Introduction to Arena Visual Designer

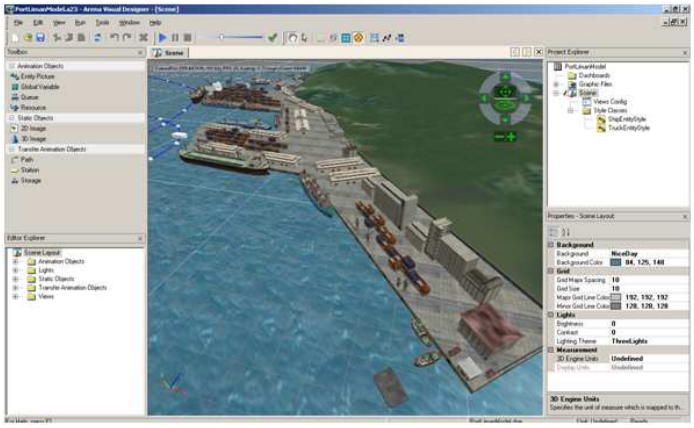
Visual Designer is the visualization application inside Arena for quickly and easily designing dashboards for advanced business graphic reporting and 3D animation in customizable display windows. Dashboards allow the animation and the business graphics to be visible simultaneously for more professional presentations. The Scene Editor allows you to create realistic 3D animations of your Arena model.

Arena Visual Designer offers:

- Intuitive drag-and-drop environment to build dashboards and animations quickly and easily
- Greater flexibility and visual control of your models
- Use of common charting controls to communicate your simulation results
- The ability to take advantage of charting with Microsoft .NET 4.0 framework
- Unlimited dashboard functionality

Dashboard controls that include Picture; Text Box; Level; Column, Bar and Pie charts; Histogram; Plot; and Scoreboard are available to construct visually appealing presentations that the simulation run will update dynamically.

Arena 3D has been developed using a state-of-the-art gaming engine and delivers the most realistic animation for a discrete-event simulation tool on the market. Now you can easily import Google SketchUp 3D Images, animated meshes and many other common 3D animation formats. The easy-to-use, drag-and-drop environment helps you quickly bring your models to life.



Arena Visual Designer also provides a sneak preview of the beginning migration of the new Arena user interface. These changes promise enhanced flexibility, ease of use and best-of-breed visualization using the most advanced software development technology. But don't worry, Arena's trusted simulation engine, familiar modeling paradigm and foundation will remain.

For quick tutorials on getting started with Arena Visual Designer, please visit our website at www.ArenaSimulation.com.

Related Topics

Getting Started with Arena Visual Designer

Dashboard - Learn how to create Dashboards!

Learn more about how to create dynamic dashboard reporting of your Arena model. The series of How-To topics will guide you through many of the basic steps of designing dashboards for advanced business graphic reporting.

Related Topics

Creating a Basic Dashboard

Adding Containers

Adding Dashboards

Adjusting Containers

Using a Dashboard to Another Model Project

Deleting Containers

Deleting Dashboards

Dividing the Dashboard into Containers

Editing an Existing Dashboard

Manipulating Dashboard Windows During the Model Run

Running Your Model and Dashboard

Runtime Animation

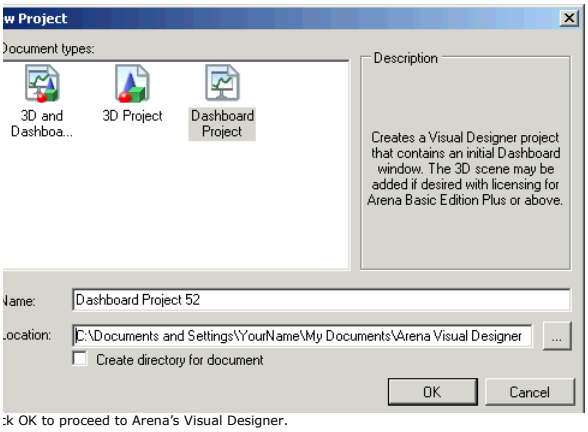
Dashboard Controls

Creating a Basic Dashboard

Arena Visual Designer's dashboards are customizable graphic display windows for presenting business information and statistics. Graphs, data, charts, text or images are placed in containers in the workspace to present important business reporting from disparate sources in a concise visual display. This content may deliver both static and dynamic information that can enhance business presentations and aid in decision making.

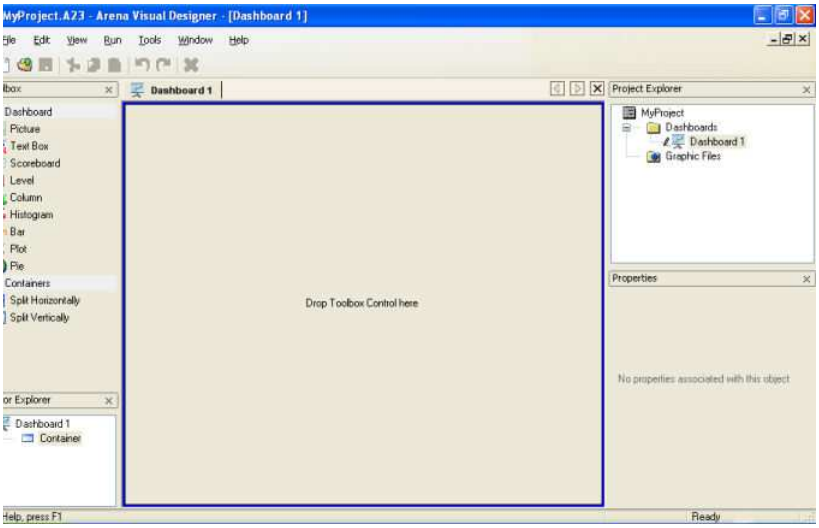
With an existing Arena model open, go to Tools/Arena Visual Designer to start the application or click the Arena Visual Designer icon ( ).

en Arena Visual Designer opens, the application prompts you to name the project. Visualization projects are saved with an .a23 file extension. The default name is the name of the current Arena model h the .a23 extension. The default directory is the same as the current directory of the saved Arena model. It is recommended that visualization projects be saved to the same directory as the ociated Arena .doe model file. Only one Visual Designer project may be open at a time for editing.



k OK to proceed to Arena's Visual Designer.

For new Visual Designer projects, the initial dashboard window (shown below) is displayed with "Drop Toolbox Control here" shown in the center of the dashboard. On the left are the Toolbox and tor Explorer and on the right are the Project Explorer and Properties window. Use the Toolbox to design the layout and to add controls to the Dashboard.



The dashboard may be segmented to hold multiple containers by dragging the Split Horizontally ( ) or Split Vertically ( ) controls into the Dashboard container window. Alternatively, segment dashboard by placing the mouse pointer in the dashboard window, right-clicking and selecting either the Split Horizontally or Split Vertically options.

To remove containers from a dashboard, place the mouse pointer in the dashboard container that should be removed. Right-click and select the Delete Container option.

Once the dashboard has been set up to an initial format, drag and drop controls from the Toolbox into the containers. When a Dashboard container is selected, it is highlighted by a blue line. Select a trol from the Toolbox and drag it into the container. A control will be placed only in a selected container.

Once a control is placed, the properties associated with it can be edited in the Properties window. Refer to the Related Topics below for more information on each dashboard control type.

To run a dashboard, save the project and select Go from the Visual Designer Run menu. To activate the animation of the dashboards, you must start the model run from within Visual Designer.

As the Arena model runs, the dashboard will update simultaneously.

Once the model run has been completed, or you select Stop from the Run menu, you may resume editing the dashboard.

Remember as with all applications, it is wise to save your work frequently.

Related Topics

Adding Dashboards
Deleting Dashboards
Dividing Dashboards
Editing an Existing Dashboard
Using a Dashboard Project in Another Model
Dashboard Controls - Bar
Dashboard Controls - Column
Dashboard Controls - Histogram
Dashboard Controls - Level
Dashboard Controls - Picture
Dashboard Controls - Pie
Dashboard Controls - Plot
Dashboard Controls - Scoreboard
Dashboard Controls - Text Box

Home > Getting Started with Visual Designer > Dashboard > Adding Containers

Adding Containers

The *Containers* tools are used to divide a dashboard into more than one container. By default, each dashboard opens with a single container. The (gray) text in the container states "Drop Toolbox Control here" to help guide the user to create a dashboard.

Dashboards can be divided into separate containers by dragging the Split Horizontally ( ) or Split Vertically ( ) controls from the Toolbox to the dashboard or by right-clicking in the dashboard and select the option to split the container.

Related Topics

Adjusting Containers

Deleting Containers

Home > Getting Started with Visual Designer > Dashboard > Adding Dashboards

Adding Dashboards

To add a dashboard:

Dashboards are added in the Project Explorer. If the Project Explorer is not visible, click View/Tool Windows/Project Explorer.

Right-click the Dashboard folder within the Project Explorer and select Insert Dashboard to add a new dashboard.

Related Topics

Deleting Dashboards

Dividing Dashboards

Editing an Existing Dashboard

Using a Dashboard Project with Another Model

Dashboard Controls - Bar

Dashboard Controls - Column

Dashboard Controls - Histogram

Dashboard Controls - Level

Dashboard Controls - Picture

Dashboard Controls - Pie

Dashboard Controls - Plot

Dashboard Controls - Scoreboard

Dashboard Controls - Text Box

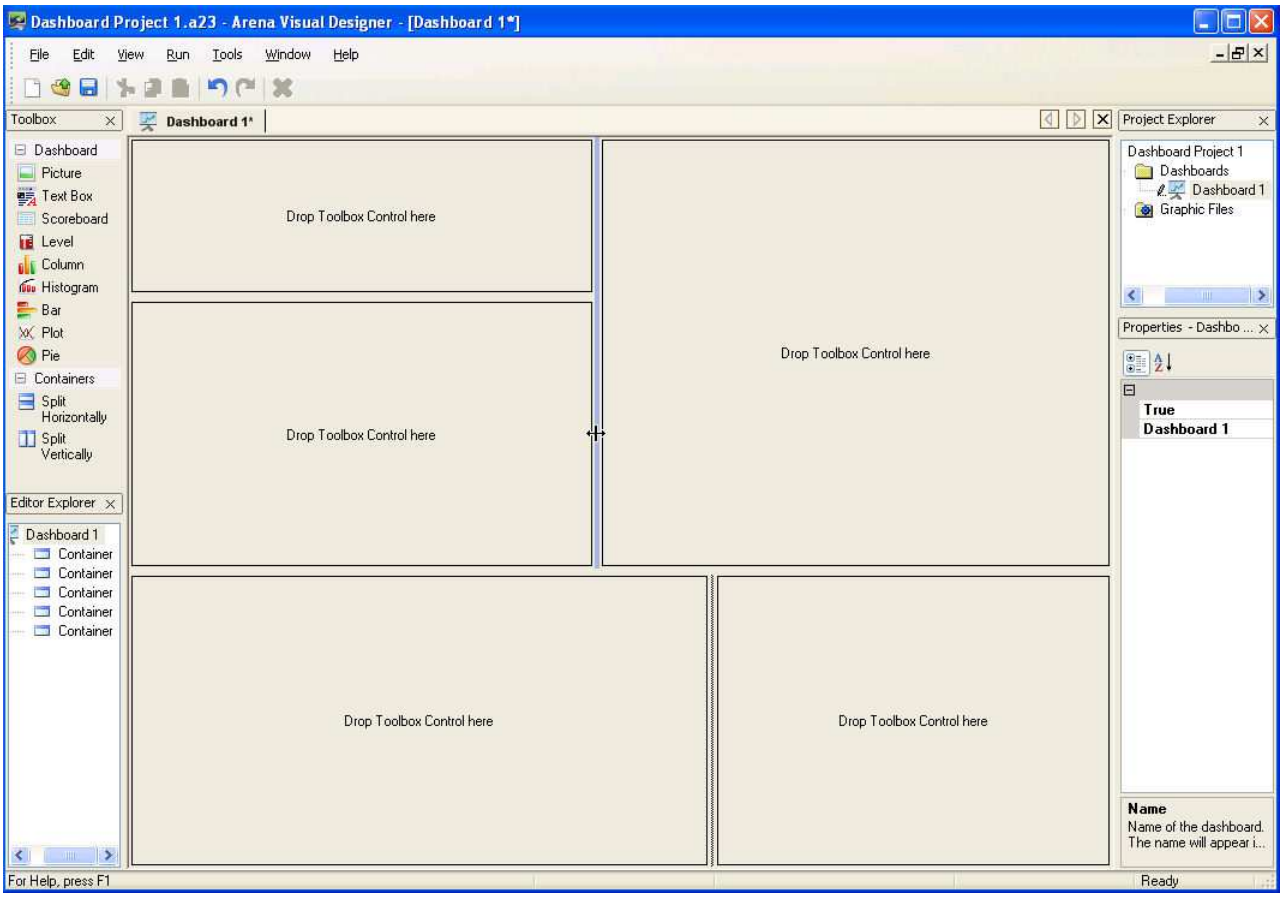
Home > Getting Started with Visual Designer > Dashboard > Adjusting Containers

Adjusting Containers

Containers may be resized by dragging the splitter bar between containers. The overall height of one container split vertically is relative to the height of the adjacent vertical container. You cannot set the overall height of a "row" to be different from other containers within the same row. Similarly, the width of a subdivided container will remain equal to the width of the corresponding horizontal partition.

The original container in the dashboard shown below was first split horizontally, then further divided with additional vertical and horizontal partitioning. You can see that the "top" row has been divided into 3 containers and the "bottom" row has two. Hovering over the separation between containers reveals the splitter bar used to alter the size of the container, as shown by the vertical blue line and two-way arrow between the containers in the top row.

It is suggested that you add one more container to your dashboard during the design phase so that you have an empty container available in case you wish to change the placement of the dashboard controls. Controls may be dragged into an open container, thus retaining the defined dashboard properties and also avoiding overwriting one control with another. The extra container can be deleted once your dashboard design is complete.



Related Topics

Adding Containers

Deleting Containers

Home > Getting Started with Visual Designer > Dashboard > Deleting Containers

Deleting Containers

To remove containers from a dashboard, place the mouse pointer in the dashboard container that should be removed. Right-click and select the Delete Container option.

Related Topics

Adding Containers

Adjusting Containers

Home > Getting Started with Visual Designer > Dashboard > Deleting Dashboards

Deleting Dashboards

Dashboards are removed in the Project Explorer. If the Project Explorer is not visible, click View/Tool Windows/Project Explorer.

Select the dashboard to be removed and right-click to select the Delete option.

Visual Designer will prompt with the question, "Are you sure you want to remove the node 'Name of Dashboard?" To permanently delete the dashboard, select Yes. To keep the dashboard, select No. ce dashboards are removed, they cannot be recovered unless earlier versions of the dashboard project were saved (and not overwritten).

Related Topics

Adding Dashboards

Dividing Dashboards

Editing an Existing Dashboard

Using a Dashboard Project with Another Model

Dashboard Controls - Bar

Dashboard Controls - Column

Dashboard Controls - Histogram

Dashboard Controls - Level

Dashboard Controls - Picture

Dashboard Controls - Pie

Dashboard Controls - Plot

Dashboard Controls - Scoreboard

Dashboard Controls - Text Box

Home > Getting Started with Visual Designer > Dashboard > Dividing the Dashboard into Containers

Dividing the Dashboard into Containers

Dashboards can be divided into separate containers by dragging the Split Horizontally ( ) or Split Vertically ( ) controls from the Toolbox to the dashboard or by right-clicking in the dashboard and selecting the option to split the container.

Related Topics

Adding Dashboards

Adjusting Containers

Deleting Dashboards

Editing an Existing Dashboard

Using a Dashboard Project with Another Model

Dashboard Controls - Bar

Dashboard Controls - Column

Dashboard Controls - Histogram

Dashboard Controls - Level

Dashboard Controls - Picture

Dashboard Controls - Pie

Dashboard Controls - Plot

Dashboard Controls - Scoreboard

Dashboard Controls - Text Box

Home > Getting Started with Visual Designer > Dashboard > Editing an Existing Dashboard

Editing an Existing Dashboard

Start Arena, open the desired model and then start Visual Designer. A Visual Designer project will open that will be associated with the model.

IMPORTANT: When editing an existing dashboard, it is recommended that the model file associated with the dashboard be opened first. Doing so makes it easier to reference the model when updating expressions and information that is directly tied to the model data.

If multiple dashboards exist, use the Project Explorer to navigate between the dashboards or select the tabs associated with the dashboard nodes.

The Editor Explorer can be used to navigate within a dashboard from one control to another or the controls can be selected directly to edit.

Only the containers that are highlighted, with or without controls, can be edited.

Related Topics

Adding Dashboards

Deleting Dashboards

Dividing Dashboards

Using a Dashboard Project with Another Model

Dashboard Controls - Bar

Dashboard Controls - Column

Dashboard Controls - Histogram

Dashboard Controls - Level

Dashboard Controls - Picture

Dashboard Controls - Pie

Dashboard Controls - Plot

Dashboard Controls - Scoreboard

Dashboard Controls - Text Box

Home > Getting Started with Visual Designer > Dashboard > Manipulating Dashboard Windows During the Model Run

Manipulating Dashboard Windows During the Model Run

When a model is running, the user can view information in the individual dashboards by clicking on the tabs within Visual Designer.

If using one monitor with a computer system, use Alt-Tab to switch between the Arena application and Visual Designer, or reduce the size of one of the applications to view information simultaneously.

If using two monitors, the Arena application or Visual Designer can be displayed separately on each monitor.

To maximize the dashboard displays as the model runs, close the various Tool windows.

Related Topics

Running Your Model and Dashboard

Home > Getting Started with Visual Designer > Dashboard > Using a Dashboard with Another Model Project

Using a Dashboard Project with Another Model

Upon completion, a Dashboard visualization project can be used with another model. To copy a Dashboard project:

1. Open the Arena Visual Designer project (.a23 file).
2. Save the project under a new name by selecting File/Save As.
3. Select the new project name from the Project Explorer and then go to the Properties tool.
4. In the Properties tool, change the name of the file listed for the Arena File field.
5. Save the model with the new model association and proceed.
   a. It may be necessary to adjust expressions and test the project with its new model association to ensure that the animation is updated correctly. For example, if Scoreboard animation is used, be sure that all referenced variables are contained within the model to which it is linked.

Related Topics

Adding Dashboards

Deleting Dashboards

Dividing Dashboards

Editing an Existing Dashboard

Toolbox

Home > Getting Started with Visual Designer > Scene

Scene - Learn how to create 3D animations!

Learn more about how to create realistic 3D animations of your Arena model. The series of How-To topics will guide you through many of the basic steps of enhancing your simulation with 3D animation.

Related Topics

Getting Oriented in the 3D Scene

Navigating Around the 3DScene

Using the Helper Object

Animating Entities

Animating Global Variables

Animating Resources

Animating a Queue

Creating a Route

Creating Views

Custom Animation

Defining a Background Image

Importing 2D Static Objects

Importing 3D Static Objects

Setting Up a Views Config and Running Your Animation

Scene Controls

Home > Getting Started with Visual Designer > Scene > Getting Oriented in the 3D Scene

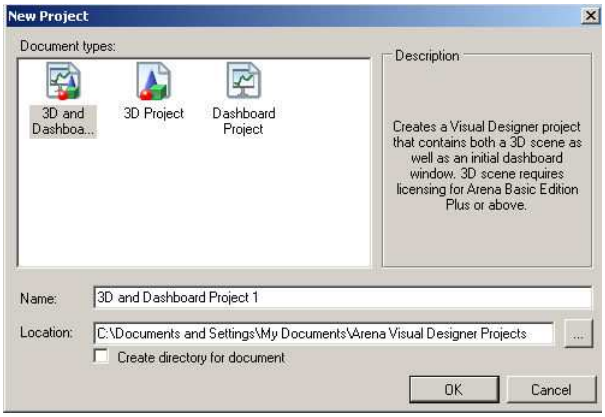
Getting Oriented in the 3D Scene

With an existing Arena model open, go to Tools/Arena Visual Designer to start the application or click the Arena Visual Designer icon ( ).

You will be prompted to select the project type from these three options:

- 3D and Dashboard Project
- 3D Project
- Dashboard Project

Select the 3D Project or 3D and Dashboard Project. The application prompts you to name the project. Visualization projects are saved with an .a23 file extension. The default name is the name of the current Arena model with the .a23 extension. The default directory is the same as the current directory of the saved Arena model. It is recommended that visualization projects be saved to the same directory as the associated Arena .doe model file. Only one Visual Designer project may be open at a time for editing.



Click OK to proceed to Arena's Visual Designer.

1. For new 3D Visual Designer projects, the initial Scene window is displayed in perspective view. On the left are the Toolbox and Editor Explorer and on the right are the Project Explorer and Properties window.

2. Use the Toolbox to drag and drop generic instances of Animation Objects (Entity Pictures, Global Variables, Queues and Resources), Static Objects (2D and 3D Images), Transfer Animation Objects (Paths, Stations and Storages) into the Scene.

3. The Editor Explorer will provide a hierarchical listing of the current objects in your Arena model. For example, if you have defined resources in your project, select Animated Objects folder and then expand the Resources folder. You will see a list of all the resources in your Arena model. If a Resource has not yet been placed in your scene, the icon will appear gray.

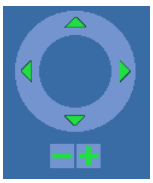
4. The 3D environment is drag and drop. You can drag controls from the Toolbox into the scene and then define them using the Properties. You can also drag objects from the Editor Explorer into the Scene and further define them using the Properties.

Note: Often there is more than one way to add, edit and move objects in your scene.

5. The toolbar at the top of the application allows you to change the view of the application as you design your scene. You can design in the Orthogonal view (top down), the Perspective view or a split view. Refer to the topic View Menu - Scene options for additional information on Split View, View Synchronization, Perspective View and Ortho View.

6. Use the hand icon (camera mode) to move around a scene in Ortho and Perspective views. Use the arrow icon (edit mode) to select objects and edit them in the scene.

7. You can also use the Helper Objects to move around the scene. Refer to the topic View Menu - Scene options for additional details on the Ortho and Perspective view Helper Objects.



You now have a basic understanding of the 3D scene environment and how to navigate.

Related Topics

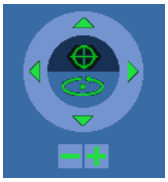
For other Scene getting started tips, see the list in Scene - Learn how to create 3D animations!

Home > Getting Started with Visual Designer > Scene > Navigating Around the 3D Scene

Navigating Around the 3D Scene

Moving around the scene is easy. You can use the helper object embedded in the scene or the mouse to navigate in the Perspective, Ortho and Split views.

When in Perspective view ( ), use the helper object below to move around the scene.



1. With move mode highlighted ( ) use the arrows to move up, down, left and right in the scene.

2. Now select the rotate mode ( ). Use the arrows to rotate the scene up, down, left and right.

3. Zoom in and out using the (-) and (+) icons.

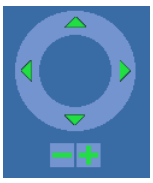
4. You can also move around the scene by simply using your mouse. Be sure you are in Camera Mode ( ). To change from Edit mode to Camera mode (or vice-versa), double left-click the mouse.

5. Holding the left button, move the mouse forward, backward, left and right to move around the scene.

6. Holding the scroll wheel, move the mouse forward and backward to rotate the scene down and up. Move the mouse left and right to rotate the scene right and left.

7. Zoom in and out with your mouse using the scroll wheel. To zoom in on a specific object in the scene, simply hover the hand over the object and advance the scroll wheel forward.

When in Ortho view ( ) and Split view ( ), use the helper object below to move around the scene.



1. Select the up, down, left and right arrows to move in the respective directions in the orthogonal view.

2. Similar to perspective view, zoom in and out using the (-) and (+) icons.

3. You can also move around the scene by simply using your mouse. Change to Camera Mode.

4. Holding the left button, move the mouse forward, backward, left and right to move around the scene.

5. Similar to perspective view, zoom in and out with your mouse using the scroll wheel. To zoom in on a specific object in the scene, simply hover the hand over the object and advance the scroll wheel forward.

Home > Getting Started with Visual Designer > Scene > Using the Helper Object

Using the Helper Object

Helper objects in Visual Designer are used to navigate in the scene and to edit objects in the scene. There are two main categories of helper objects: Scene and Edit Object.

Scene Helper Object

This widget is used to navigate and move throughout the 3D scene. It is located in the top right of the Scene when in Edit mode. Depending on the current view, the Scene Helper Object will vary slightly.

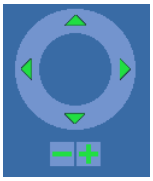
When in Perspective view ( ), use the helper object below to move around the scene.

	Indicates Move mode in Perspective view. You can use the arrows to move up, down, left and right in the scene
	Indicates Rotation mode in Perspective view. Use the arrows to rotate the scene up, down, left and right.
-/+	Zoom in and out or use your mouse scroll wheel

Perspective view mouse movements:

- Holding the left button, move the mouse forward, backward, left and right to move around the scene.
- Holding the scroll wheel, move the mouse forward and backward to rotate the scene down and up. Move the mouse left and right to rotate the scene right and left.
- Zoom in and out with your mouse using the scroll wheel. To zoom in on a specific object in the scene, simply hover the hand over the object and advance the scroll wheel forward.

When in Ortho view ( ) and Split view ( ), use the helper object below to move around the scene.



arrows	Use the arrows to move up, down, left and right in the scene
-/+	Zoom in and out or use your mouse scroll wheel

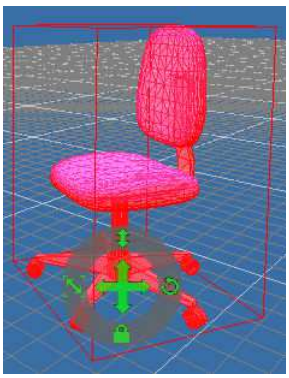
Ortho view mouse movements:

- Holding the left button, move the mouse forward, backward, left and right to move around the scene.
- Similar to perspective view, zoom in and out with your mouse using the scroll wheel. To zoom in on a specific object in the scene, simply hover the hand over the object and advance the scroll wheel forward.

Edit Helper Object

This widget is used to edit objects (animated objects, static objects, transfer animation objects) in the scene. The Edit Helper Object will vary slightly depending on the type of object being edited.

When in Edit Mode ( ) and you select an object in the scene, the Edit Helper Object will appear, overlaying the object, similar to the example below:



Helper Object edit controls include:

	Lift Up/Down	Allows you to adjust the location of the object in the Z coordinate.
	Orientation	Allows you to rotate the object in the scene.
	Lock	Locks the object within the scene.
	Unlock	Unlocks the object within the scene. Since you cannot select the object when it is locked, use the Editor Explorer to locate your object then select this icon.
	Resize	Allows you to resize the object.
	Resize All	Allows you to resize all states in the assigned style class. This icon will display when editing Resources, Entities and Global Variables.
	Move	Use this icon to change the location of the object in the scene.

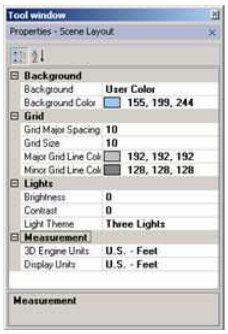
Related Topics

Navigating Around the 3D Scene

Defining Your Scene Scale

The Scene Layout includes properties for defining the scale of the 3D model. Adjusting the measurement settings allows you to design your model to an exact scale or simply to have a visual reference to approximate object size relationships.

To begin, start with the Scene Layout Properties:



Measurement properties include 3D Engine Units, Display Units, Grid Major Spacing and Grid Size.

3D Engine Units specifies the unit of measure that is mapped to the base graphic units of the application's 3D engine.

The Display Units item specifies the display units used for all measurement properties related to the scene. Changing this property converts all current measurement properties to the newly specified units.

Grid Size relates the size of each grid cell to the specified Display Unit size. This value is not updated when the Display Units size is changed, only the relationship to the unit of measure changes.

Grid Major Spacing is the number of grid cells between the major grid lines.

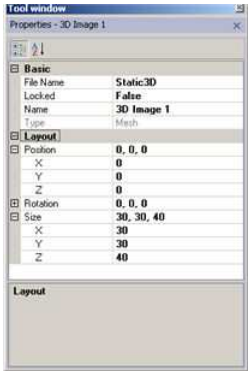
By default the Grid Size is specified as 10 and in this case since US Feet are defined as the Display Units, each grid represents a 10 foot x 10 foot square area.

For ease in scaling the 3D animation, it is recommended that the project's base units of measure and grid spacing be defined before building your scene.

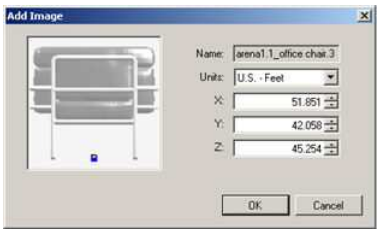
Scaling objects:

The size of Visual Designer 2D and 3D objects from the Toolbox can be defined. As seen below, in the Properties of a 3D object, you can specify the X, Y and Z size of the object. The object will not be distorted, so if you are importing a man who is standing, you can specify that he is 6 ft tall in the Z field and the X and Y components will be adjusted appropriately. You cannot distort the image and define his height at 6 ft and his width as 10 ft. So when importing objects, you can start by specifying the field that is easiest to define—for example, the height of a person, building or tree (Z component) or the width (X or Y components) of a road surface, room or conveyor.

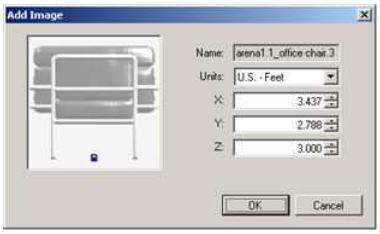
The default properties for a 3D Object in Visual Designer are shown below.



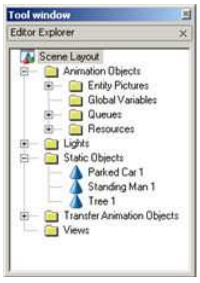
When a 3D image is imported, a dialog box will appear initially that allows the object to be scaled before it is dropped into the scene. For example, if a 3D object is dragged into the scene and a 3D file of an office chair is selected, the following dialog box will appear before the new 3D object replaces the default 3D object:



The units for the chair are define as feet, however, a review of the size indicates this is one very large chair for the scene. It may be best to define the Z component as perhaps 3 in order to have the object imported at a more realistic size. To do this, just use the arrows to reduce the size of the Z component or remove the existing value and type in the value 3. Once this is done, you can hit the Tab key and all the other values will be adjusted accordingly.



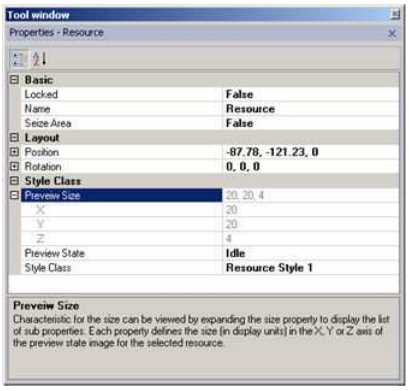
When you want to use the same 3D object repeatedly, it is wise to scale the object to suit the 3D animation needs before placing the first instance. That object can then be used as a baseline and copies of it can be dragged into the scene from the Editor Explorer window. Examples of 3D objects in the Editor Explorer below include Parked Car 1, Standing Man 1 and Tree 1. 2D Objects behave in a similar manner.



Scaling Arena Animation Objects and Arena Transfer Objects

Arena Animation Objects

The size of Arena Entity Pictures, Global Variables, and Resources cannot be changed from the Properties tool. The Preview Size is only available for you to view in order to have the object sized accordingly; it is recommended that the Helper Object be used to size the object appropriately. The Preview Size can be referenced to help determine if the resizing is correct for the scene.



A Queue size is determined by the starting and ending points. Attention to the area around the queue and the entities that will be held in the queue should be taken into consideration in order to ensure that the queue and the objects around them will be portrayed realistically.

Arena Transfer Objects

Queues, Paths, Stations and Storages are referenced by position. The grid lines can be used to specify the location of the stations and storages as well as to make sure that the paths are an appropriate length.

The grid lines can be used to help adjust the width of the paths when line patterns are defined.

Related Topics

Importing 2D Static Objects

Importing 3D Static Objects

Home > Getting Started with Visual Designer > Scene > Improving 3D Graphic Performance

Improving 3D Graphic Performance

What key factors affect animation?

There are many things that can affect how your animation is rendered.

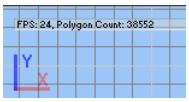
First, the level of complexity in the animation view combined with the polygon count of the 3D objects can slow down the animation. This is a common issue with all 3D engines. It is advised that when purchasing images or creating them for your 3D animation that the polygon count of the 3D animation be kept to a minimum.

What is the polygon count? When a 3D image is created, it is normally composed of triangles or other polygons. Generally, the frame of the object is created first and then a skin/texture is placed over them. See the image below for a glimpse at the polygons used to create the shape of a man.

Your images may not always appear exactly as you see them rendered in a 3D modeling application such as 3D Max Studio or Maya. Many of these professional tools have advanced computer graphic effects such as shaders and anti-aliasing. The Visual Designer application must render a picture of a scene many times a second. Configuring advanced shaders to smooth some animation components would be paid for in animation speed and hardware requirements. As a result, some objects, such as people, will look most natural using texture maps as opposed to simply colored polygons.

When creating any images, it is important to keep the number of shape polygons to a minimum because the animation can be slowed down considerably if you have many animated objects that each have a high polygon count.

Arena Visual Designer contains a tool that tracks the total polygon count of the model scene during edit mode. The Polygon Count marker is displayed in the upper left-hand corner of either the orthogonal or perspective.



Tips and advice for best 3D graphics performance

1. Frames Per Second (FPS). Pay attention to the FPS (displayed in the top left corner of the scene). For smooth animation during the simulation run, the FPS should not drop much lower than 15. The animation frame delay in the run setup can also be adjusted to improve performance.

2. Polygon Count. Keep the polygon count (displayed in the top left corner of the scene) as low as possible. You will see better graphic performance when the entire scene polygon count is less than 2 million. In run mode your polygon count will vary depending on how many entities are in the system at a given point in the simulation.

3. Graphics Card. Your computer's graphics card plays a key role in 3D animation performance. As a general rule of thumb, the better the graphics card is for gaming, the better it will be for Visual Designer. See System Requirements for additional details regarding hardware requirements.

*FPS and polygon count are dependent variables that also depend on your computer's hardware.

Tips for keeping the polygon count low

1. Repeating 3D objects, such as resources and entities, should have polygon counts of 5,000 polygons or less. For example, you may have a manufacturing facility with 20 machines and hundreds of

widgets moving throughout. If your machine object is detailed with 50,000 polygons, it quickly adds up when you use this image 20 times in the scene - 1,000,000 polygons total! One entity with a high polygon count might perform fine when the Visual Designer is running. Add hundreds of entities moving through the simulation and you will experience performance issues.

2. Create one large 3D object that contains the scene detail rather than many individual static objects. This does require access to 3rd party 3D drawing tools such as Google SketchUp or 3ds Max.

Port Model.a23 in the Examples folder is uses this technique. If you select the PortLiman static object in the Editor Explorer you will see that the port it one big object. All detail of the land, piers, containers and more were developed in a separate 3D application and dropped into Visual Designer as one large .3ds object.

3. Apply detail methodically. If you attempt to model every aspect of your scene to the smallest level of detail, you will pay the price in speed and simulation performance. Objects that the viewer will see from a far should not be objects with high polygon count. Use higher polygon objects strategically.

4. Use 2D images to make an impact. 2D images have very low polygon counts and can make a huge impact in your scene. For Example, instead of placing 3D trees in your scene, explore using a 2D image.

5. Use 2D images in combination with Google SketchUp to create custom, low polygon objects. You may not have a 3D object of an item you want to animate, but you do have a 2D picture. Create a simple box in Google SketchUp and apply the 2D image as a texture on this object. You can now drag and drop this into Visual Designer. Use it as a resource, entity, global picture or static object in the scene. See also Custom Animation .

6. When building a large scene always keep in mind that simpler is better.

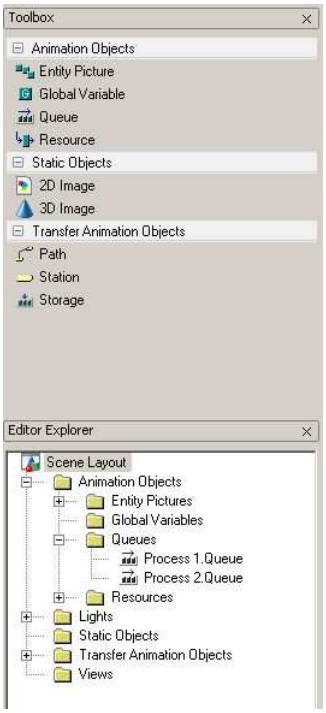
7. Be creative and have fun!

Home > Getting Started with Visual Designer > Scene > Animating Queues

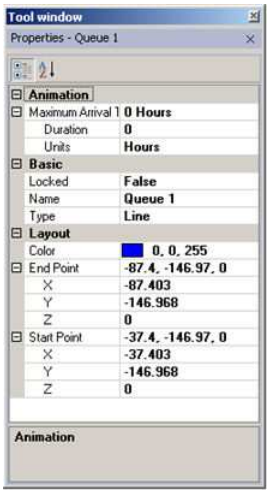
Animating Queues

1. The queues defined in your model can be found in the Editor Explorer when you browse Animation Objects>Queues. Drag and drop the queue you want to animate from the Editor Explorer into the scene.

Note: You can also drag a Queue from the Toolbox into the scene and use the Properties to define the specific queue you want to animate.



2. With the Queue selected, use the Properties window to adjust Queue characteristics. Queue changes can include making a Line-type queue into a Point-type queue, adjust positioning of queue, modify the animation speed as well as rotate the entity direction at each point of a point queue.



3. You can select and move individual points on the queue by holding the Ctrl key and selecting the point in edit mode. With the point selected, you can move the point to a new position in the scene.

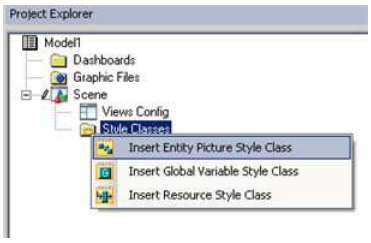
Related Topics

Animation Objects - Queue

Animation Objects

Animating Entities

1. The first step in animating your entity is to create a style class that will store your entity pictures. In the Project Explorer, right-click on Style Classes and select Insert Entity Picture Style Class.
What are Visual Designer Style Classes and why are they necessary?



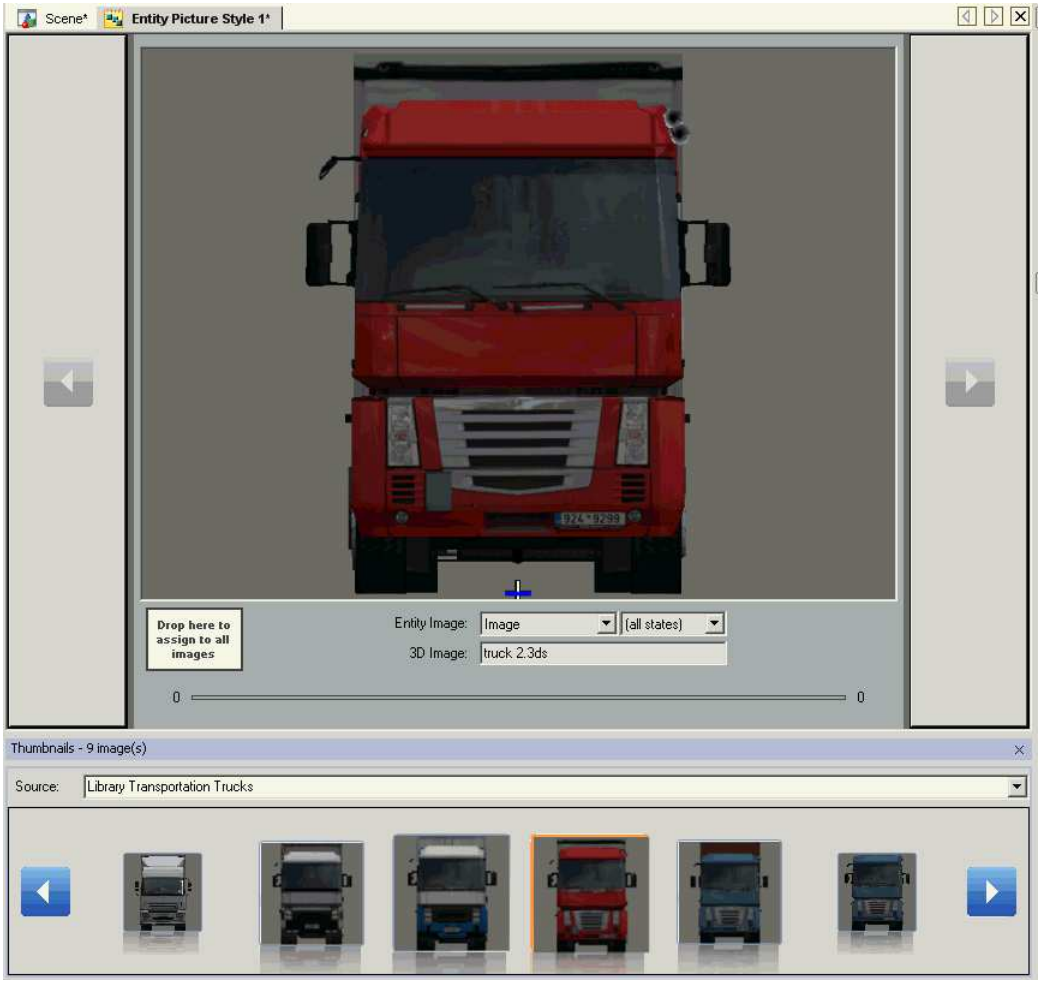
2. You can assign a picture using the Thumbnails Tool Window (View>Tool Windows>Thumbnails) or using Properties and pointing to a specific File. If you open the Thumbnails and browse to a folder with 3D objects, you will be able to view the image before you drag and drop it to assign your entity picture.

3. For more advanced entity animation, you can assign different images depending on the state of the entity. For example, you may want a person to appear as if they are walking along a route (in Transfer state). Another image may be required when they are in the queue waiting for the resource (in Queue state). You may want to change the appearance when they are then seized by the resource (in Seize Area state). Right-click on the image in the Editor Explorer and select Split to sub-states.

4. You can now choose a specific sub-state (in Transfer, in Seize Area, in Storage and in Queue) and assign a unique image. Arena Visual Designer supports animated meshes to allow for realistic entity animation by state. This means you can assign a specific animation sequence to each state.

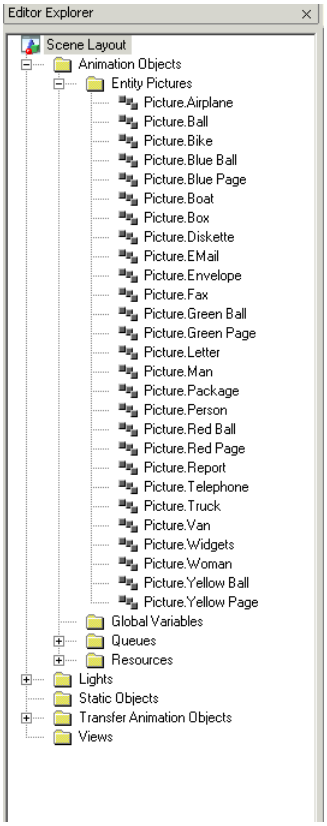
5. You may want to rename your style class to provide a more meaningful identification in the Properties window

6. Once you have assigned your entity picture(s), you can close out of the style class by selecting the "X" in the top-right of the style class window. You can re-open your style class at any time by navigating the Project Explorer and Style Classes folder.

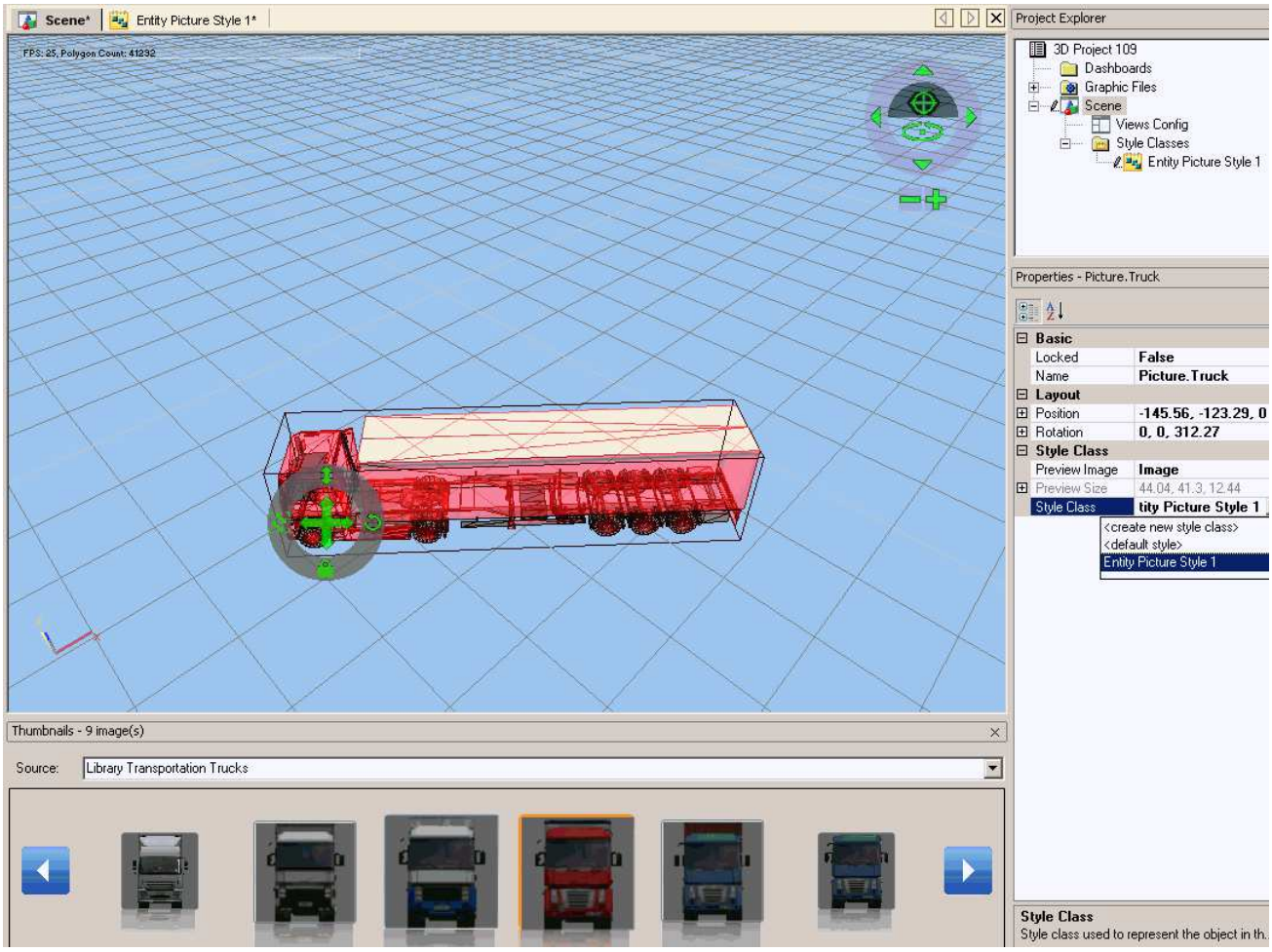


7. In the Scene, drag and drop your entity picture from the Editor Explorer. Entity pictures in your project will be listed under Animated Objects>Entity Pictures.

Note: There are multiple ways to do the same thing when creating your 3D Scene. You also could drag and drop the entity picture from the Toolbox into the scene. If you create your entity this way, you will need to make sure you specify what entity picture you are animating by using the properties.



8. In edit mode ( ) select the entity picture. Use the properties to assign the entity picture to the style class you just created.



9. You have now assigned an image to your entity picture.

Note: You will need to create a Views Config before you can run your model and see animation.

Related Topics

Animation Objects - Entity Picture

Style Class Properties

Animation Objects

Scene - Learn how to create 3D animations!

Scene Window Overview

Setting Up a Views Config and Running Your Animation

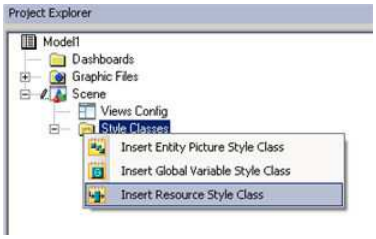
Toolbox

Home > Getting Started with Visual Designer > Scene > Animating Resources

Animating Resources

1. The first step in animating your resource is to create a style class that will store your resource pictures. In the Project Explorer, right-click on Style Classes and select Insert Resource Style Class.

What are Visual Designer Style Classes and why are they necessary?

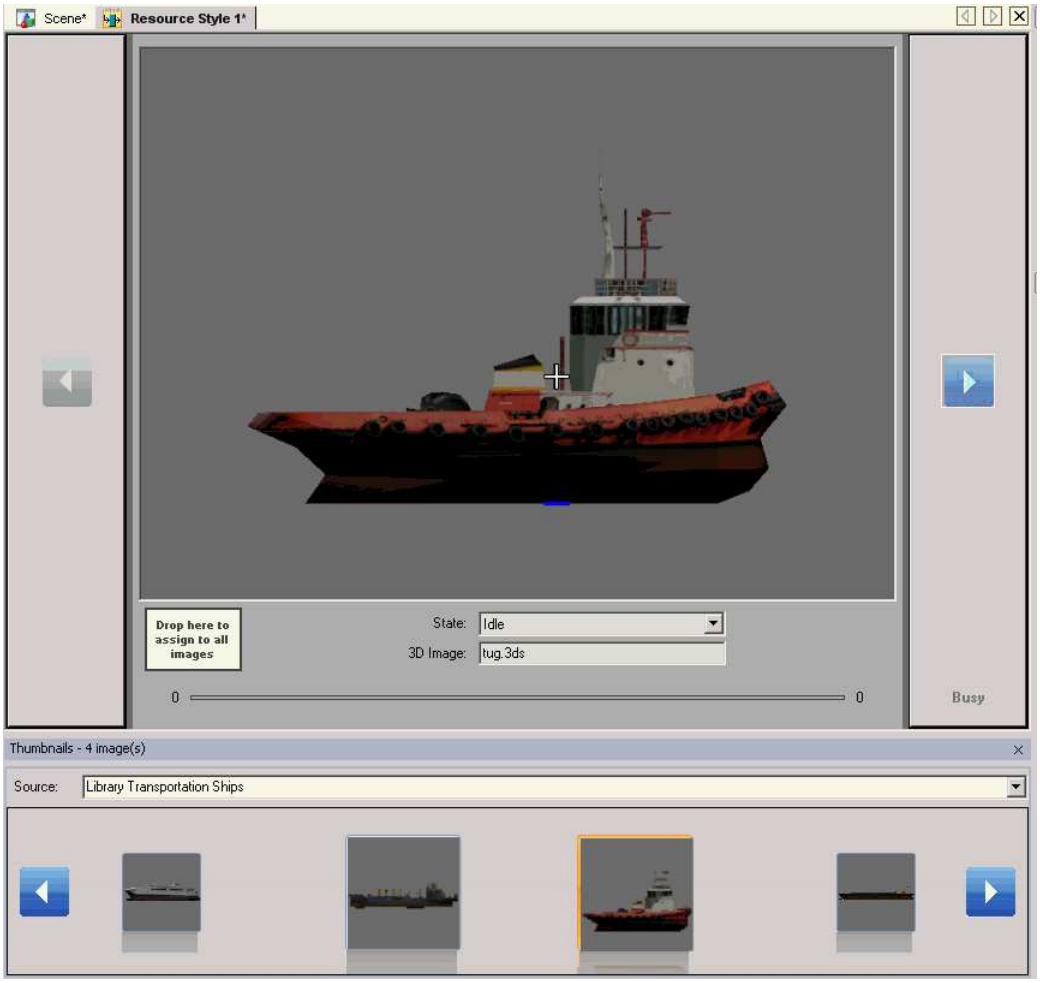


2. You can assign a picture using the Thumbnails Tool Window (View>Tool Windows>Thumbnails) or using Properties and pointing to a File. If you open the Thumbnails and browse to a folder with 3D objects, you will be able to view the image before you drag and drop it to assign your resource picture.

3. There are several ways to change the resource state you are assigning. Use the arrows on the left and right in the resource view to change the state, or use the State drop-down. You can also select the state using the Editor Explorer.

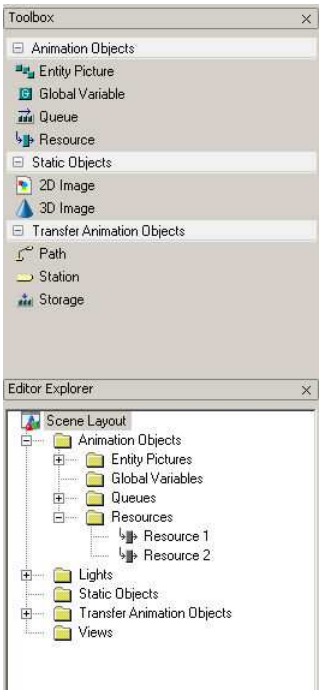
4. You may want to rename your resource style class to provide a more meaningful identification. You can change the name using the Properties Window.

5. Once you have assigned your resource pictures, you can close out of the style class by selecting the "X" in the top-right of the style class window. You can re-open your style class at any time by navigating the Project Explorer and Style Classes folder.

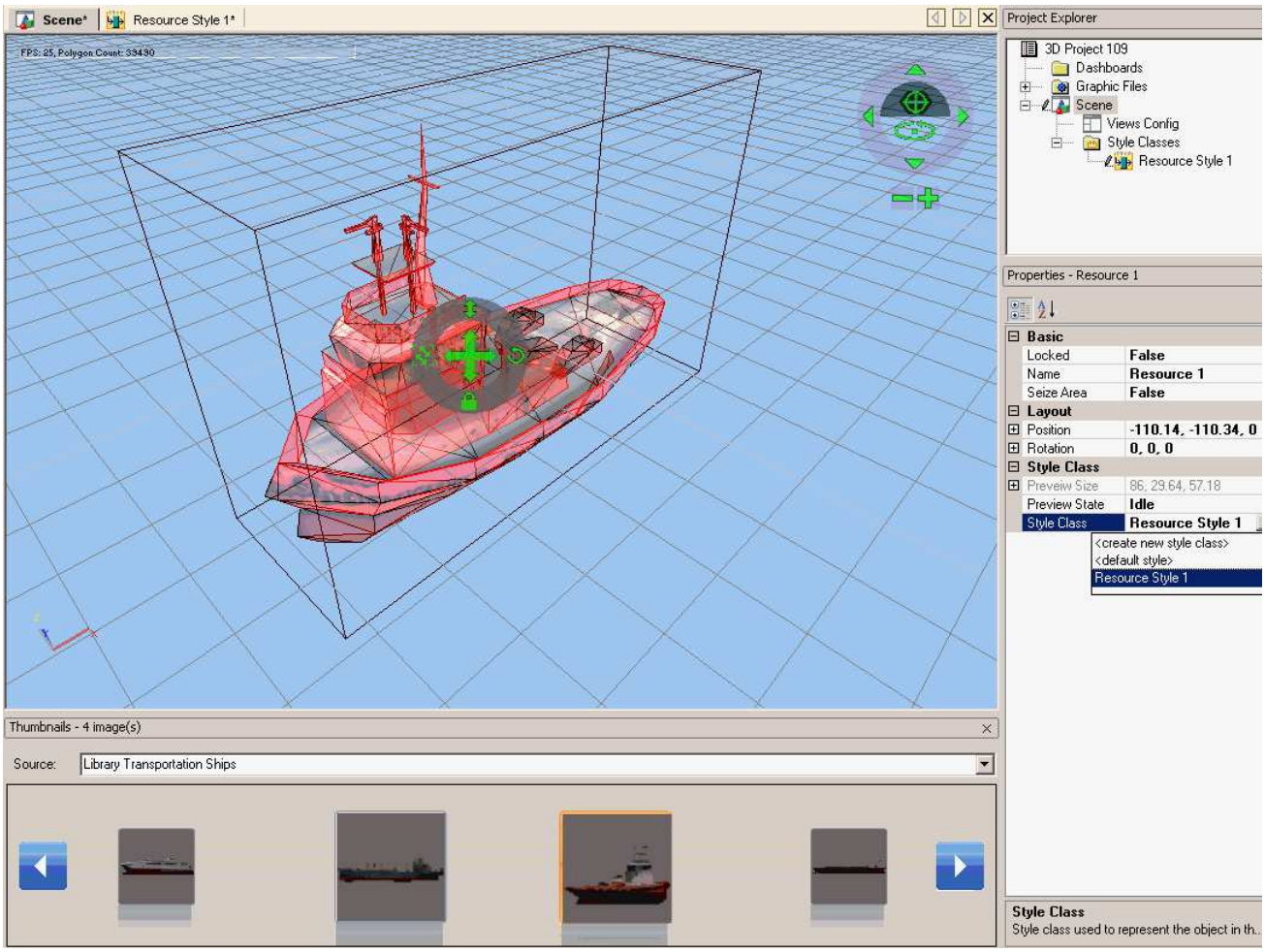


6. In the Scene, drag and drop your resource from the Editor Explorer. Resources in your project will be listed under Animated Objects>Resources.

Note: There are multiple ways to do the same thing when creating your 3D Scene. You also could drag and drop the Resource from the Toolbox into the scene. If you create your resource this way, you will need to make sure you specify what Resource you are animating by using the Properties.



7. In edit mode ( ), select the Resource. Use the Properties to assign the resource to the style class you just created.



8. You have now assigned a picture to your Resource.

Related Topics

Animation Objects - Resource
Style Class Properties
Animation Objects
Scene - Learn how to create 3D animations!
Scene Window Overview

Setting Up a Views Config and Running Your Animation
Toolbox

Home > Getting Started with Visual Designer > Scene > Animating Global Variables

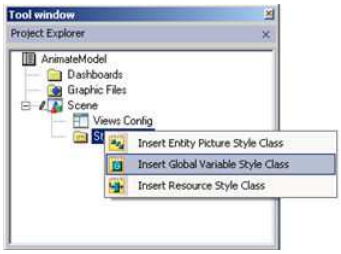
Animating Global Variables

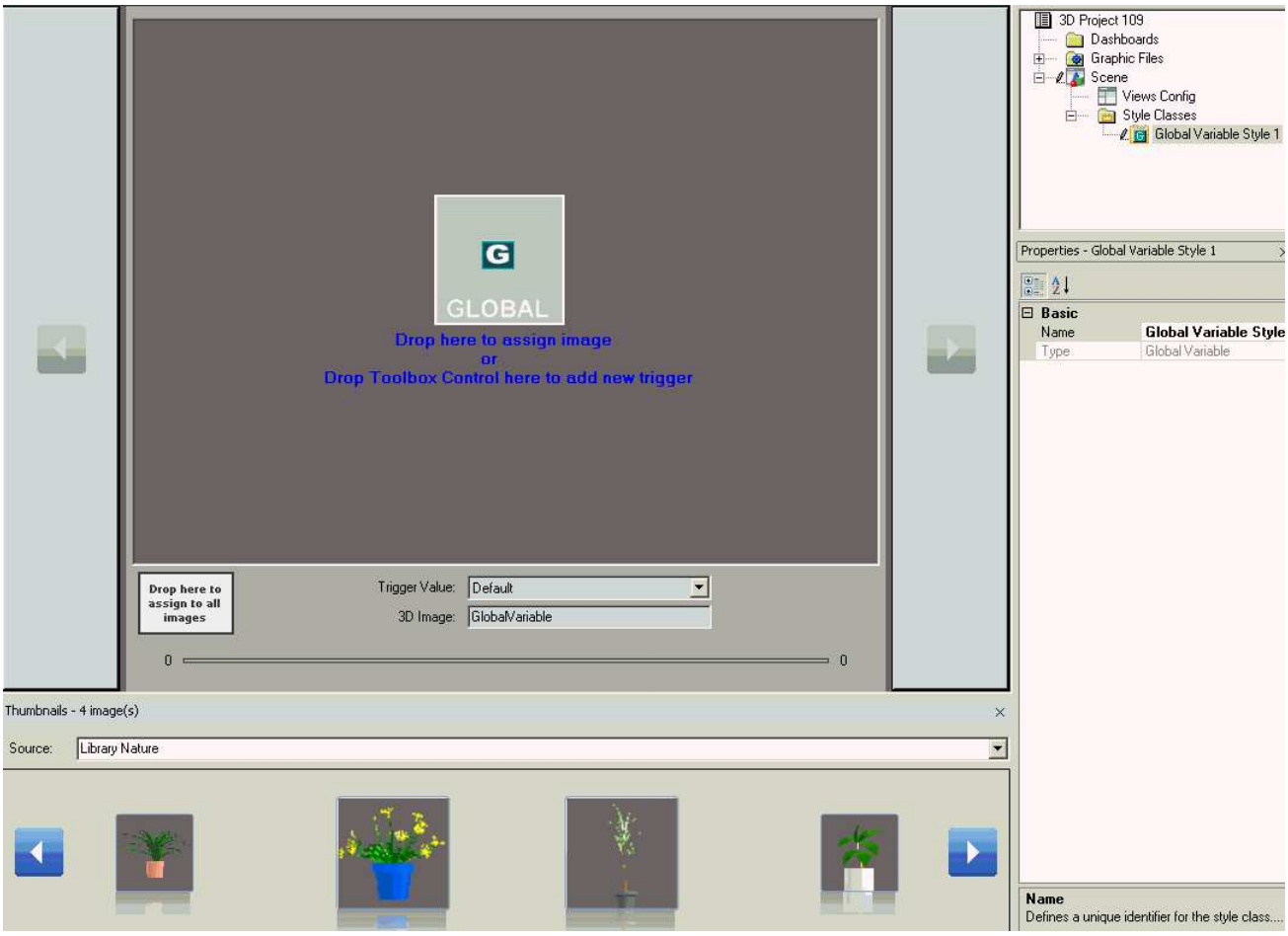
Arena uses Global Variables to animate an object based on the values of an expression. An example of an object to animate is a stop light. Based on the value of an expression, the light can be animated to be Red, Yellow, or Green. The instructions below step through animating a Global Variable and creating Global Variable Style Classes within Arena Visual Designer.

What are Visual Designer Style Classes and why are they necessary?

1. Begin animating a Global Variable, by dragging a Global Variable from the Toolbox into the scene or by defining the Style Class for the Global Variable. For this example, the Style Class is defined first.

From the Project Explorer, right click on the Style Classes listing and select Insert Global Variable Style Class to open the Global Variable Style editor to automatically open the Global Variable Style editor.





2. By default, only a default trigger value is defined. That value can be changed using the Properties toolbar when each Trigger Value is in view. The example below shows how the trigger values are assigned using the Properties toolbar.

The following properties can be assigned for each Trigger Value using the Properties tool window.

File Name – The name of the image file associated with the style class member selected.

Trigger Value – Characteristic for the trigger value can be changed by expanding the property to display the list of sub- properties, visible when the style class Type is Global Variable.

Type – This can be defined as Default, Fixed or Range. Type indicates whether the image will be triggered by a numeric range, by a fixed numeric constant or string or the default. Default specifies that the images will be displayed when none of the other trigger values are valid.

3. To add more trigger values, drag and drop a Trigger control from the Toolbox.

Drag an instance of Trigger Value into the Global Style Class window to add triggers.

4. As each trigger is added, the Editor Explorer will reflect the additional triggers.

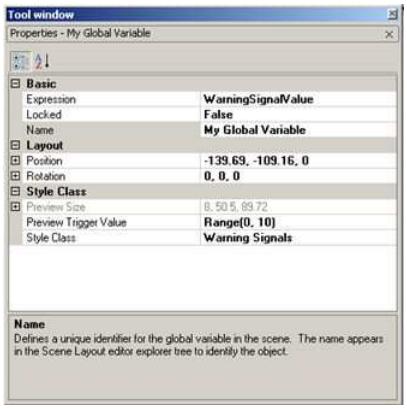
5. Pictures can be assigned to each trigger value using the Thumbnails tool window (View>Tool Windows>Thumbnails) to display images for selection or using Properties and pointing to a specific file. The images can then be dragged into the window.

6. To navigate from one trigger to another for a Global Variable, click on the left or right arrows, use the Trigger Value drop-down list, or select the triggers using the Editor Explorer.

7. The Global Variable style class name can be changed using the Properties toolbar.

8. Once you are finished editing a Global Variable Style class, you can close the editor window by selecting the "x" in the top right of the style class window. Re-open a style class at any time by navigating to the Project Explorer and Style Classes folder and clicking on the Style Class you wish to edit.

9. Drag and drop a Global Variable from the Toolbox into the Scene. From the Properties toolbar, define the Style Class and the Expression that will return the values to trigger the different animation. See the example below:



10. Once a style class is defined, it can be used with multiple Global Variables that are animated within Visual Designer. Any necessary changes or updates can be made simply to the Global Variable Style Class for them to be reflected in all Global Variables that reference that Style Class.

Related Topics

Animation Objects - Global Variable

Style Class Properties

Animation Objects

Scene - Learn how to create 3D animations!

Scene Window Overview

Setting Up a Views Config and Running Your Animation

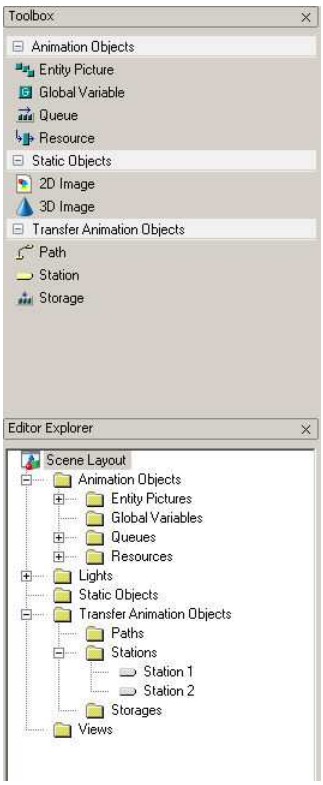
Toolbox

Home > Getting Started with Visual Designer > Scene > Creating a Path

Creating a Path

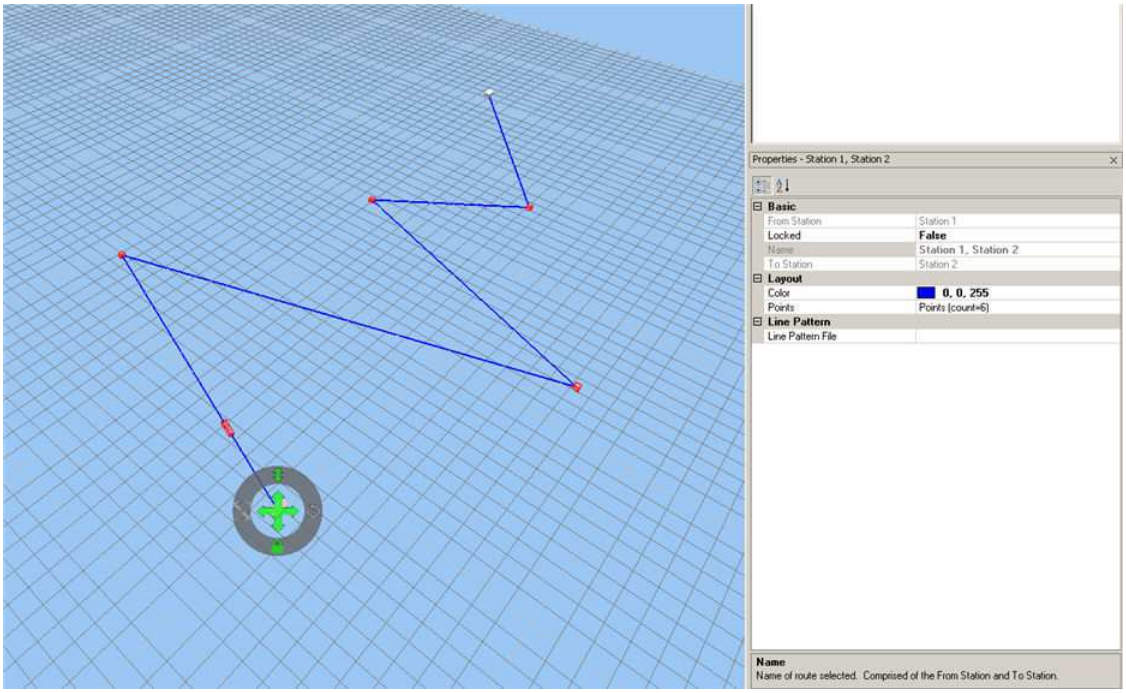
1. The first step in creating a path is to drag and drop your start station and end station in your scene. The stations you defined in your Arena project will be listed in the Editor Explorer, Transfer Animation Objects>Stations.

Note: You can also drag and drop your stations from the Toolbox. Remember to use the Properties to define your station.



2. Once you have placed your stations in the Scene, select the Path from the Toolbox. A crosshair icon will appear. Click on the station that will start the path. Move the mouse outside the starting location to a desired position and click again. Continue moving the mouse and clicking to draw the polyline that defines the path. When you have finished adding intermediate points in the path, click the ending station to complete the path placement.

3. In edit mode, you can select the path and use the Properties window to change characteristics. To move individual points on a path, hold the Ctrl key and select the point in edit mode. With the point selected, you can move the point to a new position in the scene.



Related Topics

Transfer Animation Objects - Path

Transfer Animation Objects - Stations

Transfer Animation Objects

Scene Window Overview

Setting Up a Views Config and Running Your Animation

Toolbox

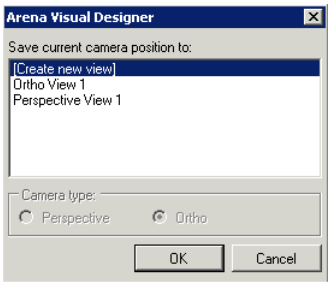
Home > Getting Started with Visual Designer > Scene > Creating Views

Creating Views

Views are saved camera snapshots taken for quick reference in your scene and for creating your animation. The "Save View" View ( ) is used to save the current camera position view displayed for the Scene window.

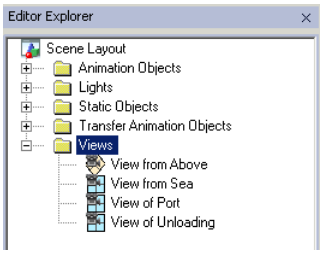
1. Move around the scene to a desired view that you would like to save for later reference.

2. To save this view, select the Save View icon. The dialog box show below will appear and contain a list of all existing view names as well as the option to Create new view. Click OK to create the new view. If you are currently in the Ortho View, the Camera type will be Ortho. If you are currently in Perspective View, the Perspective Camera type will be selected.



3. You will be prompted to name your view.

4. Your view will be listed in the Editor Explorer under Views. Icons help distinguish views captured in the Ortho view ( ) vs. Perspective view ( ).



5. Double-click on a desired view and the scene will adjust to that saved camera view.

Related Topics

Views

Setting Up a Views Config and Running Your Animation

Views Config Window Overview

Home > Getting Started with Visual Designer > Scene > Lights

Lights

The Lights folder contains all the lighting sources used in the scene. The amount and type of lighting is defined by the scene's "Light Theme" property. There are three light theme choices: three lights, two lights, and sun. If you select three lights or two lights, then the lights folder of the Scene Editor Explorer will display two or three lights. The characteristics of each light can be modified using the Properties tool window.

Light Property Descriptions:

Property Name	Valid Entry	Default	Description
Category - Basic			
Name	Read only	N/A	Name of light
Category - Colors			
Ambient Color	Color Offerings		Defines the ambient color for the selected light.
Diffuse Color	Color Offerings		Defines the diffuse color for the selected light.
Specular Color	Color Offerings		Defines the specular color for the selected light.
Category - Layout			
Position			Characteristic for the position can be changed by expanding the position property to display the list of sub properties. Each property defines the location in the X, Y or Z axis for the selected light.
X	Real		
Y	Real		
Z	Real		
Radius	0 – 10000		Defines the radius (in display units) of the illumination light cone for the selected light.

NOTE: Unlike the camera, there is no mesh representing the light in the scene. Therefore you cannot "Find Object in Scene."

Related Topics

Animation Objects

Static Objects

Transfer Animation Objects

Views

Home > Getting Started with Visual Designer > Scene > Custom Animation

Custom Animation

The Arena Visual Designer application does not include 2D or 3D design tools. It supports the import of graphic files in both animated 3D .x, .3ds and .skp file formats as well as 2D .bmp and .jpg file formats.

Where can I find images?

Some images are provided with the application, but in those cases where you need custom animation in addition to the images included with Arena Visual Designer, you can find suitable images on web sites such as those listed below.

Google Warehouse

The 3D Studio

TurboSquid

While some of these sites may provide free images, be sure to read their end user licensing agreements in order to ensure that you are using the images legally within your model.

Creating your own images

For those individuals who wish to create their own images, there are a number of different applications available that allow you to create images that you can use within Arena Visual Designer. Before downloading any new software to your computer, you are advised to check with your Information Technology Department first!

Creating 2D images

A camera! Yes, you can use a camera to take pictures that can be used in Visual Designer. The image must be in a .jpg format, but that image can be used either for 2D image imports or as a background image.

Microsoft Paint and Adobe PhotoShop are two mainstream applications that can also be used to create customized 2D images.

Creating 3D images

Google SketchUp may be one of the easier tools for a 3D animation builder. You may choose a free downloadable version or purchase a more complex tool for those who need more from their drawing package. Arena Visual Designer supports the .skp format that SketchUp creates.

AutoDesk and SolidWorks provide 3D design tools that can also be used to create 3D objects that can be saved in .3ds format.

If you are interested in using another application, be certain that the 3D design tool can write out a version of the file in .3ds format.

Related Topics

For other Scene getting started tips, see the list in Scene - Learn how to create 3D animations!

Home > Getting Started with Visual Designer > Scene > Defining a Background Image

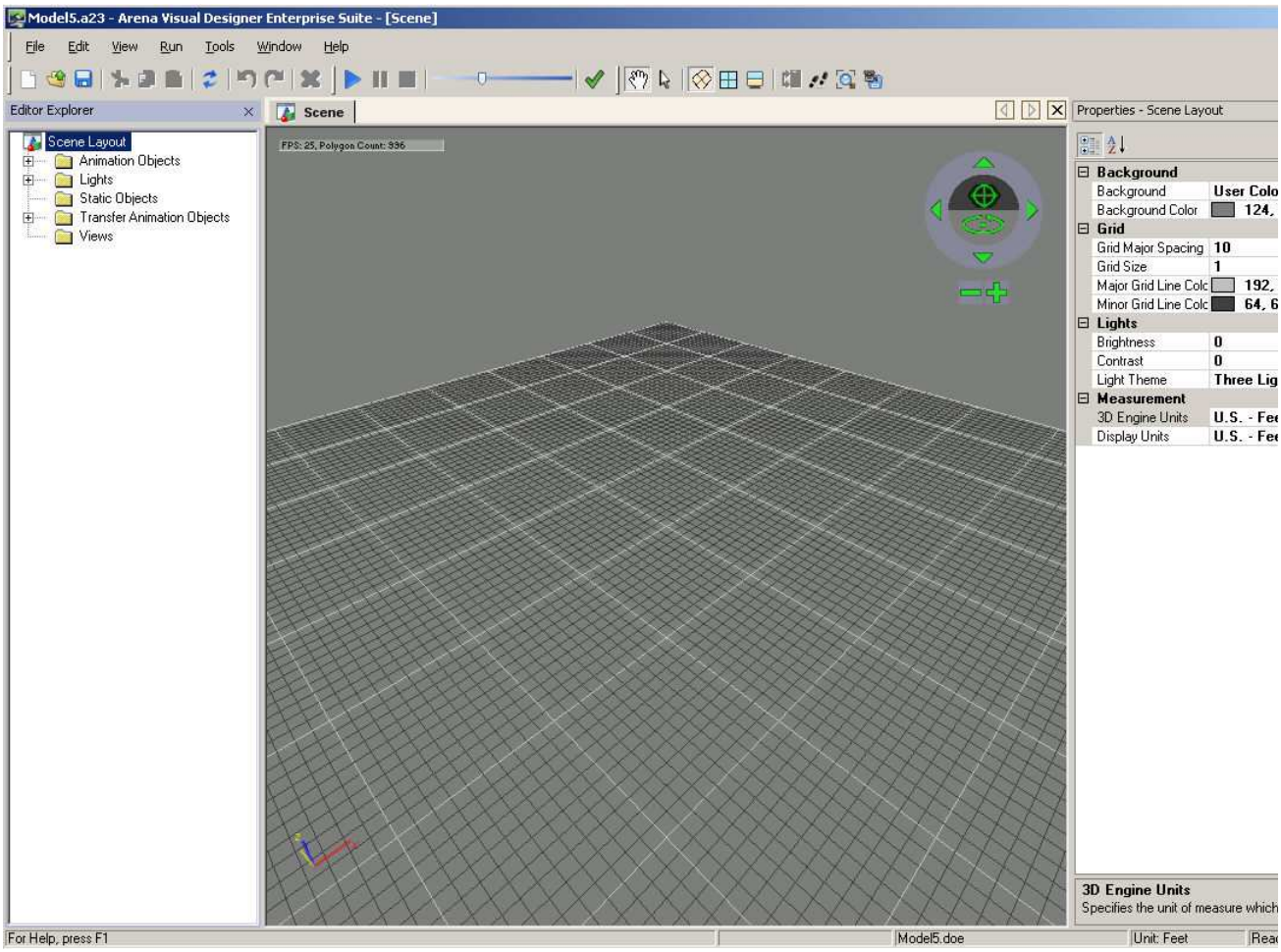
Defining a Background Image

Arena Visual Designer provides the ability to attach a background image for the simulation to create more realistic 3D animation. Depending upon the environment being simulated, a background image can help the scene look more realistic, like the sky or the interior of a building.

Outlined below are the steps for defining the background for the 3D animation.

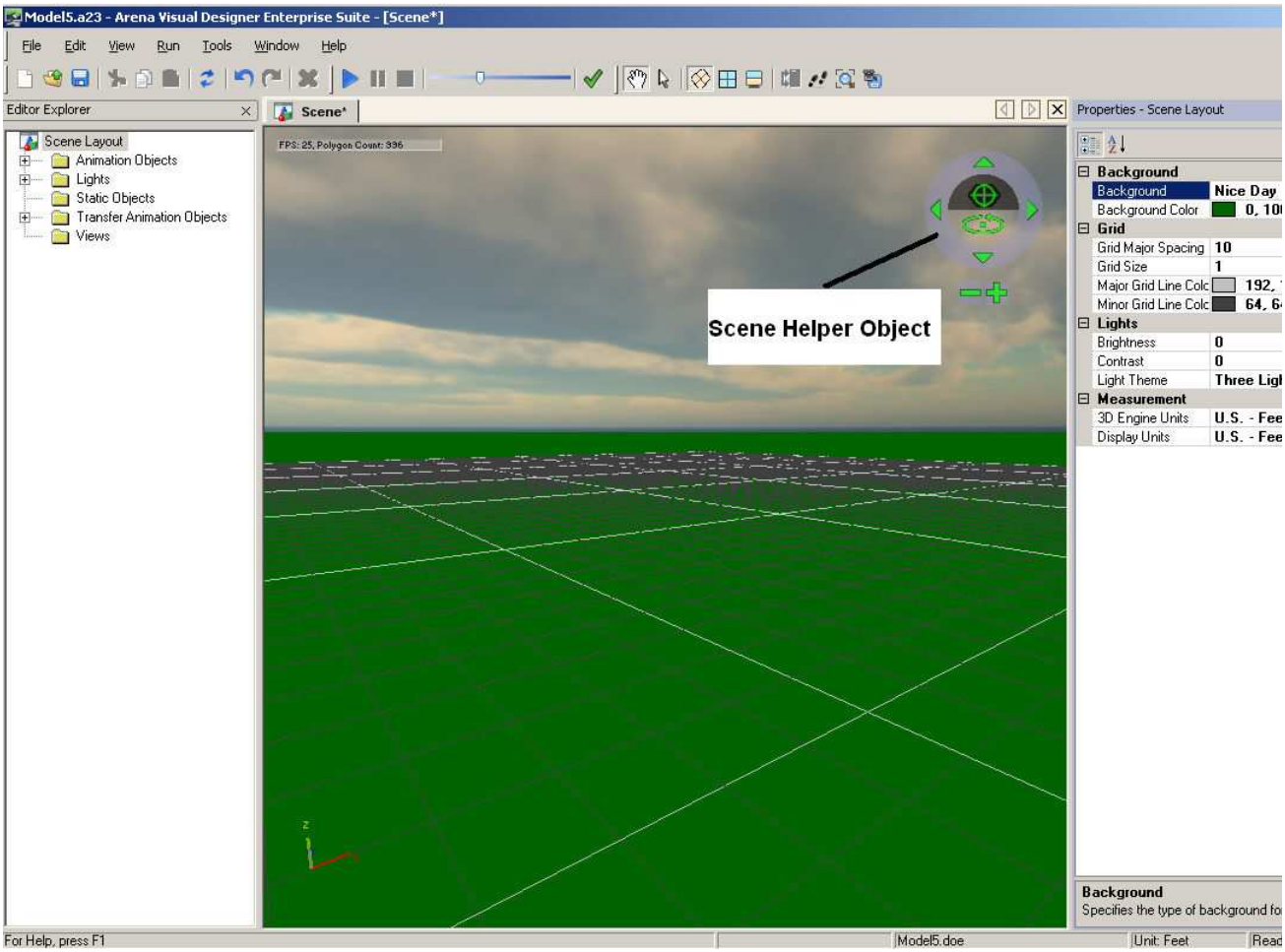
1. In the Editor Explorer, click Scene Layout or double-click within the scene to view the Scene Layout Properties in the Properties tool.

Shown below is the default scene background with only the Editor Explorer and Properties toolbar visible:



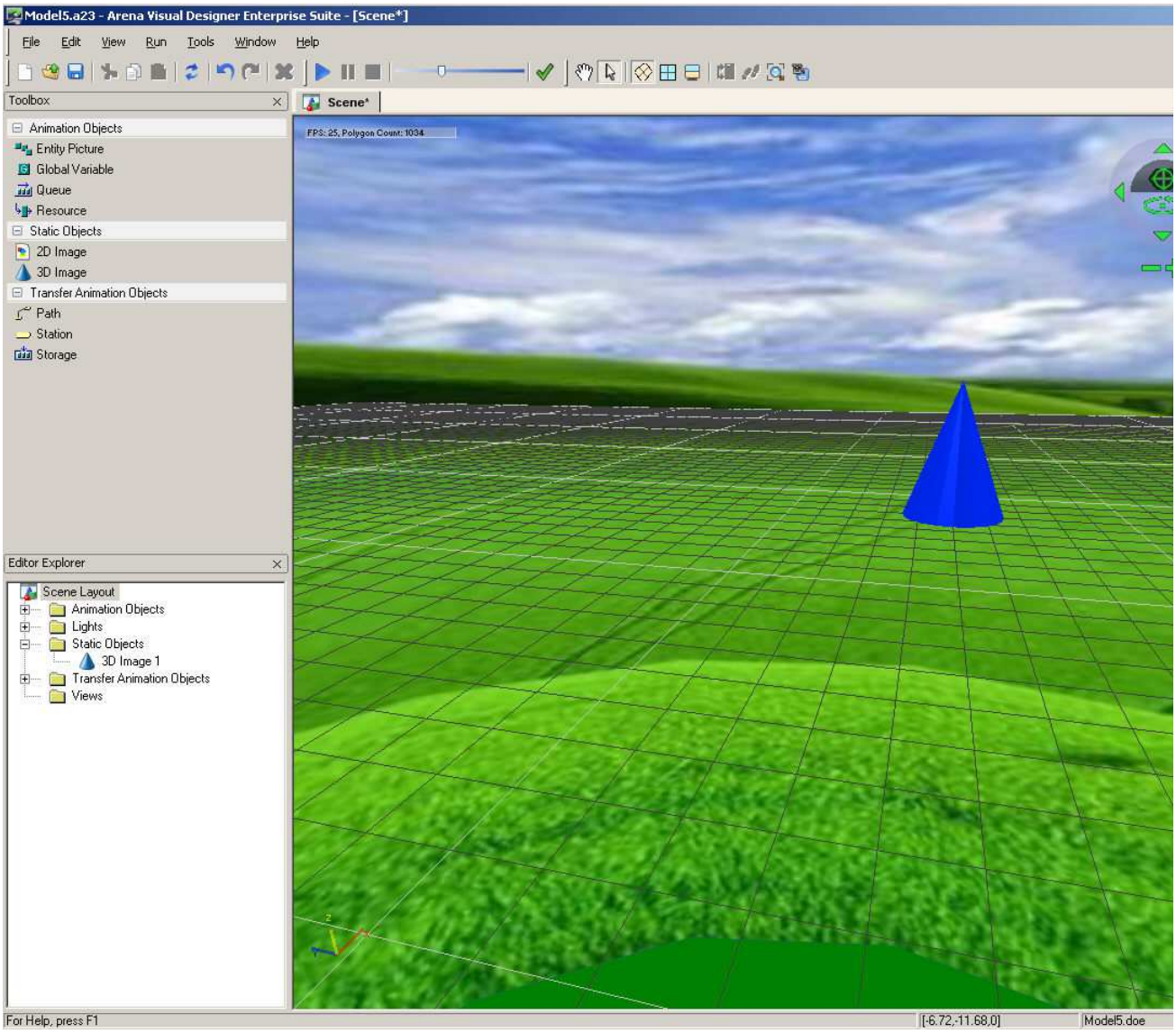
2. Within the Properties - Scene Layout editor, the Background options include two predefined images, Nice Day or Sunset, and User Color and User Texture, which allow you to define the color or browse for an image. User Color, Nice Day and Sunset have default settings, but the colors can be adjusted using the Background Color property and the setting will be applied to the entire background.

The image below shows the scene with the Nice Day background selected. When using the Nice Day and Sunset options, you may need to adjust your view to see the horizon. To adjust the view, click on the Scene Helper Object in the upper corner of the scene window. Select Rotate mode ( ) and then use the arrows to rotate the scene.

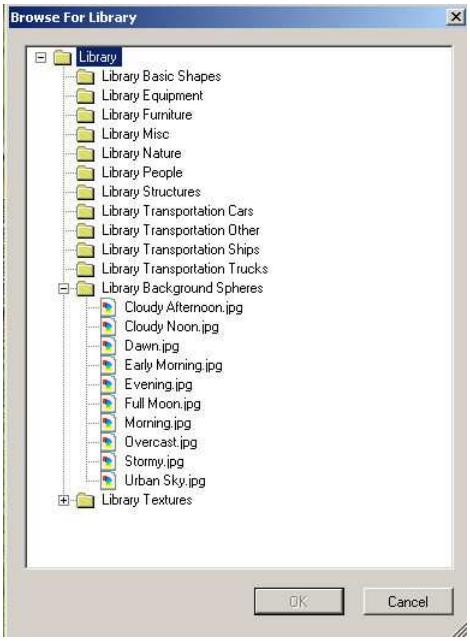


3. For a custom background, select User Texture to insert a graphic image (for example, a .jpg image of a factory wall or an outdoor scene). When User Texture is selected, these additional properties will be displayed: Background Image File, Background Sphere Percent and Background Texture Percent.

In the example below, a .jpg image, valleyscene.jpg, has been defined as the Background Image File. The Background Sphere Percent is defined at 76%, which means that from the very top (North Pole) of the animated world space, 76% is being covered with the image. Background Texture Percent is set to 100 in order to display the image uncropped. You may need to adjust both the Background Sphere and Texture percents in order to achieve the desired background look.



The Arena Image Library contains a folder called Library Background Spheres, where users can find additional sky backgrounds. From the Properties Select User Texture and in the Background Image field select Browse Library... Open the Library Background Spheres folder to select a new sky.



Related Topics

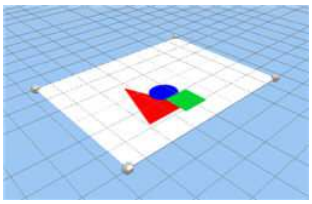
For other Scene getting started tips, see the list in Scene - Learn how to create 3D animations!

Home > Getting Started with Visual Designer > Scene > Importing 2D Static Objects

Importing 2D Static Objects

Follow these steps to import static 2D static objects into your Arena Visual Designer Scene.

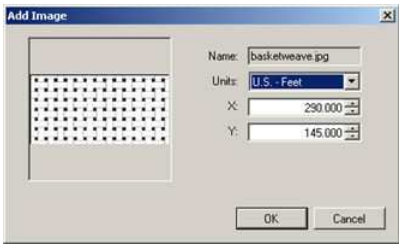
1. From the Toolbox, drag the 2D Image onto either the orthogonal or perspective view. By default a basic image will be placed on the grid within the scene.



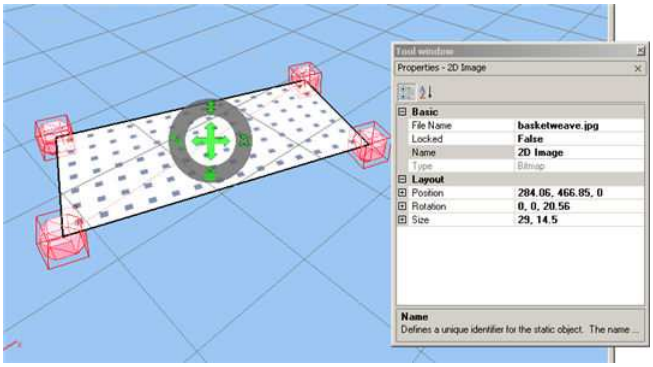
2. To import an image to replace the default, you must first select the default image to display the Properties tool for the object. In the Properties tool window, select the File Name description (i.e., Static 2D) to open the drop-down options for browsing for images on your computer. In the example below, a file was selected from one of the folders on the computer and the 2D image of a floor has been selected.

Note: You can also add a 2D object from the Thumbnails Tool Window (View>Tool Windows>Thumbnails). Select the Thumbnails "Source:" drop-down and "(Browse Folder…)" and open the folder where your 2D image resides. Predefined 2D Image Textures can be found by selecting "(Browse Library…)" and the Library Textures. Drag and drop the 2D preview from the Thumbnails into the scene.

The first screen will allow you to redefine the way the image is being imported and even the default units. See below:



Once the dialog box is complete, click OK to import the image. The new image will replace the default and the new characteristics of the object will be displayed in the Properties tool window, as shown below.



3. The basic properties of 2D objects include:

File Name - The options available are the ability to type in the name and location of the file, Browse a Library or Browse a Folder on the disk to search for images.

Locked – This field is either True or False and determines whether an object can be selected within the Scene. Locking objects in the scene will prevent them from being moved accidentally. If an image is locked, it must be selected from the Editor Explorer in order to unlock it.

Name – This is a unique identifier for the object, it is recommended that you type in an appropriate name for the object. This name will be visible on the Editor Explorer.

4. The object can be resized using the Properties window or, when the object is selected, the Helper Object can be used to resize, adjust placement, rotate and lock the object. Below is an example of the options available using the Helper Object.

Helper Object controls include:

 allows you to adjust the location of the object in the Z coordinate.

 allows you to rotate the object in the scene.

 locks the object within the scene.

 allows you to resize the object.

5. In the case where a 2D static object may be used more than once in a scene (for example, when placing anti-slip mats in a work area), the static object that has already been defined can be selected from the Editor Explorer and dragged and dropped into the Scene window. When this occurs, each image will receive a unique identifier using the original name defined but with the added numeric increment.

Order of Animation

In orthogonal view, 2D static objects located on the zero Z plane are rendered first. Then any paths with line patterns are drawn over the 2D static object. If this is not desired, alter the Z coordinate of the 2D static object to achieve the desired effect.

2D static images placed on top of an image point (3D objects used to define animation objects in the scene such as a station or route path midpoint) will go on the bottom of the image point unless it hits another object (e.g. another 2D or 3D image) or the ground first.

In perspective view under certain camera angles, any 2D plane (whether a 2D static object or a 2D plane of a 3D object) located on the same plane coordinate as another 2D plane my incur flickering in the areas where the planes overlap. To alleviate this effect, alter the plane coordinate of one of the overlapping items until the flickering is diminished.

Related Topics

Static Objects - 2D Image

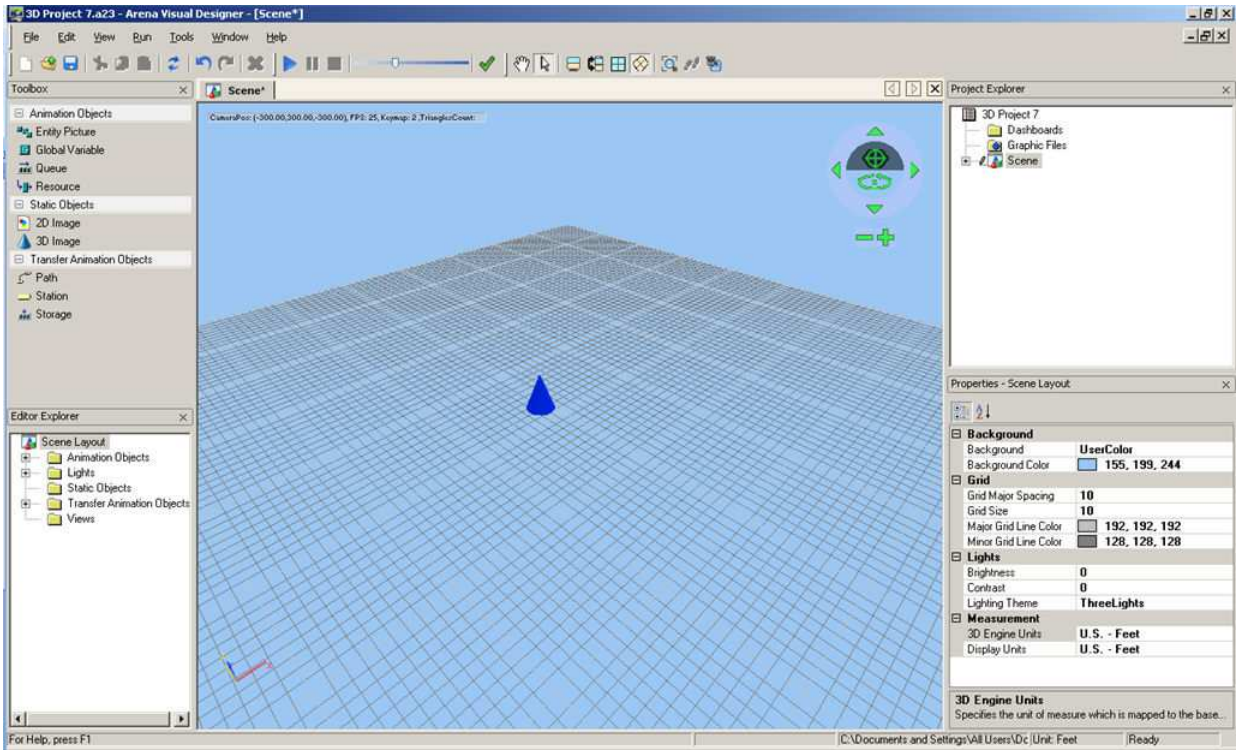
For other Scene getting started tips, see the list in Scene - Learn how to create 3D animations!

Home > Getting Started with Visual Designer > Scene > Importing 3D Static Objects

Importing 3D Static Objects

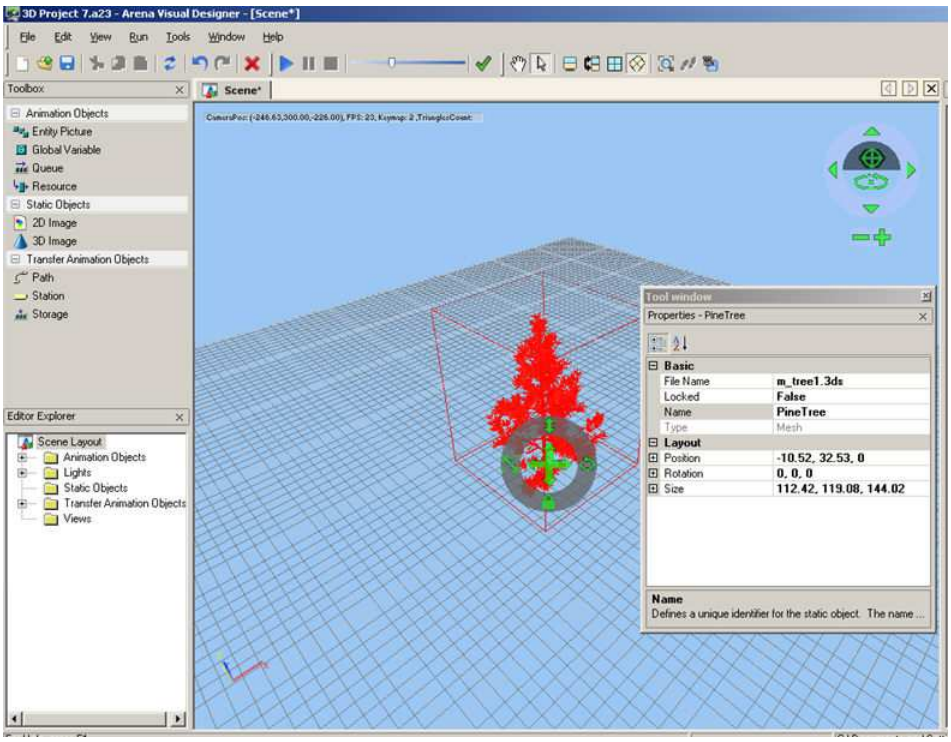
3D static objects can be imported into your scene by following the steps outlined below.

1. From the Toolbox, drag a 3D Image control onto either the orthogonal or perspective view. By default, a cone will be placed.



2. To replace the default image, click on the object in the scene to display it's Properties where you can modify the object. Using the File Name drop-down box, you can select any object already defined or you can browse your picture libraries or computer folders for a desired image. In the example below, a 3D image of a pine tree was selected from a computer folder. Note the Properties Tool Window has been moved for image clarity.

Note: You can also add a 3D object from the Thumbnails Tool Window (View>Tool Windows>Thumbnails). Select the Thumbnails "Source:" drop-down and "(Browse Folder...)" and open the folder where your 3D image resides. Predefined 3D Images can be found by selecting "(Browse Library...)" and selecting a desired Library. Drag and drop the 3D preview from the Thumbnails into the scene.



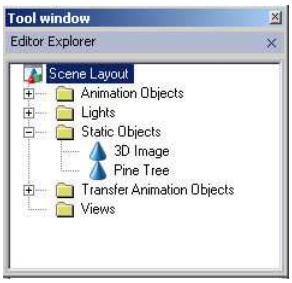
3. The basic properties of 3D objects include:

File Name – Displays the name of the selected image file associated with the object. You can select from the list of already defined objects, type in the name and location of the file, browse a picture library or browse a folder on the disk to search for images.

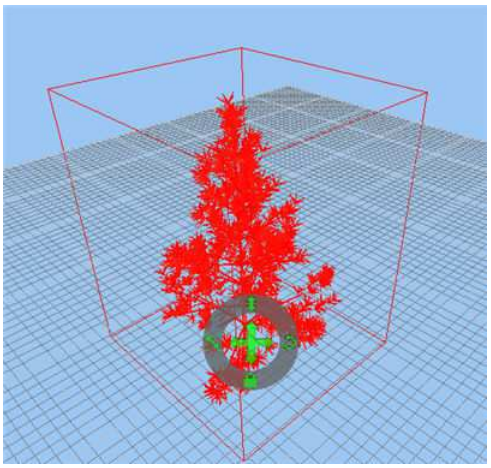
Locked – This field is either True or False and determines if an object can be selected within the scene. Locking an object prevents it from be moved accidentally. Once an image is locked, it must be selected from the Editor Explorer in order to unlock it.

Name – This is a unique identifier for the object, it is recommended that you type in an identifiable name for the object.

Once an object is imported and defined, it will appear in the Editor Explorer's list of static objects, as with the abovementioned "Pine Tree" object.



4. When an object is selected, it can be resized using the Properties box, or the Helper Object can be used to resize, adjust placement, rotate and lock the object. Below is an example showing the Helper Object for the selected tree object.

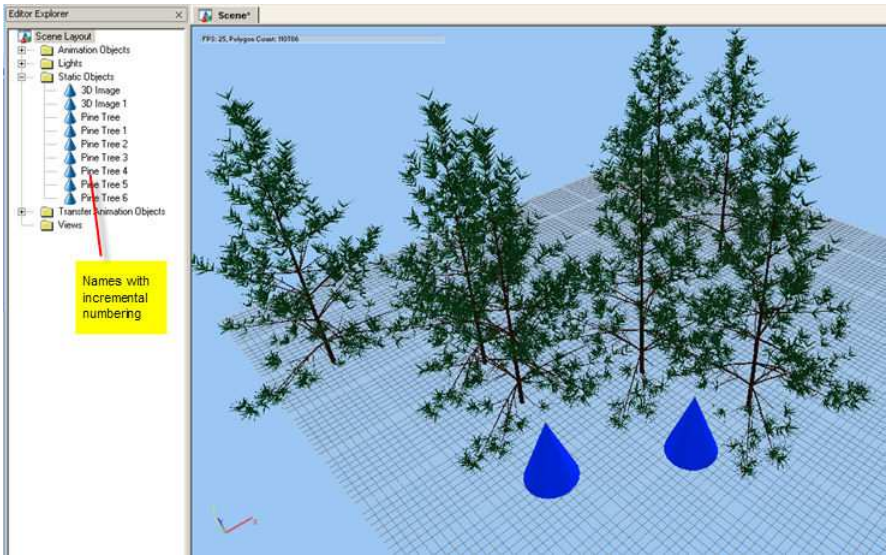


Helper Object controls include:

- allows you to adjust the location of the object in the Z coordinate.
- allows you to rotate the object in the scene.
- locks the object within the scene.
- allows you to resize the object.

5. A 3D static object that has already been defined can be selected from the Editor Explorer and dragged and dropped into the Scene for multiple placements, such as trees in a landscape, cars in a parking lot, or chairs in a waiting room. When this occurs, each image receives a unique identifier using the original name with a numeric increment appended to the name.

The example below shows how the original tree image was dragged into the scene multiple times. You will also notice that even the default 3D image can be used in the same manner.



Related Topics

Static Objects - 3D Image

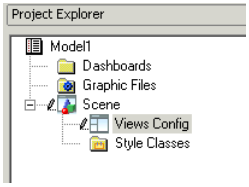
For other Scene getting started tips, see the list in Scene - Learn how to create 3D animations!

Home > Getting Started with Visual Designer > Scene > Setting Up a Views Config and Running Your Animation

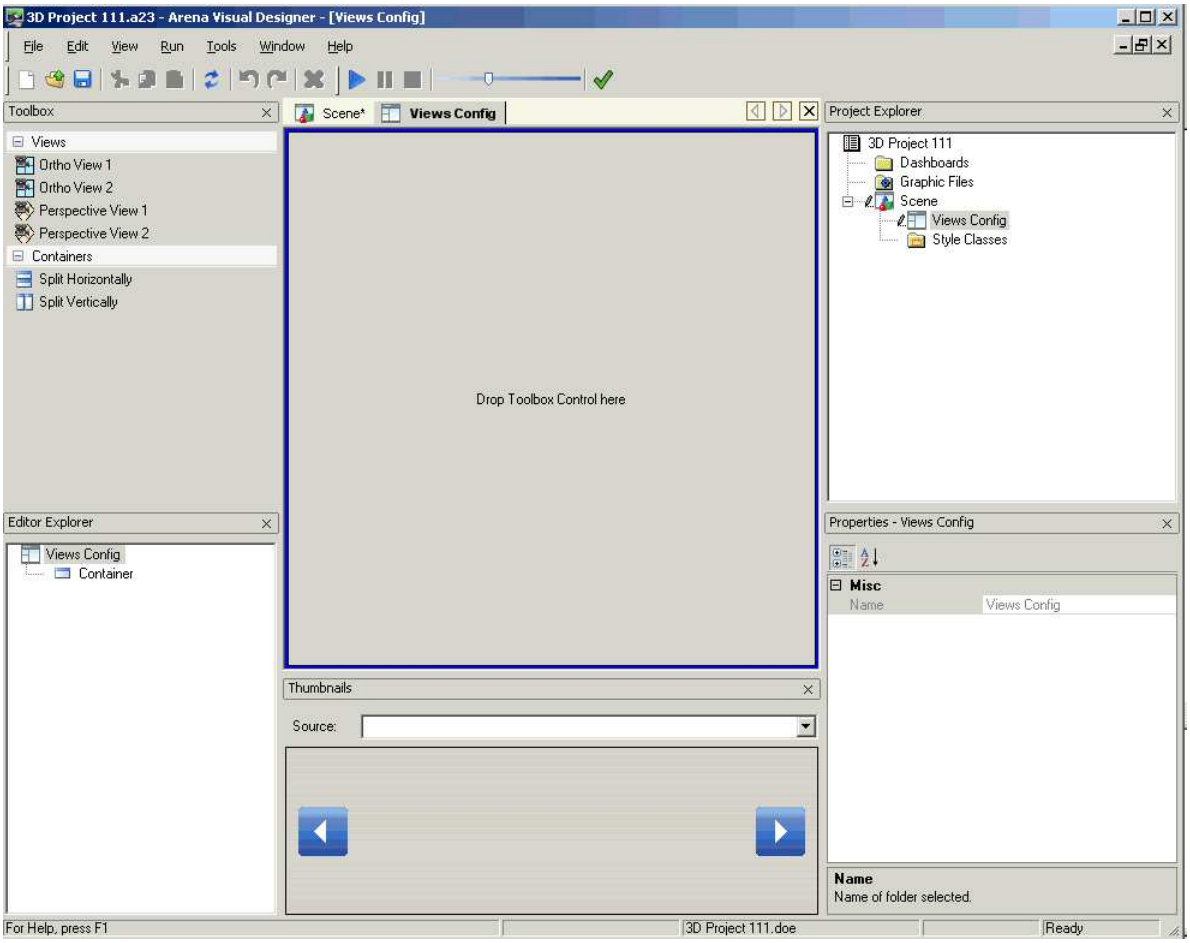
Setting Up a Views Config and Running Your Animation

Before you can run your animation, you need to establish a Views Config.

1. In the Project Explorer, double click on the Views Config to open the editor.

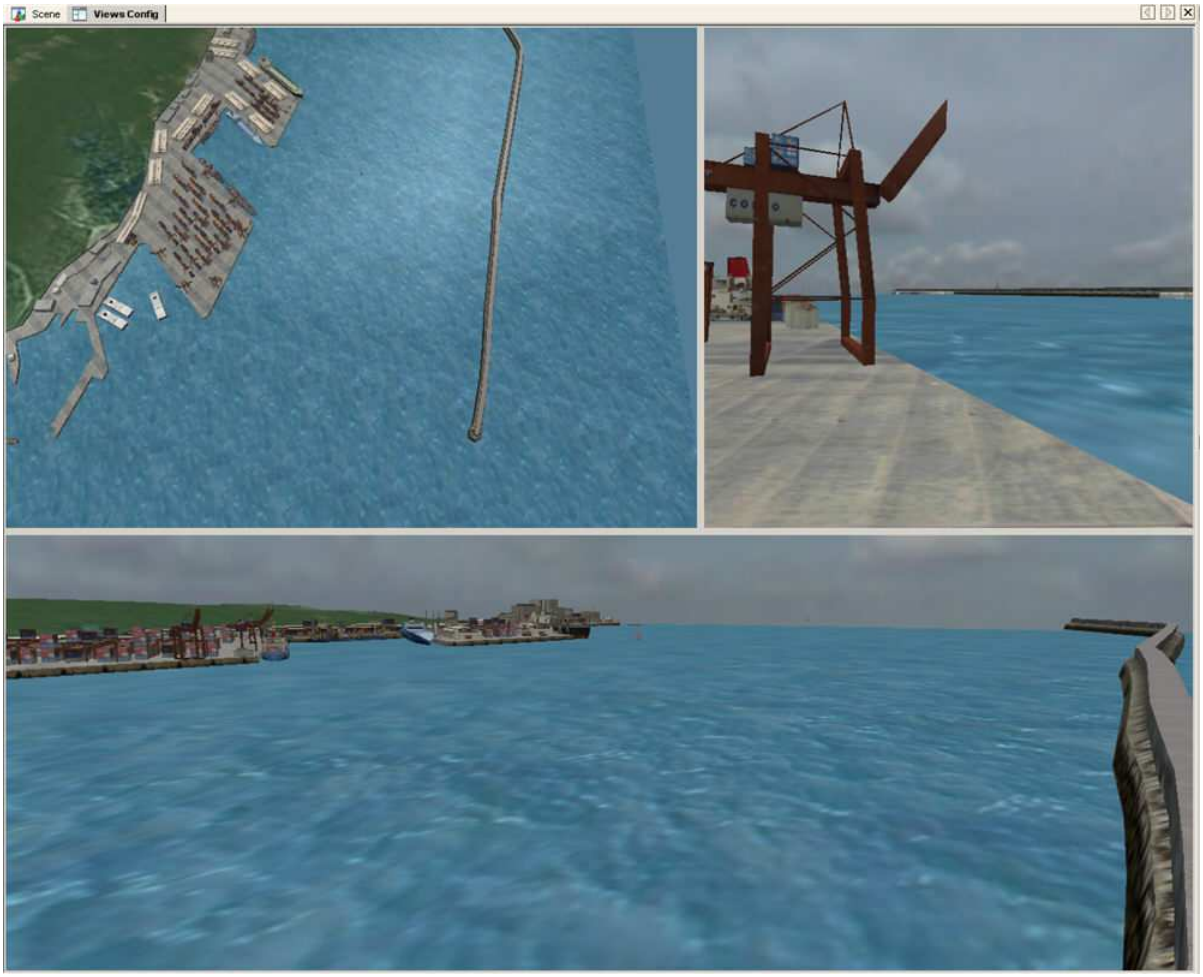


2. The Views Config Editor will look similar to the image below. In the Views Config, you will drag and drop your pre-defined views from your scene. When you run your animation, you will see your model animating in each view. You may choose whether to place only one view or multiple views for animation. If no Views appear, you will need to set up at least one View to select from. (See Creating Views.)



3. From the Toolbox, you can drag and drop the Split Horizontally and Split Vertically tools to create containers. This behavior is similar to the Dashboard. Once you have your empty containers in place, simply drag and drop views from the Toolbox into the desired containers.

4. Below is an example of three views placed in the Views Config. When the model runs, each container will show the animation from its unique view.



5. When your Views Config is set, you are ready to start your 3D animation by selecting the Play button from the toolbar.

Related Topics

Views Config Controls

Views Config Window Overview

Creating Views

Runtime Animation

Home > Getting Started with Visual Designer > Running Your Model and Visualization

Running Your Model and Visualization

When running a model from Arena, only the animation within the main Arena application will animate. The dashboard(s) and scene window within Visual Designer will not be animated. To animate the dashboard(s) and scene within Visual Designer, the model run must be started from within Visual Designer.

To run a model from within Visual Designer select Run/Go or press F5. The dashboard(s) and scene will be updated during the model run. When a model is running, it can be paused or the model run can be ended within Visual Designer. By default, the Arena animation is disabled when running the model from Visual Designer. The 'Enable Arena Animation' option (located on the Run menu of Visual Designer) can be enabled to specify that the Arena 2D animation be run concurrently with the Visual Designer visualization.

After the visualization is started from within Visual Designer, the Go, Step, Fast-Forward, Pause, Start Over and End options can be activated from the Arena application. If Go is selected, 2D animation in Arena will be enabled along with the Visual Designer visualization. If Fast-Forward is selected, 2D animation in Arena will be suspended however animation in Visual Designer will continue. The Go and Fast-Forward behavior from Arena occurs regardless of the 'Enable Arena Animation' option defined.

Models that are designated to run in Batch model will not animate in either Arena or Visual Designer.

Arena Warning messages

Arena models that generate runtime warning messages can only be animated in Visual Designer when the "Pause After Warnings" option is disabled in the Run Control tab of the Run Setup dialog of Arena. If this option is enabled, Visual Designer will terminate the visualization run when a warning message is generated in Arena.

User Input

Arena models that require user input during runtime can be animated using Visual Designer. However, the focus stays with the Visual Designer application. Any interface used to obtain user input during runtime may not appear when running a model from Visual Designer. The visualization may appear to be hung when it is waiting for user input. It is suggested that the Visual Designer application not be maximized when user input it required.

Related Topics

Adding Dashboards

Deleting Dashboards

Dividing Dashboards

Editing an Existing Dashboard

Manipulating Dashboard Windows During the Model Run

Using a Dashboard Project with Another Model

Home > Getting Started with Visual Designer > Runtime Animation

Runtime Animation

Visual Designer is a separate application from Arena. The running of the Visual Designer animation is dependent upon running the Arena model at the same time. Below are some details of running a

Visual Designer animation.

Starting Visual Designer When Arena is Not Open

Arena Visual Designer can be opened separate from Arena either by double-clicking the project file or by right-clicking and selecting Open from the context menu. Visual Designer can also be opened by double-clicking on the Visual Designer executable inside the Visual Designer folder under Arena.

Running an Animation from Visual Designer When Arena is Not Open

It is possible to start animating an Arena Visual Designer project without having Arena and the associated model file open. If Visual Designer detects that Arena is not running and the associated model is not open, it will do so for the user.

Closing a Visual Designer Project When in Run (animation) Mode

The Close/File menu option and the Close Project button are both enabled during run mode. Clicking the Close Project button or selecting File/Close during runtime opens a dialog box displaying the question, "Do you wish to end the model run and close the project?" Clicking Yes displays a dialog box message "Save changes to xxx.a3d?" This dialog box will only appear if changes have been made to the project since it was last saved. If Visual Designer is closed before the model run ends, Visual Designer will end the corresponding simulation model run prior to closing the project. However, the corresponding Arena model will stay open in Arena.

When a Visual Designer animation is running, the status bar at the bottom of the application displays:

- The name of the associated model file
- The current simulation time
- The current application status (Run Mode, while model is running; End of Run, when simulation has ended)

Related Topics

Running Your Model and Visualization

Home > Visual Designer Windows

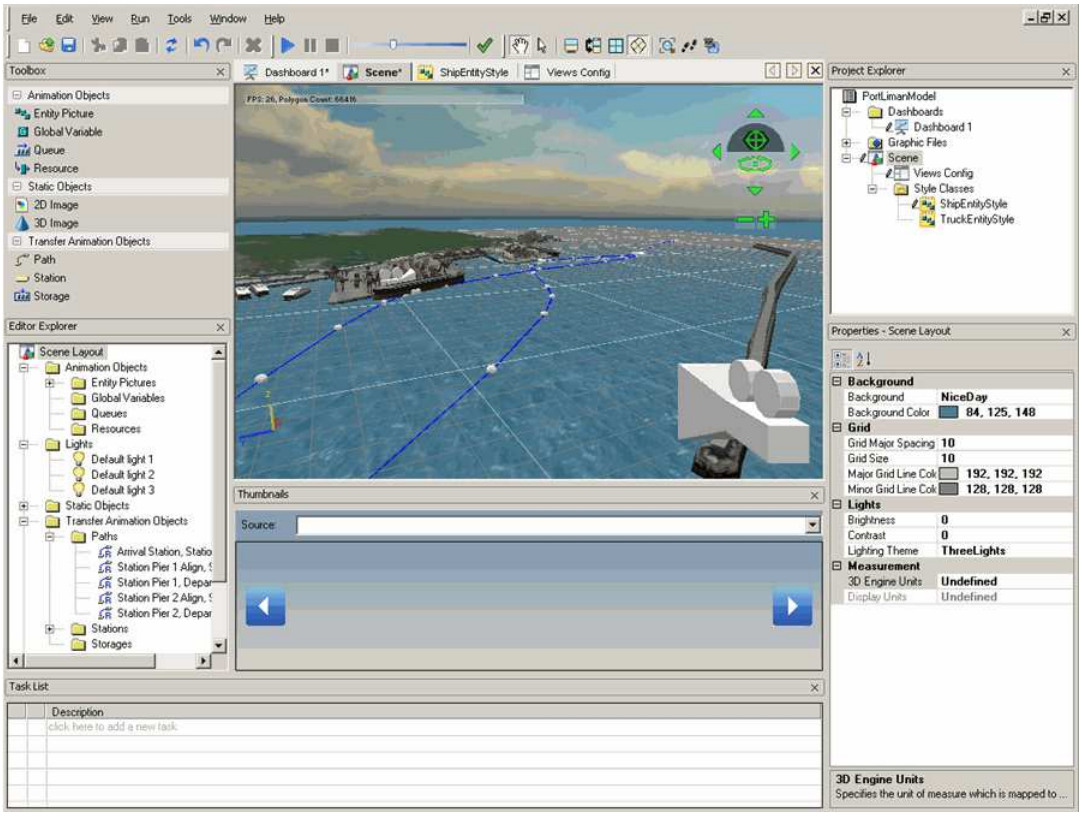
Visual Designer Windows

There are four key active editor windows and six tool windows that you should be familiar with in Visual Designer.

In the image below, the Scene window is the active editor. You can make a Dashboard, Style Classes or Views Config the active editor by selecting the appropriate tab or selecting the desired node in the Project Explorer.

The following tool windows are also visible below: Toolbox, Editor Explorer, Task List, Thumbnails, Project Explorer and Properties. The Toolbox, Editor Explorer and Properties windows are context sensitive. Their contents will on the active editor (Dashboard, Scene, Style Class, Views Config).

You can close visible tool windows by selecting the "x" in the upper-right corner of the window. You can add tool windows from the View/Tool Windows menu. You can also change the location of tool windows by dragging and dropping them in desired locations.



Related Topics

Dashboard - Learn how to create Dashboards!

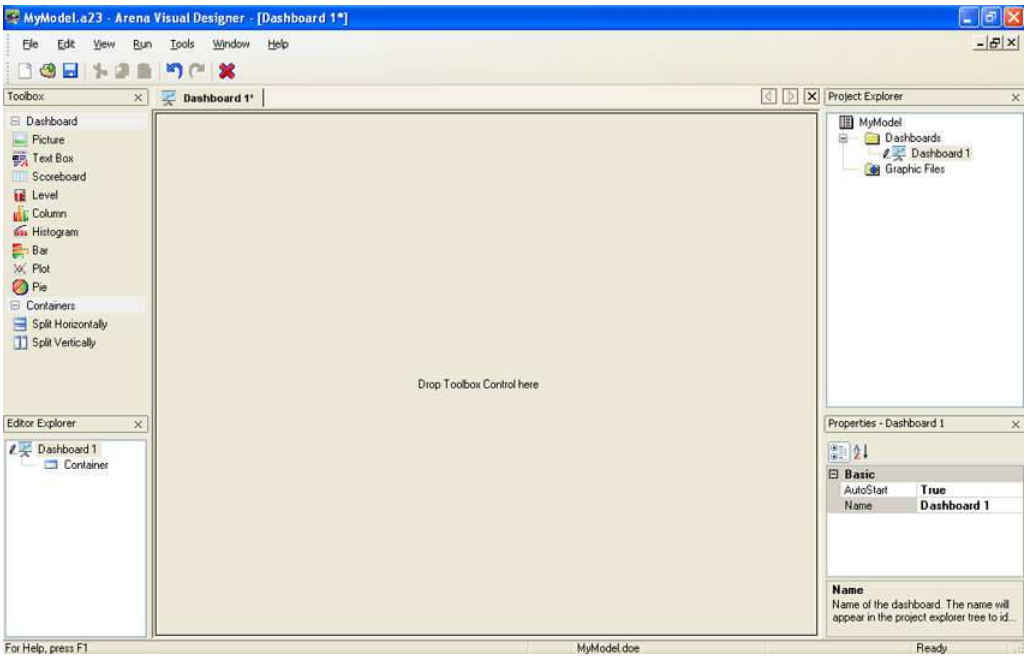
Scene - Learn how to create 3D animations!

Home > Visual Designer Windows > Editor Windows > Dashboard Window Overview

Dashboard Window Overview

The Dashboard window is used to design each dashboard. Initially, the Dashboard window contains one view, the dashboard and the starting container, which is the partition space used for building the display. The Dashboard window allows you to view and edit the dashboards that have been added using the Project Explorer.

When a dashboard is the active editor displayed, there are two categories of tools available in the Toolbox window: "Dashboard" and "Containers."



Related Topics

Dashboard Details

Dashboard Controls

Dashboard - Learn how to create Dashboards!

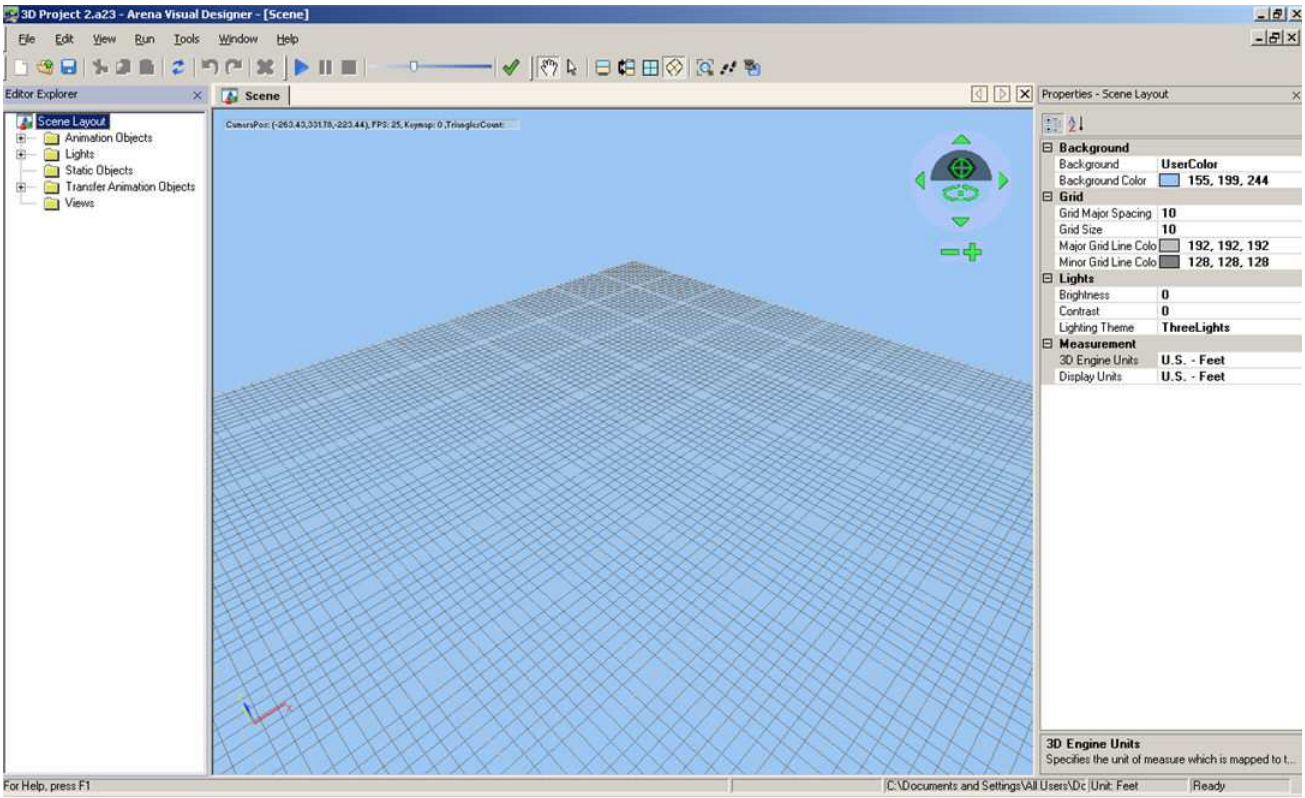
Home > Visual Designer Windows > Editor Windows > Scene Window Overview

Scene Window Overview

The Scene window is an editor that allows you to view and edit the 3D Scene for a project. If you specify a new project to include a 3D Scene, a Scene node will be added to the Project Explorer by default. The scene will be displayed in perspective view and be empty. Each node created in a project can be selected by clicking on the desired tab in the window bar or by double-click on the desired node in the Project Explorer list.

You can begin creating a scene by dragging and dropping element items from the Editor Explorer into the scene. The Editor Explorer contains a list of all element items that may be animated in the scene. Items placed using the Editor Explorer will have the element information automatically defined (e.g., the name of the resource, or the name of the queue). The object can be further configured using the Properties tool window for that object.

You can also drag and drop generic instances on animation objects from the Toolbox into the scene. They can then further define the objects using the Properties window.



Related Topics

Scene Controls

Scene - Learn how to create 3D animations!

Style Class Window Overview

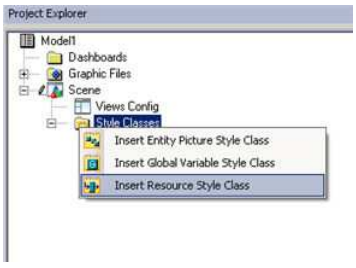
Several scene objects require a style class to be associated with them to define how the object will appear in the animation. For each object type there is an associated style class type. A style class is a generic representation of either a resource, an entity picture or a global variable (the next release of Arena will include transporters/AGVs).

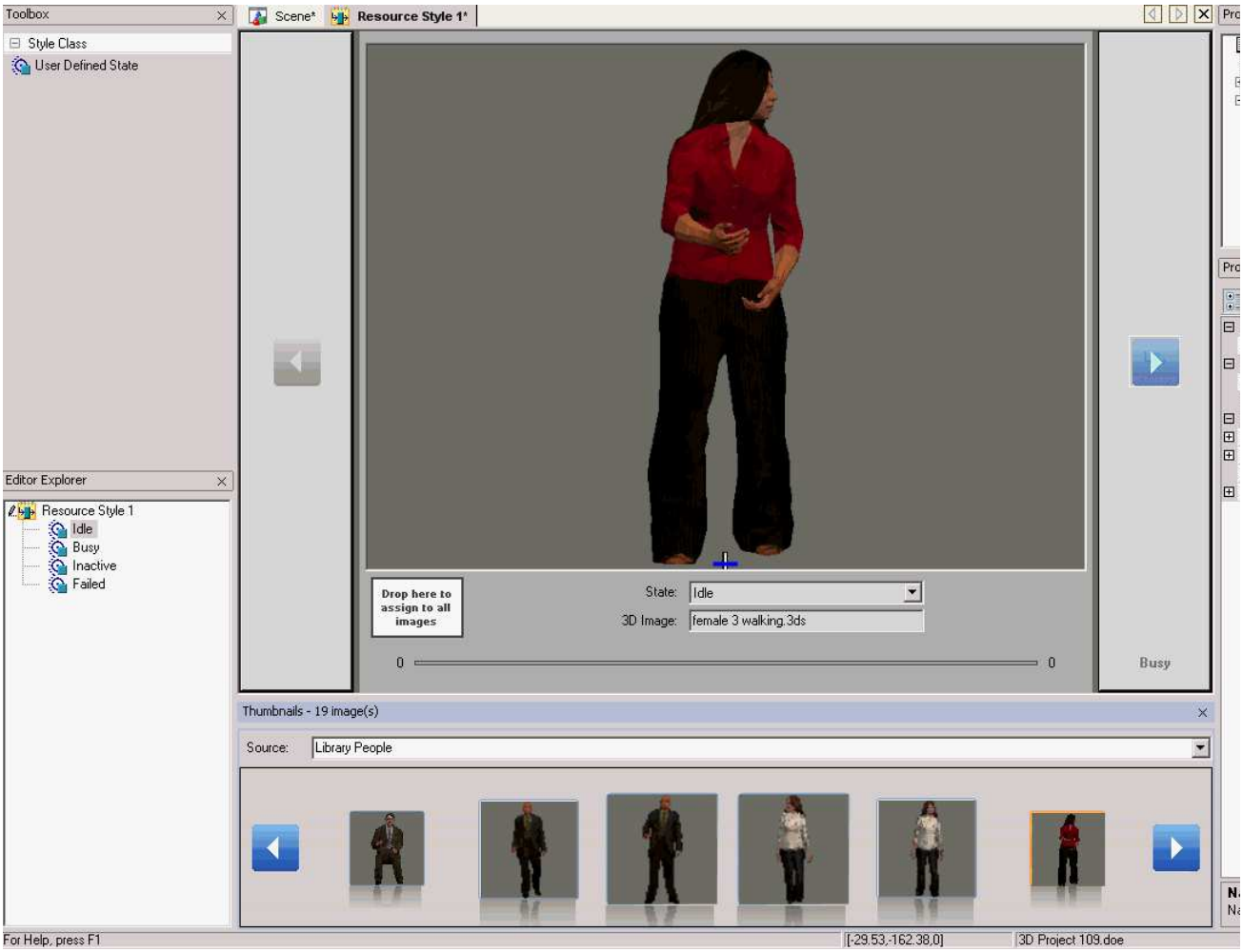
The Style Class window is an editor that allows you to view and edit a style class for a resource, global variable or entity picture. In the future, you will also be able to create style classes for transporters. The style class specifies the graphic file(s) associated with either the different trigger values of a global variable, the states of a resource, or the states of the entity assigned a given entity picture.

Style Classes are intended to save you time when animating. For example, in the case of a resource style class, if a manufacturing floor has 20 injection mold machines that are exactly alike, then only one style class needs to be defined — such as "InjectionMold_MachineStyle." This same resource style class can then be used for any injection mold machine. If any animation changes are needed, simply changing the style class properties will be effective for any resource using that style class.

The Style Class editor also contains four unique view icons in the toolbar and from the View menu. These icons allow you to change the view of the 3D image in the editor. In the order they appear on the toolbar you can select the Front, Back, Left, Right and Top view to display.

Example of Resource Style Class:





Related Topics

Style Class Controls

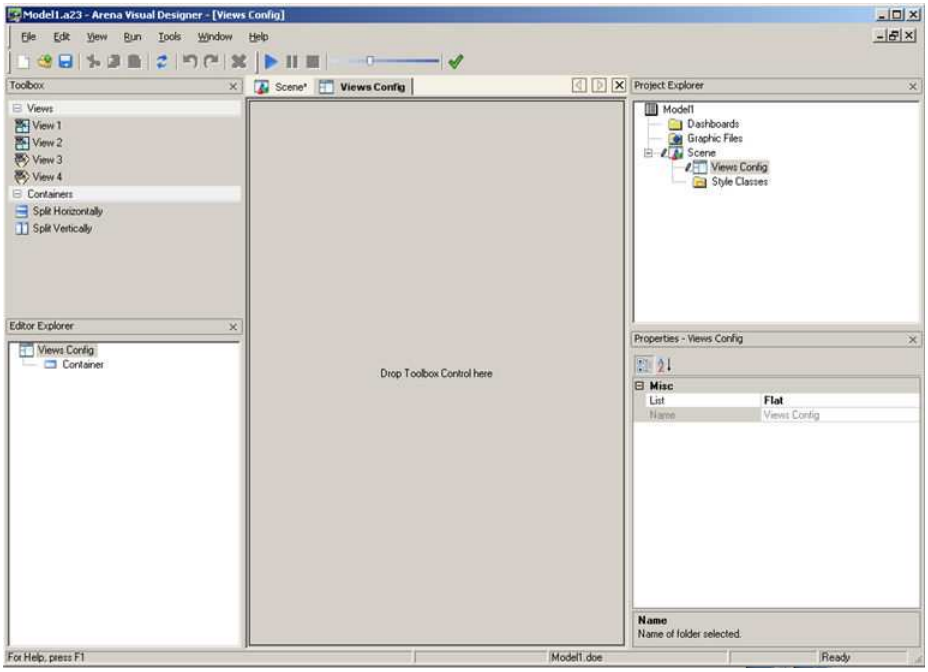
Style Class Properties

Animation Objects

Views Config Window Overview

The Views Config(uration) window is an editor that allows you to specify which camera views will be displayed for the 3D animation when the visualization is in run mode. When a new project is initiated, if you specify it to include a 3D scene, a Scene node will be added to the Project Explorer by default. Under the Scene object is the Views Config node. Double-click Views Config to open the Views Config editor window.

When the Views Config is the active editor displayed, there are two categories of tools shown: Views and Containers.



Just like the Dashboard control, the Containers tools are used to divide a Views Config into more than one container. By default, the Views Config has one container. When the Views Config editor is empty, the (gray) text in the container states "Drop Toolbox Control here" to help guide you to create a view configuration.

The Views tools are used to select a saved view to place into one or more of the containers on the Views Config window.

A container with an existing saved view may be redefined with another named view by dragging and dropping another view into the container. Note that the Camera View property is read only, so you can only change the view displayed in a container by dragging another view from the Toolbox.

Related Topics

Creating Views

Setting Up a Views Config and Running Your Animation

Views Config Controls

Views Config Properties

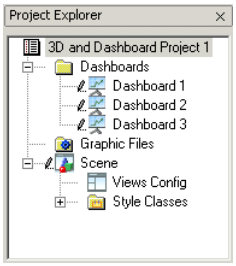
Home > Visual Designer Windows > Tool Windows > Project Explorer

Project Explorer

The Project Explorer tool window provides a hierarchical listing (using a tree view control) of the project file's content. It can be used for opening or adding new Dashboard or Scene windows and for controlling the current active editor window. When the project is opened as either a "3D Project" type or a "3D and Dashboard Project" type, the tree structure for this explorer is divided into three main folder areas: Dashboards, Graphic Files and the Scene. Nested beneath the Scene object are one Style Classes folder and one Views Config object. All Style classes, regardless of type (entity, resource, and so on) will be listed alphabetically in this folder.

When a "Dashboard Project" type is opened, the Scene area will not be displayed.

Dashboard instances, graphic files and scene objects for each project are managed from the Project Explorer tool window and are listed in alphabetical order within each section.



Related Topics

Dashboards

Graphic Files

Scene

Dashboard Basics

Toolbox

Home > Visual Designer Windows > Tool Windows > Editor Explorer

Editor Explorer

The Editor Explorer tool window provides a hierarchical listing (using the tree view control) of the active window's content. This window is context-sensitive based on the current active window. There are four main types of Editor Explorer views based on the active editor: Dashboard, Scene, Style Classes, and Views Config.

If there is no editor open and active for a project, the Editor Explorer displays a gray text message, "There is currently no data to display."

Dashboard Editor Explorer

A project may have more than one dashboard, but only the dashboard that has the active focus will be displayed in the Editor Explorer. Below is a view of the Editor Explorer with some example content.

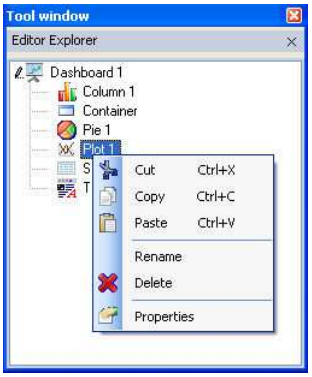
In this example:

- Dashboard 1 is the active window
- Five containers have been defined with controls
- The items are listed in alphabetic order based on the name assigned in the Name field under the Basic header of the Properties for each control.
- Selecting a control from the Editor, in this case Plot 1, indicates that it is active for editing and its Properties will be displayed in the Properties window. A blue box will surround it in the dashboard

view.

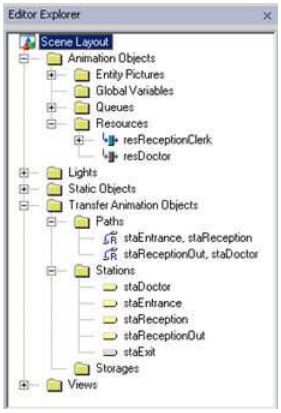
If there is no Dashboard window open and active for a project, this Tool window displays the message "There is currently no data to display." The Project Explorer tree will show whether other dashboards are available.

In the example below, the Plot control has been selected in the Editor Explorer with the right-click and the context-sensitive functions are shown. The functions listed can be performed on any container with a control; however, an empty container can only be deleted.



Scene Editor Explorer

When Scene is the active editor, the Editor Explorer displays the tree structure shown below. All folders listed are system folder and cannot be deleted from the tree structure. When the root (Scene object) is selected in the Editor Explorer, the properties listed in Scene Object are displayed in the Properties tool window. The Editor Explorer will list the objects from the Arena model that can be animated (eg. Resources, Entities, Queues, Stations, and more). Users can drag and drop these objects from the Editor Explorer directly into the scene. Objects that have been placed in the scene will be in color, while objects not yet in the scene will remain gray.



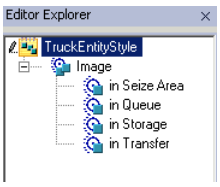
Related Scene Topics:

Scene Layout

- Animation Objects
  - Entity Pictures
  - Global Variables
  - Queues
- Lights
- Static Objects
- Transfer Animation Objects
  - Paths
  - Storages
  - Stations
- Views

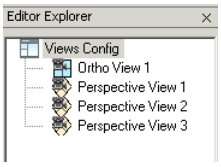
Style Class Editor Explorer

When a Style Class is the active editor, the Editor Explorer displays a tree structure listing the various states of the entity, resource or global picture in the active Style Class (example below). Select the various states in the Editor Explorer to view the current image assigned to that particular state in the Style Class active editor



Views Config Editor Explorer

When the Views Config is the active editor, the Editor Explorer displays a tree structure listing the views in the configuration. Select the view from the Editor Explorer and that view in the Views Config window will be outlined in blue. From the Properties you can change the saved view associated with the container.



Home > Visual Designer Windows > Tool Windows > Properties

Properties

The Properties tool window provides a listing of properties for selected objects in the project. The Properties tool window has two buttons at the top, Categorized and Alphabetical ( ). These buttons control the listing order of the properties. By default, the properties are displayed alphabetically by category.

When a specific property is selected, a description of that property appears at the bottom of the tool window.

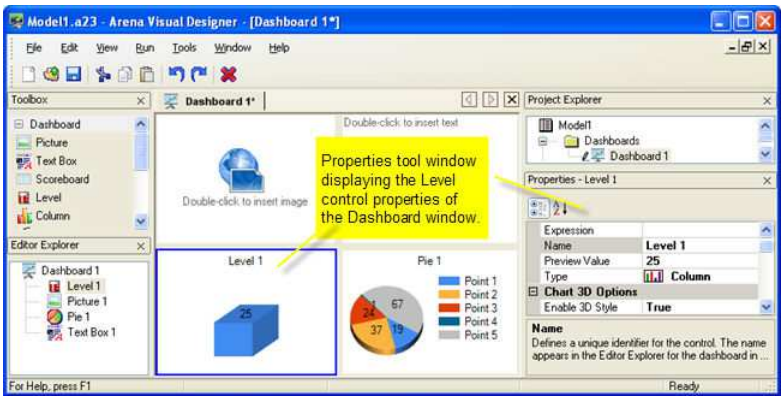
Dashboard properties

Click the name of the dashboard in the Editor Explorer or Project Explorer for its properties to become visible in the Properties tool.

When an object is selected that does not have associated properties, the properties window displays the message: "No properties associated with this object."

Individual dashboard windows, controls (e.g., plots, levels), and the project itself are examples of objects that have properties associated with them that can be customized.

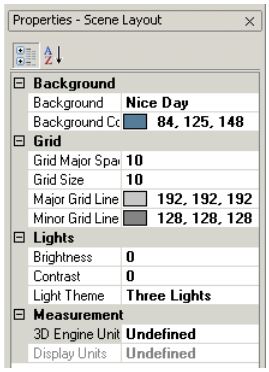
An undefined container is an example of an object that does not have any properties associated with it.



Scene properties

Click the Scene Layout object in the Editor Explorer for its properties to become visible in the Properties tool window. The Scene Properties can be used to adjust the background color or add a user-defined texture such as clouds in the sky or a sunset view. These properties also allow such changes as grid sizing, display measurement and lighting. If an option is grayed out, it cannot be changed. Once you have modified the settings, the changes will be reflected in the Scene window.

Characteristics of objects in the scene can be customized by altering the properties that are associated with the selected objects.



Related Topics

Data - Points Editor

Data - Series Editor

Data Spreadsheet - Series Values

Dashboard Controls

Expression

Scene Controls

Home > Visual Designer Windows > Tool Windows > Task List

Task List

The Task List tool window provides a list of application errors and warnings to be addressed by the user. In addition, user-specified activities can also be added to aid in project organization and task sharing. The Task List is comprised of 3 columns. The table below defines the purpose for each column in the window.

Column Heading	Tool Tip Purpose
1	Category Indicates the type of task/error

2	Find	Indicates whether the task item can be located for editing
3	Description	Task, Error or Warning description

There can be three different symbols displayed in column 1. When the user hovers over the symbol, a tool tip will appear describing the type of task (error, warning, user-defined).

If the symbol is a red exclamation it indicates an error. Errors must be rectified before the animation can begin.

A yellow triangle indicates a warning. These tasks are optional and the animation will still run.

This icon indicates a user-defined task. Like a warning, the animation will still run with these tasks.

The second column will appear with a navigation symbol or be left empty. If a task has the navigate icon, you can either double-click on the task to navigate to the issue, or right-click and select 'Find' from the menu. There may be some warnings or errors that are not navigable. These tasks will not display this icon. User-defined tasks are not navigable.

User-defined tasks are not removed from the list until the user removes them. This can be done by selecting the task, then clicking on the Delete key or by selecting the task, then selecting Delete from the right-click menu.

Related Topics

Editor Explorer

Project Explorer

Dashboard Editor

Toolbox

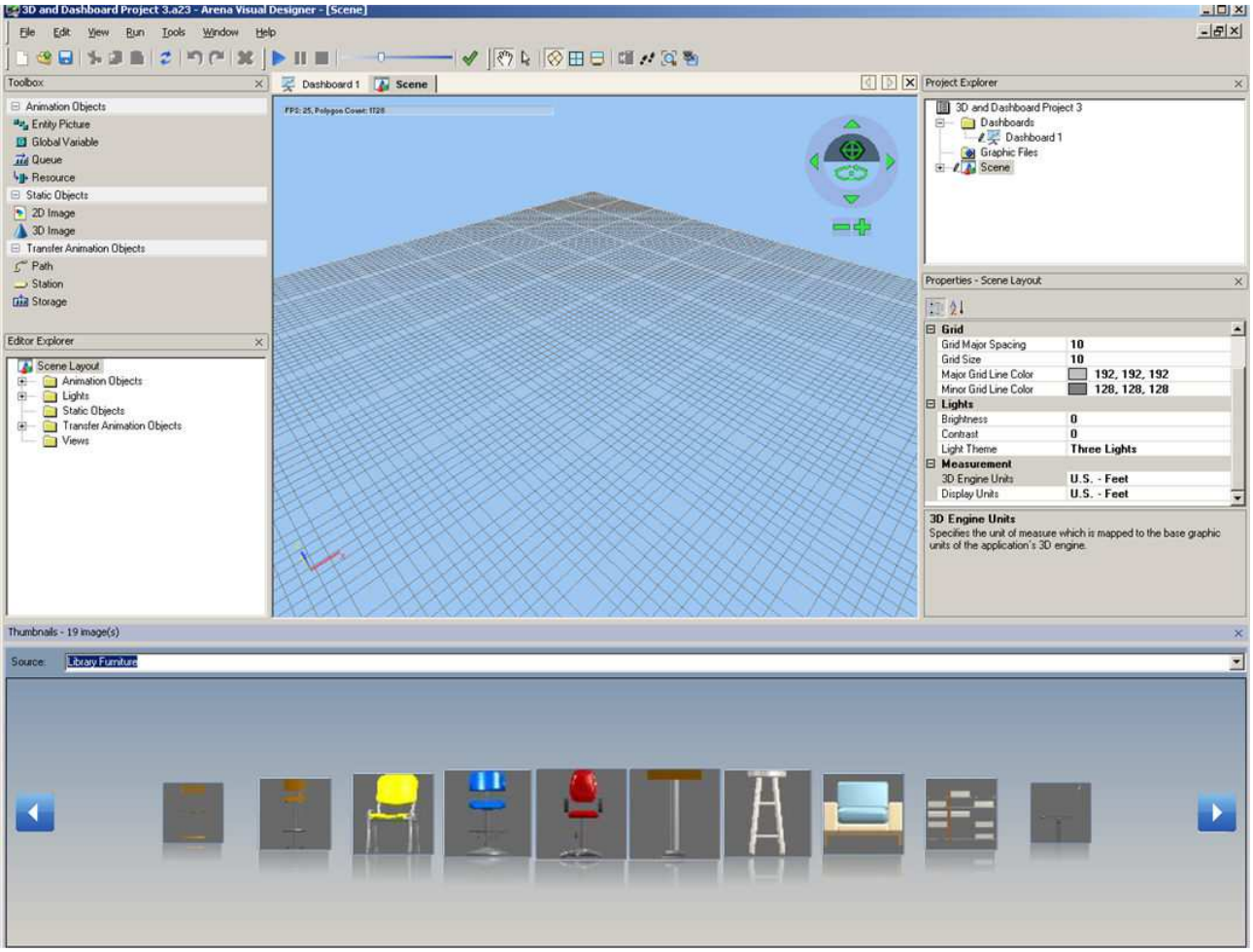
Home > Visual Designer Windows > Tool Windows > Thumbnails

Thumbnails

The Thumbnails tool window is useful for viewing 3D images that can then be dragged into the Scene or a Style Class.

The example below shows the thumbnail images of furniture from the Library Furniture folder being reviewed for definition of resource states.

To attach the Thumbnails go to View/Tool Windows and select Thumbnails. Initially, no images will appear. Select the Source drop-down to open an existing library or browse to a folder where you have your own images stored.



Home > Visual Designer Windows > Tool Windows > Toolbox

Toolbox

The Toolbox is a context-sensitive tool window that provides a listing (using tree view control) of objects and controls used for inserting graphical objects into the current active edit window (either a Dashboard, the Scene, the Views Config, or a Style Class).

If there is no editor window open and active for a project, this window displays this message in the tool window: "There are no suitable items available."

Related Topics

Dashboard Controls

Scene Controls

Style Class Controls

Views Config Controls

Dashboard Controls

When a Dashboard is the active editor displayed, there are two categories of tool controls shown in the toolbox: Dashboard and Containers. The following paragraphs describe each tool category in further detail.

The Containers tools are used to divide a dashboard into more than one container. By default, each dashboard opens with a single container. The (gray) text in the container states "Drop Toolbox Control here" to help guide you to create a dashboard.

As the user drag and drops the Containers tools onto the editor, the workspace will be further divided into multiple containers. The tools available are:

- Split Horizontally
- Split Vertically

The Dashboard controls in the Toolbox window are selected to be placed into one or more of the containers on a dashboard.

When a specific control is dragged and dropped into the dashboard, a default value for the property name is provided for the control instance. For example, if the user places two plots in the dashboard, the first instance will automatically be named "Plot 1," and the second "Plot 2." In the case of the bar and column charts, the names relate to the tool dropped. If a Column is dropped, the instance will be named "Column 1." If a Bar Chart is dropped, the instance will be named "Bar 1."

An existing control maybe redefined as another control type. After a control has been placed in a container and its properties defined, the control type can be changed by dragging and dropping a new control over the existing one. Visual Designer will then attempt to inherit all properties from the old control type into the new control type.

To place a new control without inheriting any of the previously defined properties, press the Shift key while dragging and dropping the new control on top of the existing one. This action is equivalent to deleting the old control and placing a new one.

Example 1:

1. A Column chart is placed on a dashboard.
2. The following properties of the control are then edited.
   a. Arena expressions are defined for the points in the data series within the Data properties, under the Basic header of the Properties toolbar.
   b. The Enable 3D Style is set to False, under the Chart 3D Options.
3. If a Bar chart control is dragged overtop of the Column control, the Data property, including the Arena expressions defined, as well as the Enable 3D style property will be inherited.

Example 2:

1. A Column chart is placed on a dashboard.
2. The following properties of the control are then edited.
   a. Arena expressions are defined for the points in the data series within the Data properties, under the Basic header of the Properties toolbar.
   b. The Inclination is changed to 45, under the Chart 3D Options.
3. A Histogram control is then dropped on top of the Column control. The Data property information, including the defined Arena expressions, will NOT be inherited since a histogram expects a single expression value versus an array of data points for multiple series. However, the Inclination property will be inherited since both charts have this property.

Example 3:

1. A Pie chart is placed on a dashboard.
2. The following properties of the control are then edited.
   a. Arena expressions are defined for the points in the data series within the Data properties, under the Basic header of the Properties toolbar.
   b. The Title property under the Chart Title header of the Properties toolbar is changed.
3. If a Plot control is dropped on top of the Pie control while the Shift key is pressed, NO property information will be inherited. It behaves as if a new control was placed.

Related Topics

Dashboard Basics
Dashboard Controls - Column
Dashboard Controls - Histogram
Dashboard Controls - Levels
Dashboard Controls - Picture
Dashboard Controls - Pie
Dashboard Controls - Plot
Dashboard Controls - Scoreboard
Dashboard Controls - Text Box

Dashboard Controls - Bar

Bar Control

The Bar ( ) control is used to display one or more series of model data (variables and expressions) in a bar chart.

Bar Control Properties:

Name	Valid Entry	Default Property	Description
Category - Basic			
Data			Specifies the properties and data for all series used by the control.
Data Spreadsheet			Enter, view or edit the series data for the control
Name	String	Bar <instance number>	Defines a unique identifier for the control. The name appears in the Editor Explorer for the dashboard in which the control resides.
Type	Bar, Stacked Bar, Stacked Bar 100	Bar	Defines the type of chart that will be displayed in the control.
Category – Chart 3D Options			

Enable 3D Style	Boolean	True	Indicates whether the control is displayed in 3D or 2D style.
Inclination	-90 to 90	30	Defines the inclination of the control in degrees (-90 to 90).
Rotation	-180 to 180	30	Defines the rotation of the control in degrees (-180 to 180).
Category – Chart Axes			
Category (X) Axis			Characteristic for the category (X) axis can be changed by expanding the Category (X) Axis property to display the list of sub properties.
Title	String		Defines the title of the category (X) axis visible when Display is other than None
Title Orientation	• Auto • Horizontal • Rotated 90 • Rotate 270 • Stacked	Auto	Defines the orientation of the category (X) axis title, visible when Display is other than None.
Display	• None • Labels • No Labels • Reverse order with Labels • Reverse order without Labels	Labels	Indicates the display preference for labels and their order for the category (X) axis..
Show Grid Lines	Boolean	True	Indicates whether grid lines are displayed for the category (X) axis
Interval	• User-defined Number • Auto • Every	Every	Defines the display preference for the grid lines of the category (X) axis. Can be user specified by entering a numeric value.
Category (X)Axis Labels			Expand the Category (X) Axis Labels property to assign labels for each data point defined along the (X) axis.
[1]	String		Defines the label for the data point selected.
Value (Y)Axis			Characteristic for the value (Y) axis can be changed by expanding the Value (Y) Axis property to display the list of sub properties.
Title	String		Defines the title of the value (Y) axis, visible when Display is other than None.
Title Orientation	• Auto • Horizontal • Rotated 90 • Rotate 270 • Stacked	Auto	Defines the orientation of the value (Y) axis title, visible when Display is other than None.
Display	• None • Labels • No Labels • Reverse Order with Labels • Reverse Order without Labels	Labels	Indicates the display preference for labels and their order for the value (Y) axis.
Grid Lines	• Major • Major and Minor • Minor • None	Major	Defines the display preference for grid lines of the value (Y) axis.
Scale			Characteristic for the value (Y) axis scale can be changed by expanding the Scale property to display the list of sub properties.
Scale	• Auto • Custom	Auto	Defines the display preference for the value (Y) axis scale.
Minimum	Integer	0	Specifies the minimum value for the axis label, used when Scale is Custom.
Maximum	Integer	100	Specifies the maximum value for the axis label, used when Scale is Custom.
Interval	• Number • Auto • Every • Thousands • Millions • Billions	Auto	Defines the display preference for the major grid lines of the value (Y) axis. Can be user specified by entering a numeric value. If Format is Date Time, Interval is specified in days.
Format			Characteristic for the value (Y) axis format can be changed by expanding the Format property to display the list of sub properties.
Format	• Number • Auto • Currency • Percentage • Scientific • Date Time	Auto	Defines the format of the value (Y) axis label.
Decimal Places	Integer (0-10)	0	Defines the number of digits (0-10) displayed after the decimal for the value (Y) axis label, used when Format is other than Date Time.
Use Separator	Boolean	False	Indicates whether the digit group separator is displayed, used when Format is Number.
Date Time Format	• Short Date • Long Date • Short Time • Long Time • Full Date Time (short time) • Full Date Time (long time) • General Date Time (short time) • General Date Time (long time) • Universal Date Time • Universal Full Date Time • Month Day • Year Month	Full Date Time (long time)	Indicates the display preference for the value (Y) axis label when Format is Date Time.
Use Model Start Date and Time	Boolean	True	Indicates whether the starting date and time for the selected cell is obtained from the Arena model, visible when Format is Date Time.
Start Date Time	Date Time	12/30/1899 12:00:00 AM	Specifies the starting date and time for the selected cell, visible when Format is Date Time and Use Model Start Date and Time is False.
Locale (location)	List of Languages and Countries	English (United States)	List of languages and countries English (United States) Specifies the locale (location) used to define the details of the format selected for the value (Y) axis label.
Category – Chart Title			
Title	String	Bar <instance number>	Defines the title of the control to display.
Title Back Color	Color Offerings	Undefined	Defines the background color for the title area of the control.
Title Color	Color Offerings	Black	Defines the font color for the title of the control.
Title Font			Characteristic for the Title Font can be changed through the Font dialog box by clicking the ellipsis or by expanding the Font property to display the list of sub properties.
Name	Font Offerings	Microsoft Sans Serif	Defines the font name applied to the control title.
Size	Integer	8	Defines the font size applied to the control title.
Bold	Boolean	False	Indicates whether the font applied to the control title is bold.
Italic	Boolean	False	Indicates whether the font applied to the control title is italicized.
Underline	Boolean	False	Indicates whether the font applied to the control title is

			underlined.
Title Position	• Bottom Center • Bottom Far • Bottom Near • Left Center • Left Far • Left Near • None • Right Center • Right Far • Right Near • Top Center • Top Far • Top Near	Top Center	Defines the position of the title for the control.
Category – Data Labels			
Data Labels Color	Color Offerings	Black	Defines the font color for the data labels of the control.
Data Labels Font			Characteristic for the Data Labels Font can be changed through the Font dialog box by clicking the ellipsis or by expanding the Font property to display the list of sub properties.
Name	Font Offerings	Microsoft Sans Serif	Defines the font name applied to the data labels.
Size	Integer	8	Defines the font size applied to the data labels.
Bold	Boolean	False	Indicates whether the font applied to the data labels is bold.
Italic	Boolean	False	Indicates whether the font applied to the data labels is italicized.
Underline	Boolean	False	Indicates whether the font applied to the data labels is underlined..
Data Labels Format	(Format)		Characteristic for the data labels format can be changed by expanding the Data Labels Format property to display the list of sub properties.
Format	• Number • Auto • Currency • Percentage • Scientific • Date Time	Auto	Defines the format for the data labels
Decimal Places	Integer (0 to 10)	0	Defines the number of digits (0-10) displayed after the decimal for the data labels, used when Format is other than Date Time.
Use Separator	Boolean	False	Indicates whether the digit group separator is displayed, used when Format is Number.
Date Time Format	• Short Date • Long Date • Short Time • Long Time • Full Date Time (short time) • Full Date Time (long time) • General Date Time (short time) • General Date Time (long time) • Universal Date Time • Universal Full Date Time • Month Day • Year Month	Full Date Time (long time)	Indicates the display preference for the data labels when Format is Date Time.
Use Model Start Date and Time	Boolean	True	Indicates whether the starting date and time for the selected cell is obtained from the Arena model, visible when Format is Date Time.
Start Date Time	Date Time	12/30/1899 12:00:00 AM	Specifies the starting date and time for the selected cell, visible when Format is Date Time and Use Model Start Date and Time is False.
Locale (location)	List of languages and countries	English (United States)	List of languages and countries English (United States) Specifies the locale (location) used to define the details of the format selected for the data labels.
Data Labels Position	• None • Outside • Center • Left • Right	None	Defines the position of the data labels for the control.
Category – Design			
Background Color	Color Offerings	White	Defines the background color for the control.
Background Secondary Color	Color Offerings	Undefined	Defines the secondary background color for the control used when Gradient Style is other than None.
Border			Characteristics for the border can be changed by expanding the Border property to display the list of sub properties.
Style	• None • Embossed 1-3 • Frame Thin 1-6 • Frame Title 1-8	None	Defines the style of border for the control.
Color	Color Offerings	Gray	Defines the color of the border, visible when Border Style is other than None, Embossed 1-3.
Secondary Color	Color Offerings	Undefined	Defines the secondary color of the border visible when Style is other than None, Embossed 1-3 and when Gradient Style is other than None.
Gradient Style	• None • Left Right • Top Bottom • Center • Diagonal Left • Diagonal Right • Horizontal Center • Vertical Center	None	Defines the gradient style of the border visible when the Style is other than None, Embossed 1- 3 and when Secondary Color is specified.
Page Color	Color Offerings	White	Defines the color of the control outside the border, visible only when Border Style is other than None.
Chart Background Color	Color Offerings	Undefined	Defines the background color for the chart area of the control.
Chart Palette		Bright Pastel	Selects the palette used to assign fill colors automatically for the bars/columns. Selection of Chart Palette will override Fill Colors specified in both Data - Series Editor and Data – Points Editor.
Gradient Style	• None • Left Right • Top Bottom • Center • Diagonal Left • Diagonal Right • Horizontal Center • Vertical Center	None	Defines the gradient style for the background of the control, visible only when Background Secondary Color is specified.
Category - Legend			
Legend Background Color	Color Offerings	Transparent	Defines the background color for the legend area of the control.
Legend Border	• Not Set • Dash • Dash Dot • Dash Dot Dot	Solid	Defines the border style for the legend area of the control.

	• Dot • Solid		
Legend Border Color	Color Offerings	Undefined	Defines the border color for the legend area of the control.
Legend Border Width	Integer	1	Defines the border width for the legend area of the control..
Legend Color	Color Offerings	Black	Defines the font color for the legend of the control
Legend Font			Characteristics for the Legend Font can be changed through the Font dialog box by clicking the ellipsis or by expanding the Legend Font property to display the list of sub properties.
Name	Font Offerings	Microsoft Sans Serif	Defines the font name applied to the legend.
Size	Integer	8	Defines the font size applied to the legend.
Bold	Boolean	False	Indicates whether the font applied to the legend is bold.
Italic	Boolean	False	Indicates whether the font applied to the legend is italicized.
Underline	Boolean	False	Indicates whether the font applied to the legend is underlined.
Legend Position	• None • Top Near • Top Center • Top Far • Left Near • Left Center • Left Far • Bottom Near • Bottom Center • Bottom Far • Right Near • Right Center • Right Far	Right Near	Defines the position for the legend of the control.

Data - Series Editor

When the ellipsis is selected for the Data property, the Data – Series Editor dialog is displayed. The dialog box displays a list of all the series used by the control on the list. Series can be added or removed using the associated button. Series can also be copied to expedite the creation of additional series for the control.

Data - Series Dialog Properties:

Name	Valid Entry	Default Property	Description
Category - Basic			
Fill Color		Undefined	Specifies the fill color for the selected data series. This color is also used to identify the series in the chart legend.
Name		Series <index number>	Name for the selected data series of the control. This name is also used to identify the series in the chart legend.
Points			Specifies the individual data point information for the selected series.
Type	Bar, Stacked Bar, Bar Stacked Bar 100		Defines the type of chart that will be displayed for the selected series.

Data - Points Editor

When the ellipsis is selected for the Points property of the Data – Series Editor, the Data - Points Editor dialog box is displayed. The dialog displays a list of all the points in the selected series. Points can be added or removed using the associated button. Series can also be copied to expedite the creation of additional points for the selected series.

Data - Points Dialog Properties:

Name	Valid Entry	Default Property	Description
Category - Basic			
Expression			Specifies the expression used by the control for the selected data point during runtime.
Fill Color	Color Offerings	Undefined	Specifies the fill color for the selected data point.
Preview Value	Real	Random Generated Number	Value entered identifies the selected data point during edit mode. This value is not used during runtime.

Related Topics

Data - Points Editor

Data - Series Editor

Data Spreadsheet - Series Values

Toolbox

Home > Visual Designer Windows > Tool Windows > Toolbox > Dashboard Controls > Column

Dashboard Controls - Column

Column Control

The Column ( ) control is used to display one or more series of model data (variables and expressions) in a column chart.

Column Properties:

Name	Valid Entry	Default Property	Description
Category - Basic			
Data			Specifies the properties and data for all series used by the control.
Data Spreadsheet			Enter, view or edit the series data for the control
Name	String	Column <instance number>	Defines a unique identifier for the control. The name appears in the Editor Explorer for the dashboard in which the control resides.
Type	Point, Bubble, Line, Spline, Step Line, Column, Stacked Column, Stacked Column 100, Area, Spline Area, Stacked Area, Stacked Area 100	Column	Defines the type of chart that will be displayed in the control.
Category – Chart 3D Options			
Enable 3D Style	Boolean	True	Indicates whether the control is displayed in 3D or 2D style.
Inclination	-90 to 90	30	Defines the inclination of the control in degrees (-90 to 90).
Rotation	-180 to 180	30	Defines the rotation of the control in degrees (-180 to 180).
Category – Chart Axes			
Category (X) Axis			Characteristic for the category (X) axis can be changed by expanding the Category (X) Axis property to display the list of sub properties.
Title	String		Defines the title of the category (X) axis visible when Display is other than None
Title Orientation	• Auto • Horizontal • Rotated 90 • Rotate 270 • Stacked	Auto	Defines the orientation of the category (X) axis title, visible when Display is other than None.
Display	• None	Labels	Indicates the display preference for labels and their order for

	• Labels • No Labels • Reverse order with Labels • Reverse order without Labels		the category (X) axis..
Show Grid Lines	Boolean	True	Indicates whether grid lines are displayed for the category (X) axis
Interval	• User-defined Number • Auto • Every	Every	Defines the display preference for the grid lines of the category (X) axis. Can be user specified by entering a numeric value.
Category (X)Axis Labels			Expand the Category (X) Axis Labels property to assign labels for each data point defined along the (X) axis.
[1]	String		Defines the label for the data point selected.
Value (Y)Axis			Characteristic for the value (Y) axis can be changed by expanding the Value (Y) Axis property to display the list of sub properties.
Title	String		Defines the title of the value (Y) axis, visible when Display is other than None.
Title Orientation	• Auto • Horizontal • Rotated 90 • Rotate 270 • Stacked	Auto	Defines the orientation of the value (Y) axis title, visible when Display is other than None.
Display	• None • Labels • No Labels • Reverse Order with Labels • Reverse Order without Labels	Labels	Indicates the display preference for labels and their order for the value (Y) axis.
Grid Lines	• Major • Major and Minor • Minor • None	Major	Defines the display preference for grid lines of the value (Y) axis.
Scale			Characteristic for the value (Y) axis scale can be changed by expanding the Scale property to display the list of sub properties.
Scale	• Auto • Custom	Auto	Defines the display preference for the value (Y) axis scale.
Minimum	Integer	0	Specifies the minimum value for the axis label, used when Scale is Custom.
Maximum	Integer	100	Specifies the maximum value for the axis label, used when Scale is Custom.
Interval	• Number • Auto • Every • Thousands • Millions • Billions	Auto	Defines the display preference for the major grid lines of the value (Y) axis. Can be user specified by entering a numeric value. If Format is Date Time, Interval is specified in days.
Format			Characteristic for the value (Y) axis format can be changed by expanding the Format property to display the list of sub properties.
Format	• Number • Auto • Currency • Percentage • Scientific • Date Time	Auto	Defines the format of the value (Y) axis label.
Decimal Places	Integer (0-10)	0	Defines the number of digits (0-10) displayed after the decimal for the value (Y) axis label, used when Format is other than Date Time.
Use Separator	Boolean	False	Indicates whether the digit group separator is displayed, used when Format is Number.
Date Time Format	• Short Date • Long Date • Short Time • Long Time • Full Date Time (short time) • Full Date Time (long time) • General Date Time (short time) • General Date Time (long time) • Universal Date Time • Universal Full Date Time • Month Day • Year Month	Full Date Time (long time)	Indicates the display preference for the value (Y) axis label when Format is Date Time.
Use Model Start Date and Time	Boolean	True	Indicates whether the starting date and time for the selected cell is obtained from the Arena model, visible when Format is Date Time.
Start Date Time	Date Time	12/30/1899 12:00:00 AM	Specifies the starting date and time for the selected cell, visible when Format is Date Time and Use Model Start Date and Time is False.
Locale (location)	List of Languages and Countries	English (United States)	List of languages and countries English (United States) Specifies the locale (location) used to define the details of the format selected for the value (Y) axis label.
Category – Chart Title			
Title	String	Column <instance number>	Defines the title of the control to display.
Title Back Color	Color Offerings	Undefined	Defines the background color for the title area of the control.
Title Color	Color Offerings	Black	Defines the font color for the title of the control.
Title Font			Characteristic for the Title Font can be changed through the Font dialog box by clicking the ellipsis or by expanding the Font property to display the list of sub properties.
Name	Font Offerings	Microsoft Sans Serif	Defines the font name applied to the control title.
Size	Integer	8	Defines the font size applied to the control title.
Bold	Boolean	False	Indicates whether the font applied to the control title is bold.
Italic	Boolean	False	Indicates whether the font applied to the control title is italicized.
Underline	Boolean	False	Indicates whether the font applied to the control title is underlined.
Title Position	• Bottom Center • Bottom Far • Bottom Near • Left Center • Left Far • Left Near • None • Right Center • Right Far • Right Near • Top Center • Top Far • Top Near	Top Center	Defines the position of the title for the control.
Category – Data Labels			
Data Labels Color	Color Offerings	Black	Defines the font color for the data labels of the control.

Data Labels Font			Characteristic for the Data Labels Font can be changed through the Font dialog box by clicking the ellipsis or by expanding the Font property to display the list of sub properties.
Name	Font Offerings	Microsoft Sans Serif	Defines the font name applied to the data labels.
Size	Integer	8	Defines the font size applied to the data labels.
Bold	Boolean	False	Indicates whether the font applied to the data labels is bold.
Italic	Boolean	False	Indicates whether the font applied to the data labels is italicized.
Underline	Boolean	False	Indicates whether the font applied to the data labels is underlined..
Data Labels Format	(Format)		Characteristic for the data labels format can be changed by expanding the Data Labels Format property to display the list of sub properties.
Format	• Number • Auto • Currency • Percentage • Scientific • Date Time	Auto	Defines the format for the data labels
Decimal Places	Integer (0 to 10)	0	Defines the number of digits (0-10) displayed after the decimal for the data labels, used when Format is other than Date Time.
Use Separator	Boolean	False	Indicates whether the digit group separator is displayed, used when Format is Number.
Date Time Format	• Short Date • Long Date • Short Time • Long Time • Full Date Time (short time) • Full Date Time (long time) • General Date Time (short time) • General Date Time (long time) • Universal Date Time • Universal Full Date Time • Month Day • Year Month	Full Date Time (long time)	Indicates the display preference for the data labels when Format is Date Time.
Use Model Start Date and Time	Boolean	True	Indicates whether the starting date and time for the selected cell is obtained from the Arena model, visible when Format is Date Time.
Start Date Time	Date Time	12/30/1899 12:00:00 AM	Specifies the starting date and time for the selected cell, visible when Format is Date Time and Use Model Start Date and Time is False.
Locale (location)	List of languages and countries	English (United States)	List of languages and countries English (United States) Specifies the locale (location) used to define the details of the format selected for the data labels.
Data Labels Position	• None • Above • Below • Center • Left • Right	None	Defines the position of the data labels for the control.
Category – Design			
Background Color	Color Offerings	White	Defines the background color for the control.
Background Secondary Color	Color Offerings	Undefined	Defines the secondary background color for the control used when Gradient Style is other than None.
Border			Characteristics for the border can be changed by expanding the Border property to display the list of sub properties.
Style	• None • Embossed 1-3 • Frame Thin 1-6 • Frame Title 1-8	None	Defines the style of border for the control.
Color	Color Offerings	Gray	Defines the color of the border, visible when Border Style is other than None, Embossed 1-3.
Secondary Color	Color Offerings	Undefined	Defines the secondary color of the border visible when Style is other than None, Embossed 1-3 and when Gradient Style is other than None.
Gradient Style	• None • Left Right • Top Bottom • Center • Diagonal Left • Diagonal Right • Horizontal Center • Vertical Center	None	Defines the gradient style of the border visible when the Style is other than None, Embossed 1- 3 and when Secondary Color is specified.
Page Color	Color Offerings	White	Defines the color of the control outside the border, visible only when Border Style is other than None.
Chart Background Color	Color Offerings	Undefined	Defines the background color for the chart area of the control.
Chart Palette		Bright Pastel	Selects the palette used to assign fill colors automatically for the bars/columns. Selection of Chart Palette will override Fill Colors specified in both Data - Series Editor and Data – Points Editor.
Gradient Style	• None • Left Right • Top Bottom • Center • Diagonal Left • Diagonal Right • Horizontal Center • Vertical Center	None	Defines the gradient style for the background of the control, visible only when Background Secondary Color is specified.
Category - Legend			
Legend Background Color	Color Offerings	Transparent	Defines the background color for the legend area of the control.
Legend Border	• Not Set • Dash • Dash Dot • Dash Dot Dot • Dot • Solid	Solid	Defines the border style for the legend area of the control.
Legend Border Color	Color Offerings	Undefined	Defines the border color for the legend area of the control.
Legend Border Width	Integer	1	Defines the border width for the legend area of the control..
Legend Color	Color Offerings	Black	Defines the font color for the legend of the control
Legend Font			Characteristics for the Legend Font can be changed through the Font dialog box by clicking the ellipsis or by expanding the Legend Font property to display the list of sub properties.
Name	Font Offerings	Microsoft Sans Serif	Defines the font name applied to the legend.
Size	Integer	8	Defines the font size applied to the legend.
Bold	Boolean	False	Indicates whether the font applied to the legend is bold.
Italic	Boolean	False	Indicates whether the font applied to the legend is italicized.
Underline	Boolean	False	Indicates whether the font applied to the legend is underlined.

Legend Position	• None • Top Near • Top Center • Top Far • Left Near • Left Center • Left Far • Bottom Near • Bottom Center • Bottom Far • Right Near • Right Center • Right Far	Right Near	Defines the position for the legend of the control.

Data - Series Editor

When the ellipsis is selected for the Data property, the Data – Series Editor dialog box is displayed. The dialog box displays a list of all the series used by the control on the list. Series can be added or removed using the associated button. Series can also be copied to expedite the creation of additional series for the control.

Data - Series Dialog Properties:

Name	Valid Entry	Default Property	Description
Category - Basic			
Fill Color		Undefined	Specifies the fill color for the selected data series. This color is also used to identify the series in the chart legend.
Name		Series <index number>	Name for the selected data series of the control. This name is also used to identify the series in the chart legend.
Points			Specifies the individual data point information for the selected series.
Type	Point, Bubble, Line, Spline, Step Line, Column, Stacked Column, Stacked Column 100, Area, Spline Area, Stacked Area, Stacked Arena 100	Column	Defines the type of chart that will be displayed for the selected series.

Data - Points Editor

When the ellipsis is selected for the Points property of the Data – Series Editor, the Data - Points Editor dialog box is displayed. The dialog box displays a list of all the points in the selected series. Points can be added or removed using the associated button. Series can also be copied to expedite the creation of additional points for the selected series.

Data - Points Dialog Properties:

Name	Valid Entry	Default Property	Description
Category - Basic			
Expression			Specifies the expression used by the control for the selected data point during runtime.
Fill Color	Color Offerings	Undefined	Specifies the fill color for the selected data point.
Preview Value	Real	Random Generated Number	Value entered identifies the selected data point during edit mode. This value is not used during runtime.

Related Topics

Data - Points Editor

Data - Series Editor

Data Spreadsheet - Series Values

Toolbox

Home > Visual Designer Windows > Tool Windows > Toolbox > Dashboard Controls > Histogram

Dashboard Controls - Histogram

The Histogram ( ) control is used to assess the probability distribution of a given variable by depicting the frequencies of observations occurring in certain ranges of values.

The histogram provided with Visual Designer is based on observational data values; the histogram available in Arena is based on observations, but those observations are time weighted.

If looking at the number in queue, the histogram in Visual Designer will graph just the individual observation values. In Arena, the histogram will time weight the observed values, which means that the longer an expression holds a certain value, the greater the weight it is given.

For example, if the observed values for the number in queue range from 0 through 8, the Visual Designer histogram will update the bins with the number of instances at the observed value. In Arena, the amount of time spent at each observed value is factored in as part of the observation; so if the majority of the time the number in queue is equal to 3, then that observation will have a greater precedence and be weighted accordingly.

Histogram Properties:

Property Name	Valid Entry	Default Property	Description
Category - Basic			
Enable Exterior Bins	Boolean	False	Indicates the out of range option. Specifies whether observations that fall outside the range defined by Lower and Upper Bound should be shown in exterior cells or be ignored.
Expression	Expression		Specifies the model variable or expression used by the control.
Lower Bound	Real	0	Defines the minimum for the range of values.
Name	String	Histogram <instance number>	Defines a unique identifier for the control. The name appears in the Editor Explorer for the dashboard in which the control resides.
Number of Bins	Integer > 0	1	Defines the numbers of bins (cells) displayed.
Upper Bound	Real	1	Defines the maximum for the range of values.
Category - Chart 3D Options			
Enable 3D Style	Boolean	True	Indicates whether the control is displayed in 3D or 2D style.
Inclination	-90 to 90	30	Defines the inclination of the control in degrees (-90 to 90).
Rotation	-180 to 180	30	Defines the rotation of the control in degrees (-180 to 180).
Category – Chart Axes			
Bin (X) Axis			Characteristic for the bin (X) axis can be changed by expanding the Bin (X) Axis property to display the list of sub properties.
Title	String		Defines the title of the bin (X) axis, visible when Display is other than None.
Title Orientation	• Auto • Horizontal • Rotated 90 • Rotate 270 • Stacked	Auto	Defines the orientation of the bin (X) axis title, visible when Display is other than None.
Display	• None • Labels • No Labels • Reverse Order with Labels	Labels	Indicates the display preference for labels and their order for the bin (X) axis.

	• Reverse Order without Labels		
Show Grid Lines	Boolean	True	Indicates whether grid lines are displayed for the bin (X) axis.
Interval	• User-defined Number • Auto • Every	Every	Defines the display preference for the grid lines of the bin (X) axis. Can be user specified by entering a numeric value.
Bin (x)Axis Labels	String		Expand the Bin (X) Axis Labels property to assign labels for each bin defined along the (X) axis.
[x]	String		Defines the label for the bin number selected.
Frequency (Y) Axis			Characteristic for the frequency (Y) axis can be changed by expanding the Frequency (Y) Axis property to display the list of sub properties.
Title	String		Defines the title of the frequency (Y) axis, visible when the Display property is other than None.
Title Orientation	• Auto • Horizontal • Rotated 90 • Rotate 270 • Stacked	Auto	Defines the orientation of the frequency (Y) axis title, visible when the Display property is other than None.
Display	• None • Labels • No Labels • Reverse Order with Labels • Reverse Order without Labels	Labels	Indicates the display preference for labels and their order for the frequency (Y) axis.
Grid Lines	• Major • Major and Minor • Minor • None	Major	Defines the display preference for grid lines of the frequency (Y) axis.
Category – Chart Title			
Title	String	Histogram <instance number>	Defines the title of the control to display.
Title Back Color	Color Offerings	Undefined	Defines the background color for the title area of the control.
Title Color	Color Offerings	Black	Defines the font color for the title of the control.
Title Font			Characteristic for the Title Font can be changed through the Font dialog box by clicking the ellipsis or by expanding the Font property to display the list of sub properties.
Name	Font Offerings	Microsoft Sans Serif	Defines the font name applied to the control title.
Size	Integer	8	Defines the font size applied to the control title.
Bold	Boolean	False	Indicates whether the font applied to the control title is bold.
Italic	Boolean	False	Indicates whether the font applied to the control title is italicized.
Underline	Boolean	False	Indicates whether the font applied to the control title is underlined.
Title Position	• Bottom Center • Bottom Far • Bottom Near • Left Center • Left Far • Left Near • None • Right Center • Right Far • Right Near • Top Center • Top Far • Top Near	Top Center	Defines the position of the title for the control.
Category – Data Labels			
Data Labels Color	Color Offerings	Black	Defines the font color for the data labels of the control.
Data Labels Font			Characteristic for the Data Labels Font can be changed through the Font dialog box by clicking the ellipsis or by expanding the Font property to display the list of sub properties.
Name	Font Offerings	Microsoft Sans Serif	Defines the font name applied to the data labels.
Size	Integer	8	Defines the font size applied to the data labels.
Bold	Boolean	False	Indicates whether the font applied to the data labels is bold.
Italic	Boolean	False	Indicates whether the font applied to the data labels is italicized.
Underline	Boolean	False	Indicates whether the font applied to the data labels is underlined.
Data Labels Format	(Format)		Characteristic for the data labels format can be changed by expanding the Data Labels Format property to display the list of sub properties.
Format	• Number • Auto • Scientific	Auto	Defines the format for the data labels.
Decimal Places	Integer	0	Defines the number of digits (0-10) displayed after the decimal for the data labels, used when Format is other than Date Time.
Use Separator	Boolean	False	Indicates whether the digit group separator is displayed, used when Format is Number.
Locale (location)	List of Languages and Countries	English (United States)	List of languages and countries English (United States) Specifies the locale (location) used to define the details of the format selected for the data labels.
Data Labels Position	• None • Above • Below • Center • Left • Right	None	Defines the position of the data labels for the control.
Category – Design			
Background Color	Color Offerings	White	Defines the background color for the control.
Background Secondary Color	Color Offerings	Undefined	Defines the secondary background color for the control used when Gradient Style is other than None.
Border			Characteristics for the border can be changed by expanding the Border property to display the list of sub properties.
Style	• None • Embossed 1-3 • Frame Thin 1-6 • Frame Title 1-8	None	Defines the style of border for the control.
Color	Color Offerings	Gray	Defines the color of the border, visible when Border Style is other than None, Embossed 1-3.
Secondary	Color Offerings	Undefined	Defines the secondary color of the border visible when Style

Color			is other than None, Embossed 1-3 and when Gradient Style is other than None.
Gradient Style	• None • Left Right • Top Bottom • Center • Diagonal Left • Diagonal Right • Horizontal Center • Vertical Center	None	Defines the gradient style of the border visible when the Style is other than None, Embossed 1-3 and when Secondary Color is specified.
Page Color	Color Offerings	White	Defines the color of the control outside the border, visible only when Border Style is other than None.
Chart Background Color	Color Offerings	Undefined	Defines the background color for the chart area of the control.
Chart Palette		Bright Pastels	Selects the palette used to assign fill colors automatically for the bins. Selection of Chart Palette will override Fill Color.
Fill Color	Color Offerings	Undefined	Specifies the fill color for the bins. Selection of Fill Color will override Chart Palette.
Gradient Style	• None • Left Right • Top Bottom • Center • Diagonal Left • Diagonal Right • Horizontal Center • Vertical Center	None	Defines the gradient style for the background of the control, visible only when Background Secondary Color is specified.

Related Topics

Expression

Expression Builder

Toolbox

Home > Visual Designer Windows > Tool Windows > Toolbox > Dashboard Controls > Level

Dashboard Controls - Level

Level Control

The Level ( ) control is used to display a single model variable or expression as a column or bar.

Level Control Properties:

Property Name	Valid Entry	Default Property	Description
Category - Basic			
Expression	Expression		Specifies the expression used by the control during runtime.
Name	String	Level <instance number>	Defines a unique identifier for the control. The name appears in the Editor Explorer for the dashboard in which the control resides.
Preview Value	Real	Randon Generated Number	Value entered identifies the data point during edit mode. This value is not used during runtime.
Type	Bar, Column	Column	Defines the type of level that will be displayed in the control.
Category - Chart 3D Options			
Enable 3D Style	Boolean	True	Indicates whether the control is displayed in 3D or 2D style.
Inclination	-90 to 90	30	Defines the inclination of the control in degrees (-90 to 90).
Rotation	-180 to 180	30	Defines the rotation of the control in degrees (-180 to 180).
Category – Chart Axes			
Value (Y) Axis			Characteristic for the value (Y) axis can be changed by expanding the Value (Y) Axis property to display the list of sub properties.
Title	String		Defines the title of the value (Y) axis, visible when Display is other than None.
Title Orientation	• Auto • Horizontal • Rotated 90 • Rotate 270 • Stacked	Auto	Defines the orientation of the value (Y) axis title, visible when Display is other than None
Display	• None • Labels • No Labels • Reverse Order with Labels • Reverse Order without Labels	Labels	Indicates the display preference for labels and their order for the value (Y) axis.
Grid Lines	• None • Major • Minor • Major and Minor	Major	Defines the display preference for grid lines of the value (Y) axis.
Scale			Characteristic for the value (Y) axis scale can be changed by expanding the Scale property to display the list of sub properties.
Scale	• Auto • Custom	Auto	Defines the display preference for the value (Y) axis scale.
Minimum	Real		Specifies the minimum value for the axis label, used when Scale is Custom.
Maximum	Real		Specifies the maximum value for the axis label, used when Scale is Custom.
Interval	• Number • Auto • Every • Thousands • Millions • Billions	Auto	Defines the display preference for the major grid lines of the value (Y) axis. Can be user specified by entering a numeric value. If Format is Date Time, Interval is specified in days.
Format			Characteristic for the value (Y) axis format can be changed by expanding the Format property to display the list of sub properties.
Format	• Number • Auto • Currency • Percentage • Scientific • Date Time	Auto	Defines the format of the value (Y) axis label.
Decimal Places	Integer (0-10)	0	Defines the number of digits (0-10) displayed after the decimal for the value (Y) axis label, used when Format is other than Date Time.
Use Separator	Boolean	False	Indicates whether the digit group separator is displayed, used when Format is Number.
Date Time Format	• Short Date • Long Date • Short Time • Long Time • Full Date Time (short time) • Full Date Time (long time) • General Date Time (short time) • General Date Time (long time)	Full Date Time (long time)	Indicates the display preference for the value (Y) axis label when Format is Date Time.

	• Universal Date Time • Universal Full Date Time • Month Day • Year Month		
Use Model Start Date and Time	Boolean	True	Indicates whether the starting date and time for the selected cell is obtained from the Arena model, visible when Format is Date Time.
Start Date Time	Date Time	12/30/1899 12:00:00 AM	Specifies the starting date and time for the selected cell, visible when Format is Date Time and Use Model Start Date and Time is False.
Locale (location)	List of Languages and Countries	English (United States)	List of languages and countries English (United States) Specifies the locale (location) used to define the details of the format selected for the value (Y) axis label.
Category - Chart Title			
Title	String	Level <instance number>	Defines the title of the control to display.
Title Back Color	Color Offerings	Undefined	Defines the background color for the title area of the control.
Title Color	Color Offerings	Black	Defines the font color for the title of the control.
Title Font			Characteristic for the Title Font can be changed through the Font dialog box by clicking the ellipsis or by expanding the Font property to display the list of sub properties.
Name	Font Offerings	Microsoft Sans Serif	Defines the font name applied to the control title.
Size	Integer	8	Defines the font size applied to the control title.
Bold	Boolean	False	Indicates whether the font applied to the control title is bold.
Italic	Boolean	False	Indicates whether the font applied to the control title is italicized.
Underline	Boolean	False	Indicates whether the font applied to the control title is underlined.
Title Position	• Bottom Center • Bottom Far • Bottom Near • Left Center • Left Far • Left Near • None • Right Center • Right Far • Right Near • Top Center • Top Far • Top Near	Top Center	Defines the position of the title for the control.
Category - Data Label			
Data Label Color	Color Offerings	Black	Defines the font color for the data label of the control.
Data Label Font			Characteristic for the Data Label Font can be changed through the Font dialog box by clicking the ellipsis or by expanding the Font property to display the list of sub properties.
Name	Font Offerings	Microsoft Sans Serif	Defines the font name applied to the data label.
Size	Integer	8	Defines the font size applied to the data label.
Bold	Boolean	False	Indicates whether the font applied to the data label is bold.
Italic	Boolean	False	Indicates whether the font applied to the data label is italicized.
Underline	Boolean	False	Indicates whether the font applied to the data label is underlined.
Data Label Format	(Format)		Characteristic for the data label format can be changed by expanding the Data Label Format property to display the list of sub properties.
Format	• Number • Auto • Currency • Percentage • Scientific • Date Time	Auto	Defines the format of the data label.
Decimal Places	Integer (0-10)	0	Defines the number of digits (0-10) displayed after the decimal for the data label, used when Format is other than Date Time.
Use Separator	Boolean	False	Indicates whether the digit group separator is displayed, used when Format is Number.
Date Time Format	• Short Date • Long Date • Short Time • Long Time • Full Date Time (short time) • Full Date Time (long time) • General Date Time (short time) • General Date Time (long time) • Universal Date Time • Universal Full Date Time • Month Day • Year Month	Full Date Time (long time)	Indicates the display preference for the data label when Format is Date Time.
Use Arena Start Date and Time	Boolean	True	Indicates whether the starting date and time for the selected cell is obtained from the Arena model, visible when Format is Date Time.
Start Date Time	Date Time	12/30/1899 12:00:00 AM	Specifies the starting date and time for the selected cell, visible when Format is Date Time and Use Model Start Date and Time is False.
Locale (location)	List of languages and countries	English (United States)	Specifies the locale (location) used to define the details of the format selected for the data label.
Data Label Position	• None • Above • Center • Left • Right	Center	Defines the position for the data label of the control.
Category - Design			
Background Color	Color Offerings	White	Defines the background color for the control.
Background Secondary Color	Color Offerings	Undefined	Defines the secondary background color for the control used when Gradient Style is other than None.
Border			Characteristics for the border can be changed by expanding the Border property to display the list of sub properties.
Style	• None • Embossed 1-3 • Frame Thin 1-6 • Frame Title 1-8	None	Defines the style of the border for the control.
Color	Color Offerings	Gray	Defines the color of the border, visible when Border Style is other than None or Embossed 1-3.
Secondary Color	Color Offerings	Undefined	Defines the secondary color of the border, visible when Border Style is other than None or Embossed 1-3 and when Gradient Style is other than None.
Gradient Style	• None • Left Right • Top Bottom • Center • Diagonal Left • Diagonal Right • Horizontal Center • Vertical Center	None	Defines the gradient style of the border, visible when Border Style is other than None or Embossed 1-3, and when Secondary Color is specified.
Page Color	Color Offerings	White	Defines the color of the control outside the border, visible only when Border Style is other than None.
Chart Background Color	Color Offerings	Transparent	Defines the background color for the chart area of the control.
Draw Style	Default, Cylinder	Default	Defines the shape of the level. Style is more pronounced when Enable 3D Style is True.
Fill Color	Color Offerings	Undefined	Defines the fill color for the level shape.
Gradient Style	• None • Left Right	None	Defines the gradient style for the background of the control, visible only when Background Secondary Color is specified.

- Top Bottom
- Center
- Diagonal Left
- Horizontal Center
- Vertical Center

Related Topics

Expression

Expression Builder

Toolbox

Home > Visual Designer Windows > Tool Windows > Toolbox > Dashboard Controls > Picture

Dashboard Controls - Picture

Picture Control

The Picture ( ) control is used to display a graphic image inside a dashboard. The following types of image files are supported:

- Bit mapped picture (.bmp)
- Graphics interchange format (.gif)
- Joint photographic Experts group (.jpg, .jpeg)
- Portable network graphics (.png)
- Icon graphics file format (.ico)
- Extended (Enhanced) Windows Metafile Format (.emf)
- Windows metafile (.wmf)

Picture Control Properties:

Property Name	Valid Entry	Default	Description
Category - Basic			
Image File Name	String - Name of the image file to be displayed		Displays the name of the selected image file associated with the control shown in the container.
Layout	• Auto Size • Center Image • Stretch Image • Normal	Auto Size	Determines how the image is fitted within the control. Any changes to the container size affect the image dynamically based on the layout selected.
Name	String Picture	Picture *<instance number>*	Defines a unique identifier for the control. The name appears in the Editor Explorer for the dashboard in which the control resides.
Category - Design			
Background Color	Color Offerings	White	Defines the background color of the control.

When a Picture control is first dropped into a container on a dashboard, a default image is displayed. This picture is a larger version of the toolbox icon and displays the text "Double-click to insert image."

The Image File Name property consists of a pull-down list displaying all graphic files associated with the project (as shown in the Project Explorer under the Graphic Files folder), as well as a "Browse folders..." option.

The Layout property has the following options:

- Auto Size – This option resizes and centers the image to display the entire picture within the allotted space of the container.
- Center Image – This option centers the original sized image in the center of the allotted space of the container. The size of the container can limit the amount of the image displayed.
- Normal – This option places the original sized image in the upper left corner of the container. The size of the container can limit the amount of the image displayed.
- Stretch Image – This option forces the image to fill the entire container space and will alter the image aspect ratio accordingly.

Related Topics

Toolbox

Home > Visual Designer Windows > Tool Windows > Toolbox > Dashboard Controls > Pie

Dashboard Controls - Pie

Pie Control

The Pie ( ) control is used to display a series of model variables and expressions in a pie chart.

Pie Control Properties:

Name	Valid Entry	Default Property	Description
Category - Basic			
Data			Data Specifies the properties and data of the chart used by the control.
Data Spreadsheet			Enter, view or edit the series data for the control.
Name	String	Pie <instance number>	Defines a unique identifier for the control. The name appears in the Editor Explorer for the dashboard in which the control resides.
Category – Chart 3D Options			
Enable 3D Style	Boolean	True	Indicates whether the control is displayed in 3D or 2D style.
Inclination	-90 to 90	30	Defines the inclination of the control in degrees (-90 to 90).
Rotation	-180 to 180	30	Defines the rotation of the control in degrees (-180 to 180).
Category – Chart Title			
Title	String	Pie <instance number>	Defines the title of the control to display.
Title Back Color	Color Offerings	Undefined	Defines the background color for the title area of the control.
Title Color	Color Offerings	Black	Defines the font color for the title of the control.
Title Font			Characteristic for the Title Font can be changed through the Font dialog box by clicking the ellipsis or by expanding the Font property to display the list of sub properties.
Name	Font Offerings	Microsoft Sans Serif	Defines the font name applied to the control title.
Size	Integer	8	Defines the font size applied to the control title.
Bold	Boolean	False	Indicates whether the font applied to the control title is bold.
Italic	Boolean	False	Indicates whether the font applied to the control title is italicized.
Underline	Boolean	False	Indicates whether the font applied to the control title is underlined.
Title Position	• Bottom Center • Bottom Far • Bottom Near • Left Center • Left Far • Left Near • None	Top Center	Defines the position of the title for the control.

	• Right Center • Right Far • Right Near • Top Center • Top Far • Top Near		
Category – Data Labels			
Data Labels Color	Color Offerings	Black	Defines the font color for the data labels of the control.
Data Labels Font			Characteristic for the Data Labels Font can be changed through the Font dialog box by clicking the ellipsis or by expanding the Font property to display the list of sub properties.
Name	Font Offerings	Microsoft Sans Serif	Defines the font name applied to the data labels.
Size	Integer	8	Defines the font size applied to the data labels.
Bold	Boolean	False	Indicates whether the font applied to the data labels is bold.
Italic	Boolean	False	Indicates whether the font applied to the data labels is italicized.
Underline	Boolean	False	Indicates whether the font applied to the data labels is underlined.
Data Labels Format	(Format)		Characteristic for the data labels format can be changed by expanding the Data Labels Format property to display the list of sub properties.
Format	• Number • Auto • Currency • Percentage • Scientific	Auto	Defines the format for the data labels.
Decimal Places	Integer	0	Defines the number of digits (0-10) displayed after the decimal for the data labels.
Use Separator	Boolean	False	Indicates whether the digit group separator is displayed, used when Format is Number.
Locale (location)	List of Languages and Countries	English (United States)	List of languages and countries English (United States) Specifies the locale (location) used to define the details of the format selected for the data labels.
Data Labels Position	• None • Inside • Outside	Inside	Defines the position of the data labels for the control.
Category – Design			
Background Color	Color Offerings	White	Defines the background color for the control.
Background Secondary Color	Color Offerings	Undefined	Defines the secondary background color for the control used when Gradient Style is other than None.
Border			Characteristics for the border can be changed by expanding the Border property to display the list of sub properties.
Style	• None • Embossed 1-3 • Frame Thin 1-6 • Frame Title 1-8	None	Defines the style of border for the control.
Color	Color Offerings	Gray	Defines the color of the border, visible when Border Style is other than None, Embossed 1-3.
Secondary Color	Color Offerings	Undefined	Defines the secondary color of the border visible when Style is other than None, Embossed 1-3 and when Gradient Style is other than None.
Gradient Style		None	Defines the gradient style of the border visible when the Style is other than None, Embossed 1-3 and when Secondary Color is specified.
Page Color		White	Defines the color of the control outside the border, visible only when Border Style is other than None.
Chart Background Color	Color Offerings	Undefined	Defines the background color for the chart area of the control.
Chart Palette		Bright Pastel	Selects the palette used to assign fill colors automatically for the chart. Selection of Chart Palette will override Fill Colors specified in Data - Points Editor.
Gradient Style	• None • Left Right • Top Bottom • Center • Diagonal Left • Diagonal Right • Horizontal Center • Vertical Center	None	Defines the gradient style for the background of the control, visible only when Background Secondary Color is specified.
Category - Legend			
Legend Background Color	Color Offerings	Transparent	Defines the background color for the legend area of the control.
Legend Border	• Not Set • Dash • Dash Dot • Dash Dot Dot • Dot • Solid	Solid	Defines the border style for the legend area of the control.
Legend Border Color	Color Offerings	Undefined	Defines the border color for the legend area of the control.
Legend Border Width	Integer	1	Defines the border width for the legend area of the control.
Legend Color	Color Offerings	Black	Defines the font color for the legend of the control.
Legend Font			Characteristics for the Legend Font can be changed through the Font dialog box by clicking the ellipsis or by expanding the Legend Font property to display the list of sub properties.
Name	Font Offerings	Microsoft Sans Serif	Defines the font name applied to the legend.
Size	Integer	8	Defines the font size applied to the legend.
Bold	Boolean	False	Indicates whether the font applied to the legend is bold.
Italic	Boolean	False	Indicates whether the font applied to the legend is italicized.
Underline	Boolean	False	Indicates whether the font applied to the legend is underlined.
Legend Position	• None • Top Near • Top Center • Top Far • Left Near • Left Center • Left Far • Bottom Near • Bottom Center • Bottom Far • Right Near • Right Center • Right Far	Right Near	Defines the position for the legend of the control.

Data - Points Editor

When the ellipsis is selected for the Points property of the Data – Series Editor, the Data - Points Editor dialog is displayed. The dialog displays a list of all the points in the selected series. Points can be added or removed using the associated button. Series can also be copied to expedite the creation of additional points for the selected series.

Data - Points Dialog Properties:

Name	Valid Entry	Default Property	Description
Category - Basic			
Exploded	Boolean	False	Allows segments of the pie to be separated visually by selecting desired individual points and changing the value(s) to True.
Expression			Specifies the expression used by the control for the selected data point during runtime.
Fill Color	Color Offerings	Undefined	Specifies the fill color for the selected data point. This color is also used to identify the data point in the chart legend.
Name	String		Name for the selected data point. This name is also used to identify the date point in the chart legend.
Preview Value	Real	Random Generated Number	Value entered identifies the selected data point during edit mode. This value is not used during runtime.

Related Topics

Data - Points Editor

Data - Series Editor

Data Spreadsheet - Series Values

Toolbox

Home > Visual Designer Windows > Tool Windows > Toolbox > Dashboard Controls > Plot

Dashboard Controls - Plot

Plot Control

The Plot ( ) control is used to monitor and plot one or more model variable(s) or expression(s). The independent (X-axis) variable plotted is simulated time.

Note: When the number of values in a plot increases, the visual representation of the control will appear to flatten out so a 3D plot may start to look more like a 2D plot.

Plot Control Properties:

Name	Valid Entry	Default Property	Description
Category - Basic			
Data			Specifies the properties and data for all series used by the control.
Data Spreadsheet			Enter, view or edit the series data for the control.
Name	String	Plot <instance number>	Defines a unique identifier for the control. The name appears in the Editor Explorer for the dashboard in which the control resides.
Type	Line, Spline, Step Line, Fast Line	Fast Line	Defines the type of chart that will be displayed in the control.
Category – Chart 3D Options			
Enable 3D Style	Boolean	False	Indicates whether the control is displayed in 3D or 2D style.
Inclination	-90 to 90	30	Defines the inclination of the control in degrees (-90 to 90).
Rotation	-180 to 180	30	Defines the rotation of the control in degrees (-180 to 180).
Category – Chart Axes			
Enable Zoom	Boolean	False	Specifies whether zoom capability can be invoked during runtime, visible when Enable 3D Style is False.
Time (X) Axis			Characteristic for the time (X) axis can be changed by expanding the Time (X) Axis property to display the list of sub properties.
Title	String		Defines the title of the time (X) axis.
Title Orientation	• Auto • Horizontal • Rotated 90 • Rotate 270 • Stacked	Auto	Defines the orientation of the time (X) axis title.
Scale			Characteristic for the time (X) axis scale can be changed by expanding the Scale property to display the list of sub properties.
Scale	• Auto • Custom	Custom	Defines the display preference for the time (X) axis scale.
Minimum	Real	0	Specifies the minimum value for the time (X) axis label, used when Scale is Custom.
Maximum	Real	Auto	Specifies the maximum value for the time (X) axis label, used when Scale is Custom.
Interval	• User-defined Number • Auto • Every • Thousands • Millions • Billions	Auto	Defines the display preference for the major grid lines of the time (X) axis. Can be user specified by entering a numeric value. If Format is Date Time, Interval is specified in days.
Grid Lines	• Major • Major and Minor • Minor • None	Major	Defines the display preference for grid lines of the time (X) axis.
Format			Characteristic for the time (X) axis format can be changed by expanding the Format property to display the list of sub properties.
Format	• Number • Auto • Scientific • Date Time	Auto	Defines the format of the time (X) axis labels.
Decimal Places	Integer	0	Defines the number of digits (0-10) displayed after the decimal for the time (X) axis labels, used when Format is other than Date Time or Decimal.
Use Separator	Boolean	False	Indicates whether the digit group separator is displayed, used when Format is Number.
Date Time Format	• Short Date • Long Date • Short Time • Long Time • Full Date Time (short time) • Full Date Time (long time) • General Date Time (short time) • General Date Time (long time) • Universal Date Time • Universal Full Date Time • Month Day • Year Month	Full Date Time (long time)	Indicates the display preference for the time (X) axis labels when Format is Date Time.
Use Model Start Date	Boolean	True	Indicates whether the starting date and time for the

and Time			selected cell is obtained from the Arena model, visible when Format is Date Time.
Start Date Time	Date Time	12/30/1899 12:00:00 AM	Specifies the starting date and time for the selected cell, visible when Format is Date Time and Use Model Start Date and Time is False.
Locale (location)	List of Languages and Countries	English (United States)	List of languages and countries English (United States) Specifies the locale (location) used to define the details of the format selected for the time (X) axis labels.
Value (Y)Axis			Characteristic for the value (Y) axis can be changed by expanding the Value (Y) Axis property to display the list of sub properties.
Title	String		Defines the title of the value (Y) axis, visible when Display is other than None.
Title Orientation	• Auto • Horizontal • Rotated 90 • Rotate 270 • Stacked	Auto	Defines the orientation of the value (Y) axis title, visible when Display is other than None.
Display	• None • Labels • No Labels	Labels	Indicates the display preference for labels and their order for the value (Y) axis.
Grid Lines	• Major • Major and Minor • Minor • None	Major	Defines the display preference for grid lines of the value (Y) axis.
Scale			Characteristic for the value (Y) axis scale can be changed by expanding the Scale property to display the list of sub properties.
Scale	• Auto • Custom	Auto	Defines the display preference for the value (Y) axis scale.
Minimum	Integer	0	Specifies the minimum value for the axis label, used when Scale is Custom.
Maximum	Integer	100	Specifies the maximum value for the axis label, used when Scale is Custom.
Interval	• Number • Auto • Every • Thousands • Millions • Billions	Auto	Defines the display preference for the major grid lines of the value (Y) axis. Can be user specified by entering a numeric value. If Format is Date Time, Interval is specified in days.
Format			Characteristic for the value (Y) axis format can be changed by expanding the Format property to display the list of sub properties.
Format	• Number • Auto • Currency • Percentage • Scientific • Date Time	Auto	Defines the format of the value (Y) axis label.
Decimal Places	Integer	0	Defines the number of digits (0-10) displayed after the decimal for the value (Y) axis label, used when Format is other than Date Time.
Use Separator	Boolean	False	Indicates whether the digit group separator is displayed, used when Format is Number.
Date Time Format	• Short Date • Long Date • Short Time • Long Time • Full Date Time (short time) • Full Date Time (long time) • General Date Time (short time) • General Date Time (long time) • Universal Date Time • Universal Full Date Time • Month Day • Year Month	Full Date Time (long time)	Indicates the display preference for the value (Y) axis label when Format is Date Time.
Use Model Start Date and Time	Boolean	True	Indicates whether the starting date and time for the selected cell is obtained from the Arena model, visible when Format is Date Time.
Start Date Time	Date Time	12/30/1899 12:00:00 AM	Specifies the starting date and time for the selected cell, visible when Format is Date Time and Use Model Start Date and Time is False.
Locale (location)	List of languages and countries	English (United States)	List of languages and countries English (United States) Specifies the locale (location) used to define the details of the format selected for the value (Y) axis label.
Category – Chart Title			
Title	String	Plot <instance number>	Defines the title of the control to display.
Title Back Color	Color Offerings	Undefined	Defines the background color for the title area of the control.
Title Color	Color Offerings	Black	Defines the font color for the title of the control.
Title Font			Characteristic for the Title Font can be changed through the Font dialog box by clicking the ellipsis or by expanding the Font property to display the list of sub properties.
Name	Font Offerings	Microsoft Sans Serif	Defines the font name applied to the control title.
Size	Integer	8	Defines the font size applied to the control title.
Bold	Boolean	False	Indicates whether the font applied to the control title is bold.
Italic	Boolean	False	Indicates whether the font applied to the control title is italicized.
Underline	Boolean	False	Indicates whether the font applied to the control title is underlined.
Title Position	• Bottom Center • Bottom Far • Bottom Near • Left Center • Left Far • Left Near • None • Right Center • Right Far • Right Near • Top Center • Top Far • Top Near	Top Center	Defines the position of the title for the control.
Category – Design			
Background Color	Color Offerings	White	Defines the background color for the control.
Background Secondary Color	Color Offerings	Undefined	Defines the secondary background color for the control used when Gradient Style is other than None.
Border			Characteristics for the border can be changed by expanding the Border property to display the list of sub properties.

Style	• None • Embossed 1-3 • Frame Thin 1-6 • Frame Title 1-8	None	Defines the style of border for the control.
Color	Color Offerings	Gray	Defines the color of the border, visible when Border Style is other than None, Embossed 1-3.
Secondary Color	Color Offerings	Undefined	Defines the secondary color of the border visible when Style is other than None, Embossed 1-3 and when Gradient Style is other than None.
Gradient Style		None	Defines the gradient style of the border, visible when the Style is other than None, Embossed 1-3 and when Secondary Color is specified.
Page Color		White	Defines the color of the control outside the border, visible only when Border Style is other than None.
Chart Background Color	Color Offerings	Undefined	Defines the background color for the chart area of the control.
Chart Palette		Bright Pastel	Selects the palette used to assign line colors automatically for all data series. Selection of Chart Palette will override Line Colors specified in the Data – Series Editor.
Gradient Style	• None • Left Right • Top Bottom • Center • Diagonal Left • Diagonal Right • Horizontal Center • Vertical Center	None	Defines the gradient style for the background of the control, visible only when Background Secondary Color is specified.
Category - Legend			
Legend Background Color	Color Offerings	Transparent	Defines the background color for the legend area of the control.
Legend Border	• Not Set • Dash • Dash Dot • Dash Dot Dot • Dot • Solid	Solid	Defines the border style for the legend area of the control.
Legend Border Color	Color Offerings	Undefined	Defines the border color for the legend area of the control.
Legend Border Width	Integer	1	Defines the border width for the legend area of the control.
Legend Color	Color Offerings	Black	Defines the font color for the legend of the control.
Legend Font			Characteristics for the Legend Font can be changed through the Font dialog box by clicking the ellipsis or by expanding the Legend Font property to display the list of sub properties.
Name	Font Offerings	Microsoft Sans Serif	Defines the font name applied to the legend.
Size	Integer	8	Defines the font size applied to the legend.
Bold	Boolean	False	Indicates whether the font applied to the legend is bold.
Italic	Boolean	False	Indicates whether the font applied to the legend is italicized.
Underline	Boolean	False	Indicates whether the font applied to the legend is underlined.
Legend Position	• None • Top Near • Top Center • Top Far • Left Near • Left Center • Left Far • Bottom Near • Bottom Center • Bottom Far • Right Near • Right Center • Right Far	Right Near	Defines the position for the legend of the control.

Data - Series Editor

When the ellipsis is selected for the Data property, the Data – Series Editor dialog box is displayed. The dialog box displays a list of all the series used by the control on the list. Series can be added or removed using the associated button. Series can also be copied to expedite the creation of additional series for the control.

Data - Series Dialog Properties:

Name	Valid Entry	Default Property	Description
Category - Basic			
Expression			Specifies the expression of the selected data point used by the control during runtime.
Line Color	Color Offerings	Undefined	Specifies the line color for the selected data point. This color is also used to identify the point in the chart legend.
Name	String	Series <index number>	Name for the selected data series of the control. This name is also used to identify the series in the chart legend.

Related Topics

Data Spreadsheet - Series Values

Toolbox

Home > Visual Designer Windows > Tool Windows > Toolbox > Dashboard Controls > Text Box

Dashboard Controls - Text Box

Text Box Control

The Text Box ( ) control is used to present narrative text on the dashboard. This feature does not allow the display of a model variable or expression. To do so, use the Scoreboard control.

Text Box Properties:

Property Name	Valid Entry	Default Property	Description
Category - Basic			
Name	String	Text Box *<instance number>*	Defines a unique identifier for the control. The name appears in the Editor Explorer for the dashboard in which the control resides.
Text			Enter or edit text in the control.
Category – Design			
Background Color	Color Offerings	White	Defines the background color of the control.
Border Color	Color Offerings	Undefined	Defines the border color of the control.
Border Width	Integer	0	Defines the border width of the control.
Text Wrap	Boolean	True	Indicates whether a multi-line text box control automatically wraps text to the beginning of the next line when necessary.

When a Text Box is first dropped into a container on a dashboard, the container background is white and displays the message: "Double-click to insert text."

To add text to the control, the user may double-click inside the container, click on the ellipsis in the Text property, or right-click in the container and select "Text Editor." Doing so opens the Text Editor window. The window has the label "Text Editor" and contains buttons to help the user edit their text.

The following options, listed in the order they are displayed, each have a button along the top of the text editor window.

Text Options	Icon	Description
Font		This combo box defines the font for the text selected. The fonts supported are Arial, Courier New, Garamond, Microsoft Sans Serif, Tahoma, Times New Roman and Verdana. The default font is Microsoft Sans Serif.
Font Size		This combo box defines the size of the font for the text selected.
Font Color		This combo box changes the text selected. The colors supported are Black, Blue, Red and Green.
Bold		This button changes the text selected to a heavier font.
Italic		This button changes the text selected to an italic font.
Underline		This button draws a line under the text selected.
Strikethrough		This button draws a line through the text selected.
Align Left		This button aligns the text selected to the left.
Align Center		This button centers the text selected.
Align Right		This button aligns the text selected to the right.
Undo		This button reverses the last action.
Redo		This button repeats the last undo action.
Cut		This button cuts the selection from the document and puts it on the Clipboard.
Copy		This button copies the selection from the document and puts it on the Clipboard.
Paste		This button pastes the contents of the Clipboard.

Related Topics

Toolbox

Home > Visual Designer Windows > Tool Windows > Toolbox > Dashboard Controls > Scoreboard

Dashboard Controls - Scoreboard

Scoreboard Control

The Scoreboard ( ) control is used to display model variables and expressions similar to a spreadsheet. The number of horizontal and vertical cells is limited to 500. Cell contents can display descriptive text or the current value of a model variable or expression. To display the value of a model variable or expression, the contents of the cell must be preceded by an equal (=) sign (for example, =TNOW).

Scoreboard Properties:

Property Name	Valid Entry	Default Property	Description
Category - Basic			
Columns	Integer 1 to 500	10	Defines the number of columns (1-500) for the control.
Name	String	Scoreboard <instance number>	Defines a unique identifier for the control. The name appears in the Editor Explorer for the dashboard in which the control resides.
Rows	Integer 1 to 500	10	Defines the number of rows (1-500) for the control.
Show Grid Lines	Boolean	True	Indicates whether grid lines are displayed for the control.
Category - Cell			
Cell Alignment	• Auto • Top Left • Top Center • Top Right • Middle Left • Middle Center • Middle Right • Bottom Left • Bottom Center • Bottom Right	Auto	Defines the alignment for the selected cell or cells during runtime.
Cell Background Color	Color Offerings	Undefined	Defines the background color for the selected cell or cells in the control.
Cell Border Lines		None	Defines the border for the selected cell or cells in the control.
Cell Font	Font Offerings	Undefined	Font characteristic for the selected cell or cells can be changed through the Font dialog box by clicking the ellipsis or by expanding the Font property to display the list of sub properties.
Name	Font Offerings	Microsoft Sans Serif	Defines the font name applied to the selected cell or cells.
Size	Integer	8	Defines the font size applied to the selected cell or cells.
Bold	Boolean	False	Indicates whether the font applied to the selected cell or cells is bold.
Italic	Boolean	False	Indicates whether the font applied to the selected cell or cells is italicized.
Underline	Boolean	False	Indicates whether the font applied to the selected cell or cells is underlined.
Cell Font Color	Color Offerings	Undefined	Defines the color of the font for the selected cell or cells in the control.
Cell Format			Defines the format of the selected cell or cells during runtime.
Format	• Number • Auto • Currency • Percentage • Scientific • Date Time	Auto	Defines the format of the selected cell or cells during runtime.
Decimal Places	Integer	0	Defines the number of digits displayed after the decimal for the selected cell or cells, used when Format is other than Date Time or Auto.
Separator	Boolean	False	Indicates whether the digit group separator is displayed, used when Format is Number.
Date Time Format	• Short Date • Long Date • Short Time • Long Time • Full Date Time (short time) • Full Date Time (long time) • General Date Time (short time) • General Date Time (long time) • Universal Date Time • Universal Full Date Time • Month Day • Year Month	Full Date Time (long time)	Indicates the display preference for the selected cell or cells, when the Format property is Date Time.
Use Model Start Date and Time	Boolean	True	Indicates whether the starting date and time for the selected cell is obtained from the Arena model, visible when Format is Date Time.
Start Date Time	Date Time	12/30/1899 12:00:00 AM	Specifies the starting date and time for the selected cell,

			visible when Format is Date Time and Use Model Start Date and Time is False.
Locale (location)	List of Languages and Countries	English (United States)	Specifies the locale (location) used to define the details of the format for the selected cell or cells.

The Cell Border Lines property is used to define the border for the selected cell or cells in the control. Clicking the pull-down arrow displays a preview box used to define the borders of the selection cell(s).

Related Topics

Expression

Expression Builder

Intellisense

Toolbox

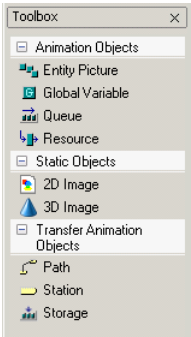
Home > Visual Designer Windows > Tool Windows > Toolbox > Scene Controls

Scene Controls

When the Scene is the active editor displayed, there are three categories of Toolbox tools (image below): Animation Objects, Static Objects, and Transfer Animation Objects.

The "Animation Objects" and "Transfer Animation Objects" tools can be used to place objects in the 3D scene. This method places generic instances of an animated object, meaning that the associated Arena element or expression must be defined by the user. This is the only method to place a global variable in the 3D scene or to place any path.

The "Static Objects" tools are used to place static 2D and 3D objects into the scene. To place a static object, simply drag and drop the generic icon from the toolbox into the scene. After placing the object, the "File Name" fields need to be defined.



Scene Layout

Scene Layout Properties:

Property Name	Valid Entry	Default	Description
Category - Background			
Background	User Color, User Texture, Nice Day, Sunset	User Color	Specifies the type of background for the scene. Nice Day depicts a daytime sky color with a user-defined ground color. Sunset depicts an evening sky with a user-defined ground color. User Texture maps a user-defined image file to the background. User Color defines the background as a solid color.
Background Color	Color Offerings		Defines the background color of the scene. When Background Type is User Color, this defines the entire background color for the entire sphere. When Background Type is Nice Day or Sunset, this defines the color of sphere from the great circle (equator) to the bottom (south pole). When Background Type is User Texture, this defines the color for the remaining portion of the sphere not mapped by the image file.
Background Image	File String		Name of the image file to be used Specifies the name of the image file used to map a texture to the background sphere of the scene. Visible when Background Type is User Texture.
Background Sphere Percent	0 to 100	50	Percentage of the sphere that is covered by the image file specified. Entering 50 covers the background sphere from the top (north pole) to the great circle (equator). Specifying 100 covers the entire sphere with the image. Visible when Background Type is User Texture.
Background Texture Percent	0 to 100	100	Percentage of the background texture mapped to the portion of the sphere specified to be covered by the image file (Background Sphere Percent). Entering 50 will map the upper half of the image file to the Background Sphere Percent specified. Entering 100 will map the entire image file to the Background Sphere Percent specified.
Category - Grid			
Grid Major Spacing	Integer	10	The number of grid cells between the major grid lines.
Grid Size	Integer	1	The size, specified in Display Units, of each grid cell. This value is not updated when Display Units are changed. Only the relationship to the unit of measure changes.
Major Grid Line Color	Color Offerings	Silver	Specifies the color for the major grid lines.
Minor Grid Line Color	Color Offerings	Gray	Specifies the color for the minor grid lines.
Category - Lights			
Brightness	Integer	0	Defines the lighting brightness for the scene (-100 to 100).
Contrast	Integer	0	Defines the lighting contrast for the scene (-100 to 100).
Light Theme	Three Lights, Two Lights or Sun	Three Lights	Specifies the type of automatic lighting used for the scene.
Category - Measurement			
3D Engine Units	Undefined, Metric – Kilometers, Metric – Meters, Metric – Centimeters, U.S. – Miles, U.S. – Feet, U.S. - Inches	If the region and language setting of the OS is set to US – English, then the default is Feet, otherwise the default is Meters	Specifies the unit of measure which is mapped to the base graphic units of the application's 3D engine. See note below.
Display Units	Undefined, Metric – Kilometers, Metric – Meters, Metric – Centimeters, U.S. – Miles, U.S. – Feet, U.S. - Inches	Same units as the default Base Units	Specifies the display units used for all measurement properties related to the scene. Changing this property will convert all existing measurement properties from the previous display units specified to the new units specified.

Notes

3D Engine Units - Changing this property will re-scale (relationship between the base graphic engine units to the specified size of the object) all user-defined scene objects. Note that system objects, like the Station icon or the default Resource icon are always proportional to the grid size. If you change to undefined units, this does NOT cause any re-scaling.

Related Topics

Animation Objects

Lights

Static Objects

Transfer Animation Objects

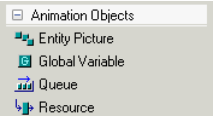
Views

Home > Visual Designer Windows > Tool Windows > Toolbox > Scene Controls > Animation Objects

Animation Objects

The Animation Objects tools can be used to place objects in the 3D scene. This method places generic instances of an animated object, meaning that the associated Arena element or expression must be defined by the user. This is the only method to place a global variable in the 3D scene. To place an object, simply drag and drop the generic icon from the toolbox into the scene. The Scene view can be either perspective or orthogonal. Since these are generic instances of animated objects, the properties associated with the object will need to be defined.

Here are a few examples: after placing a resource the "Name" property will need to be defined with the symbol name of the resource defined in the model. After placing a global variable, the "Expression" property will need to be defined with the model expression value to be evaluated.



Related Topics

Animating Entities

Animating Global Variables

Animating Queues

Animating Resources

Lights

Static Objects

Transfer Animation Objects

Views

Home > Visual Designer Windows > Tool Windows > Toolbox > Scene Controls > Animation Objects > Entity Picture

Animation Objects - Entity Picture

The properties shown below are displayed in the Properties tool window when an Entity Picture is selected in the tree view that has not yet been placed in the scene.

Undefined Element Property Descriptions

Property Name	Valid Entry	Default	Description
Category - Basic			
Name	Read Only	N/A	Name of element selected.
Type	Read Only	N/A	Specifies the type of element selected; Entity Picture, Resource, etc.

Once an Entity Picture has been placed in the scene, the properties below will be displayed for that instance. Note that for Entity Pictures, the Layout properties (Position and Rotation) are only used to display the object in the scene during edit mode. These values are not used during runtime.

Property Name	Valid Entry	Default	Description
Category - Basic			
Locked	Boolean	False	Specifies whether the object can be selected in the scene.
Name	Symbol Name [Entity Pictures]	N/A	Name of entity picture selected.
Category - Layout			
Position			Characteristic for the position can be changed by expanding the position property to display the list of sub properties. Each property defines the location in the X, Y or Z axis for the selected entity picture.
X	Real		
Y	Real		
Z	Real		
Rotation			Characteristic for the rotation can be changed by expanding the rotation property to display the list of sub properties. Each property defines the rotation around the X, Y or Z axis for the selected entity picture.
X	Real		
Y	Real		
Z	Real		
Category - Style Class			
Preview Image	Image or any Image|State value of the style class associated with the entity picture	Image	Image entered identifies the entity image used to display the object in the scene during edit mode. This value is not used during runtime.
Preview Size			Characteristic for the size can be viewed by expanding the size property to display the list of sub properties. Each property defines the size (in display units) in the X, Y or Z axis of the preview image for the selected entity picture.
X	Read Only		
Y	Read Only		
Z	Read Only		
Style Class	Entity Style Class		Style class used to represent the entity in the 3D scene.

Related Topics

Animating Entities

Animation Objects

Scene Controls

Scene Editor Explorer

Home > Visual Designer Windows > Tool Windows > Toolbox > Scene Controls > Animation Objects > Global Variable

Animation Objects - Global Variable

Global Variable Property Descriptions

Property Name	Valid Entry	Default	Description
Category - Basic			
Expression	Expression	N/A	Specifies the expression to be evaluated whose value will be represented by the image or images. The expression may return string or numeric values.
Locked	Boolean	False	Specifies whether the object can be selected in the scene.
Name	String	N/A	Defines a unique identifier for the global variable in the scene. The name appears in the Scene Layout editor explorer tree to identify the object.
Category - Layout			
Position			Characteristic for the position can be changed by expanding the

			position property to the list of sub properties. Each property defines the location in the X, Y or Z axis for the selected global variable.
X	Real		
Y	Real		
Z	Real		
Rotation			Characteristic for the rotation can be changed by expanding the rotation property to display the list of sub properties. Each property defines the rotation around the X, Y or Z axis for the selected global variable.
X	Real		
Y	Real		
Z	Real		
Category - Style Class			
Preview Size			Characteristic for the size can be viewed by expanding the size property to display the list of sub properties. Each property defines the size (in display units) in the X, Y and Z axis of the preview trigger value of the selected global variable.
X	Read Only		
Y	Read Only		
Z	Read Only		
Preview Trigger Value	Any trigger value of the style class associated with the global variable	Default	Trigger value entered identifies the global variable trigger mesh used to display the object in the scene during edit mode. This value is not used during runtime.
Style Class	Global Variable Style Class		Style class used to represent the global variable in the 3D scene. Type your drop-down text here

Related Topics

Animating Global Variables

Animation Objects

Scene Controls

Scene Editor Explorer

Home > Visual Designer Windows > Tool Windows > Toolbox > Scene Controls > Animation Objects > Queue

Animation Objects - Queue

The properties shown below are displayed in the Properties tool window when a Queues element is selected in the tree view that has not yet been placed in the scene.

Undefined Element Property Descriptions

Property Name	Valid Entry	Default	Description
Category - Basic			
Name	Read Only	N/A	Name of element selected.
Type	Read Only	N/A	Specified the type of element selected: Entity Picture, Resource, etc.

Once a particular Queues element has been placed in the scene, the properties below will be displayed for that instance.

Property Name	Valid Entry	Default	Description
Category - Animation			
Maximum Arrival Time			Characteristic for the Maximum Arrival Time can be changed by expanding the property to display the list of sub properties. The sub properties are used to determine the velocity for the arrival animation.
Duration	Real	0	Specifies the maximum duration of simulation time used to animate an entity entering the queue and moving to its waiting position.
Units	Seconds, Minutes, Hours Hours, Days	Hours	Defines the time units for the Maximum Arrival Time.
Category - Basic			
Locked	Boolean	False	Specifies whether the object can be selected in the scene.
Name	Symbol Name [Queues]	N/A	Name of queue.
Type	Line or Point	Line	Determines how the entities are located and spaced in the scene during the animation. Point type requires you to specify the maximum number and exact location for the entities displayed in the waiting area. The line type requires only a head and tail location. A line is drawn between these points and the entities will be aligned on the line.
Category - Layout			
Color	Color Offerings		Defines the color of the line for the queue. Visible only during edit mode.
Points			Specifies the properties for all points that comprise the queue, visible when Type is Point.
End Point			Characteristics for the End Point can be changed by expanding the property to display the list of sub properties, visible when Type is Line. Each property defines the location in the X, Y or Z axis for the end point.
X	Real		
Y	Real		
Z	Real		
Start Point			Characteristics for the Start Point can be changed by expanding the property to display the list of sub properties. Each property defines the location in the X, Y or Z axis for the start point.
X	Real		
Y	Real		
Z	Real		
Category - Absolute Position			
Absolute X	Real		Absolute position in the X axis for the selected point.
Absolute Y	Real		Absolute position in the Y axis for the selected point.
Absolute Z	Real		Absolute position in the Z axis for the selected point.
Category - Relative Position			
Relative X	Real		Position in the X axis (relative to the starting point) for the selected point.
Relative Y	Real		Position in the Y axis (relative to the starting point) for the selected point.
Relative Z	Real		Position in the Z axis (relative to the starting point) for the selected point.
Category - Rotation			
Rotation X	Real		Rotation in the X axis for the selected point.
Rotation Y	Real		Rotation in the Y axis for the selected point.
Rotation Z	Real		Rotation in the Z axis for the selected point.

Type property - When an entity exits the queue, all entities following it are shifted one position toward the head. The number of pictures displayed depends on the line length and the size of each entity in the waiting area.

When placing a queue using the drag-and-drop method onto the scene, the location where you click to place the queue, defines the head of the queue. All queues are placed into the scene as Line type queues by default.

When the ellipsis is selected for the Points property, a dialog box titled "Points Editor" is displayed. It displays a list of all the points that comprise the queue. Points can be added or removed using the associated button.

Animation Properties - When an entity enters the queue that is being animated, Visual Designer uses the value of the Maximum Duration field to determine a velocity for animating the arrival. The entity's picture is then animated moving along the drawn queue path at that velocity until it reaches the entity's rank position in the queue. During the movement, if the entity picture style class is split into sub-states, the 'in Transfer' state mesh will be used. Once the entity reaches its rank, the 'in Queue' state mesh will be used.

If the Maximum Duration is specified as 0, then an entity's picture will be immediately displayed at its rank position in the queue.

Points Editor

The Points Editor has the ability to modify the same property for multiple points selected. Holding down the CTRL key provides the ability to select multiple points. After the desired points are selected, the property value can be edited. This edit will affect all selected points. Note that if a particular point's property is grayed out (not editable), then that point's property will not be modified with the rest of the selected points.

The absolute position and relative position properties will be grayed out for the start point. The Rotation properties will be enabled.

Points Editor Queue Property Descriptions:

Property Name	Valid Entry	Default	Description
Category - Absolute Position			
Absolute X	Real		Absolute position in the X axis for the selected point.
Absolute Y	Real		Absolute position in the Y axis for the selected point.
Absolute Z	Real		Absolute position in the Z axis for the selected point.
Category - Relative Position			
Relative X	Real		Position in the X axis (relative to the start point) for the selected point.
Relative Y	Real		Position in the Y axis (relative to the start point) for the selected point.
Relative Z	Real		Position in the Z axis (relative to the start point) for the selected point.
Category - Rotation			
Rotation X	Real		Rotation in the X axis for the selected point.
Rotation Y	Real		Rotation in the Y axis for the selected point.
Rotation Z	Real		Rotation in the Z axis for the selected point.

Related Topics

Animating Queues

Animation Objects

Scene Editor Explorer

Home > Visual Designer Windows > Tool Windows > Toolbox > Scene Controls > Animation Objects > Resource

Animation Objects - Resource

The properties shown below are displayed in the Properties tool window when a Resources element is selected in the tree view that has not yet been placed in the scene.

Undefined Element Property Descriptions

Property Name	Valid Entry	Default	Description
Category - Basic			
Name	Read Only	N/A	Name of element selected.
Type	Read Only	N/A	Specifies the type of element selected; Entity Picture, Resource, etc.

Once a particular Resources element has been placed in the scene, the properties below will be displayed for that instance.

Property Name	Valid Entry	Default	Description
Category - Basic			
Locked	Boolean	False	Specifies whether the object can be selected in the scene.
Name	Symbol Name [Resources]	N/A	Name of resources selected.
Seize Area	Boolean	False	Specifies whether the resource will be shown alone (False) or with the entity or entities that seize it (True).
Category - Layout			
Position			Characteristic for the position can be changed by expanding the position property to display the list of sub properties. Each property defines the location in the X, Y or Z axis for the selected resource.
X	Real		
Y	Real		
Z	Real		
Rotation			Characteristic for the rotation can be changed by expanding the rotation property to display the list of sub properties. Each property defines the rotation around the X, Y or Z axis for the selected resource.
X	Real		
Y	Real		
Z	Real		
Category - Style Class			
Preview Size			Characteristic for the size can be viewed by expanding the size property to display the list of sub properties. Each property defines the size (in display units) in the X, Y or Z axis of the preview state image for the selected resource.
X	Read Only		
Y	Read Only		
Z	Read Only		
Preview State	Any state value of the style class associated with the resource	Idle	State entered identifies the resource state mesh used to display the object in the scene during edit mode. This value is not used during runtime.
Style Class	Resource Style Class		Style class used to represent the resource in the 3D scene.

Seize Area:

Once a particular Resources element has been placed in the scene and the Seize Area property is set to true, the properties below will be displayed when the seize area is the selected object in the scene.

Property Name	Valid Entry	Default	Description
Category - Basic			
Locked	Read Only		The 'Locked' property for the seize area is read only and is dependent of the value of the parent resource. If the parent resource is locked, the seize area is locked. The helper object for the seize area will have the lock control greyed out.
Type	Line or Point	Line	Determines how the entities are located and spaced in the scene during the animation. Point type requires you to specify the maximum number and exact location for the entities displayed in the waiting area. The line type requires only a head and tail location. A line is drawn between these points and the entities will be aligned on the line.
Category - Layout			
Color	Color Offerings		Defines the color of the line for the seize area. Visible only during edit mode.
Points			Specifies the properties for all points that comprise the seize area, visible when Type is Point.
End Point			Characteristics for the End Point can be changed by expanding the property to display the list of sub properties, visible when Type is Line. Each property defines the location in the X, Y or Z axis for the end point.
X	Real		
Y	Real		
Z	Real		
Start Point			Characteristics for the Start Point can be changed by expanding the property to display the list of sub properties. Each property defines the location in the X, Y or Z

		axis for the start point.
X	Real	
Y	Real	
Z	Real	

Related Topics

Animating Resources

Animation Objects

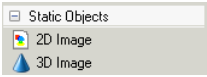
Scene Editor Explorer

Home > Visual Designer Windows > Tool Windows > Toolbox > Scene Controls > Static Objects

Static Objects

The Static Objects tools are used to place static 2D and 3D objects into the scene. To place a static object, simply drag and drop the generic icon from the Toolbox into the scene. The characteristics of each static object can be modified using the Properties tool window. Another method for placing static objects is to drag and drop graphic files (listed in the Graphic Files folder of the Project Explorer) directly into the scene.

In the Editor Explorer, the Static Objects folder contains all the static images placed by the user in the scene.



Static Objects Property Descriptions:

Property Name	Valid Entry	Default	Description
Category - Basic			
File Name	String – Name of the image file for the static object	N/A	Displays the name of the selected image file associated with the object.
Locked	Boolean	False	Specifies whether the object can be selected in the scene.
Name	String	<image type> Image <instance number>	Defines a unique identifier for the static object. The name appears in the Editor Explorer for the scene.
Type	Read Only	N/A	Defines the type of graphic file, Bitmap (2D) or Mesh (3D).
Category - Layout			
Position			Characteristic for the position can be changed by expanding the position property to display the list of sub properties. Each property defines the location in the X, Y or Z axis for the selected static object.
X	Real		
Y	Real		
Z	Real		
Rotation			Characteristic for the rotation can be changed by expanding the rotation property to display the list of sub properties. Each property defines the rotation around the X, Y or Z axis for the selected static object.
X	Real		
Y	Real		
Z	Real		
Size			Characteristic for the size can be changed by expanding the size property to display the list of sub properties. Each property defines the size of the selected static object in the X, Y or Z axis.
X	Real		
Y	Real		
Z	Real		

Related Topics

Animation Objects

Lights

Transfer Animation Objects

Views

Related Topics

Importing 2D Static Objects

Importing 3D Static Objects

Home > Visual Designer Windows > Tool Windows > Toolbox > Scene Controls > Static Objects > 2D Image

Static Objects - 2D Image

2D images can be added to your Scene window to help make your animation appear more realistic. To add a 2D image, drag the 2D Image control from the Toolbox onto the scene grid. See "Importing 2D Static Objects" for steps on replacing the default image with an image of your choice.

2D Image Properties:

Property Name	Valid Entry	Default	Description
Category - Basic			
File Name	String	N/A	Displays the name of the selected image file associated with the object.
Locked	Boolean	False	Specifies whether the object can be selected in the scene.
Name	String	N/A	Defines a unique identifier for the static object. The name appears in the Editor Explorer for the scene.
Type	Read Only	N/A	Defines whether the graphic type is Bitmap (2D) or Mesh (3D).
Category - Layout			
Position			Characteristic for the position can be changed by expanding the position property to display the list of sub properties. Each property defines the location in the X, Y, or Z axis for the selected static object.
X	Real		
Y	Real		
Z	Real		
Rotation			Characteristic for the rotation can be changed by expanding the rotation property to display the list of sub properties. Each property defines the rotation around the X, Y, or Z axis for the selected static object.
X	Real		
Y	Real		
Z	Real		
Size			Characteristic for the size can be changed by expanding the size property to display the list of sub properties. Each property defines the size of the selected static object in the X (width) or Y (height) axis.
X	Real		
Y	Real		

The object can be resized using the Properties window or, when the object is selected, the Helper Object can be used to resize, adjust placement, rotate and lock the object. Below is an example of the options available using the Helper Object.

Helper Object controls include:

allows you to adjust the location of the object in the Z coordinate.
allows you to rotate the object in the scene.
locks the object within the scene.
allows you to resize the object.

Home > Visual Designer Windows > Tool Windows > Toolbox > Scene Controls > Static Objects > 3D Image

Static Objects - 3D Image

3D images can be added to your Scene window to help make your animation appear more realistic. To add a 3D image, drag the 3D Image control from the Toolbox onto the scene grid. See "Importing 3D Static Objects" for steps on replacing the default image with an image of your choice.

3D Image Properties:

Property Name	Valid Entry	Default	Description
Category - Basic			
File Name	String	N/A	Displays the name of the selected image file associated with the object.
Locked	Boolean	False	Specifies whether the object can be selected in the scene.
Name	String	N/A	Defines a unique identifier for the static object. The name appears in the Editor Explorer for the scene.
Type	Read Only	N/A	Defines whether the graphic type is Bitmap (2D) or Mesh (3D).
Category - Layout			
Position			Characteristic for the position can be changed by expanding the position property to display the list of sub properties. Each property defines the location in the X, Y, or Z axis for the selected static object.
X	Real		
Y	Real		
Z	Real		
Rotation			Characteristic for the rotation can be changed by expanding the rotation property to display the list of sub properties. Each property defines the rotation around the X, Y, or Z axis for the selected static object.
X	Real		
Y	Real		
Z	Real		
Size			Characteristic for the size can be changed by expanding the size property to display the list of sub properties. Each property defines the size of the selected static object in the X, Y, or Z axis.
X	Real		
Y	Real		
Z	Real		

The object can be resized using the Properties window or, when the object is selected, the Helper Object can be used to resize, adjust placement, rotate and lock the object. Below is an example of the options available using the Helper Object.

Helper Object controls include:

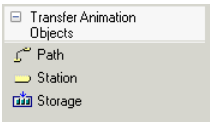
allows you to adjust the location of the object in the Z coordinate.
allows you to rotate the object in the scene.
locks the object within the scene.
allows you to resize the object.

Home > Visual Designer Windows > Tool Windows > Toolbox > Scene Controls > Transfer Animation Objects

Transfer Animation Objects

The Transfer Animation Objects tools can be used to place objects in the 3D scene. The Transfer Animation Objects are *Paths*, *Stations*, and *Storages*.

This method places generic instances of an animated object, meaning that the associated Arena element or expression must be defined by the user. This is the only method to place any path. The Path object is used to define a route between two stations. This is the only path type supported for this release.



Related Topics

Path
Animating Storages
Station
Storage
Creating a Path
Animation Objects
Lights
Static Objects
Views

Home > Visual Designer Windows > Tool Windows > Toolbox > Scene Controls > Transfer Animation Objects > Paths

Transfer Animation Objects - Path

The Path object is used to define a path between two stations. The 'Route' is the only path type which will be supported for this release. Paths are placed into the scene through the use of the Toolbox tool window. Once a path has been defined and placed into the scene, it will appear under the Paths folder in the tree view. When a specific path is selected in the tree view, the properties are displayed in the Properties tool window.

Path Property Descriptions:

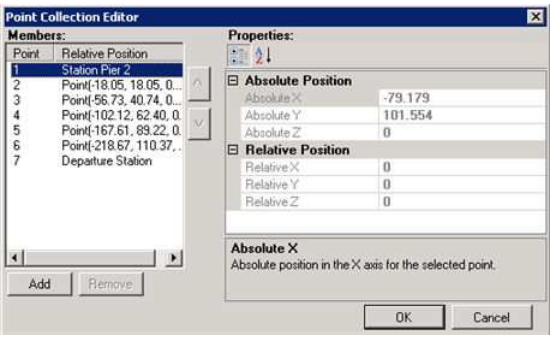
Property Name	Valid Entry	Default	Description
Category - Basic			
From Station	Read Only	N/A	The identifier of the station object at the beginning of the route.
Locked	Boolean	False	Specifies whether the object can be selected in the scene.
Name	Read Only	N/A	Name of route selected. Comprised of the From Station and To Station.
To Station	Read Only	N/A	The identifier of the station object at the end of the route.
Category - Layout			
Color	Color Offerings	Blue	Defines the line color of the route path.
Points			Specifies the properties* for all the points that comprise the route path.
Category - Line Pattern			
Line Pattern File			Specifies the name of the bitmapped file which pattern will be overlaid on the route path selected.
Line Pattern Offset	Real	2.5	Specifies the pattern offset in scene display units. The offset movement is perpendicular to the route line. Visible when Line Pattern File is specified.
Line Pattern Width	Real	10	Defines the width in the scene display units of the line pattern for the route path. Visible when Line Pattern File is specified.

* When the ellipsis is selected for the Points property, a dialog box titled "Points Editor" is displayed containing a list of all the points that comprise the line defining the route path.

(Paths) Points Editor

The Points Editor dialog box for a Path (Route) (as shown in the example below) displays a Members list on the left with two columns. The first column will be titled "Point," the second column will be titled "Relative Position." The point will display an integer value, 1 for the starting station, 2, the next point, and so on. The second column will display the relative position. The first point should always appear as Starting Station Name(0,0,0) since the relative position is relative to the first point, which is the starting station for a route.

Note that the starting and ending points (which are the stations the route path connects) are read only properties. The starting and ending stations can only be moved either using the position property of the station or by dragging to a new position in the scene. Points can be added or removed using the associated button.



This Points Editor dialog box has the following properties:

Paths Points Editor Property Descriptions

Property Name	Valid Entry	Default	Description
Category - Absolute Position			
Absolute X	Real		Absolute position in the X axis for the selected route.
Absolute Y	Real		Absolute position in the Y axis for the selected route.
Absolute Z	Real		Absolute position in the Z axis for the selected route.
Category - Relative Position			
Relative X	Real		Position in the X axis (relative to the start point) for the selected route.
Relative Y	Real		Position in the Y axis (relative to the start point) for the selected route.
Relative Z	Real		Position in the Z axis (relative to the start point) for the selected route.

The Points Editor has the ability to modify the same property for multiple points selected. Holding down the CTRL key provides the ability to select multiple points. After the desired points are selected, the property value can be edited. This edit will affect all selected points. Note that if a particular point's property is grayed out (not editable), then that point's property will not be modified with the rest of the selected points.

Related Topics

Creating a Path

Transfer Animation Objects - Stations

Transfer Animation Objects

Scene Window Overview

Setting Up a Views Config and Running Your Animation

Toolbox

Home > Visual Designer Windows > Tool Windows > Toolbox > Scene Controls > Transfer Animation Objects > Storages

Transfer Animation Objects - Storage

Storages can be placed into the scene through the use of the Toolbox tool window. The Property window for storages includes a pull-down list of all the storages defined in the model as well as having the ability to accept any valid symbol name (in the case where you create the animation before the model is complete). This pull-down list will be identical to the pull-down list displayed by Arena when placing a storage animation object.

When placing a storage onto the scene using the drag-and-drop method, the location where you click to place the storage, defines the head of the storage. All storages are placed into the scene as line-type storages by default.

When the ellipsis is selected for the Points property, a dialog titled "Points Editor" is displayed.

Storage Property Descriptions:

Property Name	Valid Entry	Default	Description
Category - Basic			
Locked	Boolean	False	Specifies whether the object can be selected in the scene.
Name	Symbol name [Storages]		Name of storage.
Type Line or Point Line			Determines how the entities are located and spaced in the scene during the animation. Point type requires you to specify the maximum number and exact location for the entities displayed in the waiting area. The line type requires only a head and tail location. A line is drawn between these points and the entities will be aligned on the line.
Category - Layout			
Color	Color Offerings		Defines the color of the line for the storage. Visible only during edit mode.
Points			Specifies the properties for all points which comprise the storage, visible when Type is Point.
End Point			Characteristic for the End Point can be changed by expanding the property to display the list of sub properties, visible when Type is Line. Each property defines the location in the X, Y or Z axis, relative to the start point, for the ending point.
X	Real		
Y	Real		
Z	Real		
Start Point			Characteristic for the Start Point can be changed by expanding the property to display the list of sub properties. Each property defines the location in the X, Y or Z axis for the start point.
X	Real		
Y	Real		
Z	Real		

Points Editor

The Points editor has the ability to modify the same property for multiple points selected. Holding down the CTRL key provides the ability to select multiple points. After the desired points are selected, the property value can be edited. This edit will affect all selected points. Note that if a particular point's property is grayed out (not editable), then that point's property will not be modified with the rest of the selected points.

The absolute position and relative position properties will be grayed out for the start point. The Rotation properties will be enabled.

Points Editor Property Descriptions:

Property Name	Valid Entry	Default	Description
Category - Absolute Position			
Absolute X	Real		Absolute position in the X axis for the selected point.
Absolute Y	Real		Absolute position in the Y axis for the selected point.
Absolute Z	Real		Absolute position in the Z axis for the selected point.
Category - Relative Position			
Relative X	Real		Position in the X axis (relative to the start point) for the selected point.

Relative Y	Real	Position in the Y axis (relative to the start point) for the selected point.
Relative Z	Real	Position in the Z axis (relative to the start point) for the selected point.
Category - Rotation		
Rotation X	Real	Rotation in the X axis for the selected point.
Rotation Y	Real	Rotation in the Y axis for the selected point.
Rotation Z	Real	Rotation in the Z axis for the selected point.

Related Topics

Animating Storages

Paths

Transfer Animation Objects

Transfer Animation Objects - Stations

Scene Controls

Scene - Learn how to create 3D animations!

Scene Window Overview

Setting Up a Views Config and Running Your Animation

Toolbox

Home > Visual Designer Windows > Tool Windows > Toolbox > Scene Controls > Transfer Animation Objects > Stations

Transfer Animation Objects - Stations

Stations can be placed into the scene through the use of the Toolbox tool window.

The Name property in the Stations Property window includes a pull-down list of all the stations defined in the model as well as the ability to accept any valid symbol name (in the case where the user creates the animation before the model is complete). This pull-down list is identical to the pull-down list displayed by Arena when placing a station animation object.

The properties shown below are displayed in the Properties tool window when a Stations element is selected in the tree view that has not yet been placed in the scene.

Station Property Descriptions:

Property Name	Valid Entry	Default	Description
Category - Basic			
Locked	Boolean	False	Specifies whether the object can be selected in the scene.
Name	Symbol Name [Stations]	N/A	Name of station selected.
Category - Layout			
Color	Color Offerings	Grey	Defines the color of the station object.
Position			Characteristic for the position can be changed by expanding the position property to display the list of sub properties. Each property defines the location in the X, Y or Z axis for the selected station.
X	Real		
Y	Real		
Z	Real		

Related Topics

Transfer Animation Objects - Path

Transfer Animation Objects

Creating a Path

Scene Window Overview

Setting Up a Views Config and Running Your Animation

Toolbox

Home > Visual Designer Windows > Tool Windows > Toolbox > Scene Controls > Scene Object

Scene Object

The Scene object has two sub items, the Style Classes folder and the Views Config(uration) object.

When the Scene object is selected in the Project Explorer, the following properties are displayed in the Properties tool window.

Scene Object Property Descriptions:

Property Name	Valid Entry	Default	Description
Category - Basic			
Auto Start	Boolean	True	Determines whether the scene window is active and open during runtime.
Display Scene Data	Boolean	True	Specifies whether the scene data is visible on the Scene editor. The information displayed is the actual FPS and the total number of polygons in the scene.
Maximum FPS	Integer	25	Specifies the maximum number of frames per second used to render the 3D scene. The maximum number of frames per second that can be rendered is limited by the computer's hardware (graphics card and CPU) and the complexity of the 3D scene being displayed. Entering 0 causes the graphic engine to render the scene as fast as it can. See Note below.

NOTES

Maximum FPS – If the set Maximum FPS exceeds the display capability of the PC hardware, the actual rate may be lower. When the value is set too high, the PCs CPU and graphics hardware may be unnecessarily burdened and can affect machine performance.

Setting the value to 0 causes the graphic engine to render the scene as fast as it can. Using a 0 value can be a useful method to determine the number of animated objects your machine is capable of rendering in the scene without degrading the visualization.

Polygon count – Specifies the total number of triangles in the scene and helps to indicate the level of complexity of the scene. The more triangles the scene objects consist of, the bigger workload for the hardware to render.

Scene Object Right-click Menu:

If you right-clicks on the Scene object in the Project Explorer, a menu appears with the following options:

Open Editor	Opens (if not already) and makes the scene editor the active editor window.
View All Scene	Changes the current view of the scene so that it includes all objects defined in the scene. This menu item is only listed when the scene window is the active editor.
Delete	Removes the scene node from the project.
Properties	Opens the properties tool window and display the scene properties.

Related Topics

Scene Layout

Home > Visual Designer Windows > Tool Windows > Toolbox > Scene Controls > Scene Object > Style Class Controls

Style Class Controls

When a Style Class is the active editor displayed, there is one category of tool shown in the Toolbox. The category and tools listed are context sensitive, dependent on the type of Style Class that is the active editor window.

Resource

If the style class type is Resource, the Toolbox may contain the following tools:

Style Class
- Idle State
- Busy State
- Inactive State
- Failed State
- User Defined State

To add another resource state mesh to the style class, simply drag and drop the appropriate icon from the toolbox onto the Style Class window. After placing the desired state, it will be added to the list in the Editor Explorer window for the Style Class and this state will become the active state displayed.

If the state added is "User-Defined State," the "'State" field will need to be defined by the user. A valid state symbol name will need to be provided.

To help you use the Style Class editor, text is displayed on the faceless image for the default states of a resource. The text states: "Drop here to assign image" or Drop Toolbox Control here to assign new state."

Global Variable

If the style class type is Global Variable, the Toolbox will appear as follows:

Style Class
- Trigger Value

To add another trigger value mesh to the style class, simply drag and drop the trigger value icon from the toolbox onto the style class window. After placing another trigger value, the '"Trigger Value' field will need to be defined by the user. A quoted string or numeric value can be entered. All trigger values specified will be added to the list in the Editor Explorer window for the Style Class.

To help you use the Style Class editor, text is displayed on the faceless image of a default trigger for a global variable. The text states: "Drop here to assign image or Drop Toolbox Control here to assign new trigger."

Entity Picture

Version 14 does not include any tools for Entity Picture style classes. This release does not support the ability to define multiple meshes for a single Entity Picture value. The toolbox currently display "There are no suitable items available." in the toolbox window.

To help you use the Style Class editor, text is displayed on the faceless image for the default states of an entity picture. The text states: "Drop here to assign image."

Related Topics

Style Classes Properties

Animation Objects

Thumbnails

Home > Visual Designer Windows > Tool Windows > Toolbox > Scene Controls > Scene Object > Views Config Controls

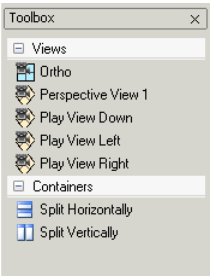
Views Config Controls

When the Views Config is the active editor displayed, there are two categories of tools shown: Views and Containers.

Just like the Dashboard control, the Containers tools are used to divide a Views Config into more than one container. By default, the Views Config has one container. When the Views Config editor is empty, the (gray) text in the container states "Drop Toolbox Control here" to help guide you to create a view configuration.

The Views tools are used to select a saved view to place into one or more of the containers on the Views Config window.

A container with an existing saved view may be redefined with another named view by a simple drag and drop of another view into the container.



Related Topics

Setting Up a Views Config and Running Your Animation

Creating Views

Views Config Properties

Home > Visual Designer Windows > Tool Windows > Toolbox > Style Class Controls > Style Class Properties

Style Class Properties

When the Style Classes folder is selected in the Project Explorer, the following properties are displayed in the Properties tool window.

Style Classes Folder Property Descriptions

Property Name	Valid Entry	Default	Description
Category - Misc			
Name	Read Only	N/A	Name of folder selected.

Style Classes Right-click Menu

If you right-click on the Style Classes folder in the Project Explorer, a menu item appears with the following options:

Insert Entity Picture Style Class	Adds an entity picture style class to the library of style classes for the project.
Insert Global Variable Style Class	Adds a global variable style class to the library of style classes for the project
Insert Resource Style Class	Adds a resource style class to the library of style classes for the project.

When a style class is created in through this menu, it is given a default name. This name is based on the type of style class and an instance number. For example, the first style class for a resource will be named "Resource Style 1." The second style class for a resource will be named "Resource Style 2," and so on. The default name for global variable style classes will be "Global Variable Style x," where "x" is the instance number. The default name for entity picture style classes will be "Entity Picture Style x," where "x" is the instance number.

When a specific style class is selected in the Project Explorer, the following properties are displayed in the Properties tool window.

Style Class Property Descriptions

Property Name	Valid Entry	Default	Description
Category - Basic			
Name	Alphanumeric strin	N/A	Defines a unique identifier for the style class. The name appears in the project explorer tree to identify the style class. The name also appears as a link to the style class for any animation object associated with the style class.
Type	Read only • Entity Picture • Global Variable • Resource	N/A	Defines the type of style class.

Specific Style Class Right-click Menu

If you right-click on a specific style class in the Project Explorer, a menu item appears with the following options:

Open Editor	Opens (if not already) and makes the style class editor of the selected style class, the active editor window.
Rename	Used to rename the selected style class.
Delete	Removes the style class from the project.
Properties	Opens the properties tool window and display the specific style class properties.

When the main Style Class object is selected, there is no right-click menu option available.

When one of the style class member objects is selected in the Editor Explorer tree, the following properties are displayed in the properties window.

Style Class member (Resource state/Global Variable trigger/Entity Picture image) properties

Property Name	Valid Entry	Default	Description
Category - Animation			
Animation	Boolean	False	Indicates whether the mesh for selected style class member will be animated.
Animation Speed	Integer (1-200)	25	Defines how many frames per second (real time not simulated time) will be displayed when the image is animated. This value should not exceed the value entered for the scene property 'Max FPS'.
Frame Begin	Integer	0	Specifies the starting frame of the animation for the selected style class member, visible when Animation is True.
Frame End	Integer	0	Specifies the ending frame of the animation for the selected style class member, visible when Animation is True.
Loop	Boolean	True	Indicates whether the animation for the selected style class member will continually loop, visible when Animation is true.
Category - Basic			
File Name	String		Displays the name of the image file associated with the style class member selected.
Name	For a resource style class, Idle, Busy, Inactive, Failed, or some user-defined state. For an entity style class, Image or Image-state.		Name of the selected state of the resource class or entity picture image, visible when the style class Type is Entity Picture or Resource.
Trigger Value			Characteristic for the trigger value can be changed by expanding the property to display the list of sub properties, visible when the style class Type is Global Variable.
Type	Range, Fixed or Default	Default	Indicates whether the image will be triggered by a numeric range, by a fixed numeric constant or string, or the default. Default specifies that the image will be displayed when none of the other trigger values are valid.
Min	Real	0.0	Specifies the minimum inclusive value of the numeric range which will trigger the display of the image defined, visible when Type is Range.
Max	Real	0.0	Specifies the maximum inclusive value of the numeric range which will trigger the display of the image defined, visible when Type is Range.
Value	Real or Quoted String	0.0	Specifies the fixed value which will trigger the display of the image defined, visible when Type is Fixed.
Category – Layout			
Offset Position			Characteristic for the offset position can be changed by expanding the offset position property to display the list of sub properties. For the selected style class member, each property defines the X, Y or Z axis offset from the reference point location of a specific instance of the resource/global variable/entity picture.
X	Real	0	
Y	Real	0	
Z	Real	0	
Offset Rotation			Characteristic for the offset rotation can be changed by expanding the offset rotation property to display the list of sub properties. For the selected style class member, each property defines the X, Y or Z axis rotation offset relative to the rotation of a specific instance of the resource/global variable/entity picture.
X	Real	0	
Y	Real	0	
Z	Real	0	
Size			Characteristic for the size can be changed by expanding the size property to display the list of sub properties. Each property defines the size of the selected style class member in the X, Y or Z axis.
X	Real	0	
Y	Real	0	
Z	Real	0	
Scale	Real	1	Scale for the style class member selected.

Notes for Animation Speed property: If Max FPS is smaller than speed, all frames may not be displayed. A warning will be generated during verification.

Notes for Loop property:
The behavior of an entity is dependent upon the value of the loop property as well as the existence of sub-states in the associated entity style classes definition.

	Loop = true	Loop = false
Sub-states defined	Entity mesh animation continuously loops while visible in the scene	When an entity changes state (e.g., moves from a seize area to a route path), the image will change as defined by the style class sub-states definition and the animation will loop once.
No Sub-states	Entity mesh animation continuously loops while visible in the scene	When an entity first appears in the scene, the animation will loop once. The animation will not loop again, even if the entity state changes (e.g., moves from a seize area to a route path).

Depending on the style class type, additional members may be added. User defined states or one of the 4 default states (if it was previously deleted) may be added to a resource style class. Trigger values may be added to a global variable style class. At this time, entity style classes cannot add additional images.

To add a member, drag and drop the appropriate tool from the Style Class toolbox. Note that the Style Class toolbox is context sensitive, displaying tools that are dependent upon the type of style class being edited.

Entity style classes are unique in that the image can be broken down into sub-states. This is done by right-clicking on the image object in the Editor Explorer, then selecting the option "Split to sub-states." This will create three predefined sub-states for the image: In Seize (at a resource), In Queue (waiting area), In Storage and In Transfer. At that point, each state is treated like a unique member of the style class. These states appear as children of the image in the Editor Explorer window. Each state can be uniquely defined using the above-listed properties. When an image is broken into sub-states, the image object itself no longer has any properties to edit.

The properties appear as follows:

Property Name	Valid Entry	Default	Description
Category - Misc			
Name	Read Only	Image	Name of the image.

When one of the style class member objects is selected in the Editor Explorer tree, the right-click menu will always display the 'Delete' option. Whether this option is enabled is dependent on the type of style class and on the number of members in the style class.

Resource style class states can be deleted as long as they are not the last member of the style class.

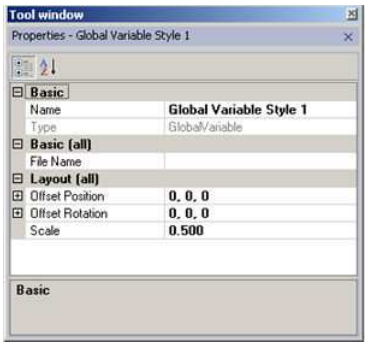
Global variable style class triggers can be deleted as long as they are not the last member of the style class.

The entity picture style class image can never be deleted.

Only the entity style class Image will display the option "Split to sub-states." Only entity style class sub-state objects will display the option "Merge Siblings by this state." Note that when the sub-states are merged back into one image, the state that was selected when this option was chosen is used to determine the properties for the image.

Adjusting the entire Style Class:

From the Editor Explorer, the Layout (all) of an entire Style Class can only be edited once all images, triggers and states have animated meshes defined for them. Below is an example of the properties of a Global Variable Style Class when selected from the Editor Explorer. In this case, all triggers have animation defined and the layout of all of them can be adjusted using the Layout (all) properties. In this case, the scale was defined to 0.50.



Related Topics

Style Class Controls

Thumbnails

Home > Visual Designer Windows > Tool Windows > Toolbox > Views Config Controls > Views Config Properties

Views Config Properties

The Views Config(uration) editor is used to specify the layout of the view window that appears during runtime for the 3D scene. The layout can be comprised of multiple containers, each containing a previously saved view of the scene. The views can be Orthogonal or Perspective.

When the Views Config(uration) object is selected in the Project Explorer, the following properties are displayed in the Properties tool window.

Views Config Object Property Descriptions

Property Name	Valid Entry	Default	Description
Category - Misc			
Name	Read Only	N/A	Name of folder selected.

Views Config Right-click Menu

If the user right-clicks on the View Config object in the Project Explorer, a menu item appears with the following options:

Open Editor	Opens (if not already) and makes the Views Config editor the active editor window.
Properties	Opens the Properties tool window and display the Views Config properties.

Related Topics

Views Config Controls

Setting Up a Views Config and Running Your Animation

Creating Views

Home > Visual Designer Menu Items

Visual Designer Menu Items

The main menu for Arena Visual Designer consists of seven options. The main menu uses the Alt accelerator keys and each item has an underlined letter to access it with a keyboard sequence.

File Edit View Run Tools Window Help

Double-click on the menu item links below to display each menu's details:

File

Edit

View

Run

Tools

Window

Help

Home > Glossary

Glossary

Animation Objects - Tools used to place objects in the 3D scene (Resources, Entity Pictures, Queues, and Global Variables).

Camera Mode - The "Camera Mode" View menu item and button are used to change the mouse control to camera mode when the Scene window is active and the view is either Orthogonal or Perspective. When selected, this mode is indicated by a change of the cursor icon into a large hand. Camera mode is used to change your point of view of the scene. The tool acts like you are looking at your scene through a camera.

Containers – Containers are the partitions of the Visual Designer workspace that are used to build a dashboard or views config display. The Editor shows the tools used to split the Dashboard window into multiple containers. Tools include Split Horizontally and Split Vertically.

Dashboard, what is it? – Visual Designer's dashboards are customizable graphic display windows for presenting business information and statistics. Graphs, data, charts, text or images are placed in containers in the workspace to present important business reporting from disparate sources in a concise visual display. This content may deliver both static and dynamic information that can enhance business presentations and aid in decision making. Lists all the possible control tools that can be dropped into the Dashboard window. Controls include Picture, Text Box, Scoreboard, Level, Column, Histogram, Bar, Plot, and Pie charts.

Dashboard Window - An editor that allows the user to view and edit the dashboards that have been added using the Project Explorer.

Edit Mode - The "Edit Mode" View menu item and button are used to change the mouse control to edit mode when the Scene window is active and the view is either orthogonal or perspective. When

selected, this mode is indicated by a change of the cursor icon into a pointer. This mode is used to select an object for editing. When you left click on an object, the selection is indicated by the item becoming highlighted in red and displayed in its vector graphics. The item can then be edited by using the edit helper object.

Find Object in Scene - To help locate animated objects in any view (orthogonal, perspective, or split) in the scene. To use this feature, select the desired object in the scene Editor Explorer. In the View menu, select "Find Object in Scene."

Graphic Files - Contains a flat level list of all the 2D and 3D graphic files (listed alphabetically) referenced in the project.

Open Link - The Open Link menu item is used to open the links displayed in the Editor Explorer tool window. When the Scene is the active window, the model elements are listed in the scene tree. For items that have an associated style class, a link to the style class is displayed under the element. When the style class link is selected, the "Open Link" item is enabled in the View menu. When selected, this will open the associated style class.

Orthogonal View - A top-down view of the 3D scene.

Perspective View - A view of the scene that has a sense of depth and space. It is similar to human vision in that objects appear to diminish in the distance.

Project Explorer - Provides a hierarchical listing (using a tree view control) of the project file's content.

Properties - An editor that provides key characteristics of the project, dashboards, scenes and the controls within them.

Refresh - The Refresh option is used to update the Editor Explorer tree in the event that the associated Arena model was edited after Visual Designer is started. This option forces Visual Designer to reload the model elements (symbols) defined in the associated Arena model, which are displayed in the Scene Layout Editor Explorer.

Save Current View Settings - This menu item is used to overwrite a previously saved view with the current active camera view for either orthogonal or perspective views. To use this function, select the desired view from Views folder in the scene Editor Explorer. From the View menu, select "Save Current View Settings to assign the current camera view to overwrite the selected view. This menu item is enabled only when a named view is selected in the scene Editor Explorer.

Save View - Allows you to save the current camera position view of the scene window.

Set Active View - This View menu item is used to change the current active camera view to any previously saved view for either orthogonal or perspective views. To use this function, select the desired view from Views folder in the scene Editor Explorer. From the View menu, select "Set Active View."

Scene - The active editor for 3D animations. Drag and drop 3D animation objects, static objects and transfer animation objects from the Toolbox or Editor Explorer to begin to create your scene.

Speed Factor - The speed at which the visualization runs. This maps to the Arena speed factor. A smaller speed factor generally results in smoother visualization at the cost of longer run times.

Split View - Used to display a special version of the ortho view in the scene window. When selected, Split View displays two containers. The top container shows the orthogonal view of the scene, and the bottom container displays a perspective view of the scene.

Static Objects - Tools used to place static 2D and 3D objects into the scene.

Style Class - A generic representation of a resource, an entity picture or a global variable.

Task List - An editor that provides a list of application errors and warnings and user-defined tasks to be addressed.

Toolbox - An editor that provides a listing (using tree view control) of objects and controls used for inserting graphical objects into the active editor.

Tool Windows

Editor Explorer – An editor that provides an alphabetic listing of the active window's content.

Project Explorer – Provides a hierarchical listing (using a tree view control) of the project file's content.

Properties – An editor that provides a listing, using a tree view control, of key characteristics (properties) for the project, dashboards, scenes and the controls within them.. The Properties tool window has two buttons at the top, Categorized and Alphabetical. These buttons control the listing order of the properties.

Task List – An editor that provides a list of application errors, warnings and user-defined tasks to be addressed.

Thumbnails – A tool window that is useful for viewing 3D images that can then be drag and dropped into the desired style class state. You can add additional user-defined states if they have been associated with the resource using the style class.

Toolbox – An editor that provides a listing (using tree view control) of objects and controls used for inserting graphical objects into a Dashboard or 3D scene window.

Transfer Animation Objects - Tools used to place objects in the 3D scene (Paths, Storages, Stations).

View All Scene - This menu item and button alters the current camera view (regardless of the current view type — orthogonal, perspective, or split) to display all items in the scene. This menu item and button are enabled when the scene is the active window.

View Synchronization - Allows movement in the orthogonal (ortho) view of a 3D scene to be reflected in the perspective view.