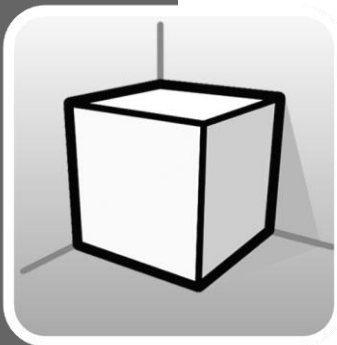




Software for Architecture,  
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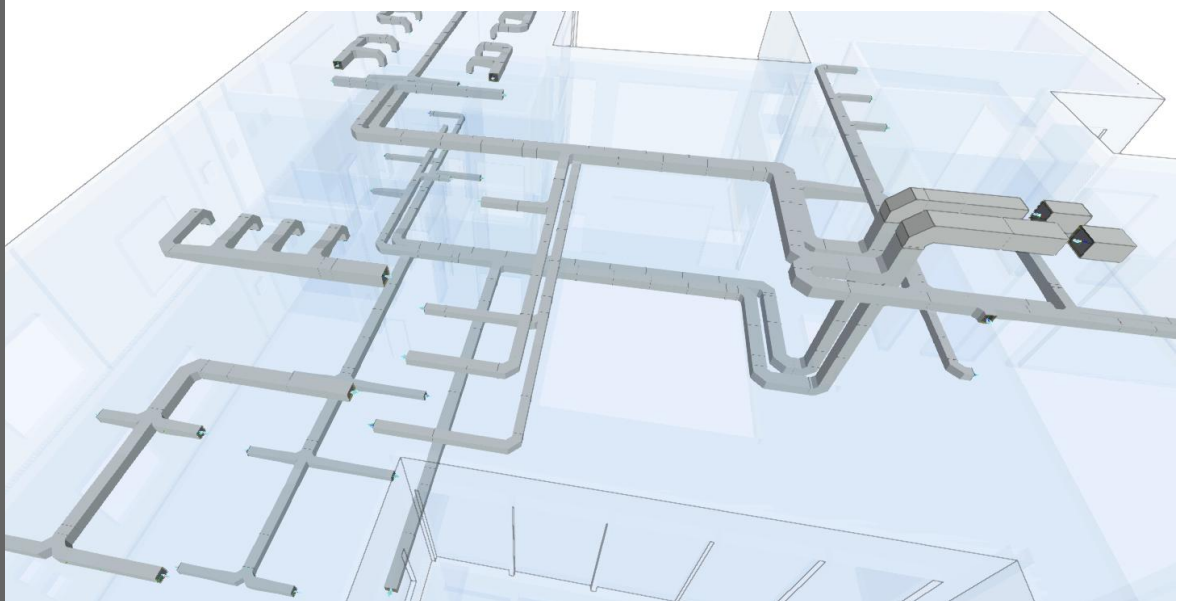


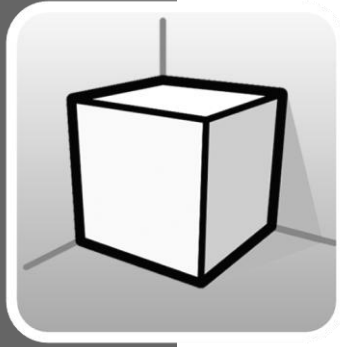
# 3D Environment

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## User's Manual

*Guide for using the 3D work environment tools available in CYPE applications*





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# 1 Introduction

The aim of this document is to explain the functioning of the user interface adapted to the 3D work environment included in CYPE applications.

The availability or location of the options described in this guide may vary depending on their implementation in each specific application.

# 2 Options

The options related to the configuration of the 3D work environment of the applications can be found in the *Views* and *Read elements* menus in the left sidebar of the application.

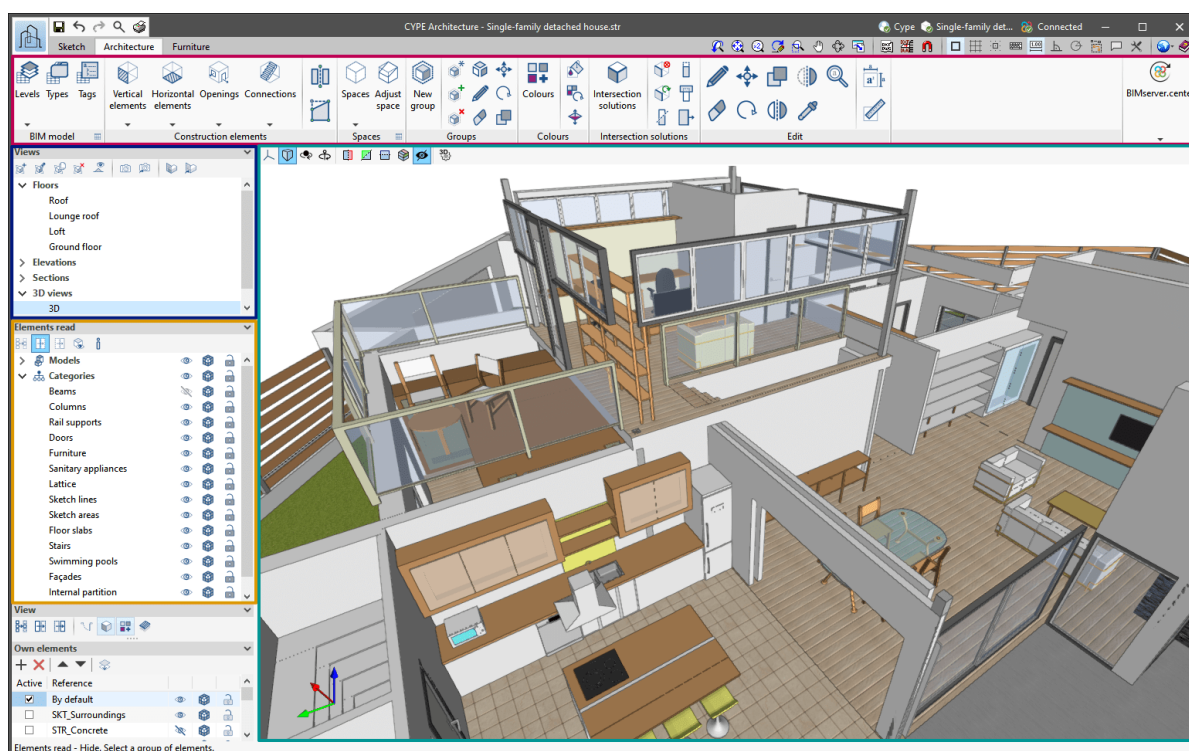


Fig. 1. User interface of the 3D work environment (CYPE Architecture)



## 2.1 Views

The views are full or partial representations of the application's design model. It is important to note that the components of the model are not linked to the views, so that they can be created, modified or deleted without affecting the underlying data structure.

The options in the *Views* menu on the left sidebar of the application allow the following actions to be carried out:

The *views* group located in the toolbar of the applications contains the following options:

- **Create.** Create a new 2D or 3D view of the model.
- **Edit.** Modifies the properties of the current view.
- **Duplicate.** Copies the current view.
- **Delete.** Deletes the current view
- **Show references.** When selecting this option, references to other views will be displayed in the active view.
- **Save the start scene.** Establishes the current position of the view as the start scene. This scene will be used to generate the graphical documents of the project.
- **Go to start scene.** Position the current view in the position of the start scene.
- **Define.** Specifies the workplane associated with the current view. The workplane is used as the base for entering the model components.
- **Go to the workplane.** Aligns the current view at the position of the working plane.

### 2.1.1 *Types of views*

Different types of 2D and 3D views of the project can be generated. Each is aimed at facilitating the users' interaction with the model in a different way.

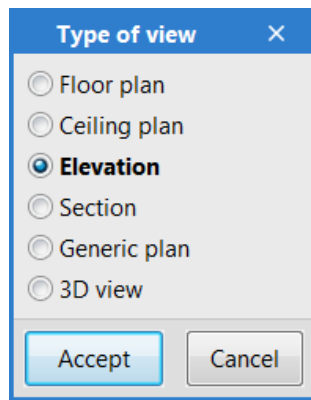


Fig. 2. Type of view selection window

References to the views are shown in the intersecting views.

### 2.1.1.1 Floor plan

Floor plans are representations of the building on a horizontal plane seen from above.

In most applications, floor plans are automatically created when a job is linked to a project on the BIMserver.center platform that contains an architectural model. In these cases, a floor plan is generated for each floor defined in the building with its reference.

#### ***How to create a floor plan view:***

- Open an existing view.
- Click on the **Create** option in the *View* menu and select **Floor plan** in the window.
- Click on the model to specify the point where the horizontal plane will be generated.
- Configure the view data (reference, elevation level and view range).



Fig. 3. Floor plan view (CYPE Architecture)

### 2.1.1.2 Reflected ceiling plan

Reflected ceiling plans, just like floor plans, are representations of the building on a horizontal plane, but in this case, seen from below.

#### ***How to create a reflected ceiling plan view:***

- Open an existing view.
- Click on the **Create** option in the *View* menu and select **Reflected ceiling** in the window.
- Click on the model to specify the point where the horizontal plane will be generated.
- Configure the view data (reference, elevation level and view range).

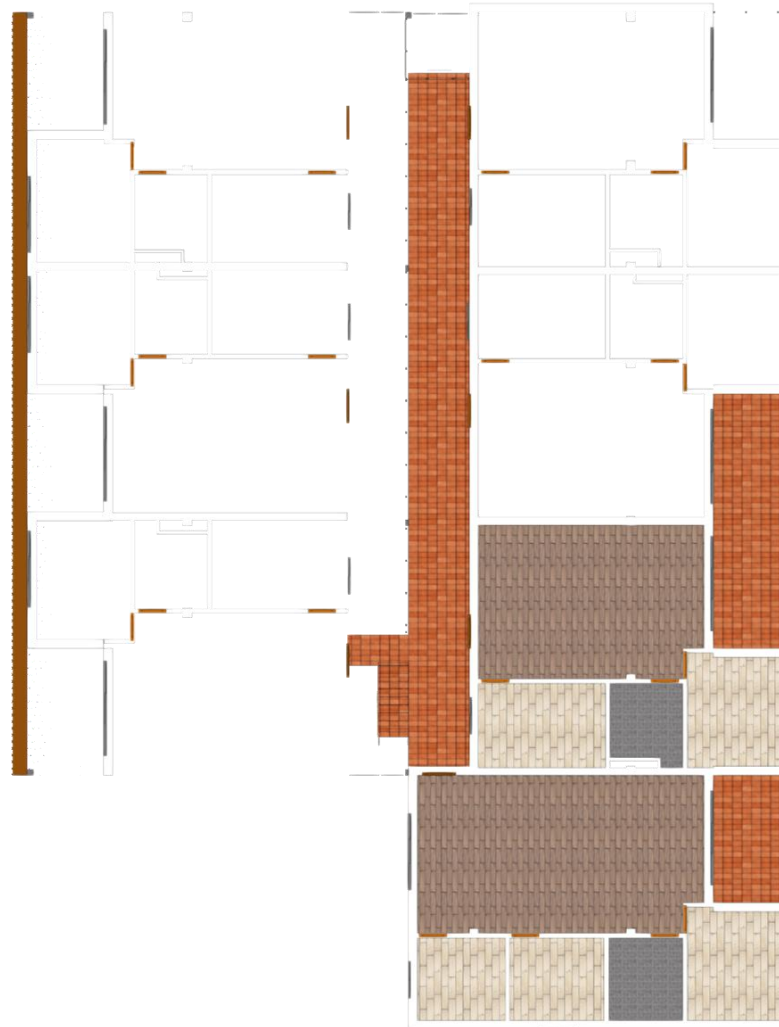


Fig. 4. Reflected ceiling plan view (CYPE Architecture)

### 2.1.1.3 Elevation

Elevations views are representations of the building on a plane that is perpendicular to the horizontal plane of the job.

#### ***How to create an elevation view:***

- Open an existing view.
- Click on the **Create** option in the *View* menu and select **Elevation** in the window.
- Click on the model to specify the point where the elevation line starts.

- Click on the model a second time to specify the end point of the elevation line.
- A third click on the model will specify the depth of the elevation view.
- Configure the view data (reference and view range).



Fig. 5. Elevation view and its reference in a floor plan view (CYPE Architecture)

#### 2.1.1.4 Section

Section views are cuts of the building that are perpendicular to the horizontal plane of the job.

##### ***How to create a section view:***

- Open an existing view.
- Click the **Create** option in the *View* menu and select **Section** in the window.
- Click on the model to specify the point where the section line starts.
- Click on the model a second time to specify the end point of the section line.
- A third click on the model will specify the depth of the section view.
- Configure the view data (reference and view range).



Fig. 6. Section view (CYPE Architecture)

### 2.1.1.5 Generic plan

In a generic plan, the view is generated from a plan located anywhere in space. To create a generic plan, in the definition of the view three non-aligned points must be indicated that make up this plan.

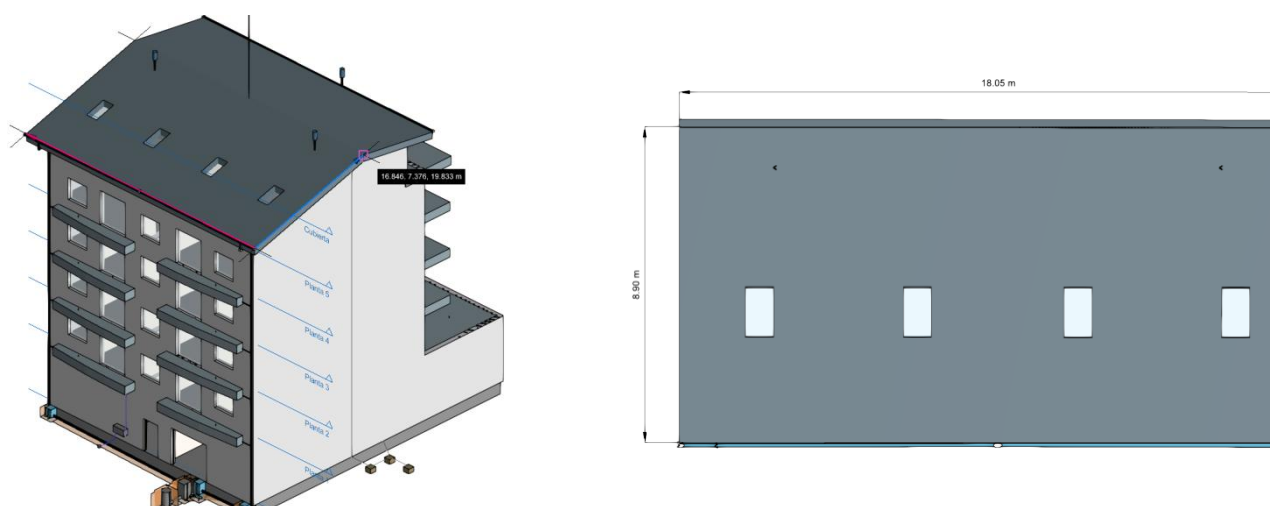


Fig. 7. Generic plan view (Open BIM Lighting)

#### *How to create a generic plan view:*

- Open an existing view.
- Click on the **Create** option in the *View* menu and select **Generic plan** in the window.
- Click on the model to specify the first point of the plane.
- Click on the model a second time to specify the second point of the plane that corresponds to the X-axis of the camera position in the generated view.
- A third click on the model will specify the third point of the plane that will determine the position of the camera's Y-axis in the generated view.
- Configure the view data (reference and view range).

### 2.1.1.6 3D view

Several 3D representations of the model can be created with different visibility options and camera positions.

When linking a job to a project in the BIMserver.center platform, a *3D view* will be automatically generated with the *3D* reference, if this does not exist.



Fig. 8. 3D view (CYPE Architecture)

#### *How to create a 3D view:*

- Click on the **Create** option in the *View* menu and select **3D view** in the window.
- Enter the reference of the view.

### 2.1.2 View range

All the view types, except the *3D view*, are associated with an area delimited by two planes, which determines the elements to be represented in the view. The distance to each of the planes from the origin of the view can be specified in the view configuration panel.

In elevation, section and general plan views, the top plane is perpendicular to the direction of vision in a positive direction. The bottom plane is the same but in a negative direction.

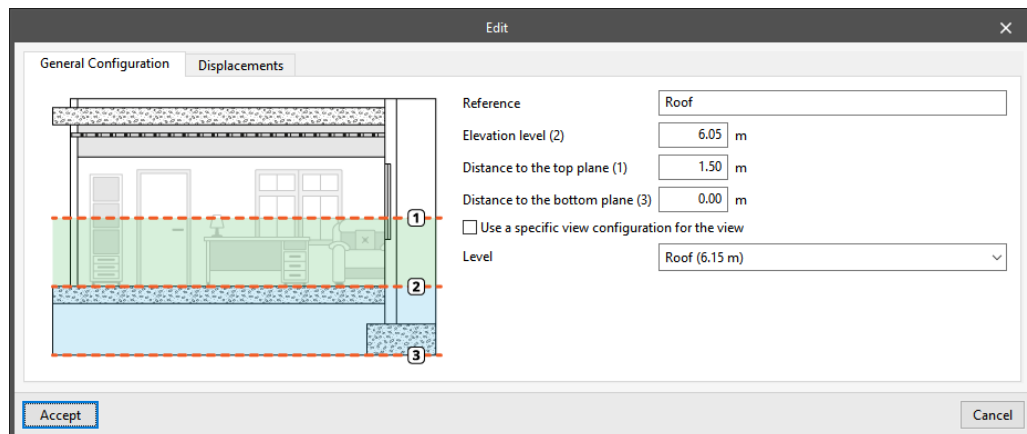


Fig. 9. Configuration of the view range in the edit window of a view

### 2.1.3 Visibility of model layers

The selection of the elements from the digital model of the building, which come from the associated BIMserver.center project and are drawn in the work area, is carried out from the *Elements read* menu in the left sidebar of the application. However, in the edit panel of a view, users can indicate whether the view will have its own configuration for the visibility of these elements or whether it will use the general configuration of the job.

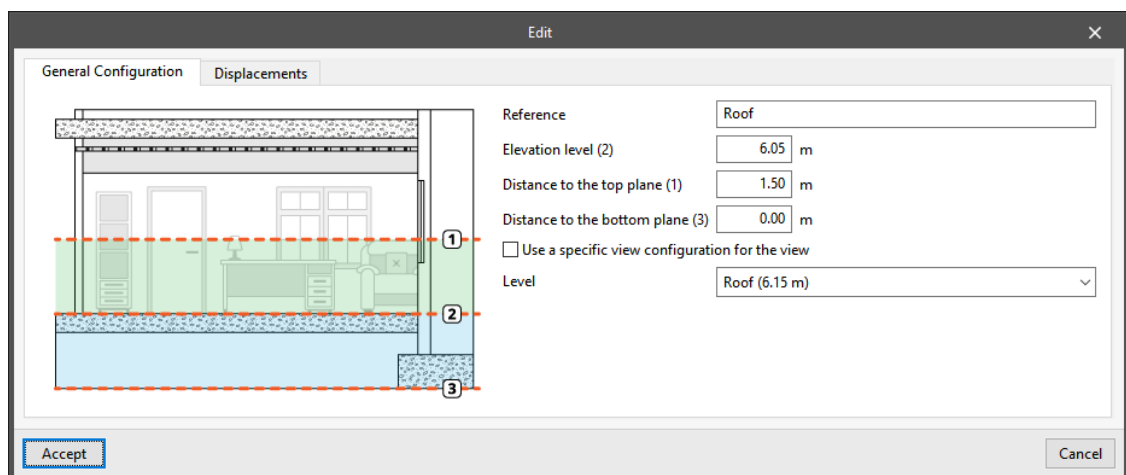


Fig. 10. Configuration of the visibility of the digital building model layers in the edit window of a view

### 2.1.4 Workplane

Each view of the model has an associated workplane. The workplane is automatically generated in all view types except in the *3D view*. Consequently, the options for the *Workplane* group are only active when the selected view is of that type.

The workplane of a *3D view* can be defined using one of the following options:

- **Existing view.** The workplane of the selected view will be used.
- **Define a plane.** The workplane will be generated by entering a plane on the model.
- **Select a point and generate a horizontal workplane.** A workplane will be generated horizontal to the selected elevation point.

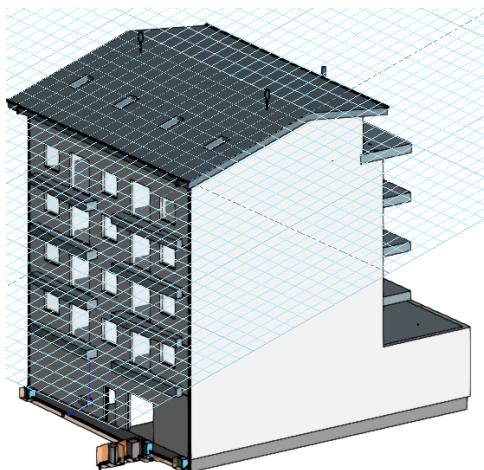


Fig. 11. Workplane generated from a generic plan

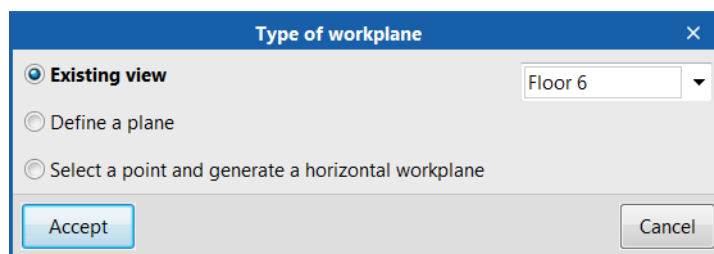


Fig. 12. Definition of a new workplane

## 2.2 Elements read

The management of the elements from the digital model of the building, taken from the associated BIM project, is carried out from the *Elements read* menu located in the left sidebar of the application.

The elements read are structured in the form of a tree according to two ways of classification:

- **Models.** Shows the models corresponding to each contribution of the project.
- **Categories.** Groups imported items based on the assigned category in the application that generated them.

Next to each component in the tree, three buttons are displayed to manage the following statuses:

- **Visible.** Permite activar o desactivar la visibilidad de los elementos.
- **Display mode.** Toggles between normal, transparent and wired display modes.
- **Snap.** Enables or disables element object snaps.

It is important to note that the configuration of visibility and object snaps applied on the organisation by *Model* is imposed on the one indicated by *Categories*.

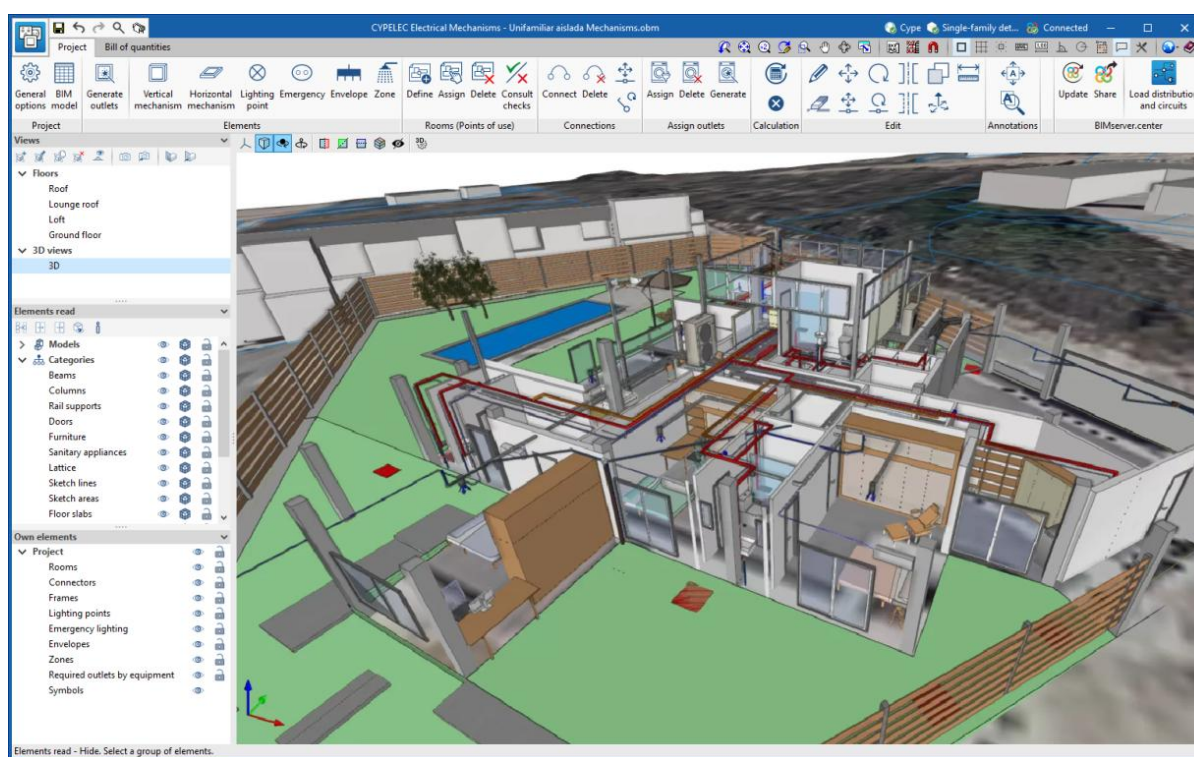


Fig. 13. Management of the elements read in CYPELEC Electrical Mechanisms.

Applications can have default visibility and object snap settings when creating a new view. Also, when entering new components using the program's tools, the application itself can force the activation or deactivation of visibility and object snaps for certain categories. Where this occurs, a yellow padlock is displayed next to the set options. At the end of the tool's use, the tree returns to its original state.

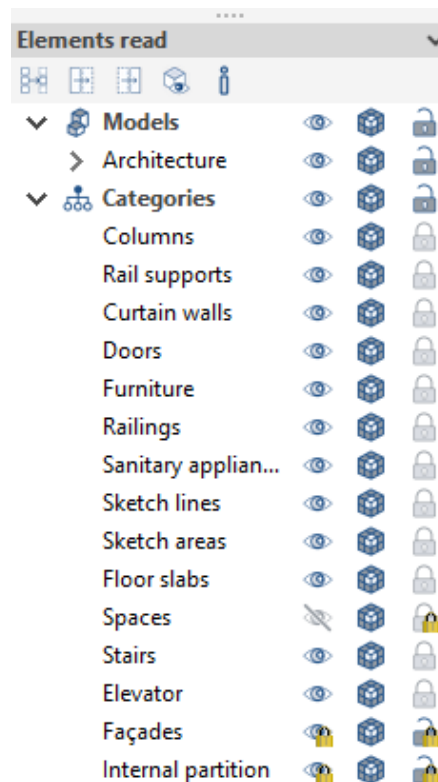


Fig. 14. Locked categories in the elements read menu.

In addition to the component tree of the external models, the *Elements read* menu includes a toolbar with a group of buttons that allow the following actions to be performed:

- **Isolate selection.** Allows elements of the 3D model to be isolated. Users can choose the elements of the 3D model they wish to isolate and, by right-clicking the mouse, the rest of the elements in the model disappear.
- **Hide.** Allows selected elements to be hidden. Users can choose the elements of the 3D model they wish to hide and, by clicking the right mouse button, they disappear.
- **Show all.** Displays all hidden elements.
- **Appearance.** Allows users to choose between a normal drawing and a monochrome drawing.
- **BIM information.** Displays a window containing the attributes associated with the selected component.

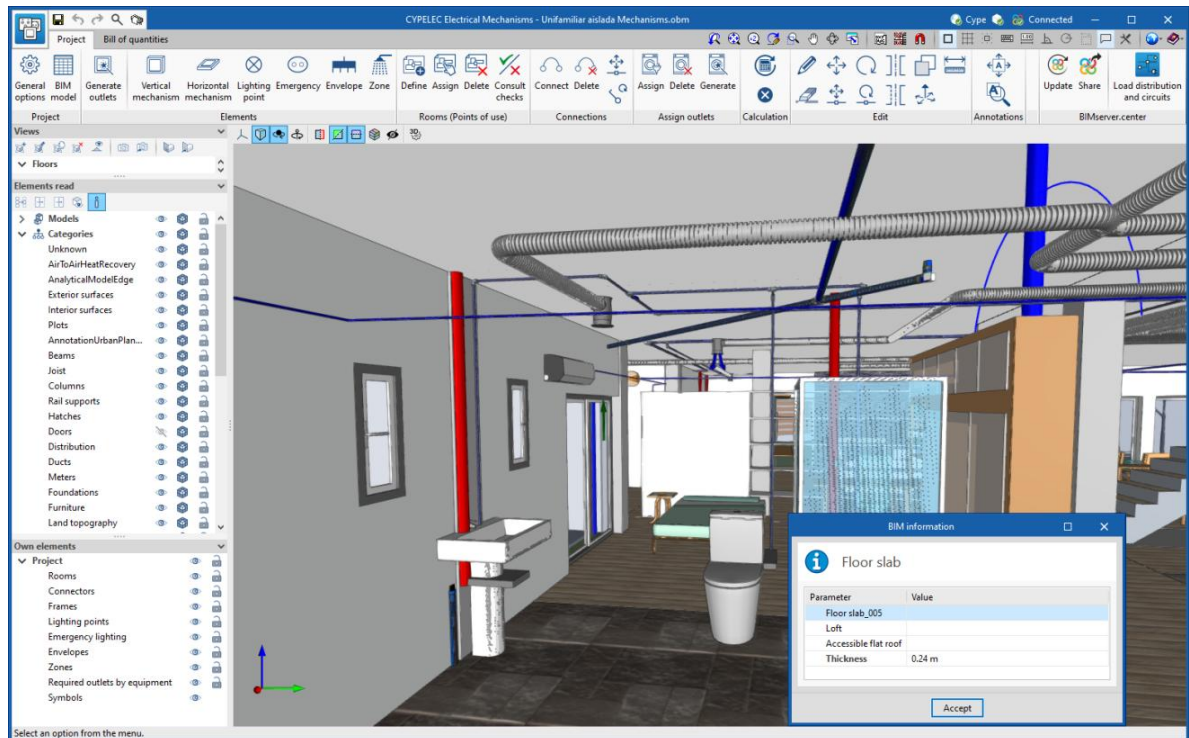


Fig. 15. Information on an element read in CYPELEC Electrical Mechanisms

### 3 Inserting components

When entering a new component of the model or editing the position of an existing one, the applications provide a series of tools to facilitate the user's interaction with the work environment.



Selecting the entry mode:

- **2D mode.** When capturing a component of the model its position will be projected on the workplane, where the new element will be entered.
- **3D mode.** When capturing a component of the model the new element will be entered in the exact position of that component, even if it is outside the workplane.

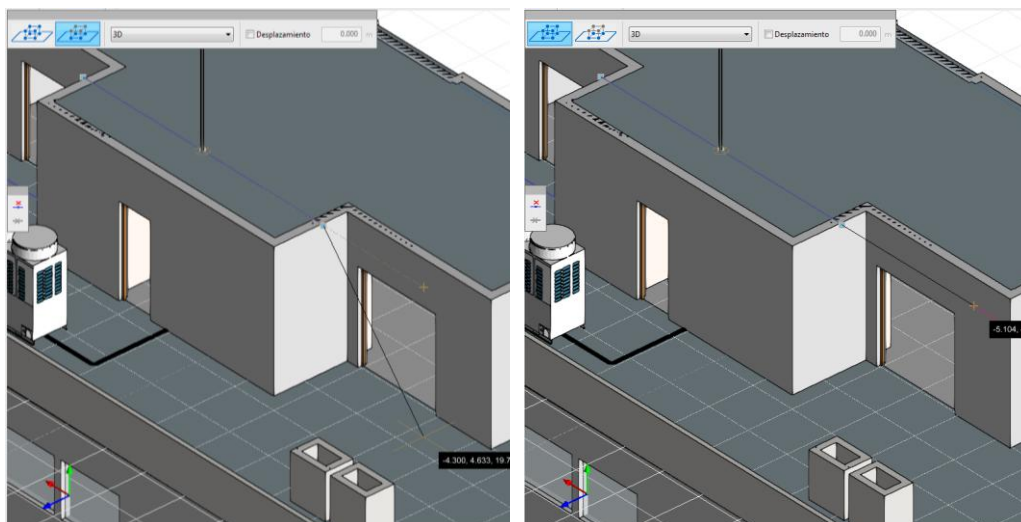


Fig. 16. Comparison of the 2D and 3D entry modes (Open BIM Lightning)

Selecting the workplane:

- **Workplane.** Indicates the view whose workplane will be used as the basis for entering the new component. This option is only available in 3D views when the 3D view is active, otherwise, the workplane associated with the active view will be used.
- **Displacement.** Indicates a displacement on the workplane. This option is only available for the 2D mode.



Fig. 17. Entering a component with displacement on the workplane (CYPE Architecture)

Displacements associated with each view of the project can be defined using the *Displacements* tab in the view configuration window or the blue arrow following the *Displacement* field. By clicking on this button, a list is displayed where the displacement values can be entered together with an associated reference to easily identify them. By accepting the window, the selected value is automatically assigned to the *Displacement* field.