DIGITAL PROJECTION

Multi Projection Simulator Professional

Software Version 1.2.3.8970

USER MANUAL

A brand of DELTA

Contents

1. Introductions

This document provides information and procedures for using the Digital Projection Multi Projection Simulator Professional (MPS-Pro) software. You can use MPS-Pro to simulate projectors installed into a scenario, using various screen shapes. The simulated projection on the screen surface includes reflections and shadows of lighting traces from the projectors, edge blending effects are also shown for the blended area on screen. The Layout Assist feature can help the user to quickly arrange the position and orientation of projectors, to cover the full surface of the designated screen.

This software allows you to:

- Setup a scenario with dimensions, ambient light environment, and reference coordinates.
- Create cameras to obtain a view of the scene. The position and orientation of the camera can be adjusted by the user.
- Create lighting to illuminate surfaces in the scene to be more stereoscopic.
- Create screen types which include Flat, Curved, Full / Half dome, Partial dome, Horseshoe, Cylinder, and Surround cave shapes.
- Users can import external 3D Models (.obj format) as a screen shape that was created in other software tools.
- Add various projectors with optional lenses to match the screen shape. The projector’s position, orientation, Lens shift and zoom (where applicable) are adjustable.
- Test patterns, including solid colors and crosshatch, can be used as the projection image of the projector.
- Keystone correction can be applied.
- Lock the projected image to the screen to fine tune the projector position.
- Create blocks to be embedded in the scenario as a basic construct for complicated objects.
- Create labels to show the names of the objects located in a scene.
- The layout assist function for regular shaped screens will automatically calculate the number of projectors necessary to cover the full surface of the screen; the position and orientation of the projectors are determined accordingly.

2. System Requirements

Windows 10 (32-bit version / 64-bit version) Home / Pro / Enterprise / Education.
Multimedia capable GPU (e.g. NVIDIA, AMD) recommended.
Minimum screen resolution is 1920x1080.

3. Quick-Start Guide

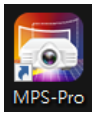
3.1 MPS-Pro software installation

The MPS-Pro (v1.2.3.8970) software can be download from Digital Projection's Website.

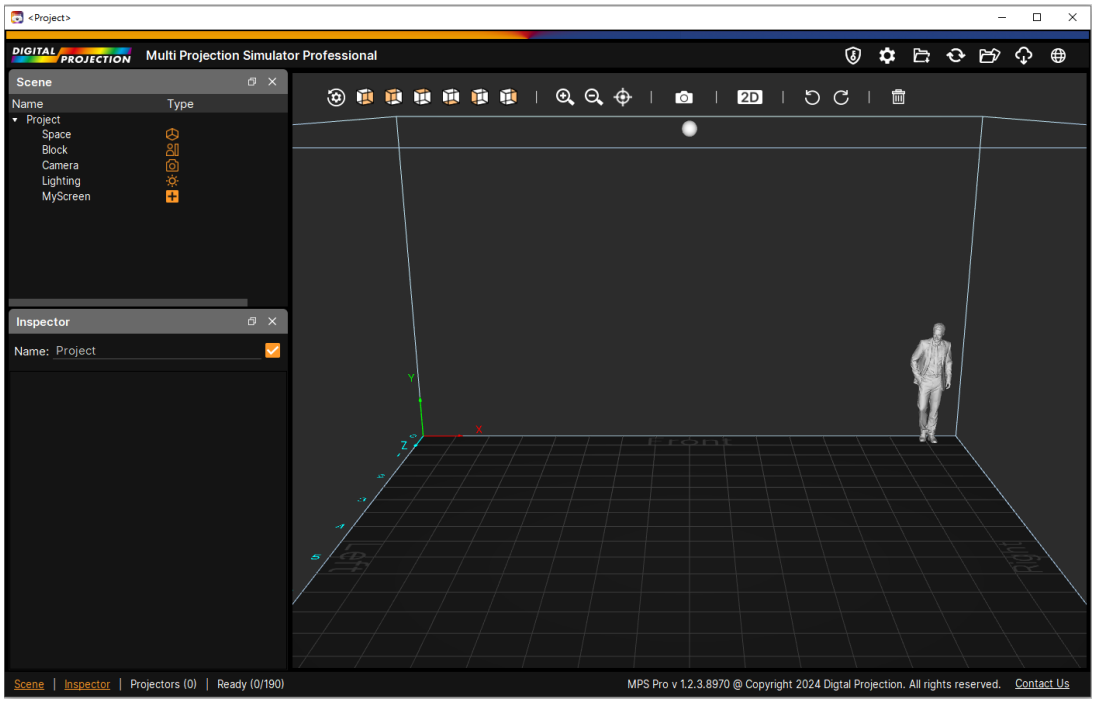
Start the installer program "DP_MPS-Pro_windows_1.2.3.8970.exe", then follow the instructions in the wizard.

3.2 Start Application

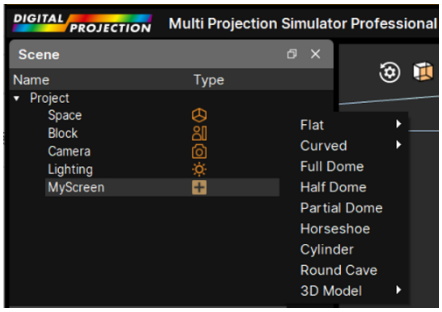
- Starting from the shortcut icon, Double-click the "MPS-Pro" icon on the desktop.



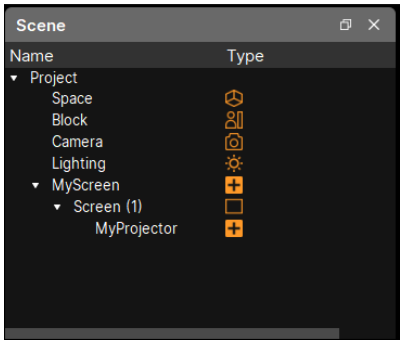
- The initial scene with a space (with a human model), camera and lighting will appear:



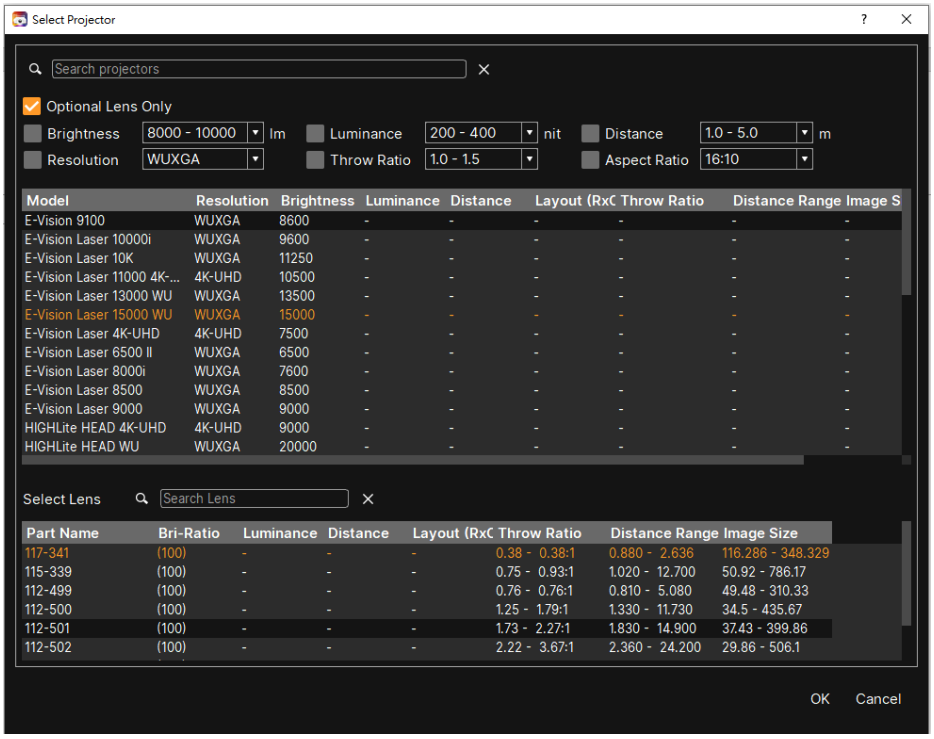
- Click the add icon  beside MyScreen, the screen selection menu will pop up to choose a screen type.



- After adding a new screen, the MyProjector item will be created automatically.

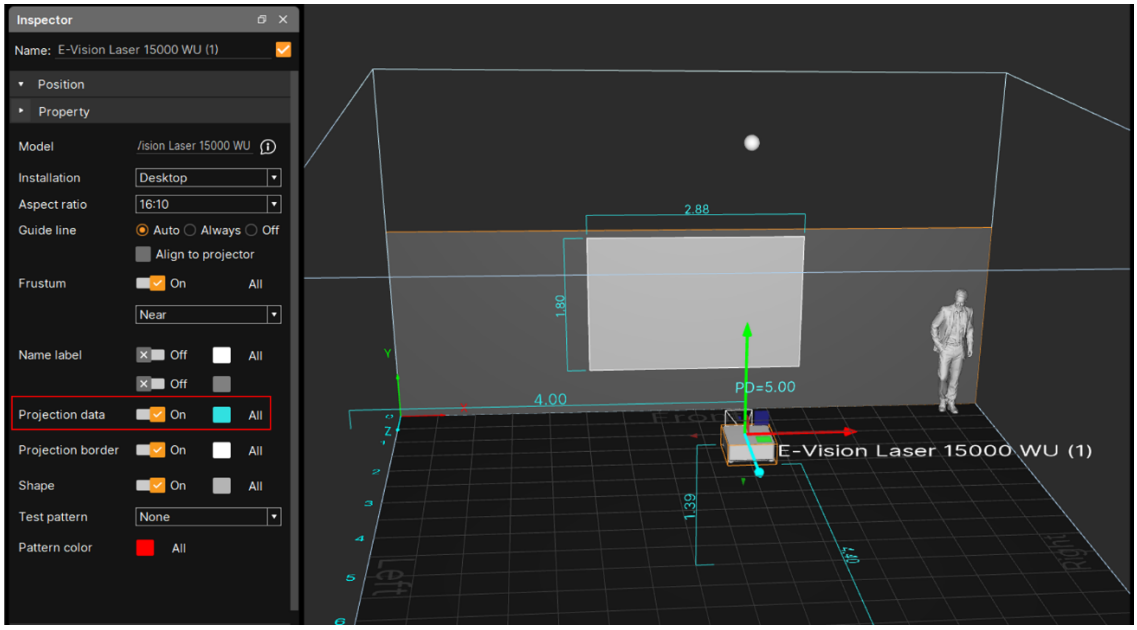


- Click the add icon  beside MyProjector, a ‘Select Projector’ dialog will pop up. Set up appropriate filter conditions at the top of this dialog, then select the required projector and lens from table below.



- Click the projector required for the scenario, then enable “Projection data” from the Inspector dock.

- Now we have a simple simulation scene including a flat screen, an E-Vision Laser 15000 WU projector with a projection size of 2.88m x 1.80m, and projection distance (PD) of 5.0m.



- Move the mouse with the Middle Button (Scroll Wheel Button) pressed, to rotate the view within the scene in pitch and yaw. Simultaneously pressing the ALT key will roll/ rotate the view.
- Move the mouse with the Right Button pressed to Pan the view of the scene.
- Use the mouse's Scroll Wheel Button to zoom in and out to view the scene.

4. Main operation window

The user interface consists of six areas: Scene rendering, Object tree, Object inspector, Projector list, Tool bar and Short cut icons.

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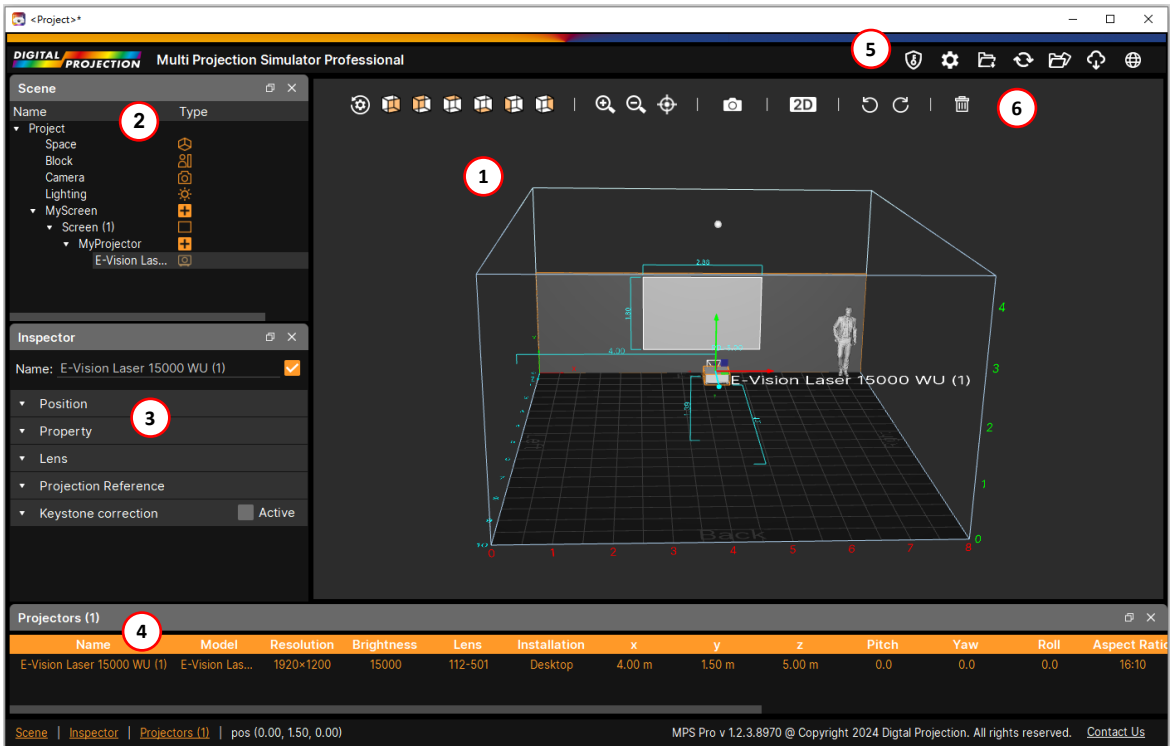


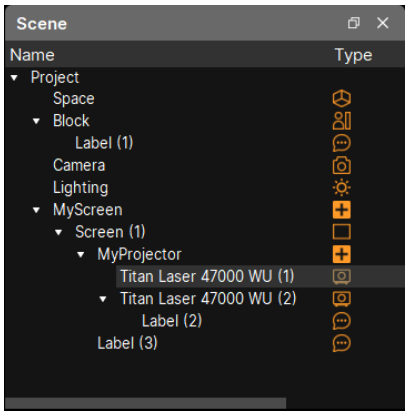
❶ Scene Rendering	3D / 2D view of the scene.
	Camera view of the scene
❷ Object Tree	Add / duplicate / rename / delete objects in the scene. Copy / paste projectors between screens.
❸ Object Inspector	Edit the parameters of an object
❹ Projector List	List all projectors in a table
❺ Toolbar	Includes the functions of the License manager, Setting, Project, Reset scene, Export to file, Update software and Languages
❻ Short cut icons	Quick change among different views, Zoom In / Out and Undo / Redo, etc.

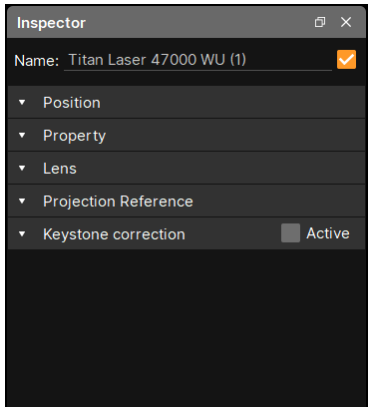
The windows of the Object Tree, Object Inspector and Projector List can be toggled On/Off by the push buttons on their status bars

5. Object Tree and Object Inspector

There are eight items in the object tree, including Scene (Project), Space, Block, Label, Camera, Lighting, Screen and Projector.

These objects are arranged in a hierarchy as shown below. A new object can be added by right clicking the mouse. Each object corresponds to its instance of an Object Inspector for setting its parameters.





Object hierarchy relationships are limited as below.

Object Class	Child allowed
Scene	Space, Camera, Lighting, Block, MyScreen
Space	Label
Camera	NA
Lighting	NA
Block	Label
Label	NA
MyScreen	Screen,
Screen	Label, MyProjector
MyProjector	Projector
Projector	Label

5.1 Space Class

Items included in the Object Inspector for Space are classified as follows.

Dimensions	Width, Height and Depth of the space
Property	Reference coordinates. Settings of this space. Auxiliary lines present on the space
Ambient	Ambient lighting selection. Custom ambient lighting illumination adjustment.
Measurement	Set up measurements. Calculates the distance between reference points.

5.2 Screen Class

Items included in the Object Inspector for Screen are classified as follows.

Position	Location and orientation of the screen
Shape	Construction parameters of the screen, including size, aspect ratio, open rate, flat ratio, etc. depending on the type of screen shape.
Property	Screen opacity, grid line, gain setting, etc.
Analyze	Measurement of brightness and depth of projection on this screen
Layout Assist	Selection of layout assist rule: by Quantity, or by Distance. Edge blend setting of layout assist Auto Collision Free.

5.3 Projector Class

Items included in the Object Inspector for Projector are classified as follows.

Position	Location and orientation of this projector
Property	Installation type, aspect ratio of this projector Model name Auxiliary line visibility control Test pattern selection for projected image
Lens	Optional lens brief and selection Lens shift / zoom setting
Projection Reference	Fine tune projector position with projection image locked, including Left/Right, Up/Down, Back/Forth directions
Keystone Correction	Horizontal and vertical keystone correction

5.4 Camera Class

Items included in the Object Inspector for Camera are classified as follows.

Position	Location and orientation of this camera
Property	Camera shape visible control FOV adjustment of this camera

5.5 Lighting Class

Items included in the Object Inspector for Lighting are classified as follows.

Position	Location and orientation of the lighting
Property	Lighting shape visible control Lighting Intensity adjustment.

5.6 Block Class

Items included in the Object Inspector for Block are classified as follows.

Position	Location and orientation of the block
Shape	Size of the block including width, height and depth.
Property	Set the color of this object, (excluding Human type block).

5.7 Label Class

Items included in the Object Inspector for Label are classified as follows.

Position	Location and orientation of this label
Shape	Font size of this label
Property	Text input to this label Colour selection, text alignment of this label.

6. Scene Rendering Windows

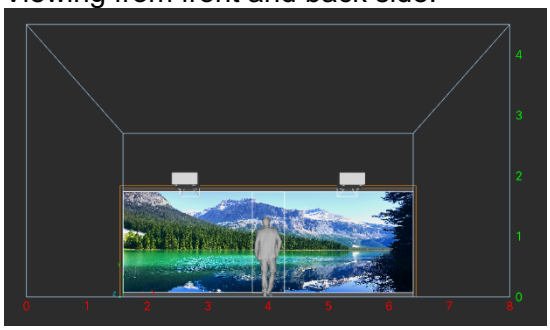
There are three ways of rendering views of the scenario in the Scene Rendering Window, including 2D, 3D and Camera views to show scene objects in various point of view.

Use the icon  to toggle between 2D and 3D rendering mode.
Use the icon  to enter the view by camera mode.

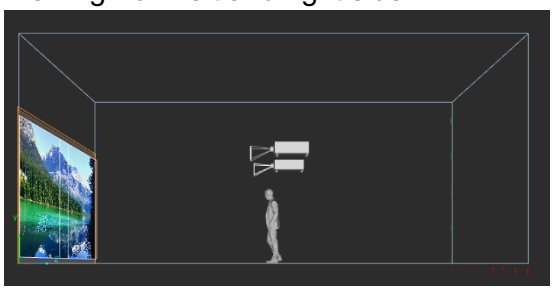
6.1 3D view

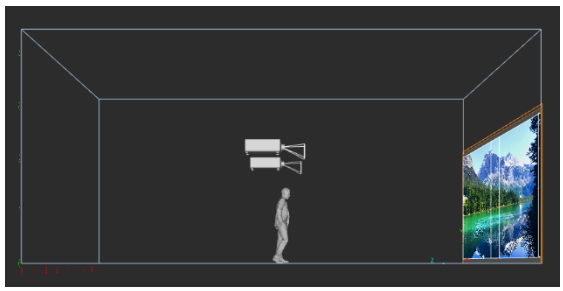
This renders the scene objects in a perspective view. Short cuts are available to check the 3D view from the front, back, top, bottom, left and right.

Viewing from front and back side:

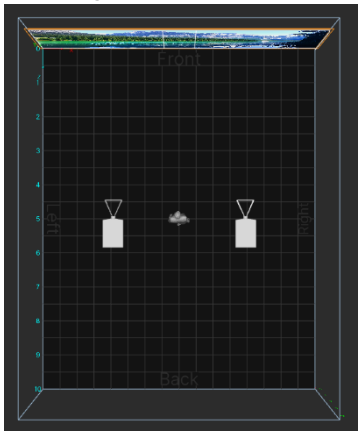


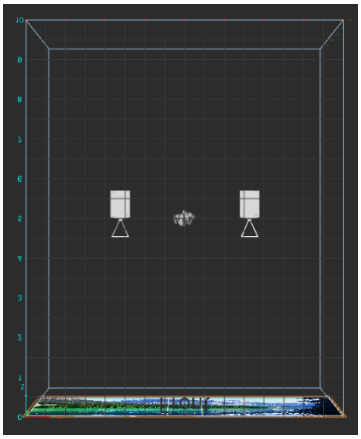
Viewing from left and right side:





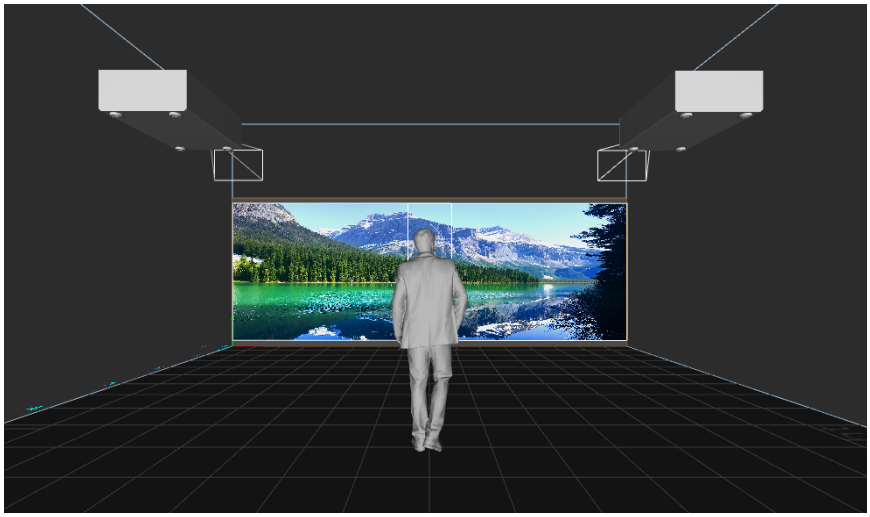
Viewing from top and bottom:





6.2 Camera view

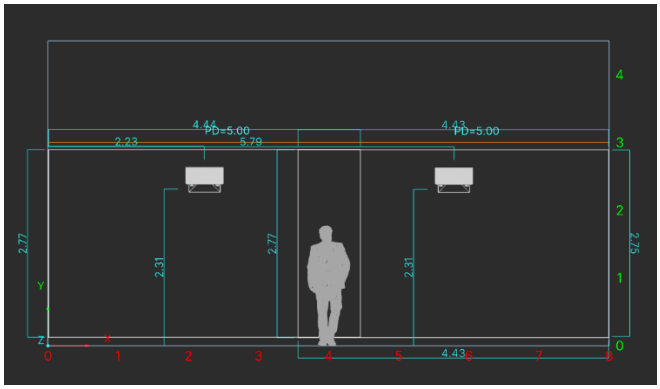
Renders the scenes objects with perspective from the selected camera’s point of view. This view simultaneously refreshes according to the movement of the camera position.



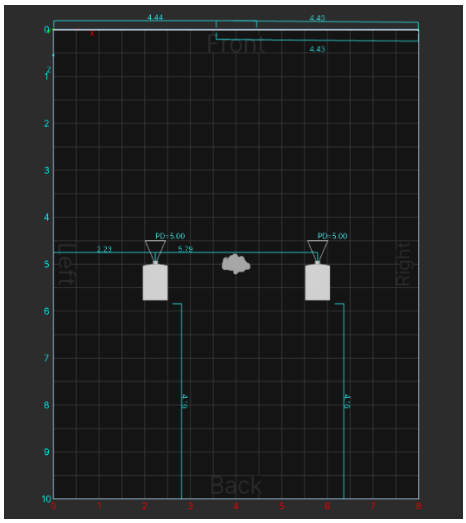
6.3 2D view

Represents the scene objects viewed in orthographic way.
Three sides are available to check as 2D views, including front, top side and left side.
Each side of the 2D view can be exported as a .DXF file to use in other CAD tools.

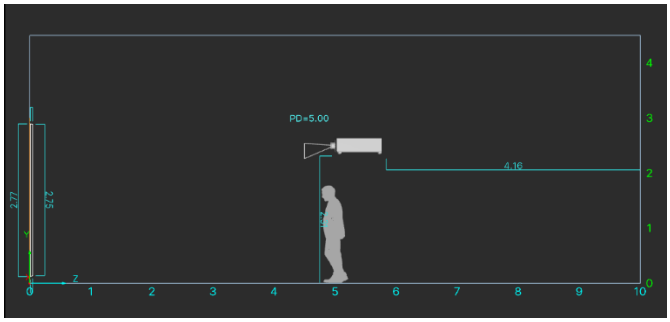
2D view Front side:



2D view Top side:



2D view Left side:



7. Layout Assist

There are two choices available for the user to utilize with layout assist: by Quantity or by Distance. Both automatically decide the number of projectors and arrange the position and orientation of projectors in an appropriate way to fully cover the screen with projection.

7.1 Layout Assist by Quantity

In this mode, the quantity of projectors plays the principal role. Please follow these steps:

Step 1: click ‘Quantity’ to switch the Layout Assist to the ‘By Quantity’ mode.

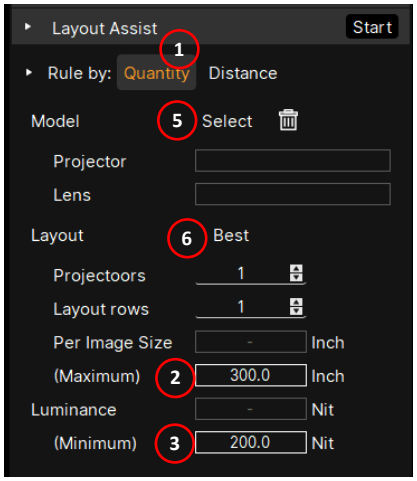
Step 2: Select the maximum image size for each projection onto the screen.

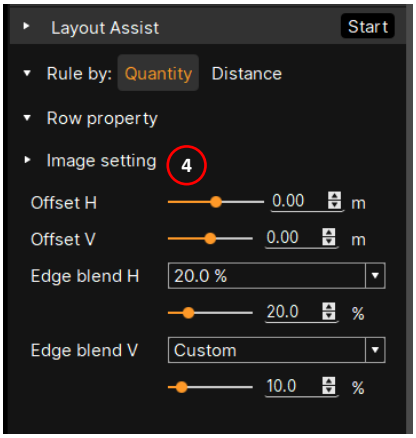
Step 3: Select the minimum required luminance of the projection.

Step 4: Expand the ‘Image Setting’ tab, to set the values of edge blending and offset.

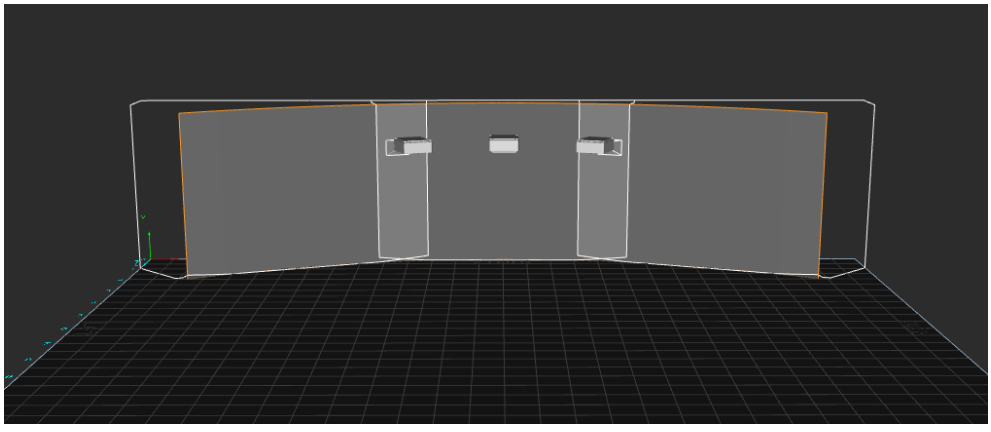
Step 5: Click ‘Select’, to select the projector model and the optional conditional filters from the ‘Select Projector’ dialog box.

Step 6: Optionally, click ‘Best’ to start the processing of the layout assistant, whenever the projectors have changed position.





After the selection of projectors or the ‘Best’ button has been selected, the software will automatically add the required projectors and arrange their position and orientation accordingly.



7.2 Layout Assist by Distance

In this mode, the projection distance of the projectors plays the principal role. Please follow these steps:

Step 1: Click ‘Distance’ to switch the Layout Assist to the ‘By Distance’ mode.

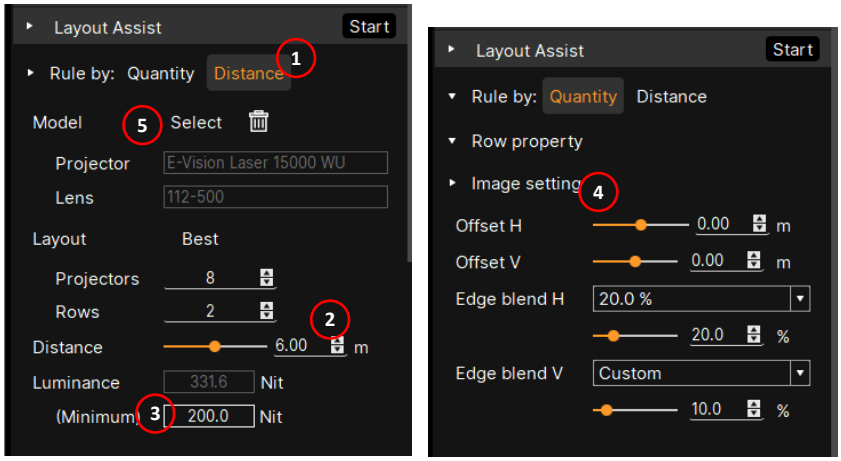
Step 2: Select the preferred projection distance of the layout.

Step 3: Select the minimum required luminance of the projection.

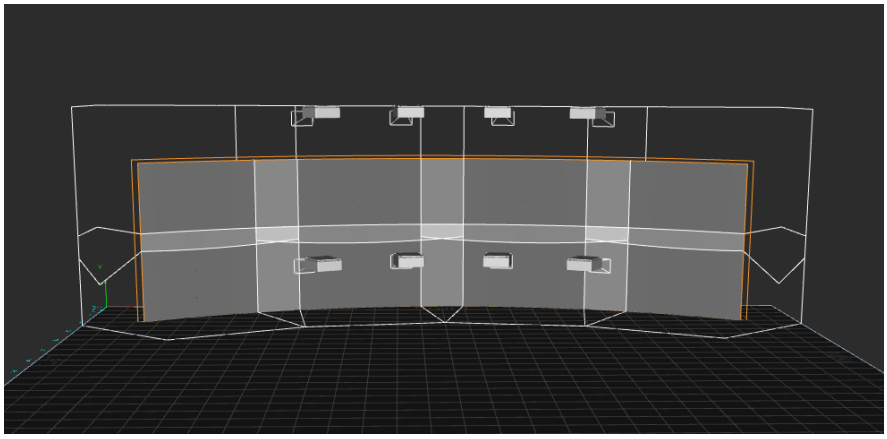
Step 4: Expand the Layout assistants ‘Image Setting’ tab, to set the values of edge blending and offset.

Step 5: Click ‘Select’, to select the projector model and the optional conditional filters from the ‘Select Projector’ dialog box.

Step 6: Click ‘Best’ to start the processing of the layout assistant.

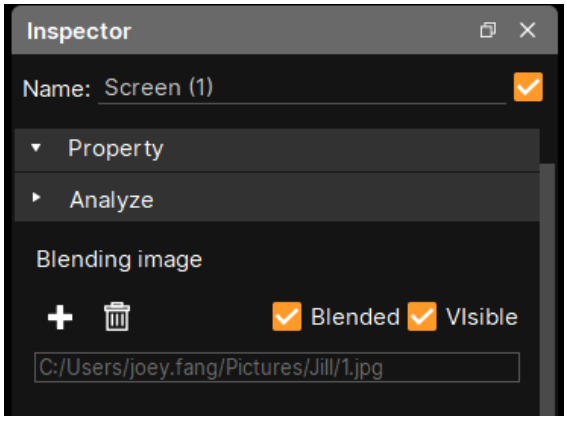


After the selection of projectors or the ‘Best’ button has been selected, the software will automatically add the required projectors and arrange their position and orientation accordingly.

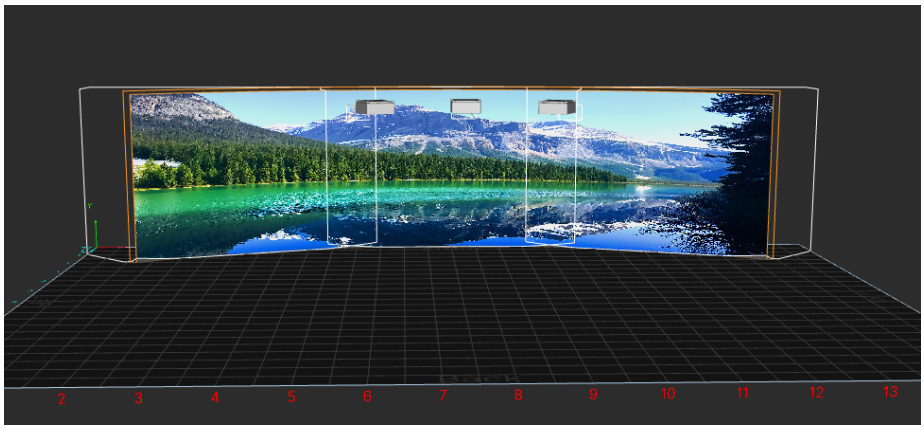


7.3 Add Blending Image

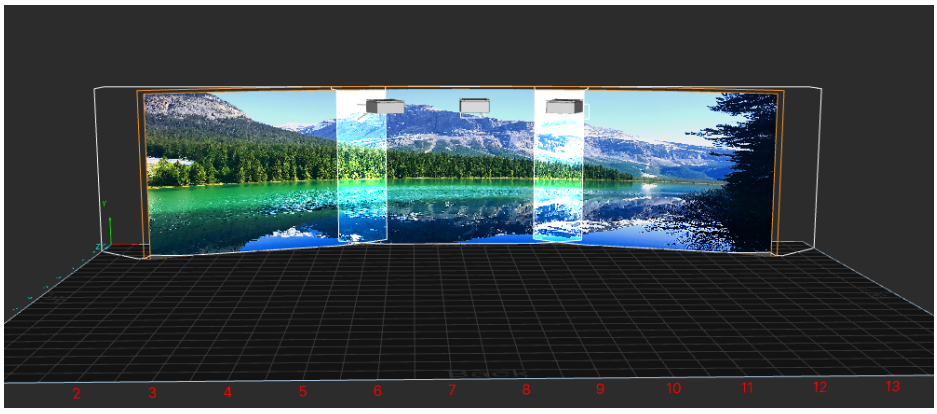
The user can import an external image or video as a texture for the projection screen from the ‘Analyze’ section of the screen object inspector



An example of a user imported image with “blending image” set to on:



An example of user input an image and “blending image” set to off:



8. **Toolbar**

The top toolbar contains project related icons which provide project design related functions, as below.

 License	License management.
 Setting	Setting length unit.
 Project	Project file management: New / Open / Save / Save As.
 Reset	Empty all objects and reset scene to an initial state.
 Export	Export scene view to .DXF file.
 OTA	Check for a new version of software to update to.
 Language	Language selection.

Contact Information

Europe

Digital Projection Limited

Unit 3 Aniseed Park,
Broadgate, Oldham,
OL9 9XA, United Kingdom

Registered in England No. 03287264
Registered Office: As Above

Tel:(+44) 161 947 3300
Fax:(+44) 161 684 7674

enquiries@digitalprojection.co.uk

service@digitalprojection.co.uk

www.digitalprojection.co.uk

North America

Digital Projection Inc.

55 Chastain Road, Suite 115,
Kennesaw, GA 30144, USA

Tel:(+1) 770 420 1350
Fax:(+1) 770 420 1360

powerinfo@digitalprojection.com

www.digitalprojection.com

China

Digital Projection China

中国 北京市 朝阳区 芍药居北里101号
世奥国际中心A座2301室
(100029)

Rm A23016, ShaoYaoJu 101 North Lane, Shi Ao International Center, Chaoyang District, Beijing 100029, PR CHINA

Tel:(+86) 10 84888566
Fax:(+86) 10 84888566-805

techsupport@dp-china.com.cn

www.dp-china.com.cn

India

Digital Projection India

Plot-43, Sector-35, HSIIDC,
urgaon Haryana -122001

Tel: +91-124-4874900#4275

india@digitalprojection.co.uk

Japan

Digital Projection Japan

〒105-0012 東京都港区芝大門2-1-14

2-1-14 Shibadaimon, Minato-ku, Tokyo, Japan 105-0012

japan@digitalprojection.co.uk

www.digitalprojection.com/jp

Taiwan

Digital Projection Taiwan

186 Ruey Kuang Rd, Neihu District, Taipei, 114 Taiwan

Tel: +886-8797-2088 x8854

Taiwan@digitalprojection.co.uk

Korea

Digital Projection Korea

대한민국 서울 금천구 가산디지털1로 219, 벽산 디지털 밸리 6차 1511

1511, Byucksan Digital Valley 6-cha, 219 Gasan Digital 1-ro, Geumcheon-gu, Seoul, Korea

Tel: (+82) 2 515 5303 #1225

Korea@digitalprojection.co.uk

www.digitalprojection.com/ko