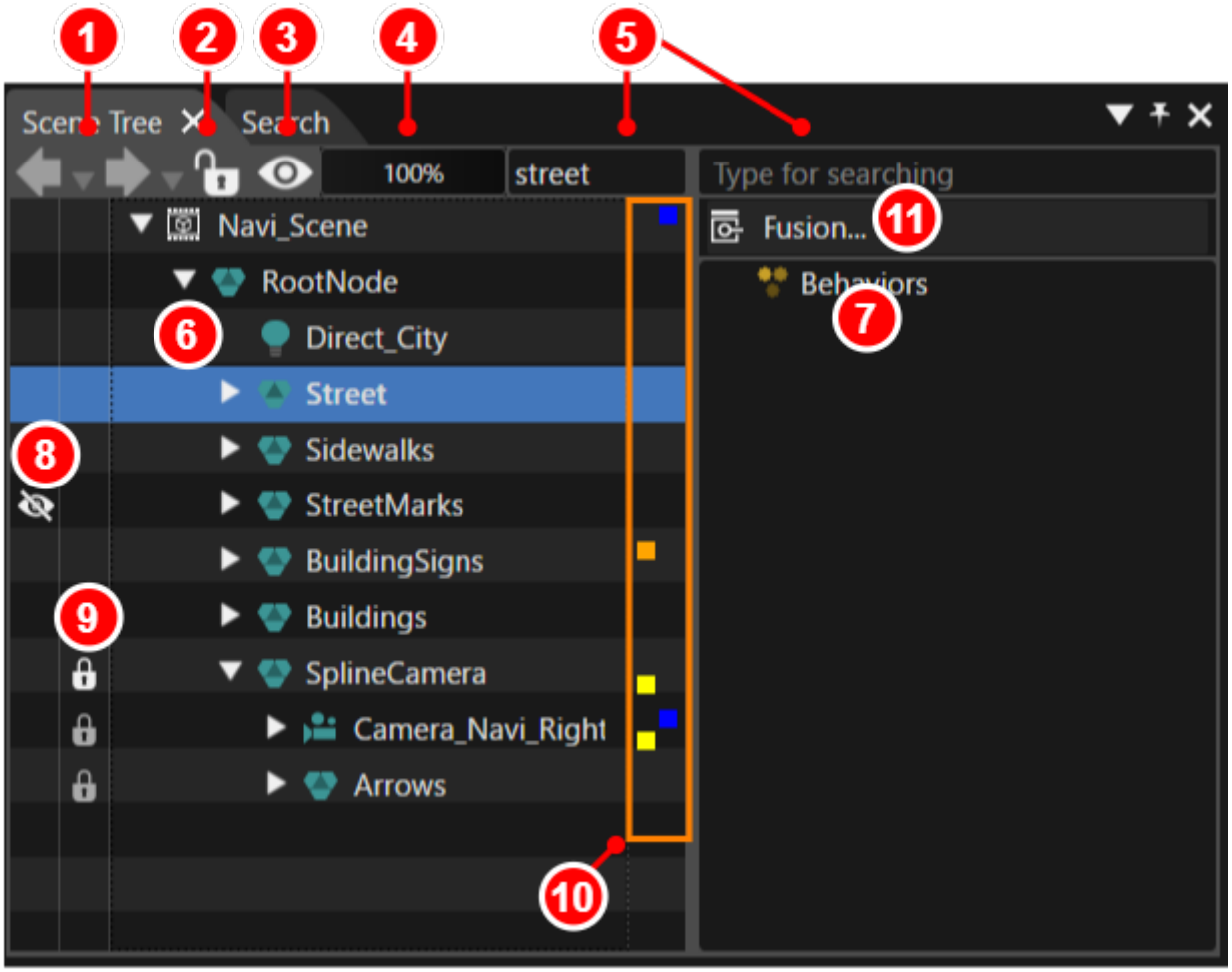
Scene Tree Editing

- Scene Tree UI
- Create Nodes
- Manage Nodes
- Locking UI Elements
- Bitmap Preview
- Flipped Bitmaps
- Pivot Hint
- Including Solution Items in Scene Explorer
- Isolated Editing
- Usage and Dependencies
- Locking/Unlocking the Properties Panel

Scene Tree UI

This section explains the User Interface of the Scene Tree panel.



No.	Name	Description
1	Navigation buttons	The left and right arrow buttons allow you to navigate backward and forward through the history of opened scenes and controls. Clicking the small triangle located at the bottom-right corner of either arrows opens the **display history**, enabling quick access to previously viewed scenes. These buttons are disabled when no backward or forward navigation history is available

2	Lock button	Clicking this button **locks the selected node** in the scene tree. For additional details, refer to here. When a node is locked, a lock icon appears next to it, and all child node icons are displayed in **grey** to indicate their locked status.
3	Rendering button	This button is used to control whether the **selected node is rendered** at **design time** and **run time**. When rendering is disabled for a node, all of its child nodes are also excluded from rendering. When rendering is disabled for a node, a **rendering disabled icon** is displayed next to it.
4	Transparency	This function allows you to set the local **alpha transparency (Alpha Value)** of the selected node and all of its child nodes. The resulting transparency is calculated by combining the node's local alpha value with the alpha value defined in its material settings, producing the **effective alpha** used during rendering.
5	Search field	The search field allows you to search for items in both the **scene tree** and the **extra scene tree**. Nodes that match the entered keywords are automatically **highlighted**, making them easier to locate.
6	Scene tree	The scene tree displays all nodes that make up the scene shown in the **Scene Editor** panel. The nodes are organized hierarchically, reflecting the structure of the scene.
7	Extra scene tree	The extra scene tree displays the **behaviors assigned to the currently selected node**. This allows you to inspect and manage behavior-related settings independently from the main scene hierarchy.
8	Rendering disabled icon	When rendering is disabled using the **Rendering** button, a rendering disabled icon is displayed next to the corresponding node.

9	Lock icon	When a node is locked using **Lock** button, a **lock icon** is displayed next to that node. If the locked node has child nodes, they are also be displayed with a **greyed-out lock icon** to indicate that they belong to the locked hierarchy.
10	Annotation	The status of each node is indicated using **four-colour icons**, each representing a different type of annotation:. • **Orange** - The node has a **behavior** assigned. • **Blue** - The node has an **animation property** set. • **Yellow** - A **script** is assigned to the node. • **Red** - An **error, warning or message** is associated with the node.
11	Fusion	Clicking this button opens the **Fusion panel displaying** the Fusion diagram for the node currently selected in the scene tree.

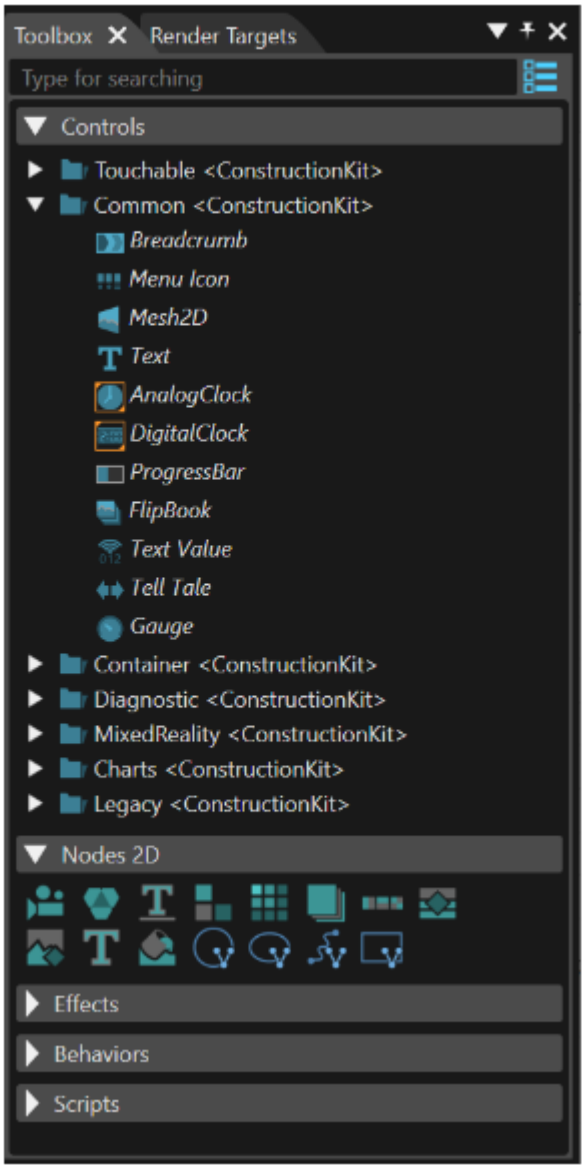
Create Nodes

Create Nodes from Toolbox

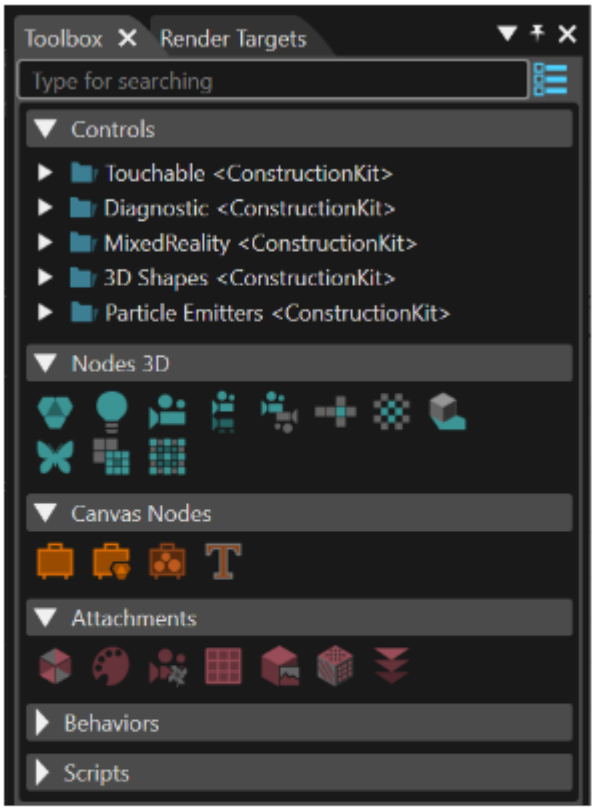
You can create new nodes by dragging items from the **Toolbox** and dropping them into the following locations:

- **Scene Tree** - Inserts the node into the desired position within the scene graph hierarchy.
- **Scene Editor (Render View)** - Creates the node at the specific display coordinates where it is dropped.

Toolbox for 2D scenes



Toolbox for 3D scenes

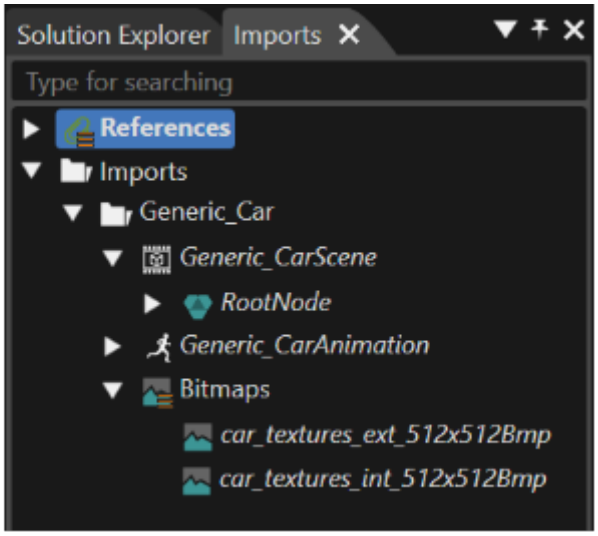


When adding a node to the scene tree, keep the following behaviors in mind:

- **Default Placement**
  The new node is created as the **last child** of the node onto which the node is dropped.
- **Repositioning**
  You can drag and drop nodes within the scene tree to modify the hierarchy. While dragging, a **blue selection line** indicates whether the node will be placed **as child** of another node or **between two existing nodes**.

Create Nodes from Imports

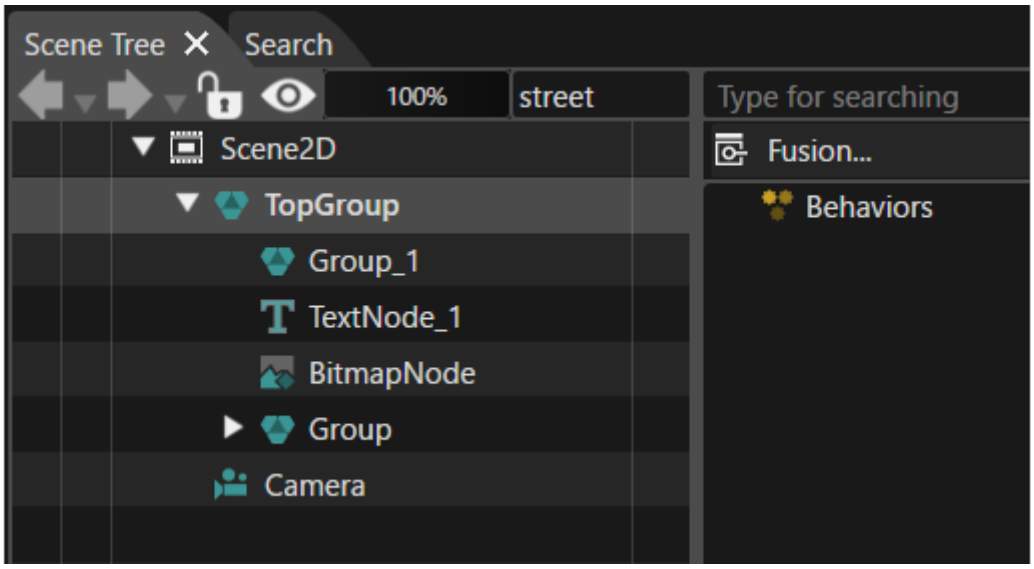
You can create nodes by dragging items from **user-defined imports** (template scene nodes) and dropping them into **Scene Editor** or the **Scene Tree**.



Creating Nodes in Scene Editor
Drag a template scene node from the Imports panel and drop it into the **Scene Editor** to create an instance of that node at the drop location. The new scene node is created at the **top level** of the scene graph.

Creating Nodes in the Scene Tree
Alternatively, you can drag a template scene node from Imports and drop it directly into the **Scene Tree**. This allows you to place the new node within the desired position of the scene graph hierarchy.

> When dropping Bitmaps from Imports into either the **Scene Tree** or the **Scene Editor** , a **RenderNode2D** is created automatically. This node is initialized with a **BitmapBrushBlend** effect that references the selected bitmap.


Scene Tree
Search
100%
street
Type for searching
Scene2D
Fusion...
TopGroup
Behaviors
Group_1
TextNode_1
BitmapNode
Group
Camera

Manage Nodes

Copying and Moving Scene Nodes

A scene is composed of individual **scene nodes**. They may originate from the **Toolbox** panel or the **Imports** panel.

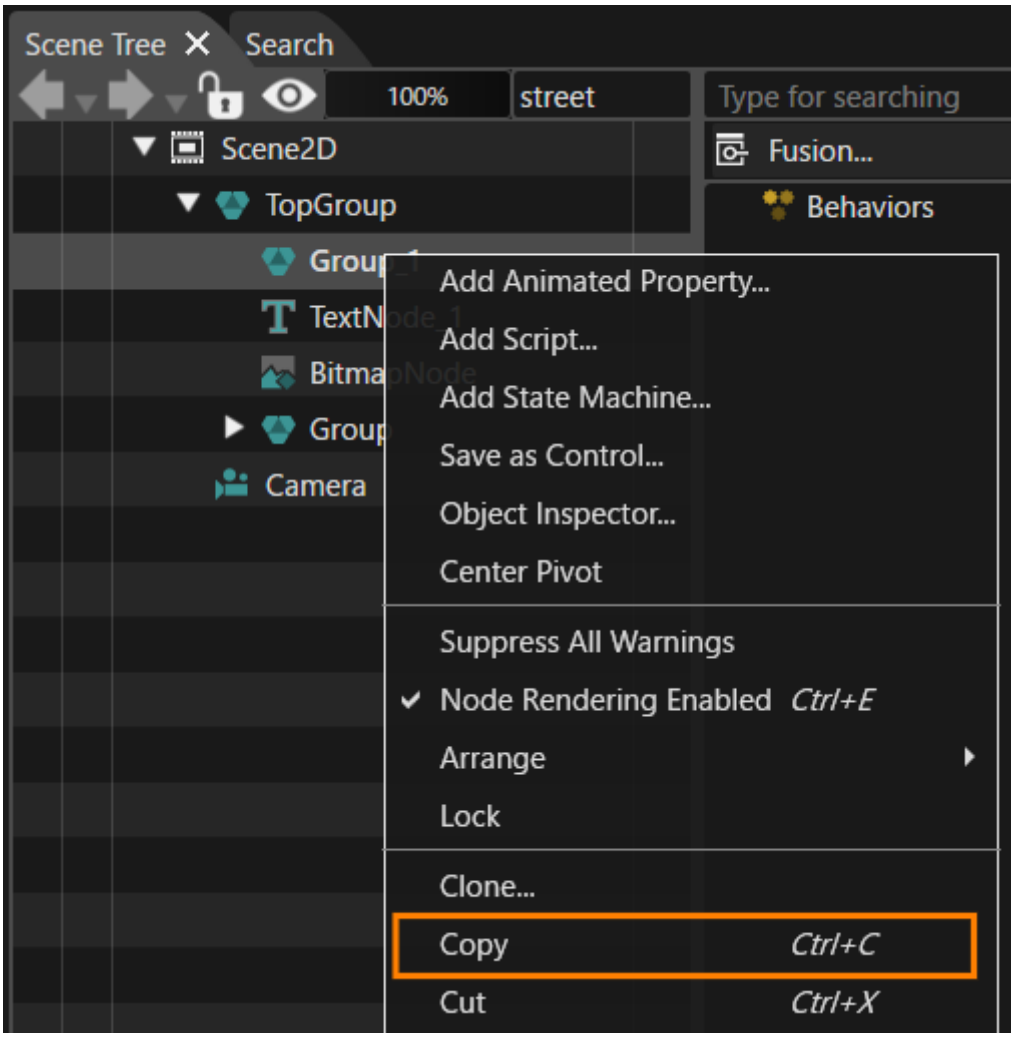
During solution development, you may need to divide a single scene into multiple smaller scenes or merge elements from several scenes to maintain a structured and manageable solution. Instead of recreating nodes manually, you can copy and paste existing nodes into any other scene as needed.

To copy and paste a node, follow the steps below:

1. In the Scene Tree or Scene Editor, select the desired node.
2. Right-click on your selection.
   - The context menu is opened.
3. Choose **Copy** from the context menu.
4. Switch to the target scene.
5. In Scene Tree or Scene Editor, right-click where you want the copied node to be placed.

   > Within the **Scene Tree**, you can also navigate to a specific node - such as a **GroupNode** - and right-click it to paste the copied element directly into that node.

   - The context menu is opened.
6. Choose **Paste** from the context menu
   - The copied item is pasted.



You can also use the following keyboard shortcuts to perform copy, cut and paste operations:

- **Ctrl + C** ... Copy
- **Ctrl + X** ... Cut
- **Ctrl + V** ... Paste

During copy, cut or paste operations, the Scene Composer executes the requested action and reports any resulting errors or warnings. These messages may include issues such as missing references, invalid paths, or other dependency violations.

> It is possible to select and copy, cut or paste **multiple nodes simultaneously**, provided that all selected nodes reside at the same level within the scene hierarchy.

Clone, Delete and Rename Scene Nodes

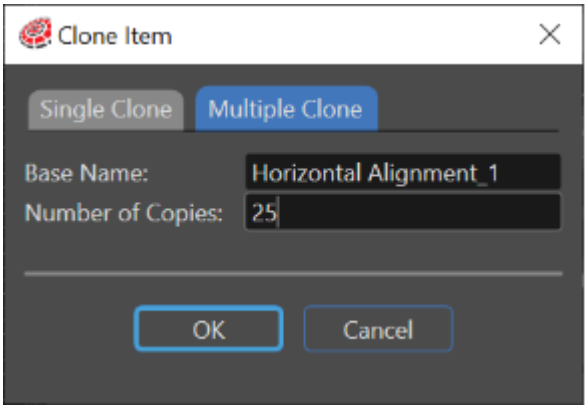
Clone

You can clone a scene node using the **Clone** option from the context menu following the steps below:

1. Right-Click on the item you want to clone.
   - The context menu opens.
2. Select **Clone** from the context menu
   - The **Clone Item** dialog appears, as shown below.
3. Enter a name for your clone (or accept the provided name) and confirm by clicking **OK**.
   - The cloned item is created in the same group or scene as the original.

If multiple clones of the same item are required, use the **Multiple Clone** option as described here:

1. Right-Click on the item you want to clone.
   - The context menu opens.
2. Select **Clone** from the context menu
   - The **Clone Item** dialog appears, as shown below.
3. Switch to the **Multiple Clone** tab.
   - The **Clone Item** dialog is displayed as shown below.
4. Enter a base name for your clone (or accept the provided name) and the number of clones to be created. Confirm by clicking **OK**.
   - The cloned items are created in the same group or scene as the original.



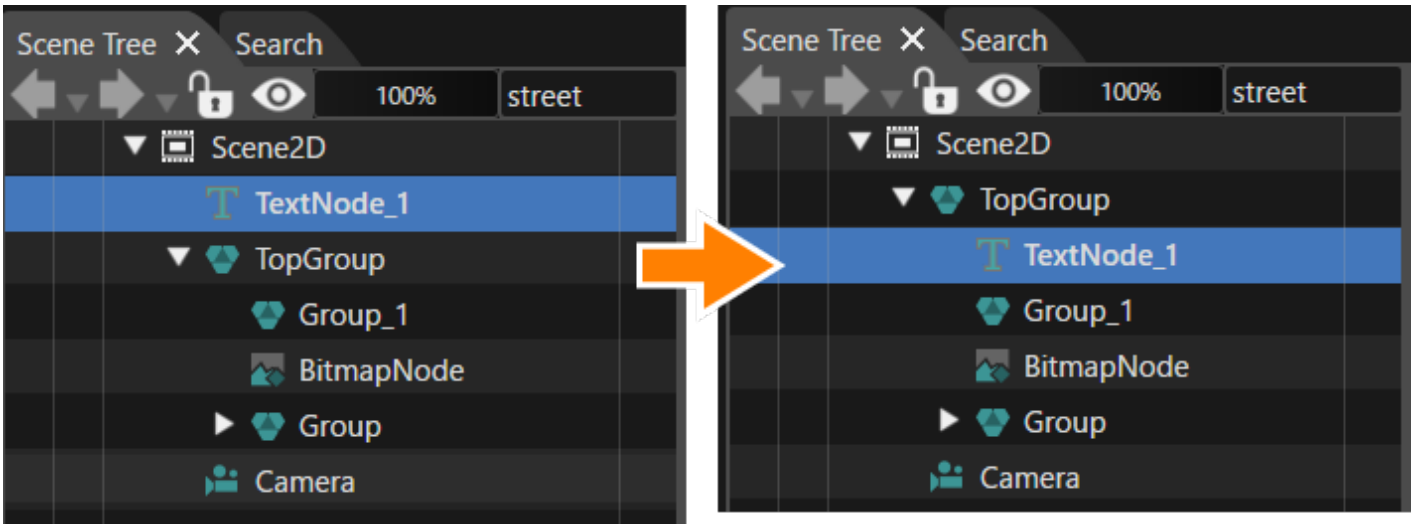
When creating multiple clones (or pasting a copied node), the system automatically checks whether the node's name ends with a numeric suffix. If a number is present, it is incremented for the new node.

For example:

- Cloning **Node_1** results in **Node_2, Node_3....**
- Cloning **Node1** results in **Node2, Node3....**.

To duplicate an item in the selected location, hold **LeftShift** while dragging and dropping the item. When you release the mouse button, a copy of the item is created at the target location.

Note that duplicating an item as a child of itself is currently not supported.



Delete

A scene node can be deleted using the **Delete** option in the context menu or by pressing the **Delete** key on your keyboard.

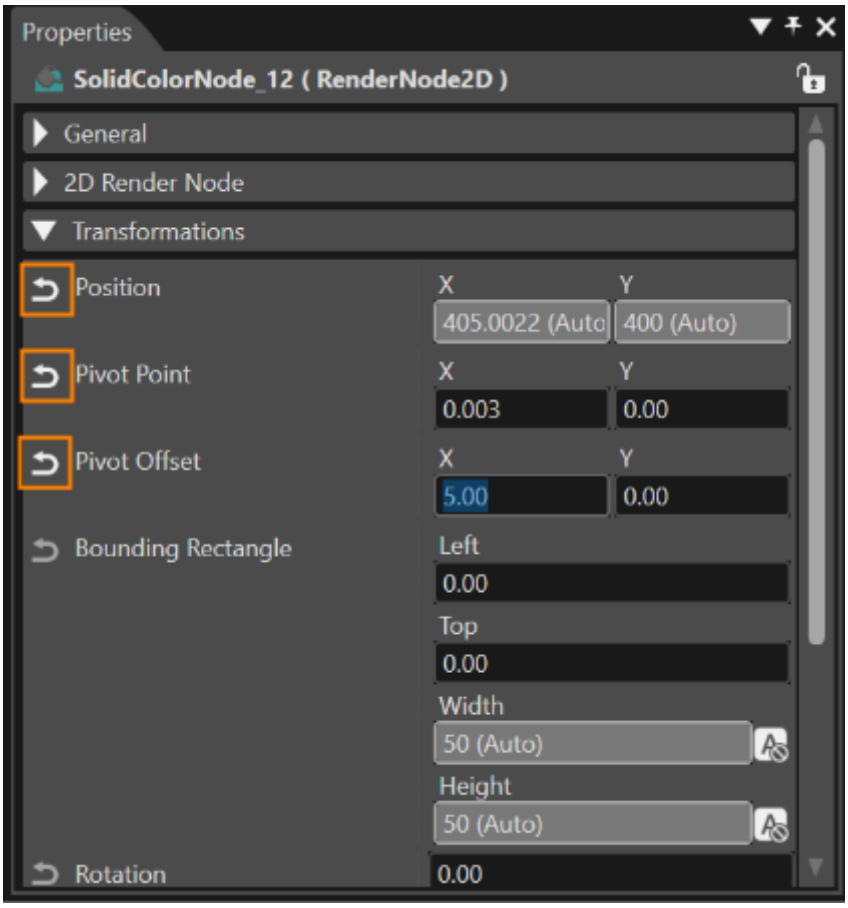
Special care must be taken when deleting items that have dependencies. Additional details on handling dependent items can be found here

Rename

A scene node can be renamed using the **Rename** option in the context menu or by pressing **F2**.

Revert Properties to Default Value

Properties of instance items can be modified in the Properties panel. If necessary, any modified property can be restored to its default value using the **Revert** button (see image below).



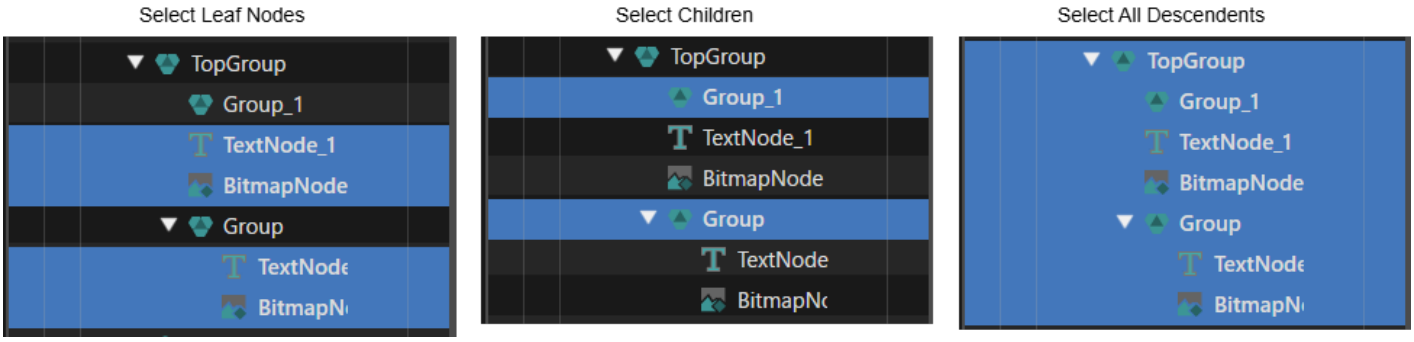
Reset Node Structure

Groups created from a template item (an imported scene graph) can be restored to their original template structure by using the **Reset Structure** option in the context menu of the group. When this action is performed, any delete or modified elements within the group are restored to their default template configuration.

Multi-Selection and Comparison of Nodes

1. For multi-selection of nodes, press the **Ctrl** key while left clicking all the desired elements to select. When the last desired element is selected the **Ctrl** key can be released.
2. To select a set of **consecutive** items, click the first item, press the **Shift** key while clicking the last item.
3. Another way is to use one of **select** options from the Scene Tree **context menu** for multi-selection:
   - Select > Leaf Nodes
   - Select > Children
   - Select > All Descendants

Examples:



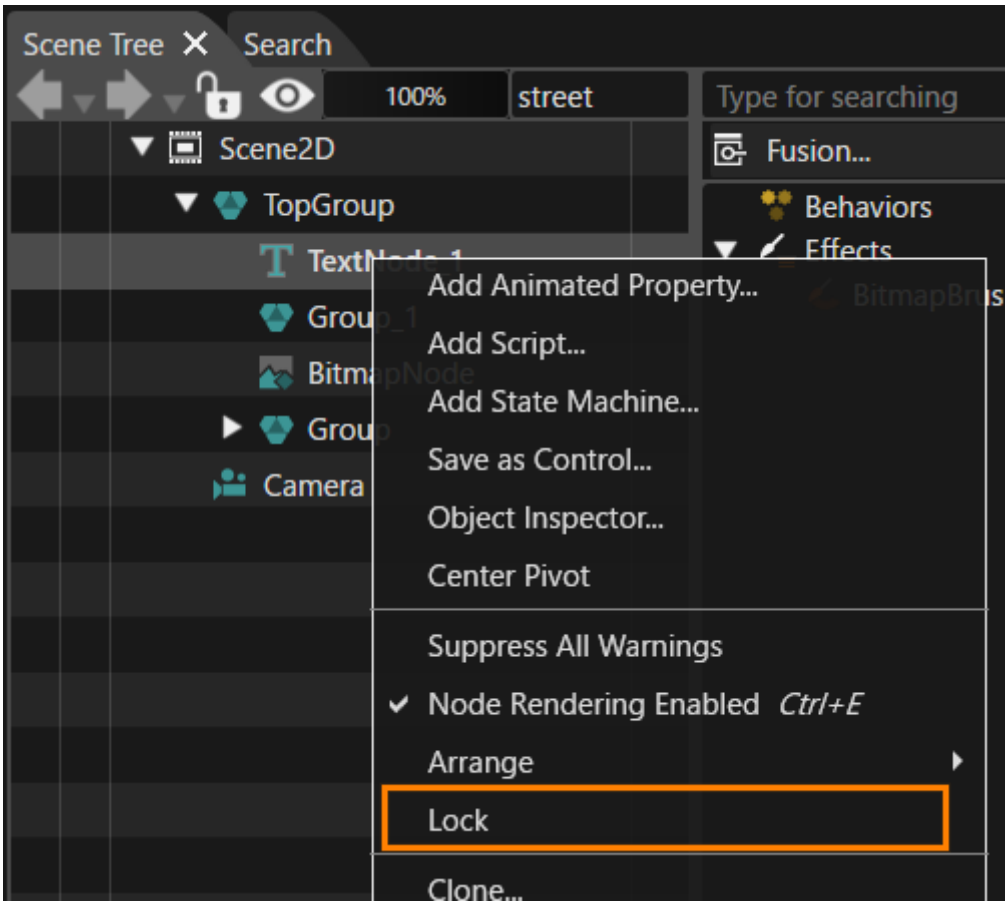
After the multi-selection operation it is possible to copy, move or delete all selected items as desired.

Locking UI Elements

In different circumstances it could be useful to have the possibility to avoid any type of accidental SceneComposer solution modification. SceneComposer offers the locking option to provide the possibility to avoid such unfortunate mistakes.

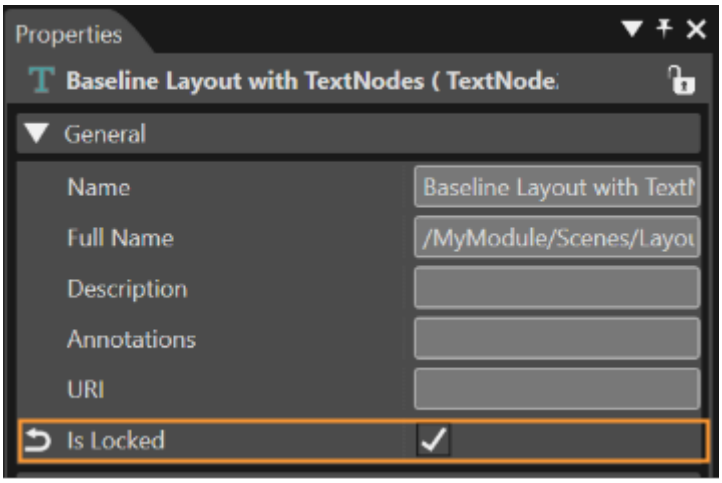
Locking is available via context menu for all items excepting folders.

To lock a selected item the user has to right click on that item. From the context menu it is possible to select the "Lock" option.



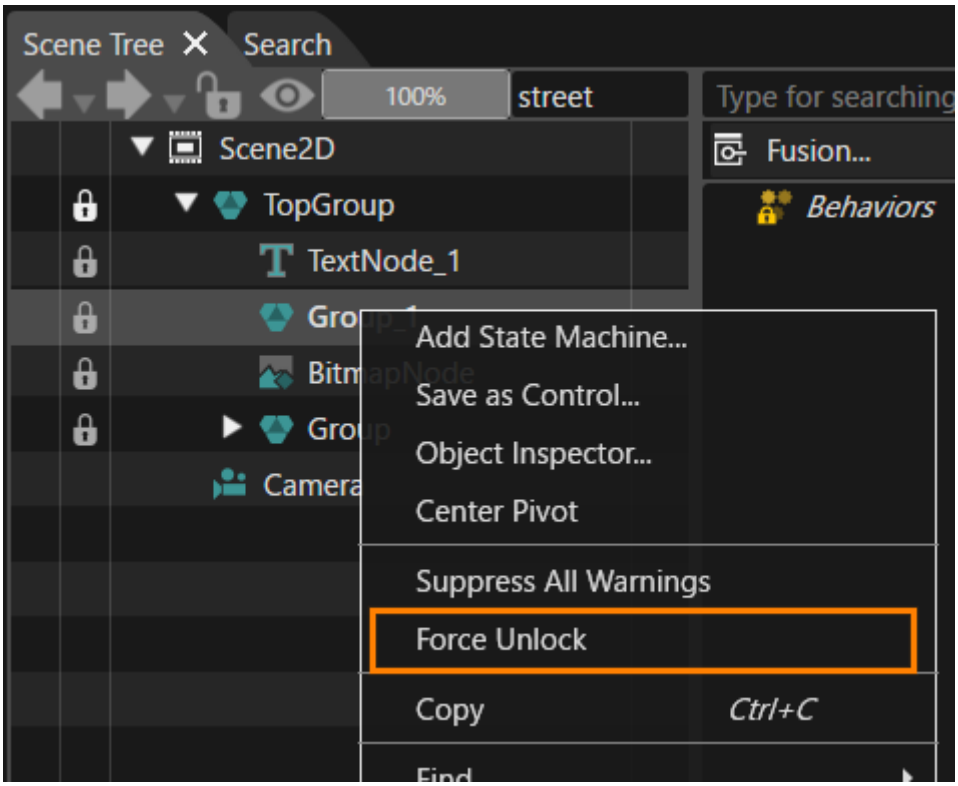
The locking state of the items can be: unlocked or locked (directly or by an ancestor). The item icon is decorated in such a way that it is clearly indicate if it is locked. The properties (including the name) and the structure of locked items cannot be changed using direct means (properties panel, scene tree etc.)

Another way to lock a selected item is to check the "Is Locked" checkbox in Properties.



The re-import of content used by locked items is not possible.

If it is necessary to unlock a sub-item it is possible to use the "Force Unlock" option from the context menu. When the "Force Unlock" option is used not only the sub-item is unlocked, the parent node is unlocked as well.



Generally speaking this feature is a soft lock mechanism. References used by a node can be modified, but not the locked object directly. For instance, if a node which has associated a texture that uses a bitmap is locked, the bitmap still can be modified so, in this way, the locked node can be modified.

Bitmap Preview

Use Bitmap Preview

Whenever a Bitmap is selected - for example from the "Imports" panel, "Scene Tree" panel or "Solution Explorer" panel - a preview of the selected Bitmap is displayed in the "Properties" panel in addition to the specific Bitmap properties.

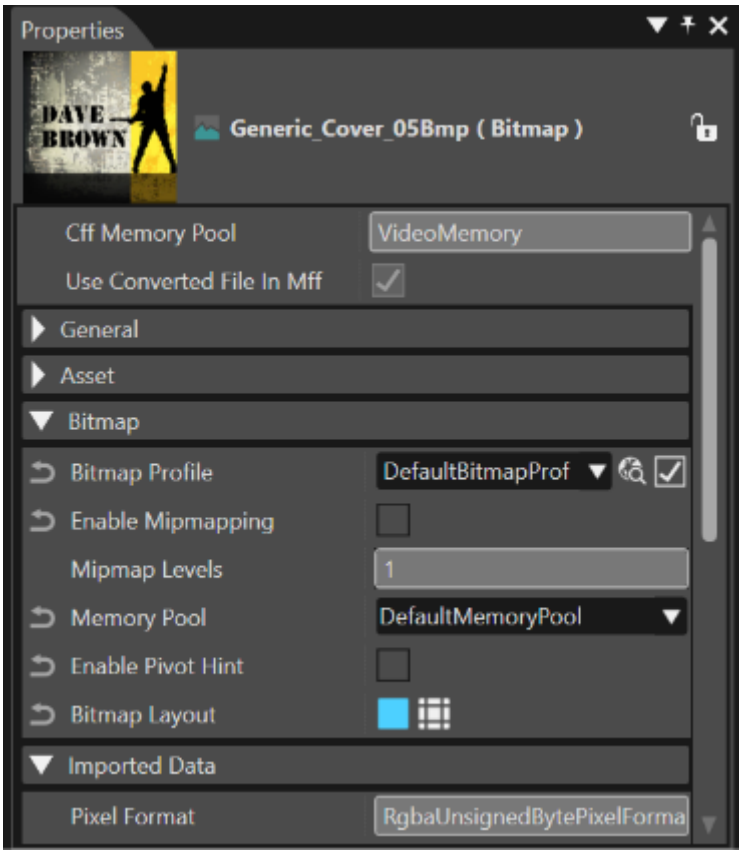
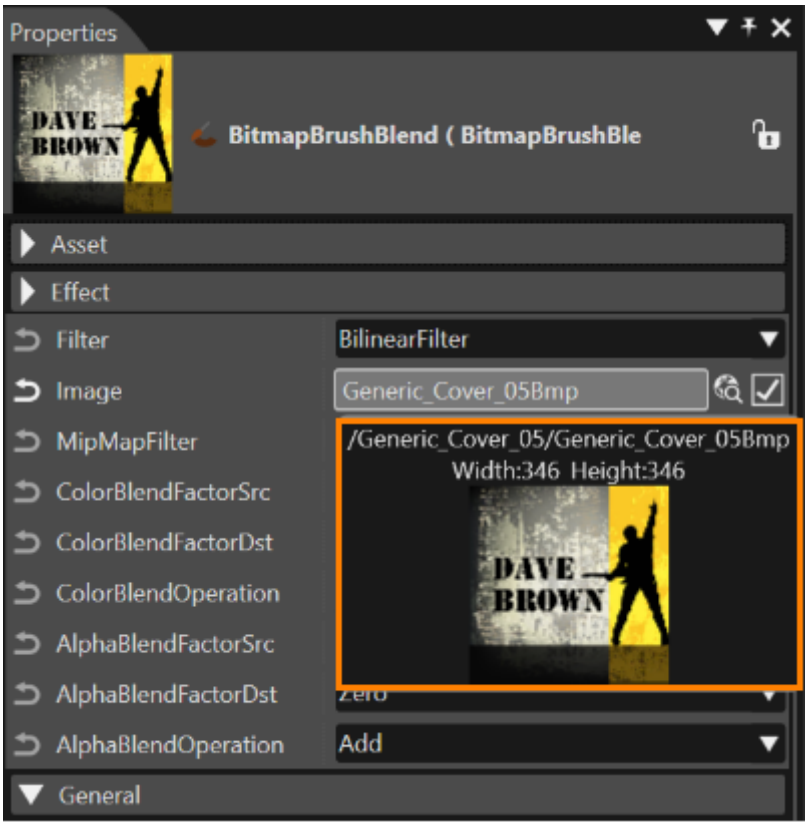


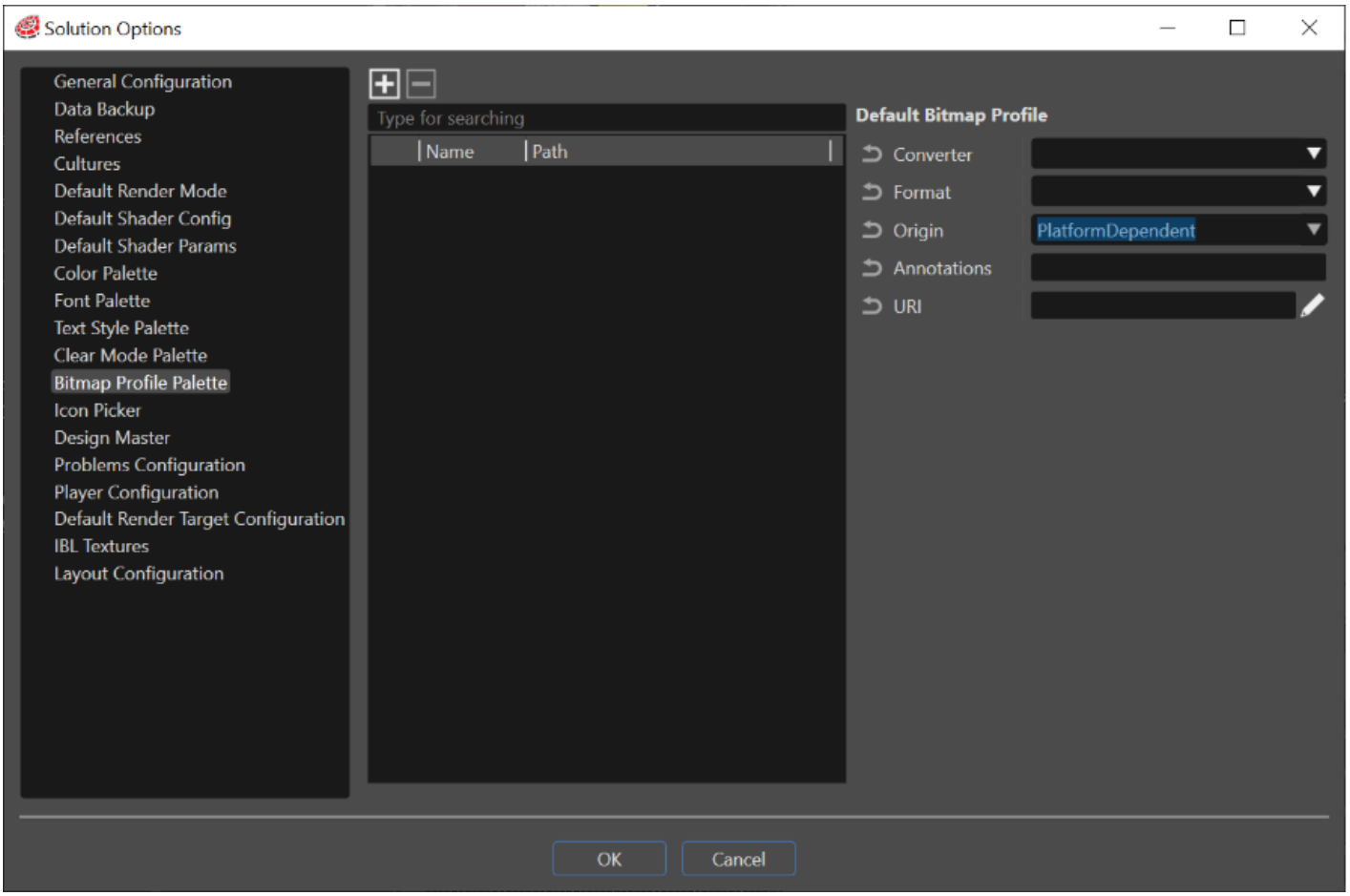
Image properties in the properties panel also show a preview of the image as a tooltip when they are hovered over with the mouse.


Properties
BitmapBrushBlend (BitmapBrushBle
Asset
Effect
Filter
BilinearFilter
Image
Generic_Cover_05Bmp
MipMapFilter
/Generic_Cover_05/Generic_Cover_05Bmp
Width:346 Height:346
ColorBlendFactorSrc
ColorBlendFactorDst
ColorBlendOperation
AlphaBlendFactorSrc
AlphaBlendFactorDst
AlphaBlendOperation
Add
General

Flipped Bitmaps

The platform definition has been extended and defined via meta-info if the bitmaps shall be flipped or not for 2D and 3D. Each bitmap written into the asset specifies the info if flipped or not (the new attribute) SceneComposer writes the bitmap data in the flipped or not flipped data format depending on the platform's specification.

A new property (Origin) is available for bitmaps to configure the layout of the pixels in the asset.



If the option PlatformDependent is selected, the following verifications will be performed:

- Bitmap is used only in 2D content, the platform setting for the 2D engine will be used;
- Bitmap is used in 3D content, the platform setting for the 3D engine will be used;
- otherwise the imported content will be exported without any flipping.

Pivot Hint

Pivot Hint is a property of a Bitmap which allows to set the coordinates of a point that will be used as default Pivot Point for the RenderNode that uses the Bitmap.

The example hereafter presents the situation of replacing the Hour Needle Image on an AnalogClock control with a bitmap having or not having set the Pivot Hint.

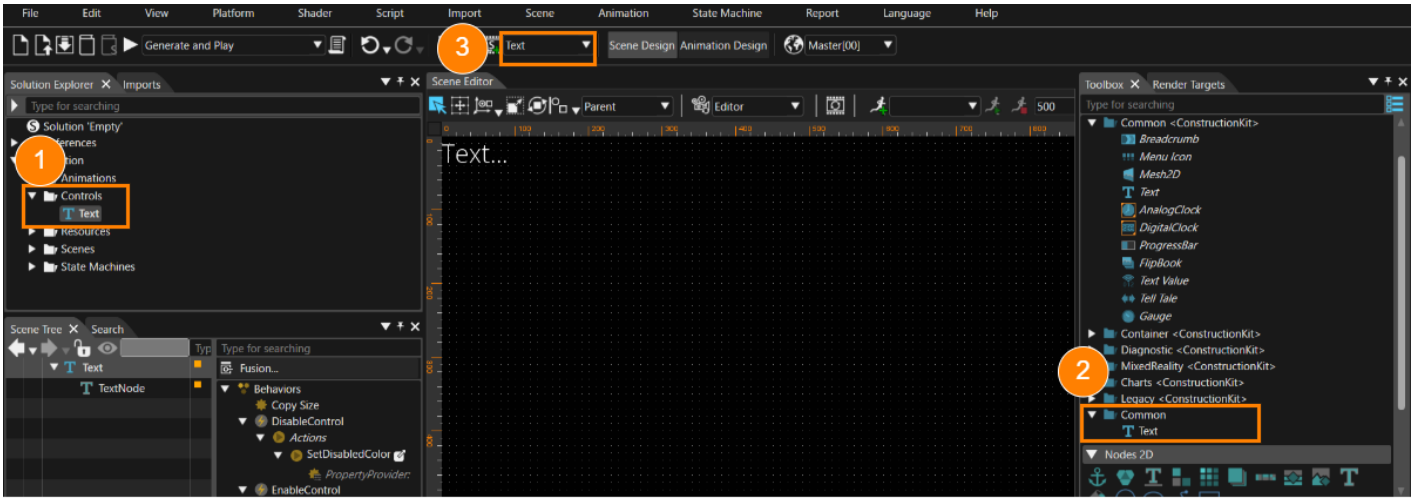




Including Solution Items in Scene Explorer

Creation

Solution items can be added in the Scene Explorer via copy-paste or drag-and-drop.
The image below exemplify the adding (by drag-and-drop) the Text Control into the Solution Explorer:



> When the solution items are copied in Scene Explorer the class is copied, not the instance.

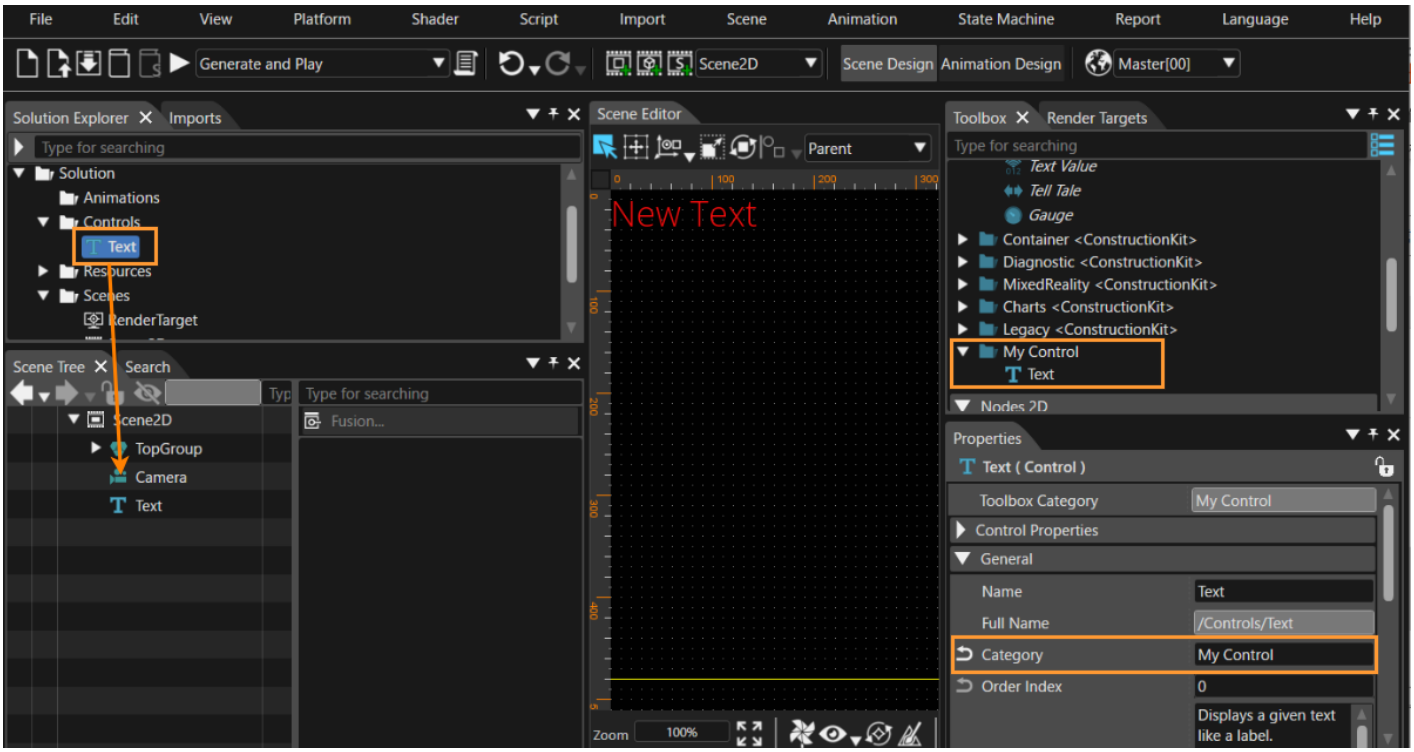
After adding the solution item (Text control, in our case) in the Solution Explorer the newly created copy is shown in the destination folder (1) from Solution Explorer and also in the Controls panel in the Category *Common* (2). Also, in the case of the controls and behavior building blocks, the solution item becomes active (3) and its content is shown in the Scene Tree.

Following solutions items support this feature:

- controls
- behavior building blocks
- templates
- shader fragments
- shader programs
- render targets

Usage

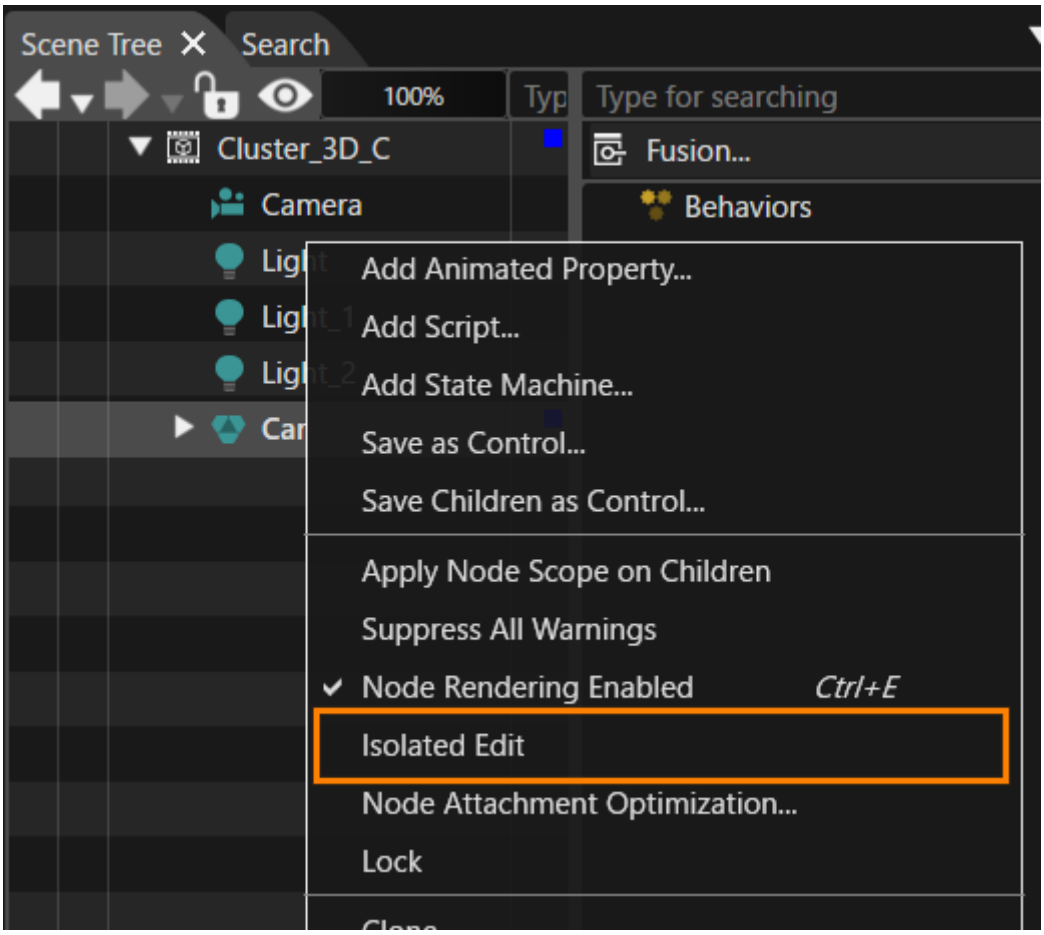
Once the solution item is copied in the Solution Explorer it can be edited and then instantiated in the Scene Tree. As exemplification, the *Category* property was changed to "MyControls" and the control TextNode2D properties were changed to show a different text and color:



Isolated Editing

For a graphic designer or a technical artist, sometimes it is very useful to have the possibility to shape a single graphic object without seeing the whole scene context. For instance, the designer needs to switch to a special context where only one object (e.g. car) is visible and can be edited. To address this need, SceneComposer allows to edit a single object within the regarding scene hiding all other rendered elements and temporary set the edited object in the view center.

To use this feature, in SceneTree having multiple objects selected, right click > Isolated Edit - this will enter in a special Single Editing Mode, where a scope is applied to the selection.



Another possibility to enter in a special Single Editing Mode is to use the "Isolated Edit" button which is placed in the Toolbar near the "Active Rendering" button.



All objects will be rendered with the built-in scope. Turning off this mode can be realized from the toolbar, this mode being highlighted. In this way more complex scenarios can be applied.

If you refresh the current scene or switch to another scene, the isolated edit mode will be automatically turned off.

Usage and Dependencies

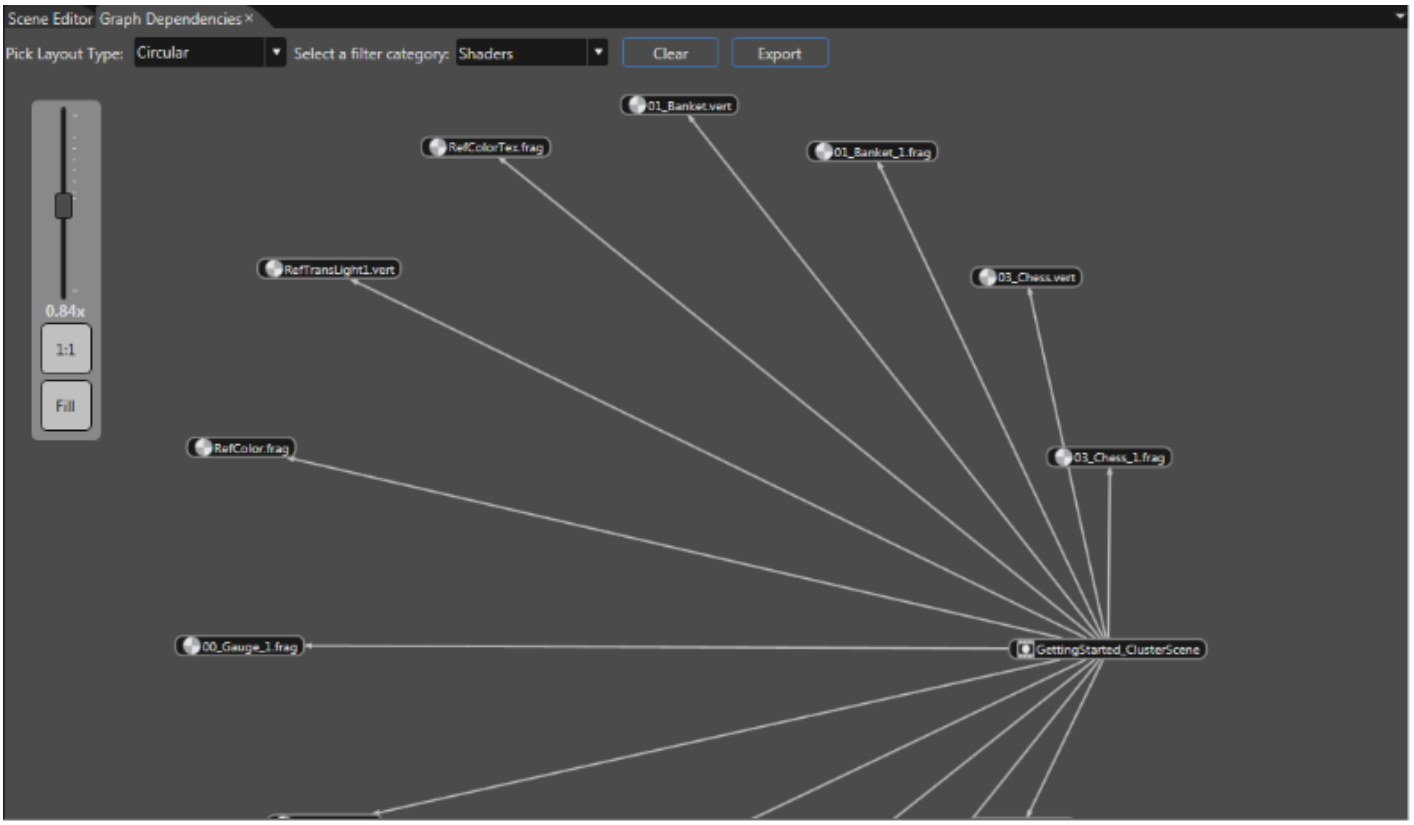
Find Usage & Dependencies

Use this feature by opening a SceneComposer solution to activate and select the Graph Dependencies panel.

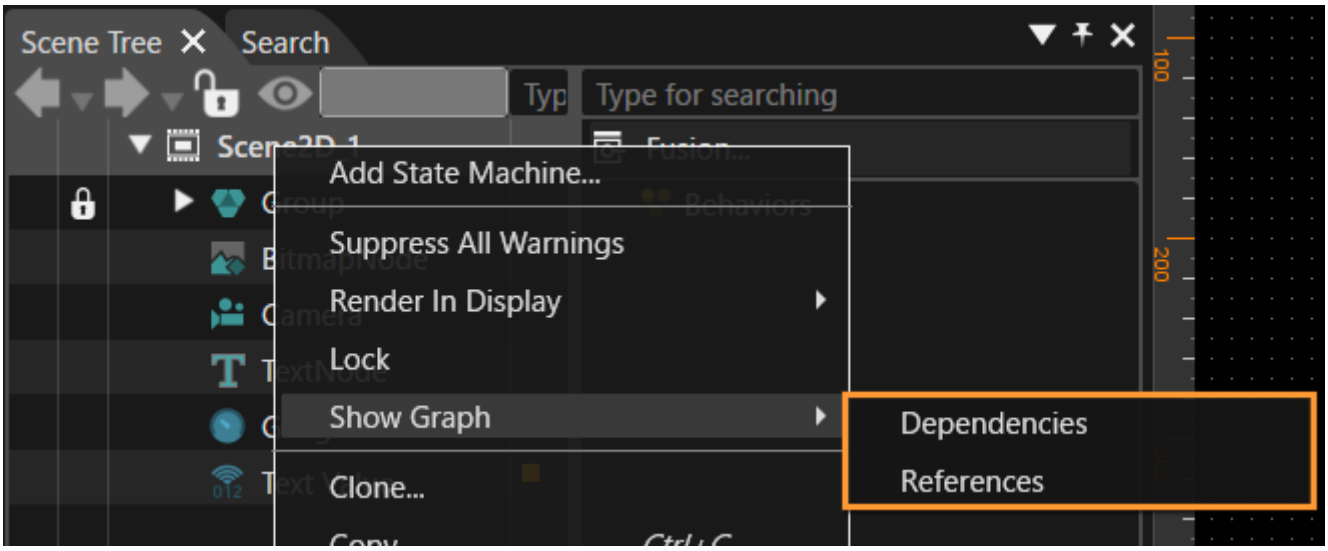
- Activate the panel by selecting "View" > "Editors" > "Graph Dependencies".
- The graph panel represents in a visual form the **nodes** and the **connections** that unify them.

The edges that link the nodes show the dependencies that exist among the items. The layout graph panel can be docked in SceneComposer.

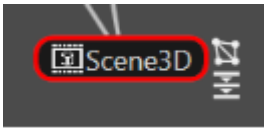
> By using the "Export" button the user is allowed to export the "Dependency Graph" as an .xml file with nodes based on items types and names.



After the Graph Dependencies panel is selected, right-click on the scene and select "Dependencies" or "References" from the context menu (see below).



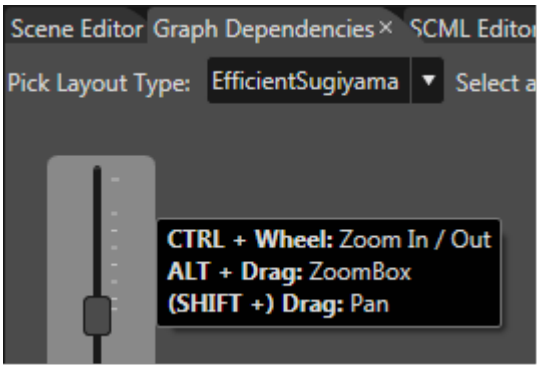
If the "Dependencies" option is selected, the graph will become visible inside the Graph Dependencies panel. If the "References" option is selected, the current selected scene will become visible inside the Graph Dependencies panel. When the current selected scene is pressed, two option are displayed as two buttons near the selected scene icon: "Show the dependencies of this node" and "Show the references where this object is used".



On the left side of the panel there is a cursor, which allows to establish the dimensions of the graph. There are several different possibilities to set the dimensions of the graph:

- By using the 1:1 button (the graph will have an optimal dimension)
- By using the "Fill" button (the graph will fill the whole panel)
- By using the cursor (the dimensions should be set in a range between 0 and 100.00)
- By using the combo Ctrl + Mouse Wheel

At the same time, there are some combinations that can be seen in the next figure:

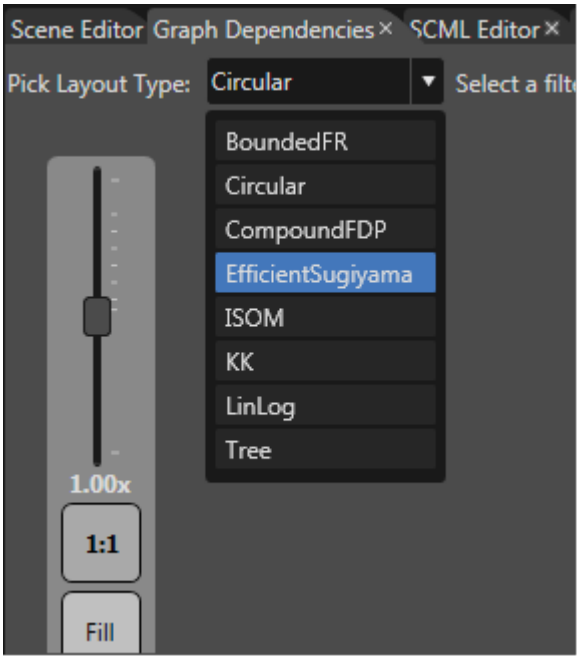


On the top side of the Graph Dependencies panel there are some other possible options. First, it is possible to select the desired layout type of the graph by using the "Pick Layout Type" list. There

are several different algorithms to display the graph:

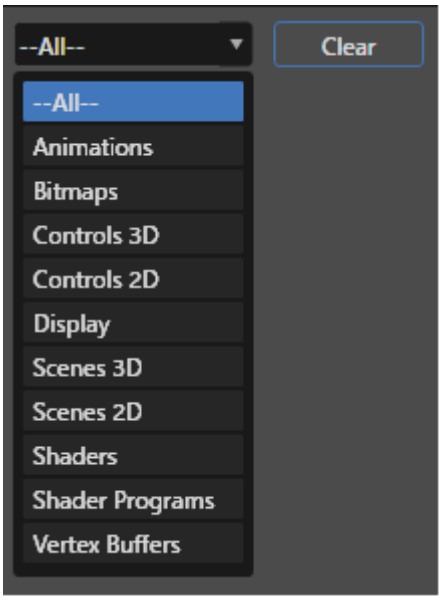
- Bounded FR
- Circular
- Compound FDP
- Efficient Sugiyama
- ISOM
- KK
- Lin Long
- Tree

The most common one from all these graph types is the Efficient Sugiyama.



The second menu list available on the top of the Graph Dependencies panel allows to filter the desired category of items displayed: "Select a Filter Category". There are several available categories:

- Animations
- Bitmaps
- Controls 3D
- Controls 2D
- Display
- Scene 3D
- Scene 2D
- Shaders
- Shader Programs
- Vertex Buffers



By left-clicking on a node in the graph two buttons will appear in the right corner:

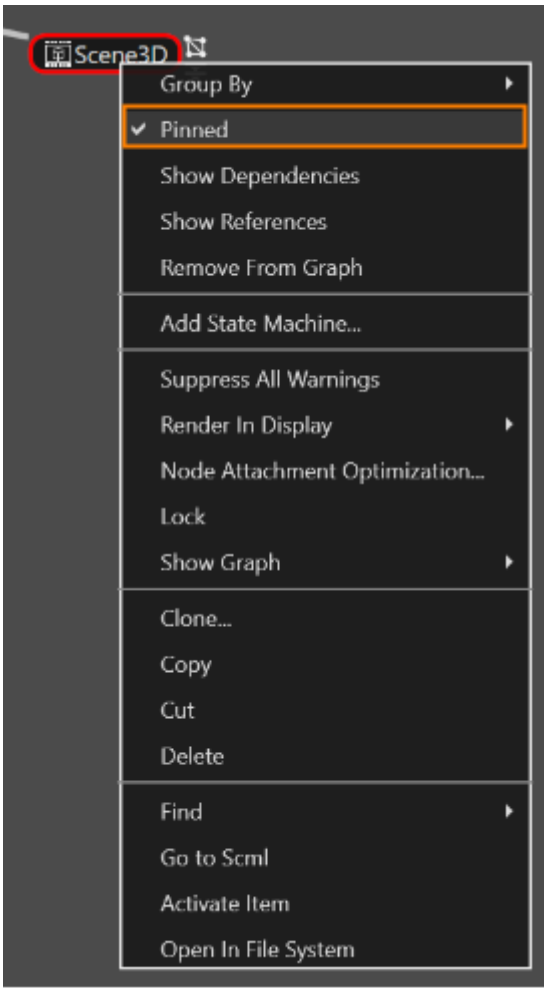
- "Show references" which will display the usage of an item in a graph with navigation and scene tree synchronization
- "Show all dependencies" which will display all the dependencies of an item in a graph

Another given possibility is to move the graph in the Graph Dependencies panel. For example, if the "Scene" category is selected, you will be able to see the relationships between the main scene and all the scenes associated with those imported .fbx that are used in the main scene.

It is possible to select and to move the whole graph; to do this, just left click somewhere near the graph and hold down the left button of the mouse. On this way, it is possible to move the entire graph in any desired place inside the panel. If just one of the scenes is selected by clicking on it, it will be possible to move just that element.

> When a category with many elements is filtered by using the specific menu list, the graph will not be centered and the only visible elements can be some peripheral parts of the tree.

To center the graph, first, the "Fill" button has to be used. After this, the "1:1" button will center the graph instantly. Last but not least, even though the filter category is used to show a specific category, it is possible to choose one or many elements that do not pertain to that category to be shown. To obtain this effect let's suppose that the Scene category was previously selected. By right-clicking on any scene displayed in the graph, there is a "Pinned" option available in the context menu.



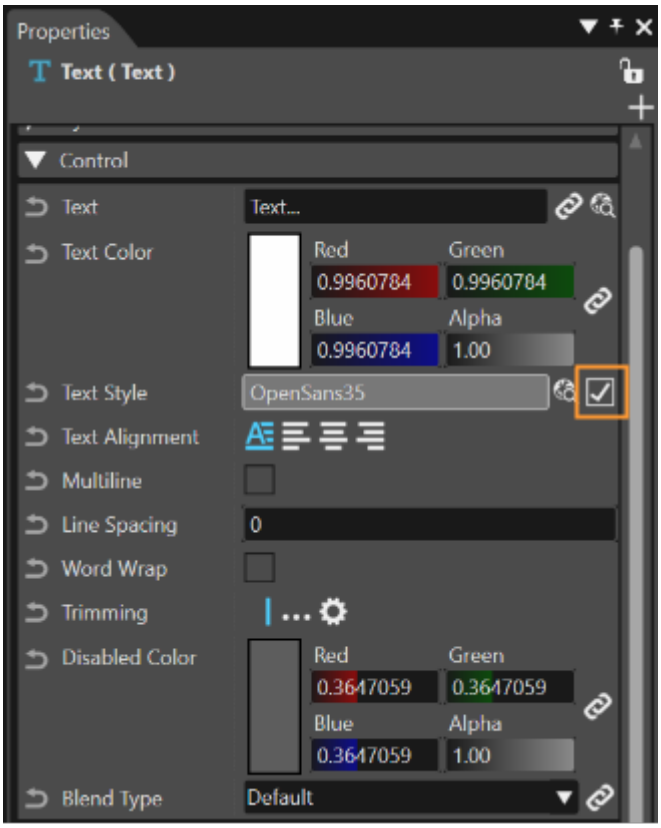
In the case of the main scene, these "Pinned" option is enabled. For any other secondary scene this option is disabled. If this option is enabled, the graph will display all the elements of that category, plus the "pinned" elements from the previous category.

Activation of Items Referenced

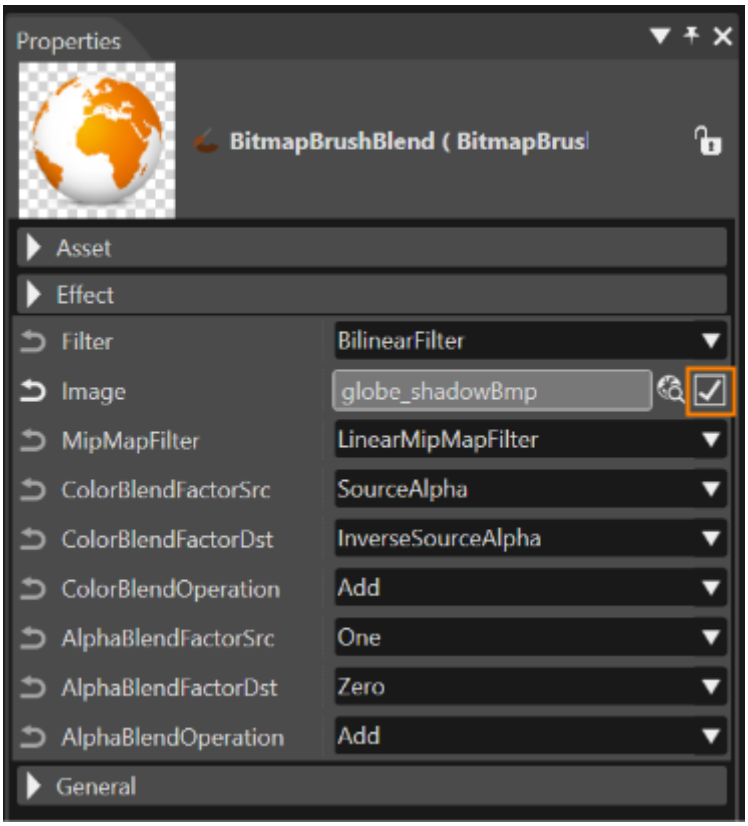
If necessary, it is possible to activate items referenced through paths. The Activate button will load the item in the property grid and in others panels linked to the type of the item.

This feature is available for any referenced item as can be seen in the examples below.

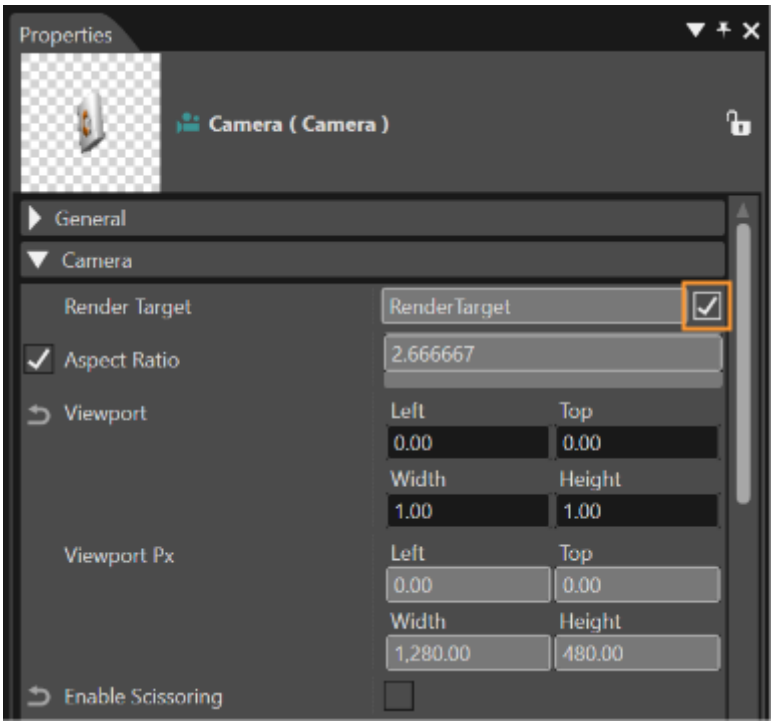
For a TextStyle referenced by a text node:



For a Bitmap referenced by a bitmap node:



For a Render target referenced by a camera:


Properties
Camera (Camera)
General
Camera
Render Target
RenderTarget
Aspect Ratio
2.666667
Viewport
Left
Top
0.00
0.00
Width
Height
1.00
1.00
Viewport Px
Left
Top
0.00
0.00
Width
Height
1,280.00
480.00
Enable Scissoring

Locking/Unlocking the Properties Panel

Some behaviors like e.g. the ForwardValue behavior have a property TargetNode. The appropriate TargetNode can be assigned by pressing the respective icon button, which will open the "Choose Item" dialog as shown in a Behavior example.

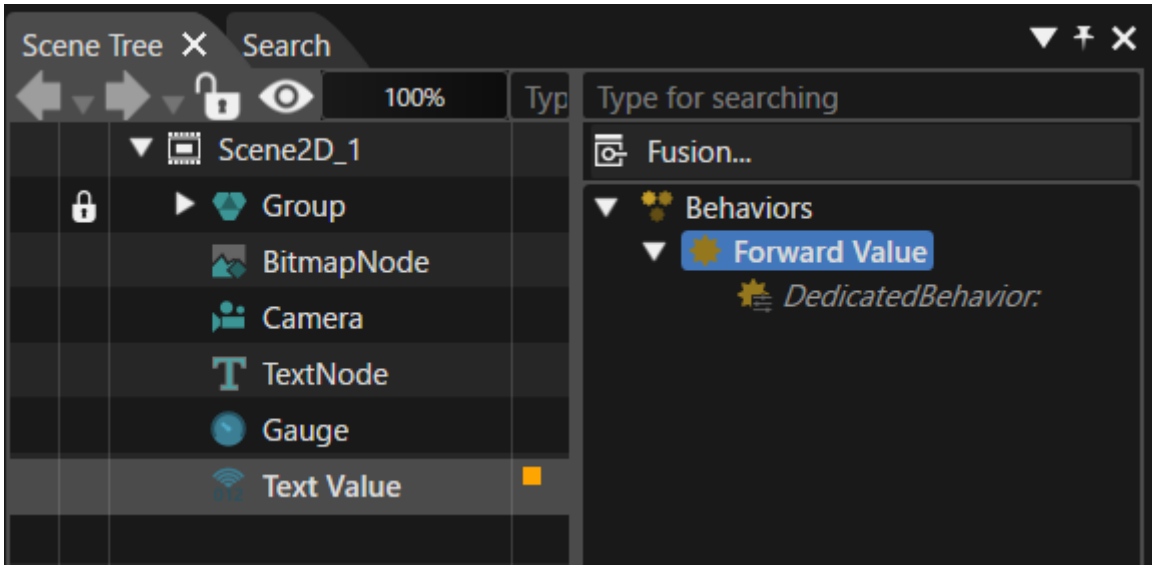
There is an alternative - possibly more comfortable - way to configure the TargetNode via drag & drop.

Like various DCC tools and Game Development Platforms, Scene Composer employs a locking and unlocking method for the Properties panel to significantly enhance the workflow efficiency for designers.

This method the user to lock the properties panel on the top right side of the property panel and move SCItems via drag and drop into the property fields. The value that is being copied into the fields is the path (if the field requires it) or the name of the item.

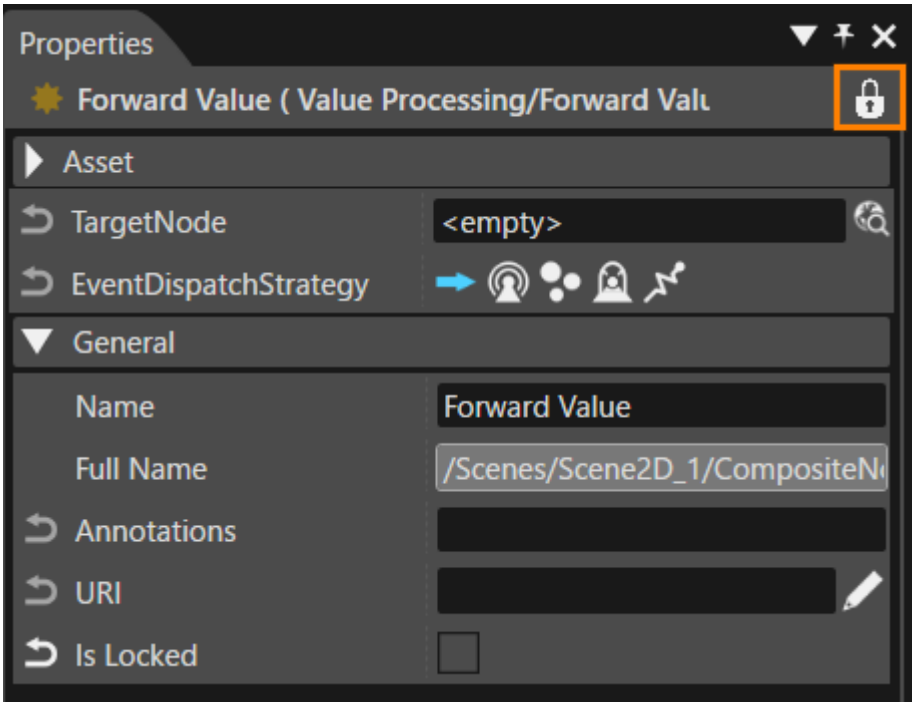
How to use the Locking/Unlocking method

1. Select the target node from the scene tree, and then select the behavior displayed in the extra scene tree.

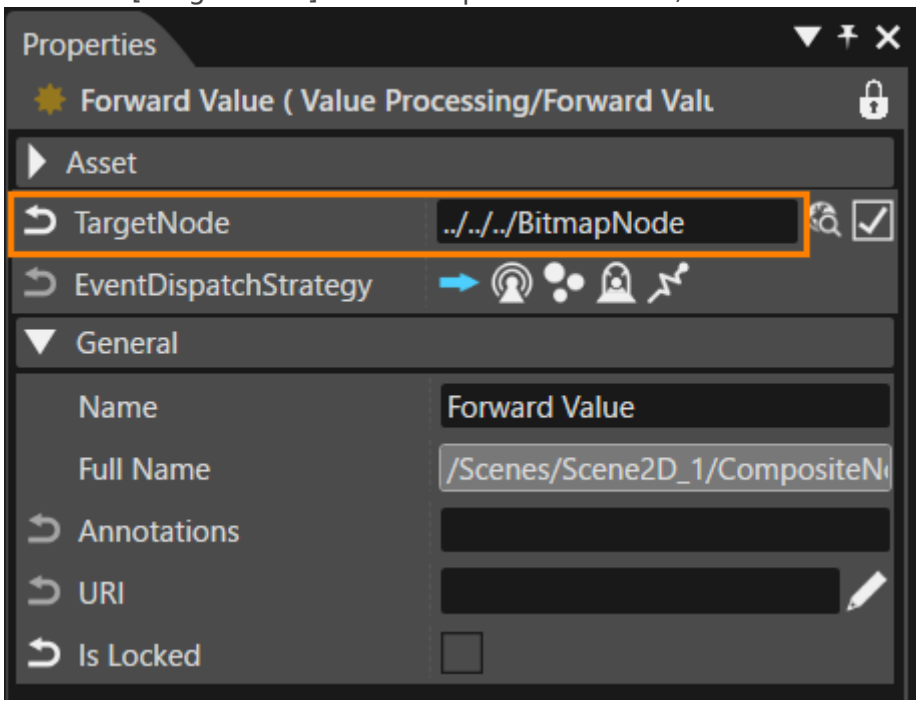


2. Click the Lock button in the upper right of the properties panel for the selected behavior to lock the properties panel.

- While locked, the properties of the object selected when locking will be displayed and maintained.



3. In the scene tree, select the node you want to set as the TargetNode, and drag and drop it onto the [TargetNode] in the Properties window, where it will be displayed in step 2.



4. Click the Lock button in the top right of the Properties panel again to unlock the Properties panel.

> **Limitation:** Drag&drop to Properties panel doesn't work for external (windows) files.