

User Manual

Eyecad VR Studio

ENGLISH

INDEX

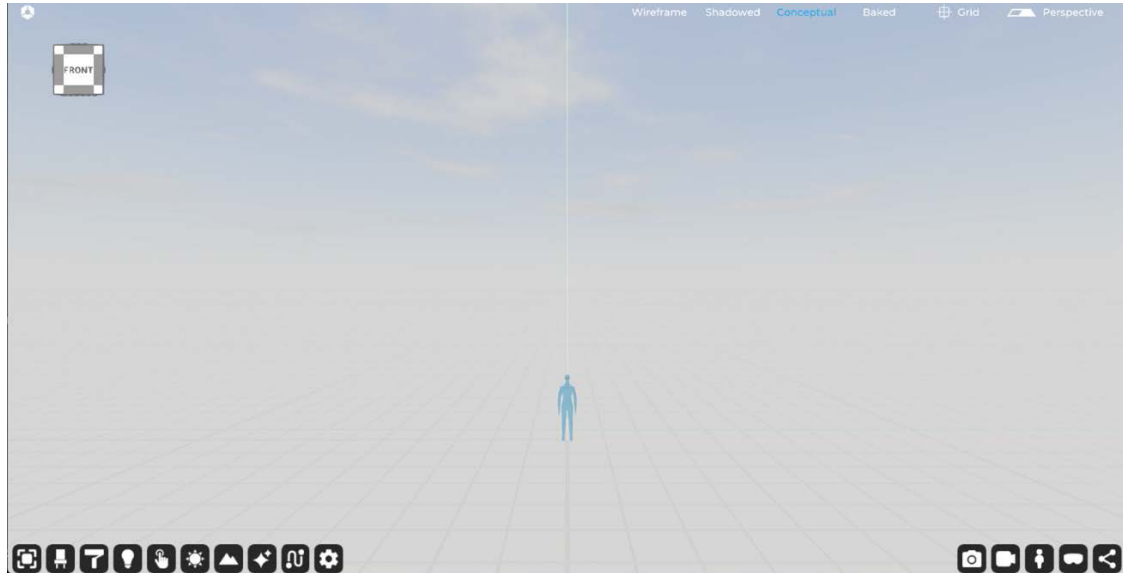
1. <u>User interface and visualization styles</u>	4
2. <u>Importing 3D objects</u>	26
3. <u>PBR material creation</u>	31
4. <u>Light sources setting up</u>	38
5. <u>Interactions</u>	45
6. <u>Environment</u>	54
7. <u>Landscape creation</u>	62
8. <u>3D visual effects</u>	79
9. <u>Animations, 3D People, 3D Cars and more</u>	86
10. <u>General settings</u>	92
11. <u>Creating Rendering, still images</u>	96
12. <u>Creating video animations, video maker</u>	101
13. <u>Real-time project exploration</u>	107
14. <u>Project Sharing (Eyecad 360 and Web Viewer)</u>	113
15. <u>Rendering Engine (Light-Baking)</u>	120

Chapter 1

User interface and visualization styles

01- User interface and visualization styles

The user interface of Eyecad VR Studio is divided into 15 TABs (areas organized by functionality) and 4 types of visualization styles.



1.1 Modify

The 'Modify' TAB allows you to interact through the three fundamental transformers of any 3D software, in addition to the 'Path' modifier that allows you to create multiple instances of the same object according to a path established by the user. The three modifiers are articulated in commands."



Move

The "Move" command allows you to modify the position of an object in the scene by varying the x, y, z coordinates of its center (pivot). The selection of the command activates a gizmo (x, y, z) that is used to perform precision control associated with one or more reference axes. The "Move" command allows you to set a displacement by modifying the reference coordinates in "Absolute" or "Relative" mode.

01- User interface and visualization styles



Rotate

The “Rotate” command allows you to change the rotation of an object in the scene. Selecting the command activates a gizmo (x, y, z) that you used to perform precise control of the effects of rotation on a single axis. You can also enter a numerical value equivalent to the rotation angle.



Scale

The “Scale” command allows you to change the scaling of an object in the scene. Selecting the command activates a gizmo (x, y, z) that is used to perform precise control of the effects of resizing on a single axis. Using the unique XYZ function, scaling occurs uniformly based on the three reference axes, and it is possible to keep the proportions of the object unchanged regardless of its final size.



01- User interface and visualization styles

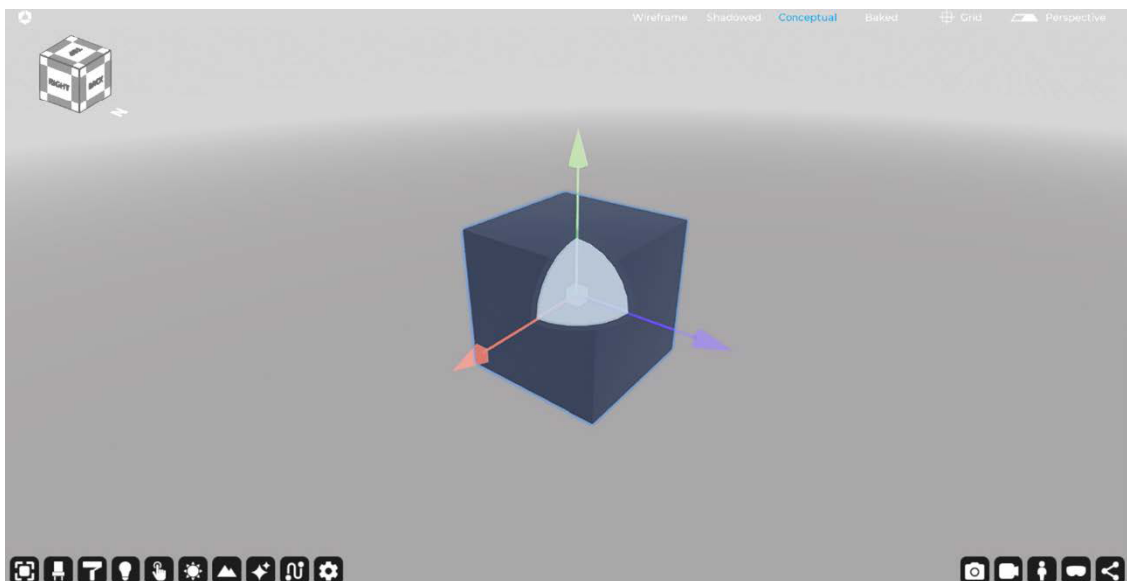
Path

The “Path” command allows you to create multiple instances of an object in the scene. Selecting the command activates “path drawing,” and thanks to it you can create a path point by point. Once the paths have been created, you can configure it.



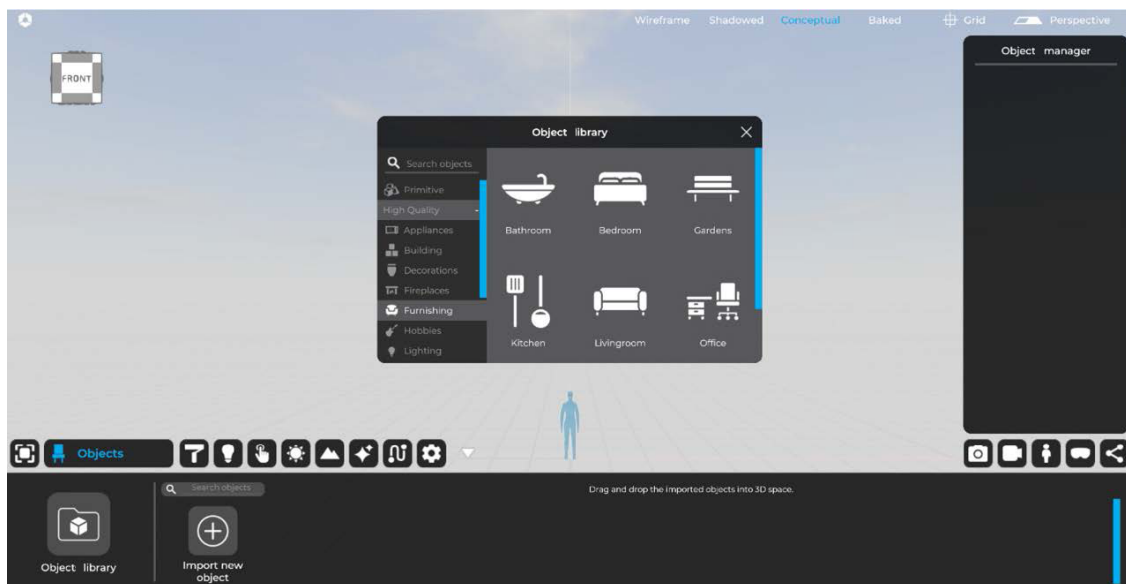
Gizmo

The “Gizmo” is a reproduction of the Cartesian axis system, proper to an object, idealized and centered on the pivot of each 3D object present within the 3D scene of Eyecad VR Studio. It allows you to change the 3 most important spatial properties of an object graphically and immediately. By selecting one of the axes (X, Y, Z) or their rotation/pan angles choosing from the outset the pair of axes on which to intervene (e.g. XY, YZ, ZX).



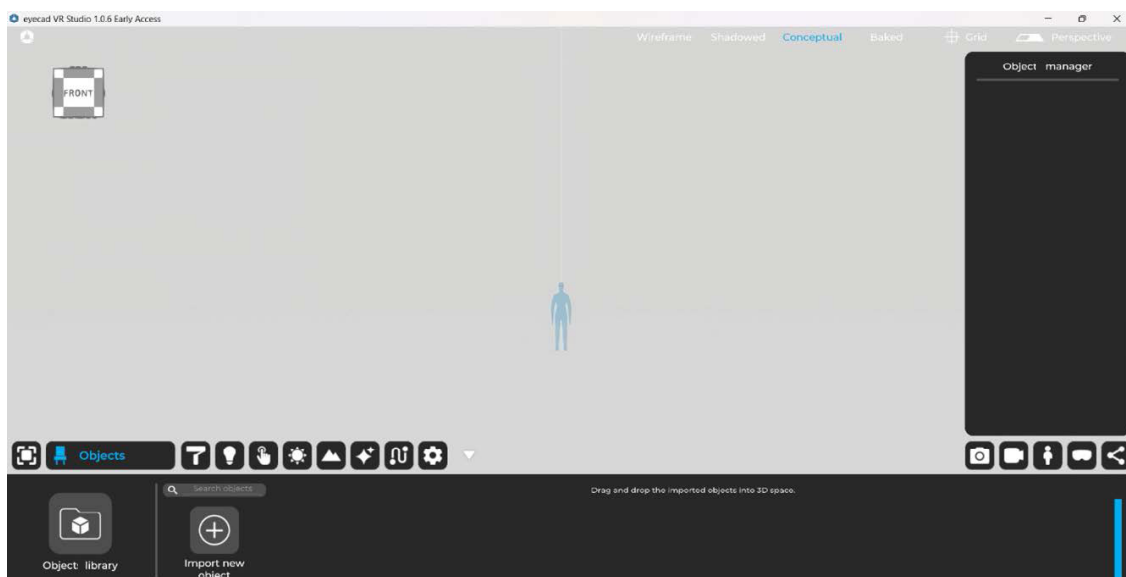
1.2 Objects

The Eyecad VR Studio 3D object library consists of a sliding menu that can be used to choose the type of object, with the ability to insert them into the current project.



All objects loaded in the current project are summarized in the “Objects” TAB, located to the right of the “Object Library” button, where you can add them within the scene through a drag-and-drop selection operation (from the UI to the 3D grid).

On the left side of the “Objects” TAB, you can open the Eyecad VR Studio Object Library, which currently has over 2,000 3D objects optimized and organized by categories to make it easier to fill each project.



01- User interface and visualization styles

1.2.1 Import new object

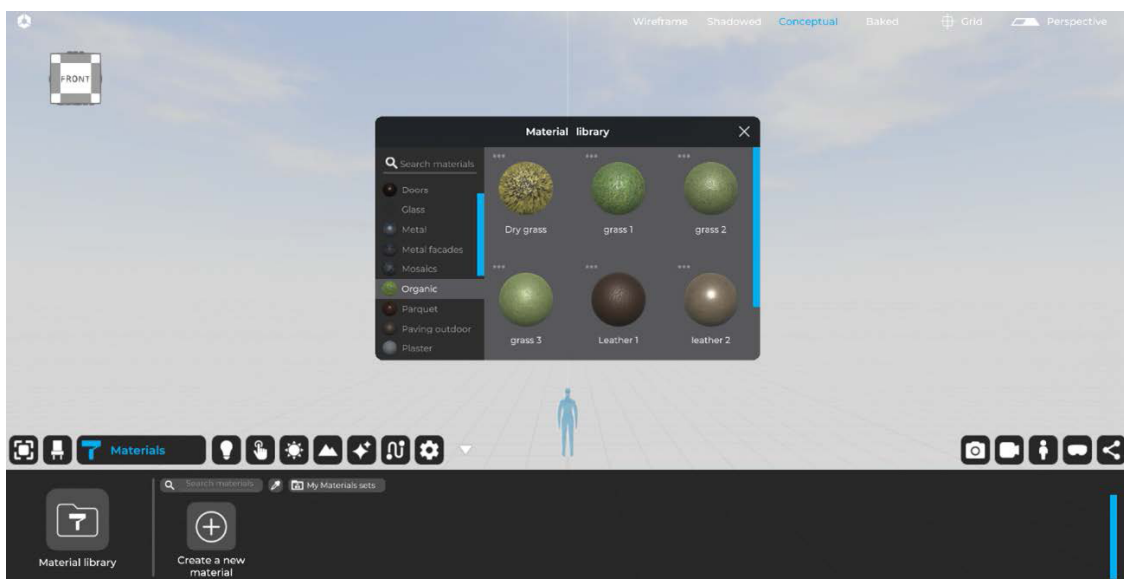
The “Import New Object” command allows you to add within your project any type of object (3D model) that is not included in the software’s proprietary libraries. You can import files with the following formats:

- Autodesk (.fbx)
- 3ds Max (.3ds)
- Collada (.DAE)
- Object (.obj)
- SketchUp (.Skp)

For a detailed overview on this topic, see the dedicated chapter of this manual (Ch. 2).

1.3 Materials

The “Materials” tab allows you to manage the Eyecad VR Studio library of PBR materials and those defined directly by the user, which can be managed in the dedicated area.



1.3.1 Personal Materials

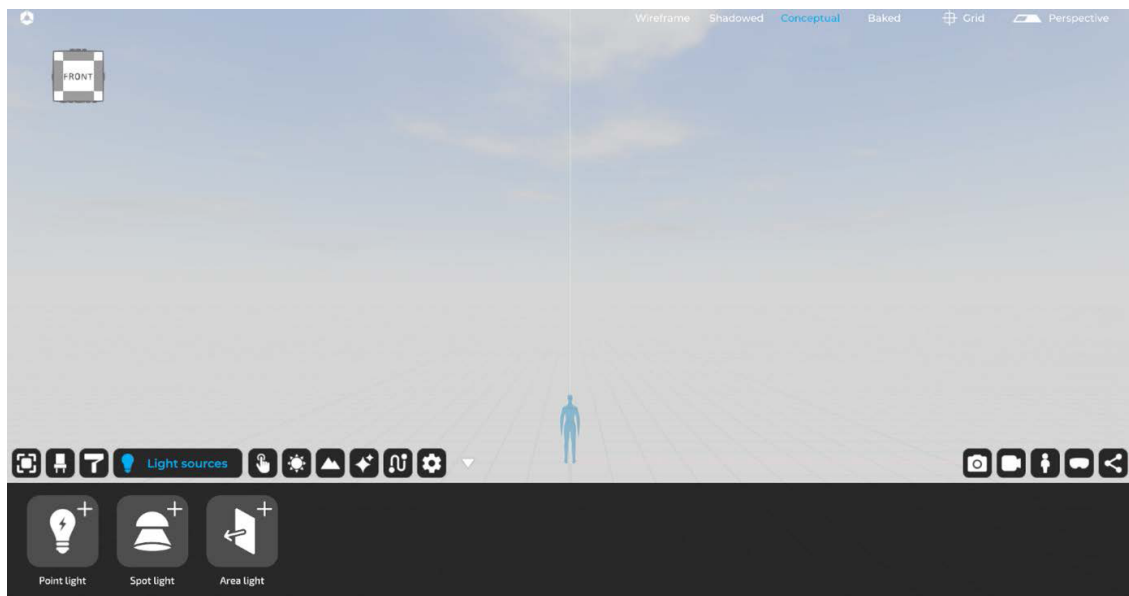
The “Personal Materials” area, being provided with editing functions, allows you to create and customize all aspects of your Eyecad VR Studio materials. To create a new material in the current project, you can click on the “Create New Material” icon, which opens the Eyecad VR material editor on the right.

For a detailed overview on this topic, see the dedicated chapter of this manual (Ch. 3).

1.4 Light sources

The “Light Sources” TAB allows you to choose from a few types of artificial lights:

- Point light
- Spot light
- Area light (Sky portal or Artificial Area light)



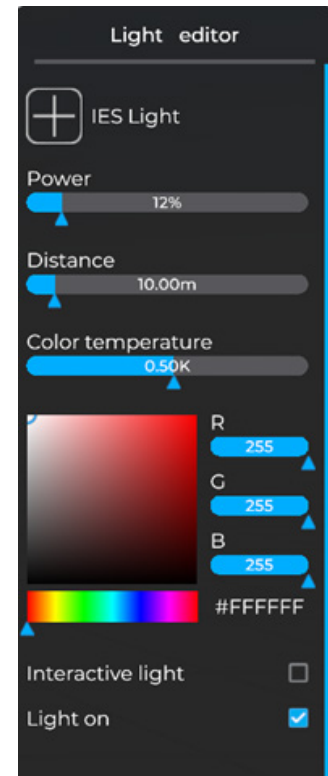
To insert them into the current project, you can drag them from the menu into the scene on the grid, where you can change their position and parameters, via the context menu that is activated by selecting one of the lights in the scene.

For a detailed overview on this topic, see the dedicated chapter of this manual (Ch. 4).

1.4.1 Point light

Point light is an omnidirectional light source that can be changed by the following parameters and settings:

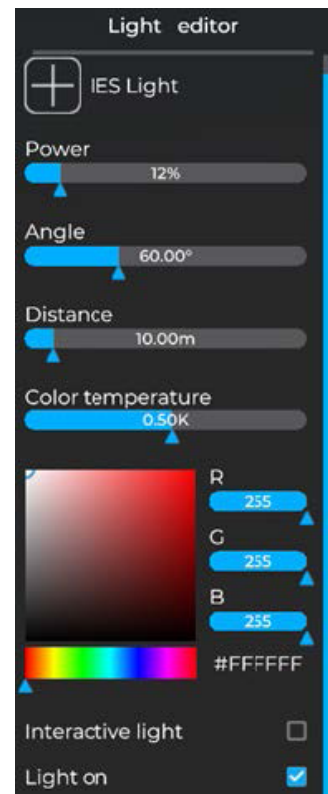
- IES Light
- Power
- Distance
- Color temperature
- Interactive light



1.4.2 Spot-light

Spot-light is a light source with a precise direction with a conical projection that can be changed through the following parameters and settings:

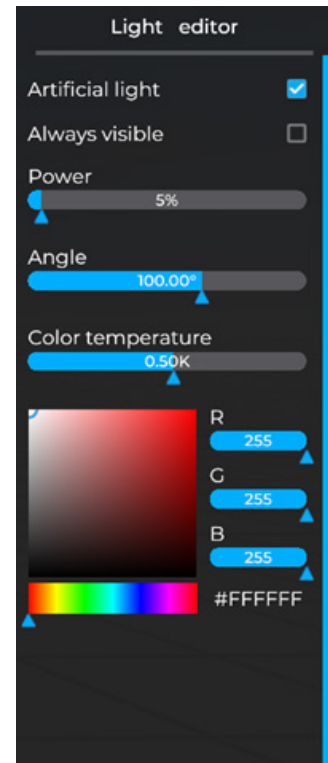
- IES Light
- Power
- Angle
- Distance
- Color temperature
- Interactive light



1.4.3 Real-time Area-light

The Area-Light is a kind of Sky-portal used to help the lighting setup of interiors. Its function is to project the ambient light component present in the scene. It is effective only in the direction of the vector arrow represented on the plane. The Area-Light can be configured in the plan dimensions (width and height) and is usually placed immediately inside the openings of the planned interiors. Within the area-light editor, the following parameters can be set:

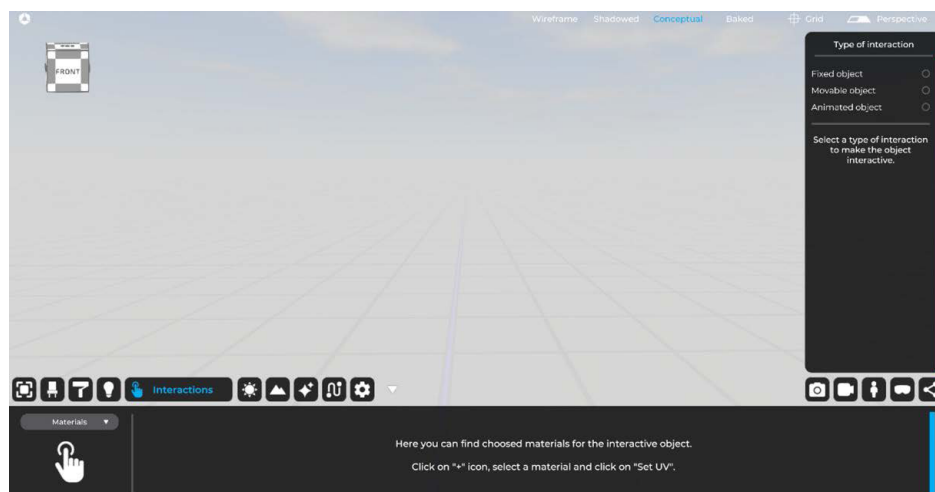
- Artificial Light
- Always visible
- Power
- Angle
- Color temperature



1.5 Interactions

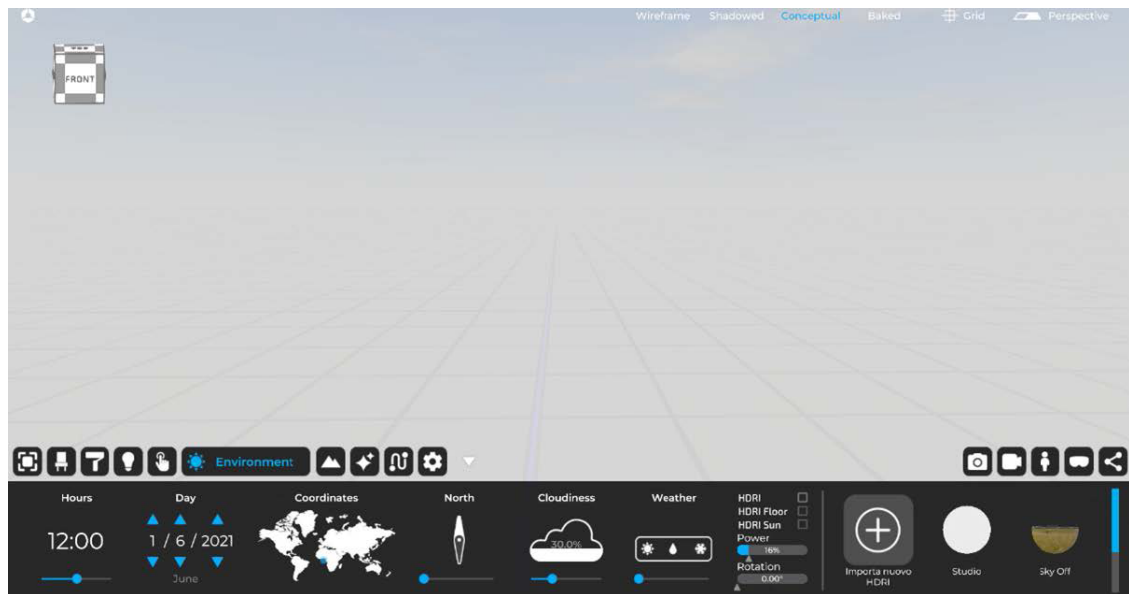
The “Interactions” tab allows you to make objects in the scene interactive and is divided mainly into 3 major macro areas, visible on the menu on the left side of the TAB:

- Materials;
- Info;
- Object variants;



1.6 Environment

The “Environment” tab allows you to set configuration parameters related to the light conditions and ambient visibility of the current project, as well as set the background and geolocate the scene.



The “Environment” tab is divided into the following configuration submenus:

- Hours
- Day
- Coordinates
- North
- Cloudiness
- Weather
- HDRI settings

1.6.1 Hours

The “Hours” function allows you to configure the time of day while simultaneously changing the position of the sun in the scene. This function is related to the “Day” function.

1.6.2 Day

The “Day” function allows you to set the current date of the project while simultaneously changing the position of the sun in the scene. This function is related to the “Hours” function.

1.6.3 Coordinates

The “Coordinates” function allows you to set earth coordinates and geo-locate (optionally) the project. This function is related to the “Time” and “Day” functions and allows you to define the location of the project on a given point on the earth’s surface.

1.6.4 North

The “North” function allows you to set the position of the geographic north, through which Eyecad VR is able to automatically determine the sunrise-sunset path, and to accurately determine its position in relation to the “Hours” , “Day” and “Coordinates” functions.

1.6.5 Cloudiness

The “Cloudiness” function determines the amount of clouds in the project sky. Clouds are generated parametrically and affect the overall shading of the scene. It is indicated in percentage terms (%).

1.6.6 Weather

It is indicated as a percentage, determines the amount and type of precipitation that will affect the 3D scene.

1.6.7 HDRI

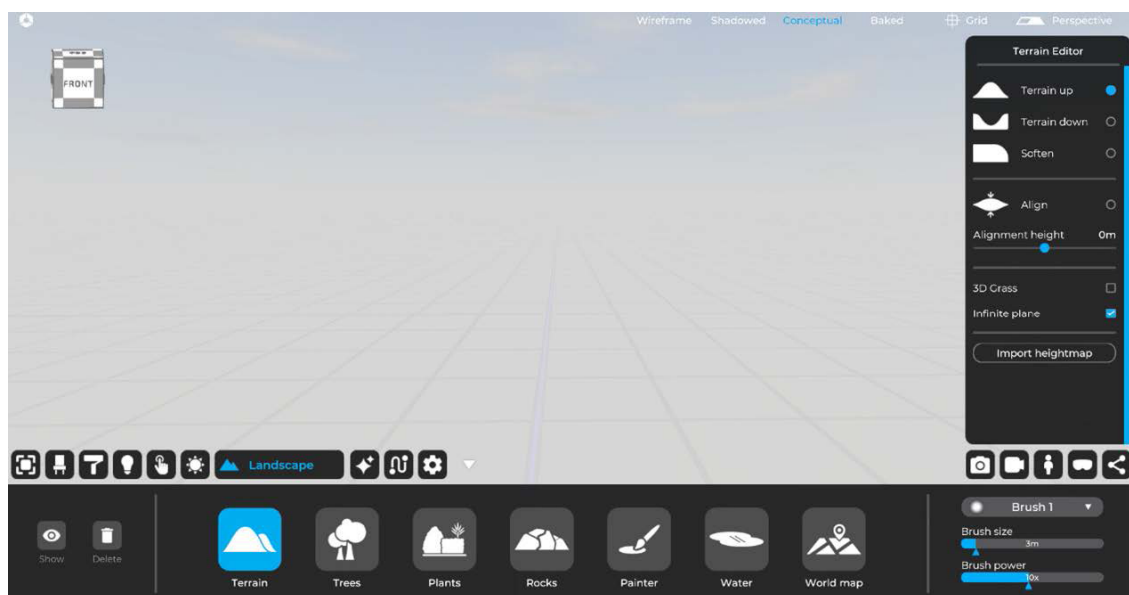
The “HDRI” function allows the background of the scene to be set through the use of an HDRI 360 image, which can be configured in the following aspects:

- HDRI: defines whether the HDRI image should be enabled or disabled.
- HDRI Floor: defines a virtual floor automatically generated by the HDRI.
- HDRI Sun: allows the virtual sun of Eyecad VR to be centered with the sun of the HDRI image.
- Power: controls the amount of light emitted by the image itself. It has influence on surfaces and the environment in general.
- Rotation: defines the rotation angle of the HDRI image with reference to the vertical axis (indicated in GREEN) of the 3D scene in Eyecad VR.

For a detailed overview on this topic, see the dedicated chapter of this manual (Ch. 6).

1.7 Landscape

The “Landscape” tab allows you to create and edit the natural or artificial landscape elements of the project, such as terrain, trees, plants and much more. To activate the terrain editing commands, simply click on the “Show” button on the “Landscape” tab.



For a detailed overview of the types and options for landscape editing in Eyecad VR, see the dedicated chapter of this manual (Ch. 7).

01- User interface and visualization styles

1.7.1 Terrain

The “terrain” function allows you to use organic modeling tools to recreate the environment around the scene design, specifically:

- Terrain up: allows you to raise the terrain in the portion of the edit area.
- Terrain down: allows you to lower the terrain in the portion of the edit area.
- Soften: makes the terrain more uniform, natural and soft, dampening angular points and accentuated disconnections in the edit area.
- Align: brings to a single dimension in the brush area of the selected surface.
- 3D Grass: creates a realistic low 3D vegetation with the dynamism of wind movement that adds further realism to the scene.

1.7.2 Trees

The “Trees” function allows to create and modify the vegetation of the scene.

1.7.3 Plants

It allows to insert plants on the project

1.7.4 Rocks

It allows to insert rocks on the project

1.7.5 Painter

The “Painter” allows you to modify areas of the terrain by assigning specific materials at the point indicated by “3D painting.”

1.7.6 Water

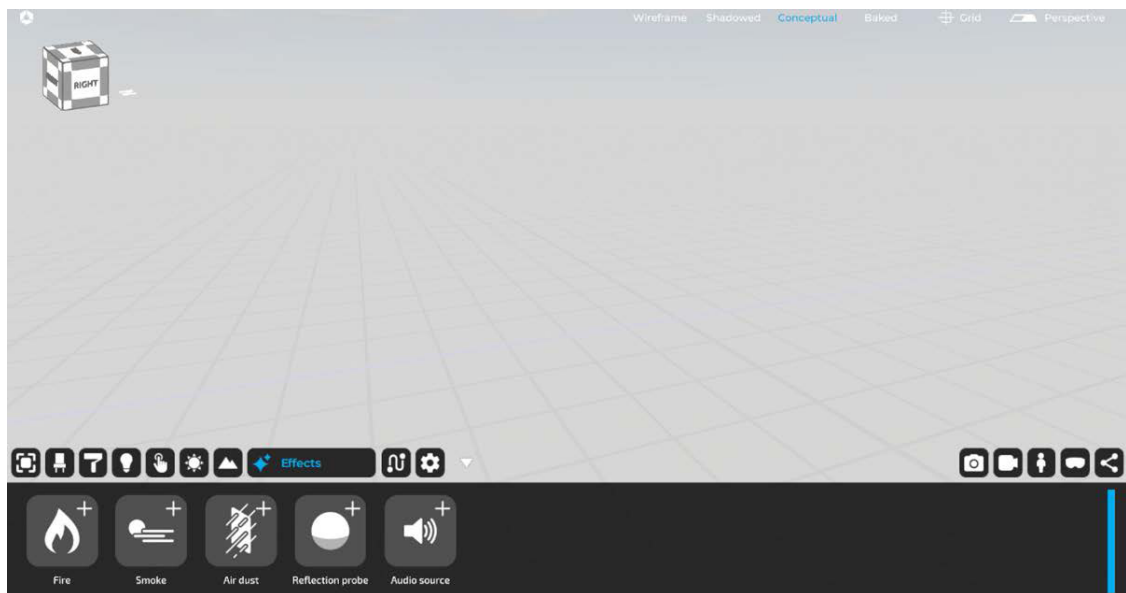
You can activate and choose the type of water to be used to highlight different soil characteristics according to your needs.

1.7.7 World map

Generates a ground relief map of a specific geographic area (Open Street Map + Digital Elevation Map).

1.8 Effects

This tab allows you to insert various visual effects (animated and not -animated) that make the project more realistic.



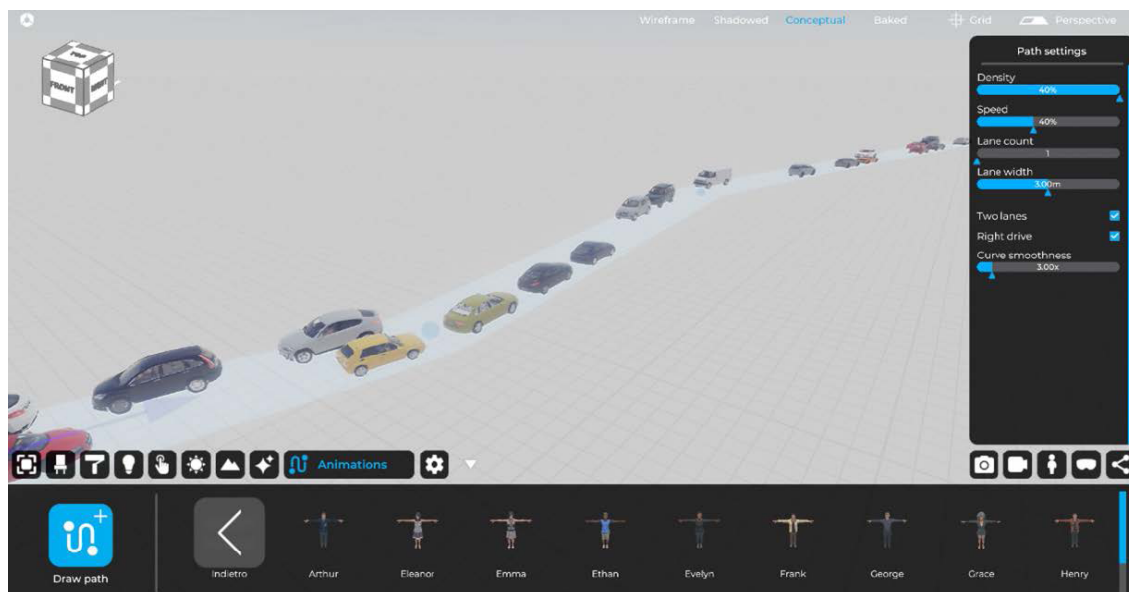
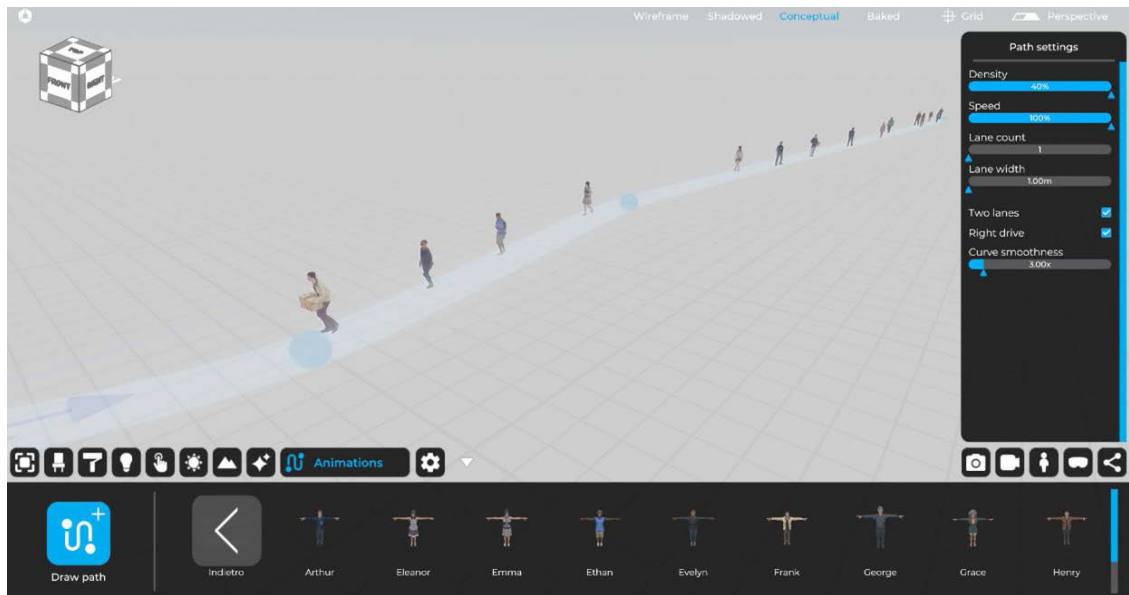
Some of the effects available are:

- **Fire:** a 3D animation that generates the effect of a chimney fire.
- **Smoke:** a 3D animation that generates the haze effect (or fog banks) for the outdoor environment.
- **Dust:** allows you to create an indoor area filled with dust that, when hit by sunlight, generates the effect of volumetric lights.
- **Reflection probe:** The reflection probe is a component for enhancing the reflections of a specific space and acts within the (editable) box that delimits it.
- **Sound Source:** The sound source allows audio files to be added to the scene, audible during user exploration, and can be activated by dragging the “Sound Source” icon from the bottom bar of the “Effects” TAB to the 3D scene.

For a detailed overview on this topic, see the dedicated chapter of this manual (Ch. 8).

1.9 Animations

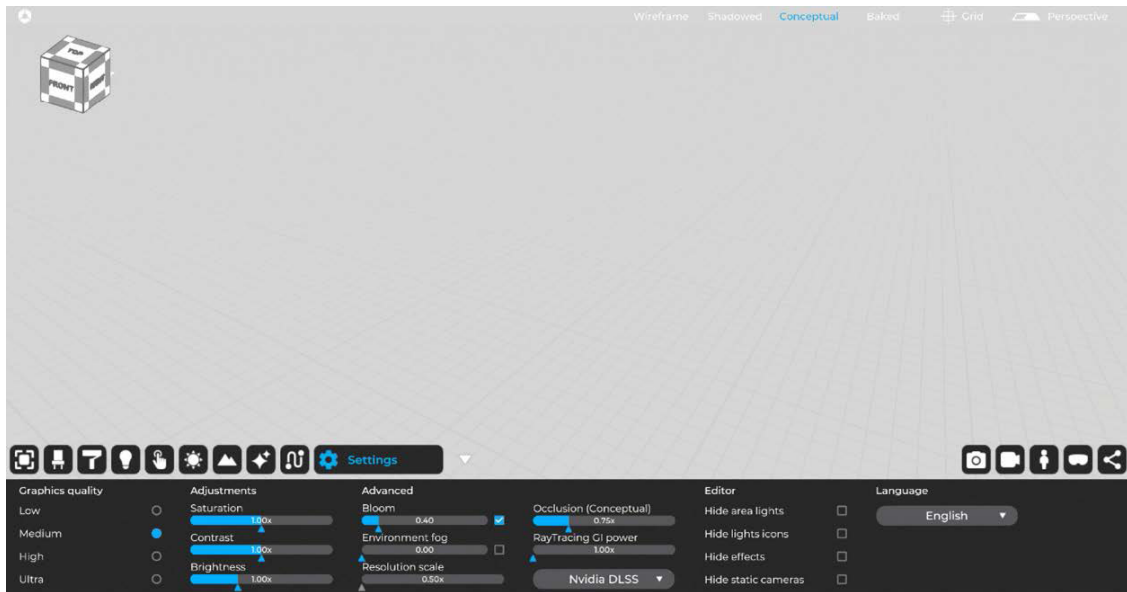
This board is designed to create animated 3D paths of people and vehicles.



For a detailed overview on this topic, see the dedicated chapter of this manual (Ch. 9).

1.10 Settings

This tab allows you to act on various scene display parameters such as lighting effects, resolution scaling, and other settings such as language, graphics quality, and overall image adjustments.



1.10.1 Graphics quality

Allows you to choose the overall graphics quality of the project by automatically acting on the quality of post-process effects, quality of light, shadows and reflections:

- Low;
- Medium;
- High;
- Ultra;

1.10.2 Adjustments

It allows to adjust various parameters such as:

- Saturation;
- Contrast;
- Brightness;

1.10.3 Advanced

This TAB comprehends all settings that affect the amount of lighting effects, resolution scale, and power of global illumination for the rendering engine.

-Bloom: is an effect used in Computer Graphics with high dynamic range (HDR) rendering to reproduce an artifact of real-world camera images. The effect produces a glow of light that extends from the edges of bright areas of an image, contributing to the illusion of extremely bright light that overwhelms the camera or the eye capturing the scene;

-Environment fog: is the ambient fog effect of the whole scene (it reaches to the horizon);

-Resolution scale: It handles the resolution and details of the image. For PCs that are not particularly powerful, it is not recommended to increase the value of this parameter unless you have the latest generation GPUs (RTX 30xx/40xx series). This parameter cooperates closely with the Nvidia DLSS algorithm.

-Occlusion (Conceptual): It defines the general screen-space occlusion intensity in the 3D scene (it works in Conceptual mode only).

-GI Power: Defines the global illumination intensity of the 3D scene

-Nvidia DLSS/T-Anti Aliasing: Anti-aliasing softens lines by smoothing edges and improving image quality. Nvidia DLSS (Deep Learning Super Sampling) on the other hand, is a technology developed by NVIDIA that captures a low-resolution image and then uses AI to generate a series of varied sampling to then select the best ones to use as a reference to produce a higher-resolution image.

1.10.4 Editor

Settings that allow certain elements in the editor to be hidden so as not to disturb the user when setting up the project, specifically:

-Hide area lights: it hides the emitting surface but not the emitted light.

-Hide lights icons: it hides the icons indicating the presence of lights in the space.

-Hide effects: it hides the parallelepiped from view but not from effect.

-Hide static camera: It hides the cameras created within the project.

01- User interface and visualization styles

1.10.5 Language

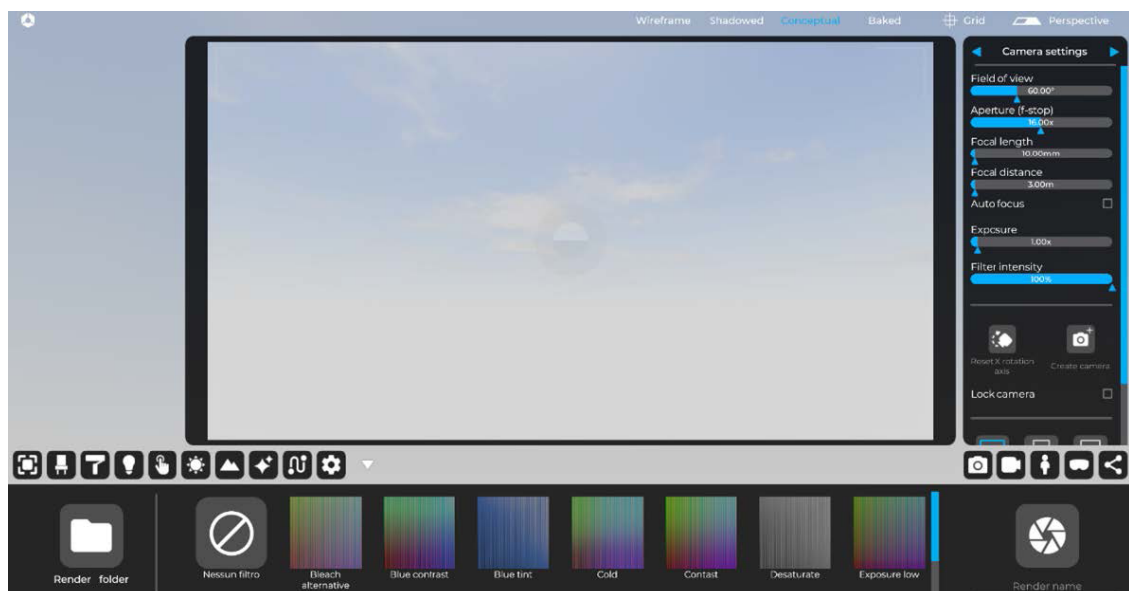
It allows different languages to be set for the software user interface:

- English;
- Italian;
- French;
- Polish;
- Czech;

For a detailed overview on this topic, see the dedicated chapter of this manual (Ch. 10).

1.11 Creating renderings: still images

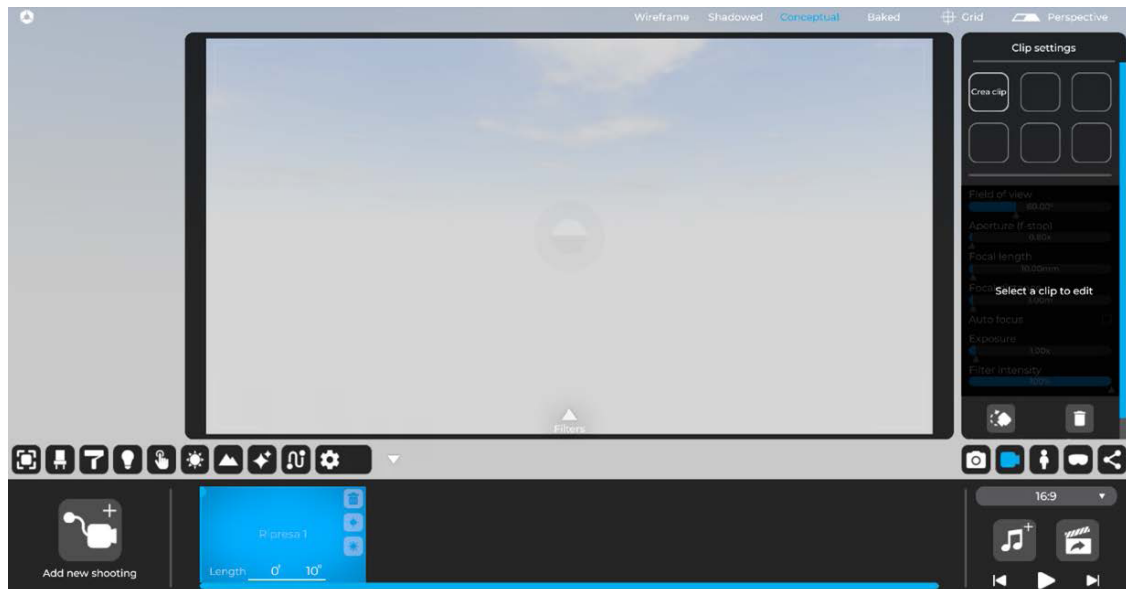
This TAB allows you to create professional renderings of your 3D projects in minutes in different rendering modes: Conceptual and Baked.



For a detailed overview on this topic, see the dedicated chapter of this manual (Ch. 11).

1.12 Creating video animations: video maker mode

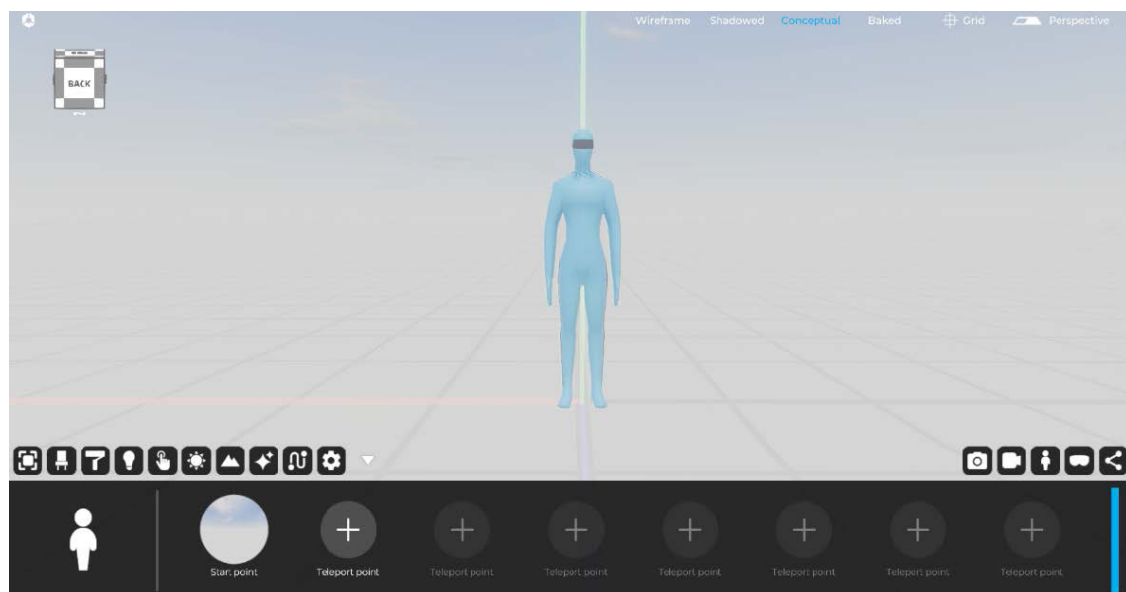
This TAB allows you to create professional animated videos in minutes with the most important camera settings on a clip-by-clip approach.



For a detailed overview on this topic, see the dedicated chapter of this manual (Ch. 12).

1.13 Avatar positioning (Eddie)

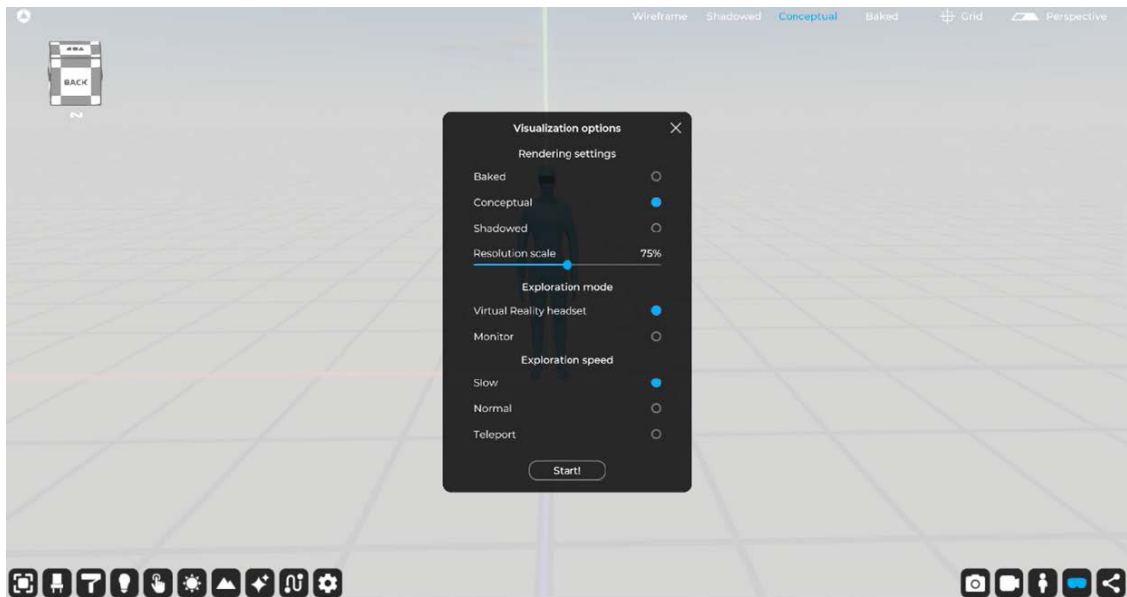
This tab allows you to set the initial position for real-time exploration (via monitors or VR viewers).



For a detailed overview of the topic, see the dedicated chapter of this manual (Ch. 13).

1.14 Real-time project exploration: visualization settings

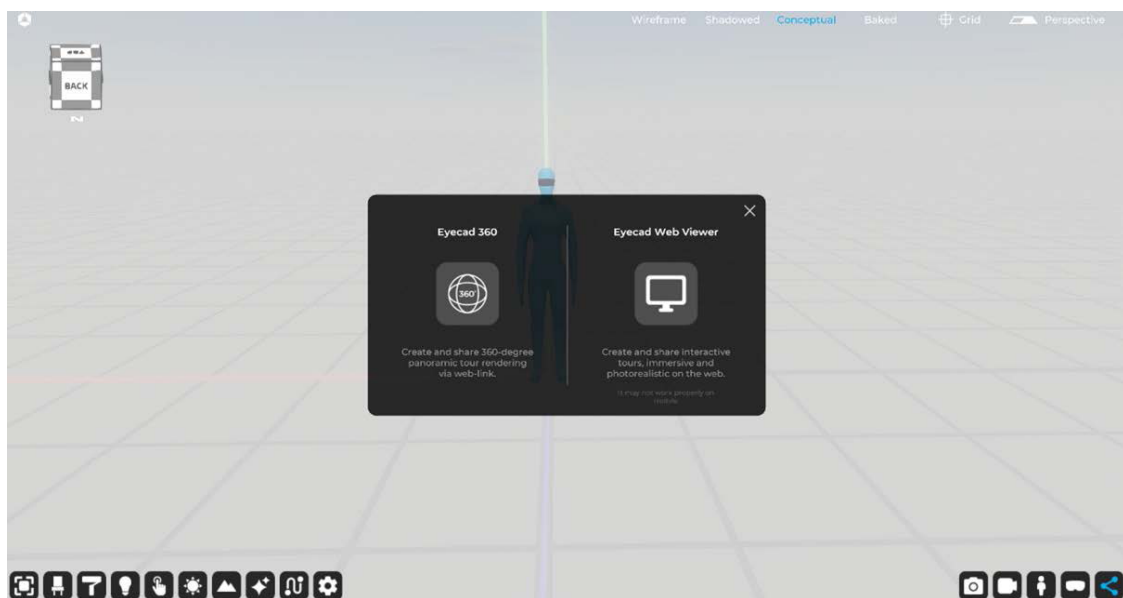
This tab allows you to set the most important parameters before starting the exploration, which can be carried out via monitor or virtual reality viewers.



For a detailed overview on this topic, see the dedicated chapter of this manual (Ch. 13).

1.15 Project sharing: eyecad web viewer and eyecad 360

This TAB allows you to share your designs with colleagues or clients via the “Eyecad 360” tool which generates 360 images allowing exploration from any internet-connected device and “Eyecad Web Viewer” that allows to you to create full 3D interactive experiences explorable via a browser from any Desktop or Laptop.



For a detailed overview on this topic, see the dedicated chapter of this manual (Ch 14).

1.16 Visualization styles

Eyecad VR Studio offers you four types of visualization so you can work on your project in the best way possible. The visualization modes are:

- **Wireframe:** It is a type of computer graphics representation of three-dimensional objects. With this method, only the edges of the object are represented as if it had been constructed with “wire.” This method requires simpler calculations of the graphics processor rather than the representation of solid surfaces and is therefore considerably faster.

- **Shadowed:** shadowed mode uses a mesh to shade surfaces without advanced rendering calculations.

- **Conceptual:** It is the creation of an image from a mathematical description of a three-dimensional scene. It is interpreted by algorithms that define the color of each point in the digital image.

- **Baked:** This is the typical scene visualization mode of the video game industry; after the “Light-baking” of the scene (an engine created specifically for Eyecad VR Studio so that it can be used by users quickly and easily), it is possible to see the project with all the light sources that have generated an impact on the project giving it solidity and realism.

For a detailed overview on this topic, see the dedicated chapter of this manual (Ch 15).

Note: Eyecad VR Studio's light-baking technology works with all DX11- and DX12-compatible video cards; however, it is recommended to use the latest generation of graphics cards such as the 20xx, 30xx and 40xx series of the RTX family as it has an algorithm that speeds up the calculation of lights via RTX hardware acceleration.

Chapter 02

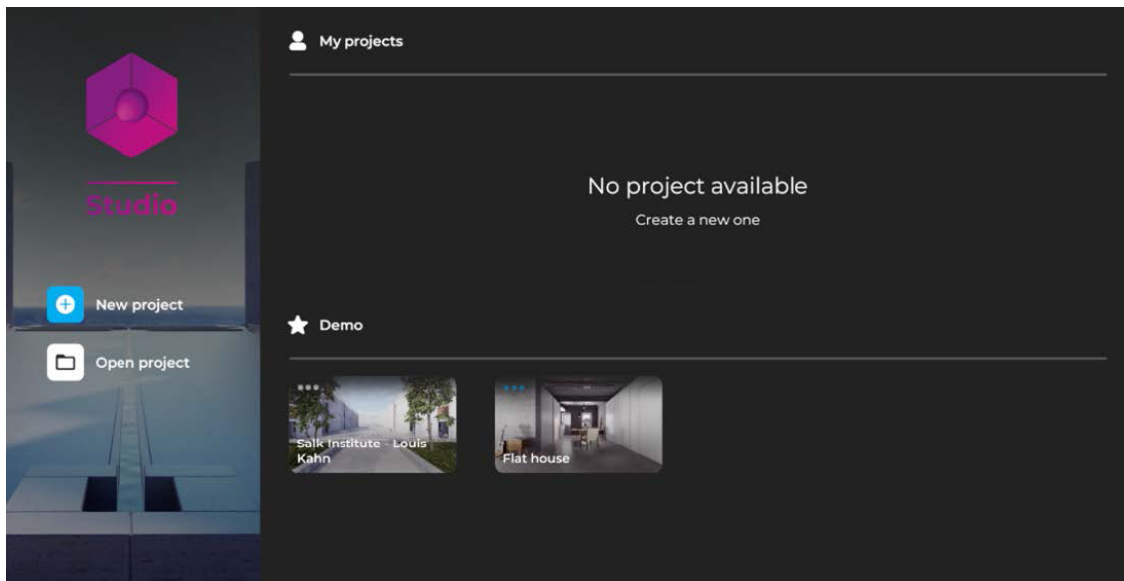
Importing 3D objects

02- Importing 3D objects

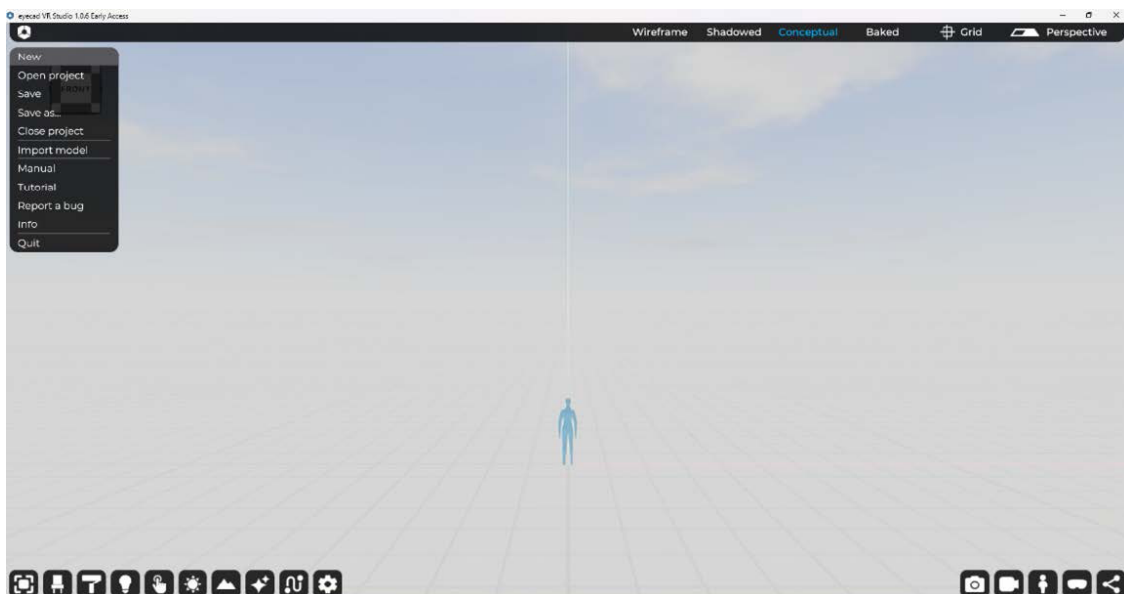
2.1 Starting a new project

The first step in starting a new project is to click on the “New Project” icon on the left side of the screen.

You can also open a previously created .evr project by clicking on the “Open Project” icon.



Another way to create a new project or open a previously created one (.evr file) is to click on the Eyecad VR logo inside the editor at the top left and select “New” or “Open Project”



Note: .evr files created with previous versions of Eyecad VR are not compatible with Eyecad VR Studio.

2.2 Importing objects

It's time to import your 3D model; to do so, simply go to the “Objects” tab.



Click the “Import New Object” icon inside the “Objects” tab and choose the 3D model from your PC.



2.2.1 Compatible formats

Eyecad VR Studio is fully compatible with these 3D formats in order of importance:

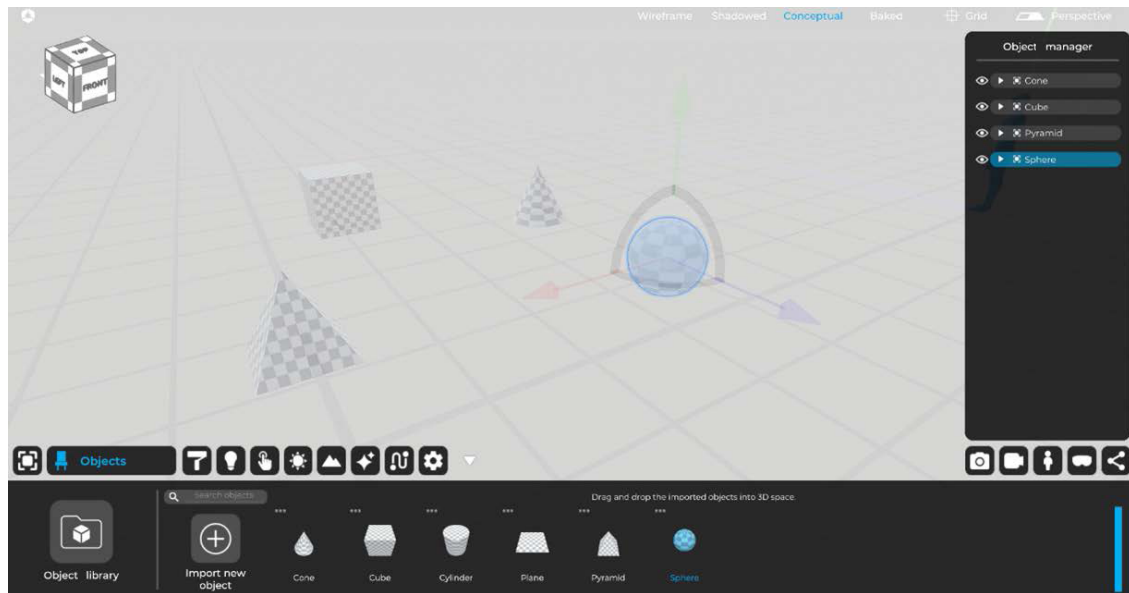
1. FBX;
2. SKP;
3. 3DS;
4. OBJ;
5. DAE;

Once you import your 3D files, they will be displayed at the bottom of the screen, within the “personal library”, then you need to drag the 3D object onto the grid (3D scene).

02- Importing 3D objects

2.2.2 Object manager

This tool is designed to help you choose the layers/objects in your project with a simple user interface on the right side of the screen. The Object manager allows you to select, hide and organize the “parent” and “child” hierarchy of the 3D models loaded within the scene.

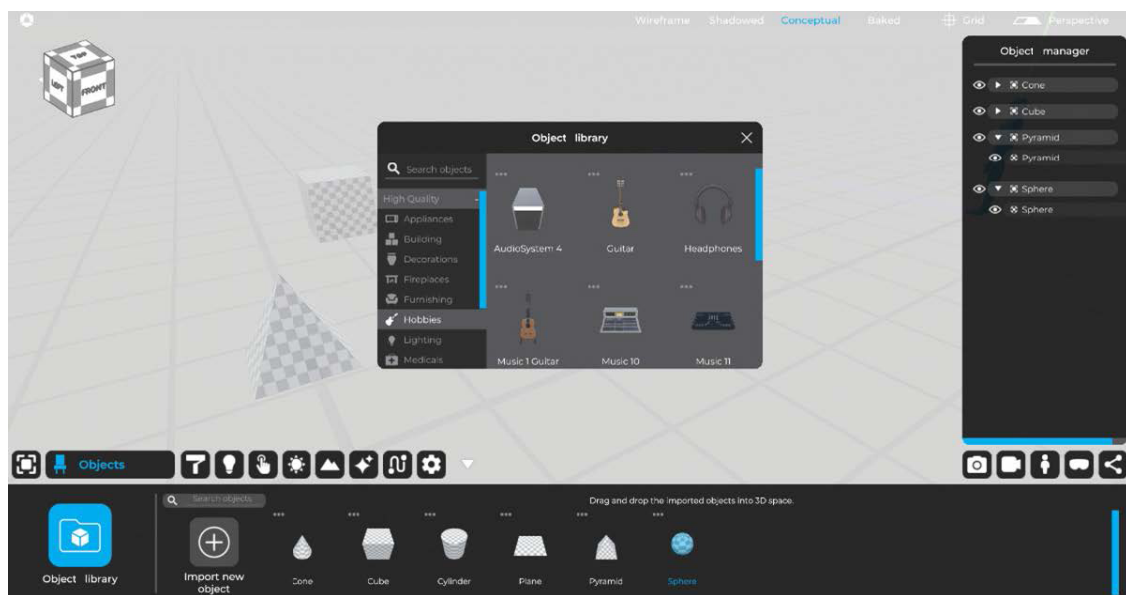


With the “Object Manager,” it is also possible to right-click on objects in order to operate on them without necessarily doing so in the 3D scene.

02- Importing 3D objects

2.2.3 Object library

The 3D object library now includes more than 2000 high-quality “Render-Ready” objects that make it easy to fill an entire scene of both interiors and exteriors. The library has been organized into categories that will help you find the objects you need.



2.2.4 Import guidelines

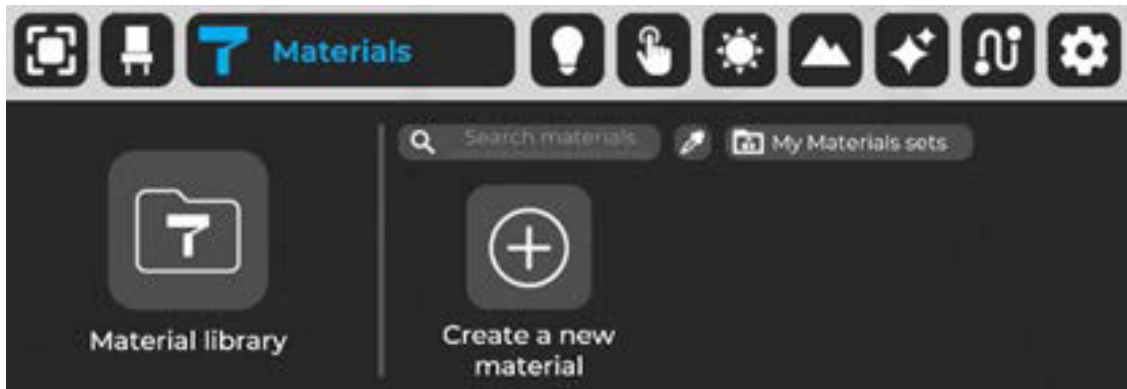
If you need more information about importing from specific 3D modeling software, check out our “import guidelines” in our forum area here: <https://eyecadvr.com/home-community/>

Chapter 03

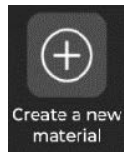
PBR material creation

03- PBR material creation

The “Materials” tab allows for the creation and editing of all materials that can be used in Eyecad VR, as well as access to the software libraries.



The “Create a new material” command provides both access to the “Material Editor” TAB containing options for editing PBR material parameters, as well as the ability to name and save the changes made.



3.1 The Material Editor

The default Eyecad VR material is PBR (Physically Based Rendering) although the terminologies used in the editor have a hybrid characterization. Opening the material editor provides access to the “texture map,” “normal map,” “reflection map,” and “heightmap” maps, which are normally created automatically by Eyecad VR via generative AI, but it is possible to add each individual custom map.

RGB color parameters can be set, as well as parameters Transparency, Gloss, Metallic and Emission can be defined. Physically Based Rendering (PBR) is a shading and rendering method that provides a more accurate representation of how light interacts with surfaces.

It is referred to as Physically Based Rendering (PBR) or Physically Based Shading (PBS). Depending on the aspect of the pipeline under discussion, usually PBS is specific to shading concepts and PBR is specific to rendering and lighting. However, both terms describe the process of representing activities from a physically more accurate point of view.

3.2 The properties of the material

The material editor allows the editing and creation of a material by managing various maps and channels within the simplified menu, below is a specific description of each channel that will make up the final PBR material.

3.2.1 Texture

Texture is the first of the material map options in the material editor. Clicking on the preview box (command "+") activates an upload menu that allows you to search, select and upload an image in .png, .jpg or .bmp formats. The Texture map element also includes a percentage scrolling tool, which allows you to set the visibility of the chosen texture. Values less than 100 actually introduce a transparency component that reveals, for the remaining percentage, the basic color of the material.

3.2.2 Alpha Map

Alpha mapping is used when the transparency of a given object is uneven. Taking a grid as an example, this is a really useful channel; instead of modeling a complex object with transparent (hence empty) and solid (mesh) parts, it is possible to simplify the grid calculation by using just this channel by applying a solid texture and its respective Alpha map to the plane to make the rendering engine understand which parts of the object will be visible and which will not.

The texture used for the Alpha Map is an independent grayscale texture.

3.2.3 RGB selector

The RGB selector allows you either to give a base color to the material, should you not be using a base texture, or it allows you to override the base texture with a coloration above it, perhaps to allow you to achieve a certain desired coloration that the base texture was unable to achieve.

You can use the various gradients or indicate the precise values in the R, G, B channels.

3.2.4 Transparency

It allows the transparency of the material to be defined. In other words, the ability of the material to have light pass through it. It is expressed as a percentage from 0 to 100 (%).

03- PBR material creation

3.2.5 Emission

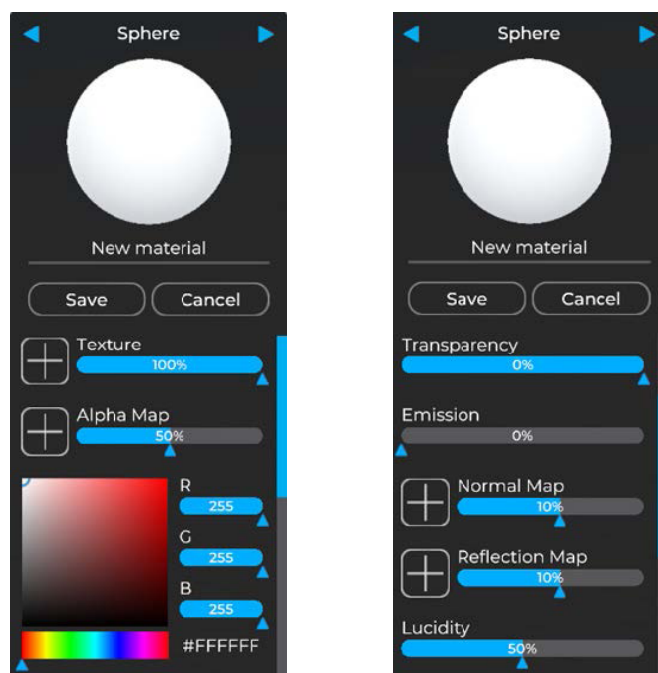
It allows you to define the light emission of the material. In other words, the ability of the material to emit light, of the same color defined in the RGB parameter, based on the intensity expressed in percentage terms, from 0 to 100 (%).

3.2.6 Normal Map and Reflection Map

Eyecad VR Studio automatically generates the Normal Map and Reflection Map from the imported texture. Therefore, it is not necessary to have the entire PBR texture kit, but only the basic RGB texture is sufficient. According to PBR conventions, the Normal Map is useful for defining relief effects without corresponding to actual geometric detail of the object to which the material is applied. The same operational logic, in the case of reflections, must be applied to the Reflection Map. Once the texture import operation is complete, Eyecad VR Studio will automatically process the Normal map image (used to simulate the complexity of surface relief without modeling it in detail) and the Reflection Map image (an efficient image-based lighting technique for approximating the appearance of a reflective surface using a precomputed texture image).

3.2.7 Lucidity

It allows us to define the glossiness of the material. In other words, the ability of the material to reflect light on its surface. It is expressed as a percentage from 0 to 100 (%). This parameter is closely related to the reflection map.



3.2.8 Metallic Map

The Metallic Map allows you to create imperfections and different types of reflections based on the metallic property of the material. One example is definitely steel, which, to achieve greater realism, through the Metallic Map can create different types of metallic reflections between clean surfaces and scratched parts.

3.2.9 Metallic

It allows the metal value of the material to be defined. In other words, the ability of the material to simulate the typical surface characteristics of metals. It is expressed as a percentage from 0 to 100 (%). This parameter is closely related to the metal map.

3.2.10 Height Map

It allows a 3D relief effect to be generated without the need for supporting mesh, and unlike the Normal Map, the Height Map can simulate a real extrusion of some parts of the material, such as, for example, gravel or stone ashlar.

3.2.11 Effect Map

This feature allows you to create dirt, scratch or rust by overlaying textures on top of the base material. By clicking on the associated “+” button, you can choose from effects already in the library or add your own; in this case, you need a seamless grayscale texture of the desired effect.

3.2.12 Effect Map UV Size

Slider that multiplies (positively or negatively) the scale of the texture selected for the Effect Map.

3.2.13 Translucency

A material with translucency properties allows light to pass through the object on which it is applied; However, it is not possible to see the object clearly and completely transparent because light can only pass through one side and is then scattered. This parameter is expressed as a percentage from 0 to 100 (%).

03- PBR material creation

3.2.14 Animated e Animation Type

An animated material allows all channels of the material to be moved in loops and in different directions simultaneously in order to simulate various very useful materials such as water and fluids of various kinds, as well as raindrops on both vertical and horizontal surfaces.

3.2.15 Animation speed

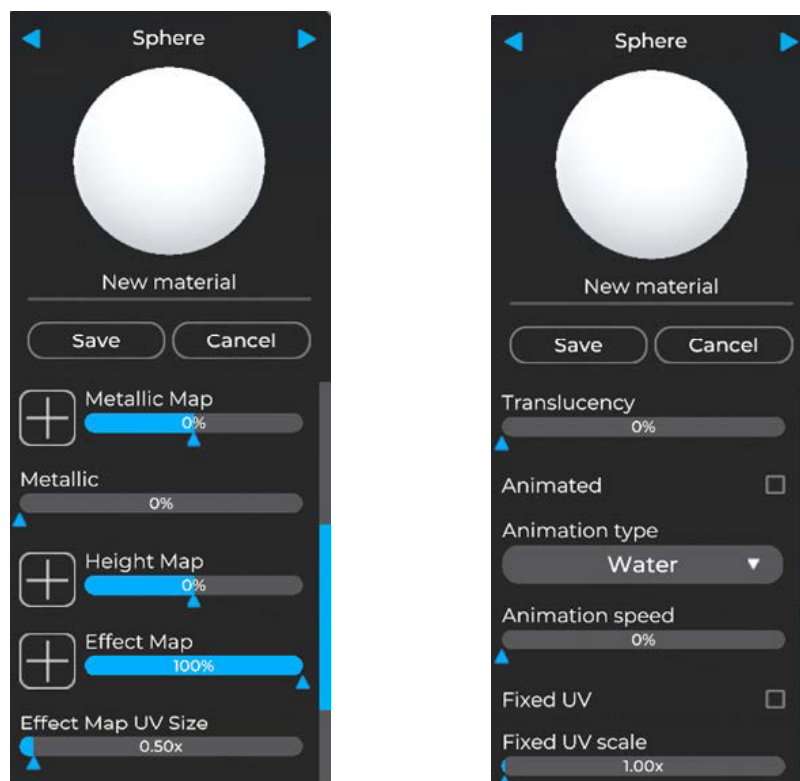
This parameter handles the animation speed of the material defined previously on the “Animated” and “Animation type” parameters.

3.2.16 Fixed UV

This parameter allows you to override the UV size of only those surfaces where the material with this active property is applied.

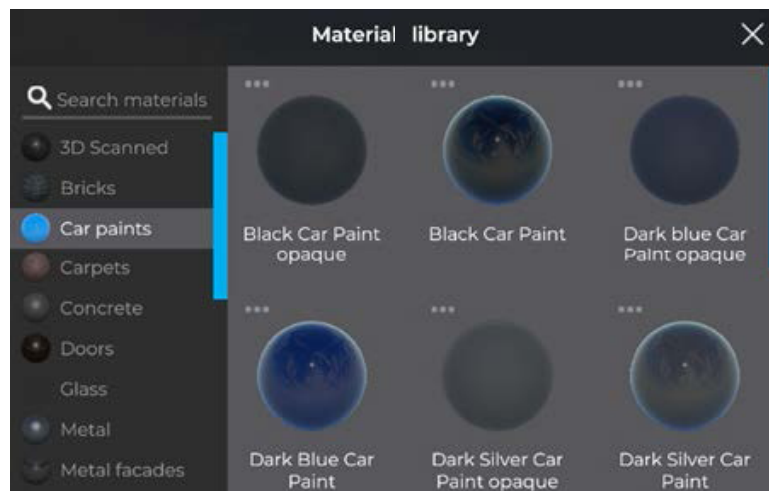
3.2.17 Fixed UV scale

This parameter affects the size of the Fixed UVs applied with the previous parameter. This function is very useful if you are using planes to which you are applying a liquid material by allowing you not to recalculate the UVs of the surface but to handle them directly from the material itself.



3.3 PBR Material Library

Eyecad VR Studio offers a large library of PBR (Physically Based Rendering) materials that includes a wide selection of samples often encountered in the context of architecture and design. The library is divided into categories that make it easy to identify which type it belongs to before making the choice in detail.



3.3.1 Why PBR Materials?

Physically Based Shading (PBS) and Physically Based Shading (PBR) respectively refer to a shading and rendering method designed to render the way light interacts with the surfaces of an object as accurately as possible.

Those who use computer graphics software, as in the case of Eyecad VR Studio, transpose a number of objective advantages into the operational phase, including the fact that they automate many procedures that affect the rendering of surface attributes, a factor that makes it much easier to achieve realism with relatively moderate effort by rendering high quality with any lighting conditions present in the scene. Another reason for choosing to use PBR materials in Eyecad VR is because the PBR methodology defines working standards that allow multiple users to easily and qualitatively intervene in material creation.

Automating the generation, via AI, of normal and reflection maps makes managing a project much easier, intuitive and lightweight. In addition, the parameters for defining a material are objectively reduced in number while maintaining realism.

Chapter 04

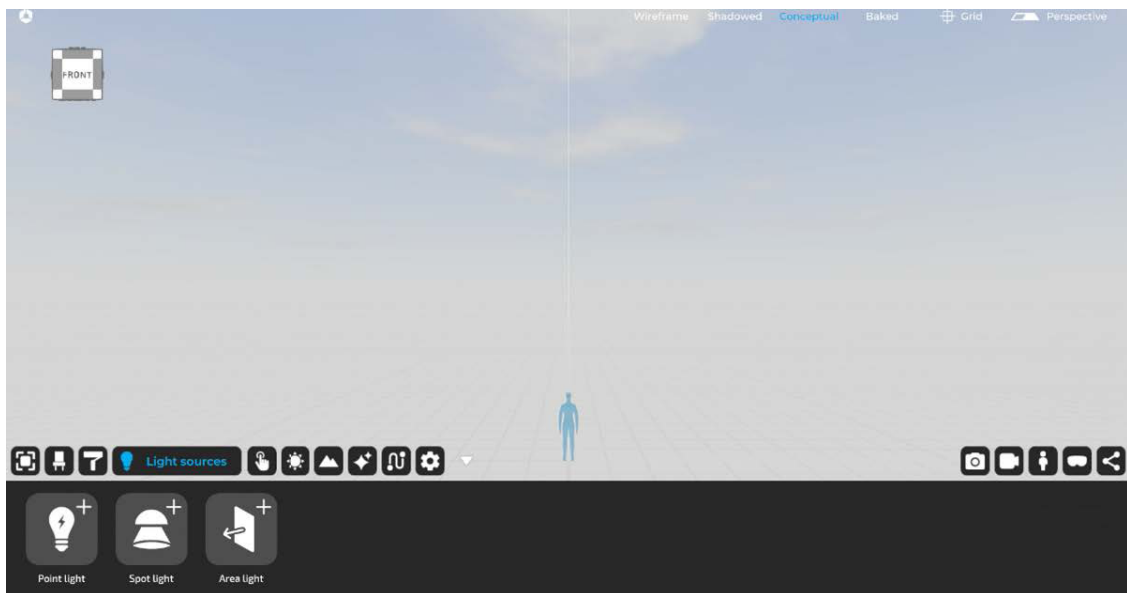
Light sources setting up

04- Light sources setting up

Eyecad VR Studio offers the possibility of adding a series of artificial lights, which can simulate the effect of omnidirectional (Point Light), spotlight (Spot Light) and Area (Area Light) sources.

Within the TAB “Light Sources” you can add the different types of lights, to place them in the scene simply drag them into the three-dimensional space. The light sources available in the Eyecad VR Studio light creation tab are:

- Point-light
- Spot-light
- Area-light



4.1 Point light

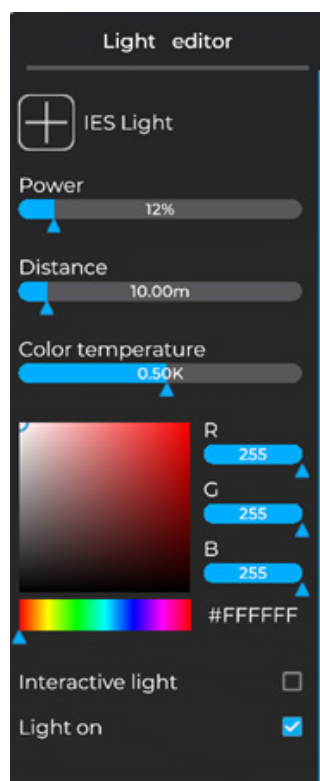
The point light is a light source that can be freely placed in the scene. From the point of emission, it projects a beam of light omnidirectionally, which can be controlled by parameters in the TAB.



04- Light sources setting up

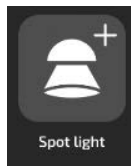
To create and place the light point, simply select it in the “Light Sources” tab and drag it inside (drag’n’drop). The gizmo (x, y, z) allows the point light to position the source more precisely. Point light parameters can be edited via the “Light Editor” TAB, where you can configure:

- **IES lights:** allows you to choose an IES file from the library included in Eyecad VR Studio to apply to the light source.
- **Power:** indicates the amount of light emitted expressed as a percentage (%).
- **Distance:** indicates the area of effect of the light source, through its depth, which is equivalent to the visibility limit of the emitted light, expressed in meters (m).
- **Color temperature:** indicates the color of the light emitted by the source, expressed in degrees Kelvin (K).
- **RGB selector:** allows to indicate the color of light (this parameter overrides color temperature).
- **Interactive light:** checking this box will allow the software to turn the light on or off during exploration.
- **Light on:** indicates whether the light should appear off or on in both Editor and explorer phases.



4.2 Spot light

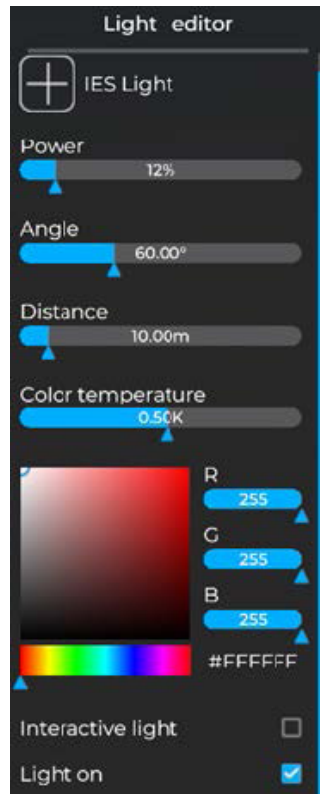
The spot light is a light source that can be freely placed in the scene. From the point of emission, it projects a beam of light through a conical beam with a variable radius, which can be configured using the configuration parameters in the appropriate editor.



To create and place the spotlight, simply select it in the “Light Sources” tab and drag it within the scene (drag’n’drop). The gizmo (x, y, z) allows you to precisely position the source and destination of the spotlight in the scene:

- **IES lights:** allows you to choose an IES file from the library included in Eyecad VR Studio to apply to the light source.
- **Power:** indicates the amount of light emitted expressed as a percentage (%).
- **Angle:** indicates the opening of the outer cone of light.
- **Distance:** indicates the area of effect of the light source, through its depth, which is equivalent to the visibility limit of the emitted light, expressed in meters (m).
- **Color temperature:** indicates the color of the light emitted by the source, expressed in degrees Kelvin (K).
- **RGB selector:** allows to indicate the color of light (this parameter overrides color temperature).
- **Interactive light:** checking this box will allow the software to turn the light on or off during exploration.
- **Light on:** indicates whether the light should appear off or on in both Editor and explorer phases.

04- Light sources setting up

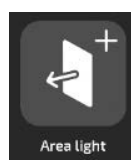


4.2.1 IES lights

IES lights are used to create a realistic light projection from the light sources (Point or Spot) added in the 3D environment. This function is very important for increasing the realism of lights. You can choose the IES light file by clicking the (+) button at the top of the light editor. A new window will appear, very close to the light editor, which contains the library of IES files that you can select.

4.3 Area-light

Area-Light is a surface that acts as an ambient light projector. It is mainly used for indoor space lighting, to increase the level of definition and to achieve a more realistic rendering of the color component of light. Its operation consists of projecting all environmental elements of the scene within an architectural space. For the reasons mentioned above, it is advisable to place the Area Light at the openings of the interiors of the scene.



04- Light sources setting up

To create and place the Area-light, simply select it in the “Light Sources” tab and drag it within the scene (drag’n’drop). The gizmo (x, y, z) and modifiers at the edges, allow you to precisely position and size the source and destination of the spotlight in the scene. Area-Light takes effect only in the direction indicated by the arrow vector.

The “Modify” tab allows the area light area to be changed at any time, or by using the cubes located at the extreme sides of the emissive rectangle.

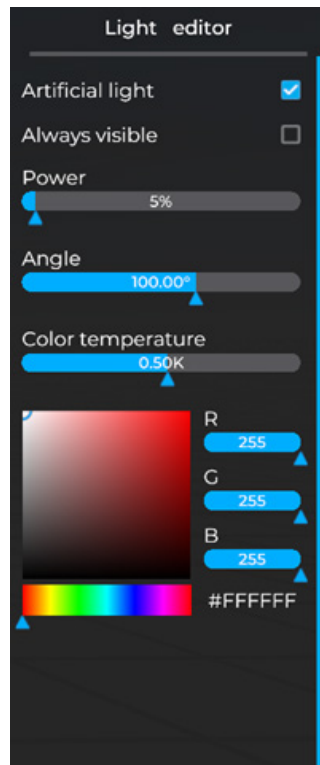
In the case of Area-Light set as Non-Artificial/Environmental Light, there are no additional editing parameters, as the light source adapts in real time to the light conditions of the scene environment.

In Eyecad VR Studio the Area-Light is also calculated by Light-baking once launched creating light bounces throughout the scene.



04- Light sources setting up

In the case of artificial light (by clicking on the Artificial Light button) a new menu appears in which you can set some parameters for artificial light that is often used as LED lights on the roof or neon effects, or even to recreate a photo studio.



Chapter 05

Interactions

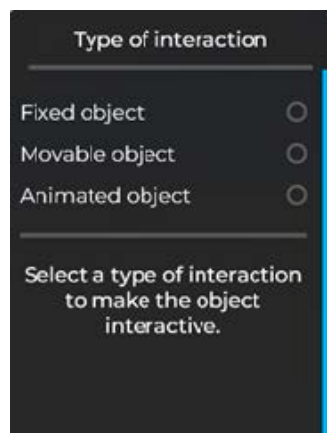
05- Interactions

The “Interactions” TAB allows you to make objects interactive so that you can create interactive scenes; you can choose mainly between two types of interactions:

5.1 Movement/animation object:

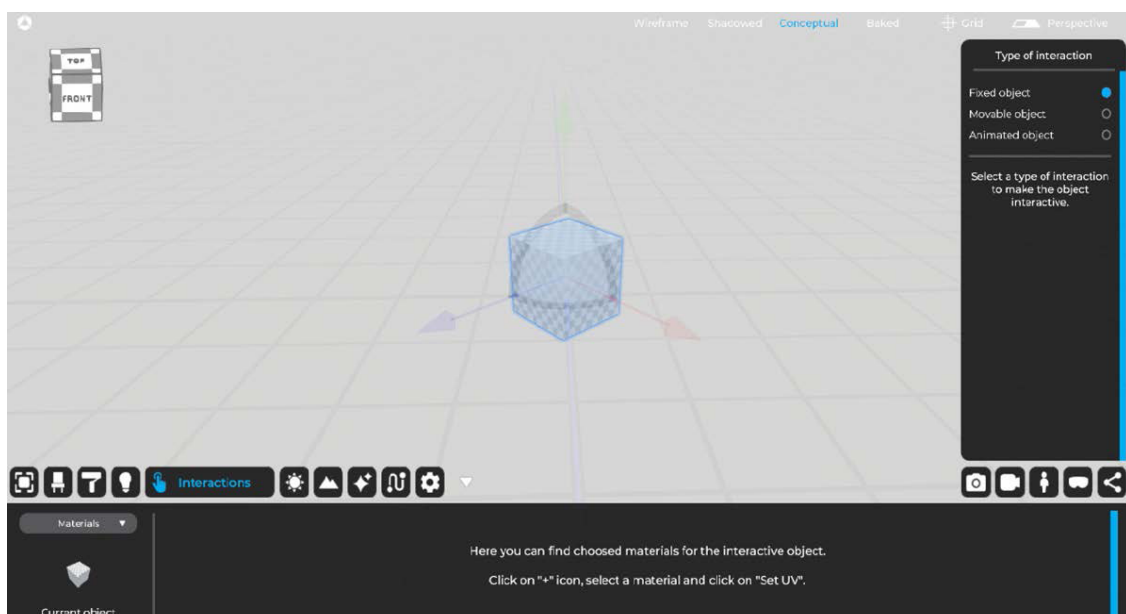
This type of interaction can be set from the menu on the right that will appear once inside the “Interactions” TAB. Within it you can set the object as:

- Fixed object;
- Movable object;
- Animated object;



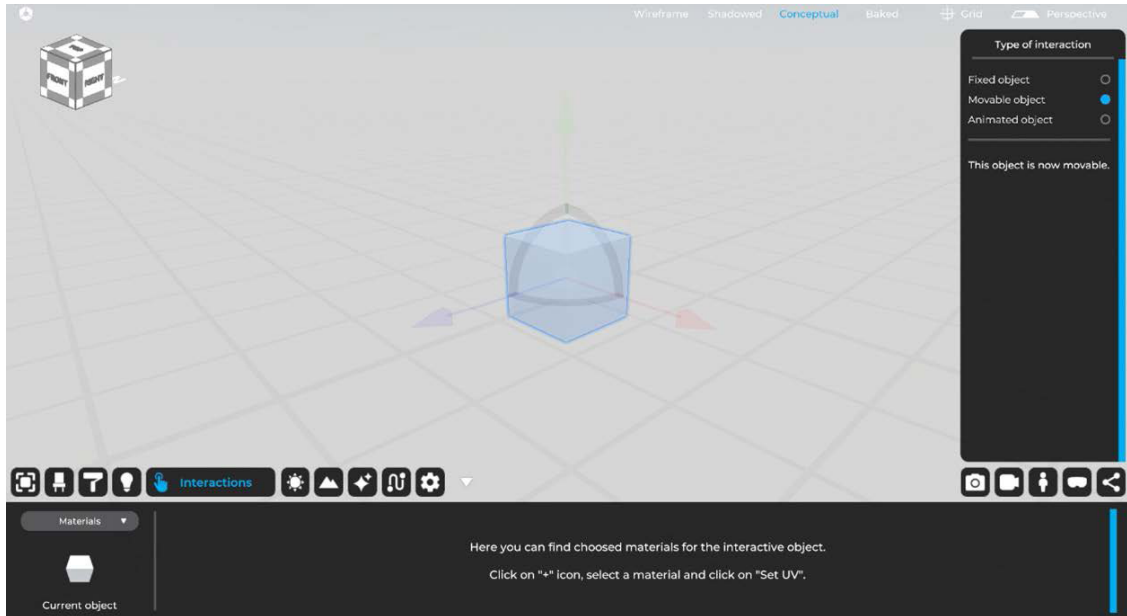
5.1.1 Fixed object

This is the default setting for any object. The object will remain fixed and will be included in the light calculation once Light-Baking is launched.



5.1.2 Movable object

This is the setting that allows the object to be moved (shifted and rotated) in the 3D scene space during exploration. It will be sufficient to select enable “Movable Object” from the menu on the right once the object is selected to make it movable.



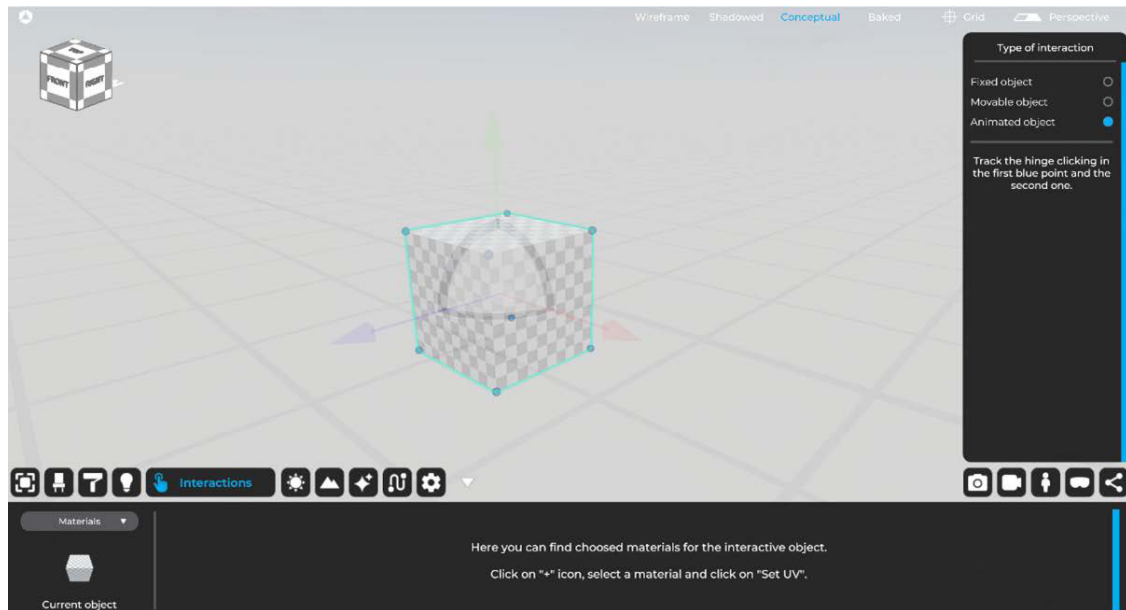
5.1.3 Animated object

This is the setting that allows the object to be animated in either rotation or scrolling according to an axis or track to be defined by the type of animation chosen.

It will be sufficient to select activate “Movable Object” from the menu on the right once the object has been selected to make it animated and the type of animation, which in turn is divided into “Rotatable” and “Sliding.”

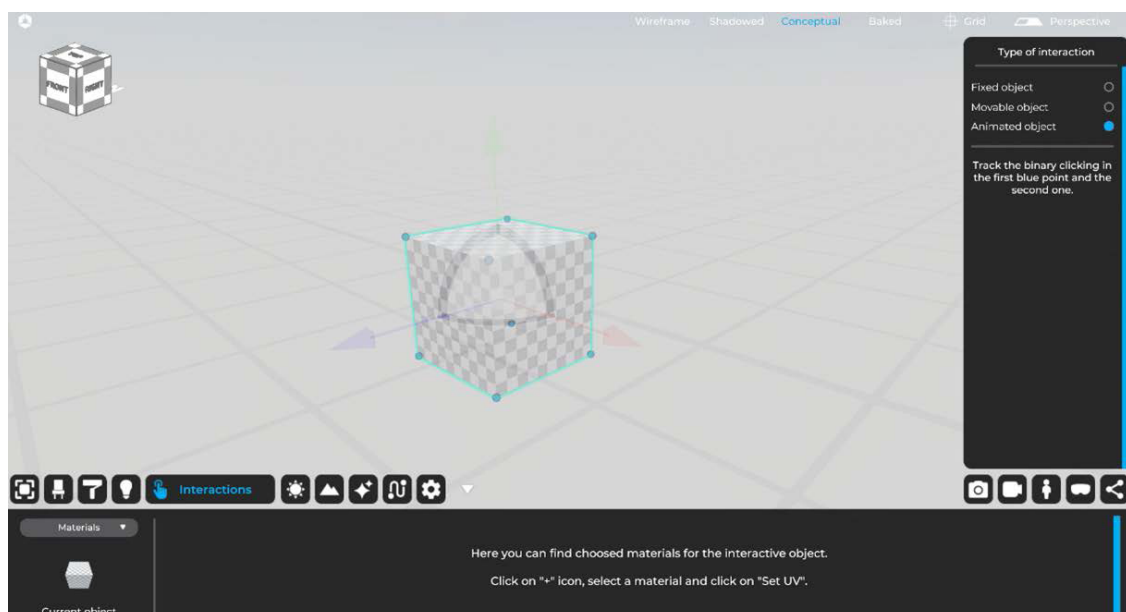
Rotatable: To allow the object to rotate, select the “Rotatable” option from the right-hand menu and click on “Draw Hinge”; a series of “Mesh points” automatically generated by Eyecad VR Studio will appear on the object’s mesh vertices. It will be enough to click the start point and end point on the “Mesh points” to draw the object’s rotation hinge, for example, in the case of a door, the hinge will be drawn at the hinge part of the door. In this type of animation, it is possible to choose the rotation angle and speed; it is also possible to check the “Proximity Sensor” box if you want to activate the animation automatically once the user faces the animated object in the exploratory phase.

05- Interactions



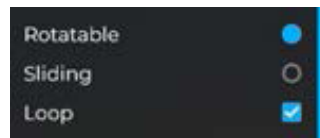
Sliding:

To allow the object to scroll, select the “Scroll” option from the right-hand menu and click on “Draw track”; a series of “Mesh points” automatically generated by Eyecad VR Studio will appear on the object’s mesh vertices. It will be enough to click the start point and end point on the “Mesh points” to draw the object’s track, for example, in the case of a door, the track will have to be drawn at the bottom along the entire length of the door. In this type of animation, it is possible to choose the displacement percentage and speed; it is also possible to check the “Proximity Sensor” box if you want to activate the animation automatically once the user faces the animated object in the exploratory phase.



Loop:

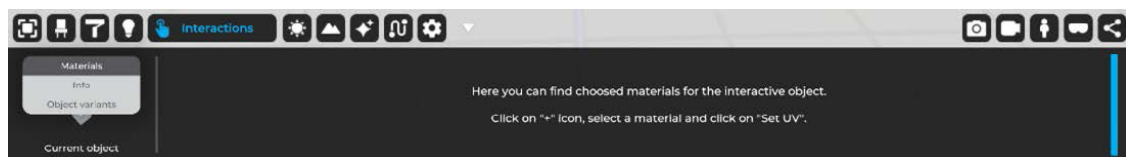
This box, if checked, allows continuous rotation or scrolling of the animated object



5.2 Set of object variants:

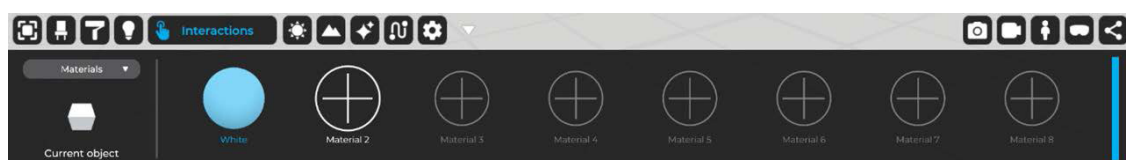
This type of interaction can be set from the bottom left menu that will appear once inside the “Interactions” TAB. Within it you can set variants of:

- Materials;
- Info;
- Object variant;



5.2.1 Materials

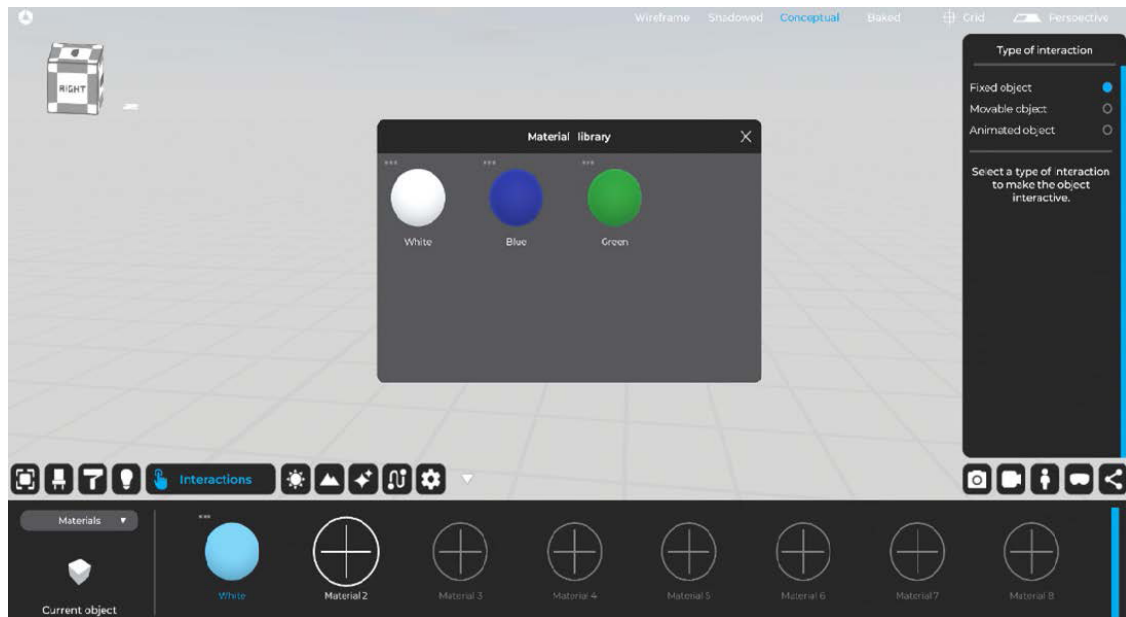
This type of interaction, allows you to create a set of material variants of the selected object; to add different materials to the object, it will be enough to select the interested object, go to the “Materials” section of the “Interactions” TAB, and click on the icon depicting a “+” with the description “Material 1” underneath.



Note: If the object already has a material previously assigned to it, the first variant will just be the material assigned to the object by default, and you will need to add the variant on “Material 2”, “Material 3” and so on.

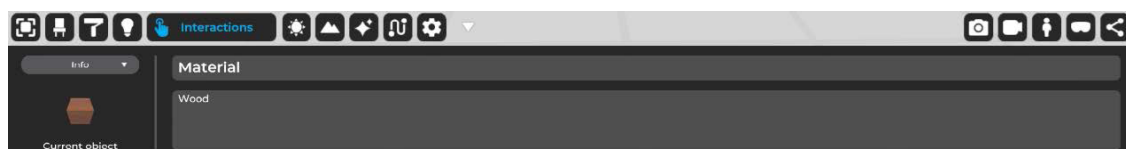
05- Interactions

At this point, a dialog box will open allowing you to choose from the design materials (you must have created the material for the variant beforehand via material editor and saved it). You only need to select the desired material to add it to the material variant set for the chosen object; you will be then able to choose the new material variant for the object during configuration while exploring the scene.



5.2.2 Info

This type of interaction, allows you to create an informational overlay of the selected object so that it can communicate additional information to the user who will be enjoying the scene such as material composition, object characteristics and so on. To add the informational overlay, simply type in the card title and description; once the fields are filled in, Eyecad VR Studio will be able to automatically make the Informational Overlay appear above the object by calculation of coordinates of the center of gravity of the object to which the Overlay refers.



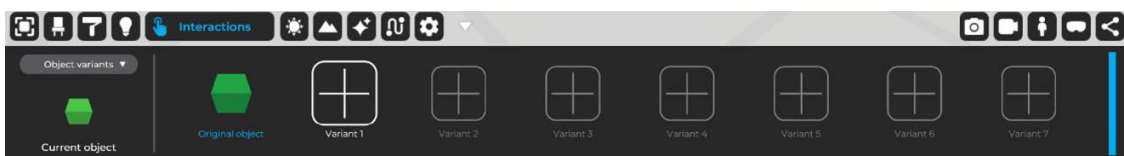


Visualization of information in the exploration phase

5.2.3 Object variants

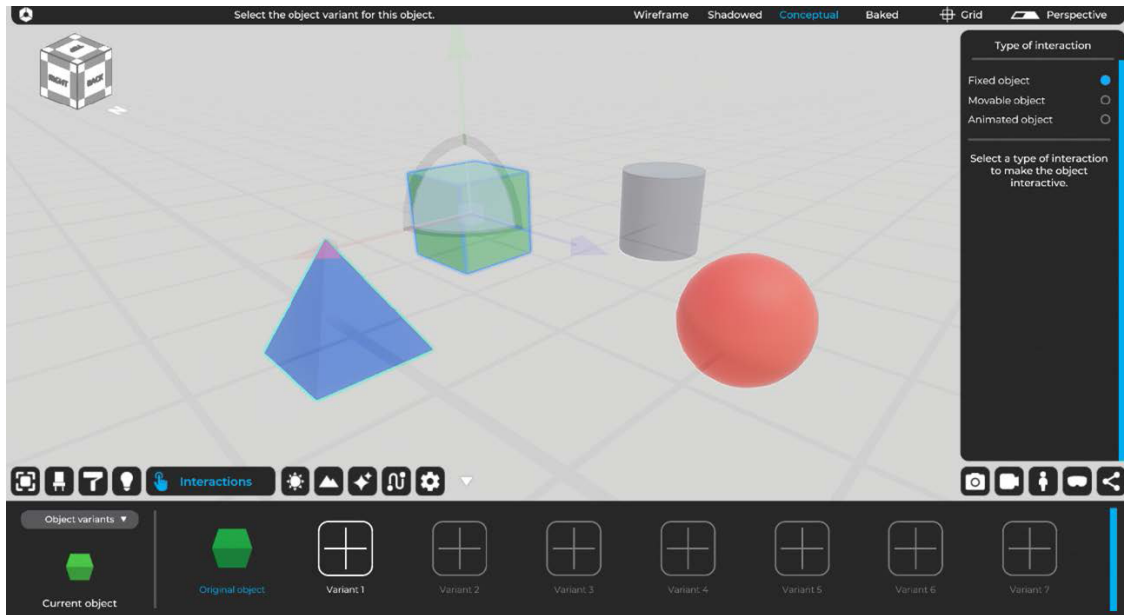
This type of interaction allows you to create a set of variants of the entire selected object. To add an object variant, the process is very similar to the material variant:

To add different variants of the object, it will be sufficient to go to the “Object variants” section of the “Interactions” TAB with the interested object selected and click on the icon depicting a “+” with the description “Variant 1” underneath, right next to the icon depicting the original object.

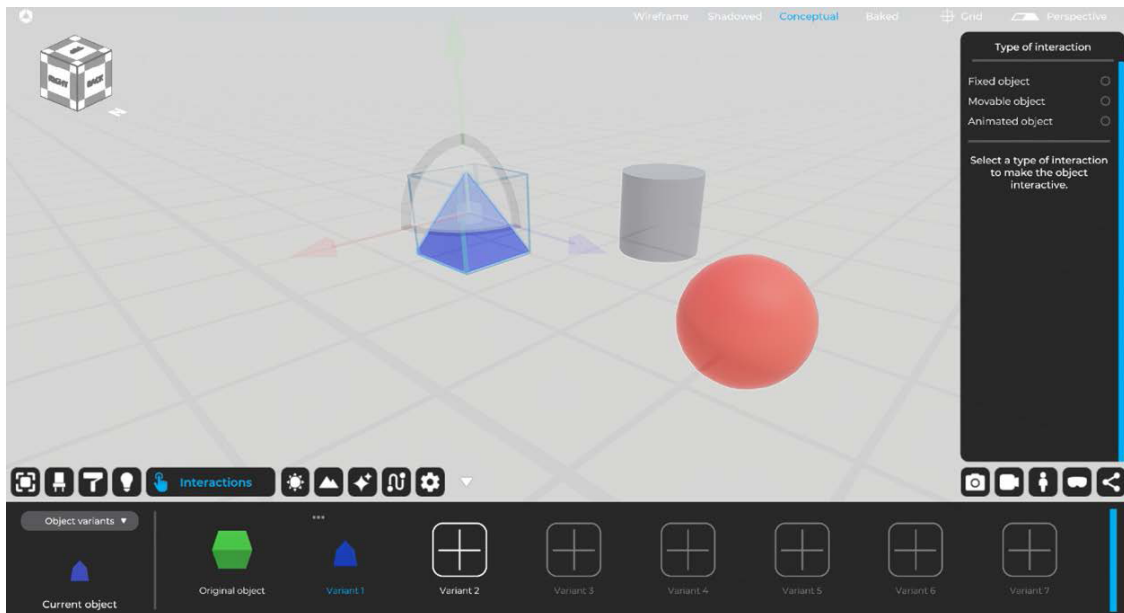


Once you click on the icon to add the variant, you will need to select an existing object in the 3D scene, this means that, even if you don't need the object at that time, you have to import it first, configure the UVs and materials; after that, the object will be ready to be selected for the variant and then will disappear from the scene.

05- Interactions

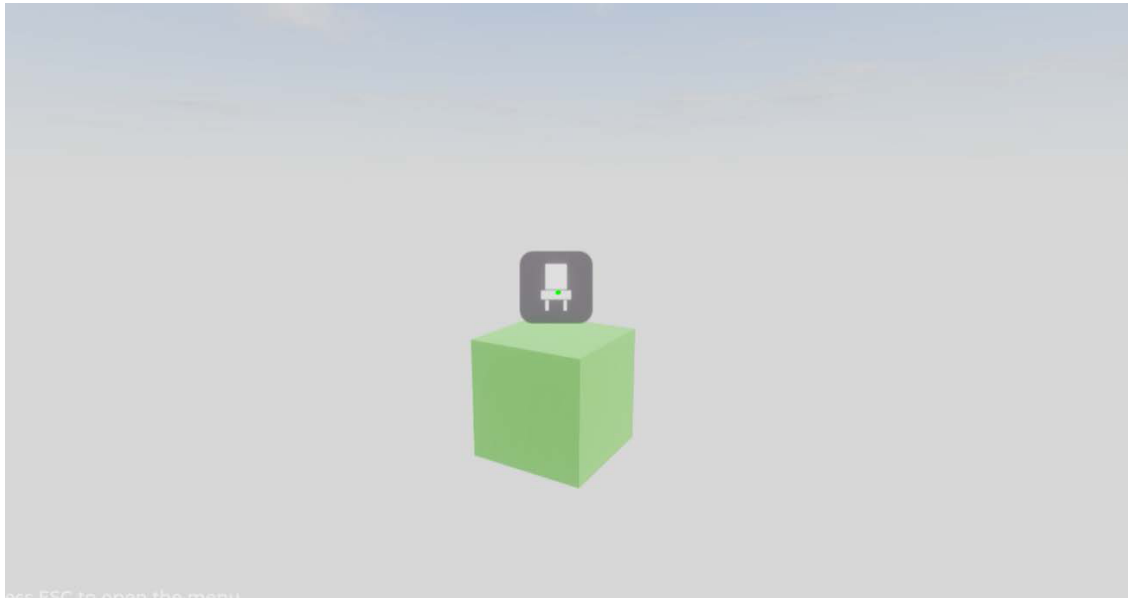


Once you have selected the object for the variant, you will need to move it (and rotate it if necessary) within the BOX that Eyecad VR Studio will automatically generate to help you place the variant object exactly where the original object would be.



05- Interactions

At this point, when exploring, users will be able to select multiple variants of the object in question.



Visualization of interaction in the exploration phase

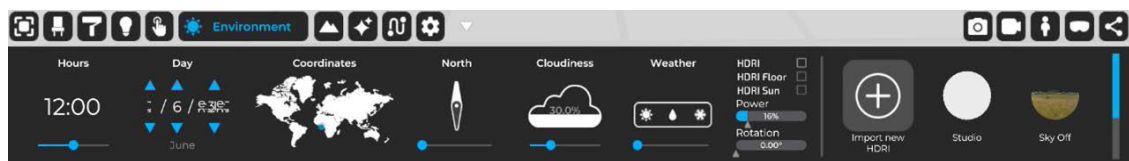
Chapter 06

Environment

06- Environment

The “Environment” tab allows you to set various conditions related to ambient light, direct sunlight and weather control of the project scene.

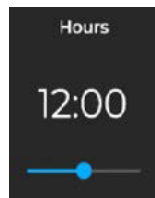
The interface of the “Environment” TAB includes the functions “Time”, “Day”, “Coordinates”, “North”, “Cloudiness”, “Weather” and “HDRI”, as well as allowing the possibility to choose an HDRI image and to make the related ambient sky visible or not (Sky On / Sky Off).



In detail, the options on the “Environment” tab allow the following aspects of environmental to be defined.

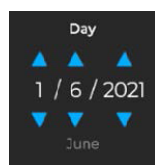
6.1 Hours

The “Hours” function allows you to configure the time of the scene. This function is also related to the “Day” function.



6.2 Day

The “Day” function allows you to set the current date of the project while simultaneously changing the position of the sun in the scene. This function is related to the “Hours” function.



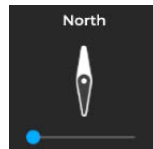
6.3 Coordinates

The “Coordinates” function allows you to set earth coordinates by geolocation of the project. This function is related to the “Hours” and “Day” functions and allows you to define the tilt of the sun in the scene.



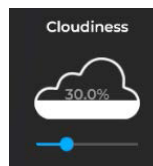
6.4 North

The “North” function allows you to set the location of geographic north, through which Eyecad VR Studio can automatically determine the sunrise-sunset path and accurately determine its location in relation to the “Time”, “Day” and “Coordinates” functions.



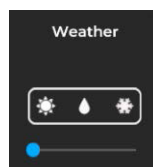
6.5 Cloudiness

The “cloudiness” function determines the amount of clouds in the project sky. Procedural clouds are parametrically generated and affect the overall shading of the scene. Indicated in percentage terms (%).



6.6 Weather

the “weather” function determines weather conditions by setting a percentage value (%), which is able to give rise to five different situations, in the following order:



06- Environment

Sunny conditions (clear or cloudy):



Wet conditions without precipitation:



06- Environment

Wet conditions with precipitation:



Snowy conditions without snowfall:



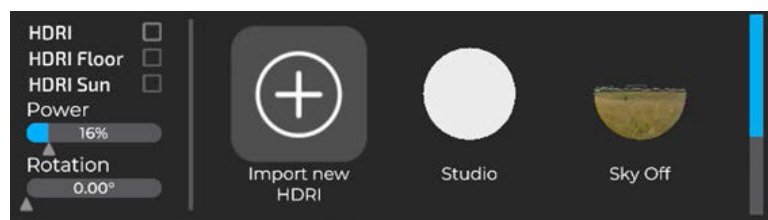
06- Environment

Snowy conditions with snowfall:



6.7 HDRI

The “HDRI” feature allows you to load a 360-degree HDRI image that totally surrounds the project scene, like a large sky vault that can affect the entire environment within it. Eyecad VR Studio’s HDRI performs the background functions of the scene and affects global reflections, as well as Global Illumination.



Eyecad VR Studio allows you to select HDRIs in the dedicated “HDRI Library,” within which you can find two types of HDRIs:

06- Environment

6.7.1 HDRI Sky On:

The HDRI Sky On determines a preset, static sky (exactly the one in which the entire photosphere was acquired). The percentage of cloudiness affects the 'general illumination of the scene, but clouds are not visible because the background is always characterized by the HDRI image. If the Sky on function is used, it is recommended to check that the position of the virtual sun coincides with that of the HDRI image (via "HDRI Sun" function), in order to avoid inconsistencies in the shading phase.



6.7.2 HDRI Sky Off:

Sky off HDRIs do not possess the visible component (static photographed sky) of the HDRI image, replacing it with Eyecad VR Studio's procedural sky, in which all effects determined by the "Time of Day," "Day," "Coordinates," "North," and "Cloudiness" functions are dynamically visible. The overall effect is hybrid in nature, combining a real landscape with a procedural sky.



06- Environment

The choice of Sky-on and Sky-off function depends on both the type of project and subjective preference to proceed with a specific ambient-level lighting setup. It is also possible to upload a personal HDRI image in .Hdr, .Exr, .Jpg, .Png, .Bmp, .Tiff, and .Tif formats. However, In case an HDRI is imported with a simple. Jpg Eyecad VR Studio will automatically and in real-time convert the image into an high luminous efficiency image, effectively simulating HDRI output from a simple photosphere.

Please note: It is still recommended to use the .hdr or .exr format to achieve more realism when rendering

The HDRI image can also be configured through the following parameters:

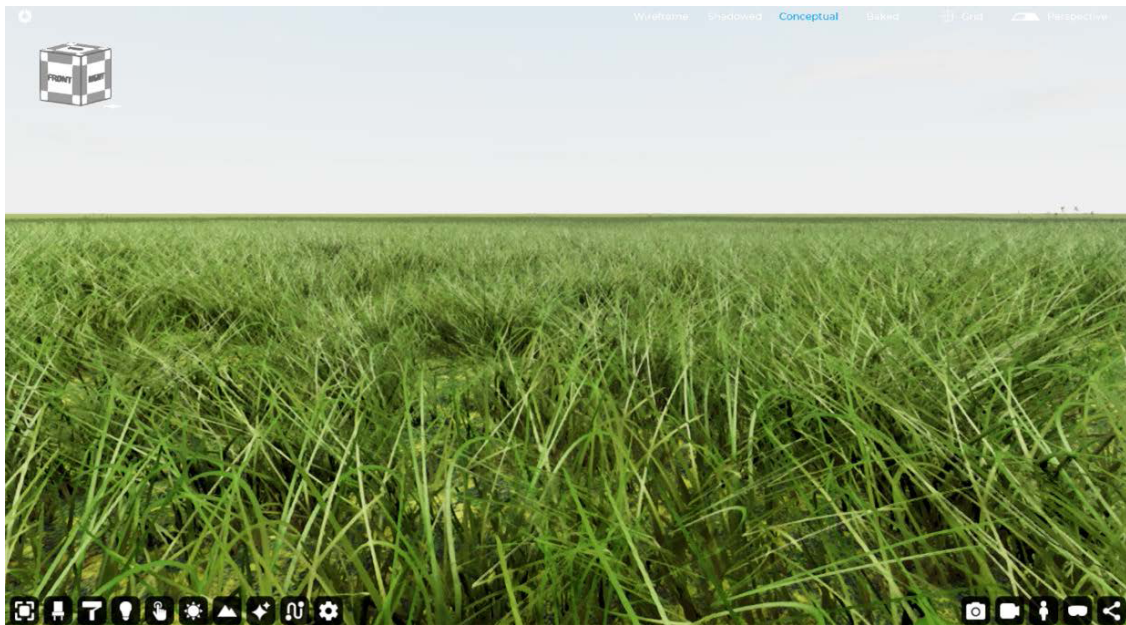
- **HDRI:** Activates (or deactivates) the HDRI background;
- **HDRI Floor:** Generates a virtual floor from the HDRI image;
- **HDRI Sun:** Allows HDRI sun to be matched with virtual sun to improve overall lighting;
- **Power:** Increases or decreases the incidence of HDRI in global illumination. Directly affects the brightness of the final image. Expressed in percentage values (%);
- **Rotation:** rotates the image 360 degrees relative to the vertical (z) axis. Expressed in degrees;

Chapter 07

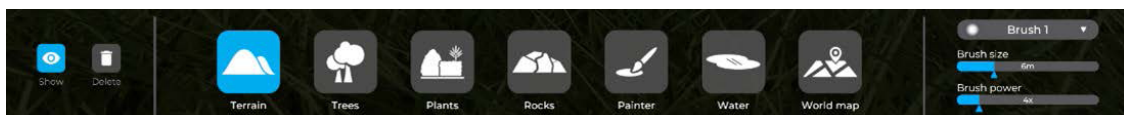
Landscape creation

07- Landscape creation

The “Landscape” tab allows you to create and edit the natural or man-made landscape elements of the project through the configuration of various parameters. The interface of the “Landscape” tab includes the ability to display or not display the terrain in 3D (show/hide the 3D terrain) and the creation commands “Terrain,” “Trees,” “Rocks,” “Painter,” “Water,” “World Map,” as well as brush configuration options that allow you to create and edit all parts related to the lay of the land.



Eyecad VR Studio allows you to import real parts of territory (with the help of Open Street Map and Digital Elevation Map technologies) or directly model one, let's see how:

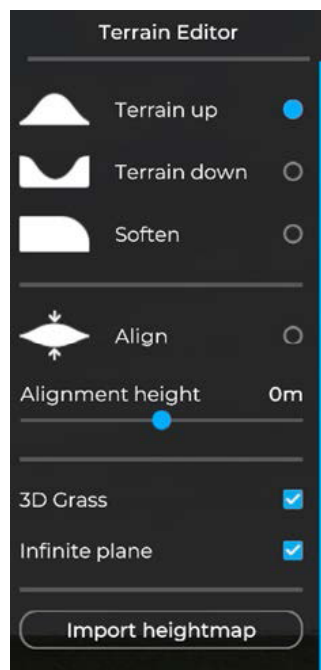


Once we enter the “Landscape” tab, in the lower left corner we can generate and/or hide the 3D terrain; if one has already been created it can be deleted using the “Delete Landscape” button. The 3D terrain consists of an “infinite” plane on which you can act, modeling, raising, lowering, leveling the terrain to make it conform to the setting you want to recreate. Other actions are available and will be, discussed in detail below.

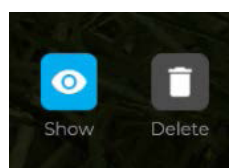
7.1 Terrain Editor

This is the tool that deals with terrain modeling; clicking on the two hills icon will bring up the “Terrain Editor” menu on the right, showing the following actions:

- Terrain up
- Terrain down
- Soften
- Align
- Alignment height
- 3D Grass
- Infinite plane
- Import heightmap



First of all, in order to perform modeling on the terrain, it is necessary to activate the Terrain, using the function: “Show”.



7.1.2 Terrain up

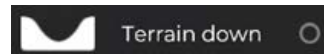
Selecting the “Terrain up” action allows you to make changes to the terrain, in the area indicated by the size of the “brush,” bringing it to the desired height. For a more precise or more general action you can choose the size, strength and shape of the “brush”.

The brush is located inside the “Landscape” tab on the right.



7.1.3 Terrain down

Selecting “Lower” allows you to work on the terrain by lowering the selected terrain area to the desired height. For more precise or more general action you can choose the size, strength and shape of the “brush”.



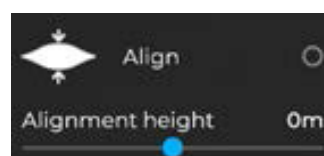
7.1.4 Soften

By selecting the “Soften” action, it is possible to intervene in the terrain by softening the curves between different terrain sizes. For a more precise or more general action, the size, strength and shape of the “Brush” can be changed.



7.1.5 Align

By selecting the “Align” action, it is possible to intervene on the terrain by bringing it to a very precise elevation. For a more precise or more general action, the size, strength and shape of the “Brush” can be changed.



07- Landscape creation

7.1.6 3D Grass

This feature allows you to generate 3D animated grass for the natural landscape. It is recommended to model the 3D terrain without the 3D grass, especially for non-high-end PCs. You can generate the 3D grass by clicking the 3D grass activation button.



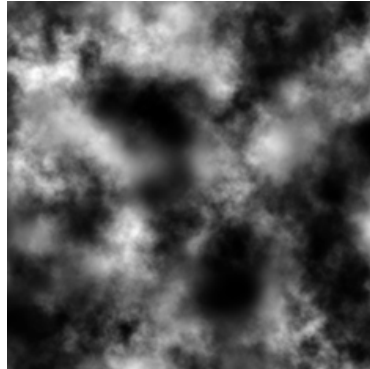
7.1.7 Infinite plane

It generates an infinite plane to simulate the horizon of the 3D scene since you can change the 3D terrain up to a certain point.



7.1.8 Import heightmap

This useful feature allows you to import the spatial trend from an image that describes it. Eyecad VR, once imported, will automatically create the spatial trend. This type of image is created with many software programs. In Eyecad VR you can import elevation map images in the following formats (jpg, png, tiff, tif):



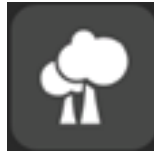
7.2 Plants

If you need to add 3D plants for private or public gardens, this is the right area; here, in fact, you can choose from many different types of decorative plants for 3D gardens, such as shrubs, small trees, and more. Simply drag the objects from the side menu to the scene.



7.3 Tree editor

If the 3D project is set in a natural landscape or in a park, natural reserve or urban area, surely there will be a need for the insertion of some trees in order to best represent it. Eyecad VR Studio provides a library of different trees that can be freely inserted into the project.



In order to include trees in the project, simply go to the “Landscape” tab and select the “Trees” button.

Once selected, a menu called “Tree Editor” will appear on your right, where you will find different types of trees. If you want to perform a quick landscape fill with several trees, you can use the brush that will help you in performing the action.



07- Landscape creation

To speed up the general landscape filling operation, select the function: “Select All,” which will select all trees in the library by placing them on the ground as the brush passes over them.

You can select the type of trees you are interested in and place them with the brush on the ground.

Again, for more precise or more general action, the size, strength, and shape of the “Brush” can be chosen.

If, on the other hand, you need a more precise adjustment, you can select and drag a tree directly from the library onto the terrain where you want to place the plant. In this case, manually dragged trees will not be anchored to the 3D landscape.

If you want to delete an area of trees without removing them individually, you can use the “Delete Trees” tool at the top of the “Trees Editor.”

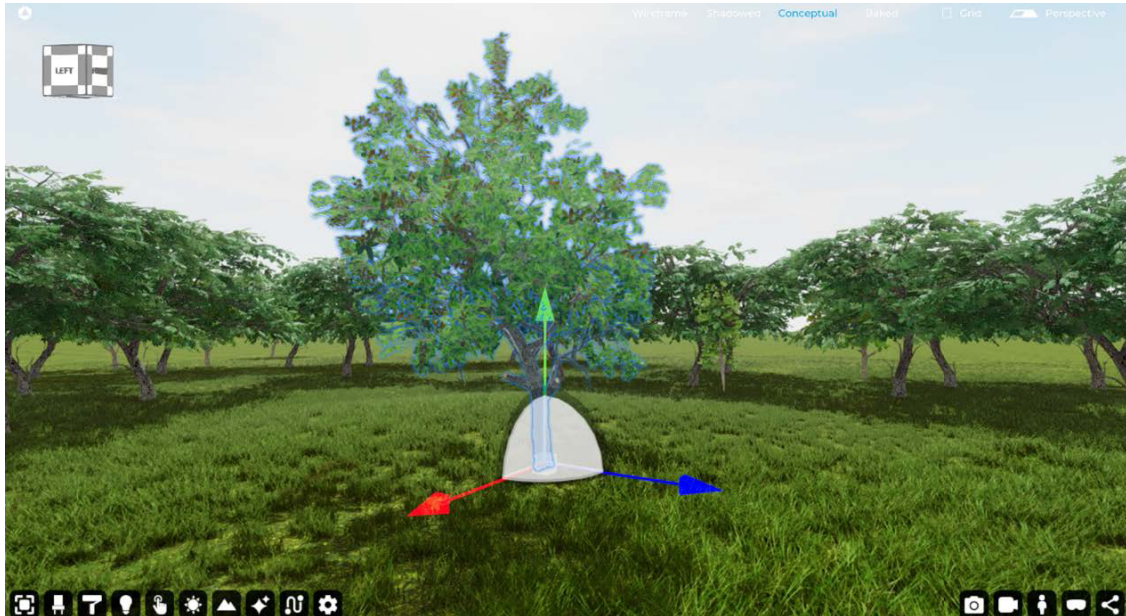
In the case of manually dragged trees, you can delete a tree individually by simply clicking on it and pressing the “Delete” key on the keyboard.

Adding trees by brush:



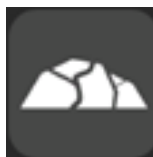
07- Landscape creation

Adding trees by dragging and dropping from the tree library:



7.4 Rock editor

If the 3D project is set in a natural landscape or in a park, reserve, or urban area, surely there will be a need for the insertion of some rocks in order to best represent it. Eyecad VR Studio provides a library of different rocks that can be freely inserted into the project.



In order to place rocks within the project, simply go to the “Landscape” tab and select the “Rocks” function.

07- Landscape creation

Once selected, a menu called “Rock Editor” will appear on your right, where you will find different types of rocks. If you want to perform a quick action to fill the landscape with different rocks, you can use a tool that helps you perform the action.



To speed up the general landscape filling operation, select the function: “Select All,” which will select all the rocks in the library by placing them on the ground when the brush passes over them. This function works only with small rocks.

You can also select the type of rocks you are interested in and place them with the brush on the ground.

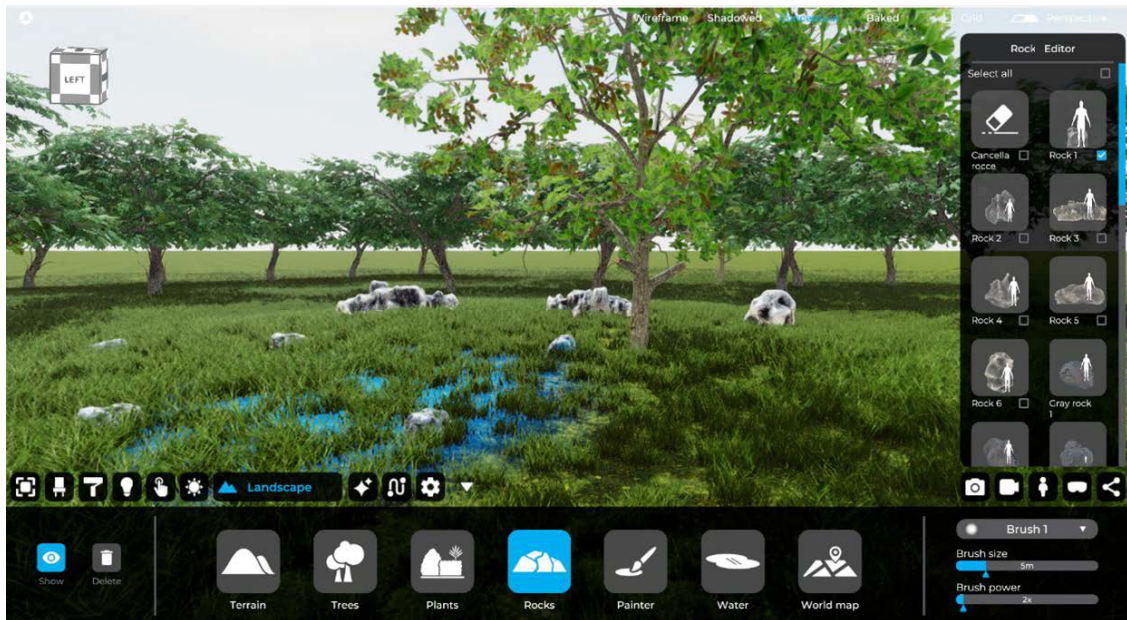
Again, for more precise or more general action, the size, strength and shape of the “Brush” can be varied.

If you need timely and more precise action, you can select and drag a rock directly from the library to where you want to place it. This feature works with all rocks in the rock editor.

If you want to delete an area of rocks without removing them individually, you can use the “Delete Rocks” tool at the top of the “Rock Editor.”

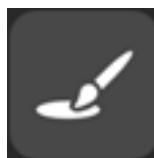
07- Landscape creation

You can also delete a rock individually by simply clicking on it and pressing the “Delete” key on your keyboard. This function works only with manually dragged rocks.



7.5 Painter

In this section Eyecad VR also allows you to customize the texture of the terrain, being able to choose from a variety of textures ranging from sand to grass, rock to earth.



In order to apply these textures, simply go to the “Landscape” TAB and click on the “Painter” icon. Once this is done, the “Painter” menu will appear where you can choose the texture best suited to your use, including:

- Sand
- Grass
- Rocks
- Ground stones
- Ground
- Ground 2
- Ground 3

07- Landscape creation



Please note: more textures for the “Painter” tool will be added in future updates

To apply them to the ground, simply choose one from the menu and apply it by pressing the left mouse button on the ground using the “Brush”.

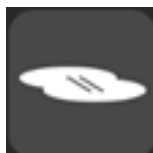
Again, for a more precise or more general action, you can vary the size, strength and shape of the “Brush” (brush).

If you want to delete an area of the ground texture, you can use the “Delete Texture” tool at the top of the “Painter” menu.

If you want to delete 3D grass in a specific area, simply use the Grass texture from the “Painter” and the 3D grass will be removed from the 3D scene.

7.6 Water

Within the “Landscape” TAB you find the “Water” section, which is very useful if the project is placed near a lake, river or the sea. In order to interact with it and see the changes, it is necessary to activate the 3D terrain with the “Show” icon, which is located to the left of the “Landscape” TAB.



07- Landscape creation

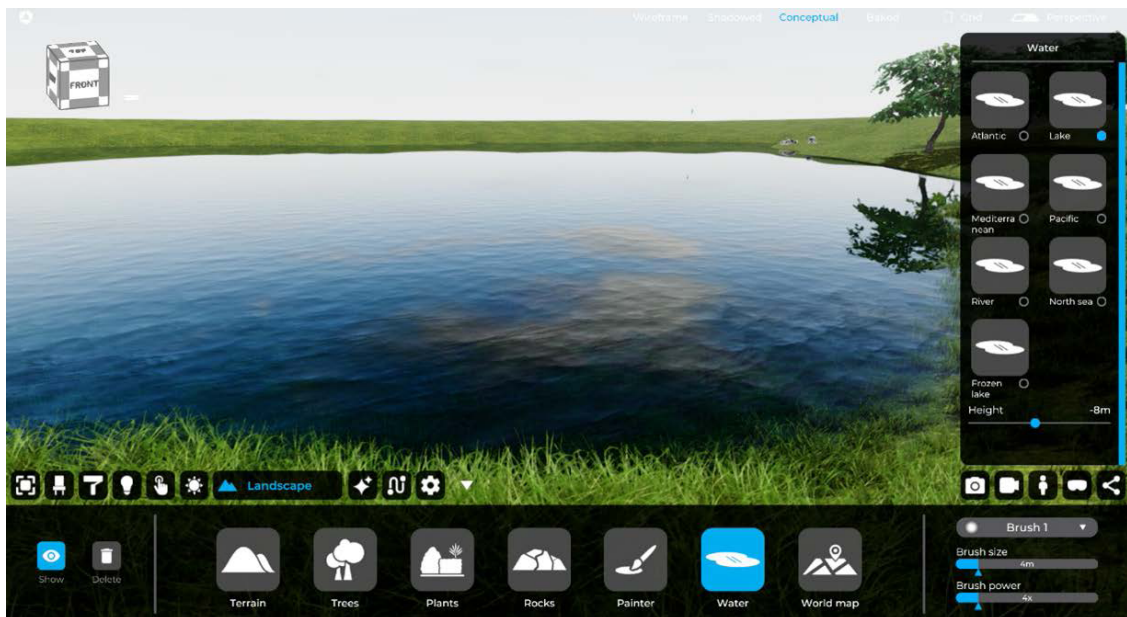
You go to the “Water” section, and here you can choose from the “Water Editor” (which will appear once you click on the Water icon) which type of “water” you want to simulate. The choice is divided into six types:

- Lake;
- Atlantic;
- Mediterranean;
- Pacific;
- River;
- North Sea;

Once you have chosen the type of water to simulate, you need to set the height of the water to at least 1 m (one meter) in order to see the simulation, or push the 3D terrain down. The height of the water surface is adjustable via the “Height” value bar within the “Water” editor.

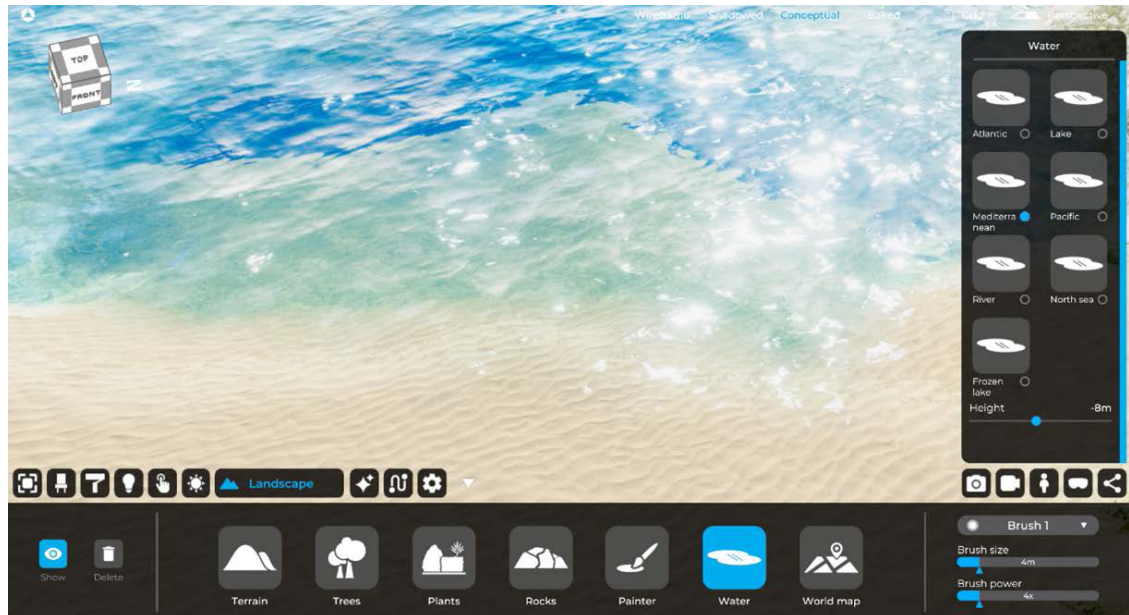
Below are the reference pictures for each water type, in order:

Lake

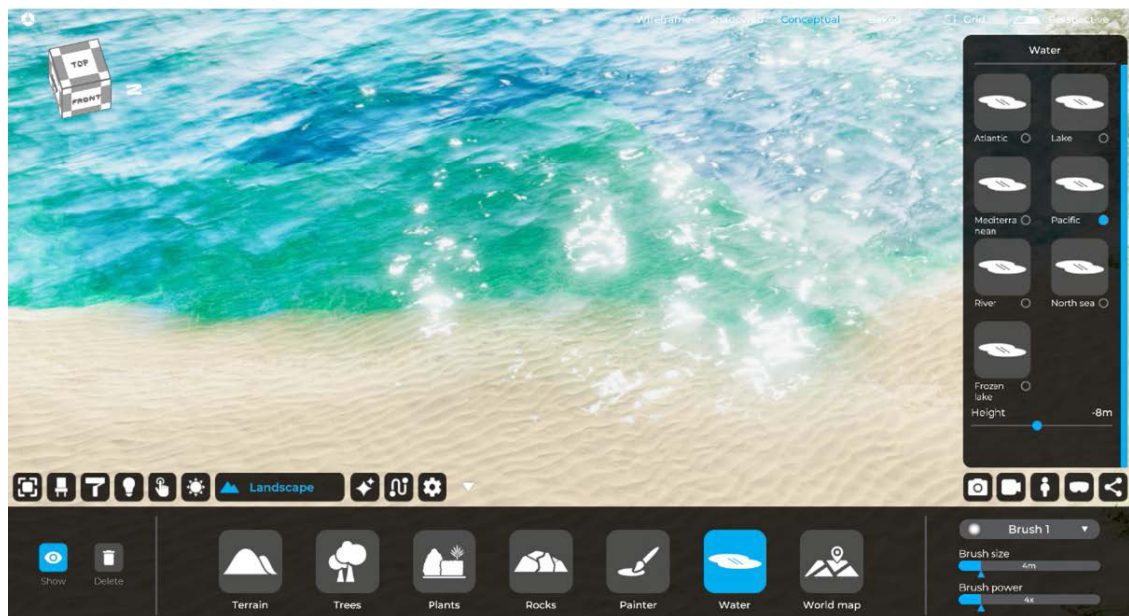


07- Landscape creation

Mediterranean



Pacific Ocean

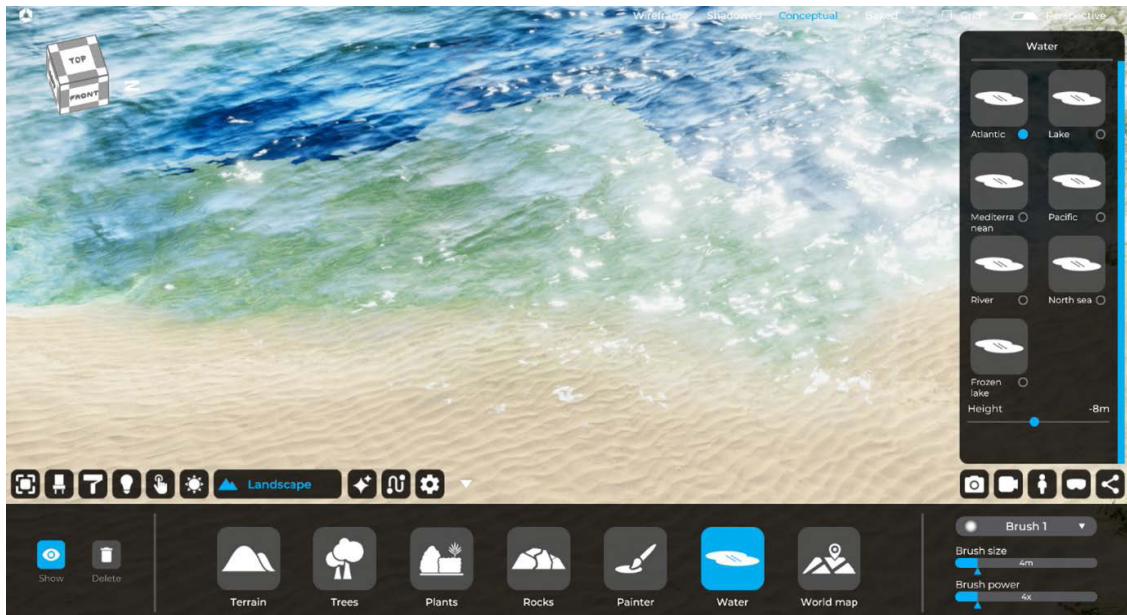


07- Landscape creation

River

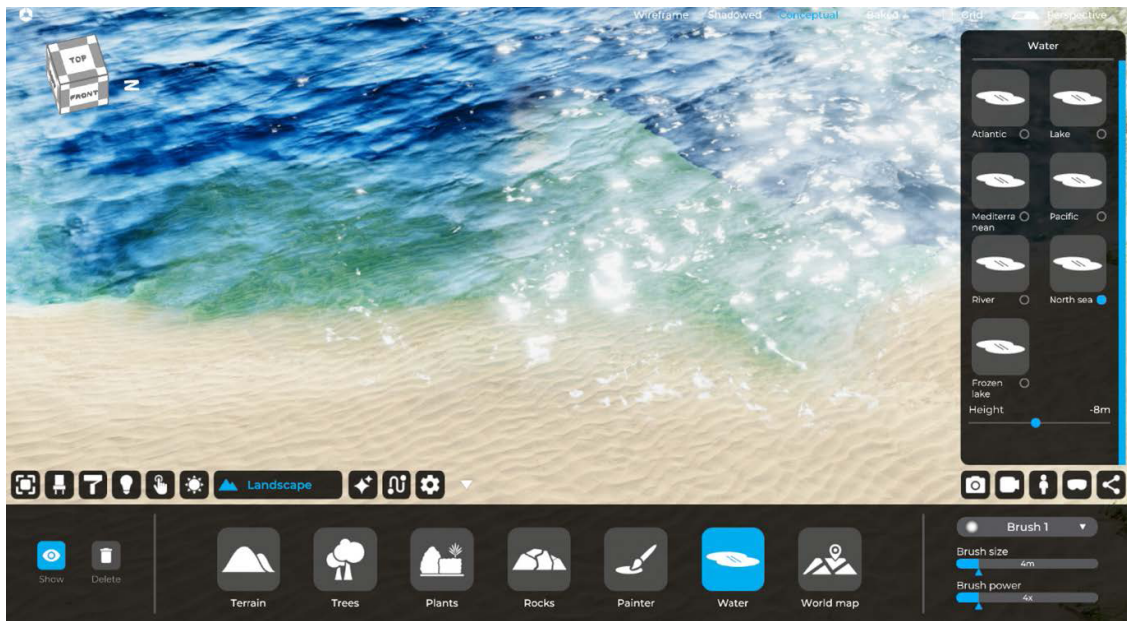


Atlantic



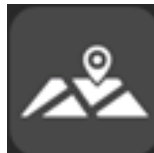
07- Landscape creation

North Sea



7.7 World map

In the “Landscape” TAB, you can import a portion of the geographical area of the globe. Simply enter the “World Map” section in the “Landscape” tab. Once you enter the “World Map” section, the “Real World Editor” will appear as usual on the right of the screen.



In the search bar just below the map, you can quickly search for the city we want to import. If, on the other hand, you want to do a more thorough search, you need to go inside the box containing the map and execute pan and scroll. Once you have located the area you want to import, click the blue “Generate World” button. You can choose whether to enter:

- Satellite images: it applies satellite photos to the terrain;
- 3D Buildings OSM (Open Street Map): it imports the simplified volume of buildings in the selected area, the green area of parks, trees, streets and other urban details into the correct location;
- Elevation DEM (Digital Elevation Map): the terrain will be imported with its topography.

07- Landscape creation



You can also take action on the height of buildings, using the “Building height” value bar in m (meters).

Whenever you want to make a change to the imported terrain and update it, simply click the blue “Generate Real World” button again.

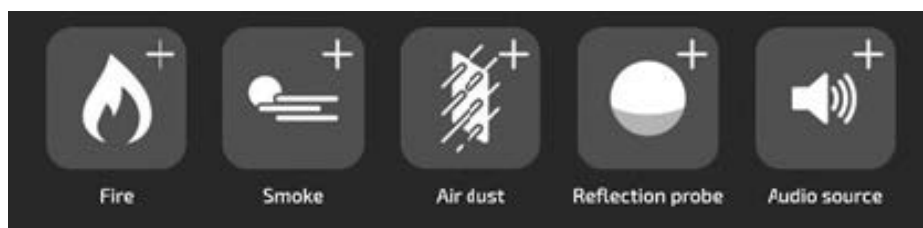


Chapter 08

3D Visual Effects

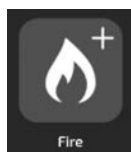
The “Effects” TAB allows you to add and manage visual effects, typically used to improve the final rendering of a rendering or video animation; specifically, within this TAB you find:

- Fire;
- Smoke;
- Air dust;
- Reflection probe;
- Audio source;



8.1 Fire

It is characterized by the unmistakable flame icon, the “Fire” effect simulates the animation of fire, found in elements such as a fireplace or bonfire. To use a fire effect, in the “Effects” tab, select and drag within the scene the icon depicting the flame. At this point, the generated fire can be handled like any other object in the scene (“Edit” TAB, controls allow moving and rotating). The “Fire” effect is able to influence the general lighting of the scene, projecting the unmistakable warm light that characterizes it



08- 3D Visual Effects

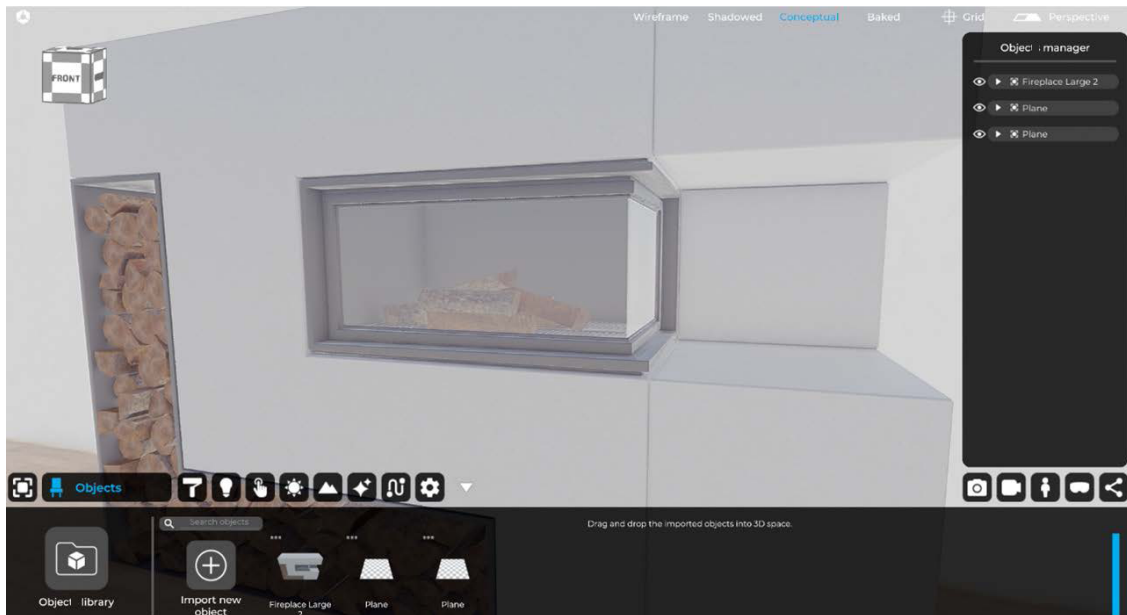


Image without fire effect

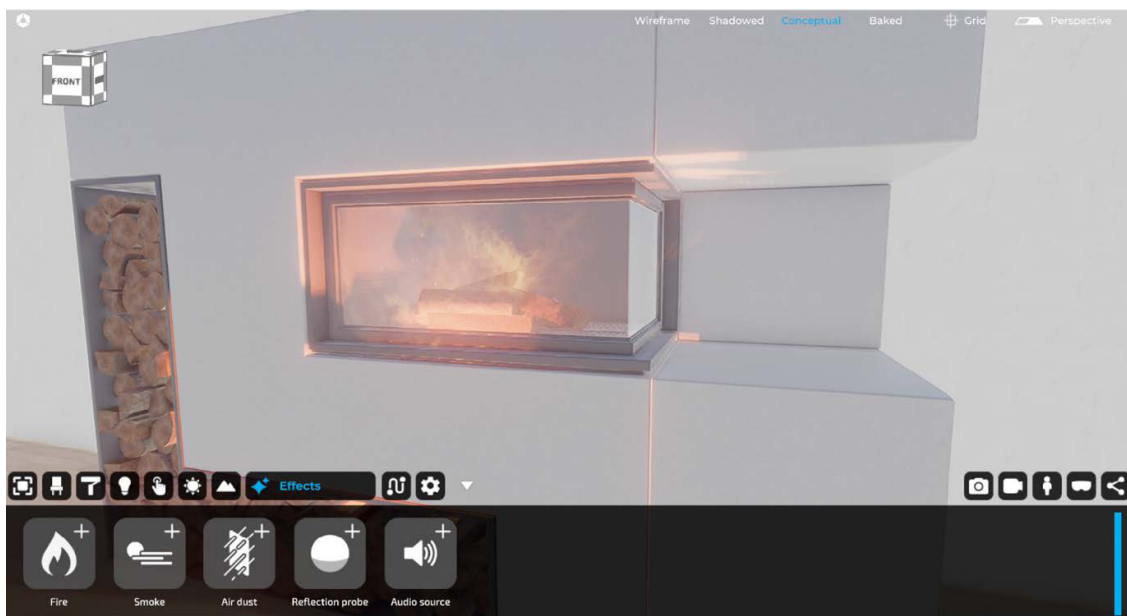
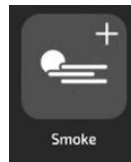


Image with fire effect

8.2 Smoke

The “Smoke” effect simulates the behavior of fog banks. This effect is very useful for simulating fog banks in environments ranging from a forest to high mountains.



8.3 Air Dust

The “Air Dust” effect allows you to create an indoor area filled with airborne dust that, when hit by sunlight, generates the effect of Volumetric Lights. It is very important in this case to size the box containing the effect well and make sure that light enters from the openings so as to generate the effect of Volumetric Lights.

It is also important to size and place the reflection probe in the center of gravity of the various rooms and using the scale command, so as to incorporate the objects of interest into it. Help yourself with the different views of the view cube in “axonometric” visualization mode for sizing and placement of the “Dust” box.



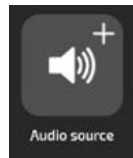
8.4 Reflection probe

The reflection probe is a component used in computer graphics to capture and represent the reflection of the surrounding environment in real time. In Eyecad VR Studio it is used to enhance the effect of reflective surfaces such as water, metal and glass. The reflection probe can be placed in the scene via drag’n’drop. Once placed in the scene it must be sized via the gizmo (or edit points placed in the center of each side of the cube) and must include the surfaces you want to reflect within the environment.



8.5 Audio source

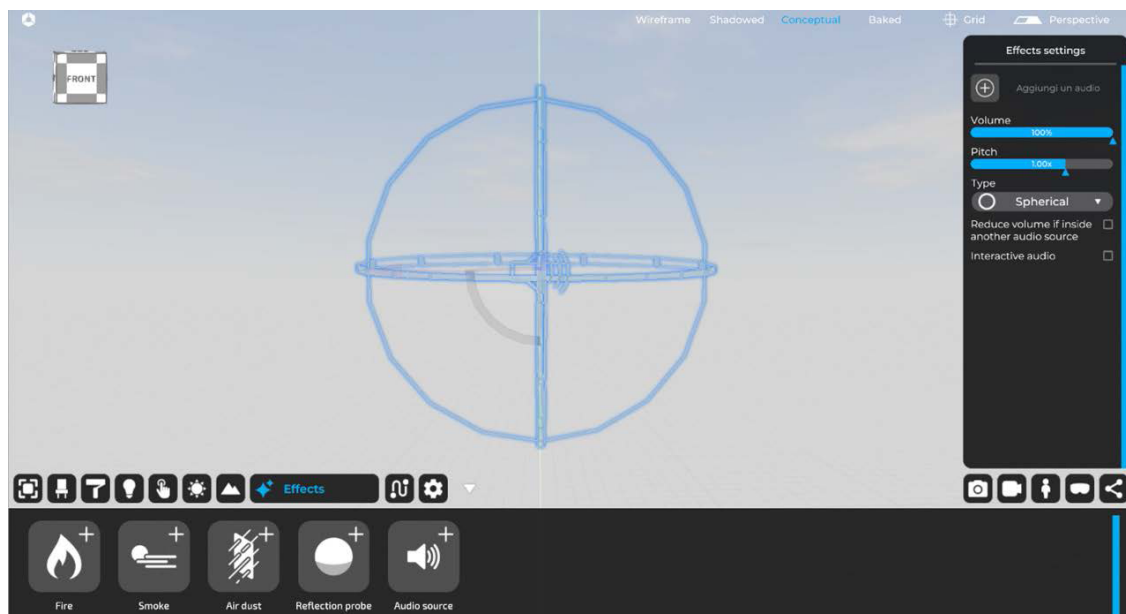
The “Audio source” allows you to add sound files to the scene, audible during user exploration, and can be activated by dragging the “Sound Source” icon from the bottom bar of the “Effects” TAB to the 3D scene.



Once you ha’ve added the effect, from the right-hand menu “Effect Settings,” the first thing to do is to add the audio file (.mp3 or .wav) that you want to recreate. At this point you can define the volume and pitch using the appropriate sliders and choose the source type, and you can choose from:

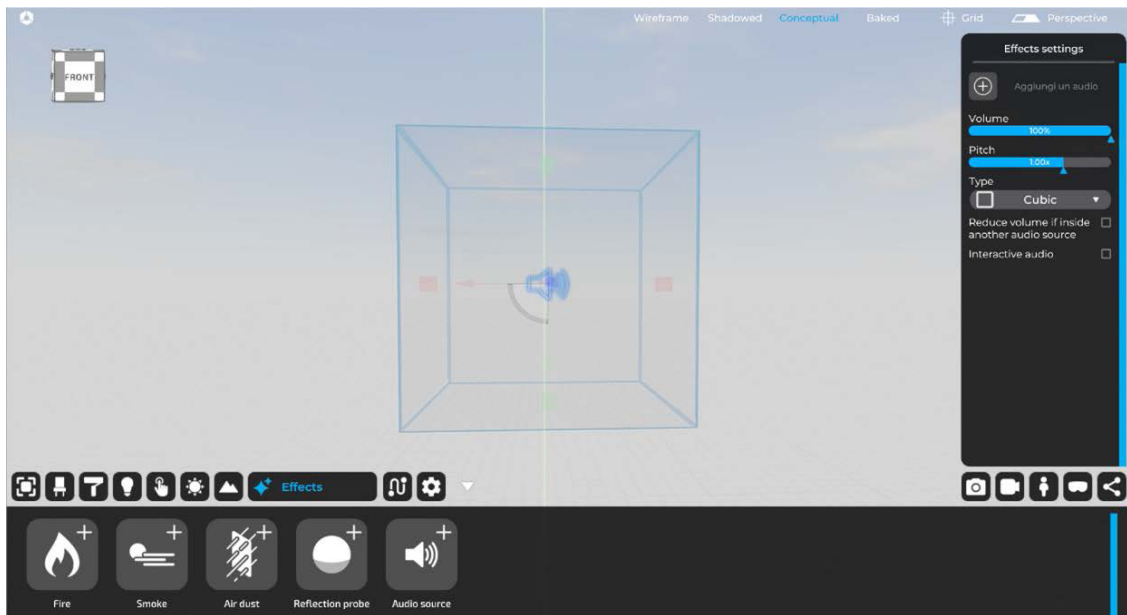
- Spherical;
- Cubic;
- Background;

Spherical: It emits sound from the central point, creating an effect of increased volume as the user approaches the source.

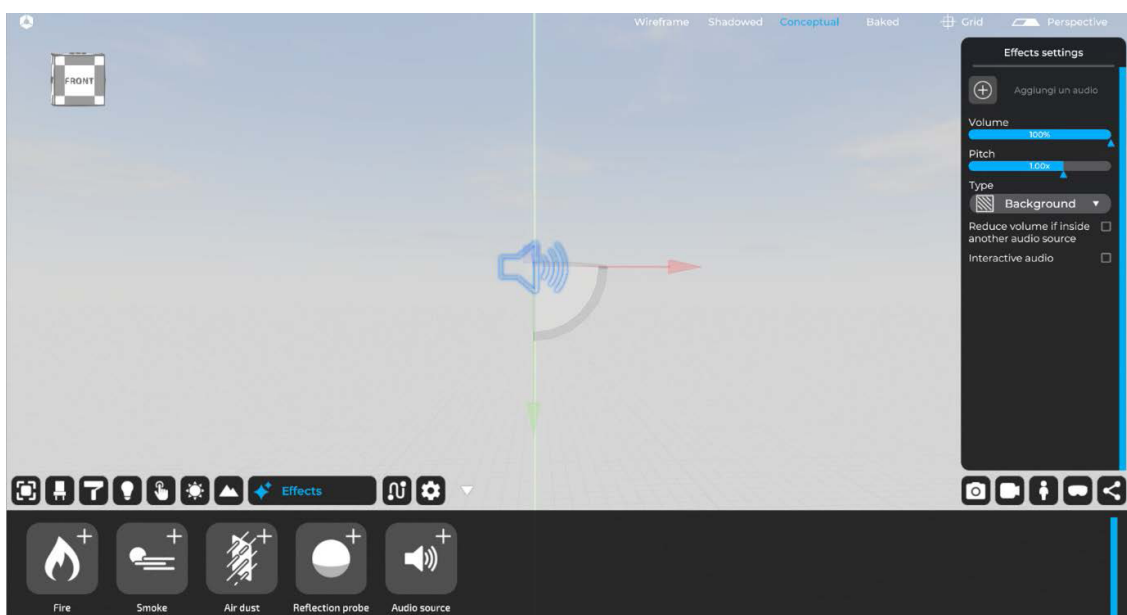


08- 3D Visual Effects

Cubic: It emits sound in the entirety of the desired area (the latter of which can be configured via the appropriate gizmo and box modifiers) creating a sound effect audible only within the volume itself (example if you want to reproduce a rain effect from inside a building).



Background: It emits sound throughout the scene without any difference in volume, regardless of where the user is during the exploratory phase.



The last two Check-boxes can be activated at the same time and are:

- **Reduce the volume if inside another audio source:** this option allows the volume of the source to go down if there is another source inside that you want to give more emphasis to, such as, for example, going from a large box that simulates rain outside and then going into a structure where another box will simulate the effect of rain inside the building, then in a more attenuated way.
- **Interactive audio:** it creates interactive audio, which can be activated during exploration by the user (e.g., to simulate the start of a song upon clicking on the source icon).

Chapter 09

Animations

3D People, 3D

Cars and more

09- Animations, 3D People, 3D Cars and more

The “Animations” tab allows you to create and manage animated 3D paths and is divided into several categories:

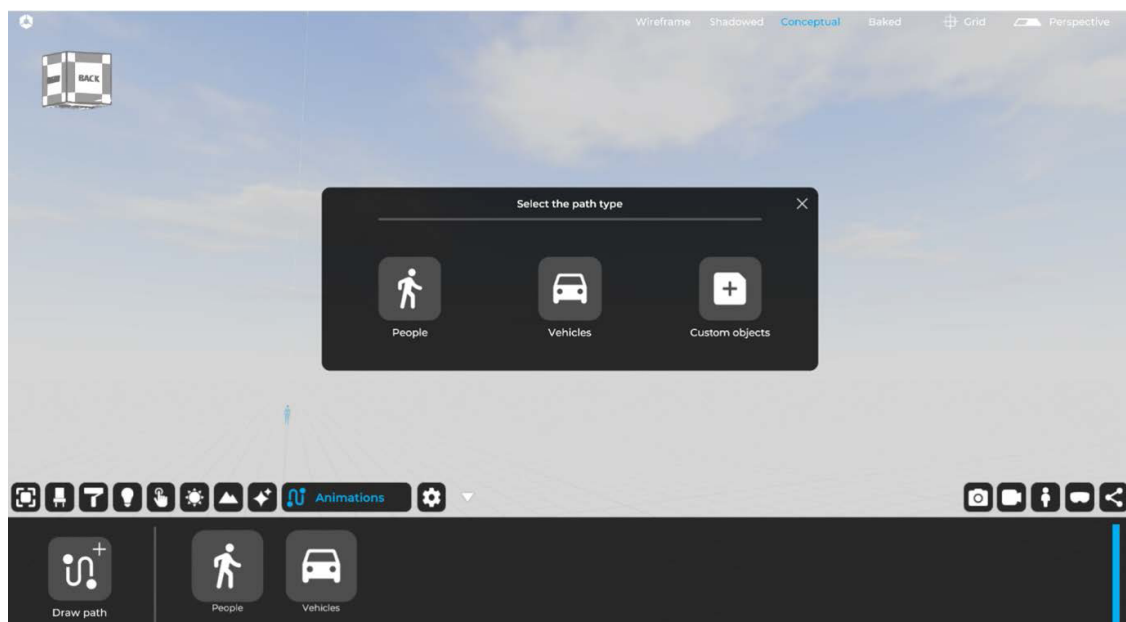
- People
- Vehicles (it allows traffic to be simulated in an urban setting).
- Custom objects

This TAB is useful if you want to fill and animate your project, especially for videos and explorations.

The first step is to go to the “Animations” tab of the general Eyecad VR user interface.

9.1 Draw path

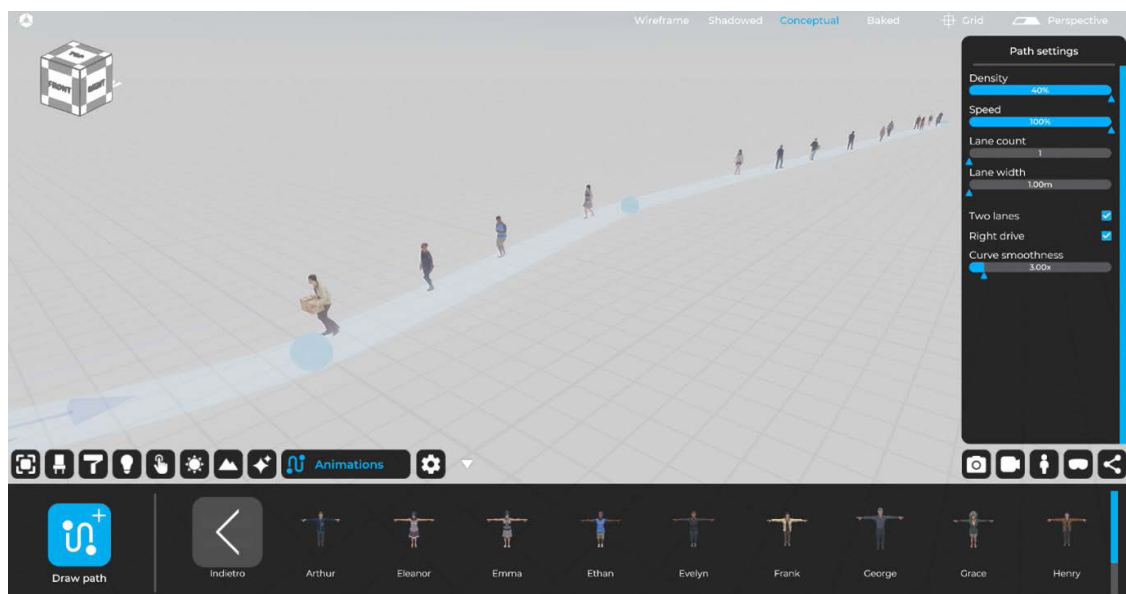
If you want to draw a path, you can click on the “Draw Path” icon and choose from different types of paths:



- 3D path of people;
- 3D vehicle path;
- Custom object path;

9.1.1 3D People Path

The path of people could help animate a sidewalk in an urban context or park. By adding people's path, you can set some parameters that allow you to have a more realistic situation of the context created with people. You can create the path by creating point by point the desired path on which the 3D people will walk.

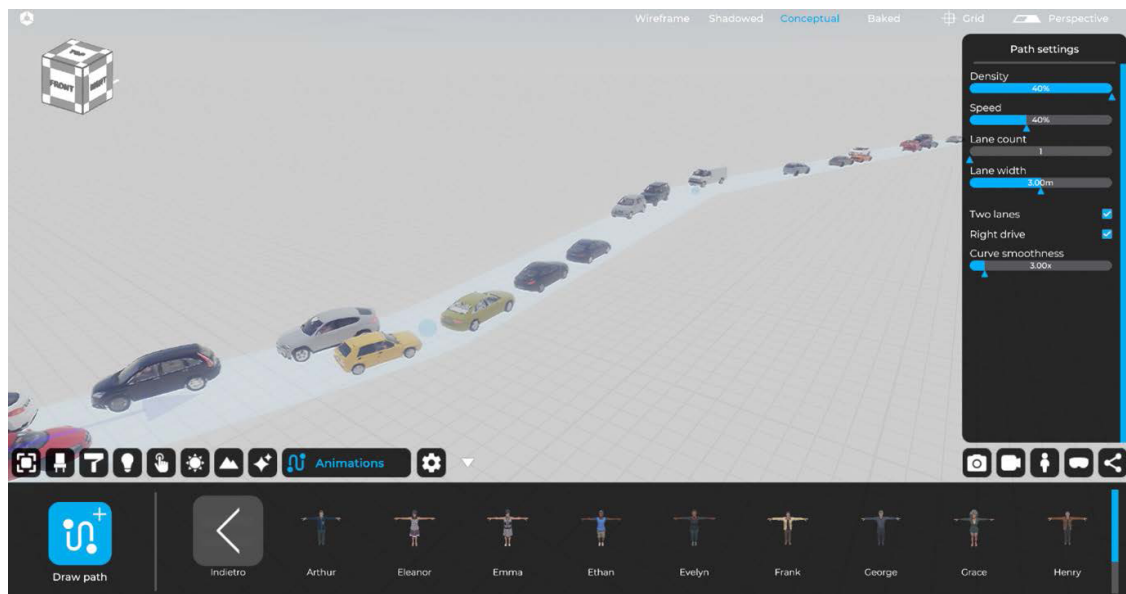


These are the parameters you can change by clicking on a blue dot in the path:

- Density;
- Speed;
- Lane counts;
- Lane width;
- Two lanes;
- Right drive;
- Curve smoothness;

9.1.2 Vehicles path

Vehicle routing could help animate a street in an urban or suburban context through 3D car traffic. By adding the vehicle path, you can set some parameters that allow you to have a more realistic situation of the created context. You can create the path by creating point by point the path on which the 3D cars will walk.



These are the parameters you can change by clicking on a blue dot in the path:

- Density;
- Speed;
- Lane counts;
- Lane width;
- Two lanes;
- Right drive;
- Curve smoothness;

9.2 Static vehicles and animated people (without path-way)

If you need to add static cars or animated people that will not walk, you do not need to create a path. In this case, the simple action to perform is to open the dedicated library: people or vehicles within the “Animations” TAB and drag the desired objects into the 3D scene.

9.2.1 Animated 3D people (without path)

To add 3D people to the scene, you need to drag them onto the 3D scene from the library, located at the bottom. Once released on the scene, selecting one will bring up a new menu on the right with the character's settings. Now you can select the animation you want to make. You can choose from:

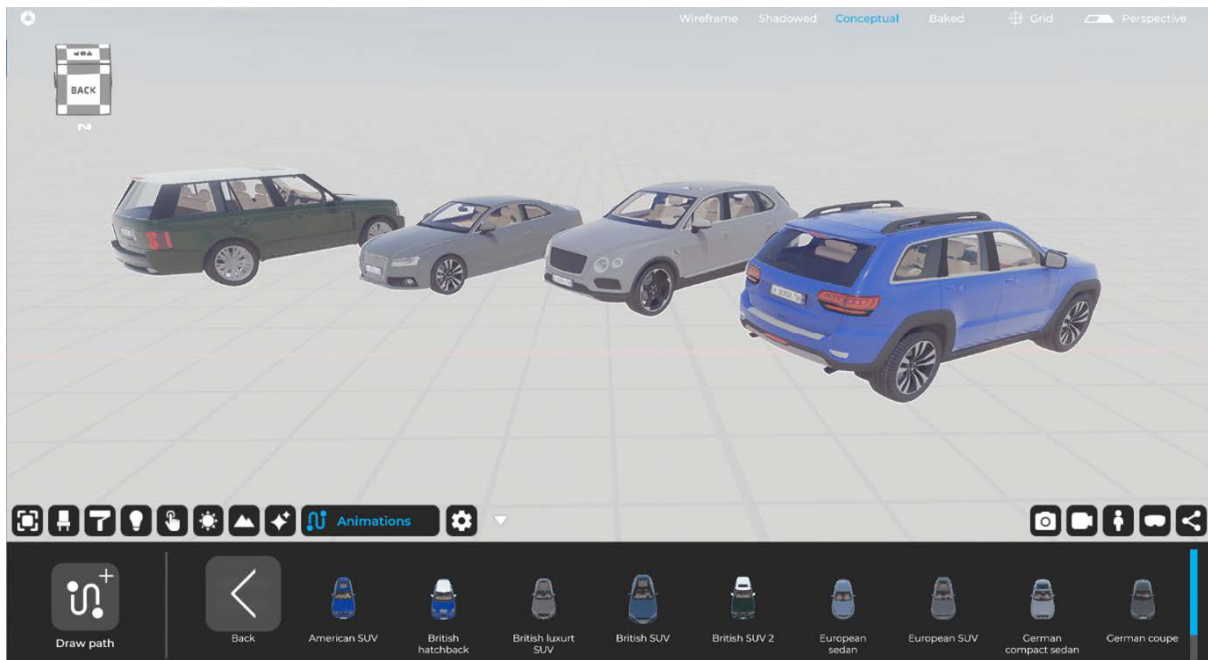
- Idle;
- Texting;
- Holding box;
- Laying;
- Dancing;
- Sitting;
- Talking;
- Phone talking;



09- Animations, 3D People, 3D Cars and more

9.2.2 3D Vehicles

To add 3D cars to the scene, you need to drag them onto the 3D scene from the library.



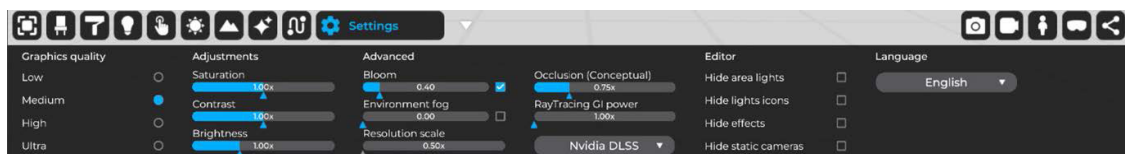
Chapter 10

General Settings

10- General settings

The “Settings” tab allows you to set various editor display parameters in Eyecad VR Studio. The interface of the “Settings” TAB features:

- **Graphics quality;**
- **Adjustments;**
- **Advanced;**
- **Editor;**
- **Language;**



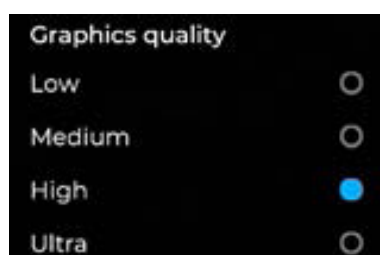
10.1 Graphics quality

The “Graphics Quality” section allows you to choose from four pre-sets of Eyecad VR Studio’s overall rendering quality:

- **Low;**
- **Medium;**
- **High;**
- **Ultra;**

Each option can affect many aspects of real-time rendering such as the quality of the lighting, the bounces it makes, shadows, reflections, and all visual effects in the scene at the EDITOR stage.

Please note: Ultra quality is highly recommended for high-end PCs.



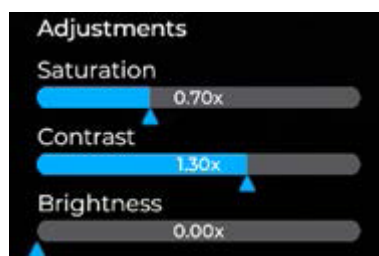
10.2 Adjustments

The “Adjustments” section allows you to define three of the main adjustments to a screen image:

- **Saturation:** adjusts the intensity of colors;
- **Contrast:** adjusts the ratio between light and dark areas;
- **Brightness:** adjusts the black level;

Adjustments start from a default value, to which changes in cents can be made in either positive (increase) or negative (decrease) directions.

Please note: Brightness control affects the perceived contrast of an image, and contrast control affects brightness.



10.3 Advanced

The “Advanced” section brings together a number of detailed aspects concerning the characteristics of Post-Process effects and the overall resolution of the project, affecting the relative aspects of graphic detail. In “Advanced” you can configure the following properties:

-**Bloom:** it is an effect used in Computer Graphics with high dynamic range (HDR) rendering to reproduce an artifact of real-world camera images. The effect produces a glow of light that extends from the edges of bright areas of an image, contributing to the illusion of extremely bright light that overwhelms the camera or eye capturing the scene;

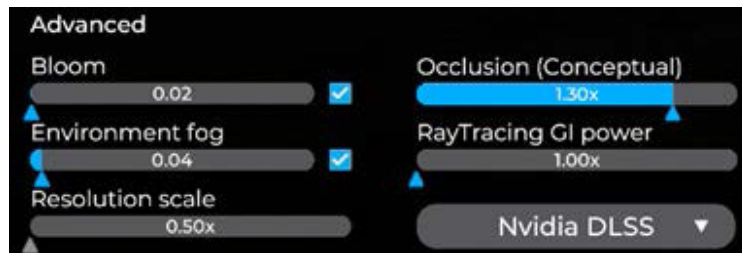
-**Environment fog:** it is the effect of ambient fog of the whole scene (it reaches to the horizon);

-**Resolution scale:** it manages the resolution and detail of the image. For PCs that are not particularly powerful, it is not recommended to increase the value of this parameter unless you have the latest generation GPUs (RTX 30xx/40xx series). This parameter cooperates closely with the Nvidia DLSS algorithm.

-**Occlusion** (Conceptual): It defines the intensity of ambient occlusion in the 3D scene in “conceptual” mode.

10- General settings

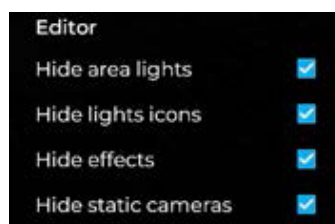
-Nvidia DLSS/Temporal Anti-Aliasing: Anti-aliasing softens lines by smoothing edges and improving image quality. Nvidia DLSS, on the other hand (Deep Learning Super Sampling) is a technology developed by NVIDIA that takes a low-resolution image and then uses AI to generate a series of varied sampling and then select the best ones to use as a reference to produce a higher resolution image.



10.4 Editor

The “Editor” section allows you to hide the icons that characterize the following objects in the scene, leaving their effects active:

- Hide area lights:** it hides the emitting surface but not the emitted light.
- Hide lights icons:** it hides the icons indicating the presence of lights in the space.
- Hide effects:** it hides the parallelepiped from view but not from effects.
- Hide cameras:** it hides the cameras created within the project.



10.5 Language

The Language section allows you to configure the general language of the software that affects the description of all visible entities in the interface and the content of the scene. This option allows you to change the language even after installing Eyecad VR Studio. Currently Eyecad VR is available in:

- English;**
- Italian;**
- French;**
- Polish;**
- Czech;**

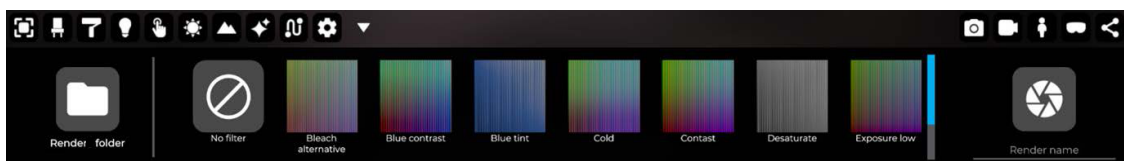
Chapter 11

Creating Renderings, Still images

11- Creating Renderings, Still images

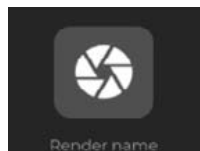
The “Rendering” tab, indicated by the camera icon in the general UI of Eyecad VR Studio, allows you to create static renderings (single or multiple images) of the project scene. The “Rendering” TAB interface includes the ability to name and save renderings, a library of image filters, the ability to define image resolution and quality, and an option that allows instant folder retrieval for saving renderings.

Please note: The type of rendering will depend on the display mode used at the time of the shot, so if the active mode at that time is “Baked” the rendering will be done taking the latter into account.



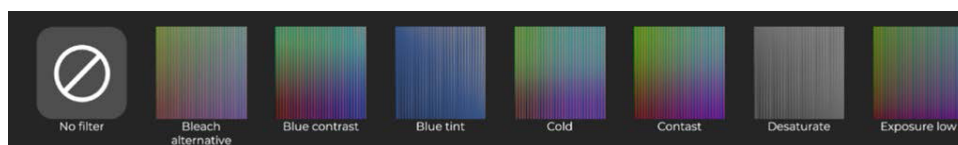
11.1 Render name

The “Render Name” section allows you to type in the name of the file (and thus the name of the final rendering that will be run), which will automatically be saved in the default folder for saving renders in PNG format. You will simply need to click on the appropriate “Render Folder” icon to the left of the user interface within the “Renders” tab to access it.



11.2 Filters

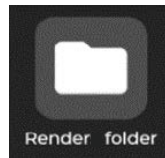
Eyecad VR Studio gives you a gallery of filters that can be applied to the image simply by clicking on one of the options in the middle part of the “Rendering” interface in the TAB. The filter is applied in real time on the image and you can therefore see the final result of the post-produced rendering even before you shoot the render.



The “filter intensity” option is a slider control expressed in percent (%) that adjusts the effects of the application. At 0% the effects of the filter are invisible compared to the original image, while at 100% the effects offer a very different version from the condition prior to its application.

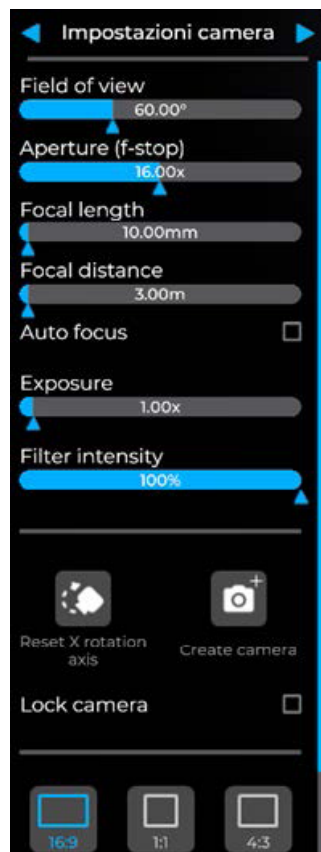
11.3 Render folder

The “Render Folder” command allows you to instantly reach the render destination path on the PC that is automatically created by the software within the project file directory.



11.4 Camera settings

The “Camera Settings” editor allows you to define the photographic parameters of the selected camera. Once you enter the shooting mode, the Camera Settings menu will appear on the right side of the screen.



11- Creating Renderings, Still images

Configurable options allow action on the following elements:

- **Fields of view(FOV);**
- **Aperture (f-stop);**
- **Focal length;**
- **Focal distance;**
- **Autofocus;**
- **Exposure;**
- **Filter intensity;**
- **Reset X rotation axis;**
- **Create camera;**
- **Lock camera;**
- **Aspect Ratio;**

Fields of view(FOV): Photographic parameter indicating the camera's field of view, expressed in degrees (°).

Aperture (f-stop): photographic parameter that indicates the focus distance of the camera. Moving the AF point closer or further away creates blurred backgrounds, which are ideal for emphasizing objects that are close to the lens or very sharp, such as in wide-angle situations.

Focal length: is a physical quantity that refers to the distance between the focal point of a lens and its focal plane. In other words, focal length represents the distance between the lens and the point at which the image of an object is brought into focus.

Focal distance: Focal distance is a physical quantity that refers to the distance between the focal point of a lens and its optical center. In other words, focal distance represents the distance between the lens and the point at which parallel light rays are focused after passing through the lens.

Auto focus: Autofocus is a system for automatically adjusting the focus of an image. In other words, autofocus manages to keep the image of a subject sharp when the camera is pointing at it.

Exposure: it refers to the amount of light that enters the camera lens and reaches the virtual camera sensor or film. It is the process by which the camera controls the amount of light entering through the lens aperture to create a properly exposed image.

Filter intensity: image post-production option (visible in real time) that determines the intensity of applying a filter (effect) on the final render. Expressed in percentage terms (°).

11- Creating Renderings, Still images

Reset X rotation axis: application of this command automatically restores the camera's X-axis rotation, effectively eliminating "falling lines" within the image. The resulting effect is a straightening of vertical lines, eliminating upward perspective convergence. This is a tool that has always been used in architectural photography to avoid deformations that can mislead the reading of building elevation composition.

Create Camera (multiple cameras): it allows you to create a system of multiple cameras, which allows you to save and recall a series of views without having to leave the rendering mode user interface. Each camera has its own "camera settings" editor marked with a sequential number, which allows scrolling and selection of the relevant camera, whose settings can be changed completely independently.

Lock camera: if it is active, prevents you from changing the current camera settings. This is a useful option especially to avoid distracted and unwanted movements, which are common when you forget to leave camera mode for normal window navigation.

Aspect Ratio: Defines the framing ratio in the most used formats, which are also very useful for direct export to major social networks, specifically we find:

- 16:9;
- 1:1;
- 4:3;
- 1.91:1;
- 9:16;
- 4:5;

Rendering Settings: Window that allows you to set the final render export parameters. You can set the quality of the render (low, medium, high, ultra) and the resolution (HD, FULL HD, 2K, 4K). To initialize the rendering phase you will simply click on "start rendering".

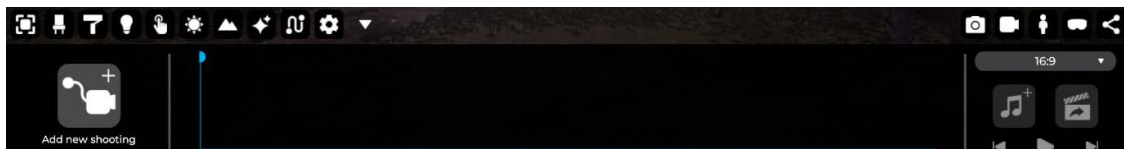
Chapter 12

**Creating video
animations
Video maker**

12- Creating video animations. Video maker

The “Video Maker” tab allows the creation and export of cinematic animations in the form of video clips. Unlike static rendering, which is characterized by a single image, the creation of which is relatively fast depending on the set resolution, video content offers a number of additional options, starting with a more articulated management of the cameras in Eyecad VR Studio.

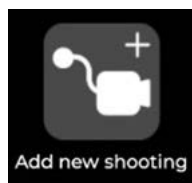
The interface of the “Video Maker” TAB contains the command to insert a new camera, a central part dedicated to the time sequence and general settings of the video animation, such as the target destination, the duration of the whole clip, the Delete button, and the setting for the replay time of the start and end of the clip; on the right you can select the resolution of the animation, add an audio track, and export the clip after defining all the necessary settings.



12.1 Add new shooting

The “Add new Shooting” command allows you to insert a video camera into the scene with which you can set all the control properties of video animation shooting.

Inserting a “new shot” into the scene will automatically create a sequence in the central area of the “Video Maker” tab, the default name of which will be “Shot 1,” with progressive numbering that follows the cameras successively created in the scene.



12- Creating video animations. Video maker

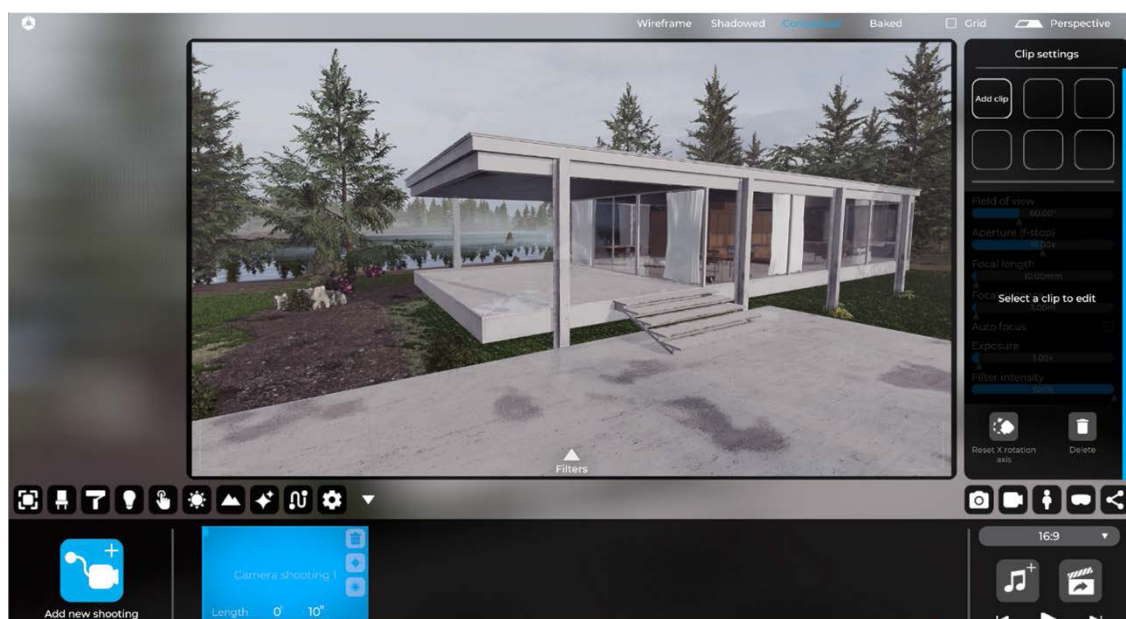
12.1.1 Shooting settings

The shot contains the sequence of movements and camera settings, properties that the camera will have throughout the recording of the shot itself (adjustable from Clip Settings) and other fundamental settings. In detail, the options allow you to perform the following operations:

- Delete: it completely deletes the selected shot.
- Target: it allows to select an object on which you want the camera to focus and set the camera observation direction to that focus
- Time settings: it allows to set a start and end time. This option is usually used to perform timelapse studies that require correct solar positioning. Regardless of the times set, the reset will always have a duration coincident with the duration set by the sequence once you exit video-maker mode. The result is a relatively accelerated lighting change in the generated video clip, acceleration that depends on the duration of the shot.
- Length: it is expressed in “minutes” and “seconds” and allows you to set the duration of the clip, which will determine the speed of the camera movements or the speed of the hourly variation set.

12.2 How to create a video animation

By selecting a sequence, the determining camera is selected in the scene, and the viewpoint will automatically switch to within the camera shot, that is, within the preview window.



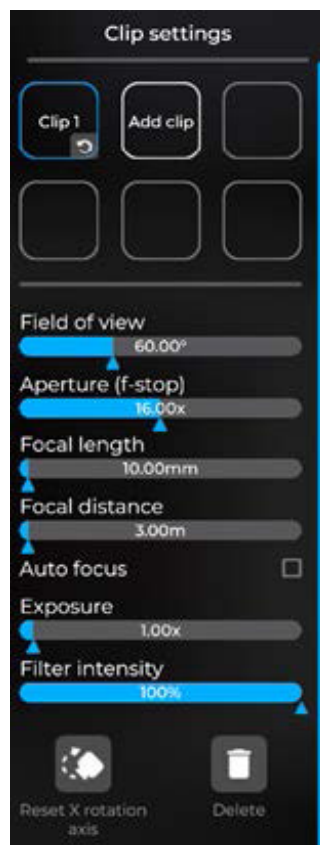
12- Creating video animations. Video maker

You can create a maximum of 6 clips for each camera shot. The clips will determine the number of the keyframe saved for the entire shot, saving the frame, clicking on the “Update” button of the individual clip will allow you to save all the parameters of the shot from that moment, viz:

- Fields of view(FOV)*;
- Aperture (f-stop)*;
- Focal length*;
- Focal distance*;
- Autofocus*;
- Exposure*;
- Filter intensity*;
- Reset X rotation axis*;
- Create camera*;
- Lock camera*;
- Aspect Ratio*;
- Delete;

Please note: When moving clips or changing clip camera parameters, it is essential to update clip values by clicking the Update Clip icon.

* These properties are described in the previous chapter (Ch. 11).

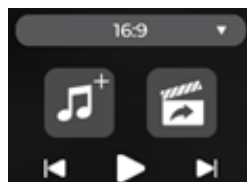


12- Creating video animations. Video maker

Within the preview windows, for each clip, you can add photo filters. You can activate a preview of the footage at any time, simply by pressing the “space bar” or by clicking the “Play” button to the right of the Video-maker UI, after configuring the clips. The right side of the “Video Maker” tab provides an additional set of controls, functional for completing the footage and exporting the video clip.

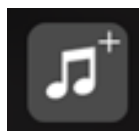
The drop-down menu, on the right, allows you to set different Aspect Ratios:

- 16:9;
- 1:1;
- 4:3;
- 1.91:1;
- 9:16;
- 4:5;



The right side also features a player that allows you to quickly play the sequences in “Video Maker,” while the central part features two icons:

- **Add Audio source:** it allows you to insert an audio track into the sequence.



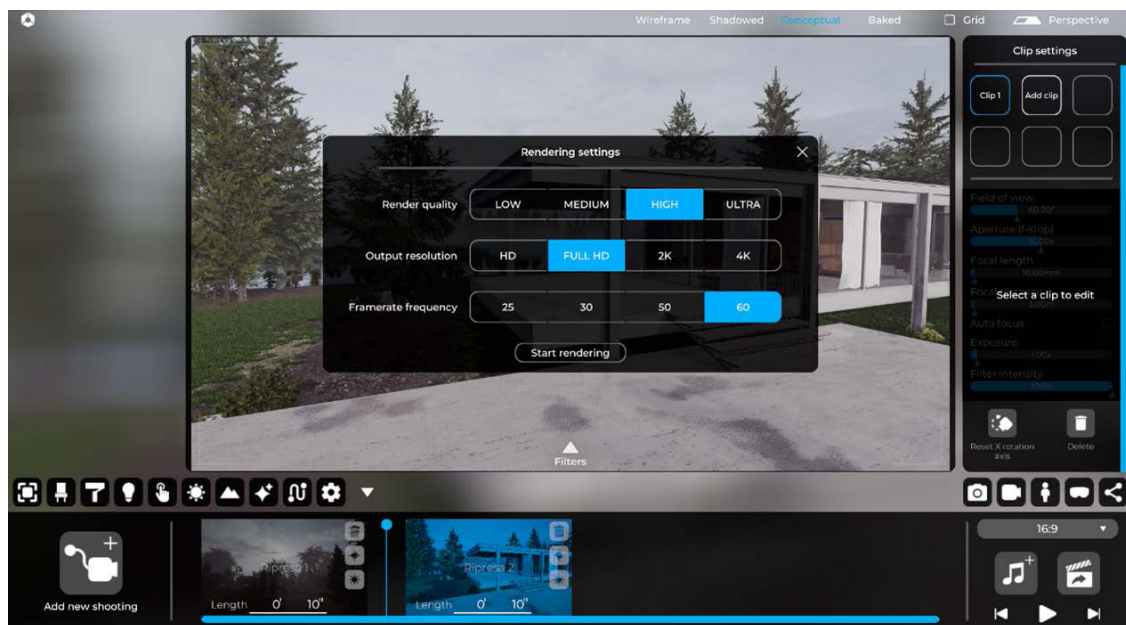
- **Export Clip:** it allows you to choose the directory and name the video clip to be exported.



12- Creating video animations. Video maker

Finally, once you are ready to render the video animation, simply click on the “Export” icon and the rendering settings window will open.

- **Rendering settings:** Window that allows you to set the final render export parameters. You can set the render quality (low, medium, high, ultra), resolution (HD, FULL HD, 2K, 4K) and frame rate (25, 30, 50, 60). To initialize the rendering phase, you will just need to click on “start rendering”.



Please note: The rendering of the video animation will be done in the mode used at that moment in the editor. For example, if you want to shoot in “Baked” mode, you need to make sure that you have enabled the eponymous homonymous display mode at the top of the general Eyecad VR Studio UI.

Chapter 13

Real-time project exploration

13- Real-time project exploration

Projects created with Eyecad VR Studio can be explored either through monitors or through virtual reality viewers. Real-time exploration is a powerful tool available to users of Eyecad VR Studio who have the chance to step inside the project and interact with it as if they were there through previously created interactions, as already described extensively in this chapter Ch.5 .

13.1 Starting point of exploration

The first step is to set the initial location through Eddie's position (Eddie is the blue-colored avatar that appears in 3D space). In fact, clicking on the TAB with the stick man icon in the general user interface (to the right of the screen) allows you to set Eddie's location and any "Teleport Points" that allow the explorer to teleport to multiple environments without having to physically reach them.



13- Real-time project exploration

Once set up, you can click on the dedicated exploration UI TAB (the icon depicting a visor) to access the exploration settings:



13.1.1 Visualization options

The display options window allows you to choose the most important display settings:

Rendering settings:

- Baked;
- Conceptual;
- Shadowed;
- Resolution scale;

Baked

Real-time rendering is enabled and it is possible to explore the project with all objects in the project calculated as a result of Light-Baking performed previously (for instructions on Light-Baking refer to Ch.15) . This mode is designed for high-end PCs.

Conceptual

Real-time rendering is enabled and it is possible to explore the design with all the Post-process effects that simulate the light in the design but without having properties based on the design light (shadows and bounces) as is the case in Baked mode. This mode is designed for high-end PCs.

13- Real-time project exploration

Shadowed

Real-time rendering is disabled and it is not possible to explore the project with all the Post-process effects of the rendering engine. This mode is designed for PCs that are not particularly high performance but still compatible with virtual reality.

Resolution scale

The Resolution scale is generally set to 75%, and it is useful not to overload the PC's GPU. However, you can increase or decrease the value according to your needs.

Please note: The resolution scale should also be set according to the polygonal complexity of the 3D models contained within the project.

Exploration mode:

- Virtual Reality headset;
- Monitor;

Virtual Reality

By choosing this option, you must have one among the VR viewers in this list:

- Oculus Rift CV1
- Oculus Rift S
- Meta Quest (connected via USB-c cable to PC - Oculus Link)
- Meta Quest 2 (connected via USB-c cable to PC - Oculus Link)
- HTC Vive
- HTC Vive Pro
- HTC Vive Cosmos Elite
- Windows Mixed Reality come Lenovo, Acer, Asus, Hp, Dell etc...

13- Real-time project exploration

Before you start exploring, follow the setup for the VR viewer. Here you can find a small guide that might be helpful:

Steam VR: Every VR headset ((from any manufacturer and model) must communicate with the Steam VR software. Therefore, this step is the most important regardless of which visor you own:

1. Download and install the Steam software from this link: <https://store.steampowered.com/about/>
2. Once installed, download Steam VR from the Steam store (it's free!) From this link: <https://store.steampowered.com/app/250820/SteamVR/>
3. Set up Steam VR by following Steam's instructions.

Oculus Rift CV1/Rift S/Quest/Quest2 Setup:

1. Download and install Oculus Setup from this link: <https://www.oculus.com/setup/>
2. Configure Oculus by following the Oculus instructions in Oculus Launcher.

HTC Vive/Vive Pro/Cosmos/Elite Setup:

1. Download and install the Steam software from this link: <https://store.steampowered.com/about/>
2. Download and install Viveport from this link: [VIVEPORT™ | VIVEPORT Setup](#)
3. Once installed, download Steam VR from the Steam store (it's free!) From this link: <https://store.steampowered.com/app/250820/SteamVR/>
4. Set up Steam VR by following Steam's instructions.

Windows Mixed Reality Setup:

1. Download and install the Mixed Reality Portal from this link: [Windows mixed reality | Download](#)
2. Configure the WMR Portal by following the instructions.
3. Installate "Windows Mixed Reality for Steam VR" da questo link: [https://store.steampowered.com/app/719950/Windows_Mixed_Reality_for_Steam VR/](https://store.steampowered.com/app/719950/Windows_Mixed_Reality_for_Steam_VR/)

13- Real-time project exploration

Monitor

By choosing this option, you can explore your 3D projects via monitor using keyboard and mouse.

Exploration speed:

- Slow;
- Normal;
- Teleport (available in virtual reality mode only);

Start

Click the “Go!” button to begin exploring your project.

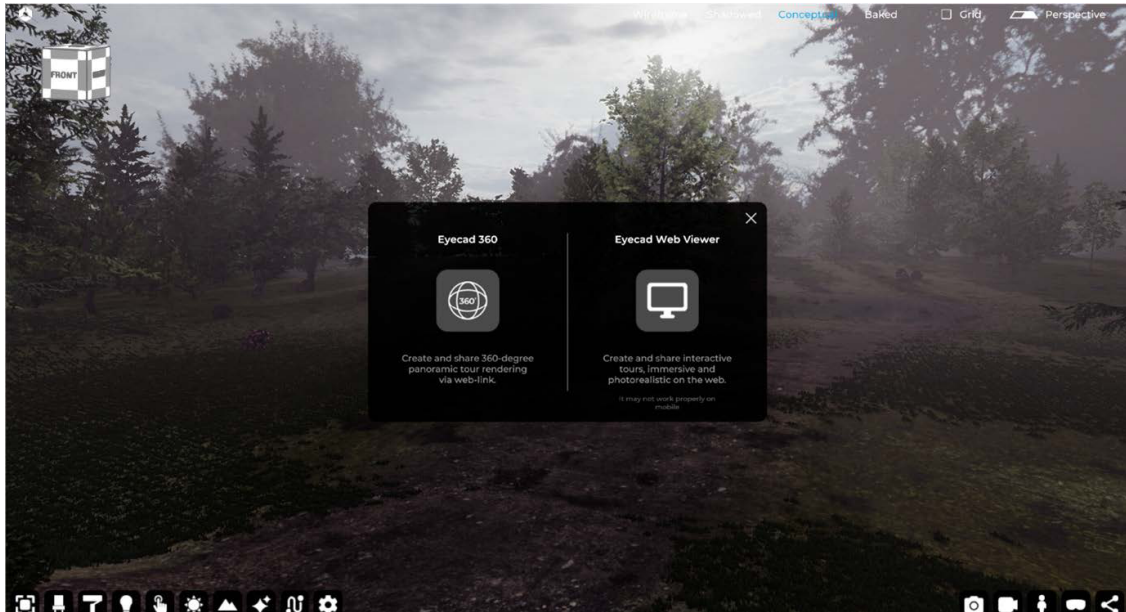
Chapter 14

Project Sharing (Eyecad 360 and Web Viewer)

14- Project Sharing (Eyecad 360 and Web Viewer)

One of the most important features of Eyecad VR Studio is the ability to share your project with your colleagues or clients. In this version it is possible to share the project via the web through two tools:

- Eyecad 360;
- Eyecad Web Viewer;



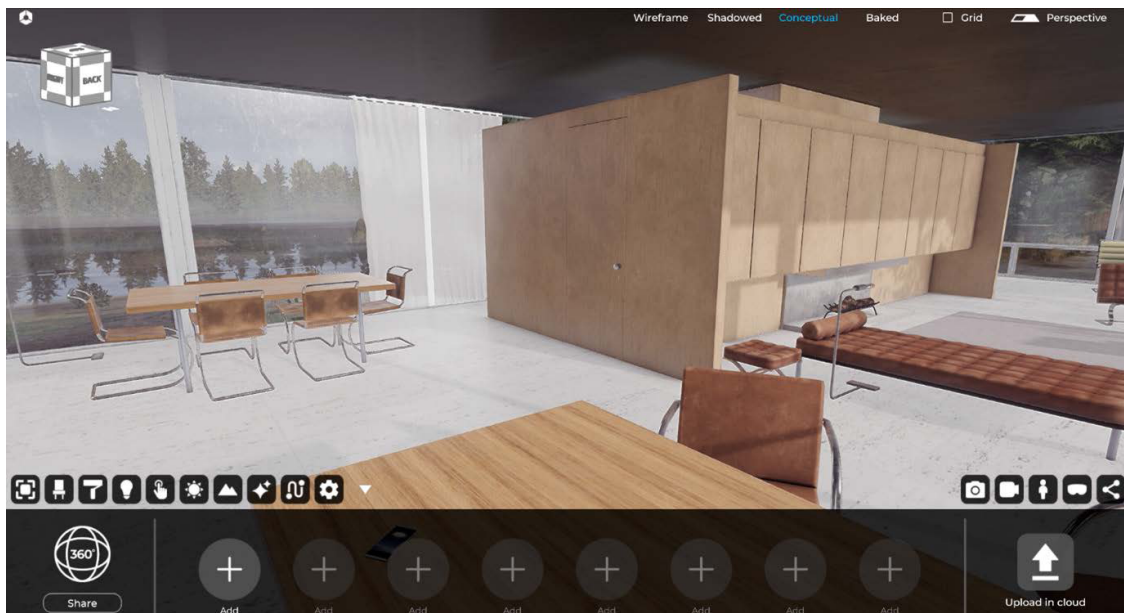
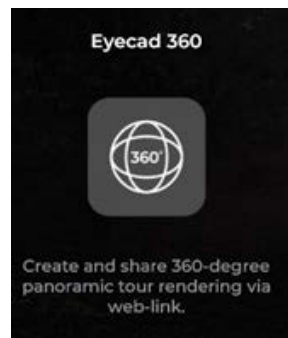
Eyecad 360: through “Eyecad 360” you can create pre-rendered Panorama tours so you can explore the project from any browser (and any device) via the URL that will be automatically generated once the upload is finished.

Eyecad Web Viewer: through “Eyecad Web Viewer” it is possible to create real full 3D interactive tours accessible via the web via PC even with integrated video cards.

14- Project Sharing (Eyecad 360 and Web Viewer)

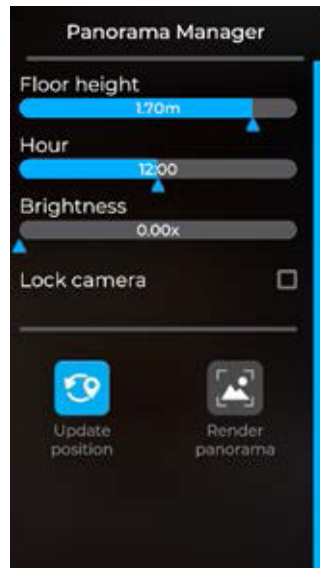
14.1 Create and share 360 virtual tour 360 via web-link (Desktop e mobile)

The new EYECAD 360 tool is very useful for creating and sharing 360-degree tour renderings with your clients or colleagues. The first step is to choose the icon depicting “360 degrees” to enter EYECAD 360 on the “Sharing” tab. Once inside, you need to create the first photosphere by clicking “Add.”



You are now in preview mode and here you can update the position of your viewpoint, change the brightness, time or height (POV) from the floor from the side editor to your right. When you click “Update Position,” the camera will be locked to help you understand that the viewpoint has been saved.

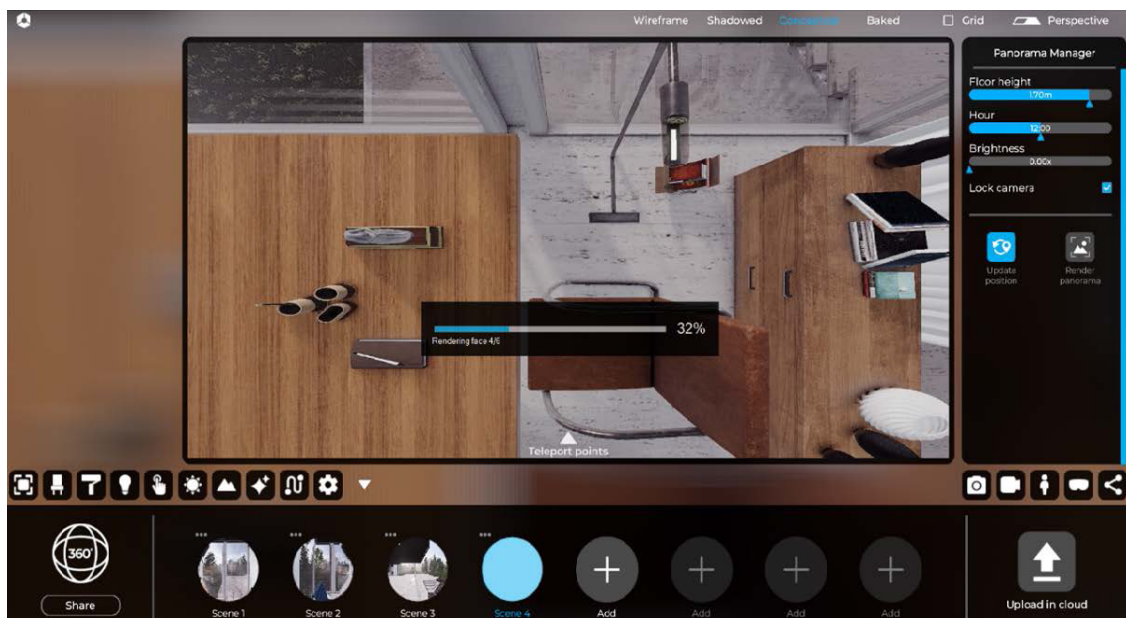
14- Project Sharing (Eyecad 360 and Web Viewer)



At this point, you need to click on the “Render Panorama” icon.

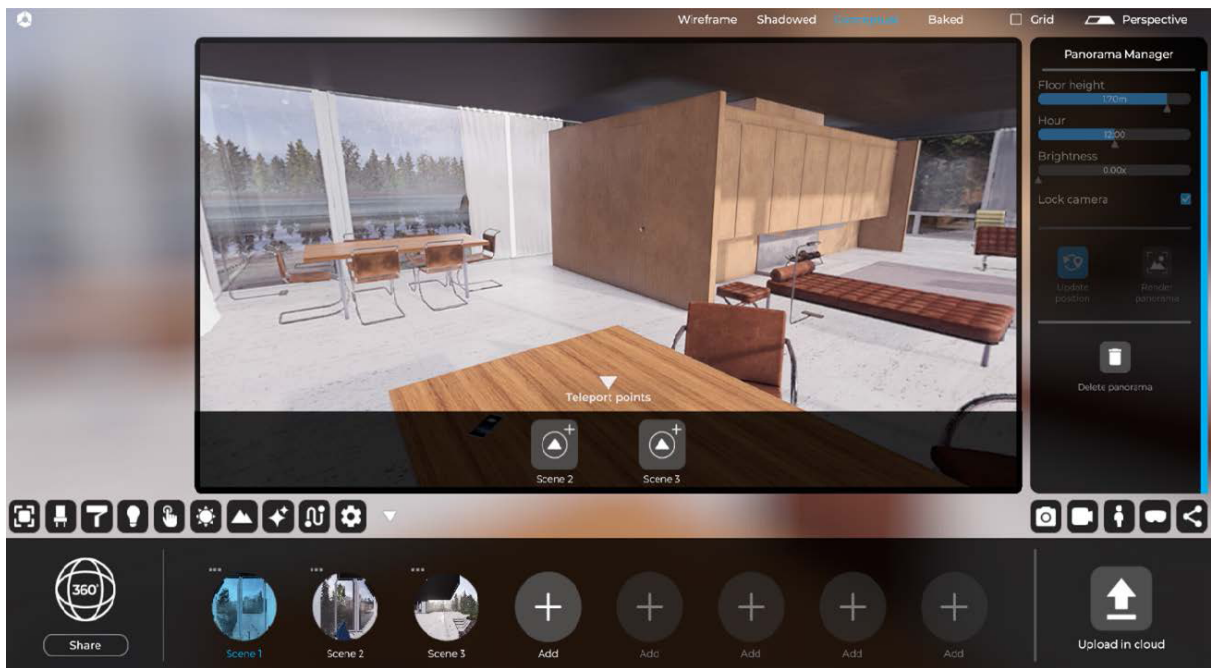
Keep in mind that you can render in both conceptual and baked modes (the latter will be able to return realistic images).

Repeat the same procedure to add a new viewpoint for your 360 tour.



14- Project Sharing (Eyecad 360 and Web Viewer)

The last thing you need to do, to create a tour of all the panoramic photospheres you have created, is to add Teleportation points in each scene, by clicking on the arrow icon, inside the preview window, a new menu will be displayed inside it and with a simple drag and drop action you can add the teleportation point of the other 360 render you have created. When you are finished setting up the tour, click “Upload to cloud” to create a web link to share with your colleagues or clients.



The 360 Panoramic tours can be managed, viewed and deleted within your personal area at eyecadvr.com. It is also possible to embed the HTML Frame of the tour to insert it within a web page via the “embed into website” button. .

This sharing mode is compatible with all devices that can open a browser, from smartphones to desktops, and it is possible to watch the panoramic tour with PC, VR viewers or mobile VR viewers.

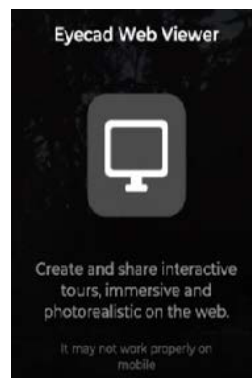
In the case of mobile VR viewers, it is necessary to open the browser and enter the personal area of the Eyecad VR Web site.

Mobile and standalone VR headsets compatible with Eyecad 360:

- Meta Quest
- Meta Quest 2
- Oculus Go
- Htc Vive Focus

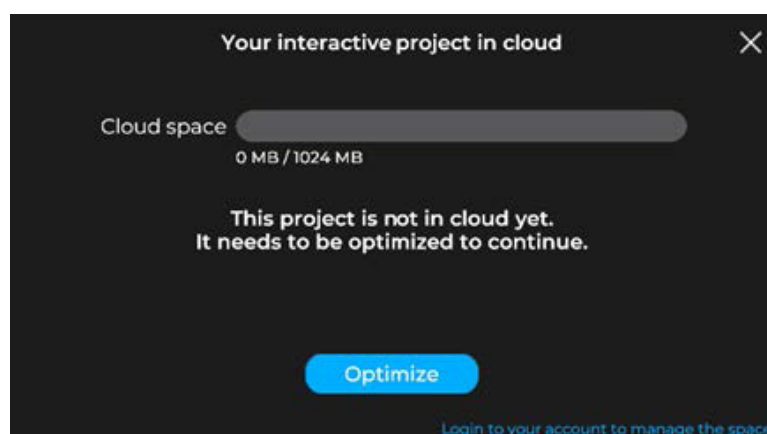
14.2 Create and share 3D full interactive tours via web-link (Desktop)

The new EYECAD WEB VIEWER tool is very useful for creating and sharing full 3D interactive tours to share with your clients or colleagues via the web even with PCs without a dedicated GPU. The first step is to choose the icon depicting a “Monitor” once inside the “Sharing” TAB to enter EYECAD WEB VIEWER. Once inside, you need to optimize the project by clicking on the “Optimize” button.



At this point, you have optimized the project and Eyecad VR Studio will inform you about the size of the project you are about to upload to your personal cloud and if the new project has enough space in your cloud, the new occupied space will appear in “Green”, if it is about to run out in “orange” and if you don’t have enough it will appear in “red”. If the space available is enough, you will only need to click on the “Share” button otherwise you can contact the sales department here to request an increase of your cloud space or access your cloud space in the “My eyecad VR” section of the website <https://www.eyecadvr.com> to delete old cloud projects and free up space. The base space per user is 1 GB for projects shared via web-viewer and 1 GB for projects shared via Eyecad 360.

Please note: Currently the polygon limit for each project uploaded to the cloud is 6 million polygons per project.



14- Project Sharing (Eyecad 360 and Web Viewer)

At this point, the project has been uploaded to your cloud and a link will be generated that you can share with colleagues and clients. You can also update the project and reload it following changes made in Editor.

The Full 3D tour can be managed, viewed and deleted within your personal area at eyecadvr.com. You can also embed the HTML Frame of the tour to insert it within a Web page via the “embed into Web site” button.

This sharing mode is compatible with all PCs that can open a browser and connected to the Internet even without a dedicated GPU, and it is possible to watch the panoramic tour with PC, VR viewers or mobile VR viewers and also via Macs.

Compatible Desktop viewers are the same as those described earlier in the previous chapter.

For mobile and standalone VR headset, on the other hand, it is necessary to open the web link via the browsers within the operating systems of the following viewers:

- Meta Quest
- Meta Quest 2
- Oculus Go
- Htc Vive Focus

15

Rendering Engine (Light-Baking)

15- Rendering Engine (Light-Baking)

“Light-baking” is a rendering mode typical of the video game industry, through which global illumination, ambient occlusion and indirect light can be calculated prior to real-time exploration. In Eyecad VR Studio has been designed and implemented to allow users to create, in a simple and intuitive way, realistic scenes that can be explored in interactive virtual reality even via Web Viewer from any PC even if it is not equipped with highly performing GPUs.

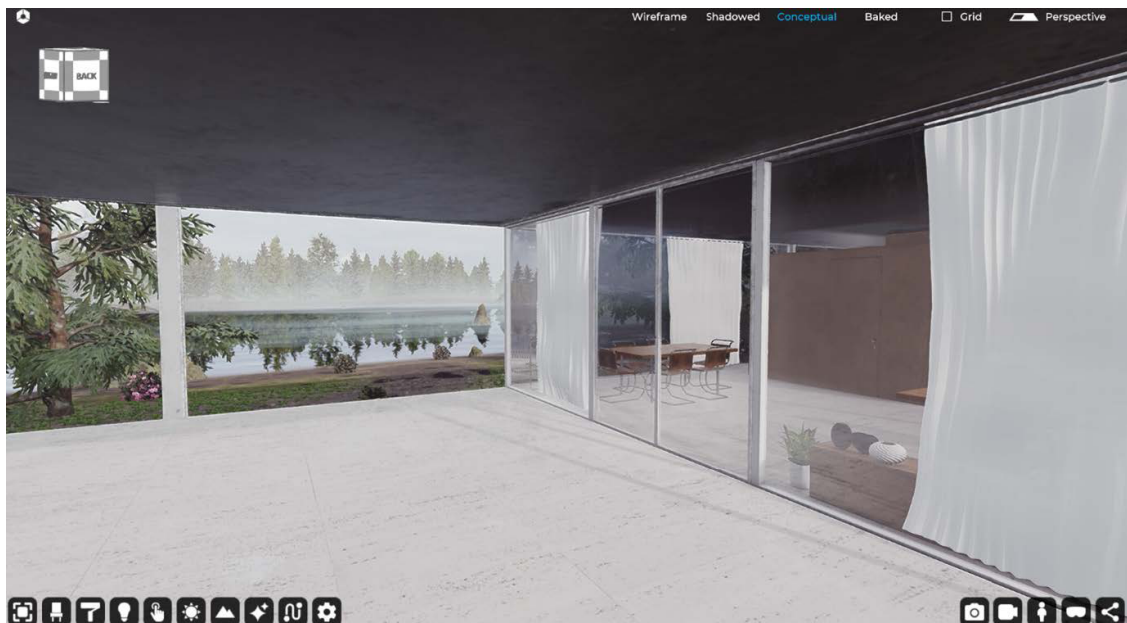


Image created in conceptual mode

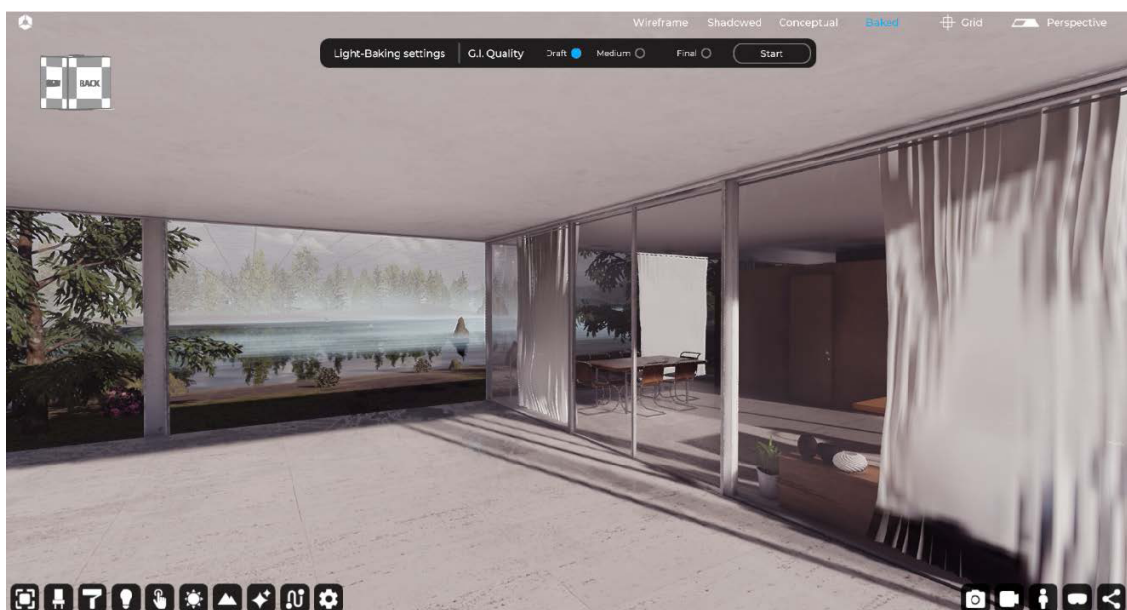


Image created using the light-baking technique

15.1 What is Light-baking?

With the light-baking technique, direct light bounces, indirect light and ambient occlusion are calculated beforehand, while direct shadows and direct lights are calculated in real time during exploration.

This technique has been implemented in Eyecad VR Studio to maintain a high frame rate in virtual reality and, at the same time, achieve 'realistic lighting of environments, which is otherwise difficult to achieve in real time especially when, thanks to Eyecad VR Studio, one can share one's interactive designs via the Web Viewer. The "light-baking" technique allows Eyecad VR Studio to calculate realistic lighting on all non-moving (static) objects in the 3D scene in advance, so that the GPU can display complex scenes at a much higher frame rate while maintaining the highest possible realism. Moving (interactive) objects, however, still need to be illuminated by real-time lighting, and thanks to a rendering algorithm created specifically for this requirement by Digital Atom, dynamic (interactive) objects will also be affected by global illumination, albeit less accurately.

This technique adds a new "texture-map" to all static objects, and with the help of "Reflection Probe" for reflections, a high graphical quality can be achieved that is easily usable even in virtual reality and via the Web.

15.1.1 Light-baking: Still images

Thanks to these technologies you can create fantastic realistic renders in seconds. In Eyecad VR Studio you simply turn on the "Baked" view at the top of the user interface, and initialize the rendering within the Rendering mode.

15.1.2 Light-baking: Video animations

In Eyecad VR Studio, simply activate the "Baked" view at the top of the user interface, and initialize the rendering of the video within the "Video maker" section. For the reasons already mentioned in this paragraph, processing the video will be quite fast.

15.1.3 Light-baking and Virtual Reality

Light-baking in Eyecad VR Studio enables far more realistic virtual reality explorations than in the past. In fact, thanks to the calculation of lights performed before exploration, it is possible to fluidly enjoy your projects with realistic lighting (even on the Web albeit with some compromises).

15.2 Light-baking: Hardware Requirements

In order to get the best performance from this technology, it is necessary to have at least NVIDIA GTX series GPUs (1060, 1070, 1080) or equivalent AMD GPU's. However, the use of the latest generation of NVIDIA RTX video cards (20xx, 30xx, 40xx series) is recommended in order to take advantage of the Eyecad VR Studio algorithm, which allows for significant hardware acceleration when calculating lights, implemented specifically for Nvidia's RTX video cards.