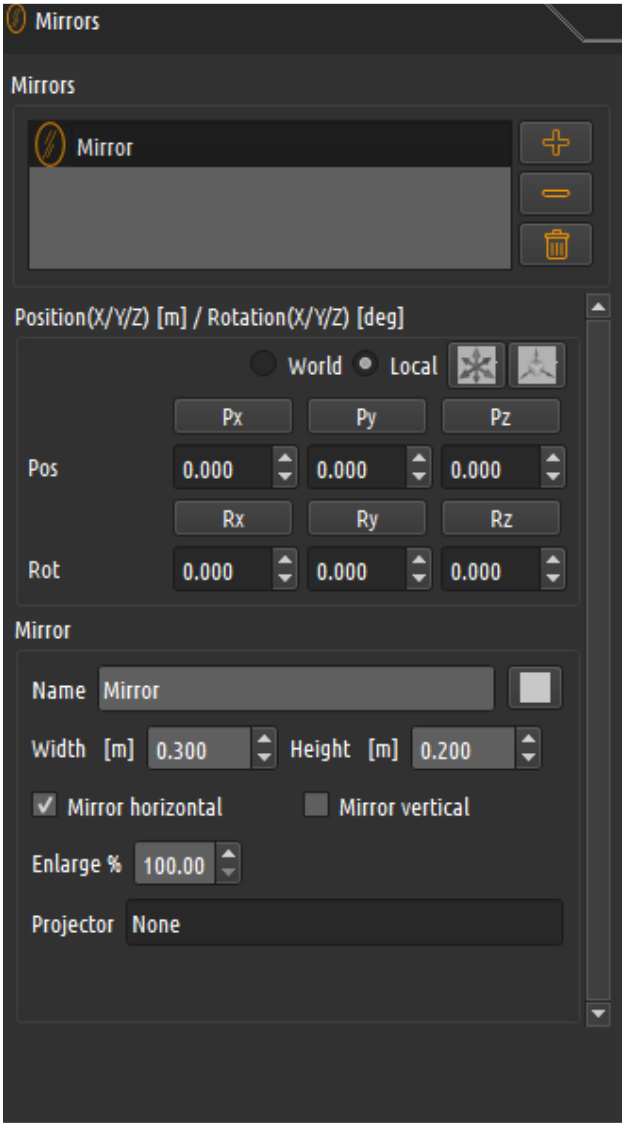


Projector frustum offset

User can use the left and right mouse button to move/zoom and rotate the 3D preview of the edited projector.

3.3.9 Mirrors tab (multi-projector mode)

In the mirrors tab user can add or remove mirrors from the setup.
For each mirror the parameters of the mirror can be changed individually after the mirror is assigned to a projector.
Mirrors can be freely moved and rotated using the mirror Move and Rotate control. All mirror movements and rotations are relative to the projector that the mirror is attached to.



Mirrors tab

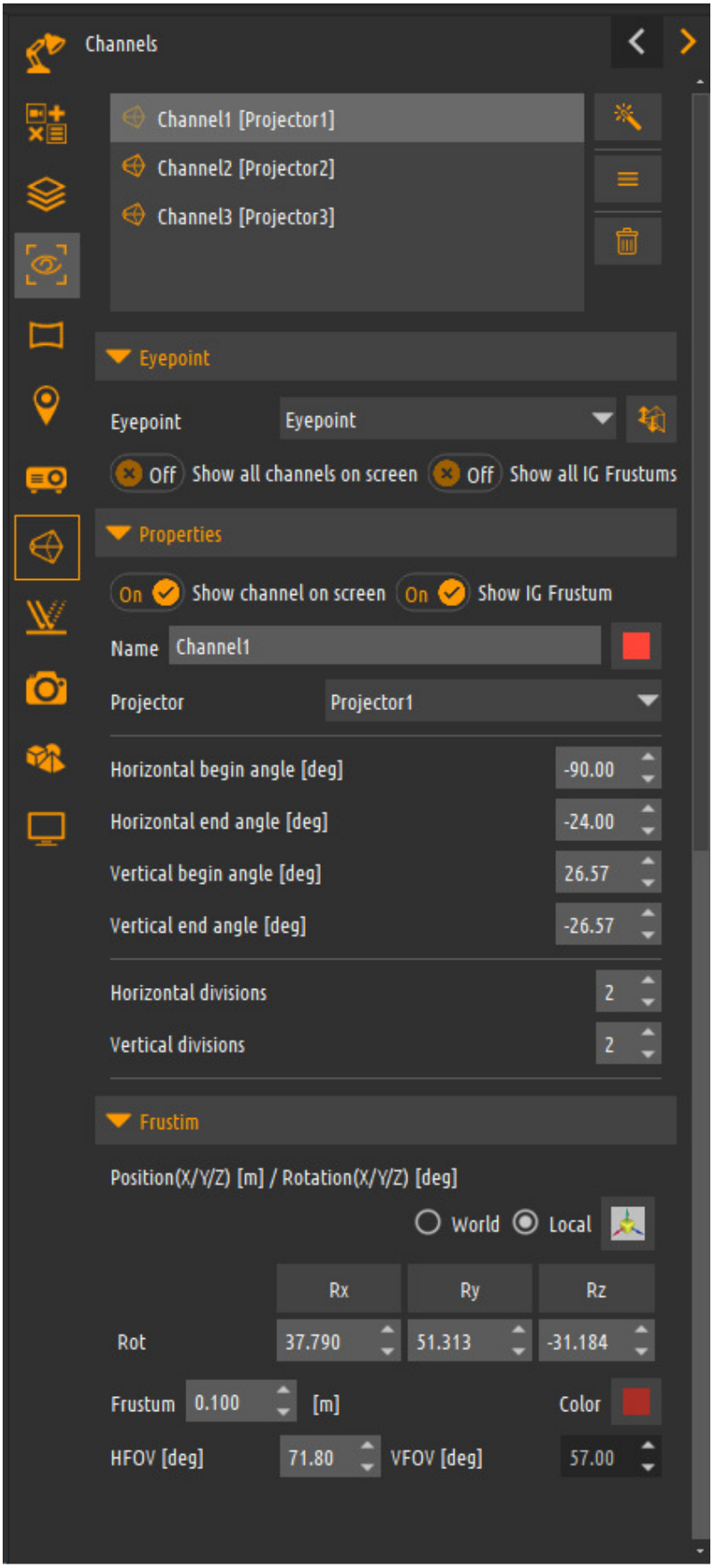
The top part of the mirror tab lists all mirrors in the setup. Using the button  and the  button user can add and remove mirrors from the scene. Using the  button user can remove all mirrors from the scene.

When adding a mirror, the mirror properties will be copied from the currently selected mirror. The mirror names have to be unique and the software will select the next unique name adding a number at the end of the name.

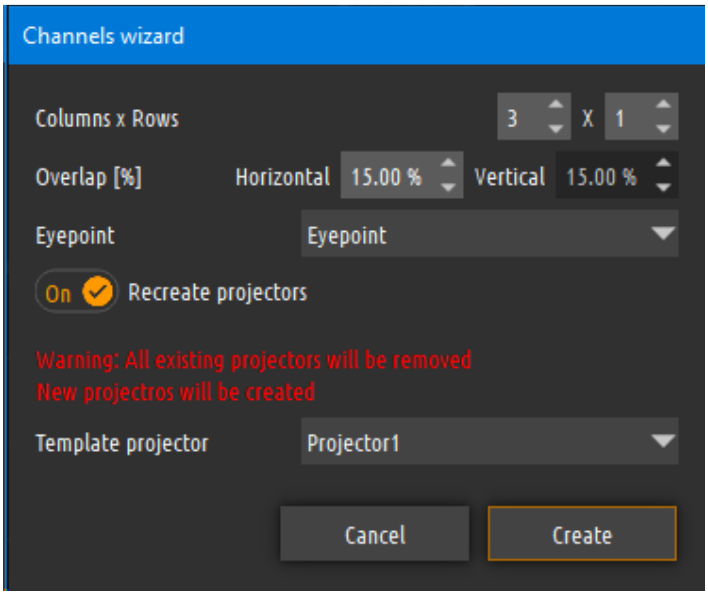
The mirror has a rectangular shape and the size of the shape can be adjusted with the width and height controls. The mirror can also have enlarging capabilities. The enlarging factor can be set with the Enlarge control.

3.3.10 Channels tab (multi-projector mode)

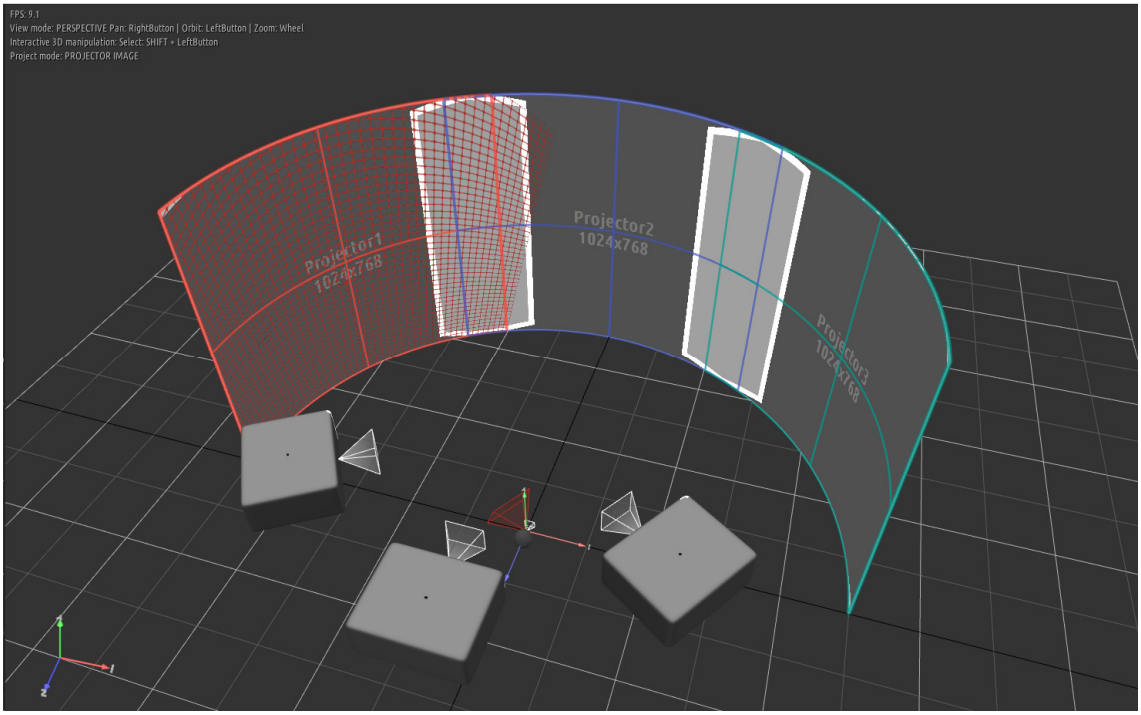
In the channels tab user can automatically divide the projection screen into “overlapping channels” and create the initial projection design to cover those channels on the screen.


Channels
Channel1 [Projector1]
Channel2 [Projector2]
Channel3 [Projector3]
Eyepoint
Eyepoint
Eyepoint
Off
Show all channels on screen
Off
Show all IG Frustums
Properties
On
Show channel on screen
On
Show IG Frustum
Name
Channel1
Projector
Projector1
Horizontal begin angle [deg]
-90.00
Horizontal end angle [deg]
-24.00
Vertical begin angle [deg]
26.57
Vertical end angle [deg]
-26.57
Horizontal divisions
2
Vertical divisions
2
Frustim
Position(X/Y/Z) [m] / Rotation(X/Y/Z) [deg]
World
Local
Rx
Ry
Rz
Rot
37.790
51.313
-31.184
Frustum
0.100
[m]
Color
HFOV [deg]
71.80
VFOV [deg]
57.00

Once the screen shape and size is known and the design eye-point is created, the users can use the multi-channel wizard to define the screen channels rows and columns and define the desired channel overlap.
If the project already contains a projector, this projector can be used as a template to create and position all other projectors, one per channel.



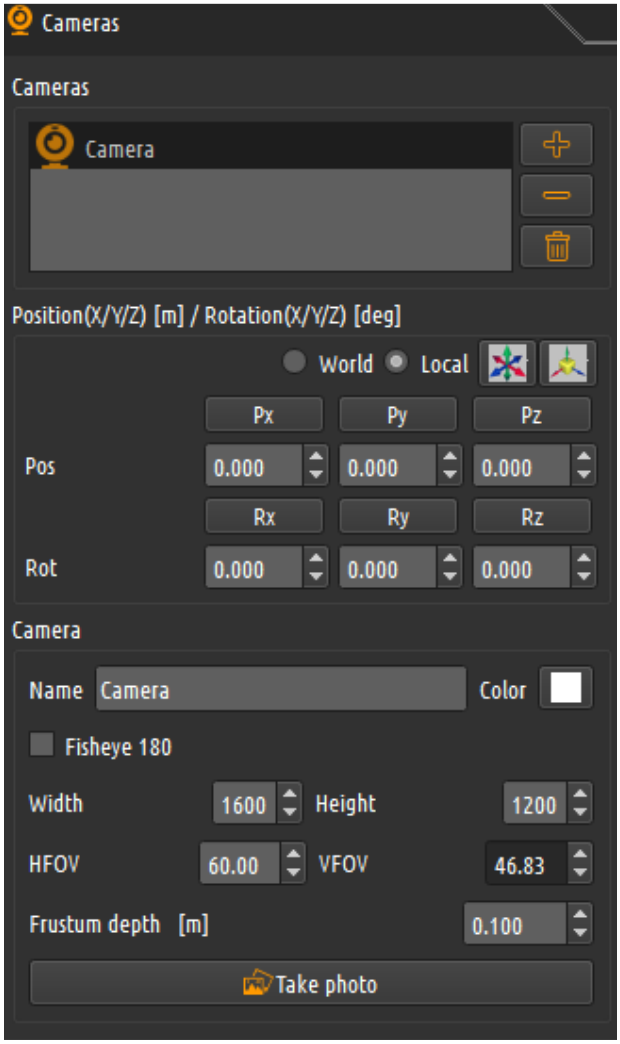
The wizard will create and position all the projectors as accurately as possible. But a manual projector position adjustment will be required to make sure that the projector image on the screen covers the complete channel on the screen.



When channels are used, the channel projection from the design eye-point can be projected on the screen. This will allow a proper analysis of multi-projector IG setups.
The Analysis tools contain a separate analysis mode for channels distortion and coverage analysis.
The following screen shapes offer multi-channel support:
Cylinder, PartialDome, Torus, Pill, HorseShoeSingle and HorseShoeDouble.
Note: The Channels support is only available with the Ultimate License.

3.3.11 Cameras tab (multi-projector mode)

In the cameras tab user can add digital cameras to the setup or remove digital cameras from the setup.
For each digital camera the parameters of the projectors can be changed individually.
Digital cameras can be freely moved and rotated using the camera Move and Rotate control.



Cameras tab

The top part of the cameras tab lists all cameras in the setup. Using the button  and the  button user can add and remove cameras from the scene. Using the  button user can remove all cameras from the scene.

When adding a digital camera, the camera properties will be copied from the currently selected camera. The cameras names have to be unique and the software will select the next unique name adding a number at the end of the name.

After adding a digital camera all camera properties can be changed individually.

When the frustum depth field is set to a number larger than 0, the camera field of view frustum will be drawn with the camera. The color of the camera

frustum can be selected by pressing the color button. Different colors can be chosen for different cameras for easier visual distinctions of the cameras in the 3D scene view.
The basic digital camera properties (resolution, and the horizontal field of view) can be entered directly on the cameras tab. The Vertical field of view (FOV) value will be updated automatically according to the resolution and the horizontal FOV.

User can take a shot of the camera using the take photo  button. The camera image can be saved to the disk.

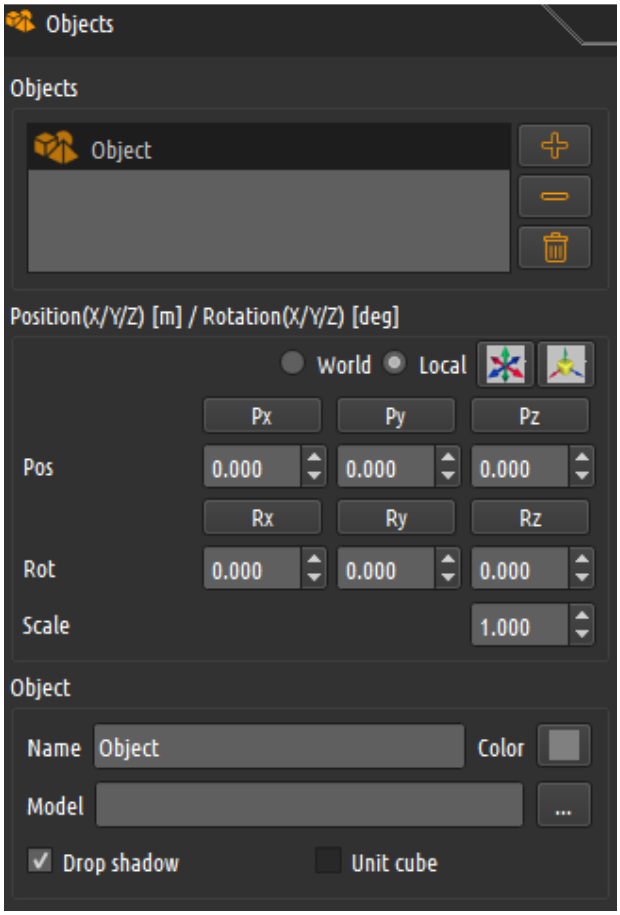
3.3.12 Objects tab

In the objects tab user can add other objects to the setup or remove objects from the setup.
The objects can be loaded from a 3D CAD model.
The current version supports importing of the following 3D formats:

- Collada (.dae)
- Blender 3D (.blend)
- 3ds Max 3DS (.3ds)
- 3ds Max ASE (.ase)
- Wavefront Object (.obj)
- Industry Foundation Classes (IFC/Step) (.ifc)
- XGL (.xgl,.zgl)
- Stanford Polygon Library (.ply)
- AutoCAD DXF (.dxf)
- LightWave (.lwo)
- LightWave Scene (.lws)
- Modo (.lxo)
- Stereolithography (.stl)
- DirectX X (.x)
- AC3D (.ac)
- Milkshape 3D (.ms3d)
- TrueSpace (.cob,.scn)
- Ogre XML (.xml)
- Irrlicht Mesh (.irrmesh)
- Irrlicht Scene (.irr)
- Quake I (.mdl)
- Quake II (.md2)
- Quake III Mesh (.md3)

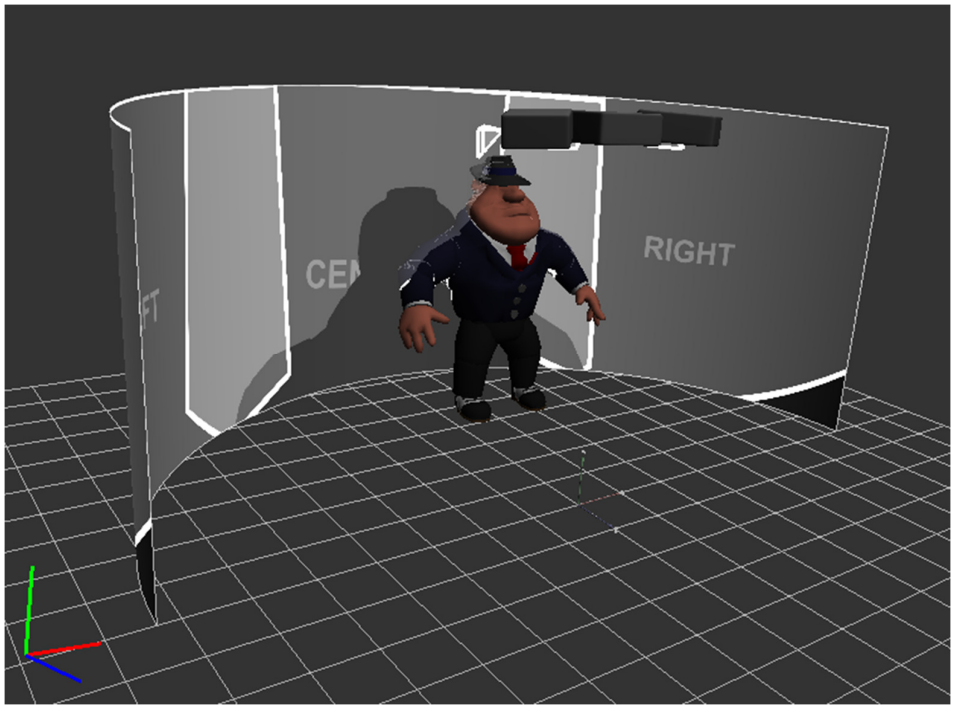
- Quake III Map/BSP (.pk3)
- Return to Castle Wolfenstein (.mdc)
- Doom 3 (.md5*)
- Valve Model (.smd,.vta)
- Starcraft II M3 (.m3)
- Unreal (.3d)
- BlitzBasic 3D (.b3d)
- Quick3D (.q3d,.q3s)
- Neutral File Format (.nff)
- Sense8 WorldToolKit (.nff)
- Object File Format (.off)
- PovRAY Raw (.raw)
- Terragen Terrain (.ter)
- 3D GameStudio (3DGS) (.mdl)
- 3D GameStudio (3DGS) Terrain (.hmp)
- Izware Nendo (.ndo)

Objects can be freely scaled, moved and rotated using the object Move and Rotate control.



Objects tab

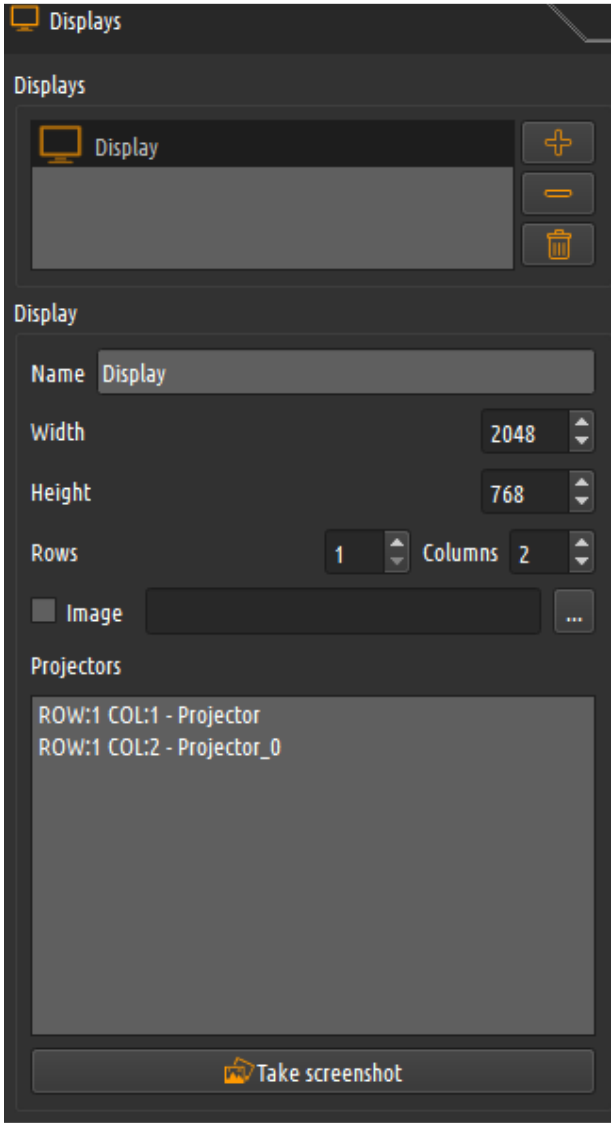
The top part of the objects tab lists all objects in the setup. Using the  button and the  button user can add and remove cameras from the scene. Using the remove all button  user can remove all objects from the scene. The objects names have to be unique and the software will select the next unique name adding a number at the end of the name.
Objects can be positioned freely in the scene in front of the projectors. Objects will cast shadows on the projection screen and user can evaluate the positions of the objects and the occluded part of the projected images.
When an object model is loaded user can choose to let the program scale and mode the object within a unit cube space. This feature is useful when models are imported that are created with coordinate systems different that the coordinate system of Immersive Designer PRO. After the object model is scaled and moved to a unit cube, user can still use the scale and move controls to position and scale the object if needed.



Objects occlusion and shadows

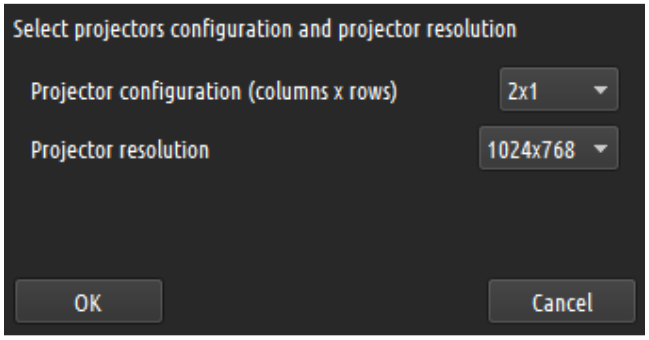
3.3.13 Displays tab (multi-projector mode)

In the displays tab user can add and remove display groups. Display groups can be used to group and connect single or multiple projectors.
The displays represent the computer displays as shown in the computer graphics properties screen.
Multi view graphical cards have a possibility to combine the graphical outputs to a single display.
Matrox Dual or Tripple Head2Go can be used to create 2x1 or 3x1 display group to connect 2 or 3 projector respectively.
Nvidia has similar technology called Nvidia 2D surround.
ATI has graphical cards with Eyefinity technology to create display groups of up to 6 outputs in different projector configurations.



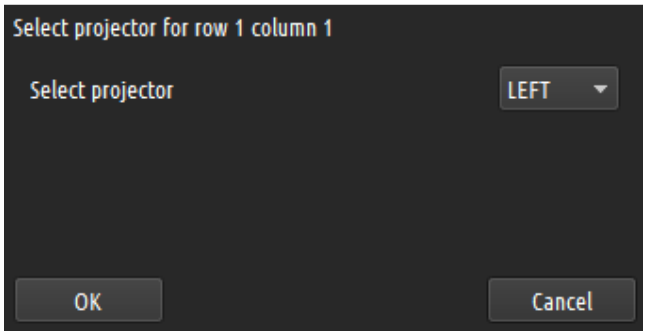
Displays tab

The top part of the displays tab lists all displays in the setup. Using the  button and the  button user can add and remove displays from the scene. Using the  button user can remove all displays from the scene.
When a display is added, a wizard dialog will be opened to define the display.



Display definition wizard

Taking into account only the projectors not connected to a display yet, the display projector configuration (rows and columns) can be selected from the available projector configuration. The resolution of the individual projectors in the displays can be selected as well.
All projectors connected to a display need to have the same resolution.
In the next steps of the wizard dialog user can select and assign projectors to the display group.

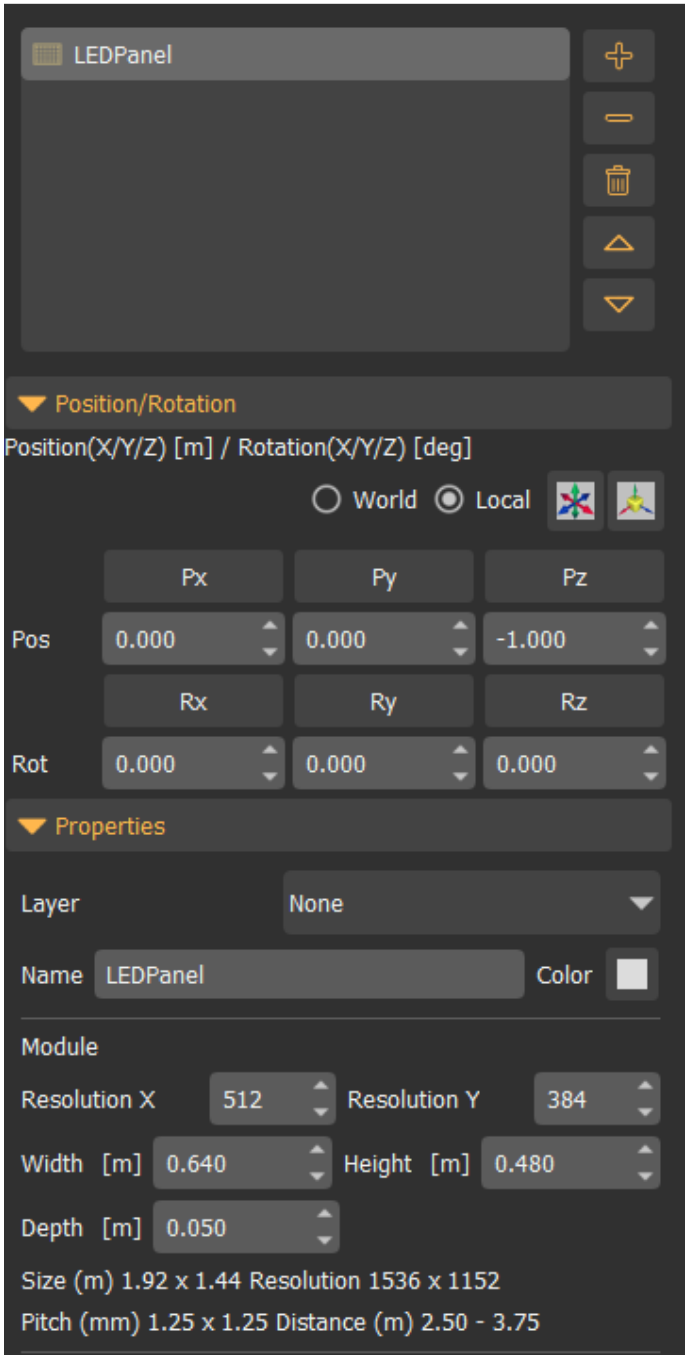


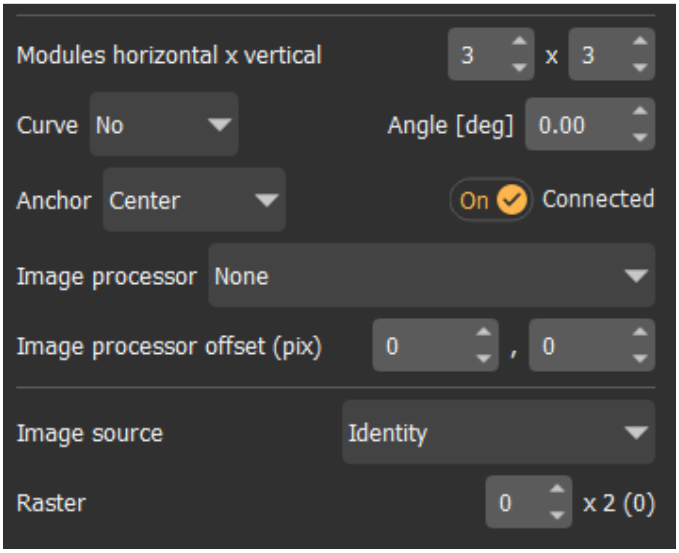
Display definition wizard

Once the last projector in the group is assigned, user can change the name of the display. Displays have to have unique names.
The defined display can be used in a simulated calibration, using manual or camera assisted calibration procedure.

3.3.14 LED Panels tab (LED mode)

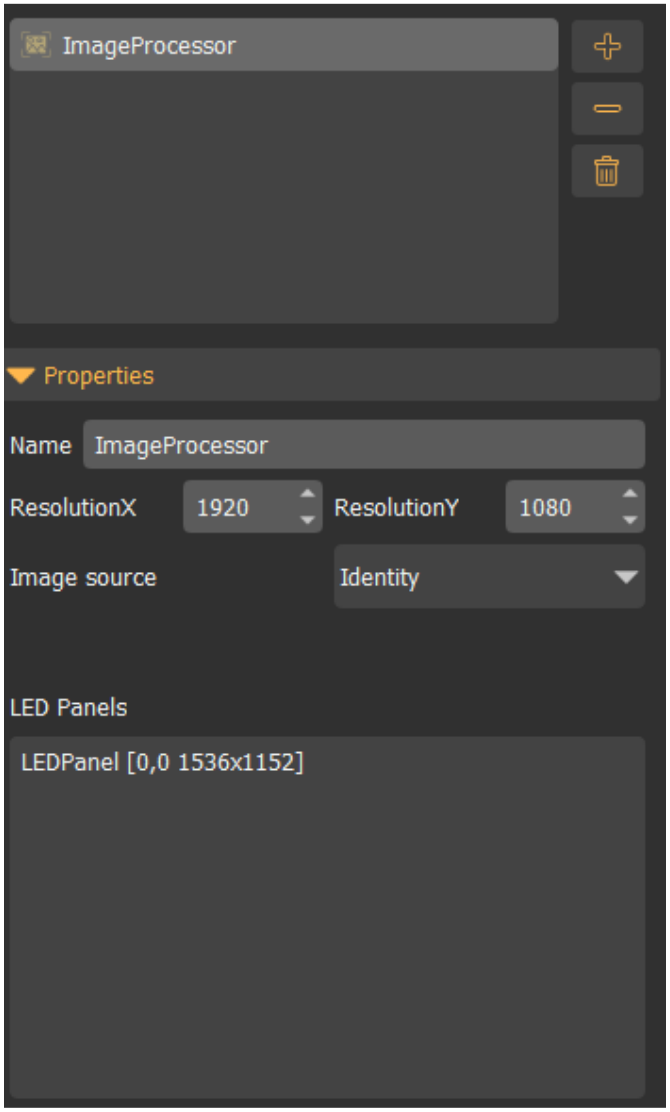
In the LED Panels tab, the user can define one or more LED panels.


LEDPanel
Position/Rotation
Position(X/Y/Z) [m] / Rotation(X/Y/Z) [deg]
World
Local
Px
Py
Pz
Pos
0.000
0.000
-1.000
Rx
Ry
Rz
Rot
0.000
0.000
0.000
Properties
Layer
None
Name
LEDPanel
Color
Module
Resolution X
512
Resolution Y
384
Width [m]
0.640
Height [m]
0.480
Depth [m]
0.050
Size (m) 1.92 x 1.44 Resolution 1536 x 1152
Pitch (mm) 1.25 x 1.25 Distance (m) 2.50 - 3.75



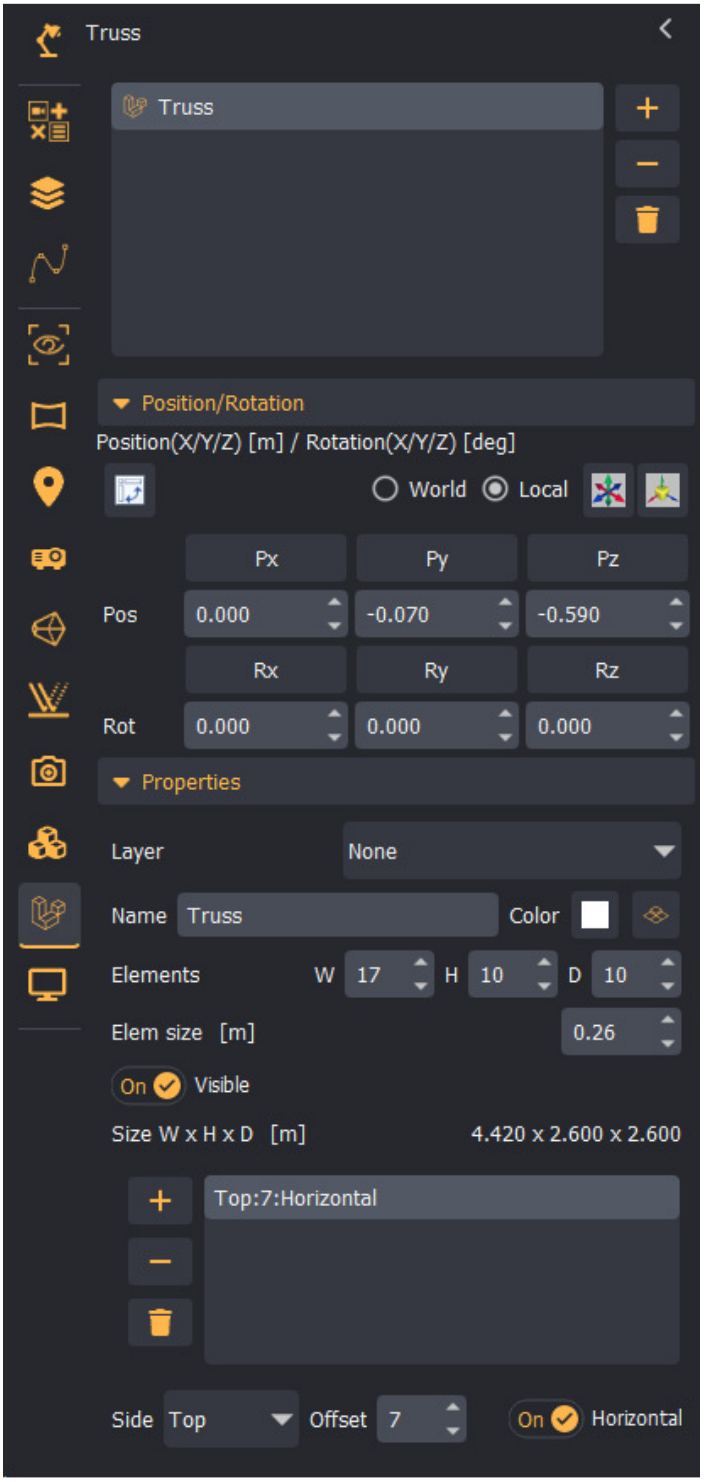
Each LCD Panel can be composed from one or more modules. Each module is defined by its size and resolution indicated by the module technical sheets. This defines the module pixel pitch and the recommended view distance.
The number of horizontal and vertical modules define the size of the LCD Panel.
Some LCD modules offer a possibility to be attached and mounted in an angle which opens a possibility for curved LCD panels. The software allows to specify a curved mounting with a mounting angle between each module.
Lastly, the LCD panel can be connected to a different image sources to show an Image on the panel. Supported image sources are: Identity, Still image, SPOUT, NDI and Image Processor.
For Image processor, an offset can be defined for sampling the image from the image processor.

3.3.15 Image processor tab (LED mode)



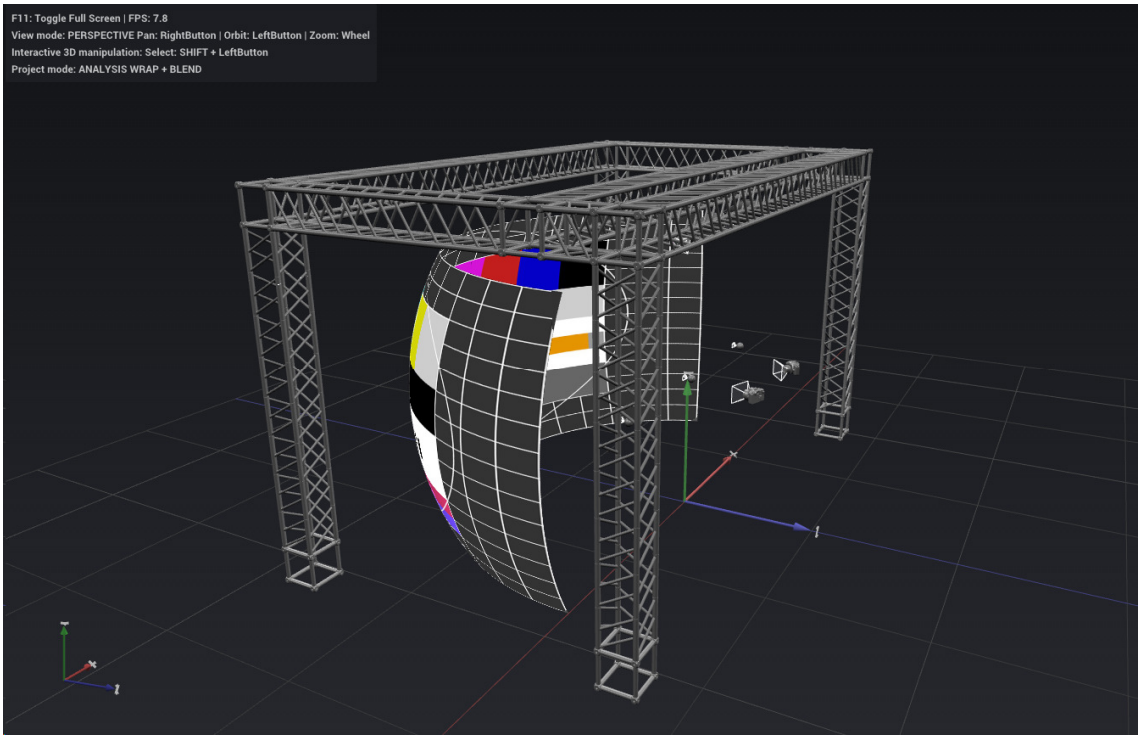
In the Image processor tab, the user can define one or more Image processors. Image processors are the source of the image for each LED panel. Each LED panel can be connected to one image processor to receive the images from. Image processor can be defined by its output resolution and the image source. Supported image sources are: Identity, Still image, SPOUT and NDI.

3.3.16 Truss system



In the Truss system tab, the user can define one or more Truss constructions. Each truss construction is constructed from a set of standard size truss elements.

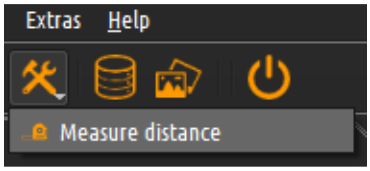
User can define the number if truss elements in each direction and the software will calculate and construct the Truss construction.



Additional truss lines can be added on each size of the truss construction.

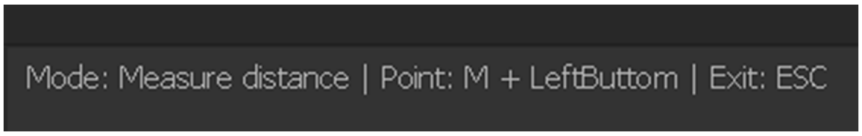
3.4 Measurement tool

Immersive Designer pro includes a measurement tape tool to measure the distance between two 3D points in the scene. This can be the distance between the projectors and the screen, or the distance between two projectors, or the distance between any two points from the scene.



Measure distance tool

When in a measurement mode the 3D display area will show the position of the selected 2 points as well the distance between the points.

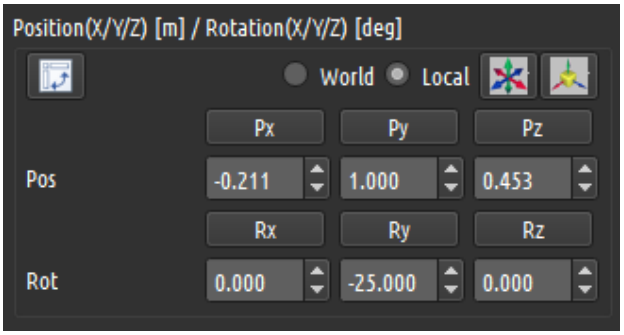


Use the keyboard key M and press the Left mouse button to select the first and the second points. When the first point is selected and the mouse is on top of a scene object, the 3D display area will show the distance between the two.

To start new measurements, press the ESC button.

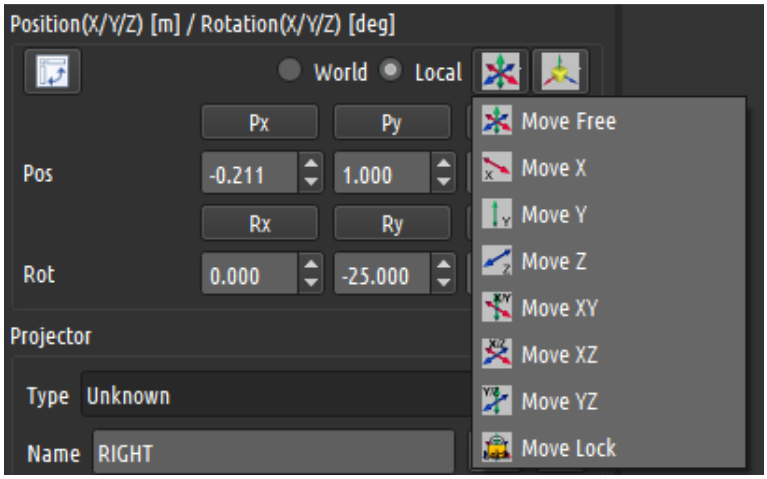
3.5 Move and rotate control

Each element of the projection can be freely positioned and rotated in the projection environment. The projection screen, projectors, cameras and the objects each have a move and rotate control to facilitate and optionally constraint the position and the orientation of the elements in the projection environment. Position and orientation can be changed either entering the position and orientation values in the corresponding boxes or using the mouse and changing the position and orientation in the 3D View area.



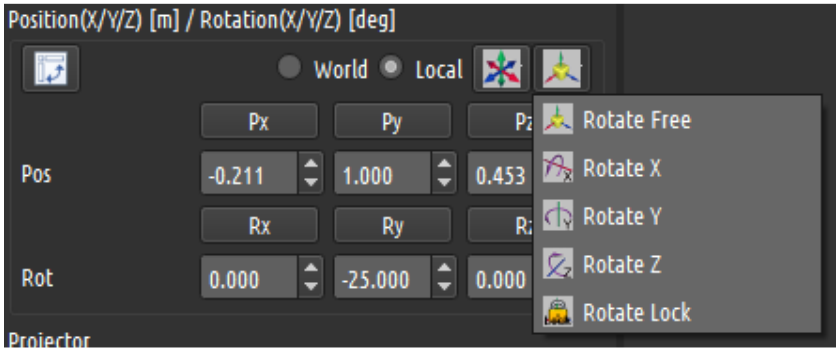
Move and rotate control

When entering the position and rotation values in the move and rotate control, the element is always translated and rotated with respect to the scene world coordinate system positioned in the center of the scene.
By pressing the Px, Py, Pz or Rx, Ry, Rz buttons a dialog box will be opened to enter the relative movement of rotation with respect the current position and orientation. The relative adjustments can be performed in the local or in the world coordinate system.
The rotation is always performed after the translation in the following rotation axis order: Rotate around X, rotate around Y and rotate around Z.
User can use the move and constraint menu buttons to constraint or limit the movement in a certain axis or plane and to constraint the rotation around a particular axis.



Move constraint menu

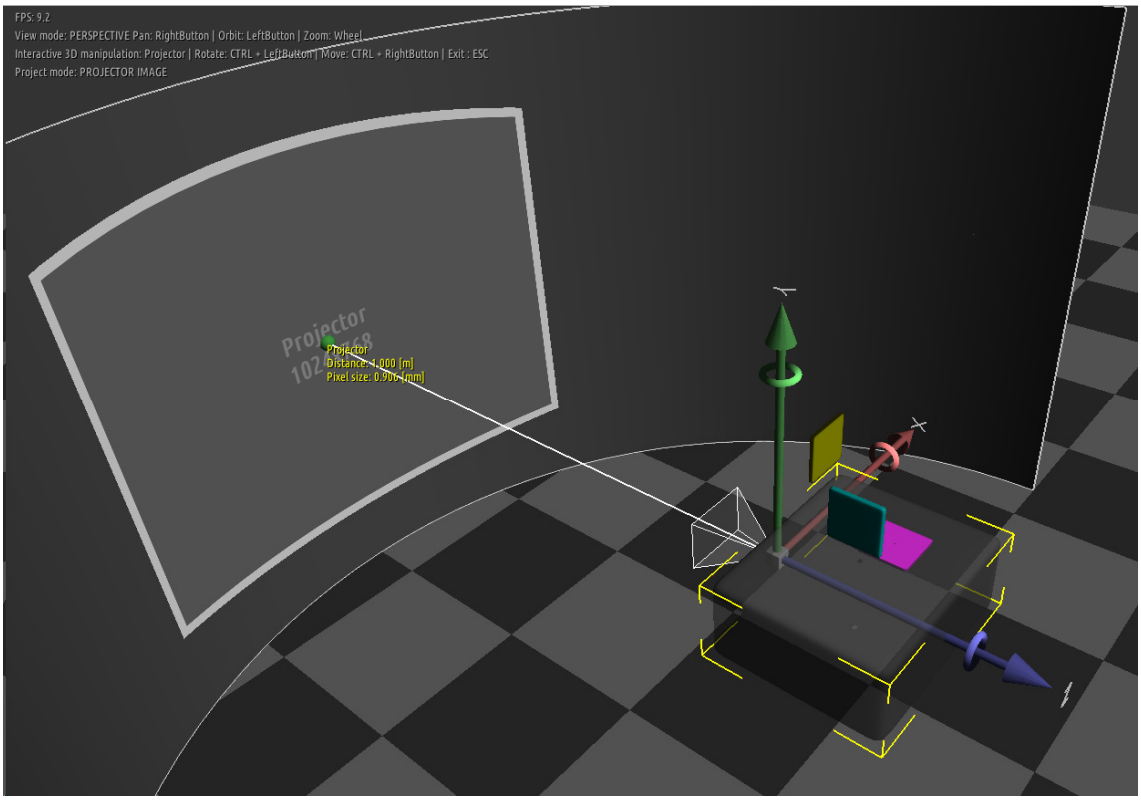
Using the move constraint menu, the moving can be enabled along all axes, can be limited to a particular axis or a plane constructed by two axes. The movement of the element can be also completely locked do disable all movements.



Rotation constraint menu

Using the rotation constraint menu, the rotation can be enabled around all axes, or limited to a particular axis. The rotation of the element can be also locked to completely disable rotation of the element.

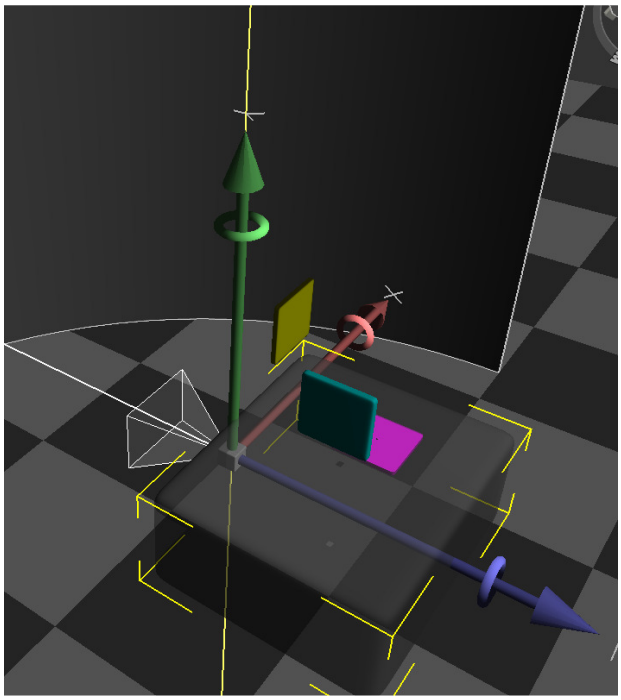
The translation and rotation can be performed in the element local coordinate system or in the scene world coordinate system. Use can use the World/Local checkbox to choose the coordinate system for translation and rotation.



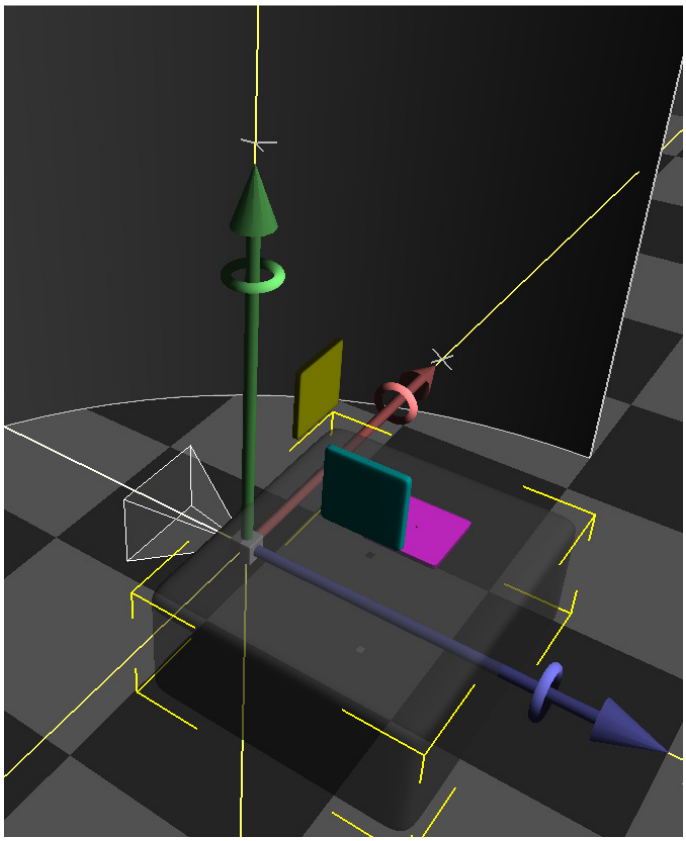
Positioning and rotation can also be done interactively in the 3D View area using our advanced Move/Rotate/Pivot/Target Gizmo.
By holing the SHIFT button user can click on an element using the LEFT mouse button. This will make the element selected and ready for interactive movement and rotation.
The selected elements are represented with a yellow bounding box and the Local or the Global coordinate system axes are drawn for a reference.
The Gizmo contains the following interaction elements: The Axis arrows (for movement and pivot per axis), the Axis Rings (for rotation around the axis), the XY, XA and YZ planes (for movement in that plane) and the origin Cube (for free movement).
Additionally, for projectors, when the Projector "Target" option is selected, the projector target can be grabbed and moved on any surface. The Gizmo axis can be used to hover the projector around the target point.

The following interactive movement actions are available:

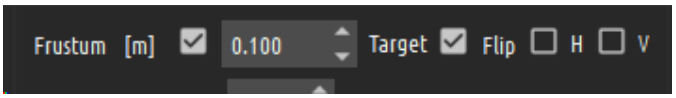
- Use the Left mouse button to grab and drag any axis. The element will move along the axis only.
- Use the Left mouse button to grab and drag any axis ring. The element will rotate around that axis only.



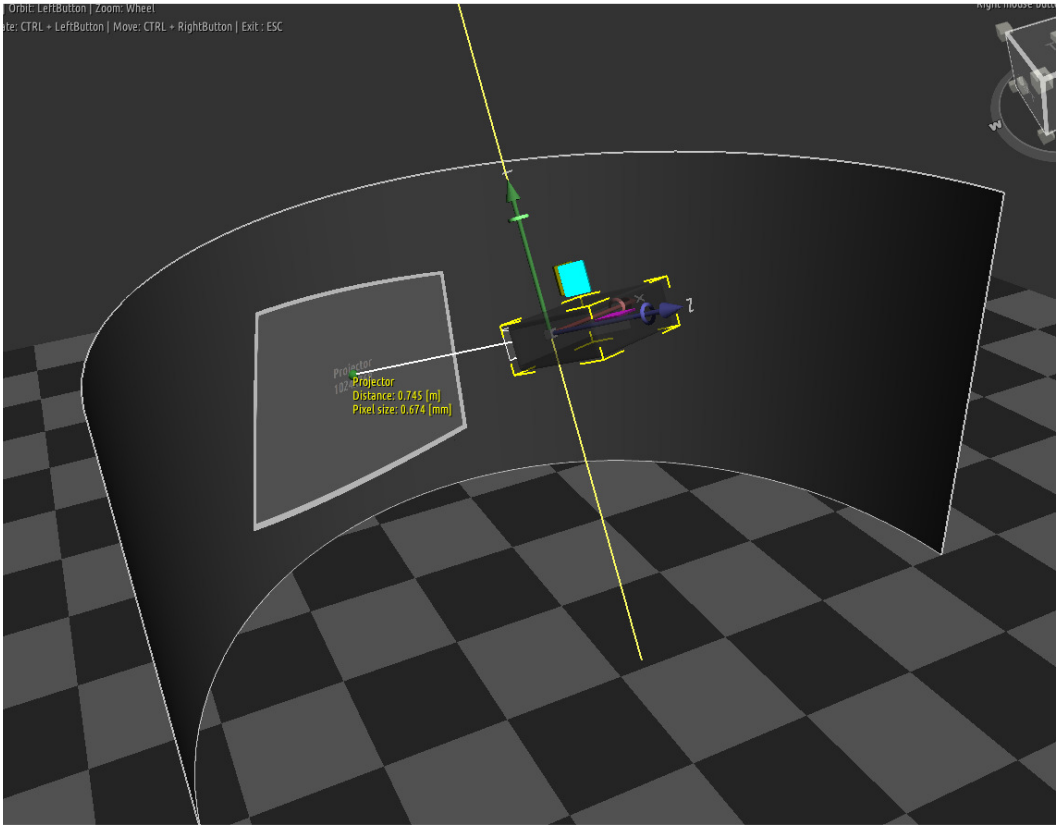
- Use the Left mouse button to grab and drag any of the XY, XY, YZ planes. The element will move in that plane only.
- Use the Left mouse button to grab and drag the cube in the center of the coordinate system. The element will move freely in any direction.



The following interactive movement actions are available only for projectors when the projector “Target” is enabled.



- Use the Right mouse button to grab and drag the green target point. The projector orientation will follow the projector target point.
- Use the Right mouse button to grab and drag any of the X or Y axis. The projector will pivot around the projector target point. Target point will not be changed by the projector position and orientation will be changed.

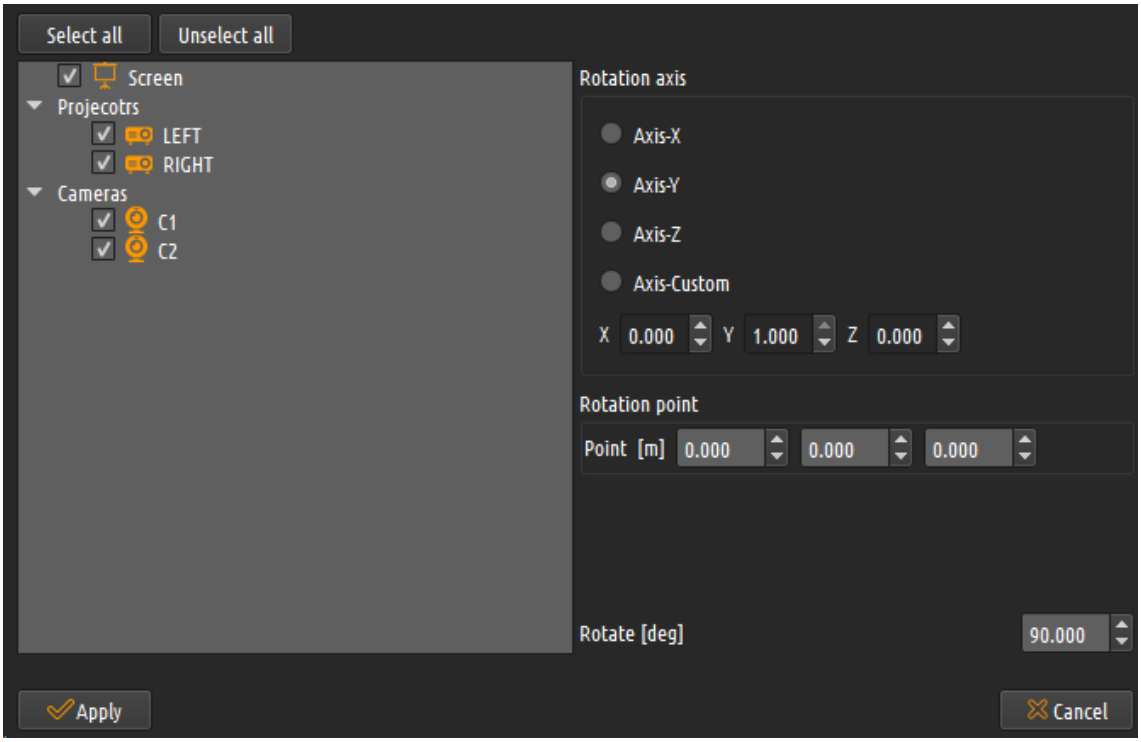


Those advanced Gizmo actions provide unlimited and extra simple control for positioning the projectors on the scene.

By holding the CTRL button and pressing the LEFT mouse button user can rotate the object around the coordinate system axis taking into account the rotation constraints.
By holding the CTRL button and pressing the RIGHT mouse button user can move the object along the coordinate system axis taking into account the translation constraints.
Holding the SHIFT button and pressing the LEFT mouse button outside of any element will unselect the currently selected element.

3.6 Scene elements rotation control

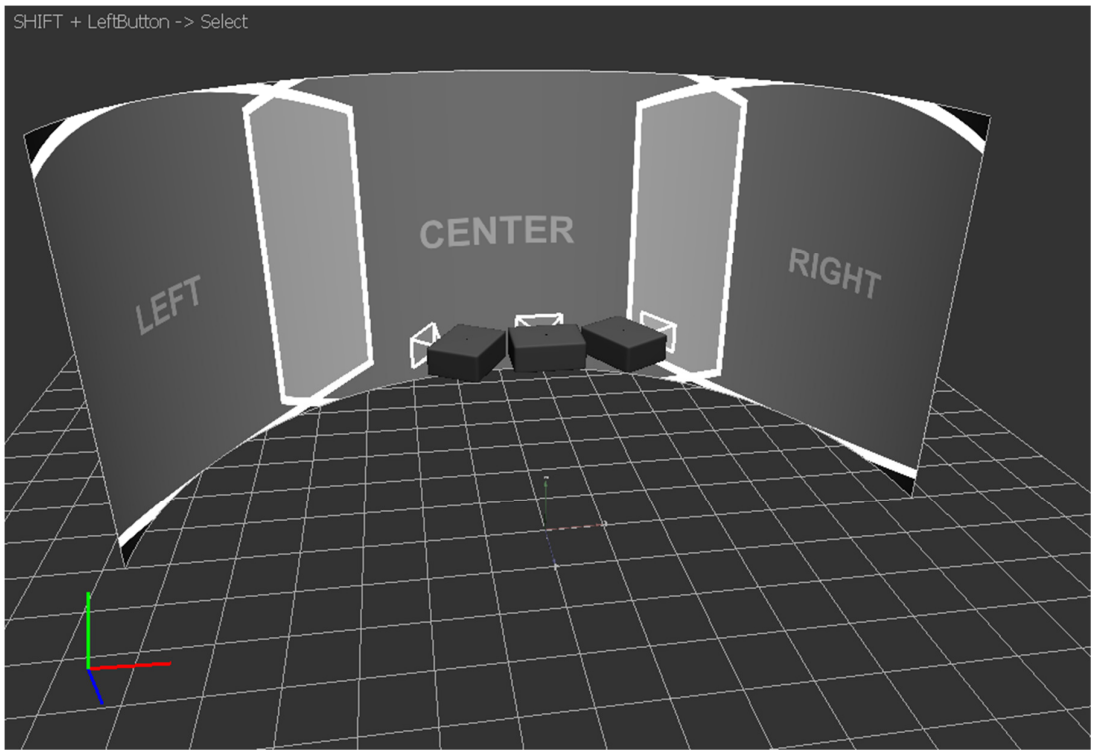
Each element of the projection can be rotated and pivoted in the projection environment. Projection screen, projectors, cameras, viewpoints and objects each can be rotated and pivoted (individually or all) around arbitrary pivot point and pivot axis.



Scene rotation dialog

3.7 3D View area

The 3D View area is the central area of the program. This area shows a 3D representation of the projection environment including the projection screen, all projectors, camera and additional objects.

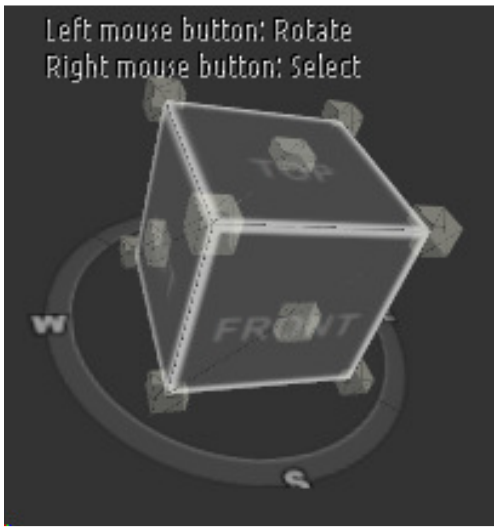


3D View area

The 3D View area also optionally shows a ground grid reference and the coordinate axis of the world coordinate system. The ground grid and the coordinate system axis can be shows or hidden using the View menu.
Pressing and dragging the LEFT mouse button in the 3D View will rotate the 3D view.
Pressing and dragging the RIGHT mouse button in the 3D View will translate the 3D view.
Pressing and dragging the MIDDLE mouse button in the 3D View will zoom in and out the 3D view. This can also be achieved using the mouse wheel.
By holing the SHIFT button user can click on an element using the LEFT mouse button. This will make the element selected and ready for interactive movement and rotation.
Holding the SHIFT button and pressing the LEFT mouse button outside of any element will unselect the currently selected element.

3.7.1 Cube View

A Cube View is an additional navigation help to quickly change the views or the view perspective. The cube view can be shown or hidden using the show menu. The cube is shown in the top right corner of the 3D View area.

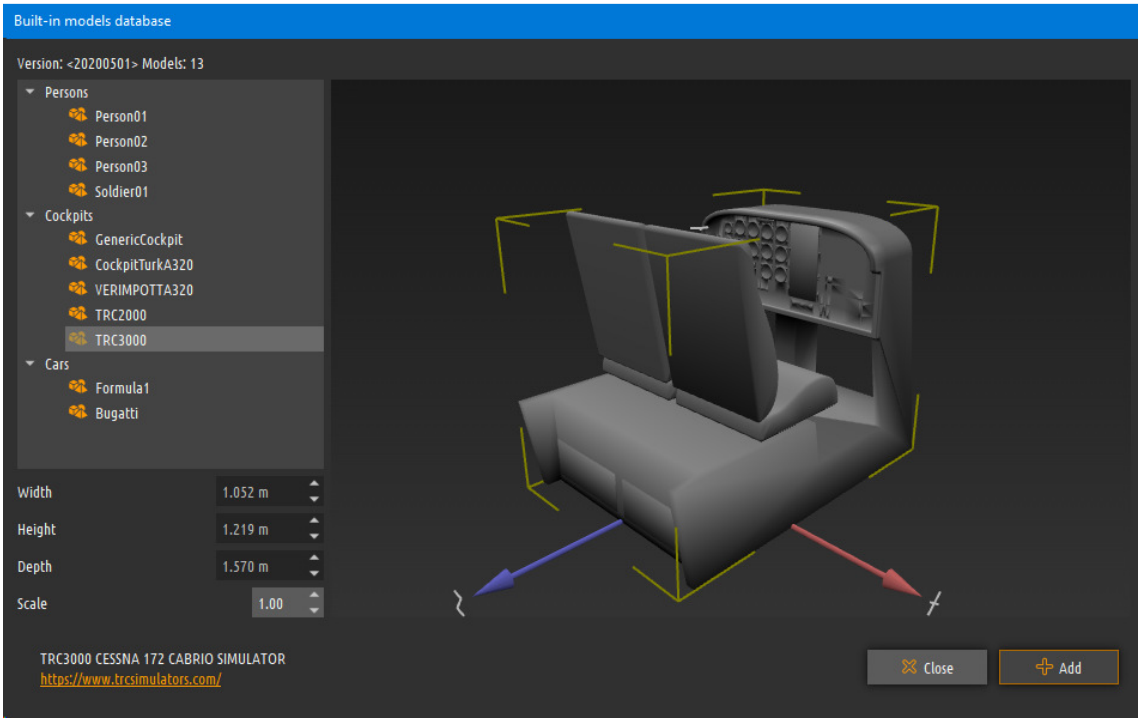


Built-in projectors database

Whenever the users rotate the 3D view area the cube view will follow and will represent the orientation. User can also use the Left mouse button to rotate the cube view.
The cube has regions on each side and each corner. Using the Right mouse button and clicking on one of the regions will automatically set the 3D view area to view the scene from the chosen direction.

4 3D models database

Immersive Designer PRO comes with a built-in database with commonly used 3D models during a design of a multi-projection system.
Using the Tools/Models Database menu opens the 3D models window.

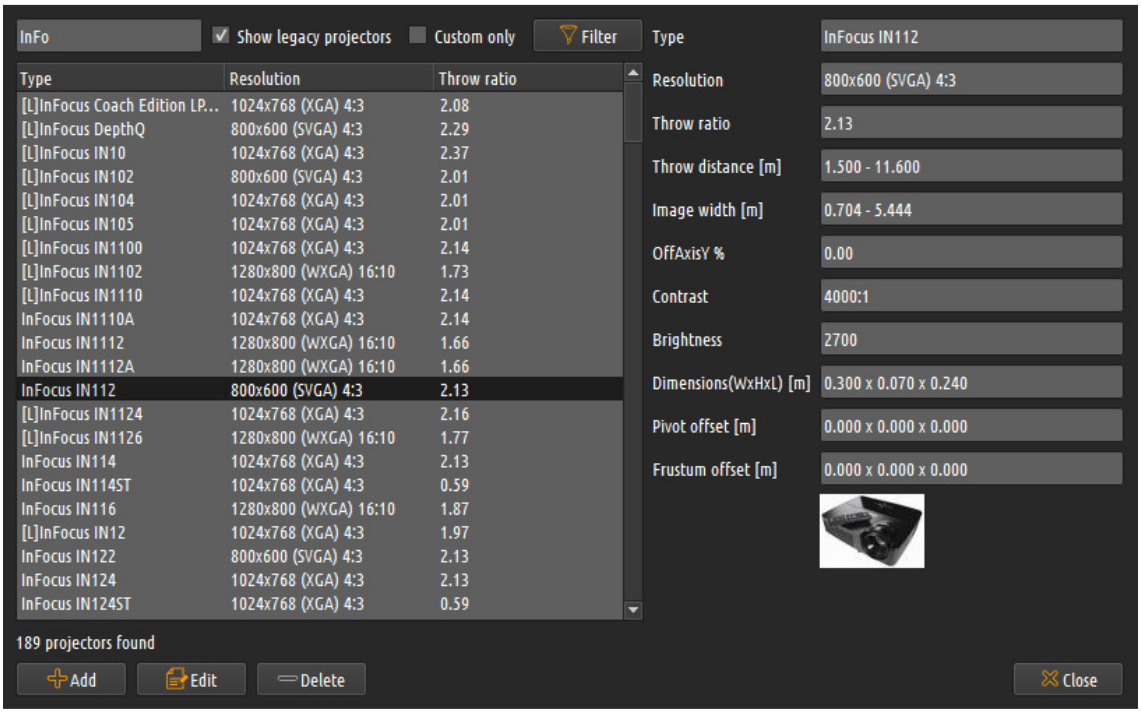


A model can be added to the existing design by pressing the Add button. If the model does not have the correct size, the scale factor can be used to scale the model before adding it to the project.

5 Projectors database (multi-projector mode)

Immersive Designer PRO comes with a built-in database of more than 8000 projector types and models. The database contains the visual characteristics of the projectors (resolution, throw ratio, throw distance, minimum and maximum projection distance, brightness and contrast) as well as the size (dimensions) of the projectors.
The database contains legacy (discontinued) projectors models and currently active projector models. The legacy projector models are discontinued from production but can still be purchased and used.

User can modify and edit the parameters of the built-in projector models and add custom projectors models to the database. The user's modified and added projectors models are saved to a separate database that can be stored locally and used when the software is updated to a new version that contains an updated built-in database.



Built-in projectors database

Using the filter  button user can filter the list of the projector types that contain the text entered in the filter text box.
When the filter text box is empty all projector will be listed. Initially, the list does not contain the legacy (discontinued) projectors. When checking the "Select legacy projectors" check box and pressing the Filter button, the legacy projectors will be listed as well. Legacy projectors are marked with the letter [L].

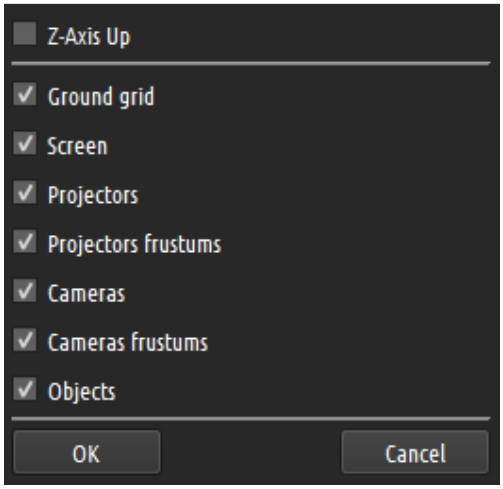
User can modify or extend the built-in database. Using the Add button  new custom projector type can be added to the database. Using the Edit  button user can edit a built-in or custom projector type definition. Edited or added projector types can be removed using the  Delete button.

All custom modified or added projectors are marked with letter [*].
The custom edited or added projectors are stored in a separate file: *projectors.data*. This file is updated automatically every time a user modifies, adds or deletes a projector. Whenever Immersive Designer PRO start it looks for the file *projectors.data* and merges this projector database with the built-in projectors database.

6 Export results

6.1 Export to DXF

When the projection setup design is completed, the complete or the partial design can be exported as a DXF file that can be loaded and used in any CAD program that can open and read DXF file format. The DXF file format is a standard file format introduced and used by AutoCAD and other 2D or 3D CAD programs.
Using the File/Export/Export to DXF menu, an export dialog fill be open to select the export options.



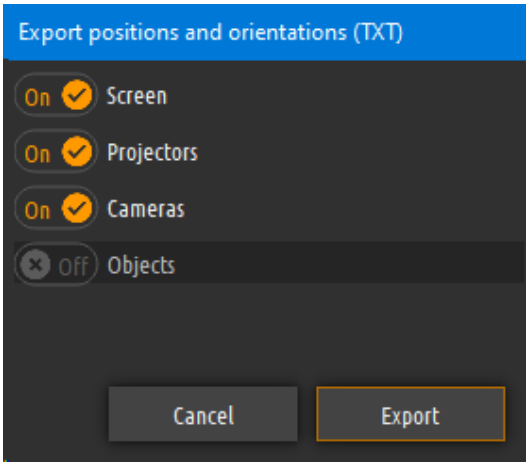
DXF export dialog

In the export dialog users can select the parts of the design that need to be exported as well as the orientation of the coordinate system. In Designer PRO the Y-axis points up. For export to DXF users can chose to set the Z-axis to point to up.

6.2 Export to TXT

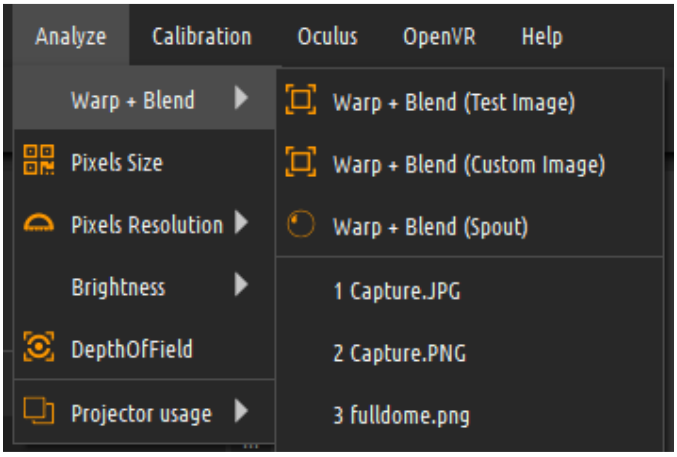
The TXT exports will export the position and orientation of each design element (projector, camera, screen, object, etc.). This txt formal can be used

and imported into any design software or can be used during the construction of the projection setup.

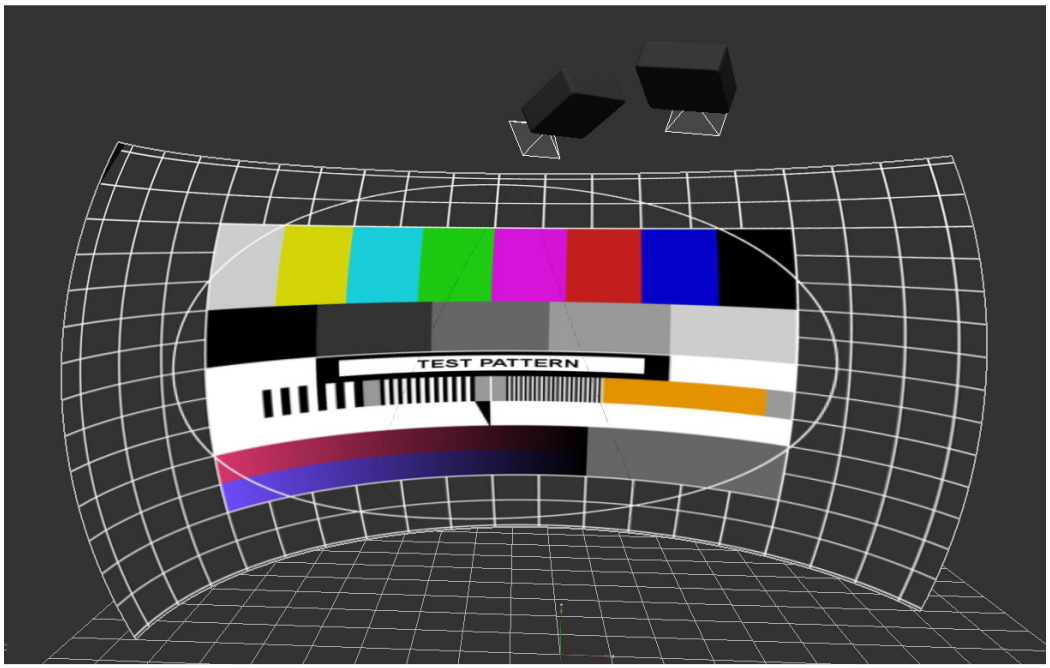


7 Analyze

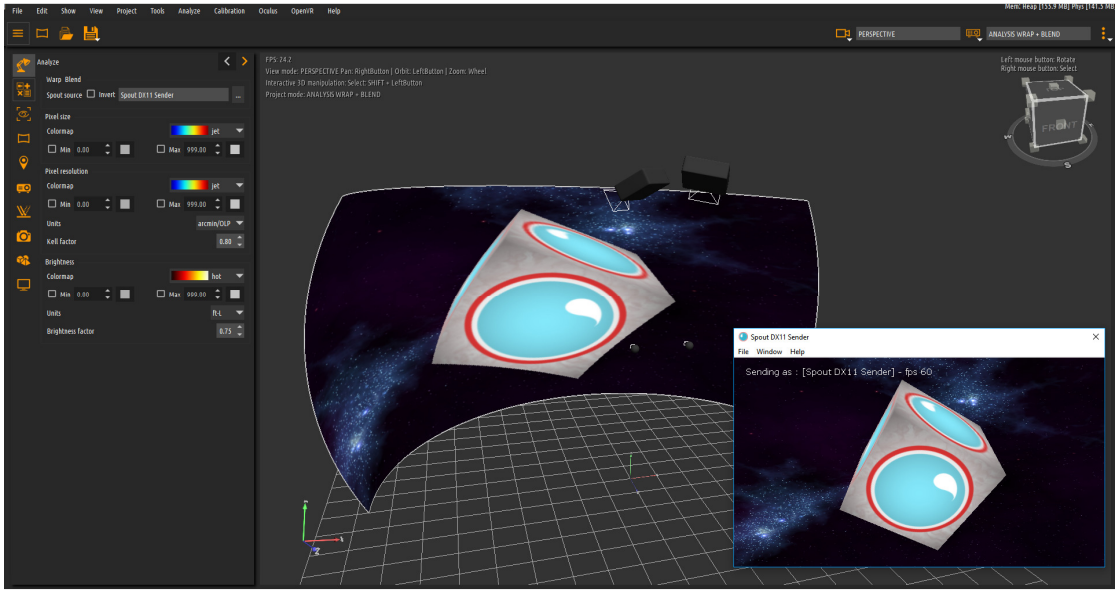
The analyze module is a module that can be used to analyze and validate different aspects of the projection. This module can be accessed from the top menu “Analyze”. The current version support analysis for all built-in screens (except multi-plane and cave) as well as for custom object screen shapes.
A sub-pixel accurate calculation is applied in the projector image to calculate and show the analysis results.
Depending on the mode of operations (multi-projector mode or LED mode), different analysis options are available.



The "**Warp + Blend**" menu option will quickly calculate the warping and blending and will show one test image on the screen.
Users can also select and load custom images to be show after the warping and blending calculation, or select a live SPOUT or NDI sender images to be shown on the screen.



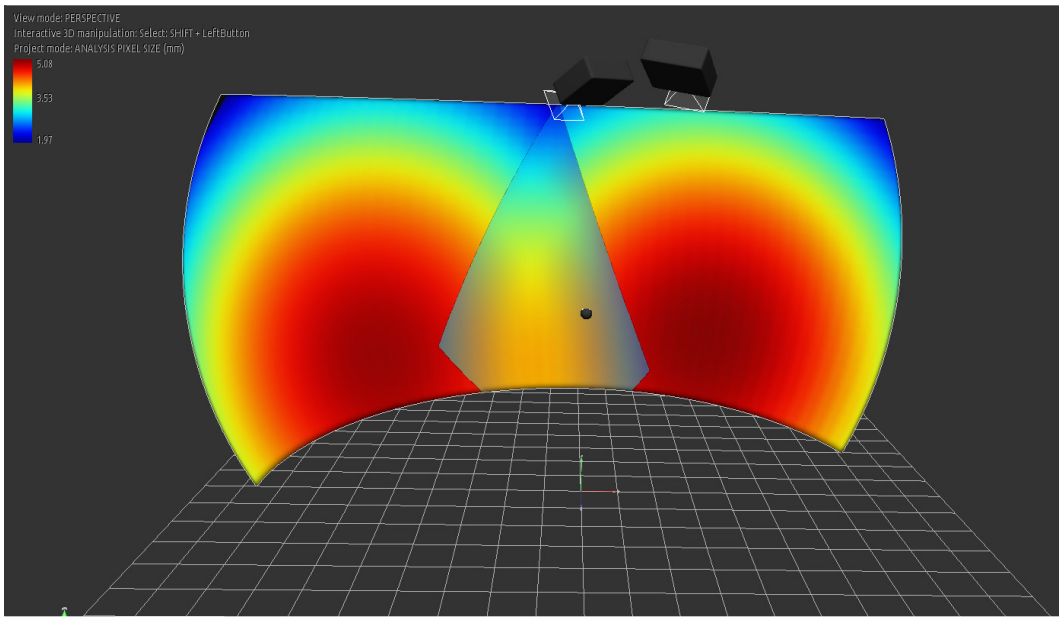
Warped and blended projection



Warped and blended projection with SPOUT

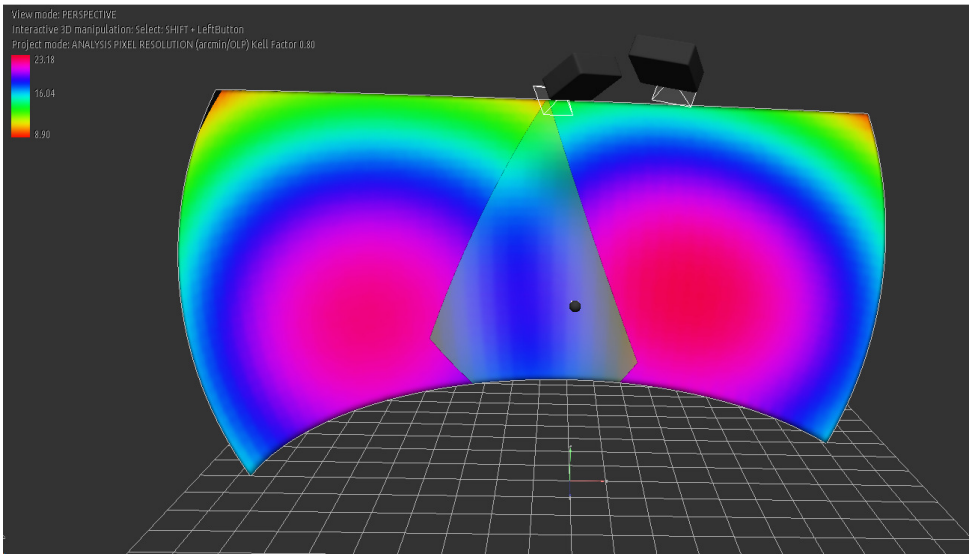
The "**Pixel size**" menu will calculate the size of each pixel on the projection screen. The size of each pixel is calculated as average of the projected pixel width and height when the projected pixel is projected on the screen.

The pixel size (in mm) is encoded in color gradient and presented on the projection screen. Using this view, users can evaluate the pixels distributions and sizes on the screen depending on the projector resolution and positions.



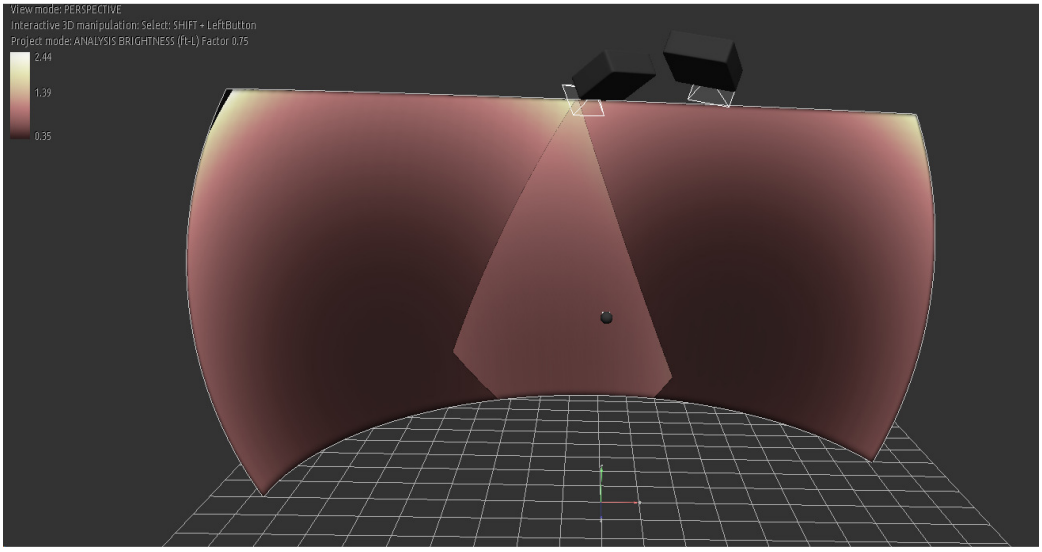
Projection pixel size distribution

The "**Pixel resolution**" menu will calculate the screen pixel resolution depending on a defined eye-point position. The pixel resolution is calculated as angle between two projector pixels or vertical line pair projected on the screen. The measure for pixel resolution is either arcmin/OLP (arc minute per optical line pair) or arcmin/pixel (arc minute per pixel). Arcmin or minute arc is a unit of angular measurement equal to one-sixtieth (1⁄60) of one degree.
The configured Kell factor in the analyze tab will be taken into account to calculate the pixel resolution.



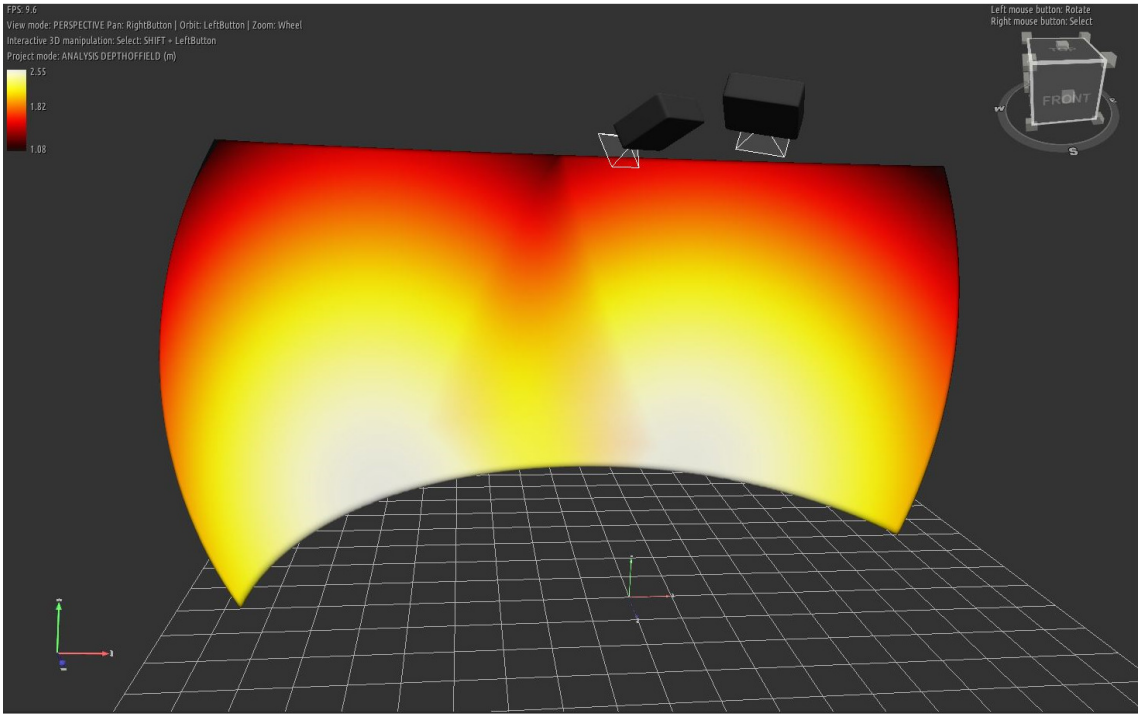
Pixel resolution on the screen

The "**Brightness**" menu will calculate brightness distribution. Brightness is calculated based on the screen gain, projector ANSI limens and the projector lamp decrease factor. The unit of measure for brightness distribution is either Foot-Lambert (ft-L) or Candela per square meter (cd/m^2).
The overlapped projectors will be edge blended and the "brightness" values will be edge-blended as well.
An experimental "brightness" analysis is available to calculate the brightness of stacked projectors when the projectors overlap regions are not edge-blended.



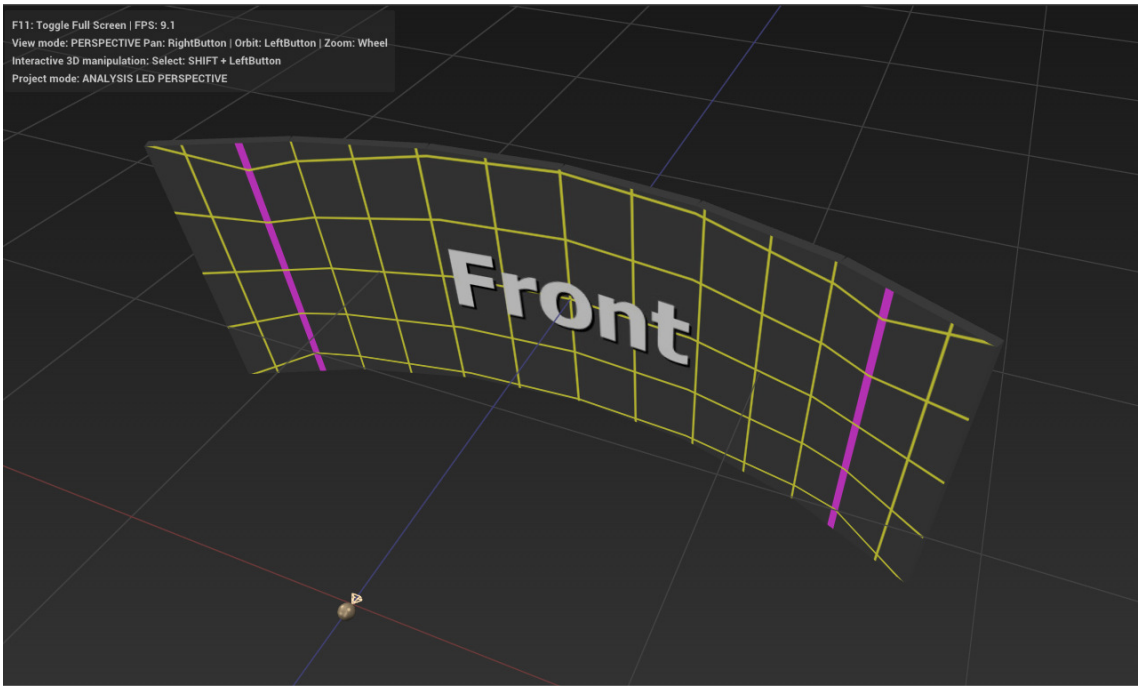
Brightness distribution on the screen

The "**DepthOfField**" menu will calculate the "depth" of each pixel on the projection screen. The depth of each pixel is calculated as a distance from the beginning of the projector frustum plane to the screen.
The depth of field (in meters) is encoded in color gradient and presented on the projection screen. Using this view, users can evaluate the focus distributions of the projector image.
Different projector manufacturers provide information of the optimal depth (distance) from the projector to the screen to get optimal focused image. If the distance is outside of those bounds, the image fill not be focused.



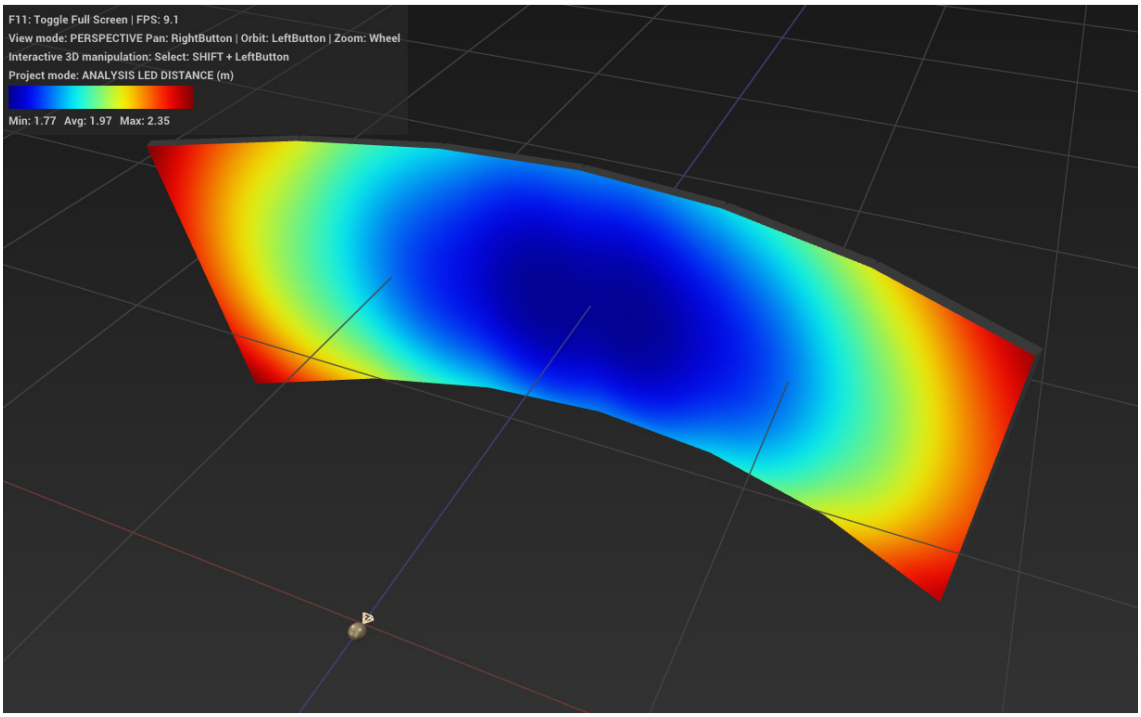
Depth of Field distribution on the screen

The "**LED perspective**" menu will calculate the perspective view for each LED display from the indicated eye point. The perspective view ensures a perfect mapping of multi-view 3D scenes on the LCD modules in order to produce 100% accurate geometric correction for undistorted images.



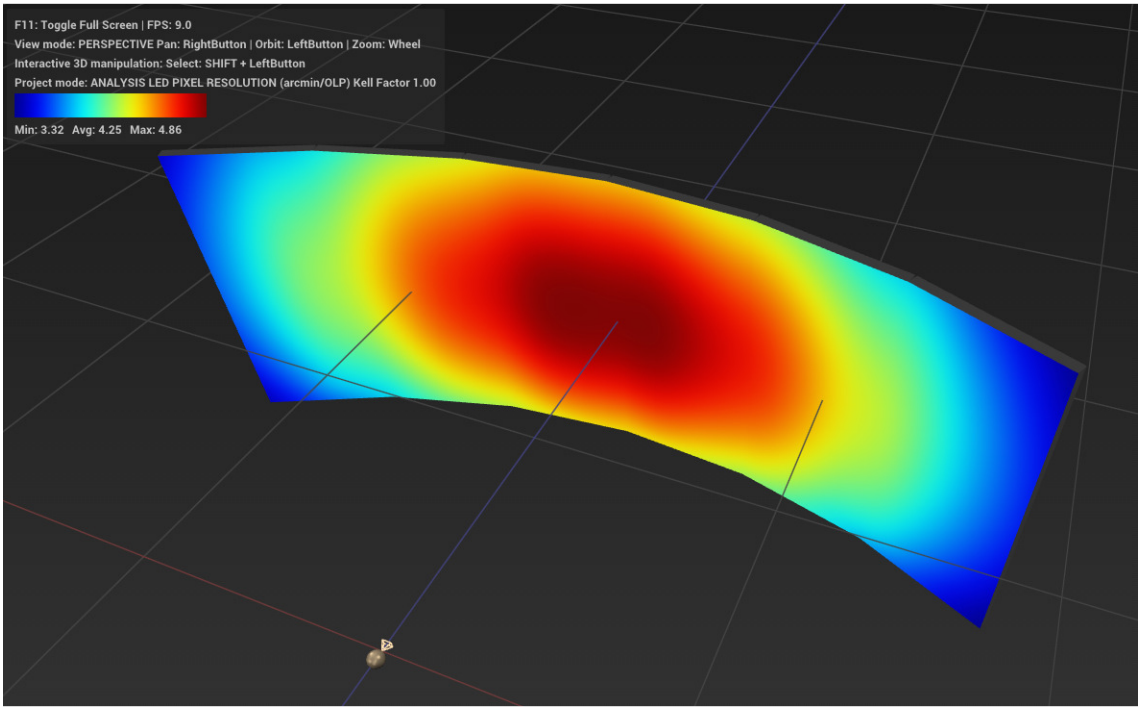
LED Perspective view

The "**LED distance**" menu will calculate the pixel accurate distance from the indicated eye point. This analysis module can be used to calculate and analyze the optimal LED panel size and resolution in combination with the desired viewing distance.



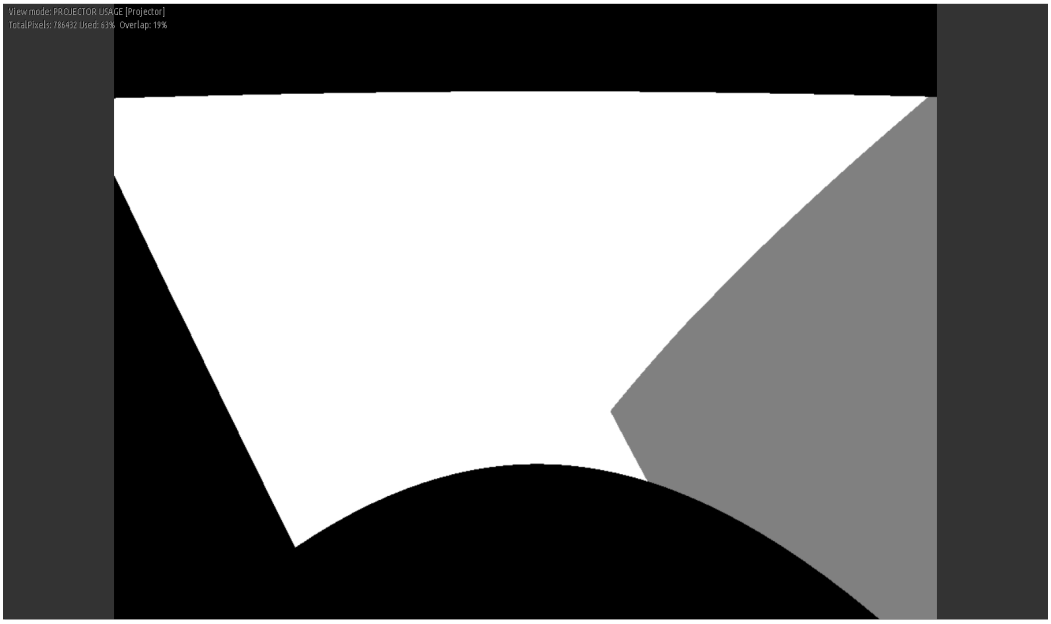
LED Distance

The "**LED pixel resolution**" menu will calculate the pixel resolution depending on a defined eye-point position. The pixel resolution is calculated as angle between two LED pixels or vertical line pair projected on the screen. The measure for pixel resolution is either arcmin/OLP (arc minute per optical line pair) or arcmin/pixel (arc minute per pixel). Arcmin or minute arc is a unit of angular measurement equal to one-sixtieth (1⁄60) of one degree



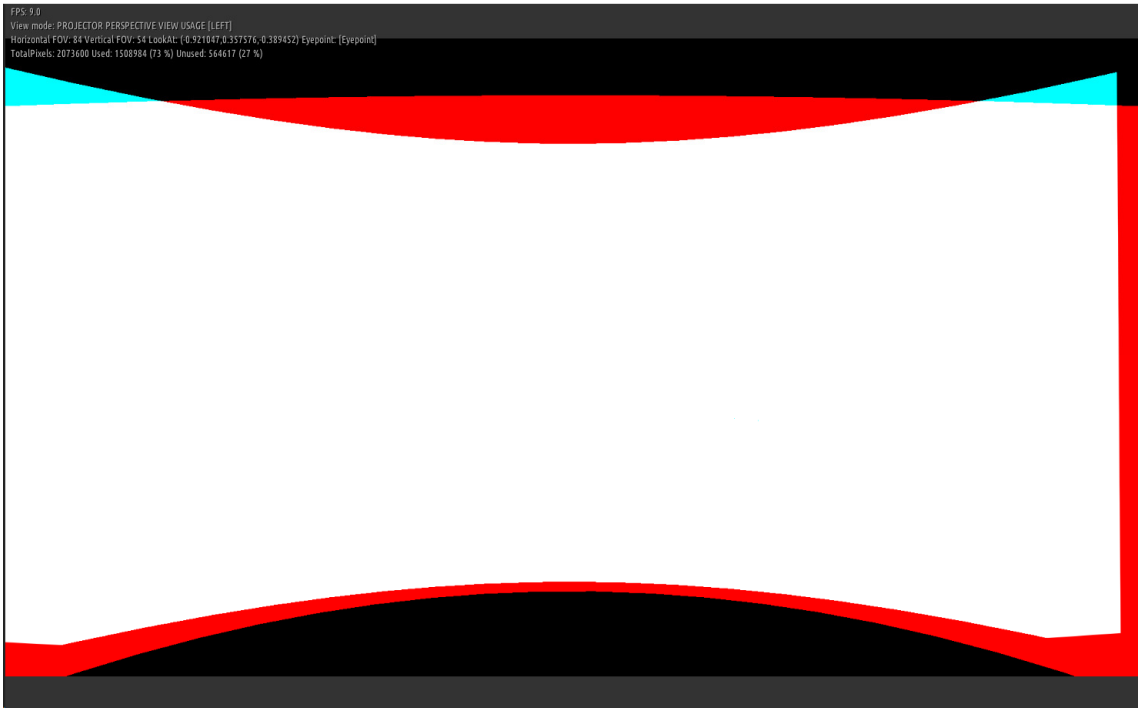
LED Pixel resoluton

The "**projector usage**" menu will calculate the effective projector pixel usage. The black area shows the projector pixels that are not used and are not projected on the screen. White area shows the projector pixels fully projected on the screen and the gray areas shows the projector pixels that are overlapped from other projector pixels.
This analysis gives a complete overview about the projector resolution utilization.



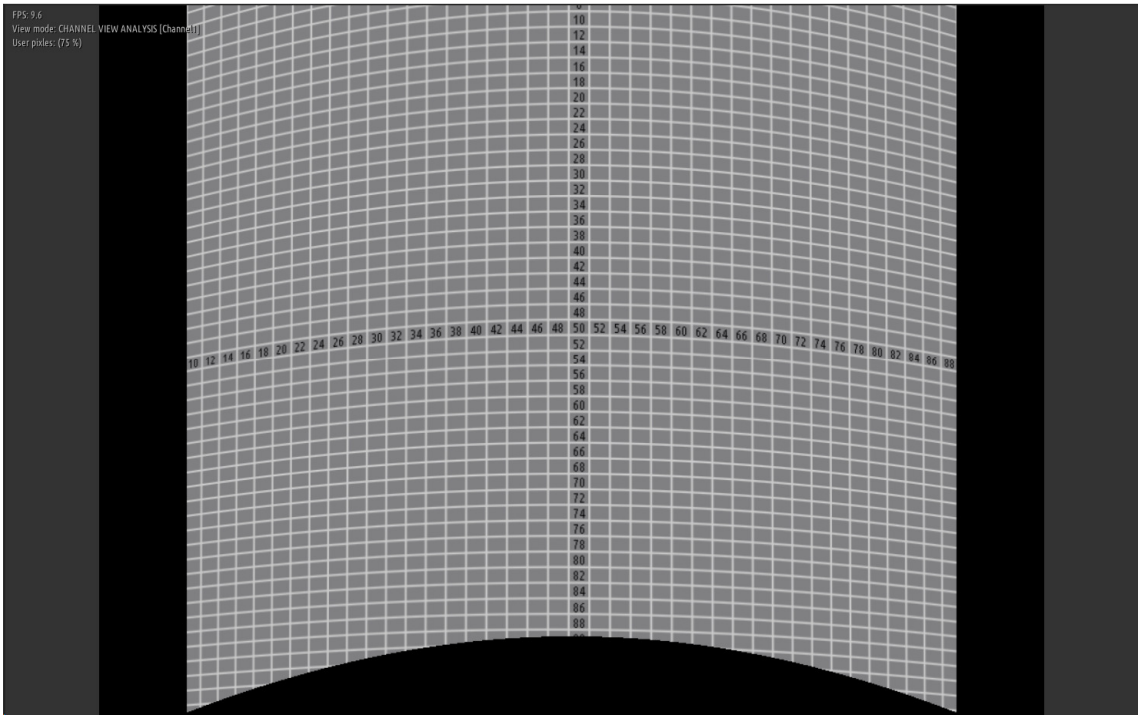
Projector usage

The "**Perspective**" menu will calculate the projector pixel usage when perspective views are used. Perspective views are used in simulator setups with multi-view calibration files. The perspective views are calculated from a certain eye-point.
The analysis shows the effective pixel utilization when the original perspective image will be warped for 100% geometrically accurate views.
The white area shows the completely used projectors pixels.
The red area shows the unused projector pixels. When the image will be deformed those pixels will fall outside of the projection screen.
The cyan pixels will be partially lost. Those will be squeezed fa able to fall on the projection screen.
The design of the projection setup, the screen and the eye-point has to be carefully chosen to maximize the projector's pixel usage and minimize the unused pixels (red area).

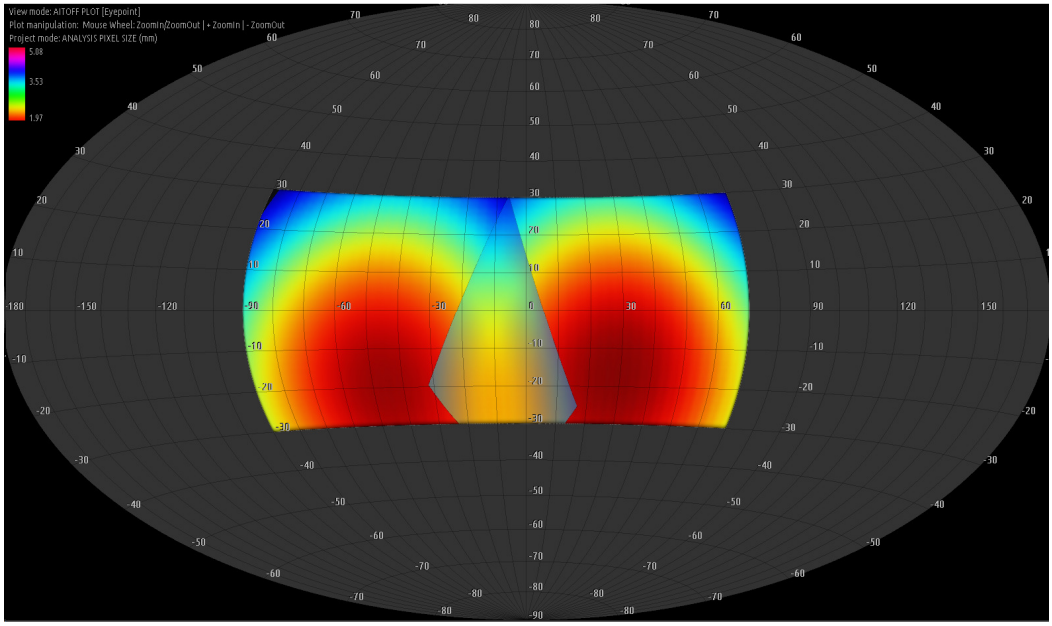


Perspective pixel usage

The "**Channels**" menu will calculate the projector image distortion and the pixel utilization for each projector associated with a channel.
The analysis shows the effective pixel utilization and the image distortion when the original perspective image will be generated and projected for 100% geometrically accurate views. The views will be observed from the designed eye-point.

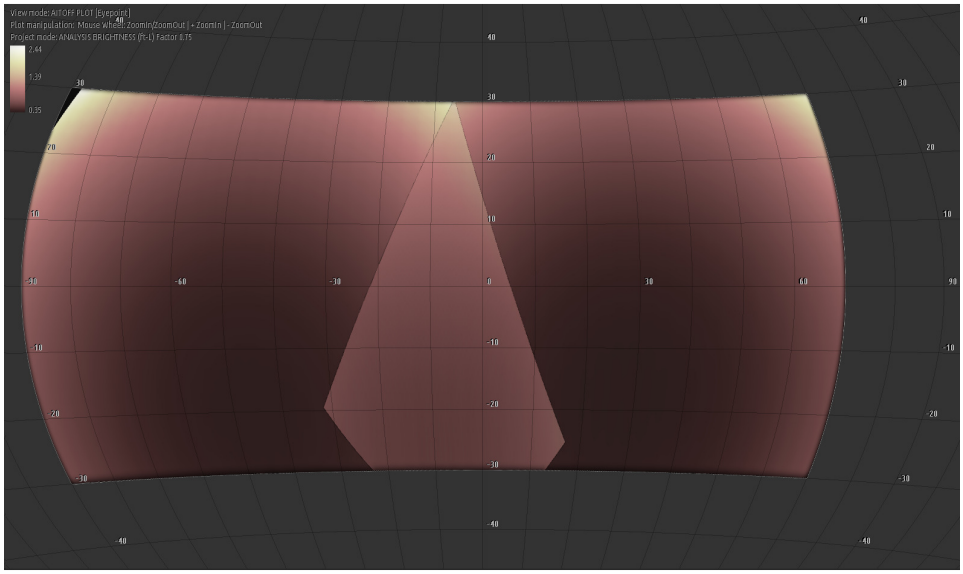


The "**Aitoff plot**" is a specific projection system visualization used in professional projection projects and projection calculation.
Aitoff plot can show 360 deg view of the projection setup.
The Aitoff plot is available from the View menu and can be selected per Eyepoint.



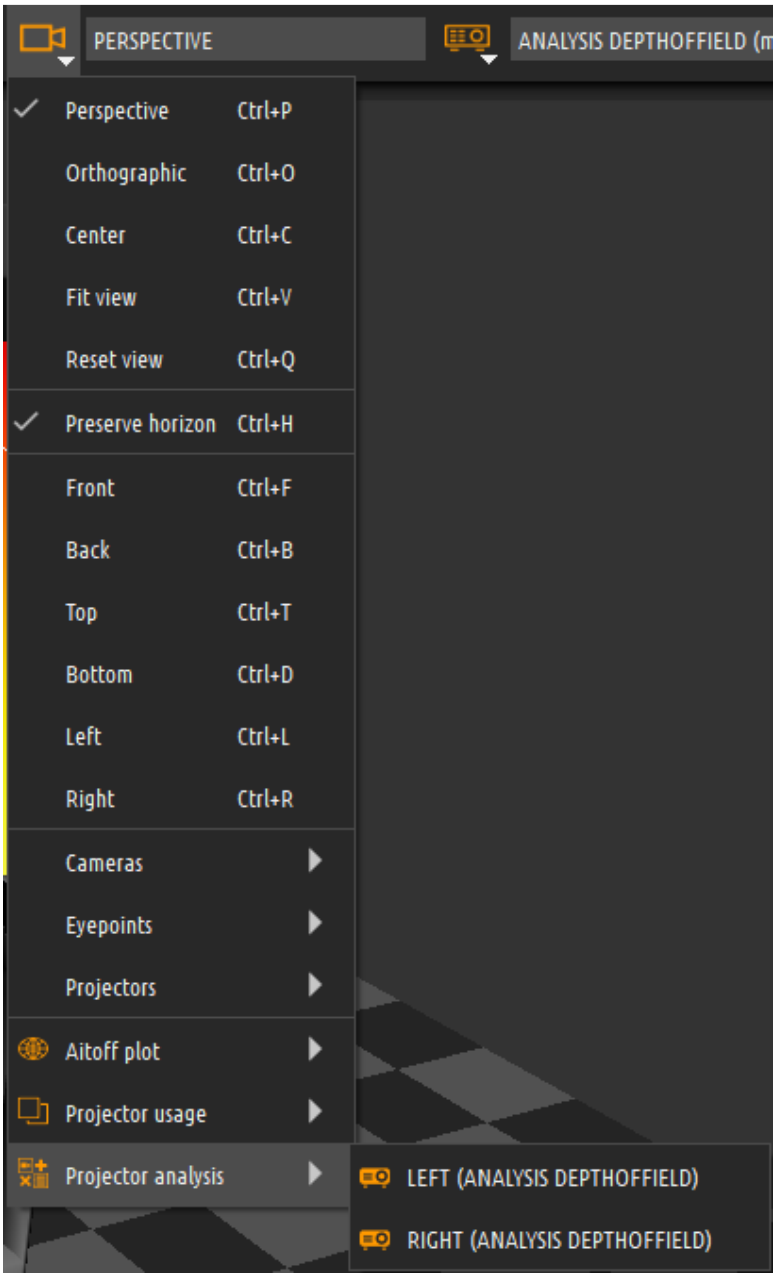
Aitoff plot pixel size

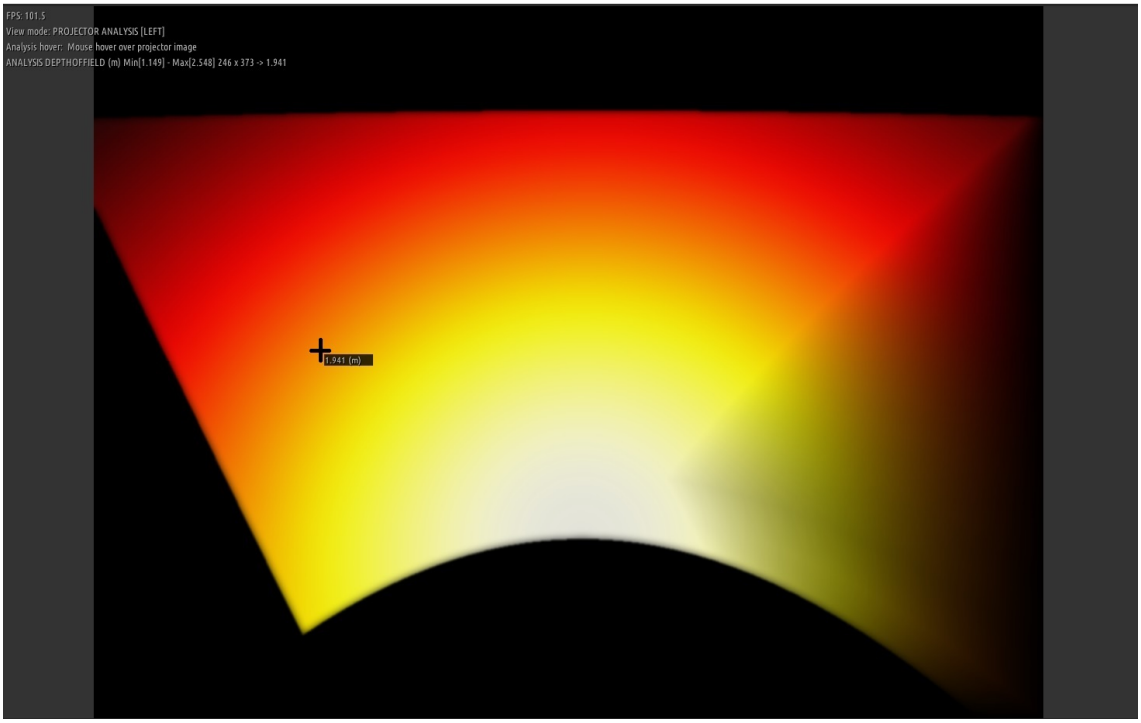
After a particular analysis is calculated, users can select the Aitoff plot view from a selected eyepoint.
In the Aitoff plot view user can zoom in or zoom out to fit the projection screen to the Aitoff plot view.



Aitoff plot brightness distribution

Whenever an analysis is calculated, users can select to view the analysis results per projector and use to mouse to hover over the desired projector image and see more details about the analyzed values.
Use the View menu to select the analyzed projector and then move the mouse on the projector image to show the analyzed values.

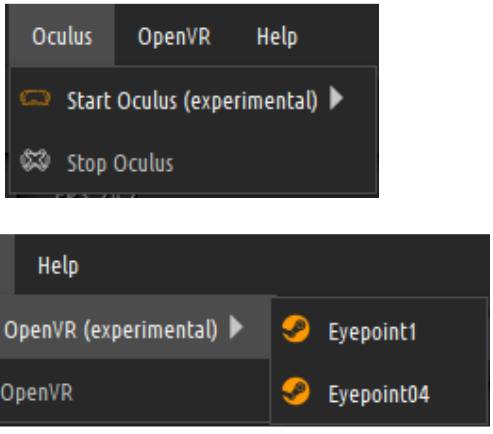




Detailed interactive projector analysis

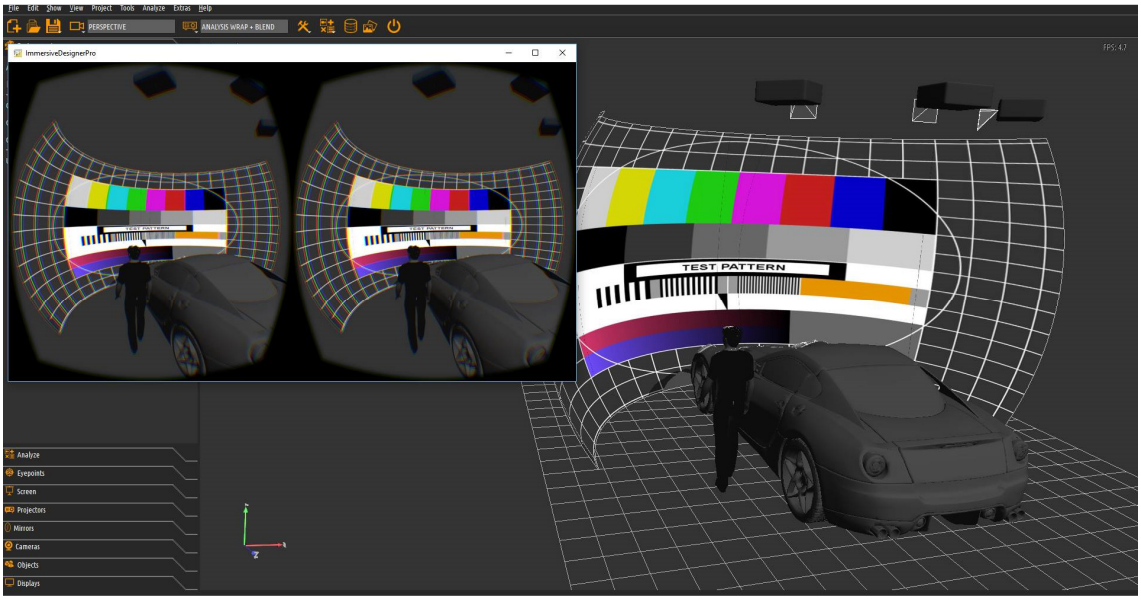
8 VR Support (Oculus Rift & HTC VIVE)

The Oculus Rift & HTC VIVE support is an experimental feature that integrates Oculus Rift or HTC VIVE HMD support into to virtual projection environment.



VR support

Using Oculus Rift or VIVE users can position themselves into the virtual projection environment and virtually move and look around the projection setup.
When Oculus Rift runtime or OpenVR (Steam) runtime is installed on the system users can start the Oculus Rift or VIVE presentation from an eye-point. A preview windows will be opened with instructions for navigating and moving into the projection environment.



VR preview

Using VR users can evaluate the projection setup from the perspective of the audience of the setup. When 3D object models are used in the projection setup users can move around or enter into 3D models that represent the projection exterior and experience how the real audience will view the projection.

9 License options

The software can be licensed with different license modes. For more information about the available license modes please visit:

https://dev.elise-ng.net/index.php/products

9.1 PC Locked and USB Dongle Licenses

The **PC Locked License** is "locked" to the PC Hardware components. The software will generate a "**HardwareID**", and based on this **HardwareID**, a "License Code" will be generated and emailed. The software can run only on that PC as long as the hardware components do not change. When a hardware component changes, the software will generate another **HardwareID**. Based on the changed **HardwareID**, it can be determined which component has been changed. If only one hardware component has been changed, we can generate a new PC Locked License. If the PC hardware is changed completely or a new PC is used, PC Locked License can NOT be re-generated.
If the software will be used on a changing PC Hardware configurations, or if the software will be used on more than one PC, a **USB Dongle License** needs to be ordered.
The **USB Dongle License** is stored and delivered on a secure "**USB Dongle**". The **USB Dongle License** is independent of the PC Hardware. The software can be used on any PC as long as the USB Dongle is inserted. USB dongles are delivered by post. Shipping costs are included in the price.

9.2 Commercial and Home-User Licenses

A **Commercial License** is for customers who are using the software for commercial applications and receive financial compensation from using the software. Re-sellers and system integrators who use the software in their solutions are considered commercial parties. Commercial license can NOT be ordered as PC Locked License. For commercial use only USB Dongle License must be ordered. If a PC Locked License is ordered and if the PC Hardware components change, PC License will not be re-generated.

A **Home-User License** (non-commercial) is for individual home-use only. It can only be purchased if no financial compensation is received whatsoever from using the software. A Home-user License can be ordered as both PC Locked License and USB Dongle License.

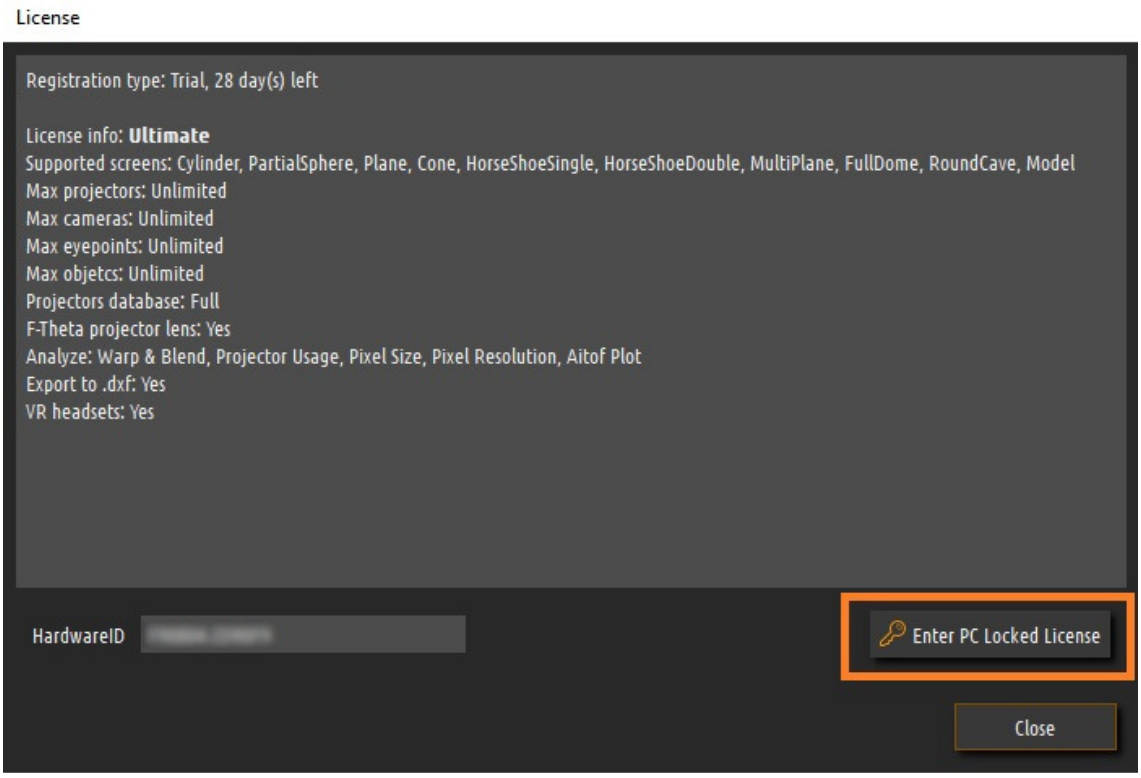
9.3 License validity

Both PC Locked and USB Dongle licenses are **perpetual**. A perpetual license will allow the customer to use the licensed software **indefinitely**. For the first **2 years**, the perpetual license also entitles the customer to download all **updates** to the software and to receive **technical support**.

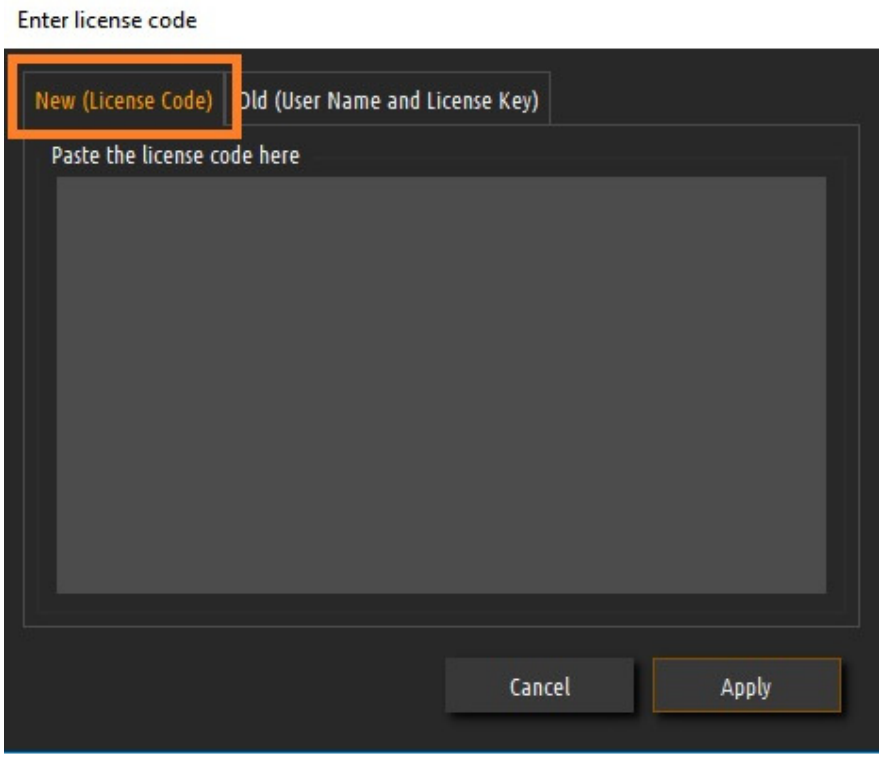
After the 2 - year period ends, the customer can choose to remain with the last version downloaded or to purchase a 2 - year **Updates & Support** package, for 40% of the license price. There are no penalties for letting Updates & Support lapse for a while before purchasing a new 2 - year Updates & Support package. The new 2 - year Updates & Support period will be extended from the expiry date of the last 2-year period.

9.4 Register the software with PC Locked License

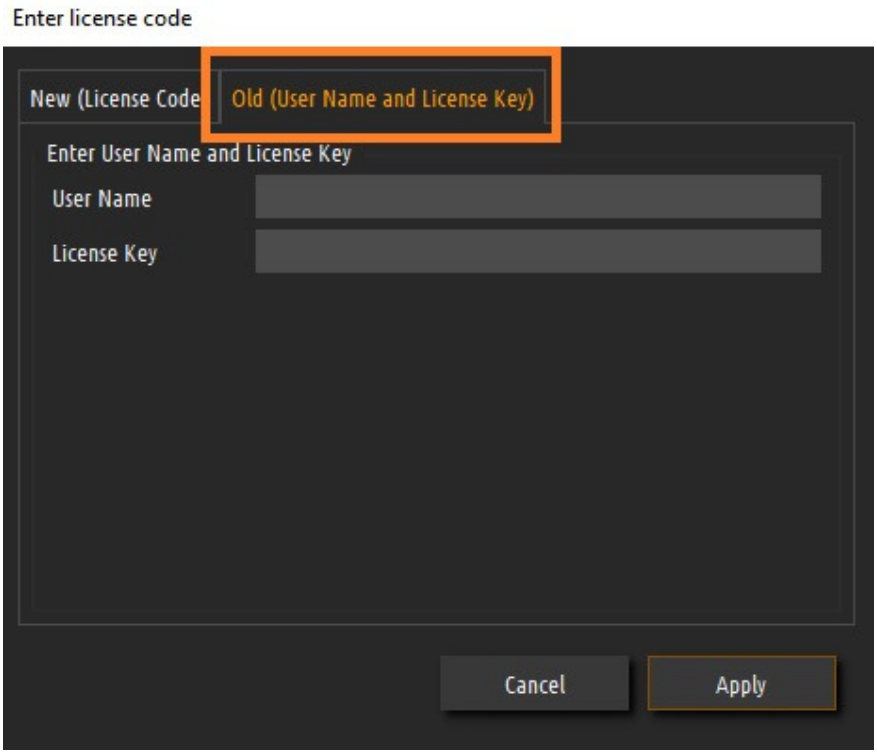
After you send us the HardwareID, we will generate the PC Locked License Code.
PC Locked License can be entered using the Software License Window and pressing the **Enter PC Locked License** button.



A new window will open to enter the license code.



Paste the license code that you received from us in the window and press Apply. The software needs to be restarted to apply the license.
If you have an “old” license with UserName and LicenseKey, select the “Old” tab.



Enter the UserName and LicenseKey. Press Apply and restart the software to apply the license.

10 License agreement

License for use and distribution of this software:
Immersive Designer PRO is "try-before-you-buy" software. This means:

- Fly Elise-ng exclusively owns all copyrights to Immersive Designer PRO.
- You may use this software for evaluation purposes without charge for 30 days. The evaluation version displays an 'Unregistered Version' text on the screen. To remove the text, you need to buy a registration key and register it with the software. You can purchase the key from our website at http://fly.elise-ng.net
- Once purchased, the user is granted a non-exclusive license to use Immersive Designer PRO on one computer (i.e. a single CPU), for any legal purpose, at a time. The licensed Immersive Designer PRO software may not be rented or leased, nor may be transferred to another person.
- You may not redistribute Immersive Designer PRO in any manner other than by linking to the Web page listed below without prior written permission.
- You may not redistribute your registration key in any manner.
- Immersive Designer PRO IS DISTRIBUTED "AS IS". NO WARRANTY OF ANY KIND IS EXPRESSED OR IMPLIED. YOU USE AT YOUR OWN RISK. THE AUTHOR WILL NOT BE LIABLE FOR DATA LOSS, DAMAGES, LOSS OF PROFITS OR ANY OTHER KIND OF LOSS WHILE USING OR MISUSING THIS SOFTWARE.
- You may not use, copy, emulate, clone, rent, lease, sell, modify, decompile, disassemble, otherwise reverse engineer, or transfer the licensed program, or any subset of the licensed program, except as provided for in this agreement. Any such unauthorized use shall result in immediate and automatic termination of this license and may result in criminal and/or civil prosecution.
- The Author reserves all rights not expressly granted here.
- Installing and using Immersive Designer PRO signifies acceptance of these terms and conditions of the license.
- If you do not agree with the terms of this license you must remove Immersive Designer PRO files from your storage devices and cease to use the product.

Thank you for using the original Immersive Designer PRO.
Web: https://fly.elise-ng.net
Email: info@elise-ng.net