



Eyecad VR 2020
Manual

ENGLISH

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CHAPTER 1

User interface and Visual styles

The Eyecad VR user interface is divided into 15 TABs (work areas organized by functions) and three kinds of styles project visualization.



1. MODIFY

The “Edit” TAB allows you to interact through the three fundamental transformers of the 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 the commands:



Move



Rotate



Scale



Path

Move

The “Move” command allows you to change the position of an object in the scene, varying the x, y, z coordinates of its center (pivot). The selection of the command activates a gizmo (x, y, z) that it is used to carry out a precision control, bound to one or more reference axes. The “Move” command allows you to set a shift by changing the reference coordinates in “Absolute” or “Relative” mode.



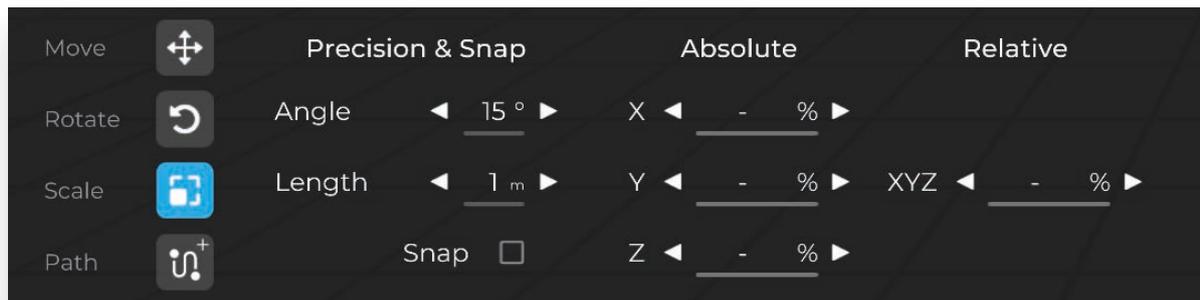
Rotate

The “Rotate” command allows you to change the rotation of an object in the scene. The selection of the command activates a gizmo (x, y, z) that it used to carry out a precise control of the effects of the rotation to a single axis. It is also possible to enter a numerical value equivalent to the rotation angle.



Scale

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



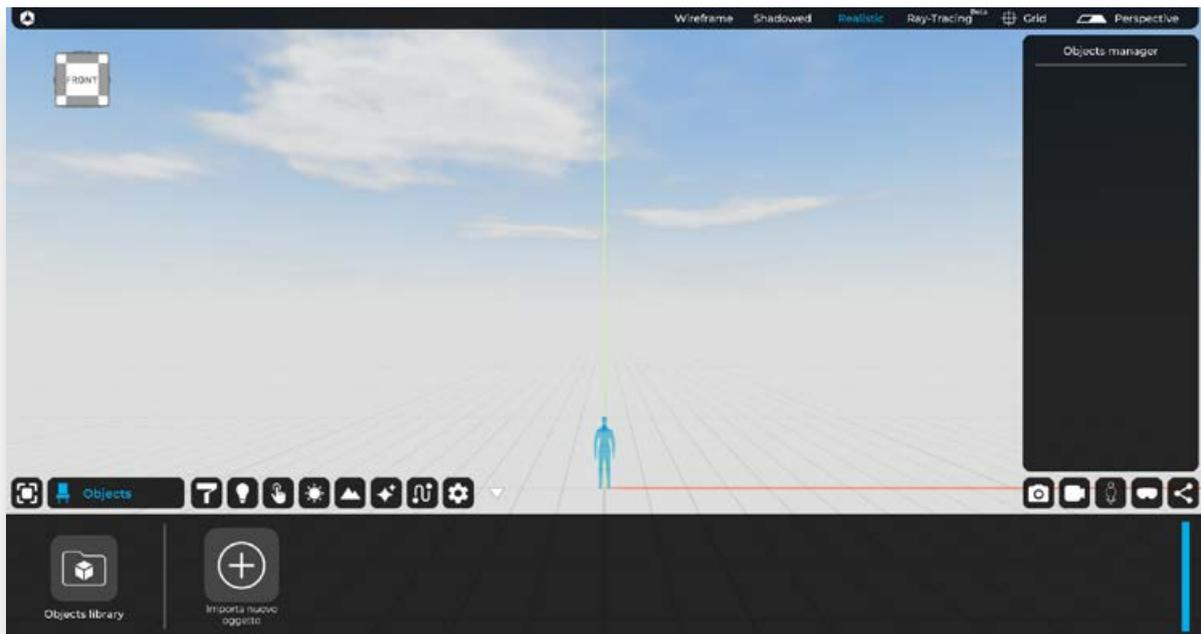
Path

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



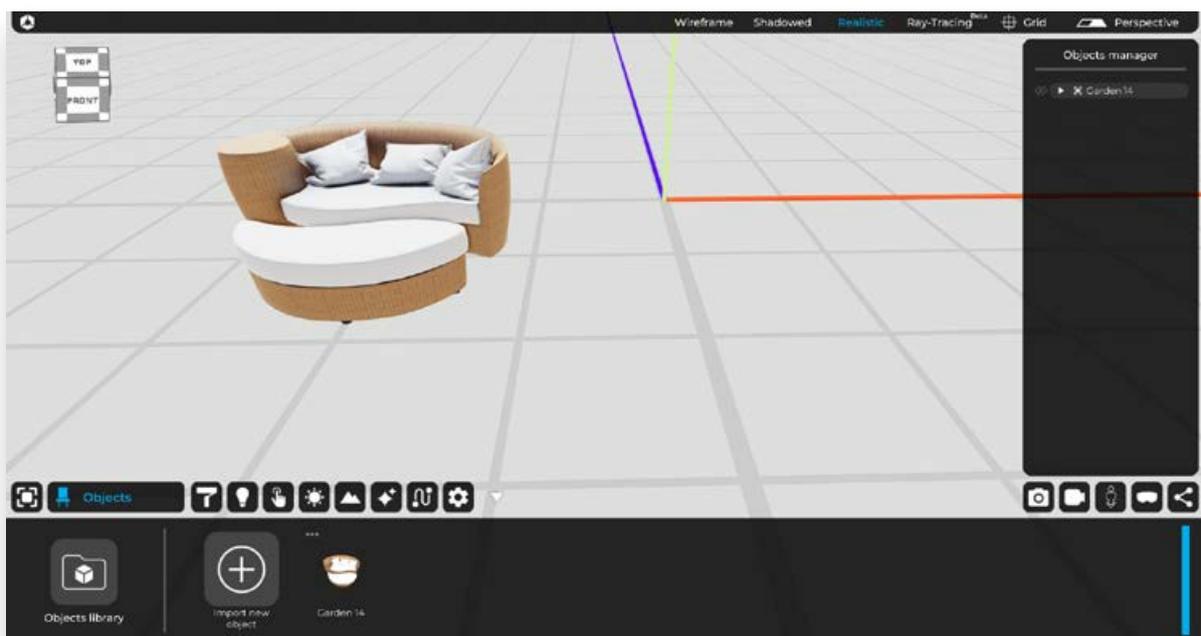
2. OBJECTS

The “Objects” TAB allows to insert inside the project both the objects (3D models) imported from the outside and the objects inside the Eyecad VR 3D library.



The Eyecad VR 3D objects library is composed of a sliding menu that can be used to choose the type of object, with the possibility of inserting them in the current project.

All the objects loaded in the current project are summarized in the “Objects” TAB, located on the right inside of the library menu, where it is possible to add them inside the scene through a drag and drop operation (from the folder to the 3D grid).



2.1 Import new object

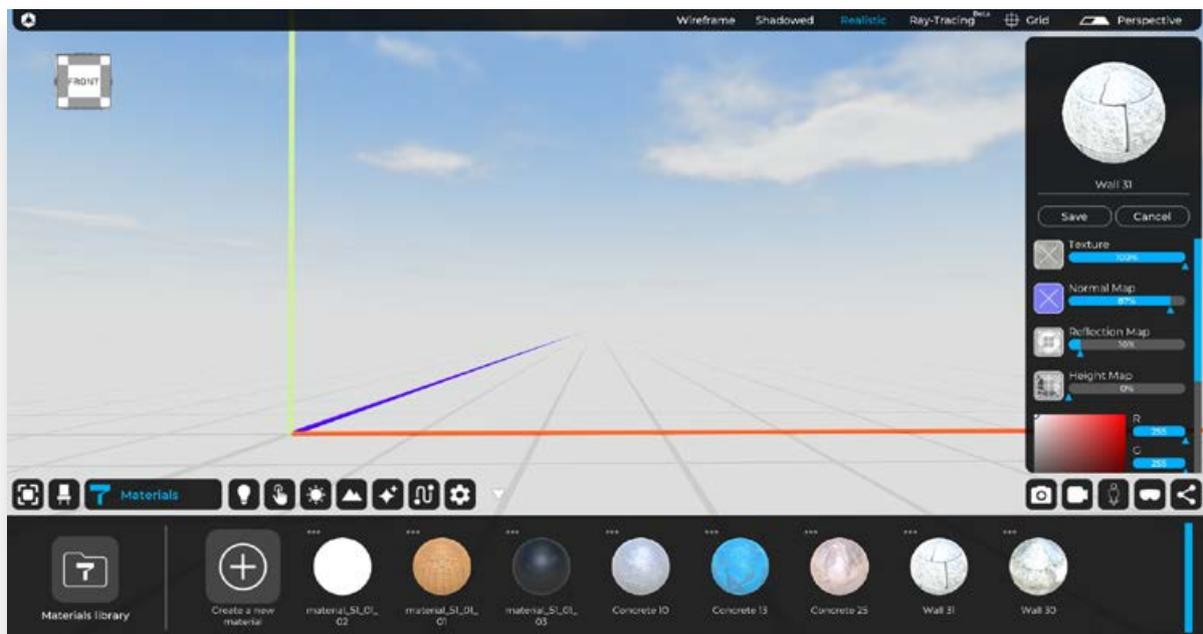
The “Import new object” command allows you to add inside the project any type of object (3D model) that it is not included in the software’s proprietary libraries. You can import files with the following formats:

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

For a detailed overview of the options related to the importing tab, please refer to chapter 2 of this manual.

3. MATERIALS

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



3.1 Personal Materials

The “Personal Materials” area allows you to create and customize all aspects of Eyecad VR materials, thanks to the functions provided by its editor.

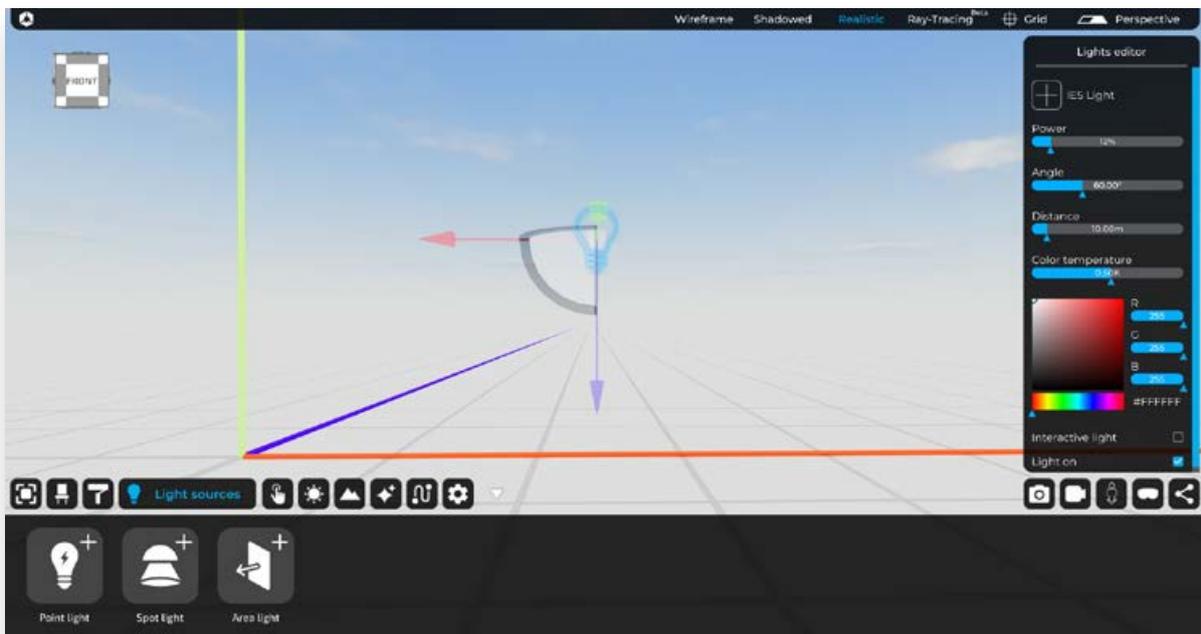
To define a new material in the current project, you can click on the “Create new material” icon that opens the Eyecad VR materials editor on the right.

For a detailed overview of the options related to the creation and modification of materials, please refer to chapter 3 of this manual.

4. LIGHT SOURCES

The “Light sources” TAB allows you to choose between some types of artificial lights:

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



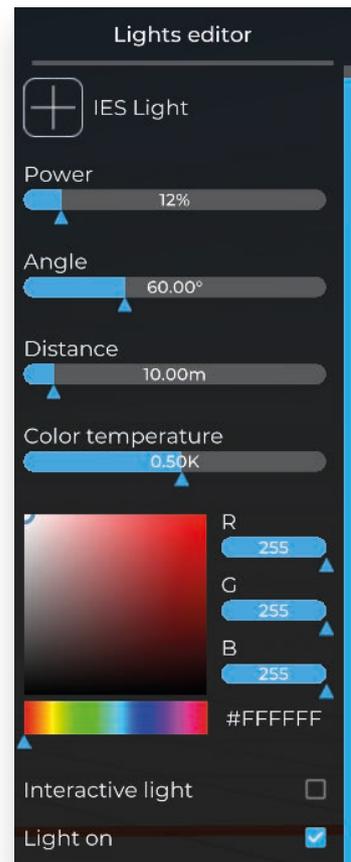
To insert them into the current project, you can drag them from the menu into the scene from the grid, where you can change their position and parameters, via the contextual menu that is activated by selecting one of the lights in the scene.

For a detailed overview of the options related to the creation and modification of light sources, please refer to chapter 4 of this manual.

4.1 Point light

The point light is an omnidirectional point source that can be modified through the following parameters and settings:

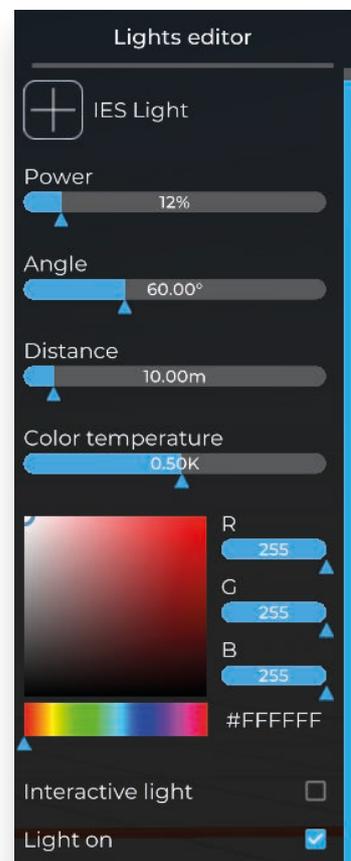
- IES Light
- Power
- Angle
- Distance
- Color temperature



4.2 Spot-light

The spot-light is a point source that emits light through a conical projection, which can be modified through the following parameters and settings:

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



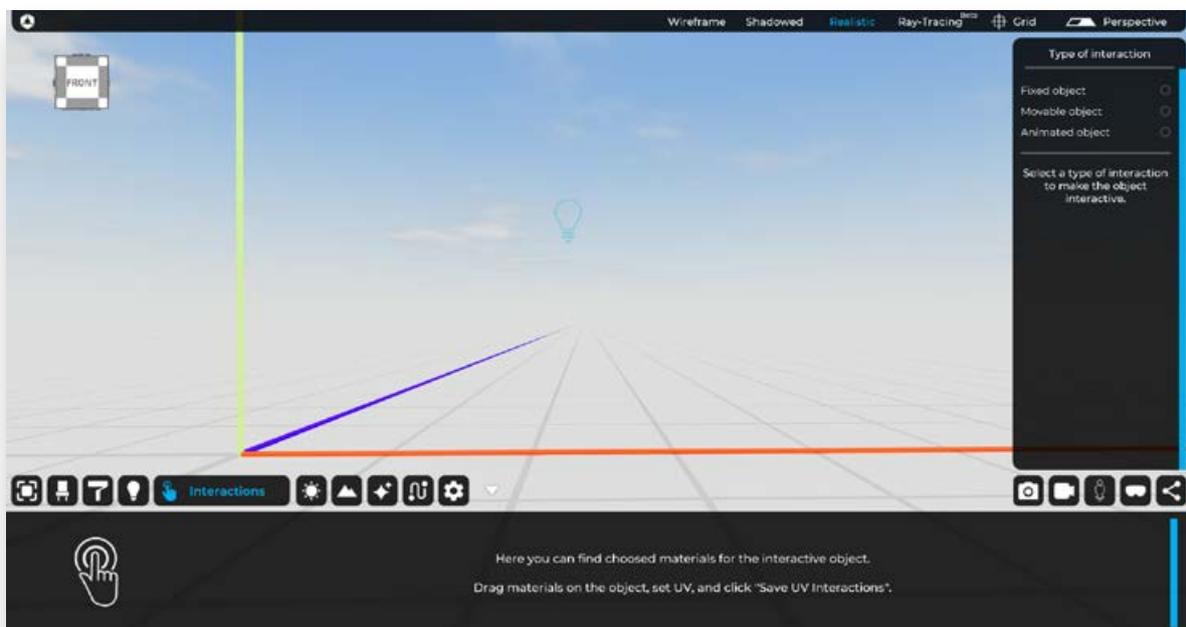
4.1 Area-light

The area-light is a portal used to facilitate interior lighting. Its function is to project the ambient light component present in the scene. It is effective only in the direction of the vector's arrow represented on the plane. The area-light can be configured in the dimensions of the top (width and height) and it is usually placed immediately inside the openings of the planned interiors.

5. INTERACTIONS

The TAB “Interactions” allows to define the interactions of the objects present in the scene of the current project (3D space of Eyecad VR). The interactions are effective in the “exploration mode” to allow the user to open and close the openings, as well as to configure different alternative solutions in the project spaces. In Eyecad VR, the following types of interaction are available:

- Fixed object
- Movable object
- Animated object



For a detailed overview of the options related to the creation of interactions, please refer to chapter 5 of this manual.

5.1 Fixed object

The “fixed object” interaction (default condition) allows to make an object immovable in the “explorer mode”. When an object present in the scene is characterized by the interaction “Fixed object” the user cannot in any way change its position.

5.2 Movable object

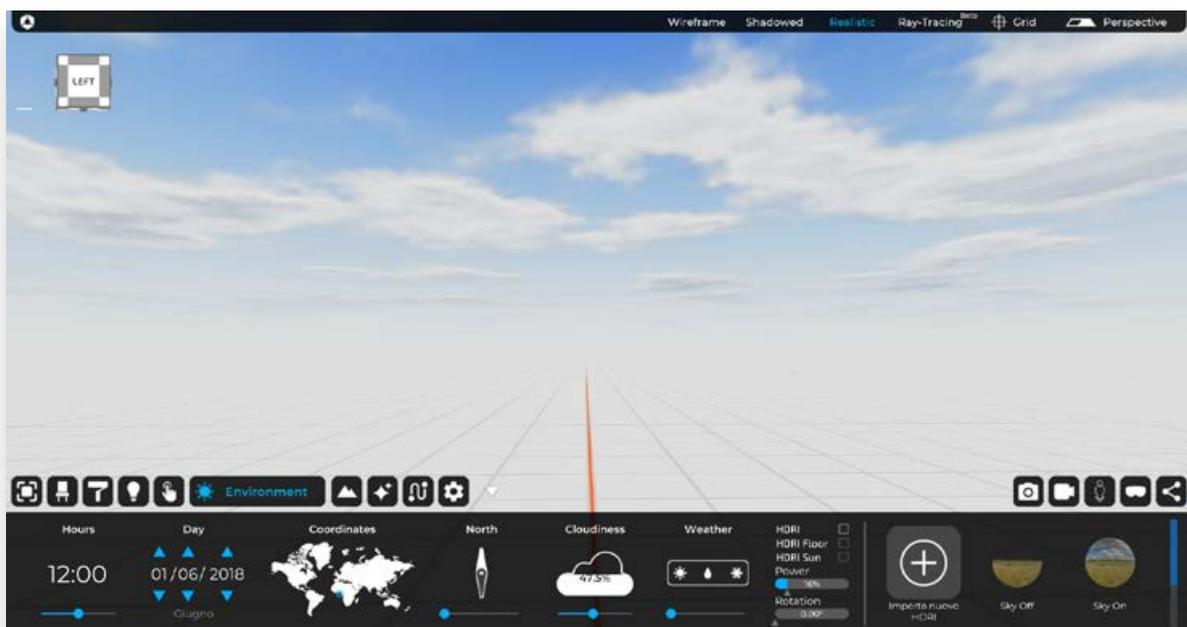
The “movable object” interaction allows you to set the possibility of moving and rotating an object in the “explorer mode”.

5.3 Animated Object

The “Animated object” interaction allows you to set the possibility to create a sliding movement or a rotation movement of an object in the “explorer mode”.

6. ENVIRONMENT

The “Environment” TAB allows you to set the configuration parameters relating to the light and visibility conditions of the current project, in addition to set the background and geolocate the scene in detail.



The “Environment” TAB is divided into the following configuration sub-menus:

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

6.1 Hours

The “Hours” function allows you to configure the day time, contextually changing the position of the sun in the scene. This function is related to the “Data” function.

6.2 Day

The “Day” function allows you to set the current date of the project, contextually changing the position of the sun in the scene. This function is related to the “Time” function.

6.3 Coordinates

The “Coordinate” function allows you to set the terrestrial coordinates and geo-localize (optionally) the project. This function is related to the “Time” and “Day” functions and allows you to define the position of the sun in the scene.

6.4 North

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

6.5 Cloudiness

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

6.6 Weather

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

HDMI

The “HDMI” function allows to set the background of the scene, through the use of an HDMI 360 image, configurable in the following aspects:

- HDMI: it defines if the HDMI image must be on or off.
- HDMI Floor: it defines a virtual floor automatically generated from the HDMI.
- HDMI Sun: it allows to center the virtual Eyecad VR sun with the HDMI’s sun.
- Power: it controls the amount of light “Reflected” by the image it self. It influences on the surfaces and the overall environment.
- Rotation: it defines the rotation angle of the HDMI image with reference to the vertical axis (indicated in GREEN) of the 3D Eyecad VR scene.

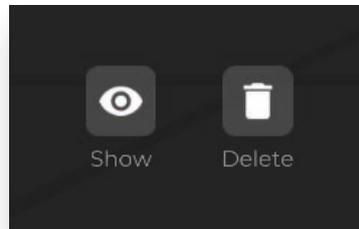
For a detailed overview of the options related to the Environment tab, please refer to chapter 6 of this manual.

7. LANDSCAPE

The “Landscape” TAB allows to create and modify the elements of the natural or artificial landscape of the project, through the configuration of different parameters, referable to a specific function.



To activate the terrain editing commands, it is sufficient to click on the “Show” button in the “Landscape” TAB.



7.1 Terrain

The “terrain” function allows to modify the following modification parameters:

- Up**: it allows to raise the ground in the portion of the area of modification
- Down**: it allows to lower the ground in the portion of the area of modification.
- Smooth**: it makes the ground more uniform, natural and soft, damping angular points and accentuated disconnections in the modification area.
- Align**: it leads to a single dimension in the brush area of the selected surface.
- 3D grass**: it creates low 3D vegetation similar to reality with the dynamism of the wind movement giving more realism to the scene.

7.2 Trees

The “trees” function allows you to create and modify vegetation in the scene.

7.3 Plants

The “Plants” area allows you to add and modify garden vegetation in the scene.

7.4 Rocks

It allows you to insert rocks inside the project.

7.5 Painter

The “brush” allows you to paint the areas of land subject to modification with the selected texture.

7.6 Water

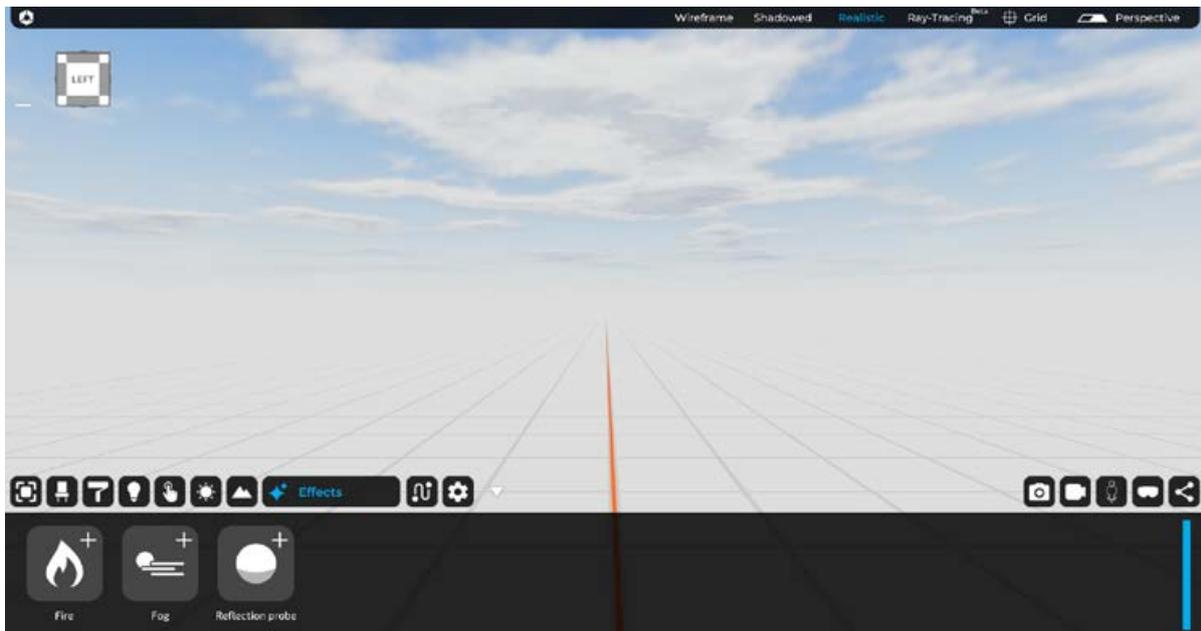
Using a brush, you can choose the type of water to be used to highlight different characteristics of the soil according to your needs.

7.7 World map

It generates a relief map of the soil of a specific geographical area (Open Street Map + Digital Elevation Map).

For a detailed overview of the options related to the creation and modification of the 3D landscape, please refer to chapter 7 of this manual.

8. 3D VISUAL EFFECTS

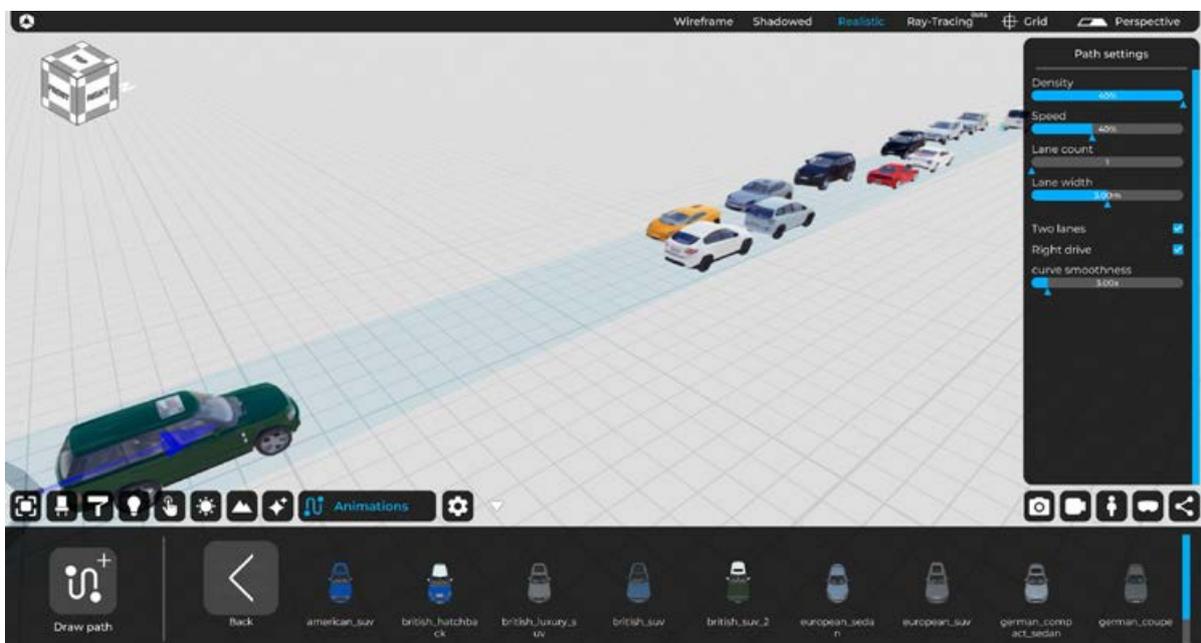
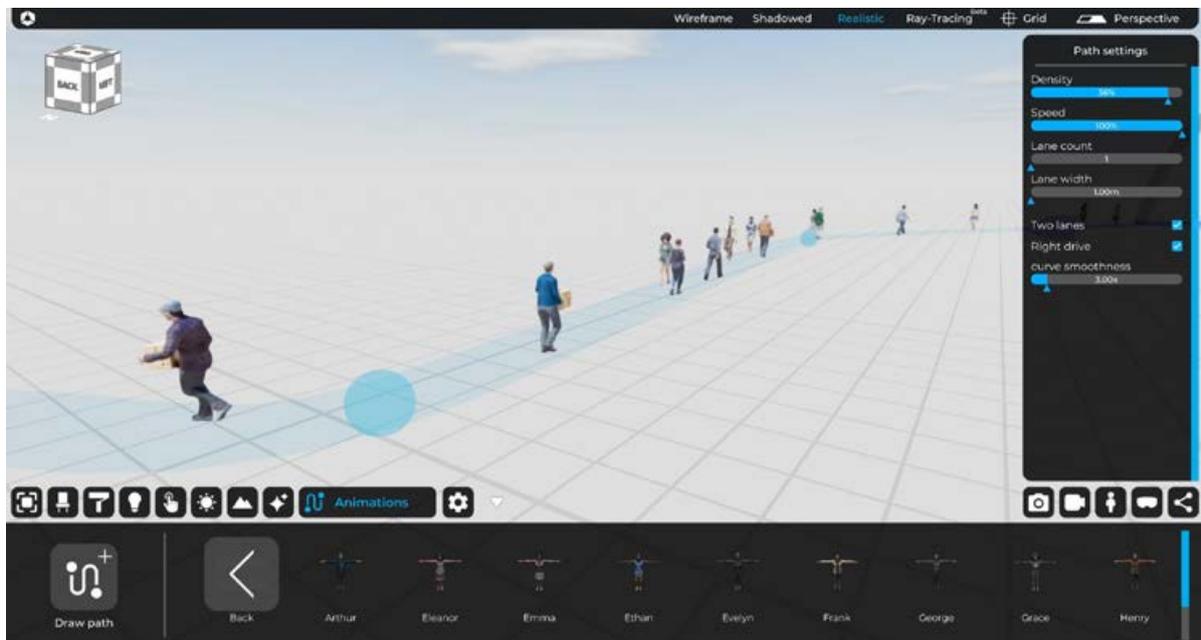


This tab allows you to insert different “animated” effects that make the project more realistic. These consist on:

- Fire:** a 3D animation that generates the effect of a fireplace’s fire.
- Fog:** a 3D animation that generates the mist haze effect.
- Reflection probe:** allows you to reflect objects and light on surfaces in a more realistic and real-time way.

9. ANIMATIONS

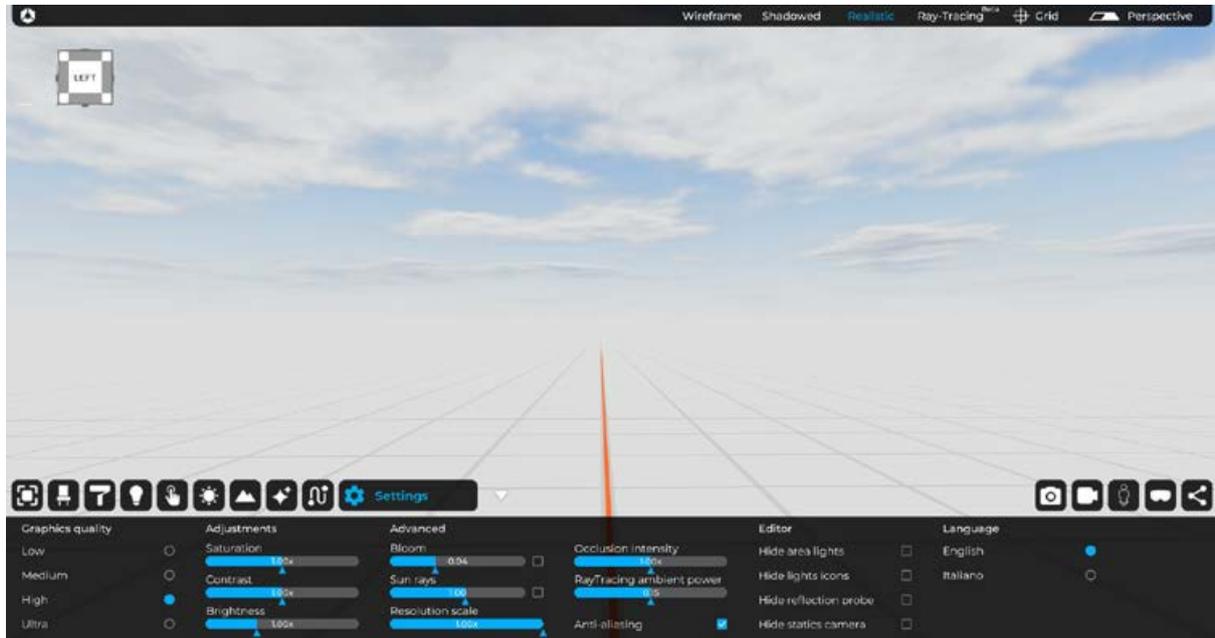
This TAB is designed to create path for animated 3D people and 3D vehicles or add them individually.



For a detailed overview of the options related to the creation of 3D animations, please refer to chapter 9 of this manual.

10. SETTINGS

This TAB allows you to act on different display parameters and light effects, scale and other settings such as language.



10.1 Graphics Quality

It affects the quality of effects, light, shadows and details:

- Low
- Middle
- High
- Ultra

10.2 Adjustments

It allows you to adjust various parameters such as:

- Saturation
- Contraston
- Brightness

10.3 Advanced

Settings that affect the amount of light effects and the resolution scale.

-**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 fringes (or feathers) of light that extend from the edges of the bright areas of an image, contributing to the illusion of extremely intense light that overwhelms the camera or the eye that captures the scene.

-**Sun rays**: accentuation of the penetration of sunlight into the scene.

-**Anti-aliasing**: Anti-aliasing softens the lines by smoothing the edges and improving the quality of the image.

-**Resolution scale**: It manages image resolution and detail. For PCs that are not too fast, it is not recommended to increase the value of this parameter.

-**Occlusion intensity**: It defines the intensity of the environmental occlusion in the 3D scene.

-**Ray Tracing Ambient Power**: It defines the ambient intensity (only raytracing mode) of the 3D scene.

10.4 Editor

Selectable settings that allow:

-**Hide Area-Light**: it hides the emitting surface but not the emitted light.

-**Hide light icons**: it hides the icons that indicate the presence of lights in the space.

-**Hide refl. Probe**: it hides the parallelepiped from the view but not the effects.

-**Hide Static cameras**: it hides the static cameras created for the still images (render mode).

10.5 Language

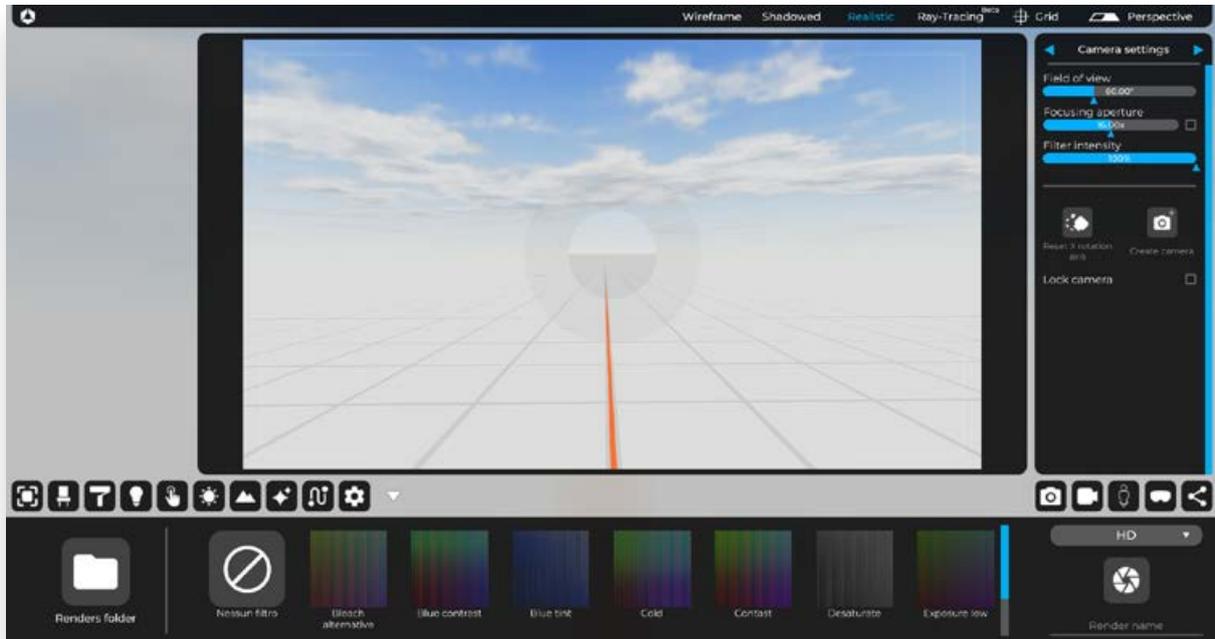
It allows to set the language in different languages such as

- English
- Italian

For a detailed overview of the options related to the settings tab, please refer to chapter 10 of this manual.

11. RENDER MODE

This TAB allows you to shoot in few minutes, professional renders of your 3D projects in two different mode: **Realistico** and **Ray-Tracing**.



For a detailed overview of the options related to the creation of still images, please refer to chapter 11 of this manual.

12. VIDEO MAKER

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



For a detailed overview of the options related to the creation and modification of videoclips, please refer to chapter 12 of this manual.

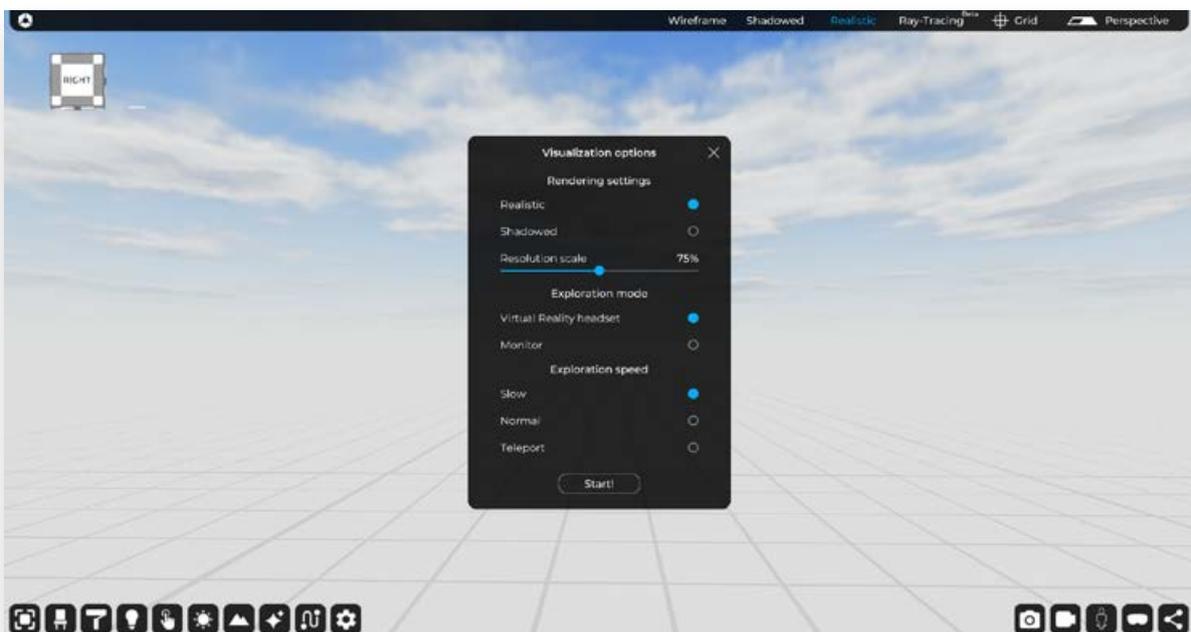
13. STARTING POSITION (EXPLORATION MODE)

This TAB allows you to set the initial position of the 3D exploration (via monitor or via VR headsets).



VISUALIZATION OPTIONS (EXPLORATION MODE)

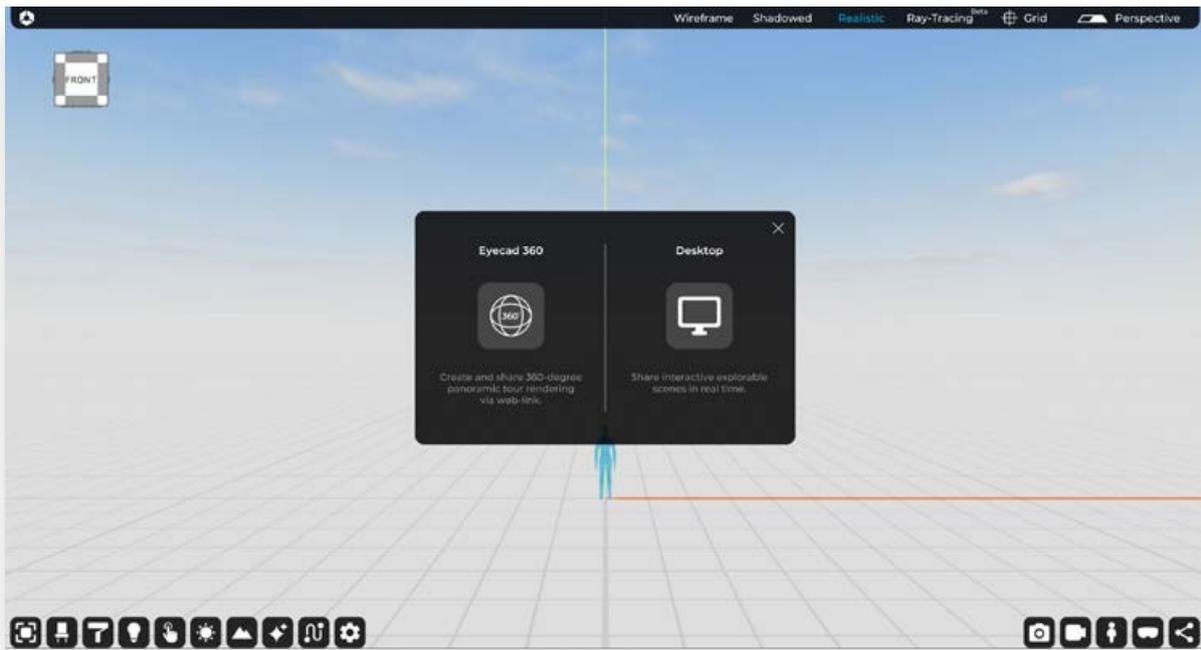
This TAB allows you to set the most important parameters for the exploration phase (via monitor or via VR headsets).



For a detailed overview of the options related to the exploration mode, please refer to chapter 13 of this manual.

14. PROJECT SHARING

This TAB allows you to share your 3D projects with your colleagues or customers.



For a detailed overview of the options related to the Project sharing, please refer to chapter 14 of this manual.

VISUAL STYLES

Eyecad VR offers three types of visualization so you can to work to your project in a better way. The choice are:

- **Wireframe:** it is a type of computer graphic representation of three-dimensional objects. With this method only the edges of the object are represented as if it has been constructed with “wire”. This method requires easier calculations of the graphic processor rather than the representation of solid surfaces, and it is therefore considerably faster.
- **Shadowed:** shaded mode uses a mesh to shade surfaces without advanced rendering calculations.
- **Realistic:** it is the creation of an image starting from a mathematical description of a three-dimensional scene. It is interpreted by algorithms that define the color of each point of the digital image.
- **Ray-Tracing (Beta):** It is the new rendering mode that is more accurate and it works in real time in the Eyecad VR Editor.

For a detailed overview of the options related to the Ray-tracing mode please refer to chapter 15 of this manual.

Please note: the Ray-Tracing mode it works with efficient graphic cards like as Nvidia RTX series or GTX family (10th series).

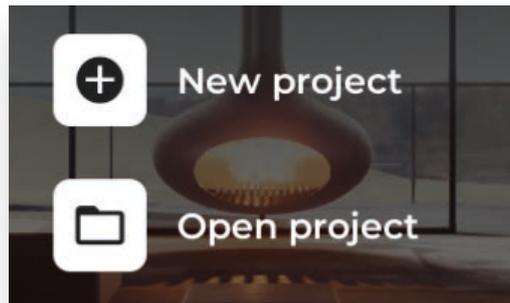
CHAPTER 2

Start and import 3D Objects

The “Objects” TAB allows you to import and modify all the objects that can be imported in Eyecad VR, as well as the access to the software’s objects libraries.

Start a new project

The first step to start a new project is to click on the “New project” icon on the left of the screen.



It is also possible to open a .evr project created before, by clicking on the “Open project” icon.

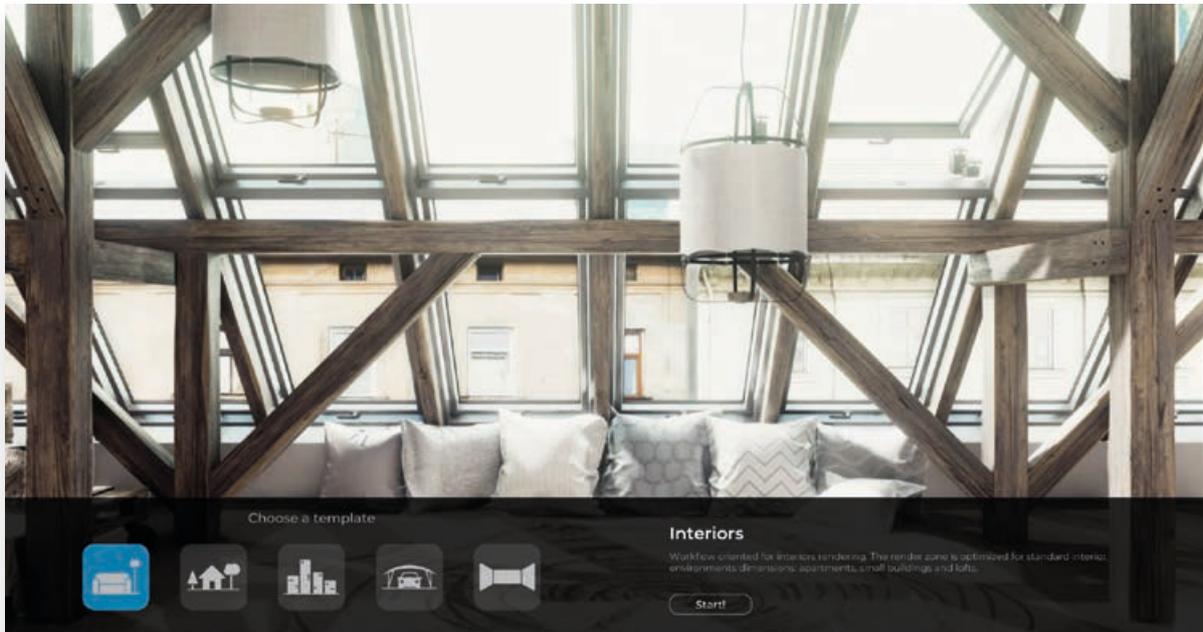
Please note: the .evr files created with old Eyecad VR versions are not compatible with Eyecad VR 2020.

Choose the startup template

Choose the startup template for your project. This is an important phase for your new project, because the templates will help you with your workflow based on your project needs. In order, we have the following 5 startup templates:

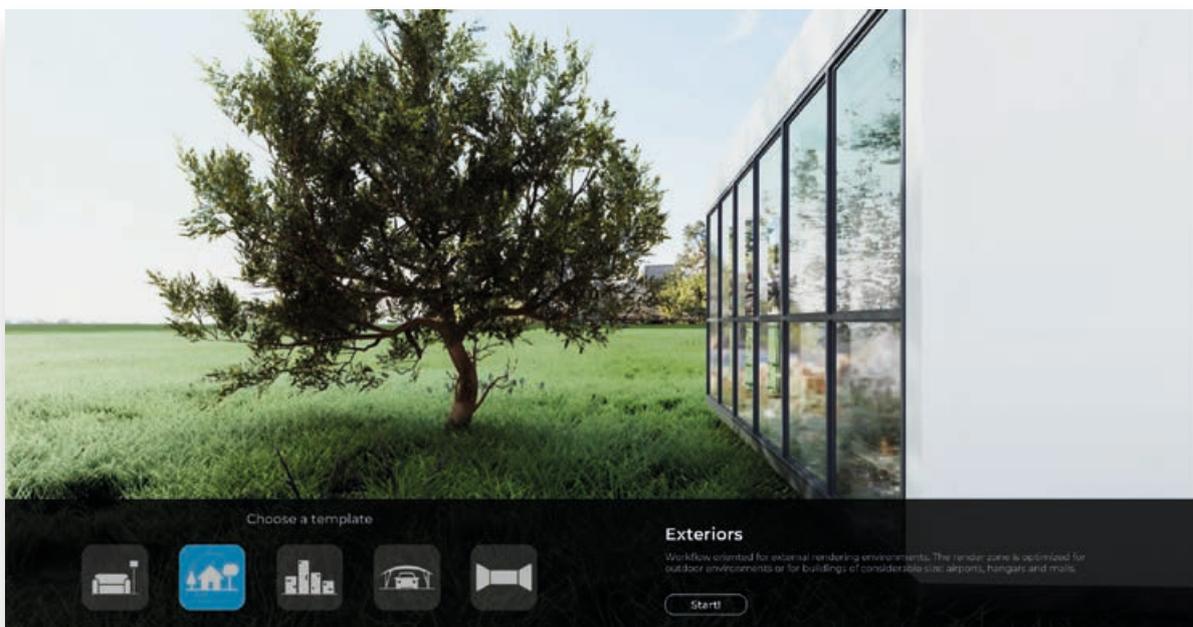
Interiors Template

This startup template is highly recommended for interiors projects. Eyecad VR will automatically optimize the render zone for more accurate details.



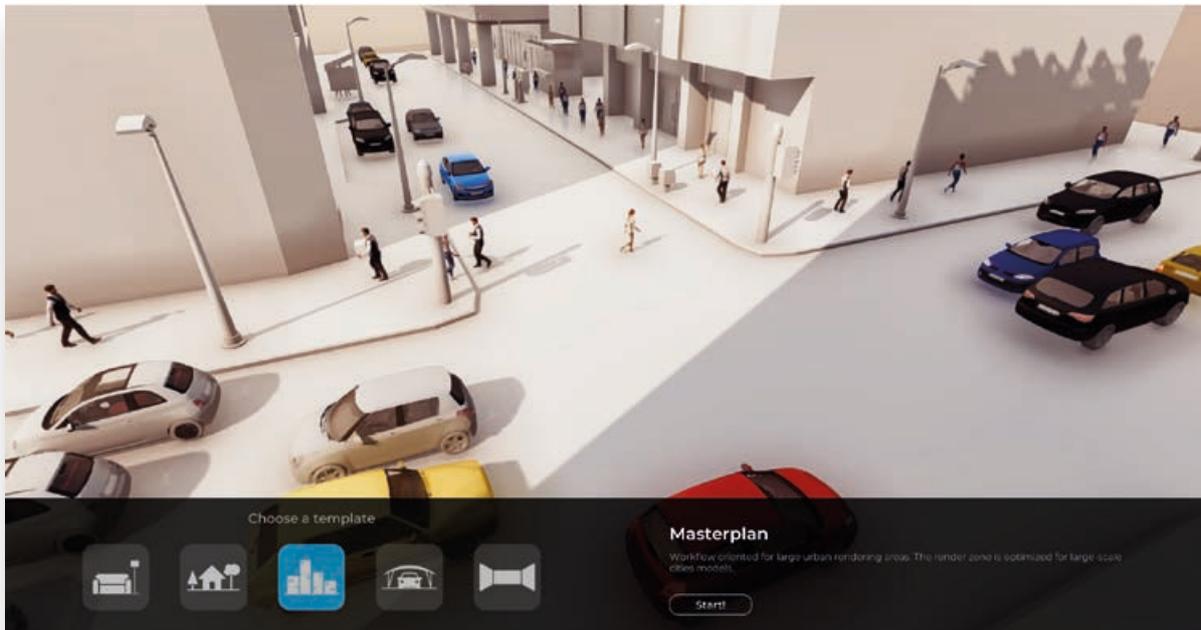
Exteriors Template

This startup template is highly recommended for exteriors projects, but it is also recommended for big structure like as: airports, hangars, malls etc... Eyecad VR will automatically optimize the render zone for big dimensions projects. This template appears with a 3D terrain already in the scene at the opening.



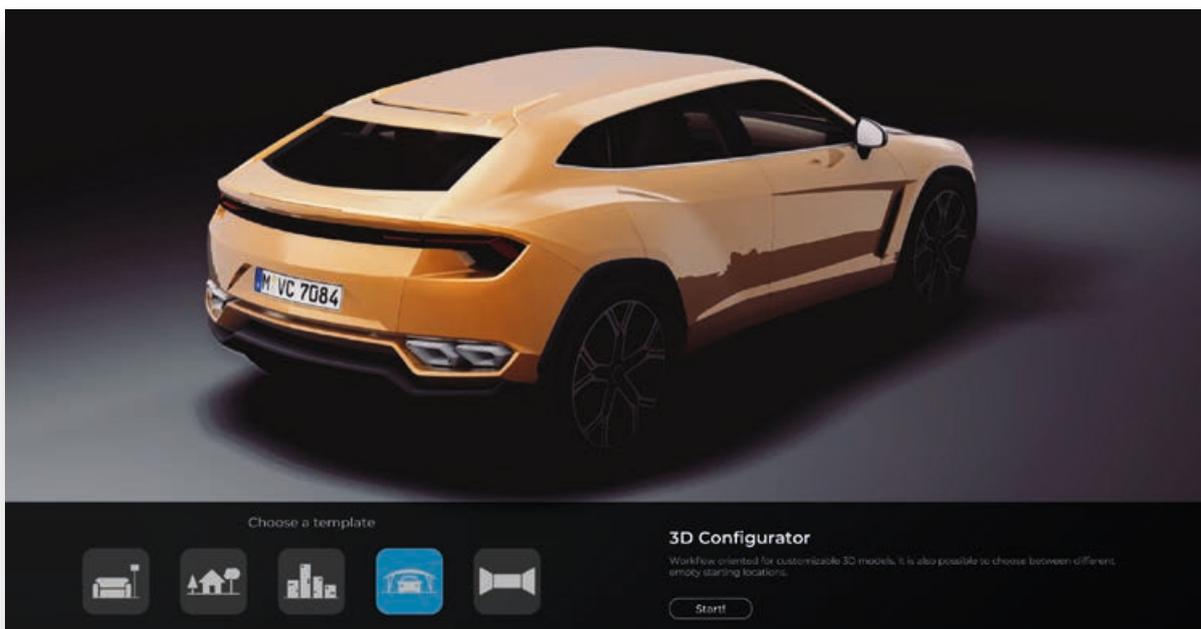
Masterplan Template

This startup template is highly recommended for Urban visualization. Eyecad VR will automatically optimize the render zone for better viewing of portions of cities.



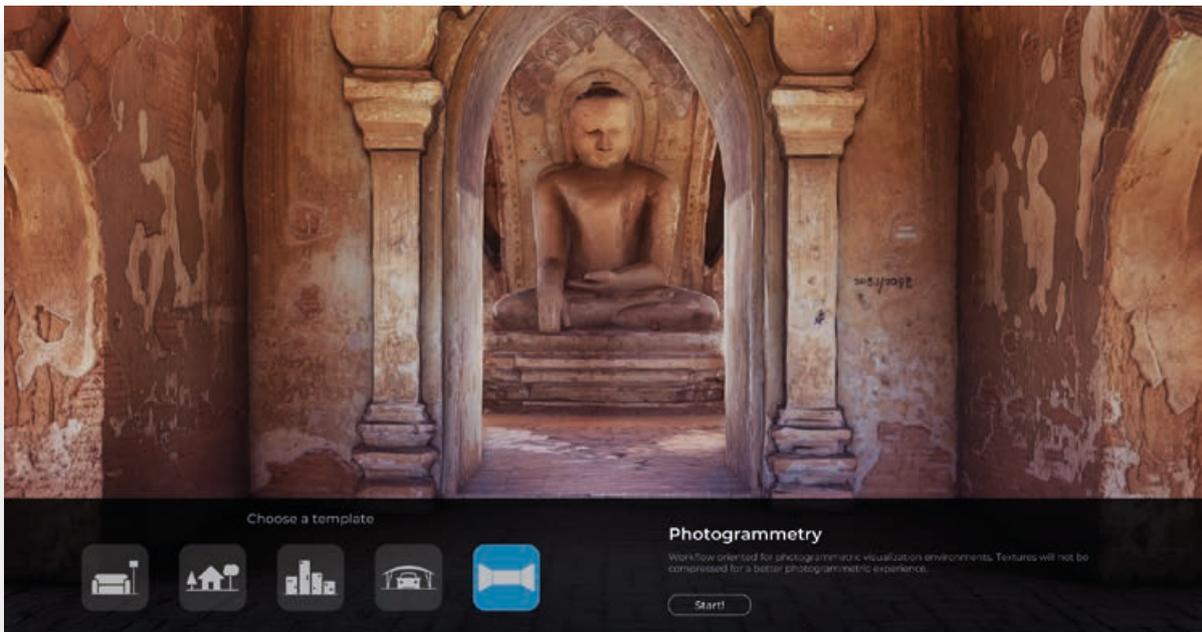
3D Configurator Template

This startup template is highly recommended to create customizable 3D models like, furnitures configuration, car configurators and more... It is highly recommended to use the "HDRI Studio mode" in the "Environment" settings.



Photogrammetry Template

This startup template is highly recommended to import 3D photogrammetry models. Eyecad VR will automatically optimize the meshes with the two-sided-mode for relief 3D models and the texture will be import in the original resolution.

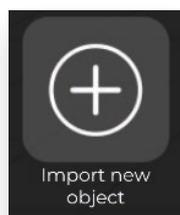


Import objects

Once chosen the best template for your project, it's time to import your 3D model. It sufficient to go to the "Objects" TAB.



Click on the "import new object" icon inside the "Objects" TAB and choose your 3D model from your PC.



Compatible formats

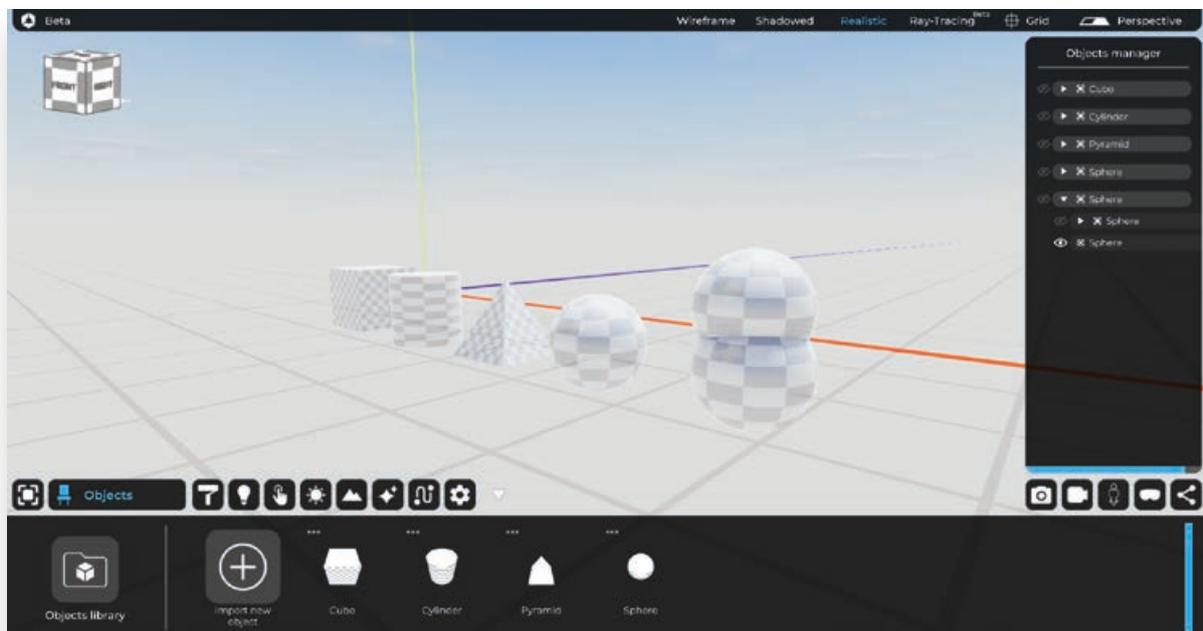
Eyecad VR 2020 is fully compatible with these 3D formats in order of importance:

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

Once imported your 3D files, it will appear on the bottom of the screen, inside the “personal project library” and it is necessary to drag’n’drop the 3D object to the grid (3d scene).

Objects manager

It has been designed to help you to choose the layers/objects of your project with an easy User Interface on the right of the screen. The objects manager allows to select, hide and organize the “father” and the “son” hierarchy of the 3d models.



Thanks to the “Objects manager” is also possible to click with the right mouse button on the objects to be able to operate on the them without necessarily do it in the 3D visualization.

Objects Library

The 3D Objects library now includes over 2000 high quality objects “render-ready” that allows you to fill an entire scene with ease. It has been organized in categories that will help you to find the objects you need.



Import guideline

If you need more information about importing from a specific 3D modelling software, take a look at our “import guideline” on our forum area:

<https://eyecadvr.com/home-community/>

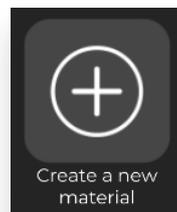
CHAPTER 3

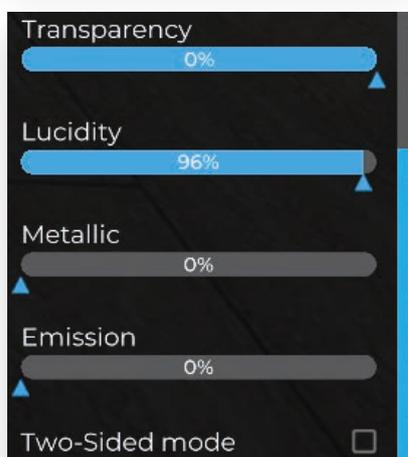
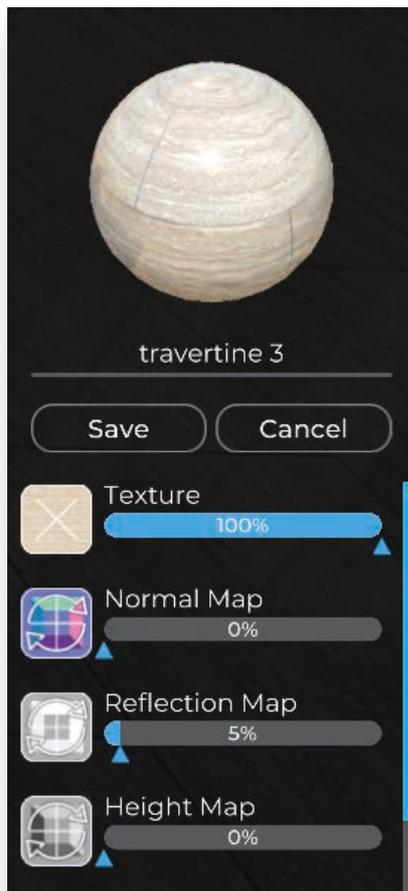
How to create materials

The “Materials” TAB allows you to create and modify all the materials that can be used in Eyecad VR, as well as the access to the software’s libraries.



The “create a new material” command allows to access to a menu of options relating to the parameters of the editable material, as well as the possibility of assigning a name and saving the changes made.





The default Eyecad VR material is PBR (physically based rendering) although the terminologies used in the editor have an hybrid characterization. By opening the materials editor it's possible to access to the "texture map", "normal map", "reflection map" and "height map" mappings, that normally are automatically created by Eyecad VR, but is possible to add every single customize map. Is possible to set the RGB color parameters, in addition to define the parameters Transparency, Lucidity, Metallic and Emission.

Physically Based Rendering (PBR) is a method of shading and rendering that provides a more accurate representation of how the light interacts with surfaces. It is referred to as Physically Based Rendering (PBR) or Physically Based Shading (PBS). Depending on what aspect of the pipeline is being discussed, PBS is usually specific to shading concepts and PBR is specific to rendering and lighting.

However, both terms describe the process of representing assets from a physically accurate standpoint.

Texture map

The texture map is the first of the four material maps options in the materials 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 item also includes a percentage slider, which allows you to set the texture visibility choosed. The values lower than 100 actually introduce a transparency component which reveals, for the remaining percentage, the basic color of the material.

Normal Map and Reflection Map

Eyecad VR automatically generates the Normal Map and the Reflection Map from the imported Texture Map. It is therefore not necessary to be in possession of the entire PBR texture kit, but only the RGB texture is sufficient. According to the PBR conventions, the Normal Map is useful to define the effects of relief without corresponding to an actual geometric detail of the object where the material is applied. The same operating logic, in the case of reflections, it has to be applied to the Reflection Map.

Once the texture import operation has been completed, eyecad VR will automatically process the image of the Normal Map (a technique used to simulate the complexity of the survey of surfaces without modelling them in detail) and the image of the Reflection Map (it is an efficient technique of image-based illumination to approximate the appearance of a reflective surface using a precalculated texture image).

Basic properties of the material

The materials editor allows defining the final appearance by modifying the following parameters:

- RGB
- Transparency
- Lucidity
- Metallic
- Emission

RGB

It allows to define, through the mix of the three RGB parameters (red, yellow, blue) the basic color of the material. You can also enter a hexadecimal color code or select the color using the two visual preview modes provided.

Transparency

It allows to define the transparency of the material. In other words, the ability of the material to be crossed by light. It is expressed in percentage terms from 0 to 100 (%).

Lucidity

It allows to define the lucidity of the material. In other words, the material's ability to reflect light on its surface. It is expressed in percentage terms from 0 to 100 (%).

Metallic

It allows to define the metallic value of the material. In other words, the ability of the material to simulate the typical surface characteristics of metals. It is expressed in percentage terms from 0 to 100 (%).

Emission

It allows 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, according to the intensity expressed in percentage terms, from 0 to 100 (%).

Two-sided-mode

The materials editor allows you to activate the "two-sided-mode" option. Its effects are easy to understand when assigning the material to an object present in the project scene. The fact of making the material visible both inside and outside the surfaces that characterize the object during rendering makes it possible to overcome the problems of "mesh normal inverted" that can be inherited during the import phase of 3D models all inside of eyecad VR. By default the "two-sided-mode" option is deactivated, because it is highly suggested to fix the direction of the mesh in the 3D modelling software. Anyway, its activation affects transparencies and reflections:

Two side mode – off
Two side mode – on

PBR Materials Library

Eycad VR offers a big PBR materials (Physically Based Rendering) library that includes a wide selection of samples frequently encountered in the context of architecture and design. Libraries are categorized into items that allow you to easily identify the type before making the choice in detail.

Why PBR materials?

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

Who uses a software in computer graphics, as in the case of eycad VR transposes a series of objective advantages in the operational phase, including the fact of automating many procedures that affect the rendering of surface attributes, a factor that makes it much easier to define realistic assets with a relatively moderate effort, thanks to their high quality rendering with any light condition present in the scene.

Another of the aspects for which eycad VR has chosen to make use of PBR materials is given by the fact that the PBR methodology defines work standards that allow more users to interact, even at different times. Automating procedures makes managing a project much simpler and more intuitive, and the parameters for defining a material are objectively reduced in number.

CHAPTER 4

Light sources

Eyecad VR offers the possibility to add a series of artificial lights, able to simulate the effect of omnidirectional sources (point light), spot (spot light) and area (area light).

Inside the TAB: “Light sources” you can create the different types of lights, to position them in the scene by drag’n’drop. The light sources available in the Eyecad VR light creation tab are:

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



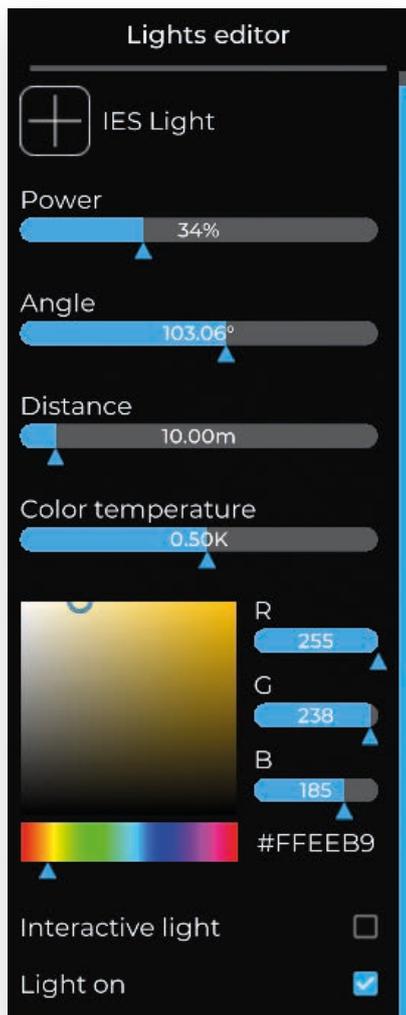
Point light

The point-light is a light source that can be freely positioned in the scene. From the point of emission, it projects a beam of light in an omnidirectional manner, controllable by parameters present in the TAB.



To create and position the point-light, simply select it in the “Light sources” tab and drag it inside the scene (drag and drop). The gizmo (x, y, z) allows the point-light to be positioned precisely in the scene. The point light parameters can be edited through the “Light Editor” TAB, where it is possible to configure:

- **IES Lights:** it allows to choose one IES file from the library included in Eyecad VR to apply to the light source.
- **Power:** it indicates the quantity of light emitted expressed in percentage terms (%).
- **Angle:** it indicates the radius of the light beam emitted, expressed in degrees (°).
- **Distance:** it indicates the area of effect of the light source, through its depth, which is equivalent to the visibility limit of the light emitted, expressed in meters (m).
- **Color temperature:** it indicates the color of the light emitted by the source, expressed in degrees Kelvin (K).



In the Interactions section, the light editor allows you to choose whether to offer the option of turning the point light on and off during navigation in the scene.

This option has an influence in the exploratory phase and allows (light on / light off) to configure the preset for each point light in the scene.

Spot-light

The spot-light is a light source that can be freely positioned 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 TAB.

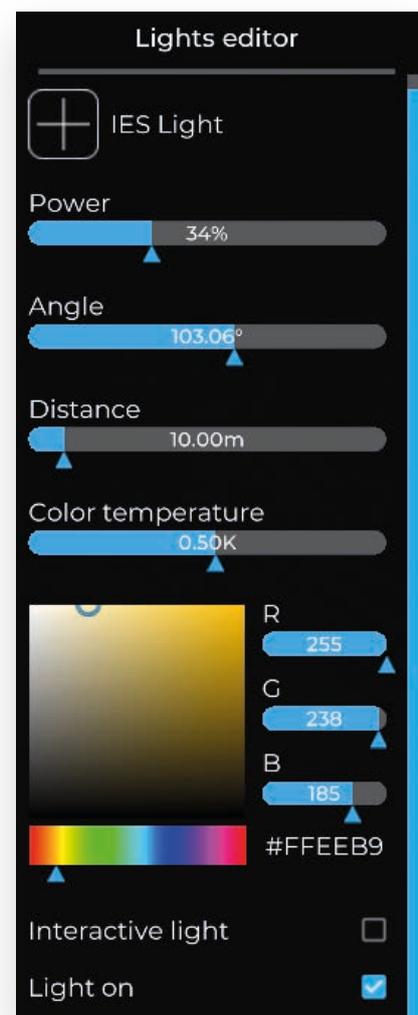


To create and position the Spot-light, simply select it in the "Light sources" tab and drag it inside the scene (drag and drop). The gizmo (x, y, z) allows you to precisely position the source and destination of the spot-light in the scene:

- **IES Lights:** it allows to choose one IES file from the library included in Eyecad VR to apply to the light source.
- **Power:** it indicates the quantity of light emitted expressed in percentage terms (%).
- **Angle:** it indicates the radius of the light beam emitted, expressed in degrees (°).
- **Distance:** it indicates the area of effect of the light source, through its depth, which is equivalent to the visibility limit of the light emitted, expressed in meters (m).
- **Color temperature:** it indicates the color of the light emitted by the source, expressed in degrees Kelvin (K).

In the Interactions section, the light editor lets you choose whether to offer the option of turning the spot-light on and off while navigating in the scene.

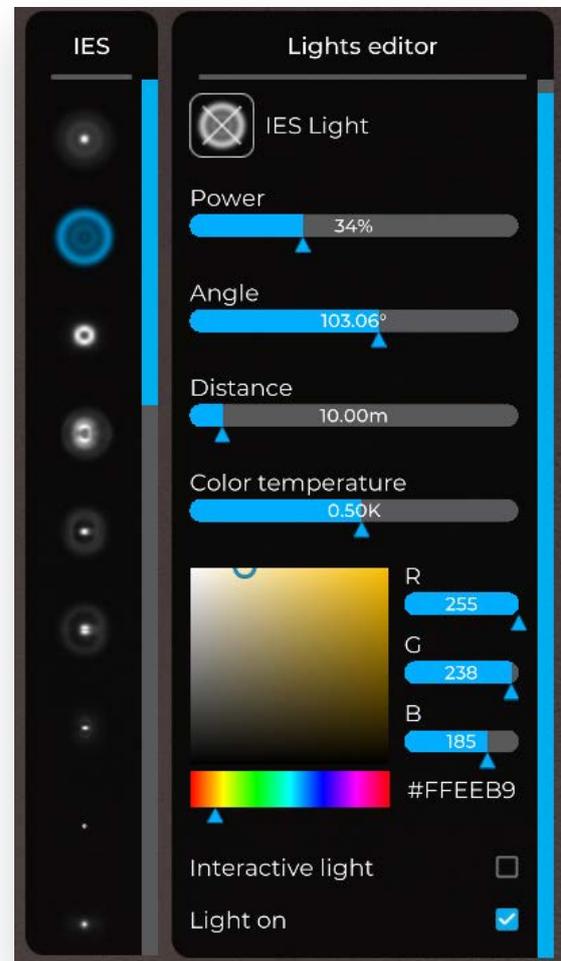
This option has influence in the exploratory phase and it allows (light on / light off) to configure the preset for each spot-light in the scene.



IES Lights

IES Lights are used to create a realistic light projection from the light sources (spot or point) added in the 3D environment. This feature is very important to increase the realism of the lights.

It is possible to choose IES light files by clicking on the (+) button on the top of the lights editor. It will appear a new window, very close to the lights editor, that contains the IES file library.



Area-light

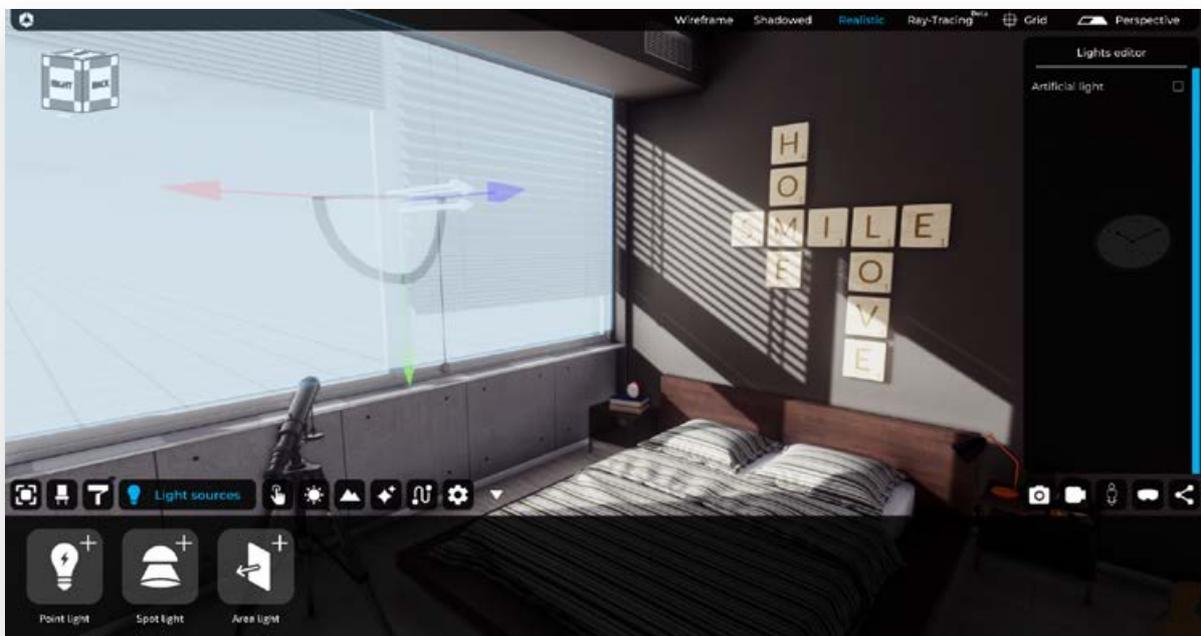
The Area-Light is a surface that acts as a projector (Sky-portal) of ambient light. It is mainly used for lighting interior spaces, to increase the level of definition and to obtain a more realistic rendering of the chromatic component of light. Its operation consists of projecting all the environmental components in the scene into an architectural space. For the reasons mentioned above it is advisable to position the Area Light in correspondence with the openings of the interiors in the scene.



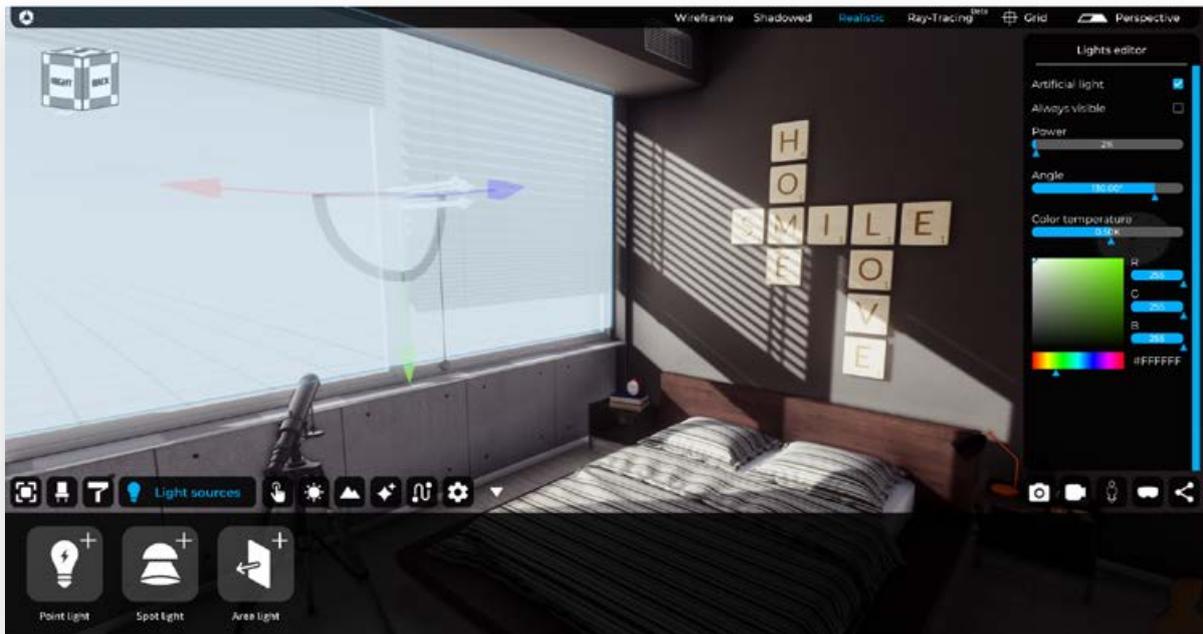
To create and position the Area-light, simply select it in the “Light sources” tab and drag it inside the scene (drag and drop). The gizmo (x, y, z) allows you to precisely position the source and destination of the spot-light in the scene. The Area Light takes effect only in the direction indicated by the arrow vector.

The “Modify” TAB allows you to change the surface area of the Area-light any time.

In the case of the Area-Light (default as Sky-portal) there are no additional modification parameters, as the light source adapts in real time to the ambient lights in the scene, emitting in a perpendicular way to the direction of emission indicated by the arrow vector.



In the case of the Artificial Area-Light (by clicking on the Artificial light button) a new menu appears which is possible to set some parameters for the artificial arealight that is often used like as roof led lights or neon effects.



CHAPTER 5

Interchangeable materials interaction

The materials configuration in an interactive 3D scene is one of the distinctive features of Eyecad VR. Through the exploration mode the user can navigate in real time in the defined spaces with the possibility of interacting with the objects for which this possibility has been provided.

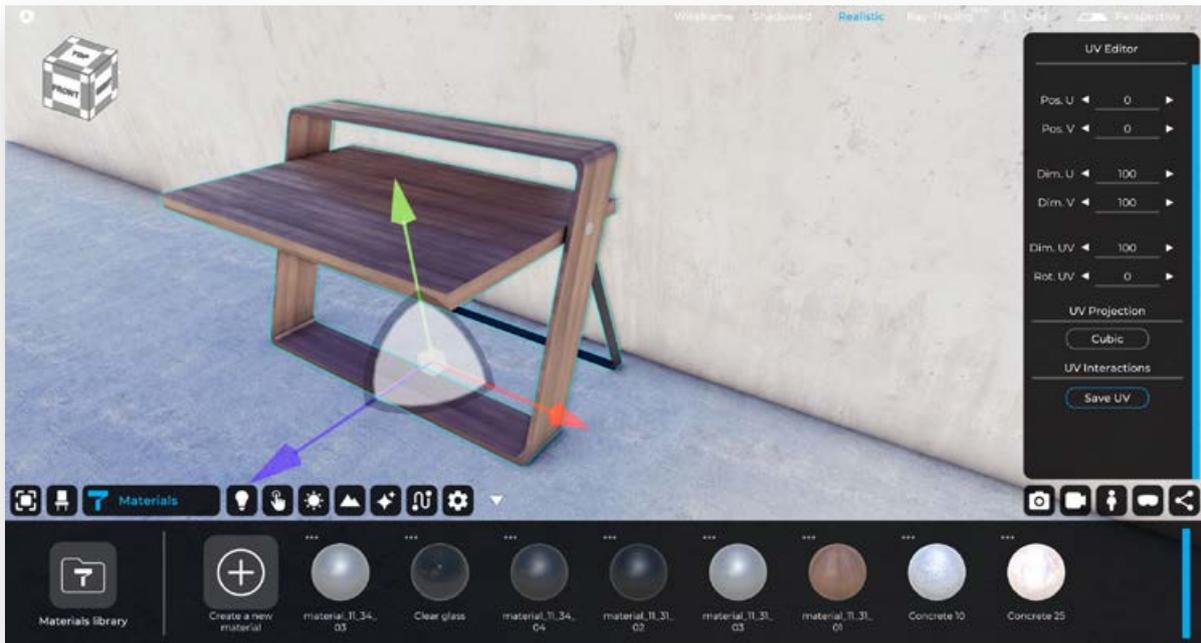
It is therefore possible to use Eyecad VR as a 3D configurator for interior projects, furnishings and finishes, as well as customizing any aspect of the project scene. In the Exploration mode it is possible to select any object to activate the sample of available options, from which to choose and display in real time the final appearance, both via monitor and via virtual reality headsets.

To set the configurable materials, simply follow the procedure described below.

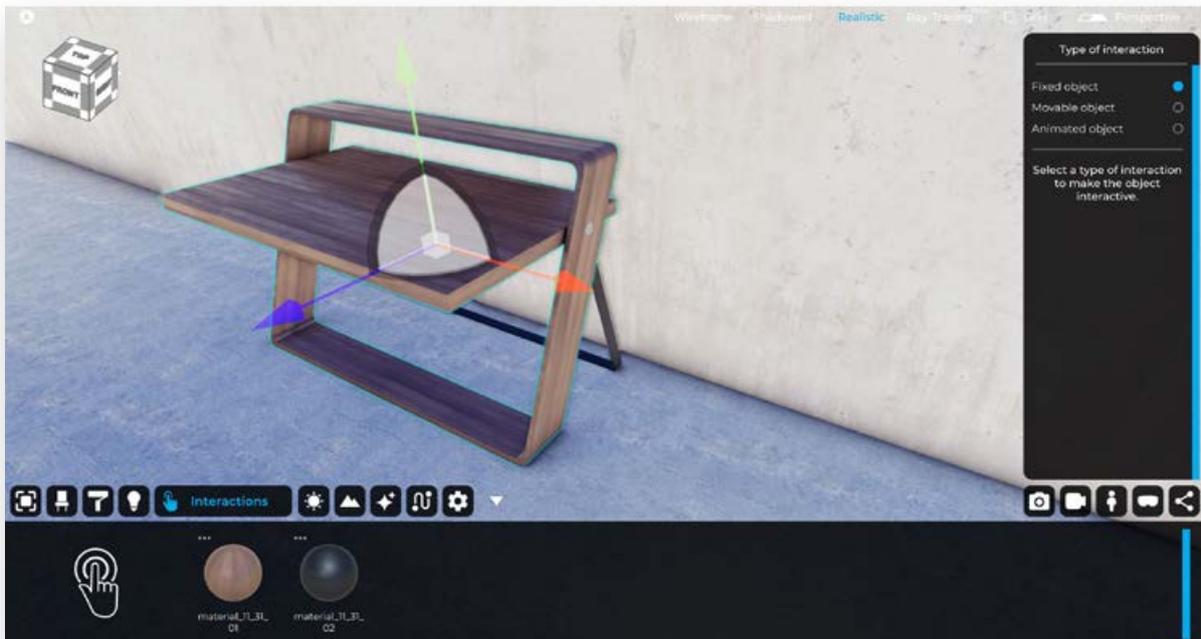
After assigning a material (selecting the material in the “Materials” TAB and dragging it on the object to which the material is to be assigned), select the object, right-click and go to the “Set UV” menu and click on it.



Here you can set the UV of the Objects and by selecting “Save UV” allows to Eyecad VR to save the selected material in the interactive settings of the object, thus making it possible to select in the exploration mode.



To assign more materials to the same object, simply repeat the procedure for each material you intend to assign with a customizable UV setting for each interchangeable material.



By selecting the object with interactive materials assigned, and by going on the Interactions TAB, you will see the materials saved for the interactions.

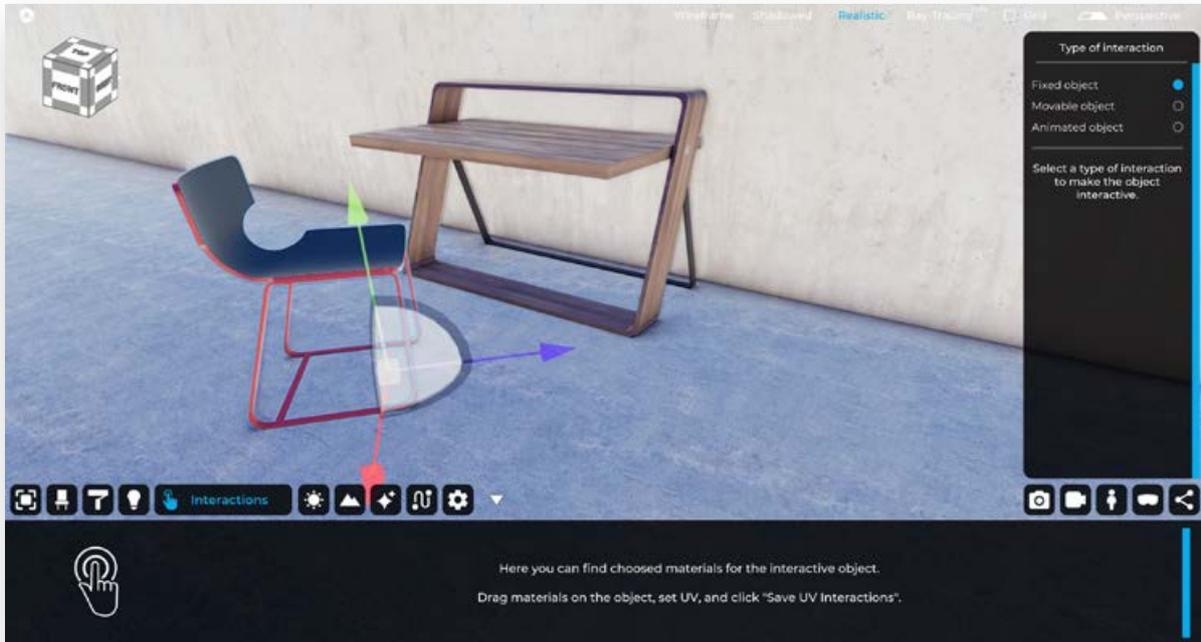
In addition to choose the applicable materials for each object in the scene, it is possible to set the default material, which is assigned to the activation of the exploration mode. In other words, it is possible to choose the basic material from which to start with the configuration.

To do this, select the “Interactions” tab and click on the material you want. The real-time preview also allows you to visually check the default material chosen for the interactions, minimizing the possibility of error.

CHAPTER 5.1

Movable object-fixed object interaction

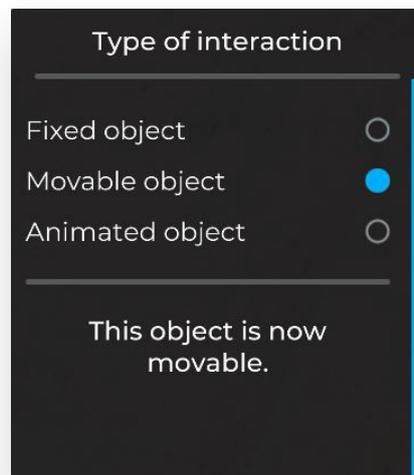
The “interactions” TAB allows to associate to the objects in the scene four possible types of interaction, directly selectable in the right column of the menu. The “Movable Object” interaction, if active, allows you to move and rotate the object in the exploration mode.



To activate the “movable object” option, the procedure described below must be performed. After selecting the “Interactions” tab, the menu on the right will display the four possible interactions, including “movable object”. Selecting the aforementioned mode, the following confirmation message will appear in the menu “this object is now movable”.

The operation is completely reversible. To remove the possibility of interaction of an object in the “exploration” mode, it is in fact sufficient to select the type of interaction “fixed object”.

By default, the objects in the scene are set with the interaction type “fixed object”.



CHAPTER 5.2

Rotatable object interaction

The “Interactions” TAB allows to associate to the objects in the scene four possible types of interaction, directly selectable in the right column of the menu.

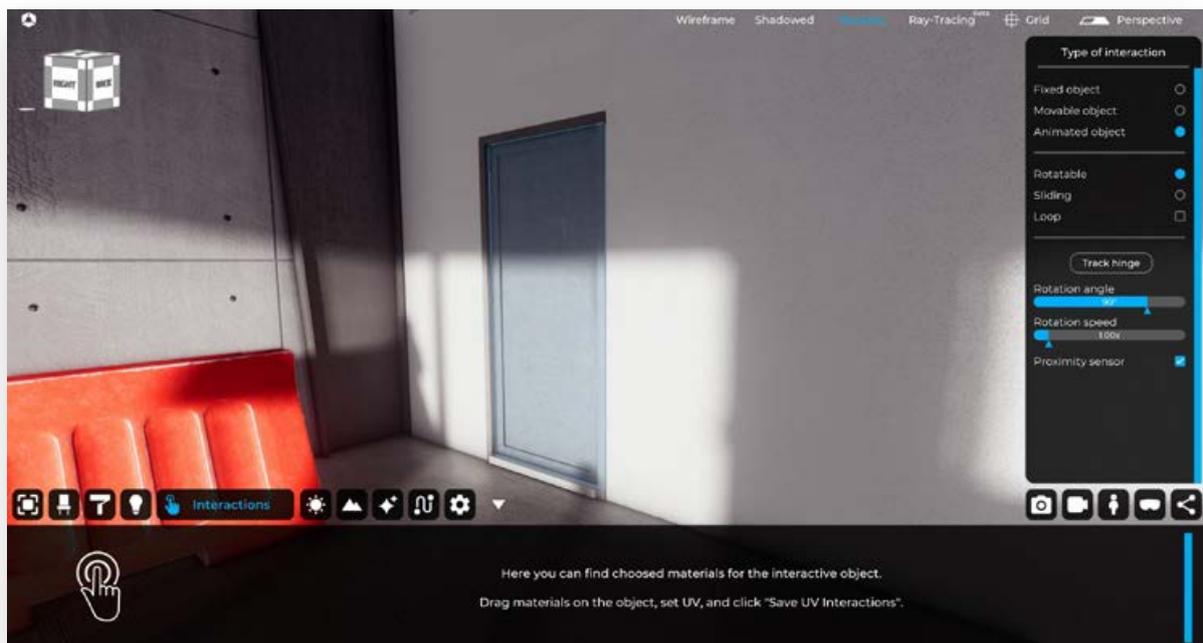
The “Rotatable” interaction, when active, allows to define the opening modes like of a door characterized by a rotation around a pin.

To activate the “Rotatable” option, the procedure described below must be performed.

Premise – the “Rotatable” interaction was originally conceived to be used with the doors in a scene, but can be freely associated with any object, since it limits itself to defining the rotation modes around a pin.

The first operation coincides with the selection of the object to be opened with a rotation.

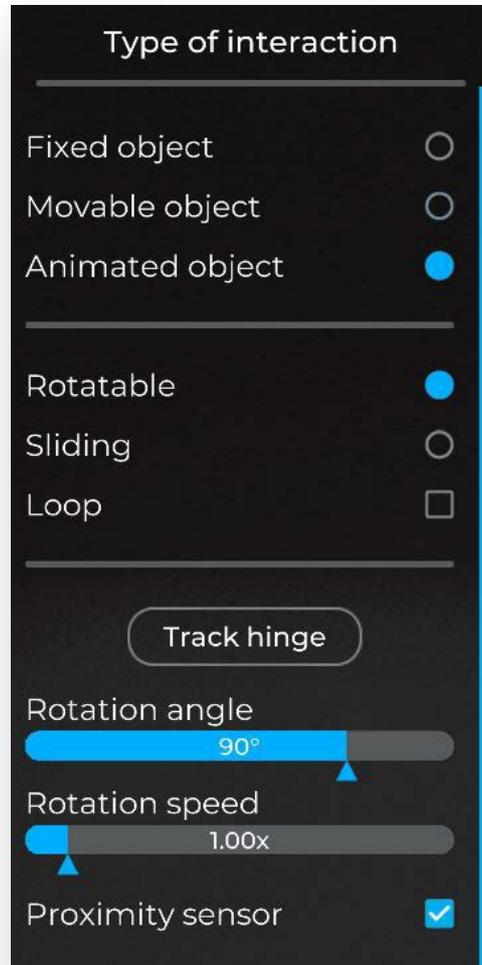
The most common examples are a door or the door of furniture or wardrobe for which a revolving opening is foreseen, distinct in eyecad VR with respect to the sliding openings, which are managed through the type of interaction “Sliding”.



After selecting the object that you want to open with a rotation, you need to select the “Interactions” tab, which automatically activates the right column of the menu, where there are all types of interaction.

Select the type of interaction “Rotatable”.

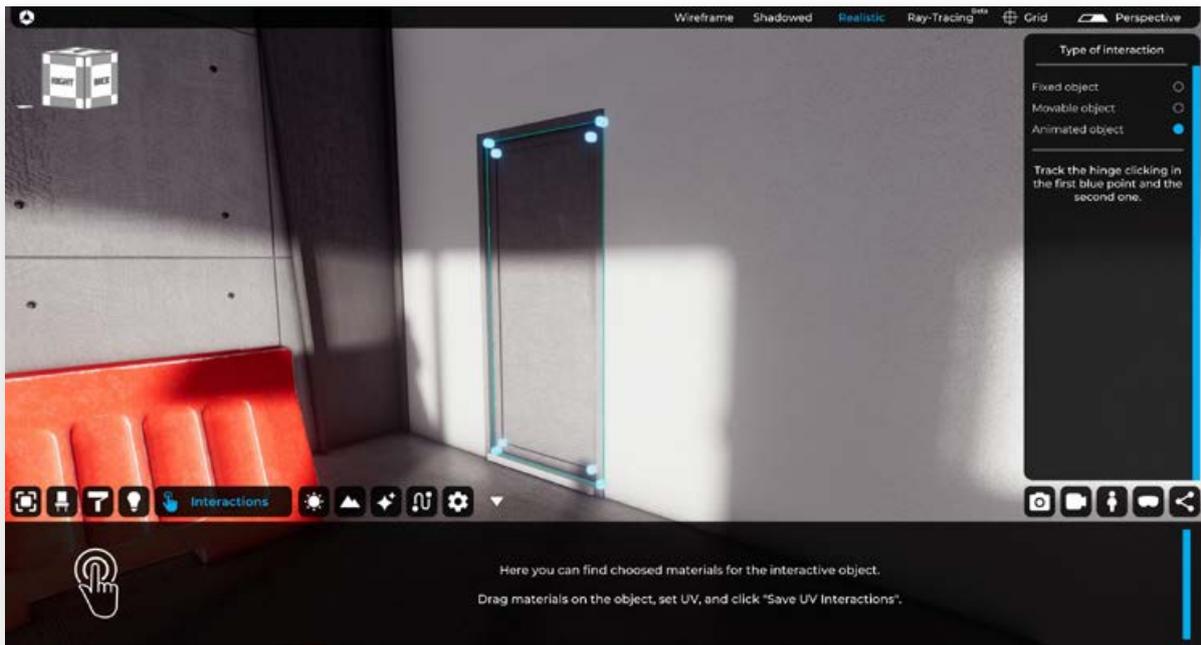
The selection of the interaction type “Rotatable”, enables the commands “Track hinge”, “Rotation angle”, “Rotation speed” and the option “Proximity sensor”.



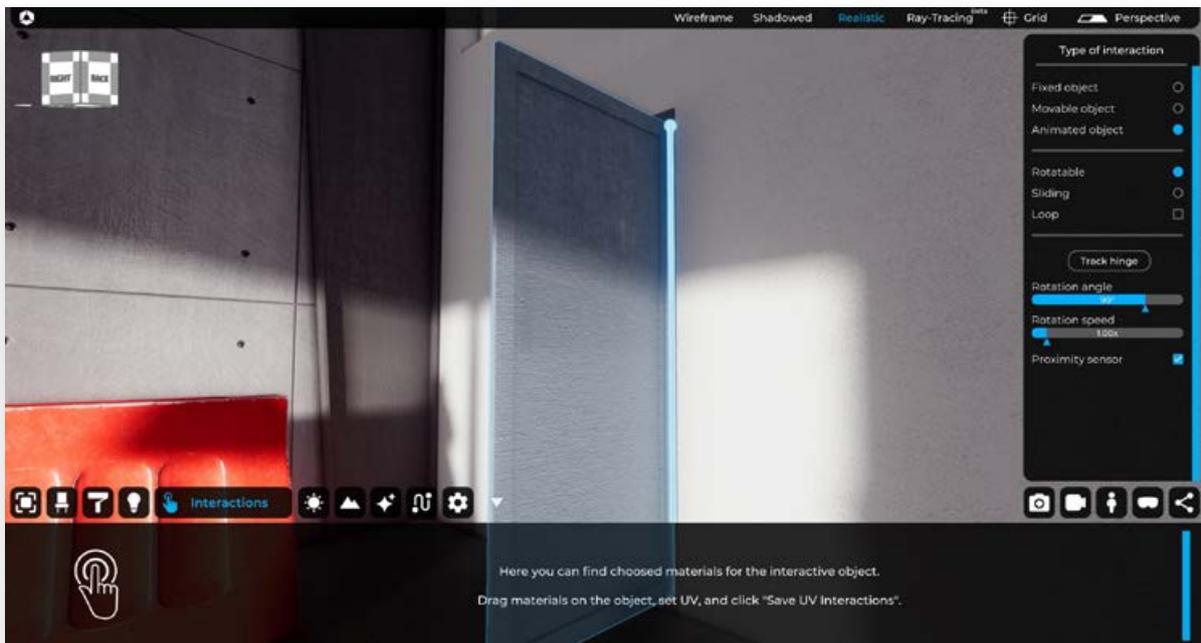
The “Track hinge” command activates a series of blue circular points helper, which allow you to define the object’s axis of rotation.



After activating the “Track hinge” command, it is necessary to select two of the blue points helpers active on the object, to draw the line that acts as a rotation axis (hinge).



Once the rotation axis has been set, eyecad VR is able to recognize both the hinge around which the object is rotating and the opening direction.



The “Rotation angle” function allows you to set the maximum opening angle through a slider in degrees.

The “proximity sensor” function allows you to activate or deactivate the mode according to which the opening takes place automatically when, in the exploration mode, a user approaches the object to which the interaction was associated.

In other words, if the “proximity sensor” function is active, the simple approach of the user activates the opening animation of the object.

If the “Proximity Sensor” function is not active, the user must interact directly with the controller / keyboard and mouse during the exploration in order to activate the opening animation.

CHAPTER 5.3

Sliding object Interaction

The “Interactions” TAB allows to associate to the objects in the scene three possible types of interaction, directly selectable in the right column of the menu.

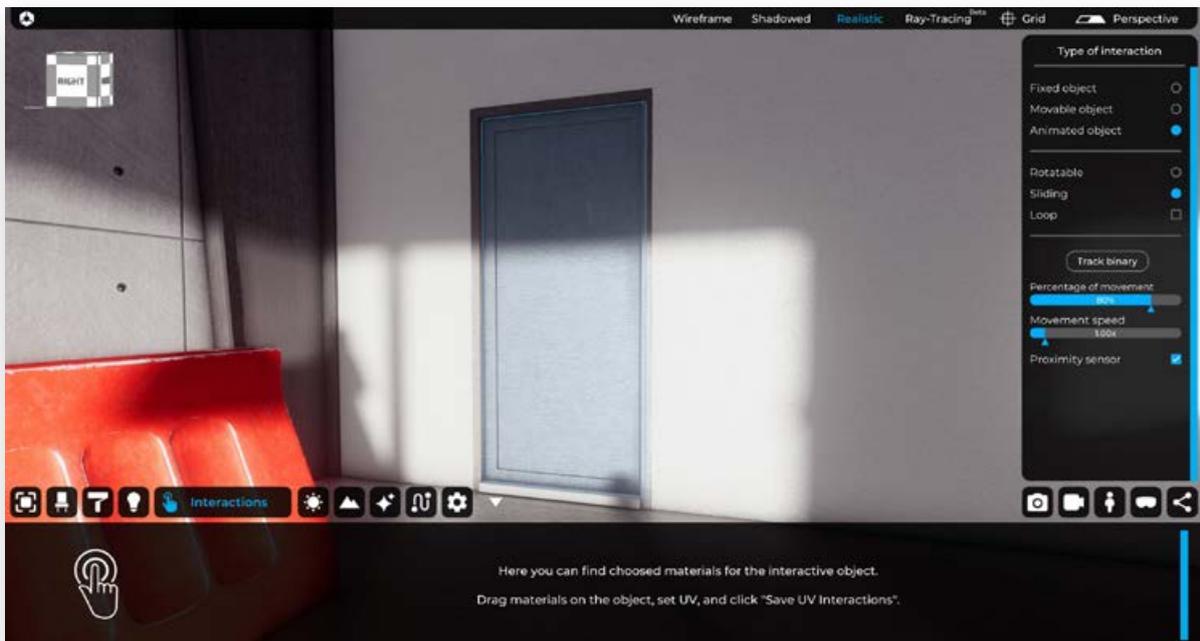
The “Sliding” interaction, under the “Animated object” window, when active, allows to define the opening modes of a door characterized by a scroll along a straight line.

To activate the “Sliding” option, the procedure described below must be performed.

Premise – the interaction “Sliding” was originally conceived to be used with the doors present in a scene, but can be freely associated to any object, as it limits itself to defining the modes of translation along a straight line.

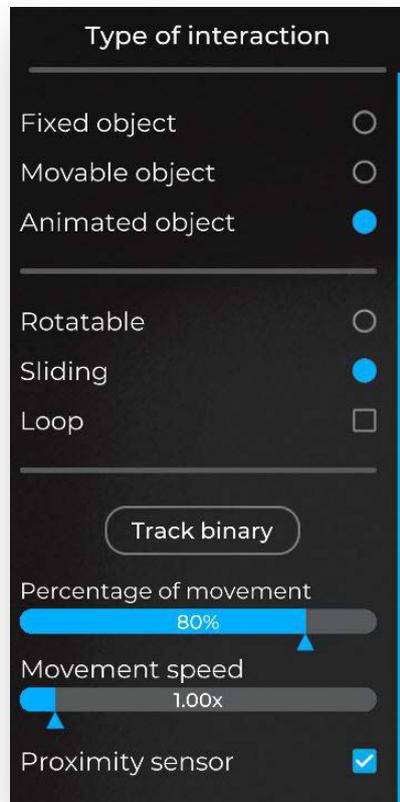
The first operation coincides with the selection of the object to be opened with a scroll. The most common examples are a standard door or a door of furniture or wardrobe for which a sliding opening is expected.

After selecting the object that you want to open with a sliding, you need to select the “Interactions” tab, which automatically activates the right column of the menu, where there are all types of interactions.

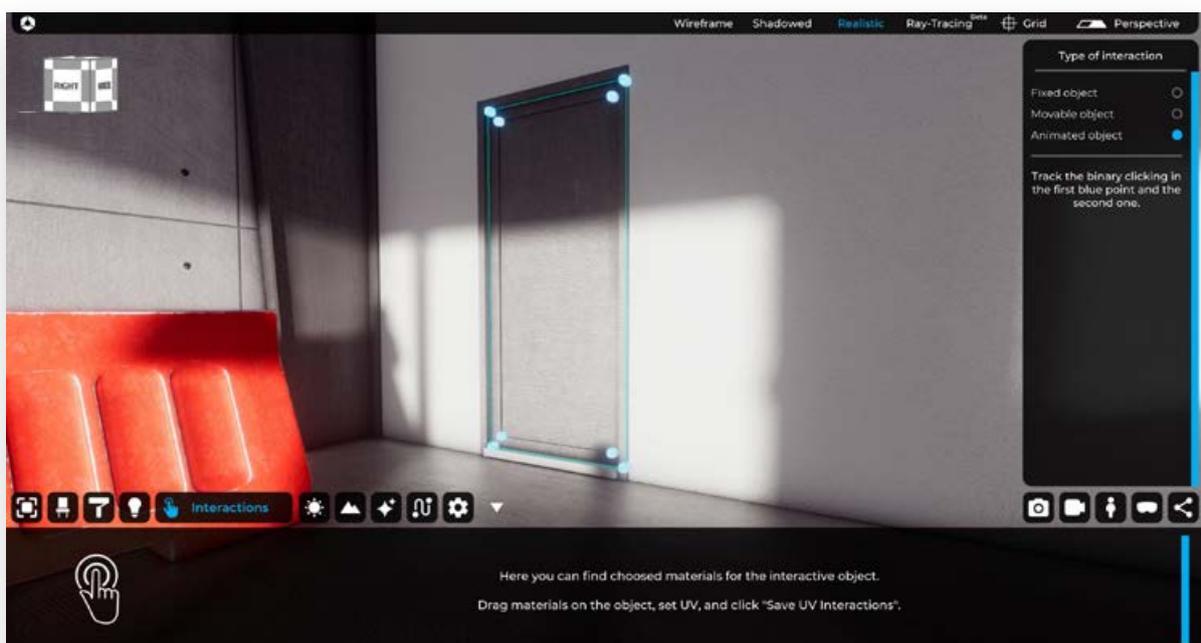


Select the interaction type “Animated object” and than “Sliding”.

The selection of the interaction type “Sliding” enables the commands “Track binary”, “Percentage of movement”, “Movement speed” and the function “Proximity sensor”.

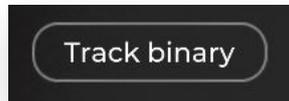


After selecting the interaction type “Sliding”, Eyecad VR identifies the object with a series of blue color helpers.

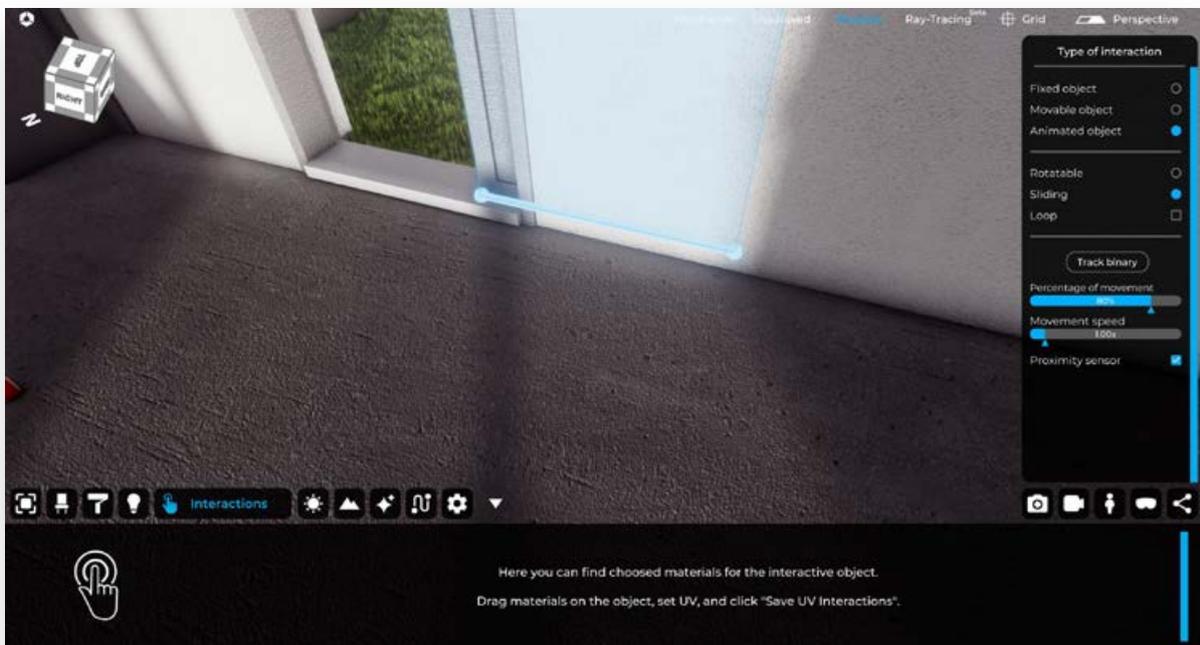


The next operation consists in selecting the “Track binary” command that allows you to define the line that constrains the scrolling of the object.

Click on the icon “Track binary”.



If you define a line (through the blue points) on the lower limit of the object as a binary, this effectively becomes the track that Eyecad VR uses to convey its flow during the animation.



The “Percentage of movement” command allows you to set, with respect to the overall length of the track, the percentage of sliding that the object will perform during the animation.

The default condition provides a percentage of movement of 80%, but it can be changed at any time thanks to the slider below the description of the command. The image depicts the case of a sliding door that enters a part of the wall inside. According to the default settings, its leaf would remain visible outside the wall for 20% of its width, which in this case coincides with the sliding track. If you set a movement percentage of 100%, the entire leaf would disappear into the wall.

The “Movement speed” command allows you to set, with respect to the overall length of the track, the movement speed that the object will perform during the animation.

The “proximity sensor” function allows you to activate or deactivate the mode according to which the translation takes place automatically when, in “exploration” mode, a user approaches the object to which the interaction was associated. In other words, if the “proximity sensor” function is active, the simple approach of the user activates the translation animation of the object.

If the “proximity sensor” function is not active, the user must interact directly with the controller / keyboard and mouse during the exploration phase in order to activate the opening animation.

CHAPTER 6

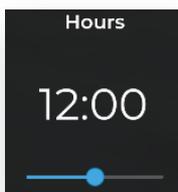
Environment

The “Environment” TAB allows you to set different conditions related to the ambient light, direct solar light and to control the atmospheric agents of the project scene.

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



In detail, the “Environment” TAB options allow you to define the following environmental lighting aspects.



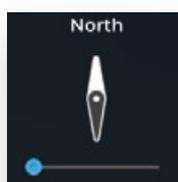
Hours: The “time” function allows you to configure the time, contextually changing the position of the scene. This function is related to the “Day” function too.



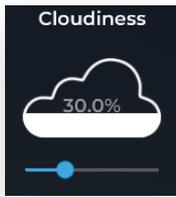
Day: The “Day” function allows you to set the current date of the project, contextually changing the position of the sun in the scene. This function is related to the “Hours” function.



Coordinates:The “Coordinate” function allows you to set the terrestrial coordinates by geo-localization of the project. This function is related to the “Hours” and “Day” functions and allows you to define the inclination of the sun in the scene.



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” functions, “Day” and “Coordinates”.



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



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

Sunny conditions (clear or normally cloudy):



Wet conditions without rainfall:



Wet conditions with rainfall:



Snowy environment conditions without snowfall:



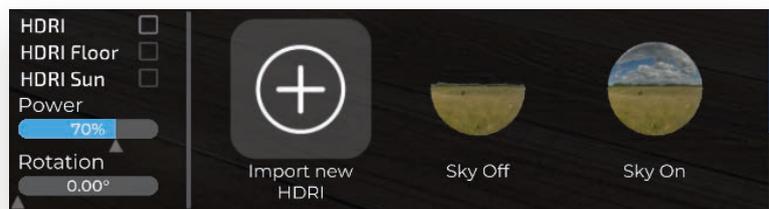
Snowy environment conditions with snowfall:



Other functions:

HDRI

The “HDRI” function allows you to load an HDRI 360 image, which hemispherically surrounds the project scene, like a great celestial vault able to condition the entire environment inside it. The Eyecad VR HDRI performs the background functions of the scene and affects global reflections and the Global Illumination too (the last one in Raytracing mode only).



Eyecad VR allows you to select the HDRI preset in the Eyecad VR “HDRI library” setted in two ways, which can however be changed and managed independently, at any time.

Sky on HDRIs: the HDRI determines a preset and static sky. The cloudiness percentage affects the general lighting of the scene, but the clouds are not visible because the background is always characterized by the HDRI image. If the Sky on function is used, it is advisable to check the coincidence with the position of the virtual sun with that of the HDRI image, in order to avoid inconsistencies in the shading phase.



Sky off HDRIs: the Sky off function removes the visible component (static sky) of the HDRI image, replacing it with the default environment, in which all the effects determined by the functions Time, Day, Coordinate, North and Cloudiness are dynamically visible. The overall effect is of a hybrid nature, combining a real landscape with a procedural sky.



The choice of the Sky-on and Sky-off function depends both on the type of project and on the subjective preference to proceed with a specific lighting setup at the environment level.

It is also possible to upload a personal HDRI image in Jpg, Png, Bmp, Tiff and Tif formats. However, Eyecad VR will automatically convert the image into a real-time lighting image with high luminous efficiency, so, simulating the HDRI emission from a simple photosphere.

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

- **HDRI:** It turns on (or off) the HDRI background.
- **HDRI Floor:** It allows to create a virtual floor from the HDRI image.
- **HDRI Sun:** It allows to match the HDRI sun with the virtual sun to improve the general lighting.
- **Power:** it affects directly the exposure of the final image. Expressed in percentage values (%)
- **Rotation:** it rotates the image 360 relative to the vertical axis (z). Expressed in degrees (°).

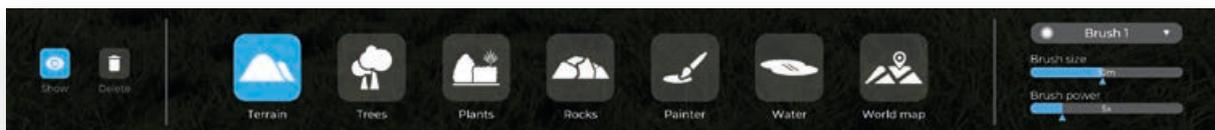
CHAPTER 7

Landscape creation

The “Landscape” tab allows you to create and modify the elements of the natural or artificial landscape of the project, through the configuration of different parameters. The “Landscape” TAB interface includes the ability to view or not the terrain in 3D (show/hide 3D terrain) and the creation commands “Terrain”, “Trees”, “Plants”, “Rocks”, “Painter”, “Water”, “World Map” as well as the brush configuration options that allows you to create and modify all the parts related to the territory conformation.



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

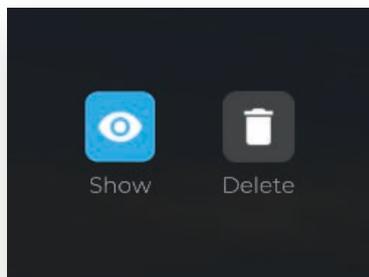
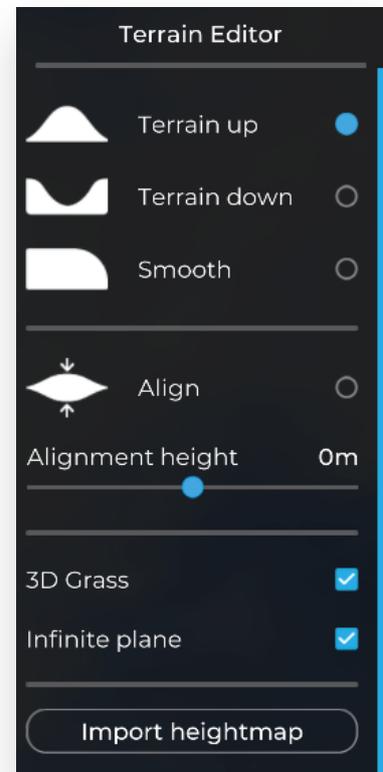


Once inside the “Landscape” tab, at the bottom left we can generate and / or hide the 3D terrain, if one has already been created it can be deleted using the “Delete landscape” button. The 3D terrain consists of an “infinite” plane on which it is possible to act, by modeling, by raising, lowering, leveling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

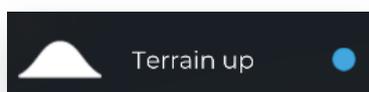
Terrain

This is the tool that deals with soil modeling, by clicking on its icon representing two hills, the “Terrain Editor” menu will appear on the right, showing the following actions:

- Terrain Up
- Terrain Down
- Smooth
- Align
- Alignment height
- 3D Grass
- Infinite plane
- Import heightmap

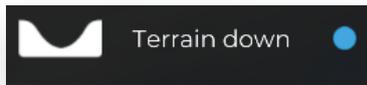


First of all, in order to perform modeling on the ground, the Terrain must be activated, using the function: “Show”.

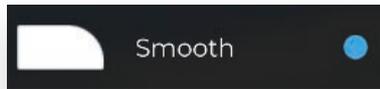


Terrain Up: Selecting the action “Up” it is possible to make changes on the ground, in the area indicated by the size of the “brush”, bringing it to the desired height. For a more precise or more general action it is possible to choose the size, strength and shape of the “Brush”.

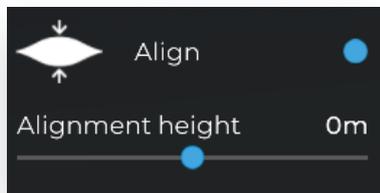
The Brush is located inside the “Landscape” tab on the right.



Terrain Down: Selecting “Down” it is possible to work on the ground by lowering the area of the selected land to the desired height. For a more precise or more general action it is possible to choose the size, strength and shape of the “Brush”.



Smooth: Selecting the action “Smooth” it is possible to intervene on the ground by softening the curves between the different dimensions of the ground. For a more precise or more general action it is possible to change the size, strength and shape of the “Brush” (brush).

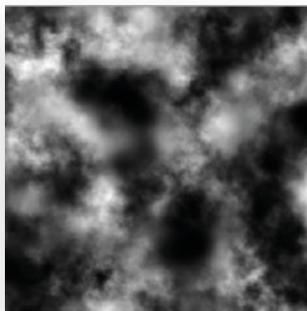


Align: Selecting the action “Align” it is possible to intervene on the ground bringing it to a very precise altitude. For a more precise or more general action it is possible to change the size, strength and shape of the “Brush” (brush).

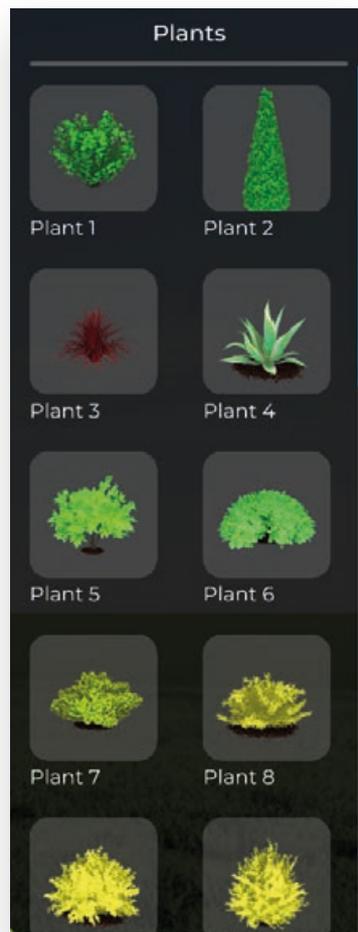
3D Grass: This function allows to generate 3D animated grass for the natural landscape. It suggested to model the 3D terrain without the 3D grass on, especially for not high-end PCs. It is possible to generate the 3D grass by clicking on the 3D grass toggle button.



Infinite Plane: It generates an infinite plane to simulate the horizon for the 3D scene, however, it is possible to modify the 3D terrain up to a certain point.



Import Heightmap: This helpful function, allows you to import the territorial trend by one image that describes it. Eyecad VR, once imported it, will automatically create the territorial trend. This kind of images are created with a lot of software. In Eyecad VR is possible to import the heightmap images in these formats (jpg, png, tiff, tif) :



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 a lot of different types of 3D gardens decorative plants, like bushes small trees and more. Just drag'n'drop the objects from the lateral menu to the scene.



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

To be able to insert trees in the project, just go to the "Landscape" tab and select the "Trees" button. Once selected, a menu called "Trees Editor" will appear on your right, where you will find different types of trees. If you want to perform a fast filling action of the landscape with different trees you can use the brush that will help you in the execution of the action.

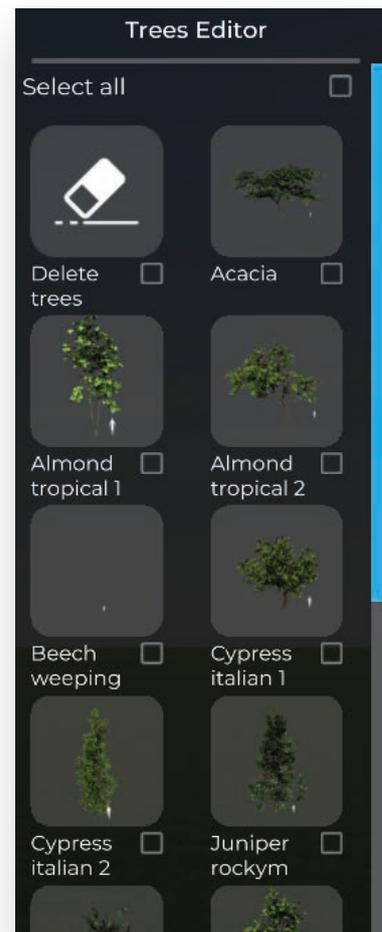
To speed up the operation of general filling of the landscape select the function: "Select all", which will select all the trees in the library by positioning them on the ground when the brush passes over it.

It is possible to select the type of trees of our interest and insert them with the brush on the ground.

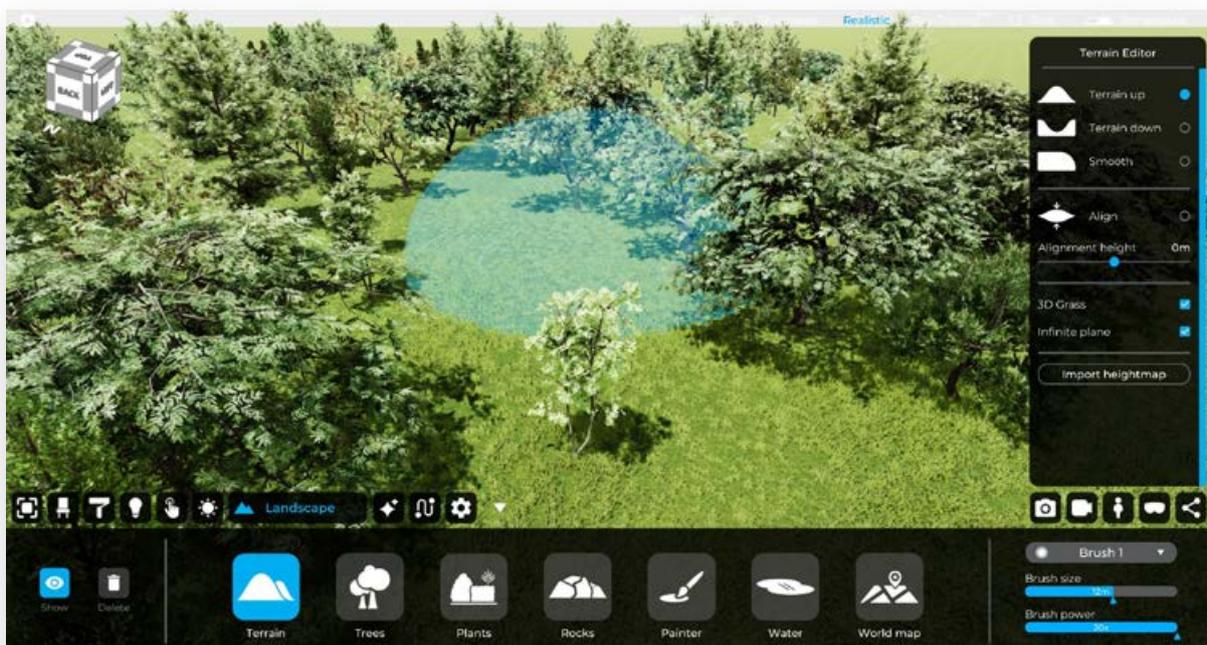
Also in this case, for a more precise or more general action it is possible to choose the size, strength and shape of the "Brush" (brush).

If instead you need a timely, more precise regulation, you can select and drag a tree directly from the library to the terrain where you want the plant be inserted. In this case, the trees dragged manually 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 also delete a tree individually by simply clicking on it and pressing the "Delete" key on the keyboard. Adding trees by brush:



Adding trees by drag'n'drop from the trees library:



Rocks editor: If the 3D project is inserted 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 it to be able to represent it at its best. Eyecad VR provides a library of different rocks that can be freely inserted into your project.

To be able to insert the rocks inside the project, just go to the “Landscape” tab and select the “Rocks” function. Once selected, a menu called “Rocks 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 will help you carry out the action.

To speed up the general filling operation of the landscape, 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 it. This function works with little rocks only.



It is also possible to select the type of rocks of your interest and insert them with the brush on the land.

Also in this case, for a more precise or more general action it is possible to vary the size, strength and shape of the “Brush” (brush).

If you need timely, more precise intervention, you can select and drag a rock directly from the library to the point where you want it to be inserted. This function works with all rocks in the rocks editor.

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

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





Painter: In this section Eyecad VR allows you to also customize the texture of the soil by being able to choose from a range of textures ranging from sand to grass, from rock to soil.

To be able to apply these textures, just 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 that best suits our use, including:

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

Please note: Other painter textures will be added on the future updates.



To apply them to the ground, just choose one from the menu and apply it by pressing the left mouse button on the ground using the Brush (brush). Also in this case, for a more precise or more general action it is possible to vary the size, strength and shape of the “Brush” (brush).

If you want to delete an area of soil texture we can use the “Erase texture” tool, at the top of the “Painter editor”.

If you want to delete the 3D grass in a specific area just use the grass texture from the painter and the 3D grass will be deleted from the 3D scene.



Water: Inside the “landscape” TAB we find the “Water” section, very useful if the project is placed in a context near a lake, river or sea. To be able to interact with it and see the changes it is necessary to activate the switch: “Show 3D terrain”, which is located at the beginning of the “Landscape” tab.

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

- Lake
- Mediterranean
- Pacific
- River
- North Sea

Once you have chosen the type of water to be simulated, you will need to set the height of the water to at least 1m (one meter) to be able to see its simulation, or push the 3D terrain down. The height of the water surface is adjustable using the “Height” value bar inside the “Water” editor. Together with the height, it is also possible to adjust the water stirring state through the value: “waves”, which is always inside the “Water” editor.

Below are the reference images of the type of water, in order:

Lake



Mediterranean



Pacific Ocean



River



Atlantic Ocean



North Sea





Worldmap: Nella scheda "Paesaggio" è possibile importare una porzione dell'area geografica del globo terrestre. Vai alla sezione "Worldmap" nella scheda "Paesaggio". Una volta all'interno della sezione "Worldmap", il "Real World Editor" apparirà con il proprio menù sulla parte destra dello schermo.

In the search bar just below the map, we can quickly search for the city we want to import. If, on the other hand, you want to make a more accurate search, you must go to the inside of the box containing the map and perform Pan and scroll. Once the area to be imported has been identified, click on the blue "Generate Real World" button. You can choose whether to insert:

- **Satellite images:** it will apply satellite photos to the ground;
- **3D Buildings OSM (Open Street Map):** it will import in the correct position the simplified volume of the buildings present in the selected area, green park area, trees, streets and more urban details;
- **Elevation DEM (Digital Elevation Map):** the soil will be imported with its topography.



It is also possible to intervene on the height of buildings, using the “Buildings height” value bar in m (meters) Whenever you want to make a change to the imported soil and update it, just click again on the blue button “Generate Real World”.



CHAPTER 8

3D Visual Effects

The “Effects” TAB allows you to create and manage the visual effects indicated in its interface: Fire, Fog and Reflection Probe.



Fire: It is characterized by the unmistakable icon of the flame, the “Fire” effect simulates the animation of fire, that can be found in elements such as a fireplace or a bonfire.

To use a fire effect, in the “Effects” tab, select and drag the flame icon inside the scene. At this point, the generated fire can be managed like any other object in the scene (“Edit” TAB, the commands allow movement and rotation).





Fog: The “Fog” effect simulates the behavior of the fog, in environments ranging from forest mist to high mountain fog.

To use a fog effect, select and drag the “Fog” icon, the “Effects” tab, inside the scene. At this point, the fog generated can be managed like any other object in the scene (TAB “Edit”, the commands allow movement, rotation and scaling).



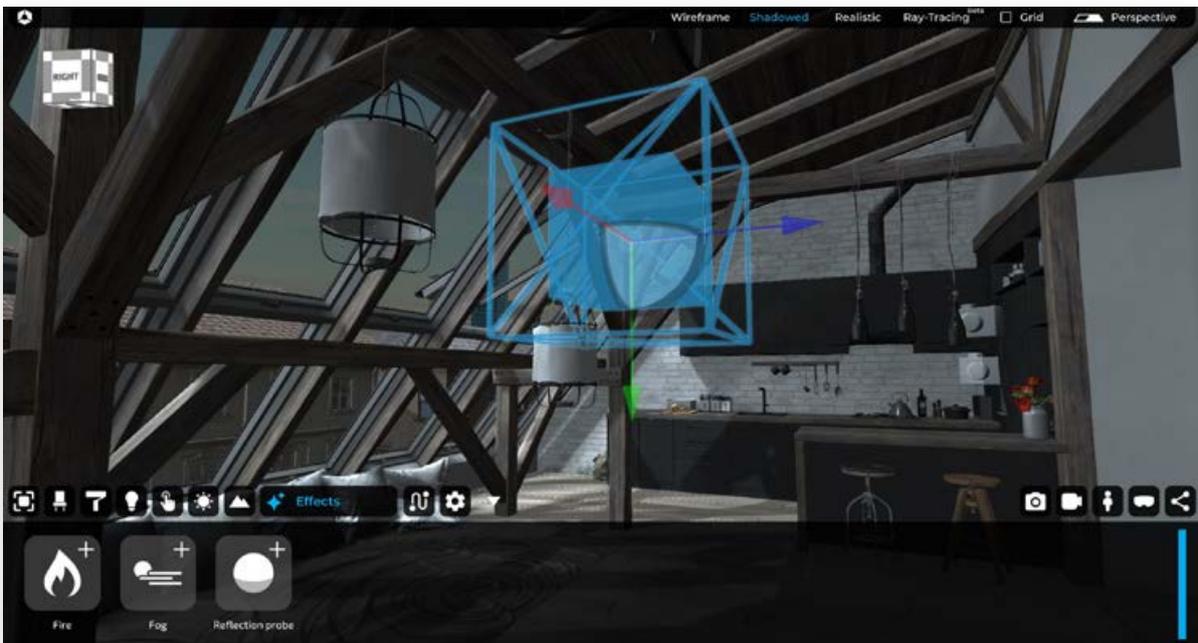
Reflection Probe: The “Reflection Probe” effect is recurrent in real-time 3D software and allows you to create a box in the scene that simulates a surrounding reflection, influencing only what is inside it. It is used above all to improve the quality of reflections in real time in the interior, influencing all the more or less reflective surfaces.

To use a “Reflection Probe” effect it is necessary to select the homonymous icon in the “Effects” tab and drag it inside the scene.

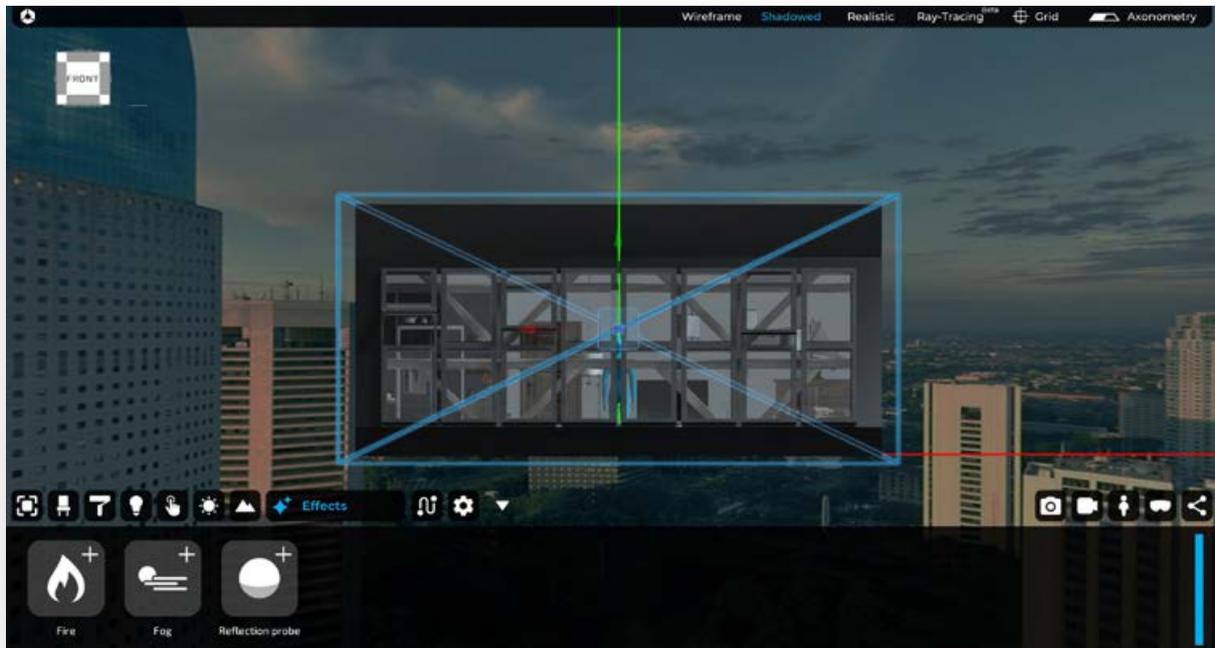


At this point, the generated “Reflection Probe” can be managed like any other object in the scene (“Edit” TAB, move, rotate and scale commands).

Size and position the reflection probe in the centre of gravity of the rooms and using the scale command, so as to incorporate the objects of interest into it.



Help yourself with the different views with the view cube (axonometric visualization) for sizing and positioning the reflection probe. It is highly suggested to create one reflection probe for each room you have in your project.



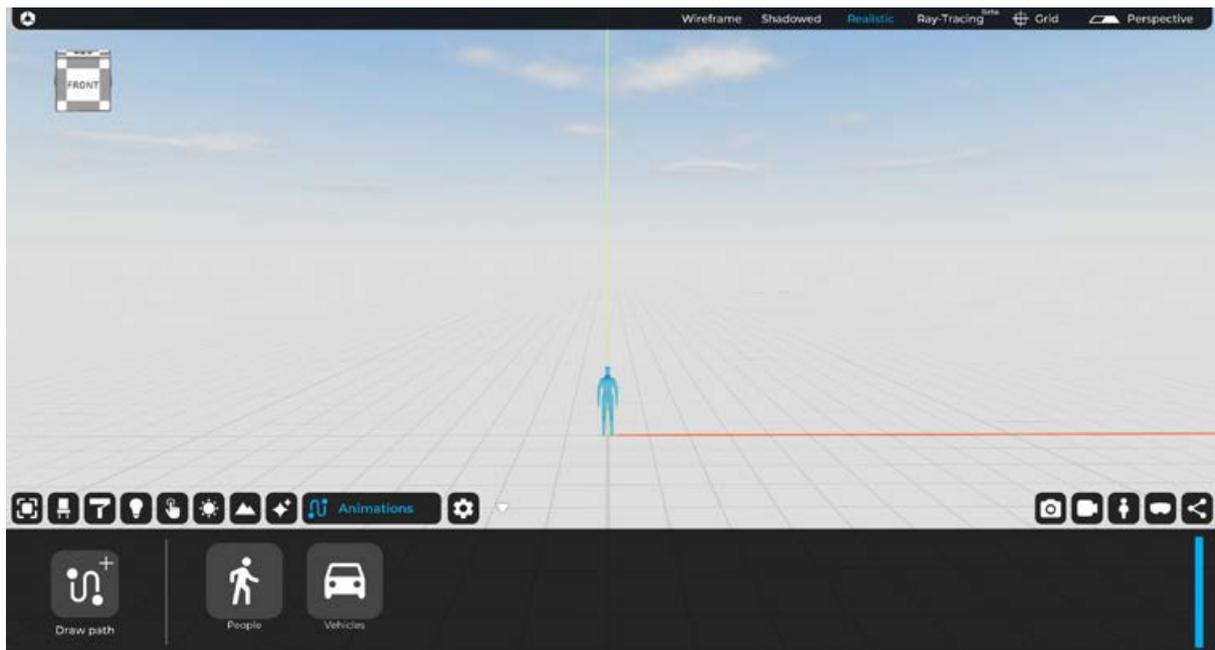
Differently from the Fire and Fog effects, the effects of the Reflection Probe depend specifically on its “bounding box”, having to accurately surround the environment in which you want to emphasize the real-time reflections. The Reflection Probe must therefore be sized so as to “wrap” the room, with its limits that should be almost tangent to the outer surface of the perimeter walls.

CHAPTER 9

Animations – 3D People, 3D cars and more

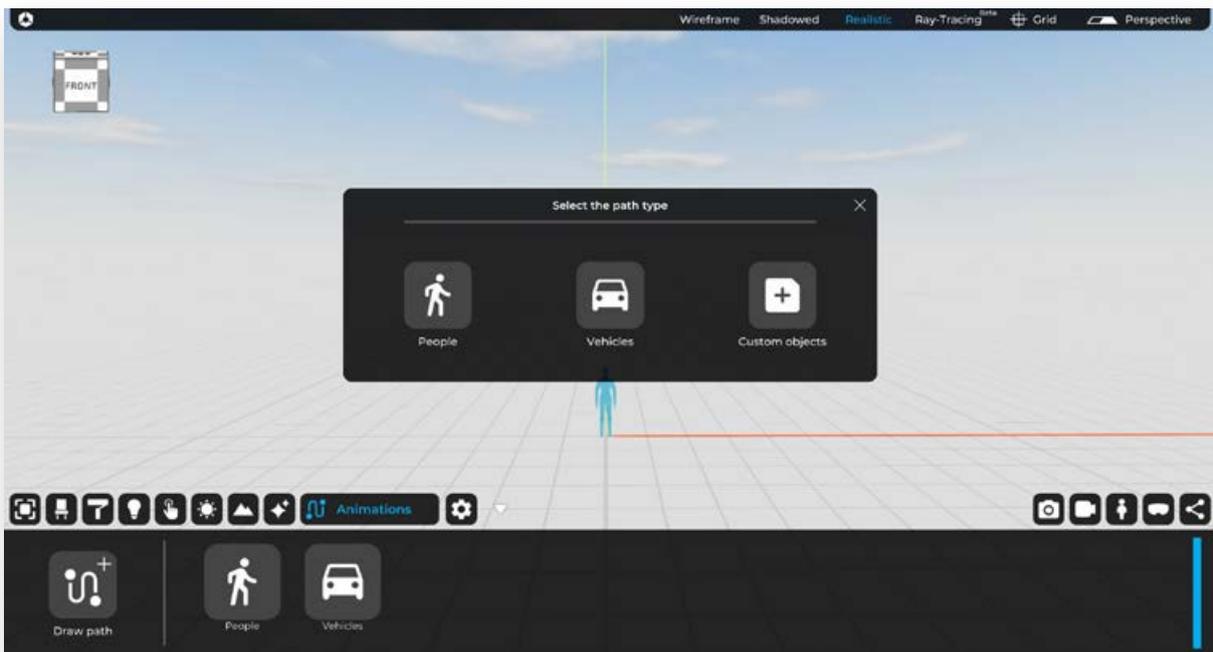
The “Animations” TAB allows you to create and manage 3D paths in different categories: 3D People and 3D cars (to simulate traffic in an urban context). This TAB is very interesting because, it allows to fill and animate your project, especially for videos and explorations.

The first step to do is to go on the “Animations” TAB on the general Eyecad VR User Interface.



1 - Draw a Path

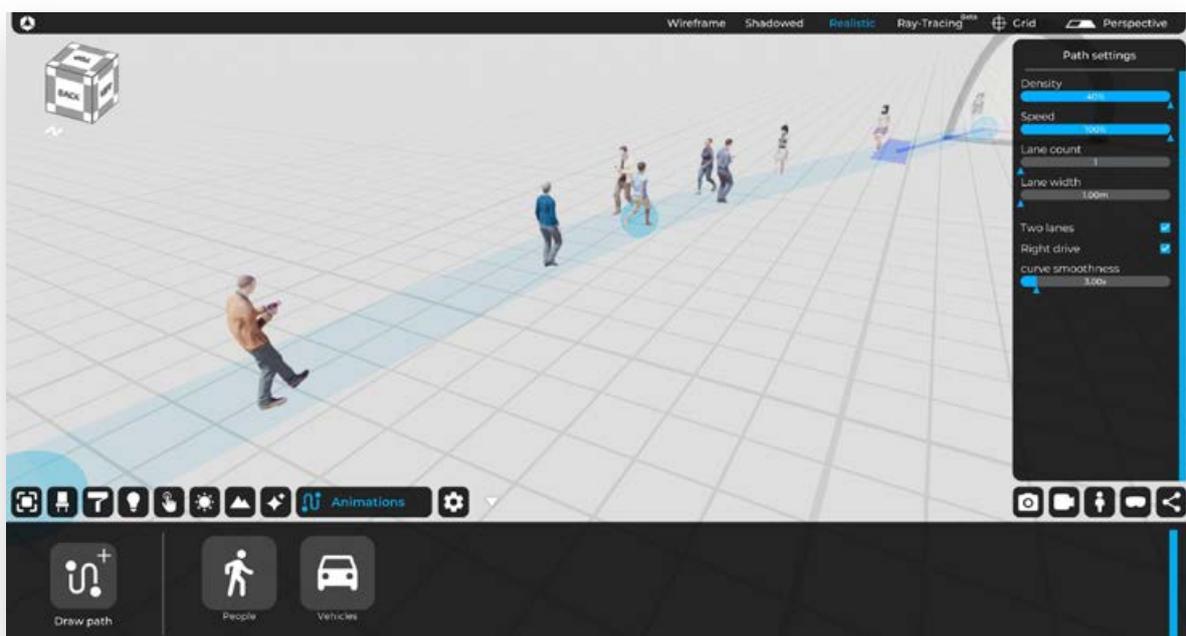
If you want to draw a Path, you can click on the “Draw path” icon and choose by different path types:



- People path
- Vehicles path
- Custom objects path

People Path

People path could help to animate a sidewalk of an urban context or a park. By adding people path is possible to set some parameters that allows to have a more realistic situation of the context created with the people. You can create the path by creating point by point the path you want that 3D people will walk on.

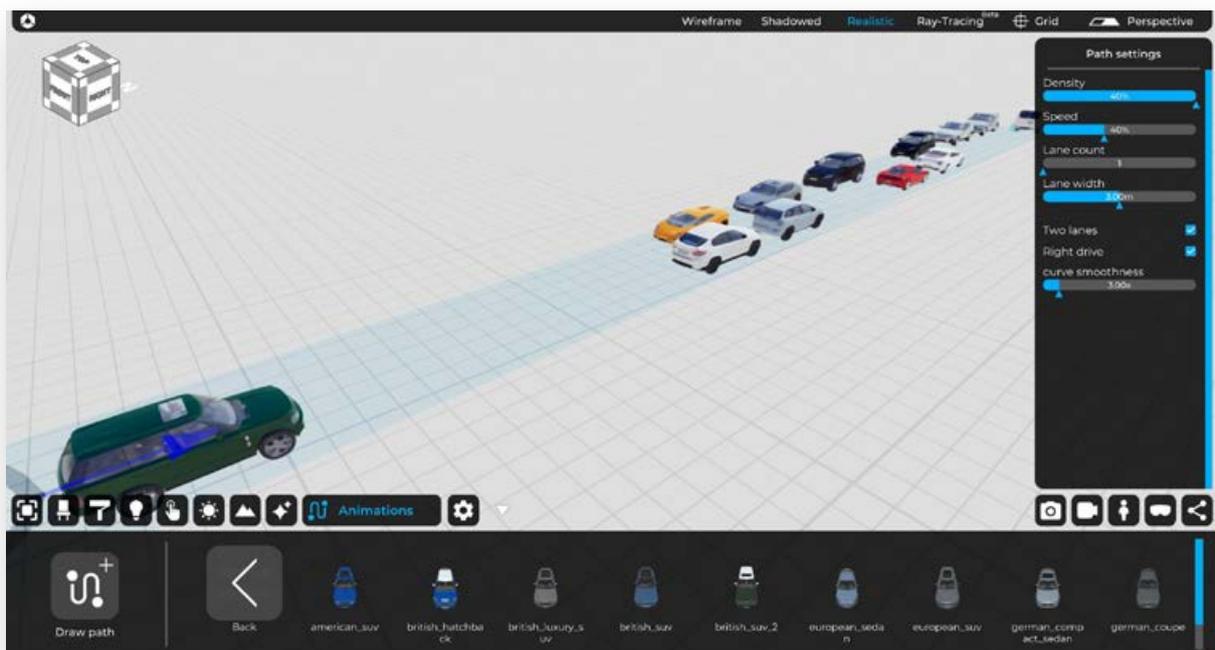


These are the parameters you can edit by clicking on a blue point of the path:

- Density
- Speed
- Lane count
- Lane width
- Two lanes
- Right drive
- Curve smoothness

Vehicles Path

Vehicles path could help to animate a street of an urban or suburban context by 3D cars traffic. By adding vehicles path is possible to set some parameters that allows to have a more realistic situation of the context created with the cars. You can create the path by creating point by point the path you want that 3D cars will walk on.



These are the parameters you can edit by clicking on a blue point of the path:

- Density
- Speed
- Lane count
- Lane width
- Two lanes
- Right drive
- Curve smoothness

2 - Static HQ cars and HQ animated people (without path)

If you need to add static cars or animated people who won't walk, you don't need to create a route. The simple action to do is open the dedicated library: people or vehicles and drag the desired objects into the 3D scene.

3D HQ people

To add 3D people to the scene, you need to drag them to the 3D scene from the library, located at the bottom. Once dropped on the scene, by selecting one of them, a new menu will appear on your right with the settings of the character.

At this moment is possible to select the animation that you want the it accomplishes. It's possible to choose from:

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



3D HQ cars

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

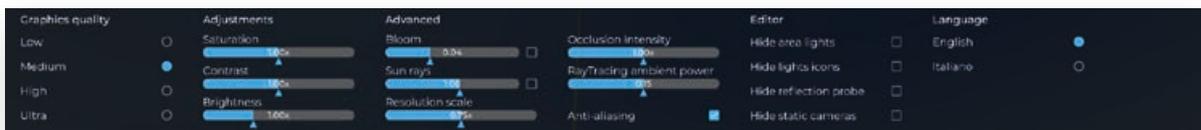


CHAPTER 10

Settings

The TAB “Settings” allows you to set some options for the work area of Eyecad VR. The “Settings” TAB interface is characterized by five main topics:

- Graphics quality
- Adjustments
- Advanced
- Editor
- Language



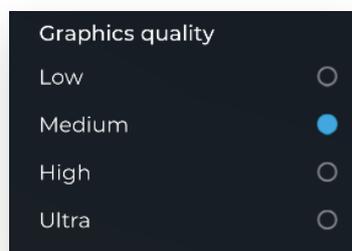
Graphics quality

The “Graphics quality” section allows you to choose between four general quality presets for real-time rendering of Eyecad VR:

- Low
- Medium
- High
- Ultra

Each option is able to influence many aspects, including the rendering of details, the quality of lights, shadows, reflections and all the visual effects present in the scene.

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



Settings

The “Adjustments” section allows you to define three of the main adjustments of an image in computer graphics:

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

The adjustments start from a default value, to which it is possible to make changes in centesimal positive (increase) or negative (decrease)..

NB: the brightness control affects the perceived contrast of an image and the contrast control affects the brightness.

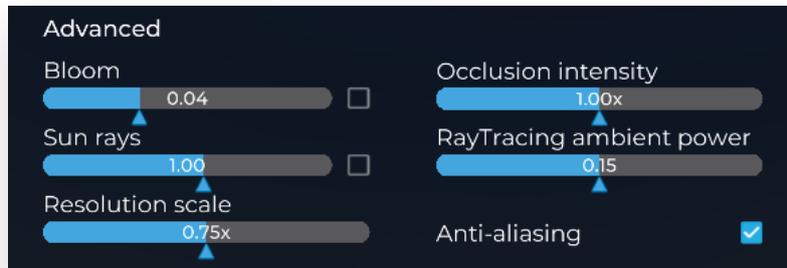


Advanced

The “Advanced” section brings together a series of detailed aspects concerning the characteristics of the effects of light and the general resolution of the project, influencing the relative aspects of the graphic detail. In “Advanced” it is possible to configure the following properties:

- Bloom:** it regulates the effect that occurs when an object is affected by a powerful light, going beyond its edges, to generate the characteristic luminous halo in correspondence with its contours.
- Sun rays:** it regulates the effect of solar rays filtered by objects.
- Resolution scale:** it adjusts the scaling (constrained in the preset proportions) of the number of horizontal and vertical pixels that define the dimensional margins of the scene.
- Occlusion intensity:** it regulates the intensity of environmental occlusion (AO).
- Ray-tracing ambient power:** it regulates, with a rapid multiplier effect, the “ambient power” value.

-Anti-aliasing: it rule, with the aim of eliminating it, the aliasing effect (scaling at the edges) of the objects (3d models) in the scene. Associated with rendering, this adjustment is always active as Eyecad VR uses a real-time rendering method, constantly updated (refresh).

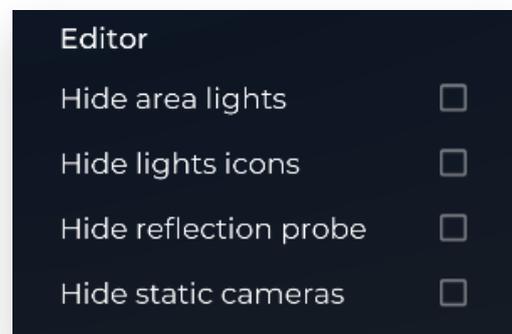


The configurable items in the “Advanced” section all depend on a slider, whose numerical counterpart follows a scaling of various kinds, depending on the specific option.

Editor

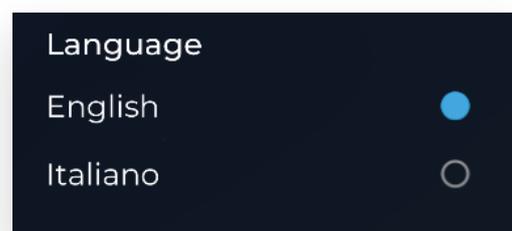
The “Editor” section allows you to hide the icons that characterize the following objects in the scene, while leaving their effects active:

- Hide Area Light
- Hide Lights icons
- Hide Reflection probe
- Hide Static cameras



Language

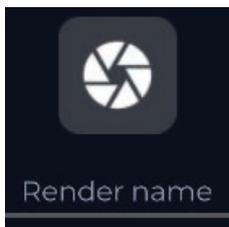
The Language section allows you to configure the general language of the software, which influences the description of all the entities visible in the interface and the contents of the scene. This option allows you to change the language even after installing Eyecad VR. Currently Eyecad VR is configurable in Italian and English language.



CHAPTER 11

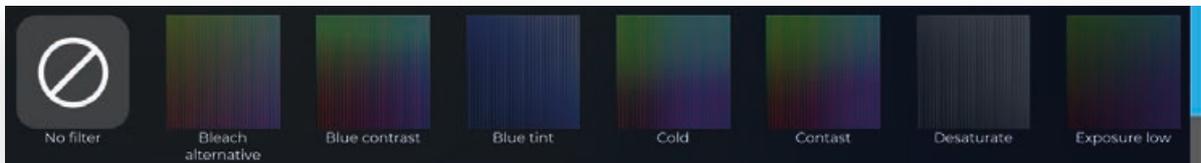
Making a Rendering - Still images

The “Rendering” TAB allows to create static rendering (single or multiple images) of the project scene. The “Rendering” TAB interface includes the possibility of naming and saving renderings, a library of image filters, the possibility to define image resolution and an option that allows instant retrieval of the folder for saving the renderings.



Render Name: The “render name” line allows you to write the name of the file, which will be automatically saved in the default folder for saving renderings in PNG format.

Filter: Eyecad VR has a gallery of filters that can be applied to the image by simply clicking on one of the options in the central part of the TAB “Rendering” interface. The filter is applied in real time on the image and it is therefore possible to see the final result of the post product rendering even before saving it.



The “filter intensity” option is a slider expressed in percentage (%) that regulates the effects of the application. At 0% the effects of the filter are invisible with respect to the original image, while at 100% the effects offer a very different version from the condition preceding its application.



Resolution: Eyecad VR allows rendering in the following resolutions, which correspond to the pixel dimensions (base x height) of the images saved:

- HD (1280 x 720)
- Full HD (1920 x 1080)
- WQHD (2560 x 1440)
- UHD (3840 x 2160)

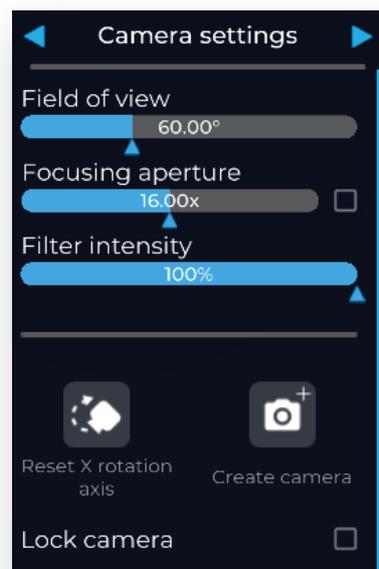
Open the Render folder

The “Render folder” command allows you to instantly reach the rendering destination path in your PC that is automatically created by the software inside the project file directory.



Camera settings

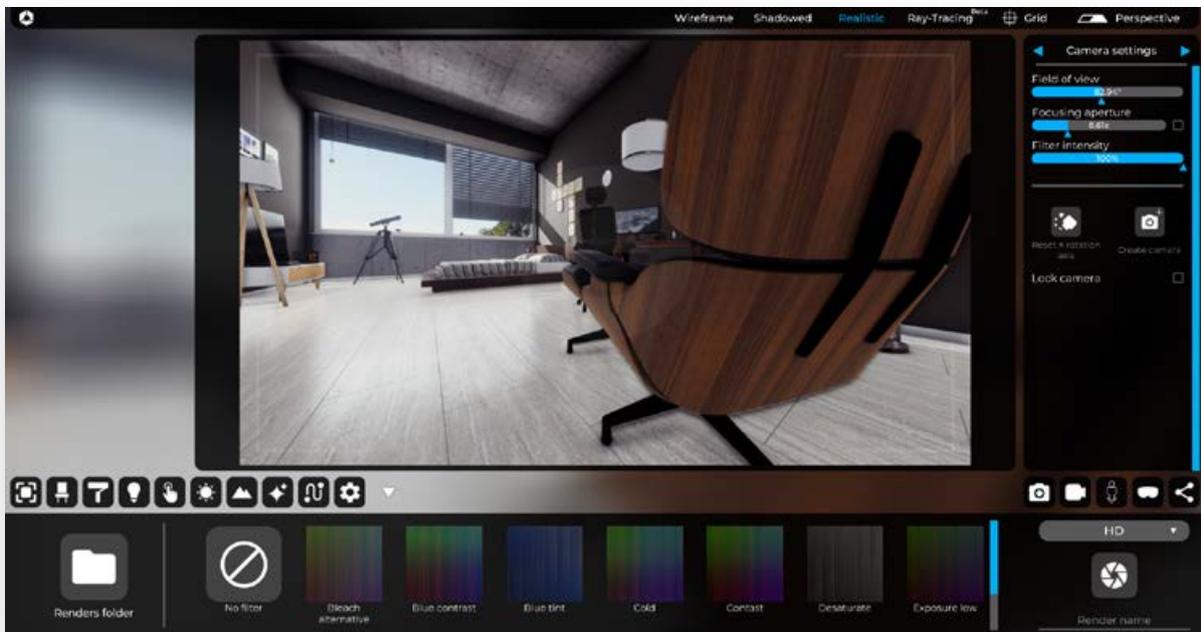
The “Camera settings” editor allows you to define the photographic parameters of the selected camera. Once you have entered in the shooting mode, the Camera Settings menu will appear on the right side of the screen.



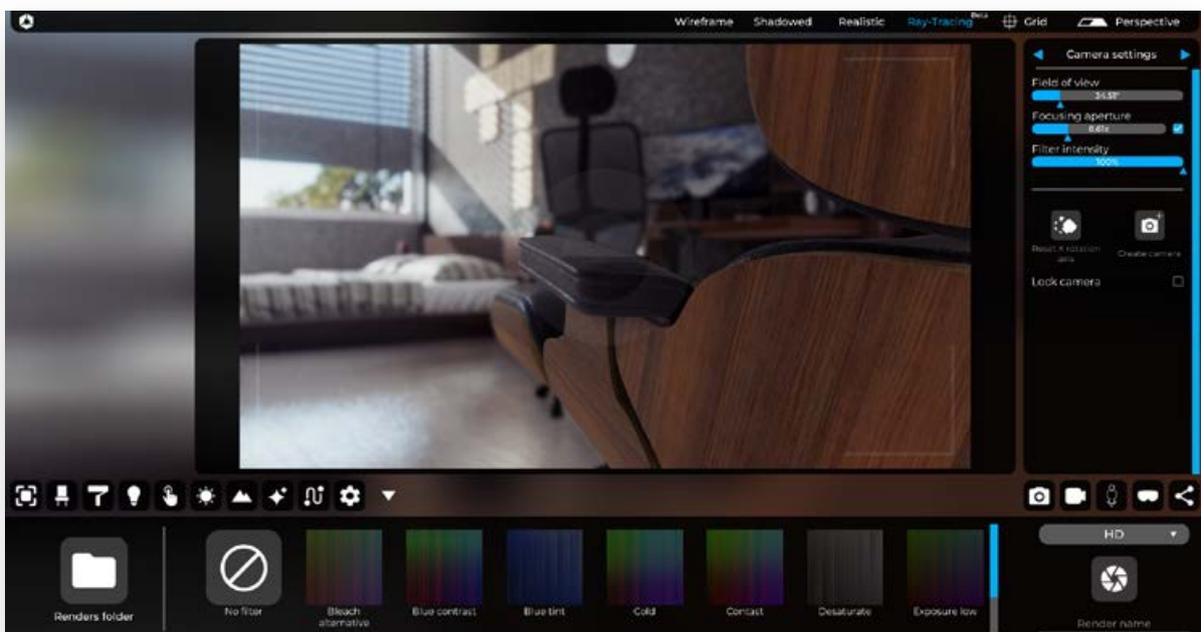
The configurable options expect to intervene on the following items:

- Field of view (FOV)
- Focusing aperture
- Filter intensity
- Reset rotation axis X

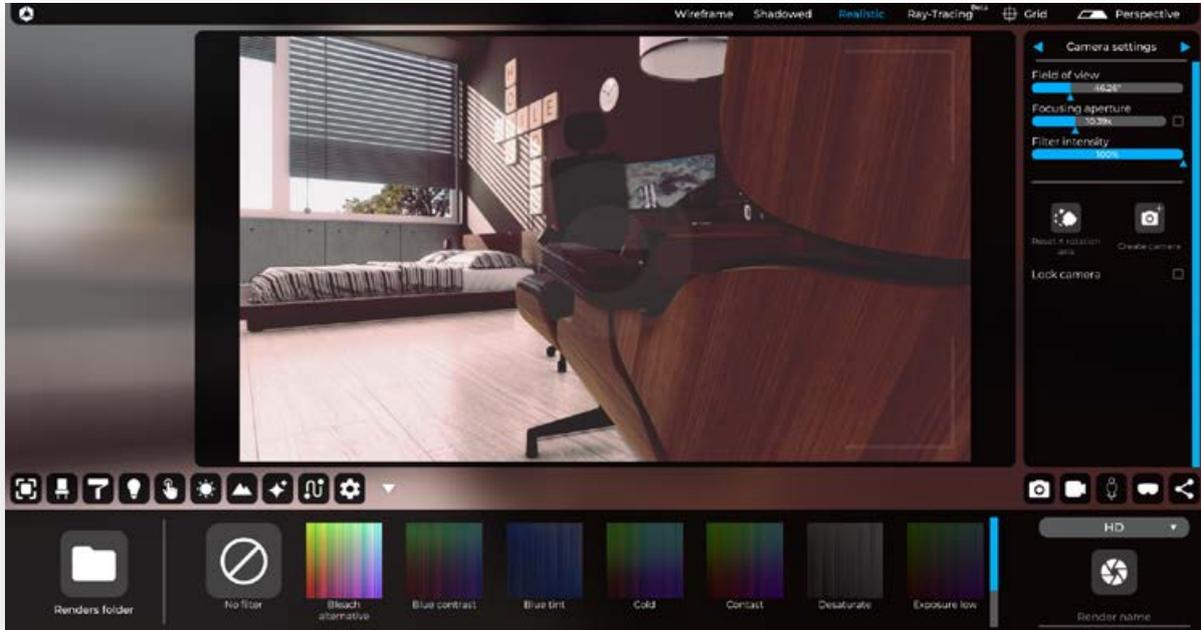
Field of view (FOV): photographic parameter that indicates the visual field of the chamber, expressed in degrees (°)



Focusing aperture: photographic parameter that indicates the focusing distance of the camera. Moving the focus point closer or farther away creates blurry backgrounds, ideal for emphasizing objects that are close to the lens, or very sharp, as happens for example in wide-angle situations.

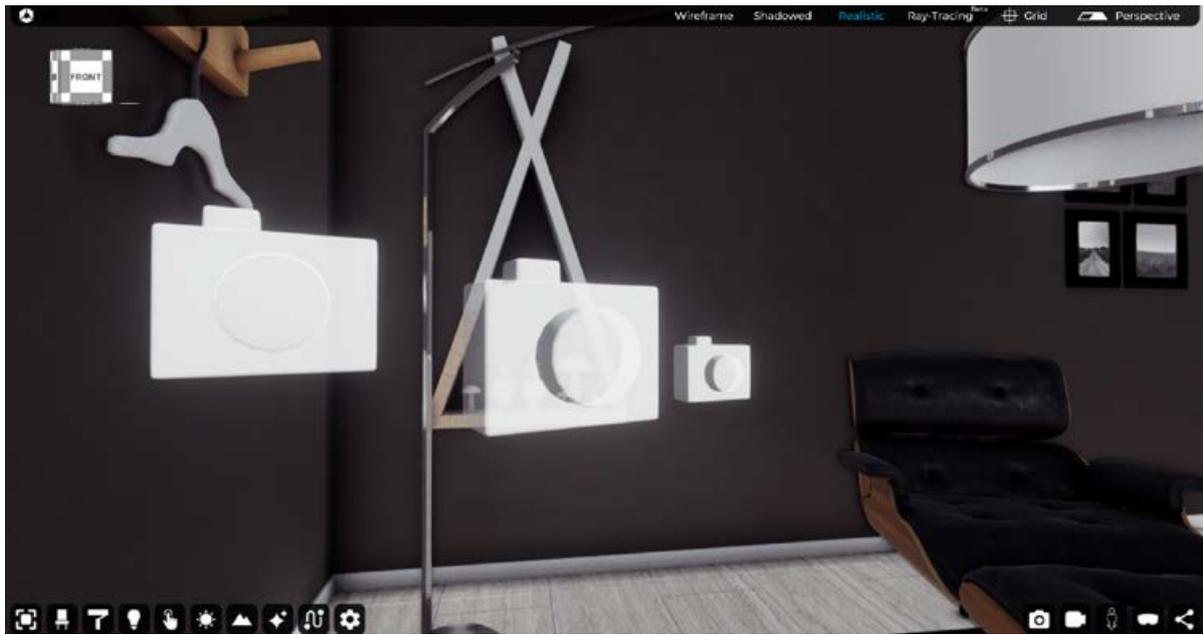


Filter intensity: post-production option of the image that determines the intensity of application of a filter (effect) on the rendering. Expressed in percentage terms (%).



Reset rotation of X axis: the application of this command automatically resets the rotation of the X axis of the camera, effectively eliminating the “falling lines” inside the image. The resulting effect is a straightening of vertical lines, eliminating perspective convergence towards the top. This is a device that has always been used in architectural photography to avoid deformations that can mislead the reading of the composition of the building’s elevations.

Create Camera (multiple cameras): Allows you to create a system of multiple cameras, which allow you to save and recall a series of views without having to exit the UI of the render mode. Each camera has its “camera settings” editor marked with a progressive number, which allows the scrolling and selection of the relative camera, of which it is possible to modify the settings in a totally autonomous way.



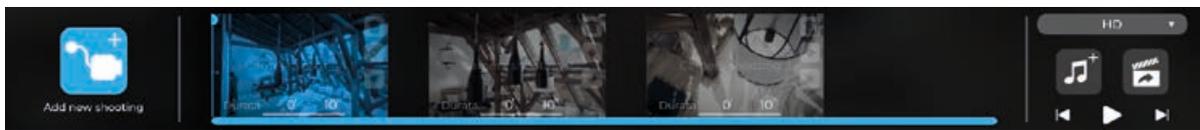
Lock Camera: if active it prevents you from changing the settings of the current camera. This is a useful option especially to avoid distracted and unwanted movements, which are frequent when you forget to leave the camera mode for normal window navigation.

CHAPTER 12

Video maker

The “Video Maker” TAB allows you to determine all the settings useful for creating and exporting cinematic animations in the form of video clips. Differently from the static rendering, characterized by a single image, whose realization is instantaneous according to the set resolution, the video contents provide a series of additional options, starting with a more articulated management of the Eyecad VR cameras.

The TAB “Video Maker” interface contains the command to insert a new camera, a central part dedicated to the timeline and the settings of the cameras in the scene, like the target camera, time setting and delete button, while on the right it is possible to select the resolution of the animation, add an audio track and export the clip once all the necessary settings have been defined.



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

The insertion of a “New Camera” in the scene automatically creates a sequence in the central area of the “Video Maker” TAB, whose default name will be “Camera shooting 1”, with a progressive numbering that follows the video cameras created in the scene.



The sequence icon indicates a series of fundamental informations, with the possibility of activating the relative modification options. In detail the four options allow you to perform the following operations:

Delete

It completely eliminates the selected recording.

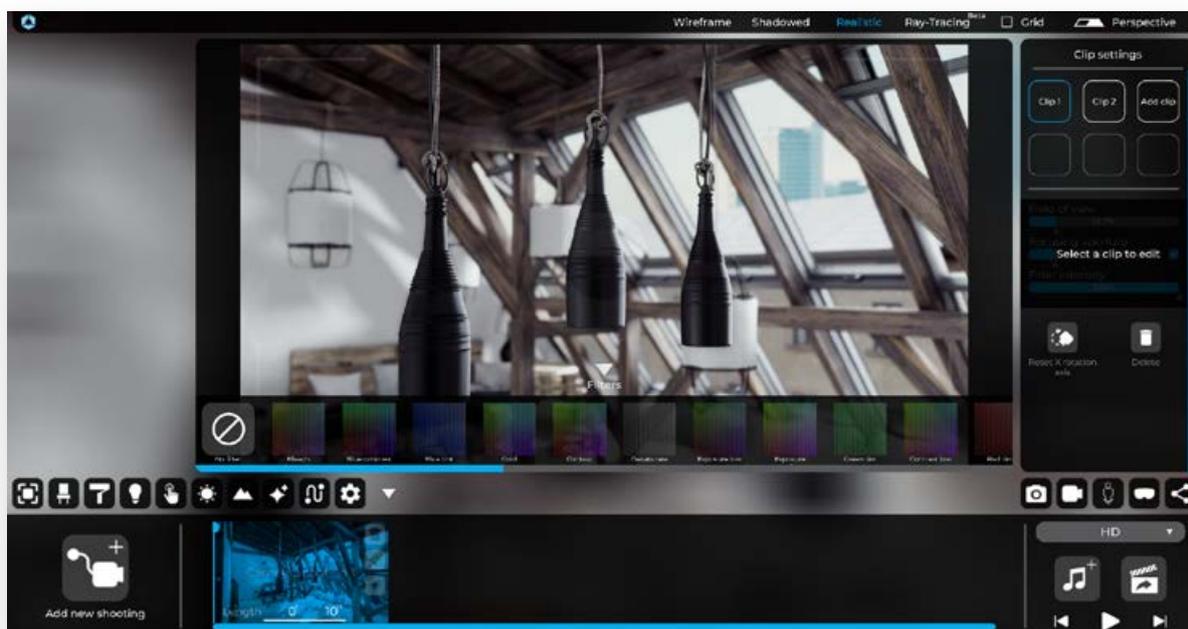
Target

It allows you to set an observation direction for the selected camera path on an object.

Time settings

It sets a start-time and end-time. This option is usually used for performing timelapse and shading studies, which require proper solar positioning. Regardless of the times set, the recovery will always have a duration coinciding with that set by the sequence. The result is a more or less accelerated lighting variation in the generated video clip.

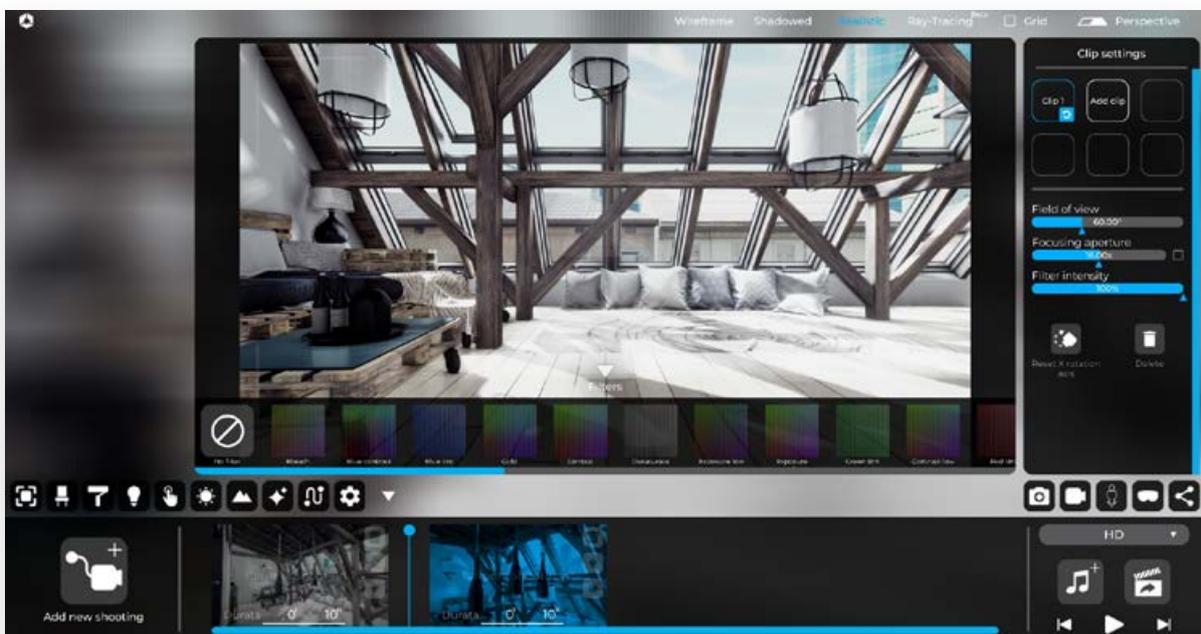
By selecting a sequence, the camera that determines it is selected in the scene and the point of view will be inside the camera shooting within the preview window.



Is possible to create a maximum of 6 clips for each camera shooting. The clips will determine the number of the Key-frame saved for the entire shooting. Inside every clip is possible to set the camera parameters:

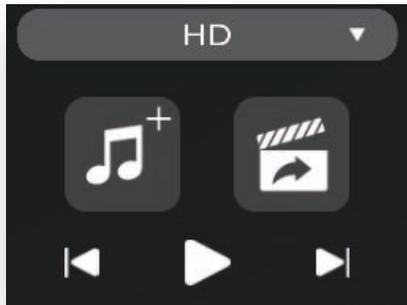
1. FOV (Fields Of View)
2. Focusing aperture
3. Filter intensity
4. Reset X rotation axis
5. Delete (in refer to the selected clip)

When you move the clips or you change the camera parameters of the clip, is very important to update the clip values by clicking on the update clip icon.



Inside the Preview windows, for each clip, is possible to add photo-filters. You can activate a preview of the shot at any time, simply by pressing the “space bar” or clicking on the “play” button, after selecting a shot.

The right side of the TAB “Video Maker” provides a further series of commands, functional to the completion of the shooting and the export of the video clip.



The drop-down menu at the top allows you to set the following three video resolutions:

- HD 1280×720
- Full HD 1920×1080 (default)
- WQHD 2560×1440 (2K)

In the lower portion there is a player that allows you to quickly reproduce the sequences present in the “Video Maker”, while the central part is characterized by the presence of two icons:



Add audio sources: It allows you to insert an audio track in the sequence.



Export the video: It lets you choose the directory and name the video clip to export.

CHAPTER 13

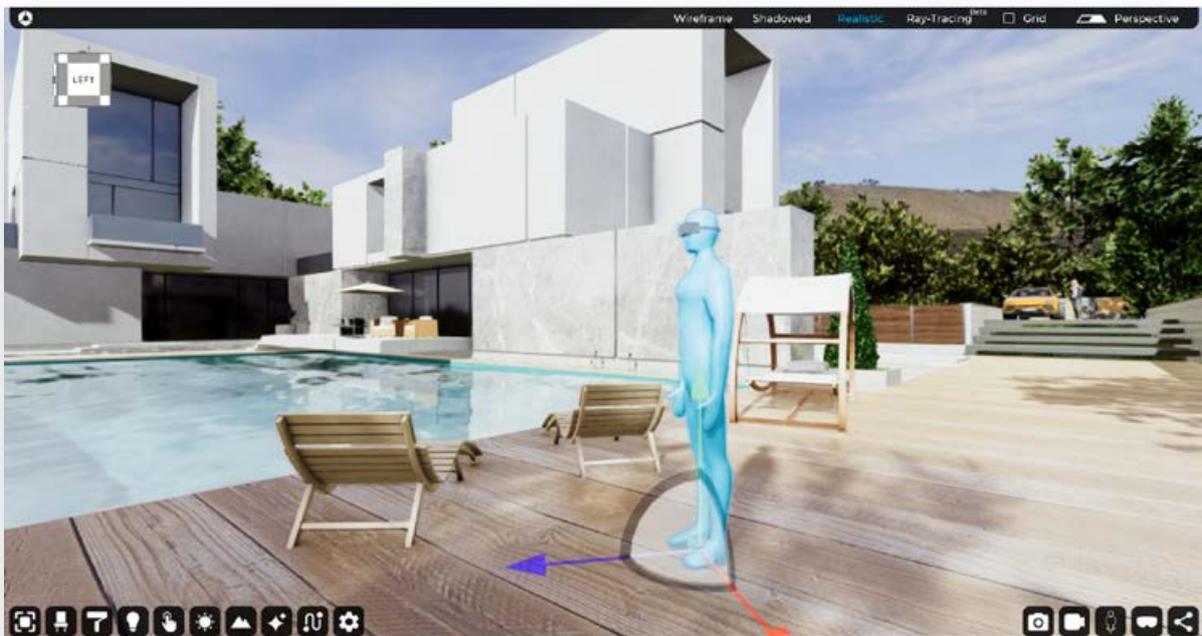
Real-time Exploration

The projects created with Eyecad VR can be explored both via monitor and via Virtual Reality headsets, and there's the possibility to interact with the project. Real-time exploration is a powerful tool available for Eyecad VR users who have the ability to access and watch the project live.

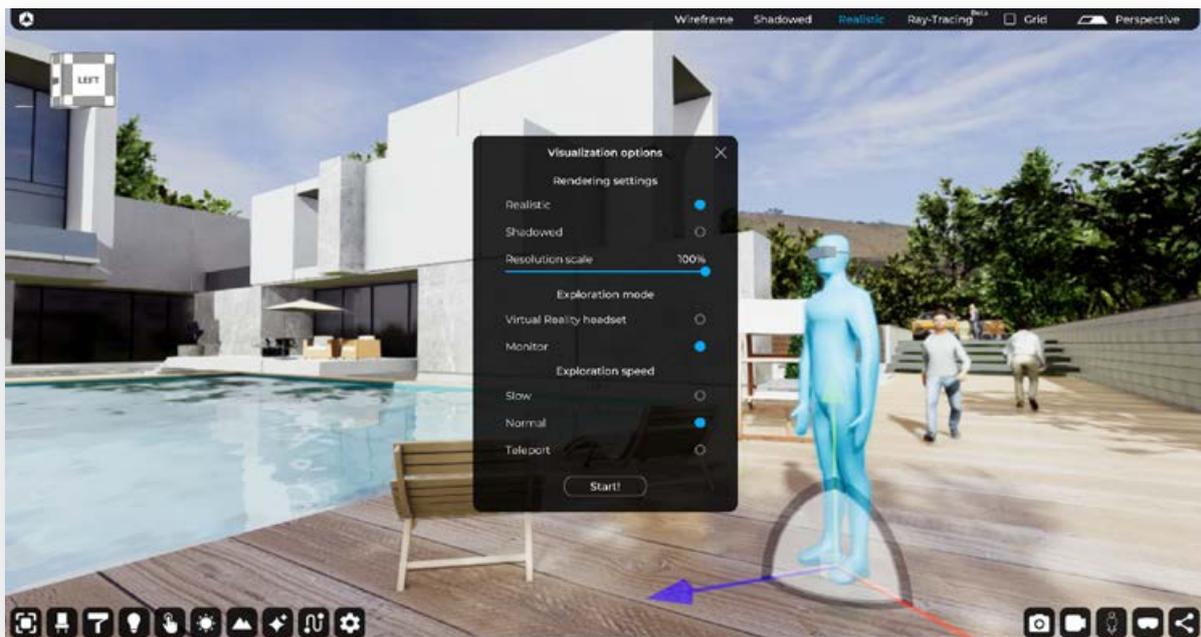
Starting point of the 3D Exploration

First step is to set the starting position through the Eddie's position (Eddie is the blue man that appears in the 3D scene).

In fact, by clicking on the 13th TAB of the User Interface (on the right of the screen) is possible to set the Eddie's position.



Once setted, is possible to click on the 14th TAB of the User Interface (the glasses icon) to go to the Exploration settings:



Visualization Options

The visualization options tab allow you to choose the most important visualization settings:

Rendering Settings:

- Realistic
- Shadowed
- Resolution scale

Realistic mode:

The real-time rendering is turned on and it is possible to explore the project with the all lights effects created from the realistic rendering mode by Eyecad VR. This mode has been designed for high-end PCs.

Shadowed mode:

The real-time rendering is turned off and it is not possible to explore the project with the all lights effects by the rendering engine. This mode has been designed for not-high-end PCs.

Resolution scale:

The resolution scale is usually set at 75% and it is helpful to do not overload the GPU of your PC. However, is possible to slide down or slide up the value in based to your needs.

Please note: the resolution scale should also be set in based on the polygonal complexity of the 3D models.

Exploration Mode:

1. Virtual Reality headset | 2. Monitor

1. Virtual Reality headset

By choosing this option, is necessary to have one of these VR headsets in this list:

- Oculus Rift CV1 (Windows only)
- Oculus Rift S (Windows only)
- HTC Vive
- HTC Vive Pro
- Windows Mixed Reality come Lenovo, Acer, Asus, Hp, Dell ecc ... (Windows only).

Before starts the exploration, please, follow the configuration for your VR headset. Here you can find a little guide that could be helpful:

Steam VR

Every VR headset needs to communicate with the Steam VR software. So this step is the most important independently from which headset you have.

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

Oculus Rift CV1/S Setup

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

HTC Vive/Vive Pro Setup

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

Windows Mixed Reality Setup

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

2. Monitor

By choosing this option, you are able to explore your 3D projects via monitor by using keyboard and mouse.

Exploration Speed:

- Slow
- Normal
- Teleport (only available for VR headsets)

Start

Click on the START button to explore!

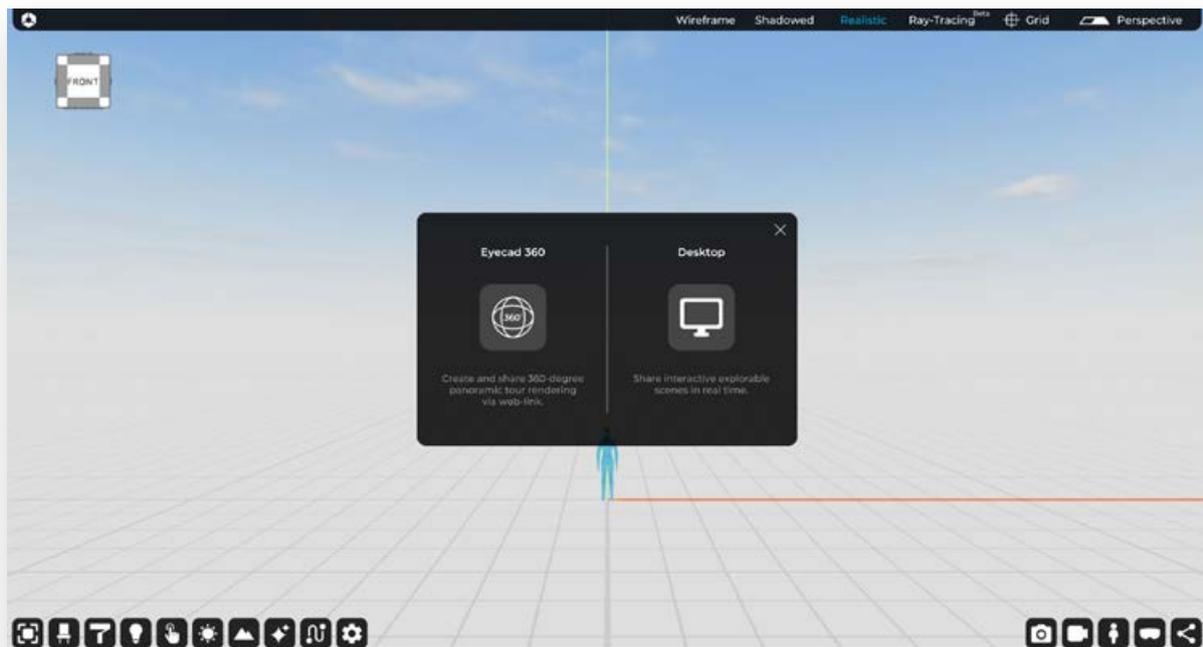
CHAPTER 14

Project sharing

One of the most important Eyecad VR feature is the possibility to share your own project with your work friend or customers.

You have different ways to share, from Desktop (EVR files) to another Desktop, or Panorama tour through the new tool EYECAD 360.

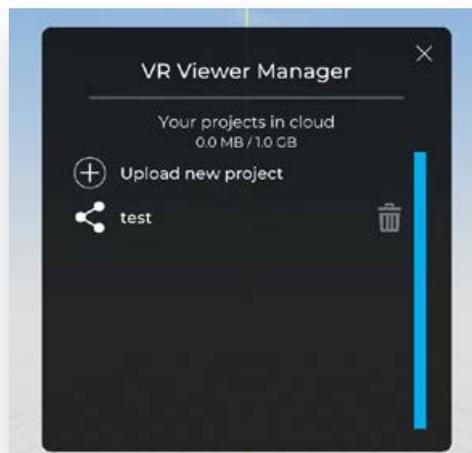
In this guide it is explained how these two different sharing modes work.



Share Interactive explorable scenes in real time (Desktop only).

The first thing to do is click on the “Sharing” tab which will guide you on the sharing mode you need. Click on the “Desktop” icon and go ahead.

At this point, you can simply click on “Upload new project” and you will get a link that you can use in eyecad VR Viewer (Launcher Explorer mode). Your client or work colleague will only download the explorable scene (and not the editor mode). You can manage your projects in the cloud within VR Viewer Manager.



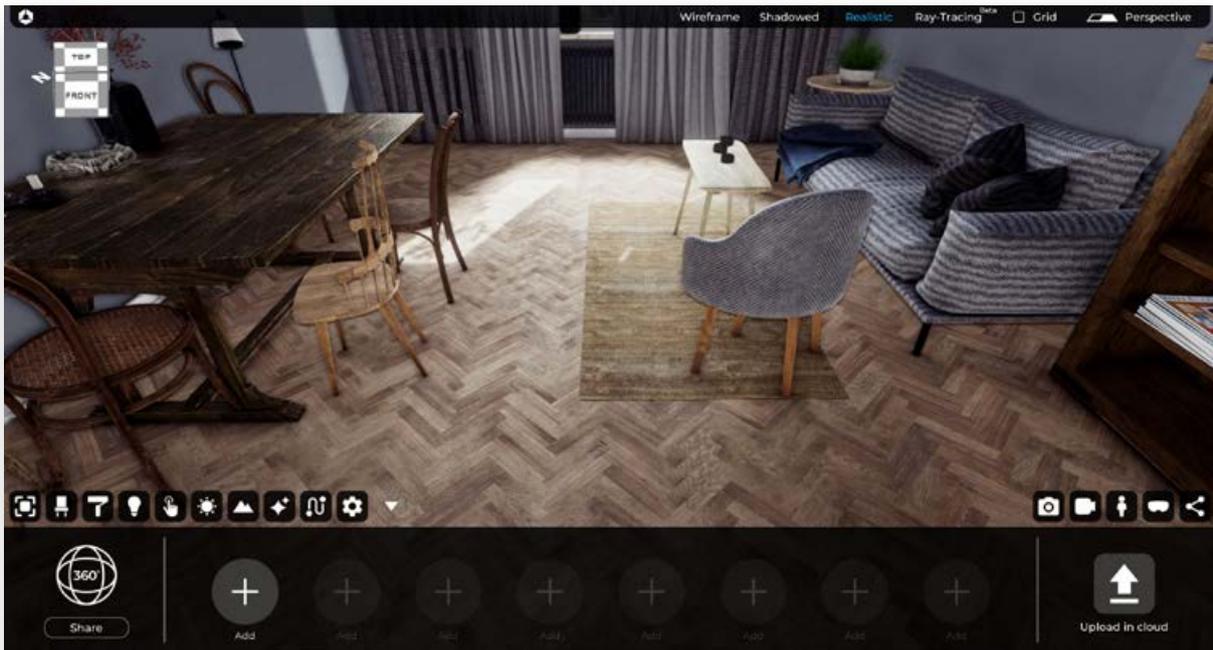
Remember you need to save your EVR project before to upload it in cloud. Inside the Eyecad VR viewer, the project will be explorable via monitor (with keyboard and mouse) or via PC/Mac VR headsets:

- Oculus Rift S
- Oculus Rift CV1
- HTC Vive
- HTC Vive Pro
- WMR headsets

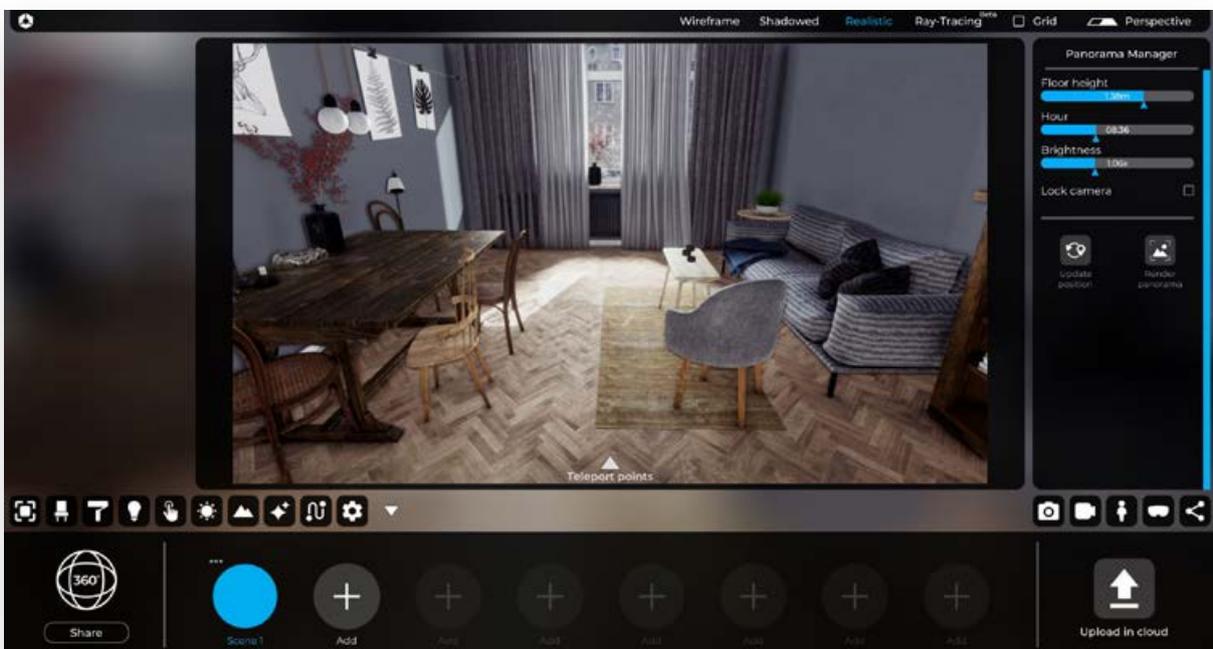
Create and share 360 degree panoramic tour rendering via web-link (Desktop and mobile)

The new EYECAD 360 tool is very useful to create and share 360 rendering tour to your customers or work friends.

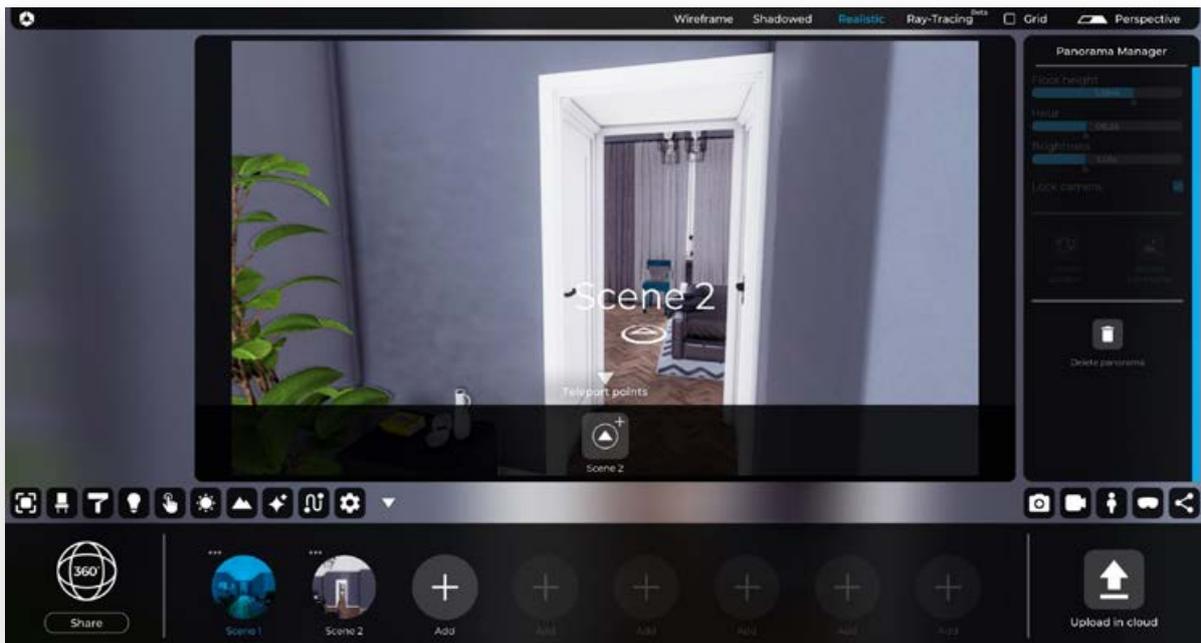
The first step is to choose the “360 degree” icon to enter in EYECAD 360 in the “Sharing” TAB. Once inside, you need to create the first photosphere by clicking on “Add”.



Now, you are in the preview mode, and here you can update the position of your point of view, change the brightness, the hour or the POV height from the floor by the lateral editor on your right. When you click on “Update position” the camera will be locked to help you to understand that the Point Of View has been saved.

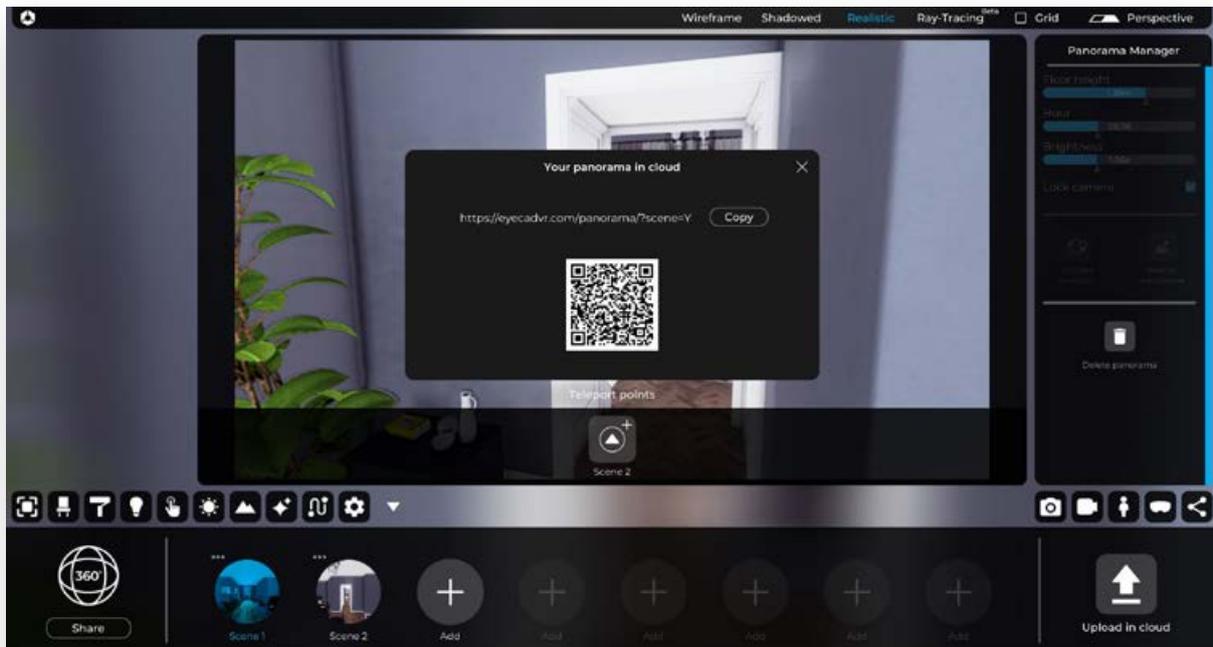


At this point, you have to click on the “Render Panorama” icon (remember that you can render in both realistic and ray tracing mode). Repeat the same workflow to add a new Point of View.

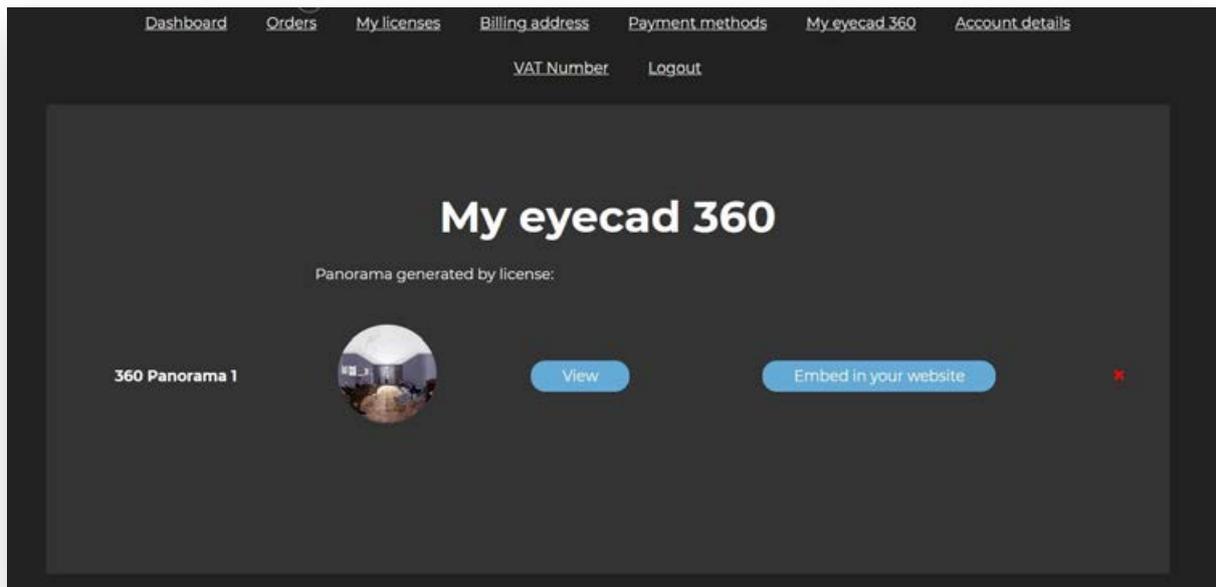


The last thing to do, to create a tour of the all 360 panorama scenes created, you add, in each scene, the Teleport points, by clicking on the arrow icon, inside the preview window. A new menu will appear in the preview window and with a simple drag'n'drop action, you can add the teleport point of the other 360 rendering created.

When you have finished to set the tour, just click on "Upload in cloud" to create a weblink to share to your work friends or customers.



The 360 Panorama tour could be manage inside your own personal area in eyecadvr.com.



Inside the “My eyecad 360” area, you can open the link or, by clicking on “Embed in your website” you can add your panorama tour on the web.

This sharing mode is compatible with every device that could open a browser, from smartphone to Desktop, and is possible to watch the panorama tour with PC VR headsets or mobile VR headsets. In the case of mobile VR headsets, you need to open the browser and enter in your personal area of the Eyecad VR website.

Mobile and standalone VR headsets:

- Oculus Quest
- Oculus Go
- Htc Vive Focus

CHAPTER 15

Ray-tracing for Architectural visualization

The “Ray-tracing” is an interactive ray-tracing mode that is possible to choose to activate on the upside of the screen in Eyecad VR.



Ray-tracing in Eyecad VR is very fast and is possible to use it in real-time inside the Editor to allow you to verify in real-time how the lighting changes in the scene.

What is Ray-tracing

The Ray-tracing is not a new technology, but now, thanks to the new 2019/2020 hardware is possible to use it in a very fast way as never before. It is a process of physical light that allow to elaborate highly realistic images. Eyecad VR has created its own version of this technology and it wants to give the possibility to all users to use it without go to hard and difficult Computer Graphic software. Obviously it is necessary to have a minimum of knowledge in the CG field, but if you follow this little guide it will be very easy to create realistic renderings at the speed of light.



Ray-tracing Rendering / Still images

Thanks to this technology is possible to create awesome still images in less than a minute. In Eyecad VR, is sufficient to turn on the Ray-tracing mode inside the Camera view on the upside of the screen.



Ray-tracing Video-animation

In Eyecad VR is possible to create video-animation with the Ray-tracing mode, however, this mode is still in preview version, so it could cause some noise in the exported video file.

Ray-tracing for Virtual Reality

Ray-tracing in Eyecad VR can not be used for VR exploration. This kind of technology requires a lot of the GPU power and at this moment is possible to go to virtual reality through the Realistic mode only.

Ray-tracing Hardware Requirements

To be able to have the best performance from this technology is necessary to have the latest GPUs, especially the NVIDIA RTX series (2060, 2070, 2080) or at least the NVIDIA GTX 10th series (1070, 1080). The latest AMD GPUs work in Ray-tracing, but not at the best possibilities, because no AMD GPU has been yet created for the real time ray-tracing officially.

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