



## V-Author<sup>®</sup> Editor

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### *USER MANUAL*

Version 5.1

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## **HOW TO USE THIS MANUAL**

This manual was designed and created for quick and easy navigation when viewed electronically. First, read the introductory table of contents. The table of contents is designed so as to group related topics together in one section of the manual. Forms are cross-referenced and a copy of the form is in the appendix to each manual where applicable.

For quick navigation, locate the **TABLE OF CONTENTS** page. Simply click on the topic of interest and the manual will direct the user to that page, eliminating the need for scrolling.

To return to the Table of Contents page, click on the **TABLE OF CONTENTS** words located on the upper right corner of every page following the TOC page.

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## I. INTRODUCTION

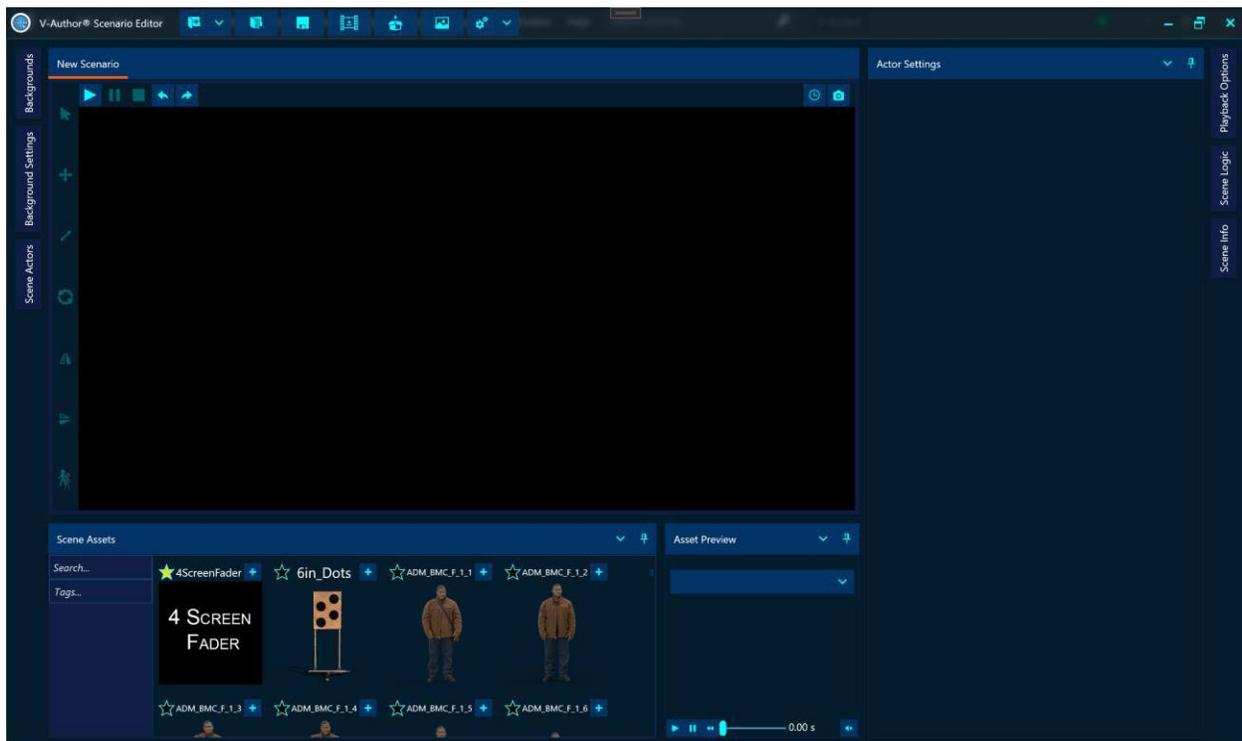
The V-Author® Editor allows users to create interactive simulations from background images and drag-and-drop green screen filmed characters. The flexibility of this approach allows instructors to create and edit scenarios customized to their agency’s training objectives providing more freedom and less limitation in training.

## II. QUICK START GUIDE

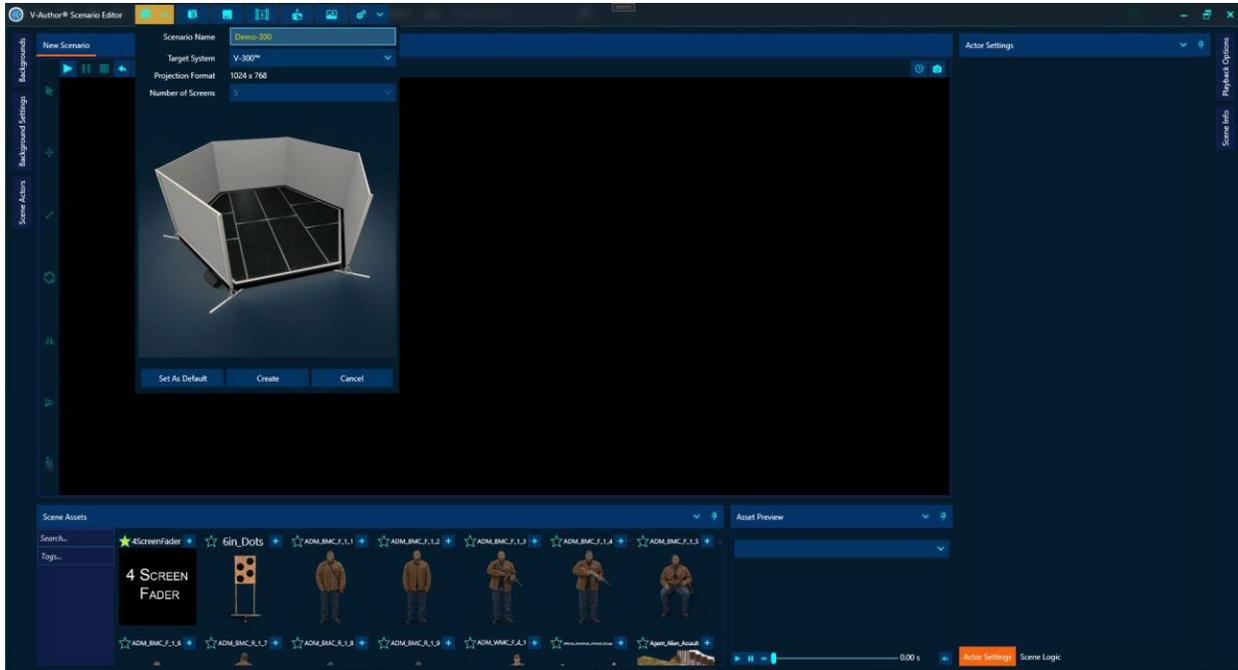
Quick start will guide you to create a simple first scenario. Double click the V-Author® Editor icon to start the application:



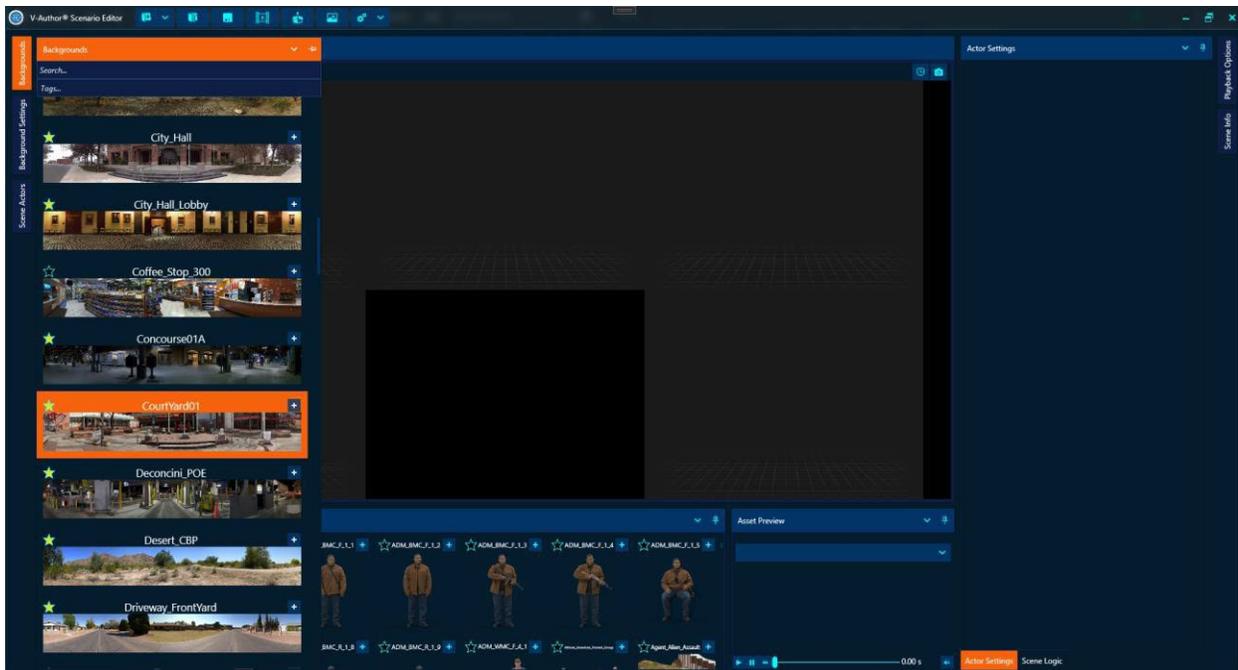
The first time it is opened V-Author® Editor presents a default workspace layout which can be customized as the user desires.



On the top application menu select the new scenario drop down button to create a new scenario for the target simulator type.

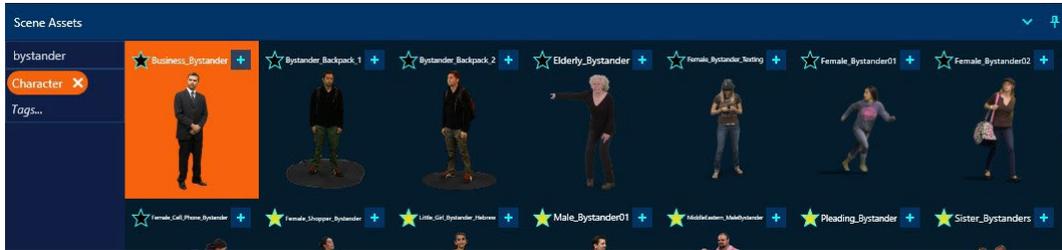


Select “V-300” as the target system and give the scenario a name then click “Create”. Hover over or click the left edge button labelled “Backgrounds” to add the scenario background by clicking the “+” button or dragging the background into the player window. In this example we will select the “CourtYard01” background.



At the top edge of the player window we can choose how we want to view this 5 screen scenario. Select “All Screens Wrapped” to show the 5 simulator screens in a wrapped view. 

The bottom window shows all the assets available to add to the scene including characters, props, special effects, etc. Assets can be filtered with search terms and tags. Start typing “Character” in the tags box and select the “Character” tag. In the search box type “bystander” and the assets window will now show all the character bystander assets.



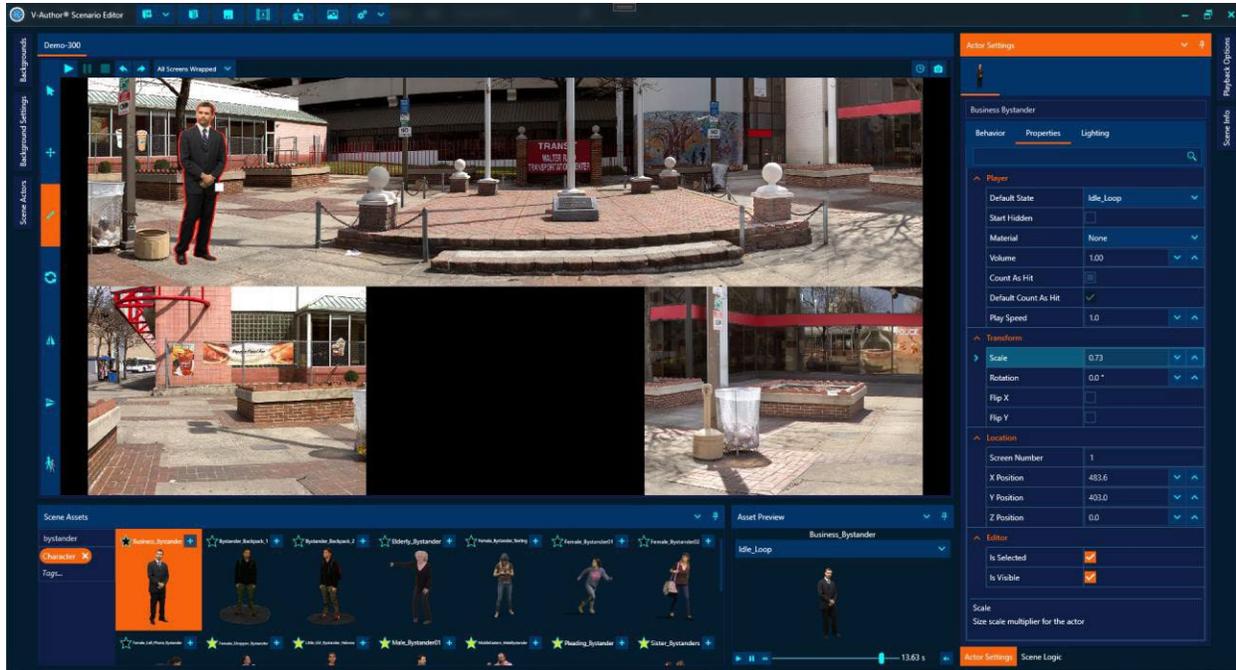
Add the “Business\_Bystander” character by clicking the “+” button and place the character in the scene by clicking in the player window near where you want to place the character.



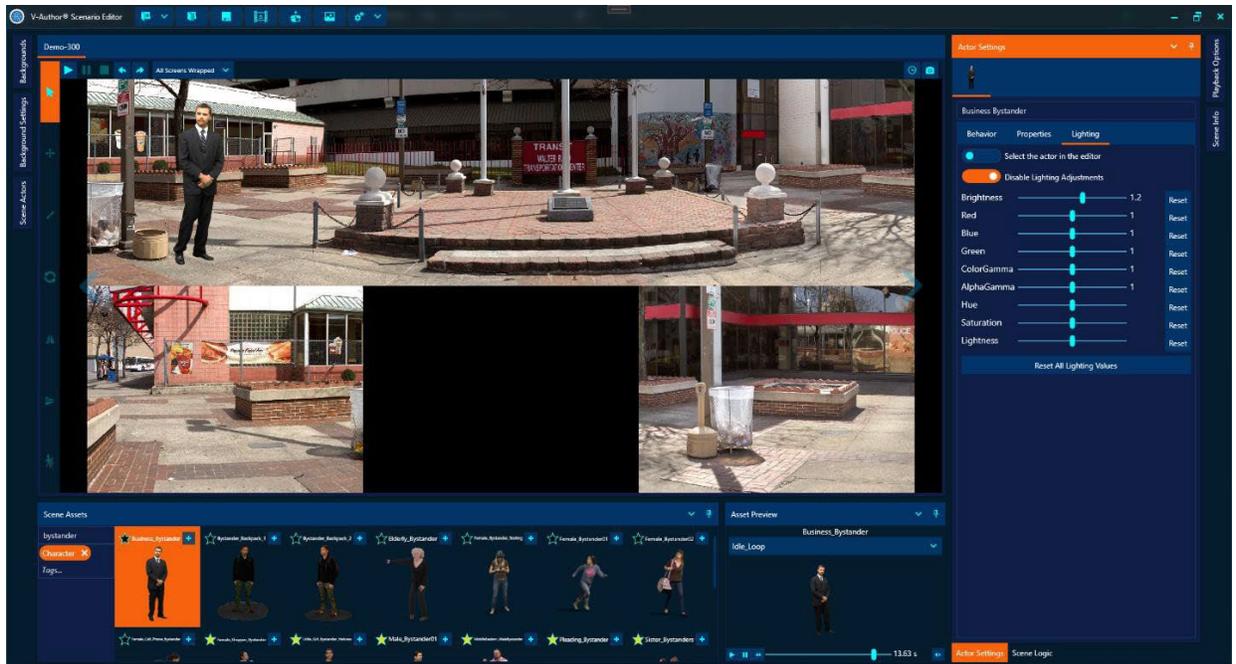
This character is now a uniquely named actor in our scene. We can now adjust the actor to appropriately blend with the selected background. The left column of the player window provides actor edit tools to modify the actor using mouse control. From top to bottom these tools are:

- Actor Select Tool
- Move Tool
- Scale Tool
- Rotate Tool
- Flip Horizontal
- Flip Vertical
- Clone Actor

The Actor Settings panel shown as the right pane in this layout also provides a properties tab for each actor that allows actor properties to be set directly by the author. The actor needs to be smaller for this scene which can be accomplished by reducing the actor’s scale value. Use either the scale tool or the properties to reduce the actor scale to look appropriate for the scene as shown below:

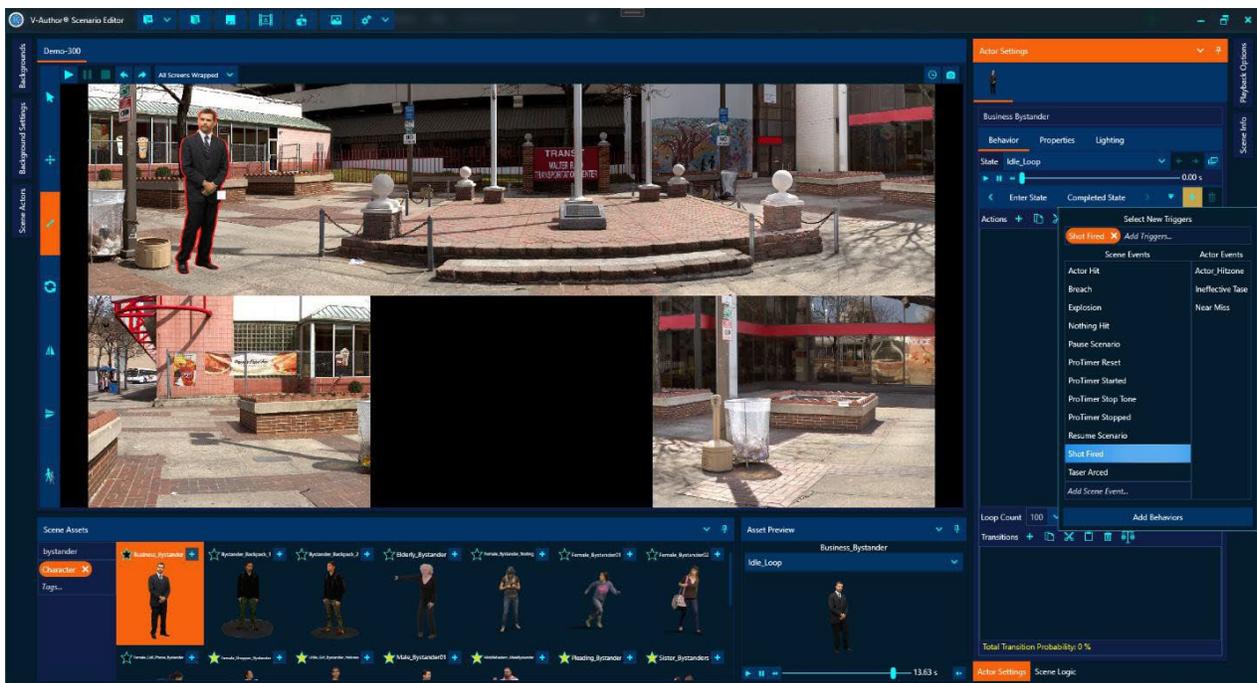


As green screen characters can only be filmed with one lighting condition, often times the actor lighting does not match the background we have chosen. The actor settings in the right pane also includes a “Lighting” tab we can use to adjust actor lighting and match our background. Go to the “Lighting” tab, click the “Enable Lighting Adjustments” switch to allow lighting adjustments for the actor as below:

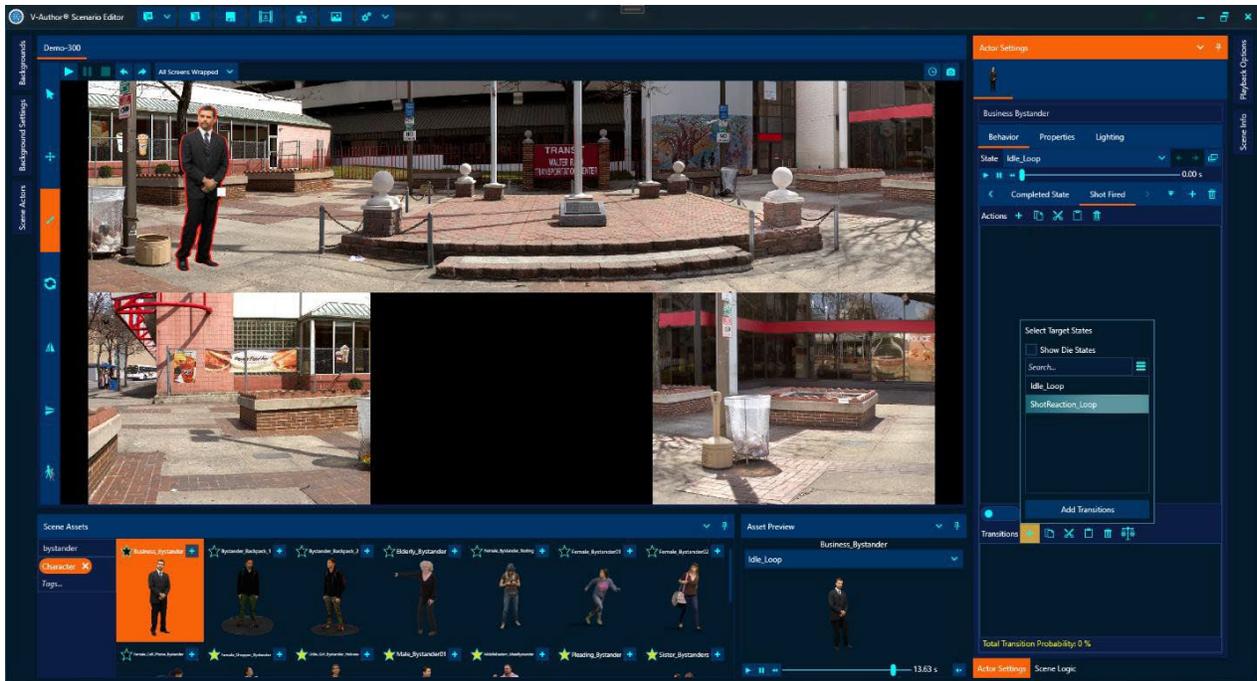


To help blend we can unselect the actor to eliminate the scene selection orange highlight around the actor with the top switch in the Lighting tab. Then adjust brightness to blend the actor better with the background lighting conditions.

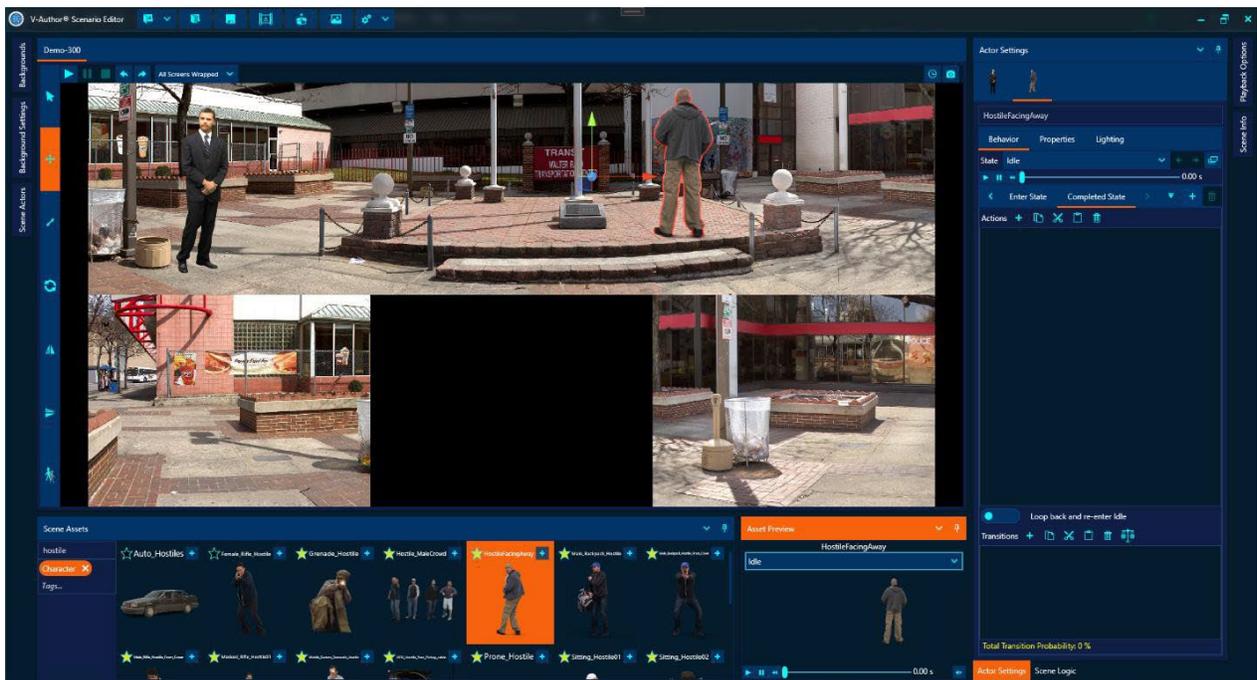
By default this actor will just loop in its idle state doing nothing. We need to give it some behavior. All the states provided by the character for this actor can be previewed in the “Asset Preview” window at the bottom of editor in this layout next to the scene assets. When you select an asset in the “Scene Assets” window it appears in the “Asset Preview” allowing you to select and play all the states of that character. Once a character has been added as an actor, the states can also be played within the scene using the “Behavior” tab of the actor settings. This bystander has a shot reaction state we want him to go to if a shot is fired. Go to the “Behavior” tab for the actor and make sure the “Idle\_Loop” is the selected state. Click the “+” button next to the existing behavior triggers to add a new behavior and we will select the “Shot Fired” event as a trigger for this behavior as shown below:



This creates a new empty behavior triggered if the “Shot Fired” event occurs while this actor is in the “Idle\_Loop” state. Behaviors allow the author to define a series of actions that should be executed when the behavior is triggered followed by optional transitions to other actor states. We can also define an immediate looping behavior to loop a specified number of times within the current state right after actions are executed. In our sample scenario, we don’t need to execute any actions for this actor’s “Shot Fired” behavior so we will just skip the action section. All we want is for the actor to transition into their shot reaction state when a shot is fired. We add a transition by clicking the “+” button in the “Transitions” section at the bottom of the Behavior tab which brings up a window allowing us to select from all the available states of this actor. Multiple target states can be selected in which case the transition will be a random one between all the selected states. For this simple scenario and actor however, we only want to transition into its one-shot reaction state so we select “ShotReaction\_Loop” and add it to the “Shot Fired” behavior transitions as shown below:

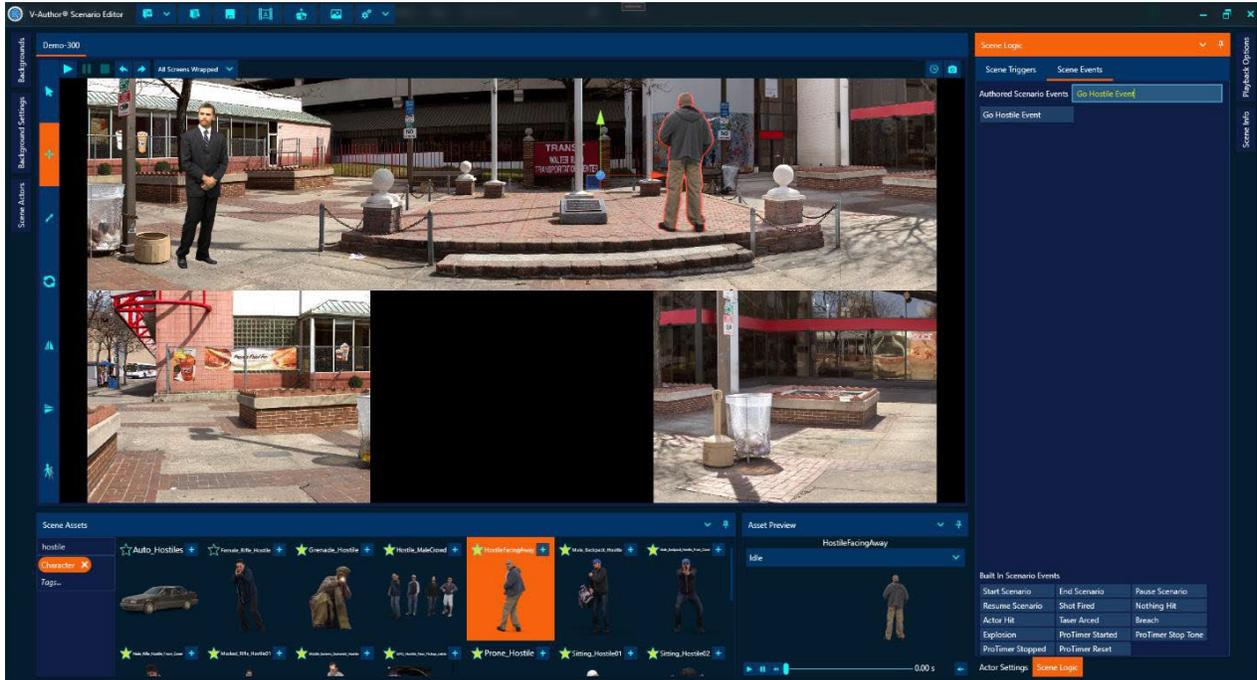


Now we will add a hostile actor for this scenario. Replace the “bystander” search text with “hostile” in the “Scene Assets” search box. Add the “HostileFacingAway” character to the scene placing him on the right side of the central platform and use scaling and lighting adjustments as needed.

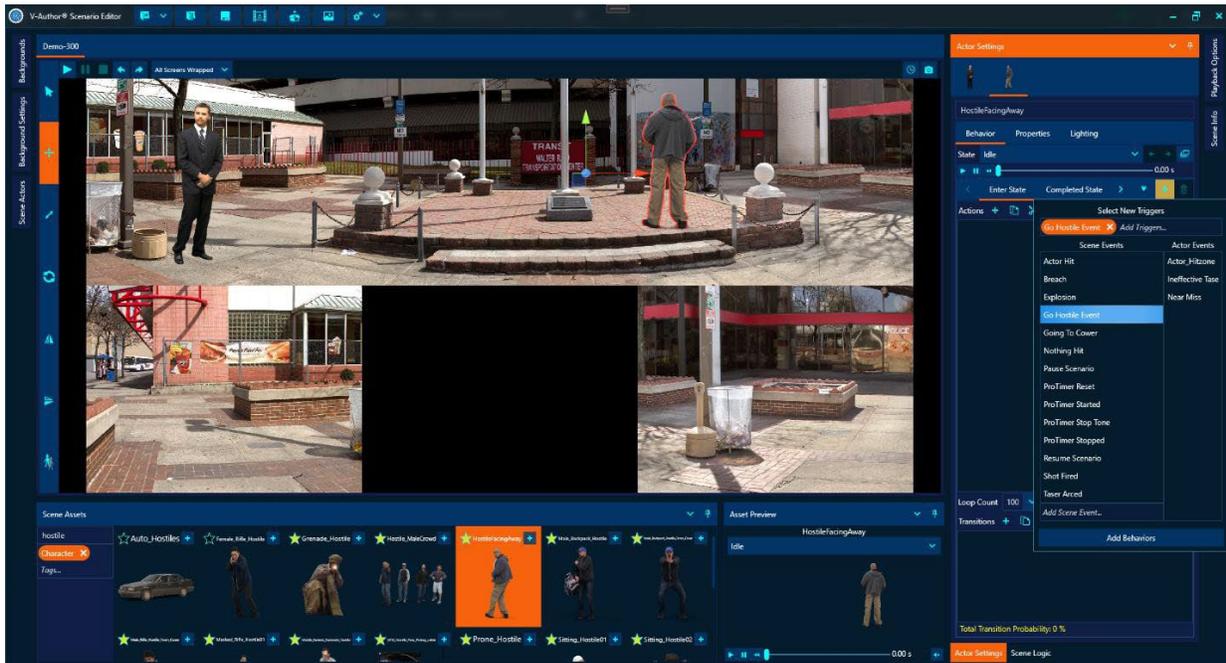


We want him on the right side because this character turns and side steps to our left when he goes hostile so he needs room to move left. We need a way to trigger his hostile state, this is done by adding a scene trigger we can use to trigger a hostile behavior. Select the “Scene Logic” tab at the bottom of the right pane in this customized layout with a pinned “Scene Logic” pane (NOTE: the “Scene Logic”

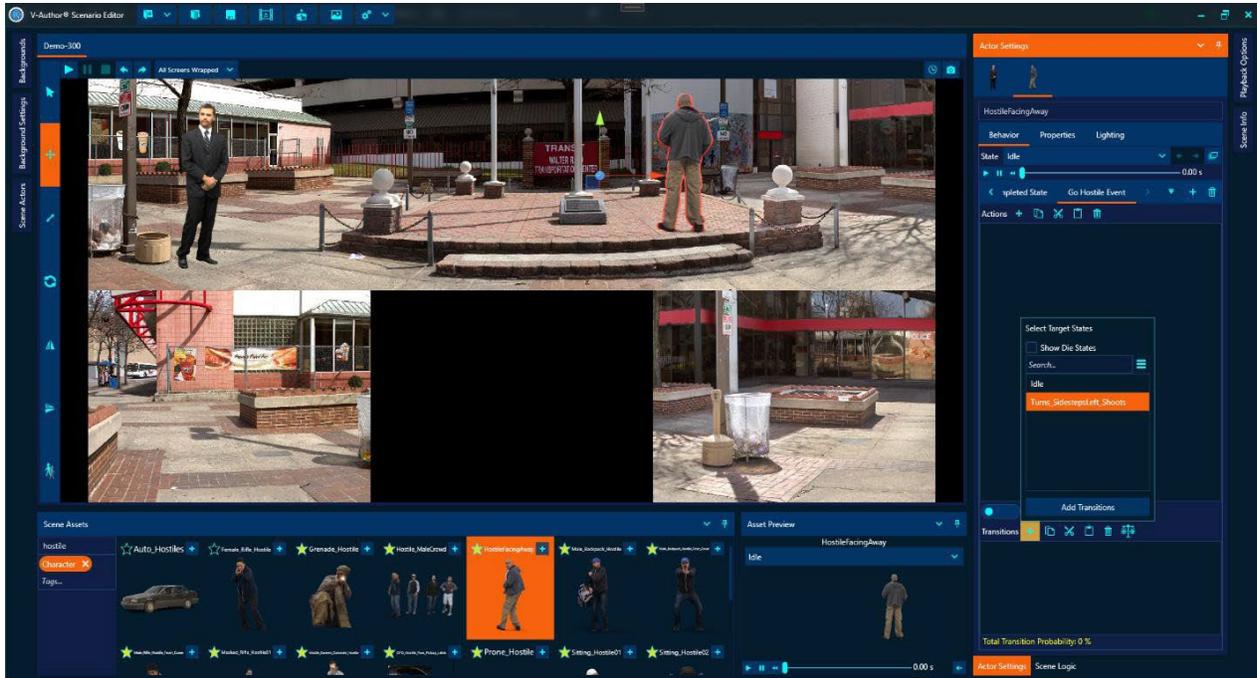
button will be on the right side of the application in the default layout). Add a new scene event by typing its name in the top text box and hitting enter. For this example, add an event named “Go Hostile Event” as shown below:



Now go back to the “Actor Settings” tab and select the “HostileFacingAway” actor and in its “Behavior” tab make sure the “Idle” state is selected. Add a behavior to this state selecting the “+” button next to the behavior triggers and select the “Go Hostile Event” as shown below:



This creates a new “Idle” state behavior that will be triggered when the “Go Hostile Event” is triggered. All that is needed for this behavior is to transition the actor to its hostile state named “Turns\_SidestepsLeft\_Shoots”. Click the “+” button in the “Transitions” region and select the “Turns\_SidestepsLeft\_Shoots” state as shown below:



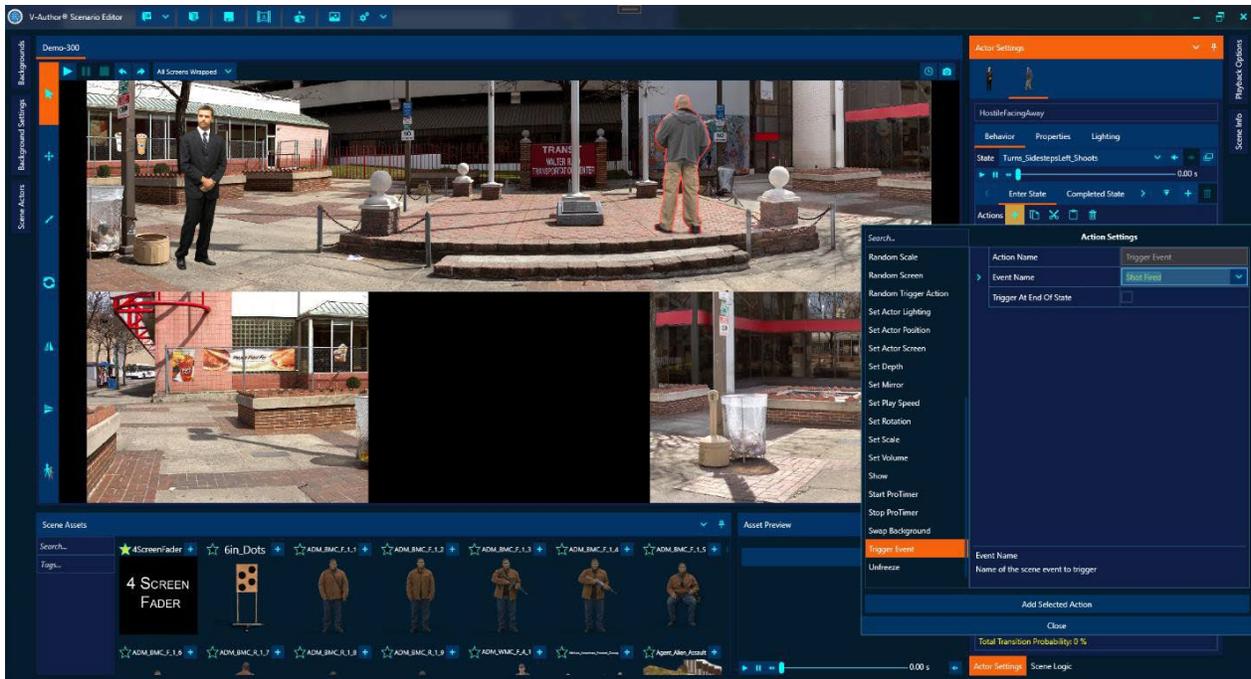
This legacy character does not have automatic “Fires Weapon” markers so we want to make sure a “Shot Fired” event is broadcast when the hostile fires their weapon. We will use actions in this new hostile behavior to do so. First, we need to determine when the hostile fires their weapon to trigger “Shot Fired” at the correct time. In the behavior pane we can scrub the state timeline to observe the actor’s animation in scene. With the “Turns\_SidestepsLeft\_Shoots” state selected, drag the timeline thumb for the hostile actor to the point he fires his gun as shown below:



The actor fires their gun 2.13 seconds into this state. This is the point we need to trigger a “Shot Fired” event. So, we will add an action to delay 2.13 seconds before the next action when we enter this state.

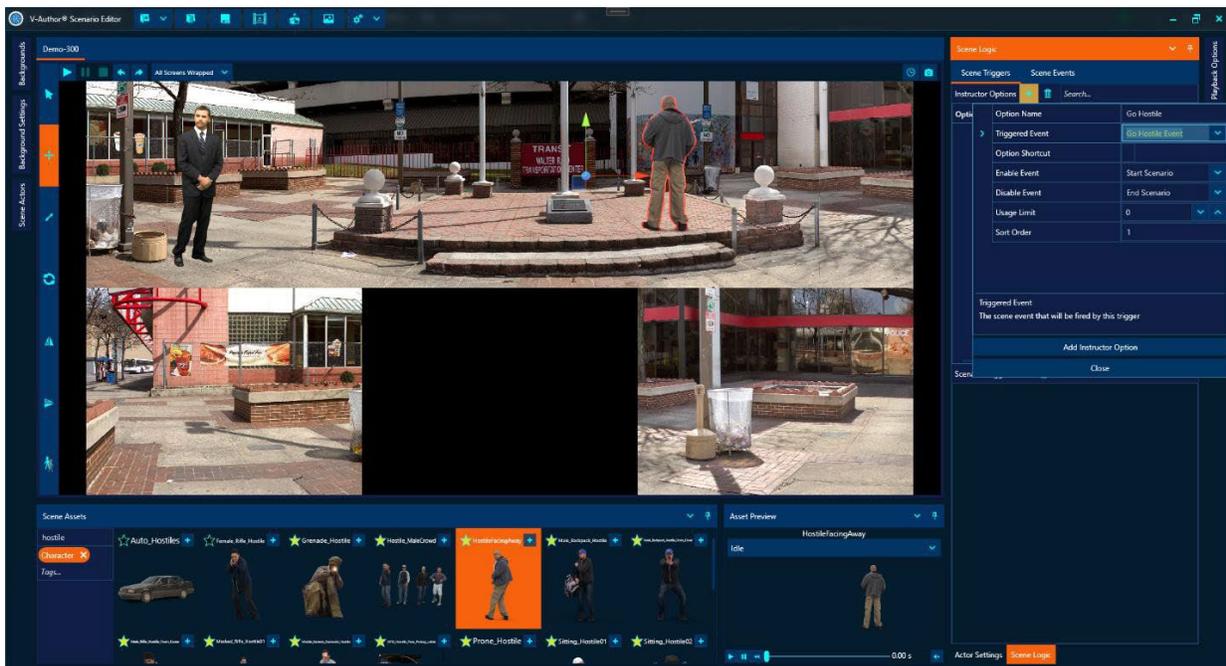


After clicking “Add Selected Action” to add the delay action, we will now add a “Trigger Event” action to trigger the “Shot Fired” event. Select the “Trigger Event” action and select “Shot Fired” for the “Event Name” to trigger and then click “Add Selected Action” as shown below:

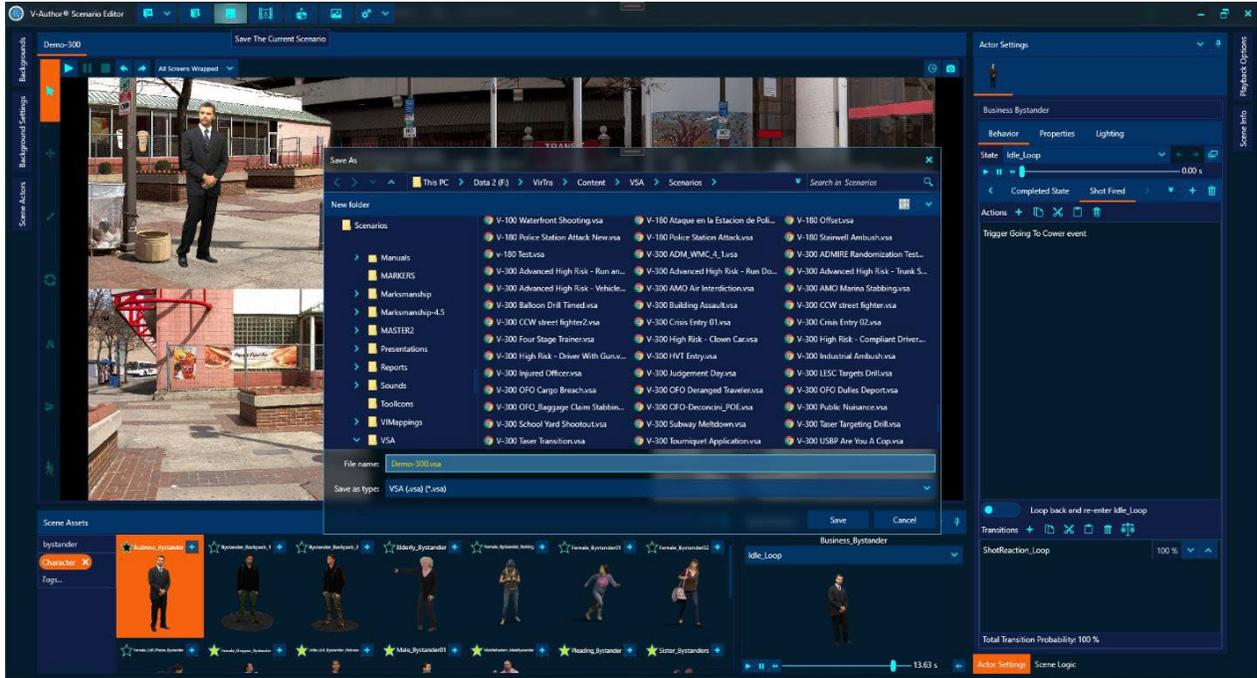


Now the “Shot Fired” event will be triggered from hostile as well as trainee fire so the bystander actor acts appropriately. Finally, we need a way to allow the instructor to initiate hostile action.

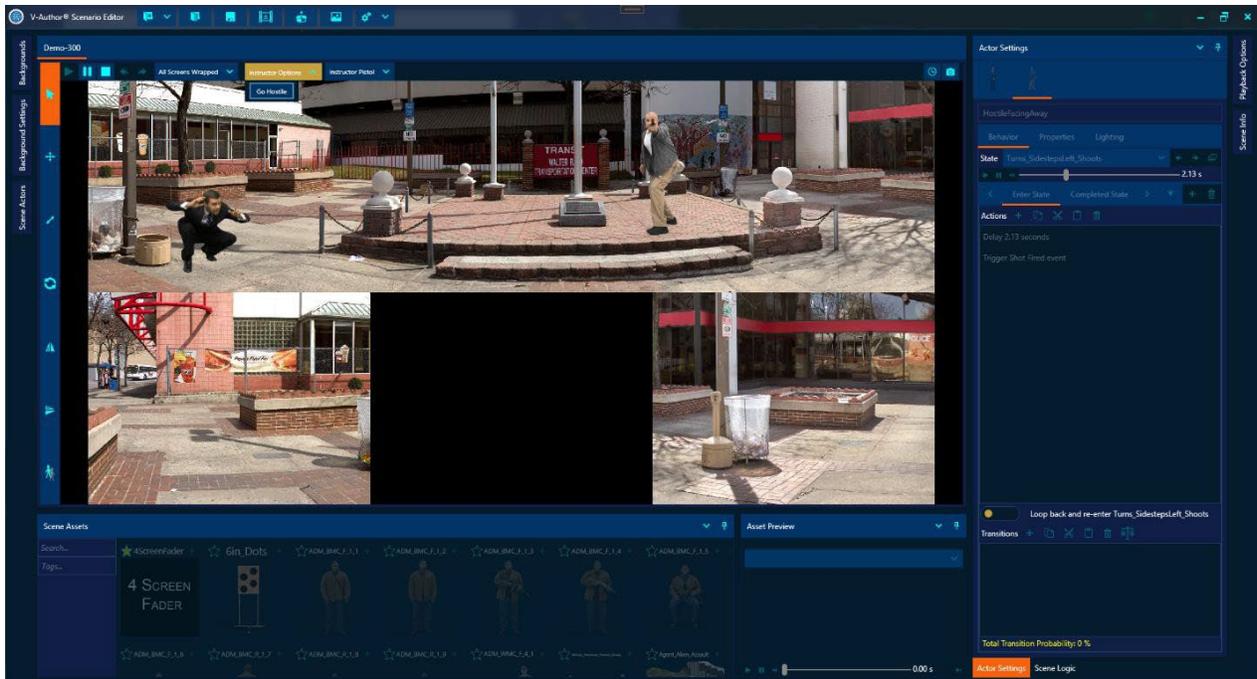
Select the “Scene Logic” tab in the lower right of this layout and at the top of the “Scene Logic” pane select the “Scene Triggers” tab. This allows authoring of both instructor options and automatic scene triggers. Click the “+” button next to “Instructor Options” to add a new instructor option. In the drop down name the new option “Go Hostile” and select the “Go Hostile Event” for the “Triggered Event” as shown below.



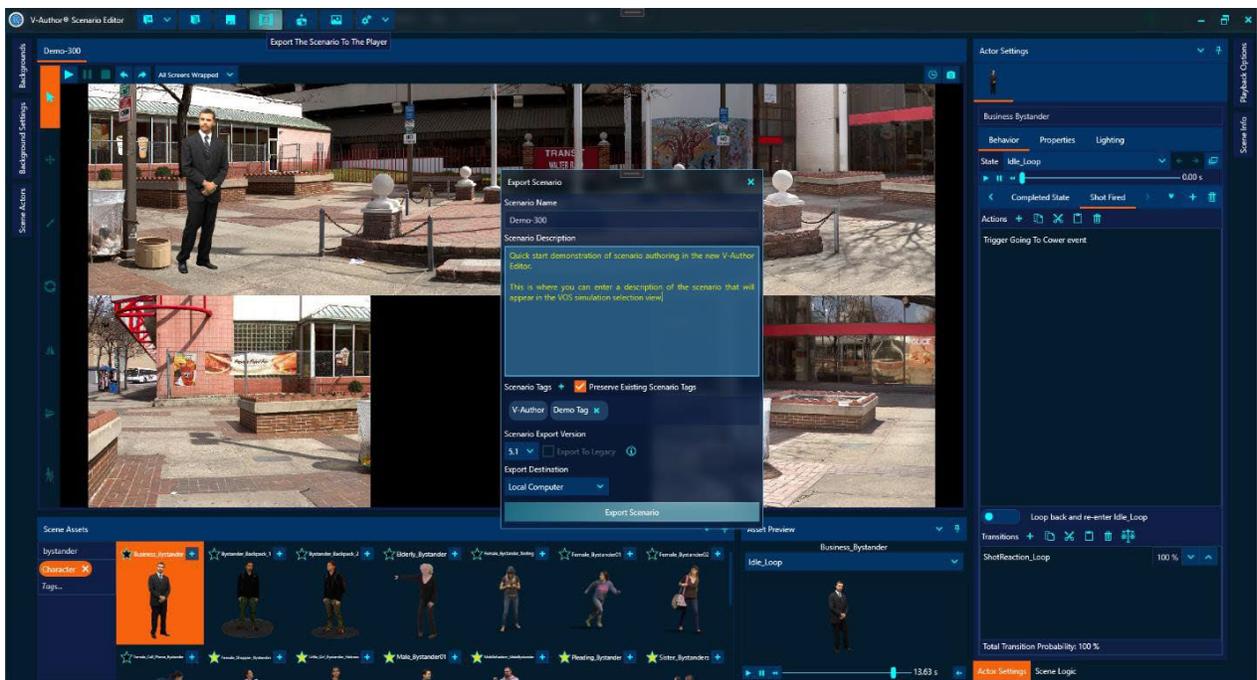
This will create a button in the player UI named “Go Hostile” that when clicked will trigger the “Go Hostile Event” when we already created a behavior for in the hostile actor. Our authoring is now complete. It is a good idea to periodically save authoring, we will save out our authored scenario by clicking the save scenario button on the top button menu and giving it a file name of “Demo 300” as shown below.



We can now open this authoring up in the future to inspect or modify it. We can see how our scenario runs directly in the editor by clicking the “Play” button in the upper left of the player window. This will load up the scenario and start playback giving the user instructor options and ability to inject instructor shots with various weapons via the mouse. Play the scenario and select the “Go Hostile” option at the top of the player window to run the scenario. Click with the mouse to shoot.



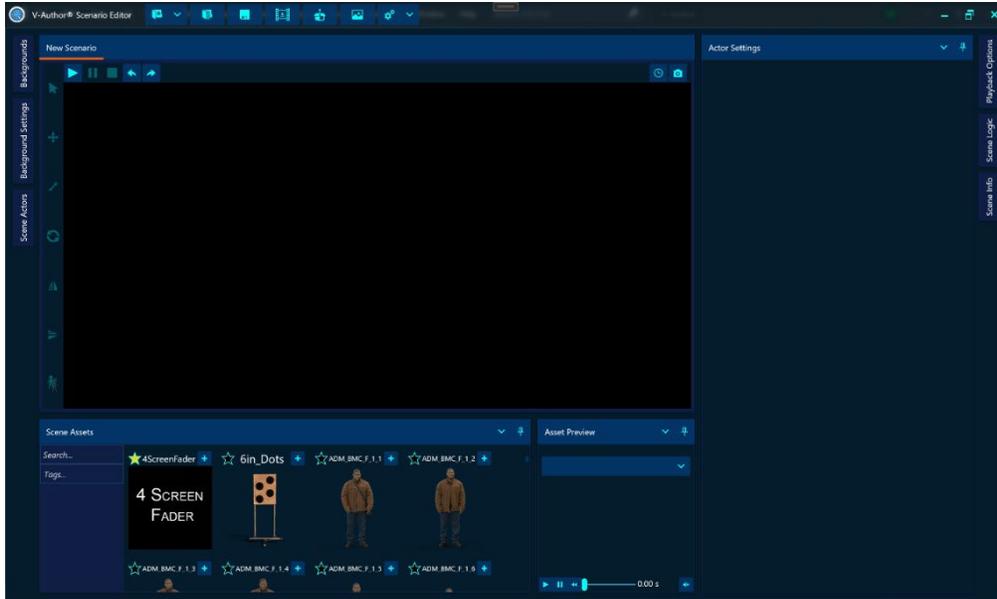
This scenario can now be exported to run on a simulator. This is done with the “Scenario Export” button on the top button menu. If authored on a V-300™, it can be exported directly to the simulator. Other options include exporting just to the local computer or to a scenario package that can be imported on other simulators.



The exported scenario can now be played in VOS on a simulator or in standalone mode. You have now created a fully functioning V-Author® scenario.

### III. V-AUTHOR® WORKSPACE

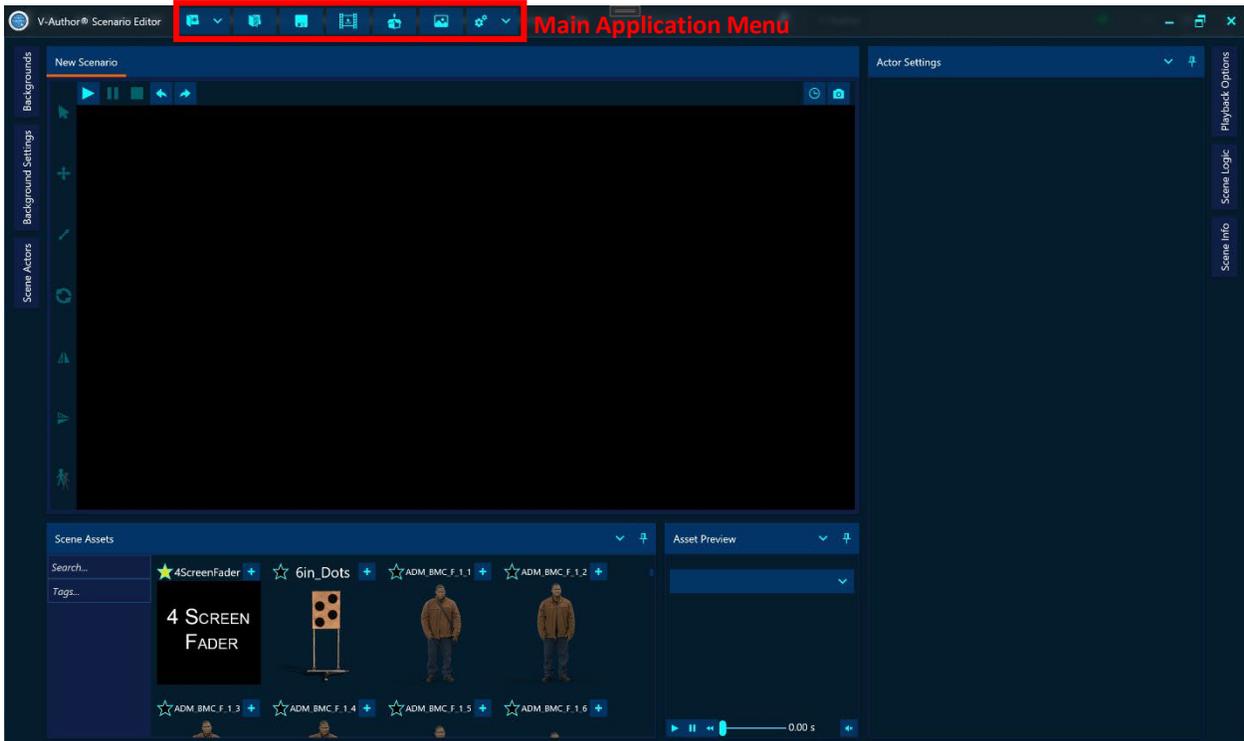
V-Author® Editor divides authoring functionality amongst various window panes whose layout can be customized by the user into a workspace of their liking. The default layout is shown below.



The V-Author® panes consist of the following:

#### Main Application Menu

The V-Author® Editor main application menu is at the top of the application window as shown below.



Create New Scenario



Opens a drop-down window for creating a new V-Author® scenario.

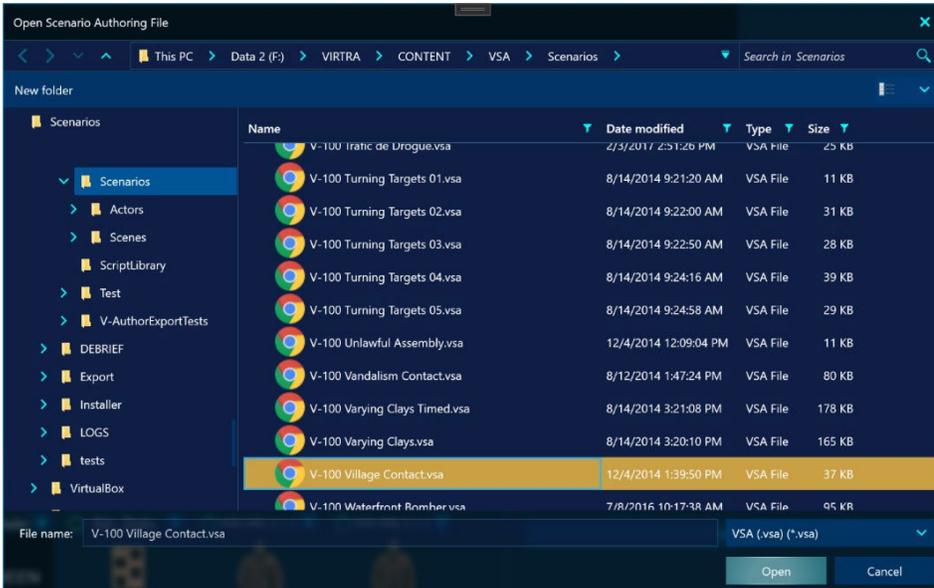


To create a new scenario the “Scenario Name” field must be filled in which enables the “Create” button. The user also chooses the target simulator system type for the scenario along with the projection format for that system and if supported the number of screens for the scenario. The default target system will be whatever the local simulator system is or the system set as the default by using the “Set As Default” button. Clicking “Create” will create a new blank scenario for the given system type.

Open Scenario



Brings up a file browser to open a saved scenario file.



V-Author® project files are stored with .vsa extensions. The file browser has features to search with a file pattern and sort by name, date or file size. The file name field also provides auto complete with matching file names. Select the desired scenario and click the “Open” button to open that scenario in the editor.

### Save Scenario Authoring



Opens a save file browser to save out the current scenario to a V-Author® .vsa project file.

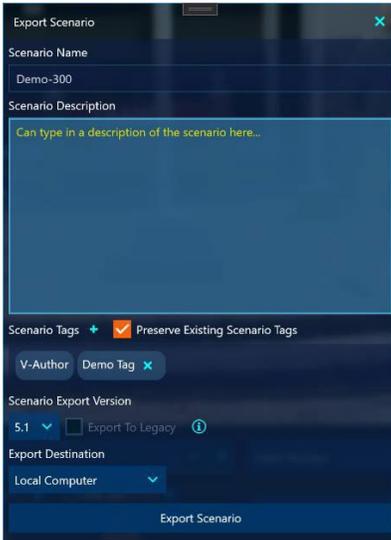


By default the file name will be the same as the scenario name. If the file name is changed, the scenario name will also be changed to match the file name. Click the “Save” button to save out the current scenario with all its authoring. While V-Author® Editor has an auto-save feature that periodically saves authoring, it is recommended to manually save the project frequently so as not to lose any work if an unexpected close occurs.

## Export Scenario



To play the scenario on a simulator or standalone in VOS, the scenario must be exported to the system. This button opens up the export options for the scenario.



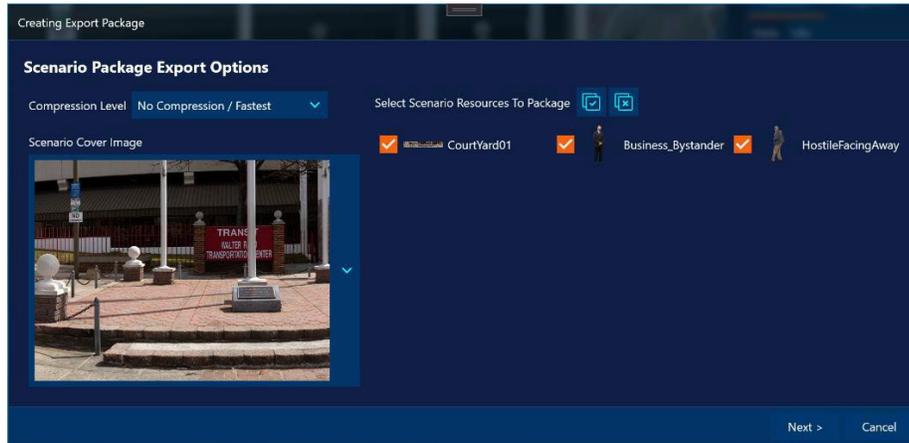
The dialog allows the user to rename the scenario on export and add a description of the scenario that will be displayed in the VOSTM scenario display.

- **Scenario Tags:** Tags are added with the “+” button next to “Scenario Tags”. Here we have added a tag named “Demo Tag” for this scenario. By default, if this scenario already exists on the target system any existing tags it has will be preserved after export. The “Preserve Existing Scenario Tags” box can be unchecked if that behavior is not desired.
- **Scenario Export Version:** By default, the V-Author® Editor will export a scenario as the latest 5.1 export version which allows the use of all the latest 5.1 features. The resulting exported scenario can only be played by 5.1 or later versions of the V-Author® player. If we want to create a scenario in the editor to play on older versions of the V-Author® player, it must be exported as a legacy version and no 5.1 features can be used in the authoring. To export to legacy the “Export To Legacy” box can be checked or the legacy version selected in the version drop down. In the example shown above, the “Export To Legacy” box is disabled. This will occur if non-legacy authoring features have been used in the scenario as is the case here. To see what non-legacy features are in use, click the info  button and it will display all the non-legacy features and their required version as shown below:

Non-Legacy Features Used	
<b>Required Export Version: 5.1</b>	
Feature	Version
Demo-300 > Background > Lighting	5.1
Business Bystander > Lighting	5.1
HostileFacingAway > Lighting	5.1

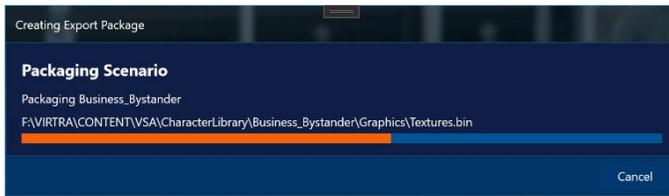
In this scenario, lighting adjustments are used for both the background and actors which requires version 5.1 or later of the V-Author player.

- **Export Destination:** Here we select what type of export we want. We can always export to the local computer or to a distribution package that can be imported on other systems. If V-Author® Editor is on a simulator system, it will also give an option to export to that simulator system including all screen clusters for that system. Exporting to the local system will allow the scenario to be run in VOS on that system. Exporting to a distribution package will create a zip file with the scenario contents packaged inside that can be used by the import feature on another system to unpack that scenario to run on that system. If we are exporting to a scenario package, V-Author® Editor will bring up a dialog for distribution package export options as shown below.



The compression level can be set to optimize for compression size or speed and the assets used by the scenario are packaged by default but can be unchecked to not package those assets. This can greatly decrease the size of the package and reduce the time to create and import a package if we know the scenario assets are already on the target system and do not need to be imported.

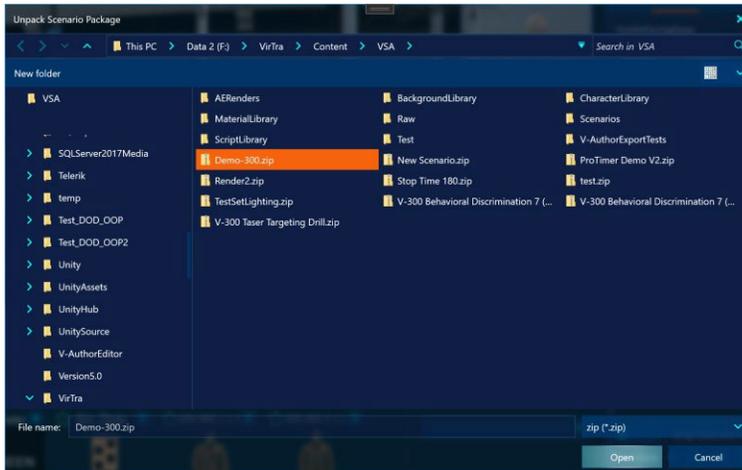
Once all export options have been specified click the “Export Scenario” button to do the export and a cancellable progress dialog will pop up to show export progress information until the export is complete or cancelled.



## Unpack Scenario Package



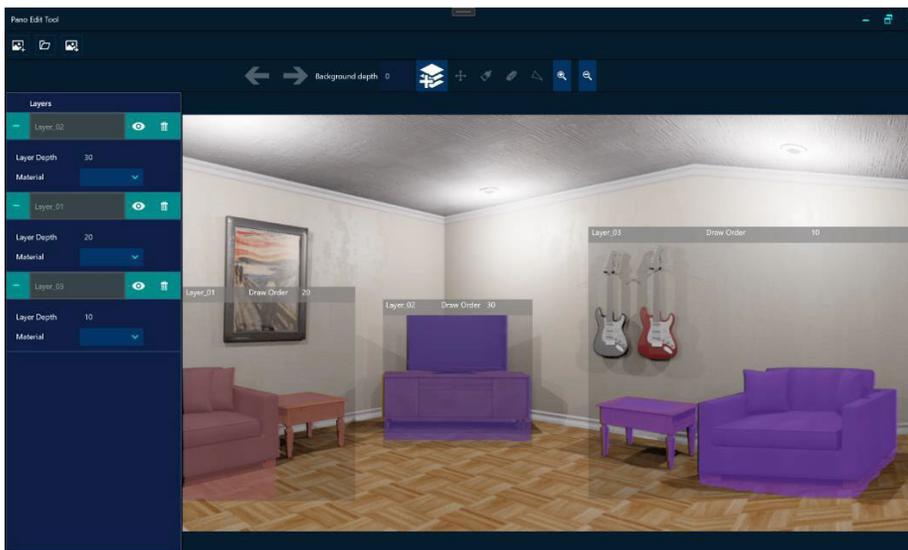
Brings up a file browser to select a distribution package to unpack and import for running the packaged scenario on the current system.



## Open Pano Editor



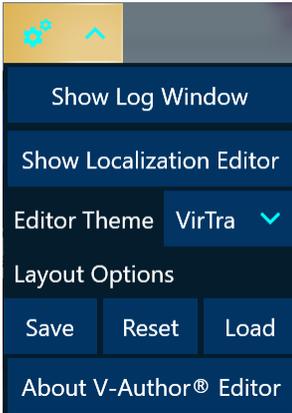
Opens the Pano Edit Tool which is an associated application used to create new V-Author® background resources from image files. The Pano Edit Tool functionality is covered in a separate manual.



## V-Author® Editor Options

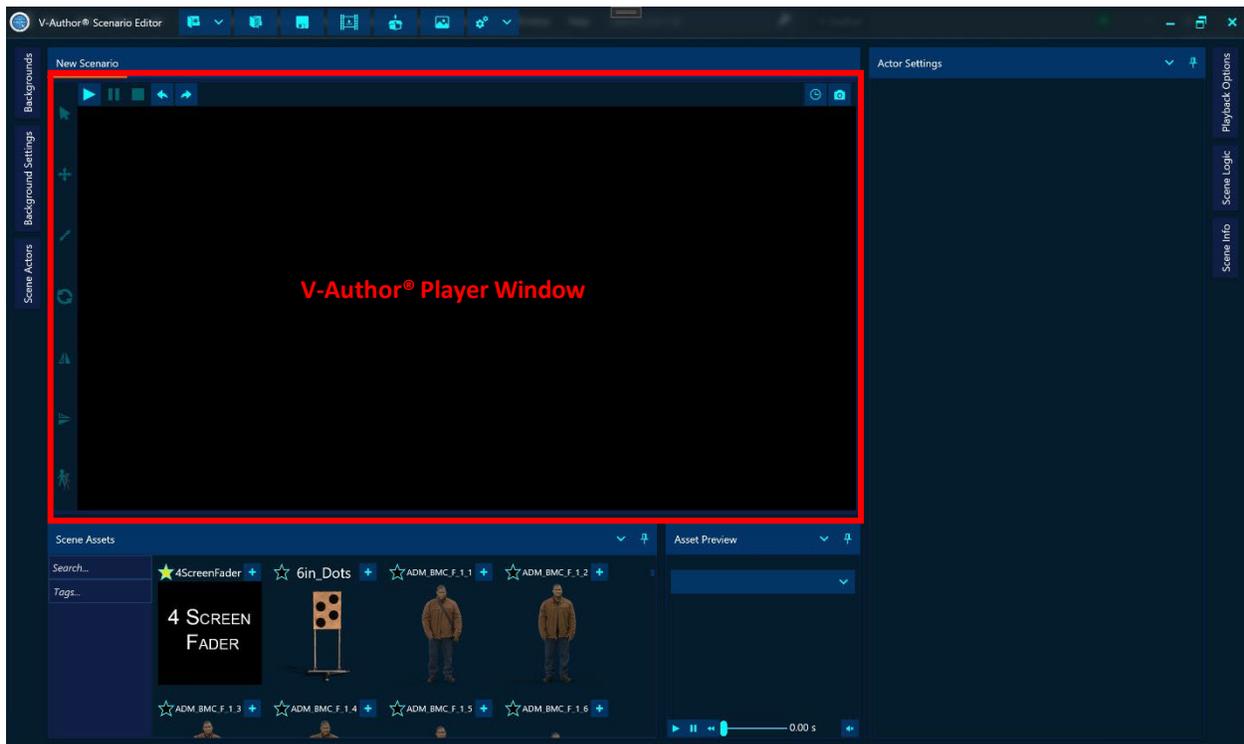


Drop down to access various optional settings for the V-Author® Editor.



- **Show Log Window:** Brings up a floating window that shows streaming log information from the V-Author® Editor that can be useful in diagnosing problems.
- **Show Localization Editor:** Brings up a floating window that can be used to create a localized version of the V-Author® Editor user interface allowing text replacement with translations.
- **Editor Theme:** By default, the V-Author® Editor uses a VirTra color theme but if a different color scheme is desired the user can also select a dark or light color theme instead.
- **Layout Options:** The V-Author® Editor workspace layout is highly customizable by the user. Panes can be moved, docked to alternative locations, pinned or unpinned to slide out from the sides or up from the bottom of the application or floated into separate windows. Whatever layout the application was closed with will be the layout it uses the next time it is opened. The current layout can also be saved to a file that can then later be opened with these options to restore that specific layout. The layout can also be reset to the default here.
- **About V-Author® Editor:** Brings up dialog with version and copyright information.

## V-Author® Player Window

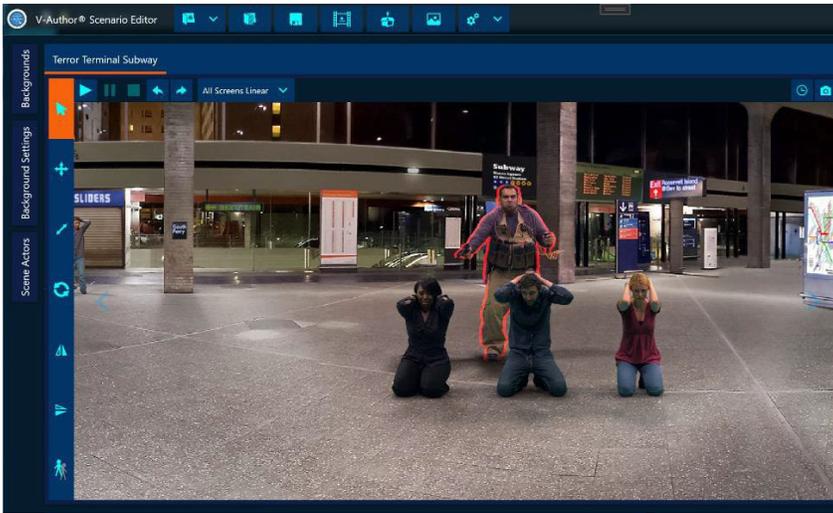


The authored scene will appear in the player window in which the author can interact with the scenario they are creating. Along the left border of the player window are various actor edit tools that can be used to modify selected actors in the scene. Along the top border are player controls to run, edit and interact with the scenario.

### Actor Edit Tools

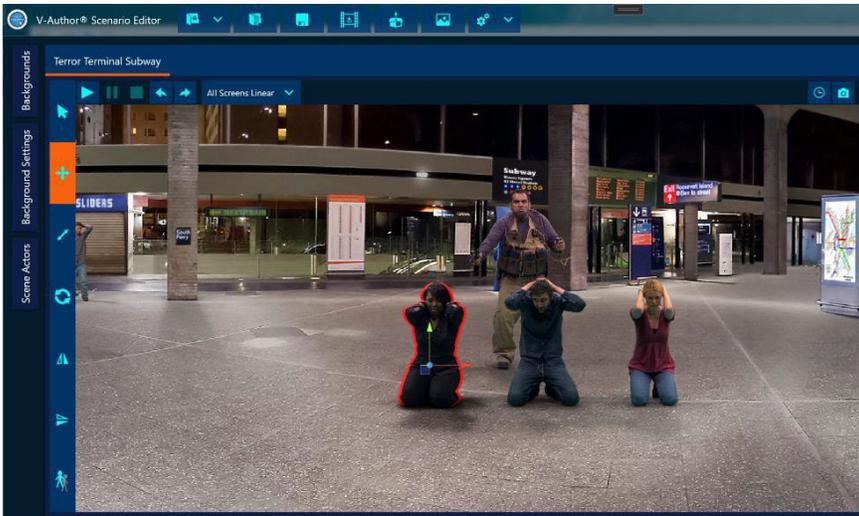
The actor edit tools apply to the selected scene assets in the player window allowing them to be manipulated via mouse movement or directly modified depending on the active tool.

- Actor Select Tool



Allows actor selection in the player window by left clicking on the actor with the mouse. Selected actors will get an orange outline in the player windows to indicate they are currently selected. Selecting an actor in the player window will also cause their actor settings pane to be selected and their actor list item to be selected. Multiple actors can be selected by holding down the CTRL key and clicking on additional actors. All other actor tools operate on the currently selected actors in the scene.

- Actor Move Tool



The actor move tool allows movement of the actor in the scene using the mouse. When this tool is active, a move gizmo appears for the selected actors in the scene. By holding down the left mouse button in the small box in the bottom left of the move gizmo the actor can be dragged around with the mouse in any direction. Holding the left mouse button down on the right pointing arrow allows constrained movement in the horizontal direction keeping vertical position constant. Holding the left mouse button down on the upward pointing arrow constrains movement in the vertical direction on the current screen keeping horizontal position constant. When this tool is selected the keyboard arrow keys will also move the selected actors

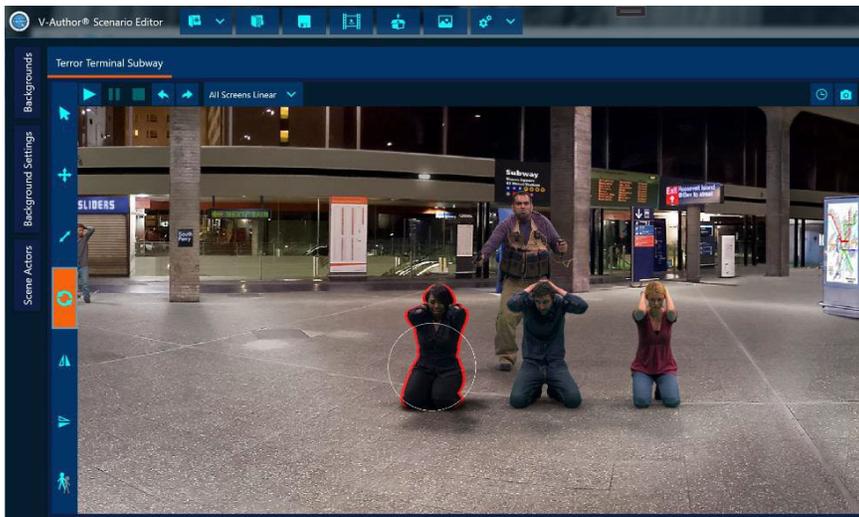
with fine adjustments in x and y. The actor move tool can also be selected via the hot key combination of CTRL + M.

- Actor Scale Tool



The actor scale tool is used to increase or decrease the size of the actor in the scene. When this tool is active a scale gizmo will appear for the selected actors consisting of a small white square. Holding down the left mouse button on this gizmo and dragging causes the scale of the selected actors to increase or decrease according to the length and direction of the mouse drag. Dragging to the right and/or up increases the size, dragging to the left and or down decreases the size. When this tool is active the + key will increase size and the – key will decrease size for fine adjustment of scale. The actor scale tool can also be selected via the hot key combination of CTRL + S.

- Actor Rotate Tool



The actor rotate tool can be used to rotate the actor in the scene. When this tool is active a rotation gizmo will appear for the selected actors consisting of a thin white circle. Holding

down the left mouse button on this circle when it turns yellow and dragging will cause the actor to rotate in the scene. Dragging to the right or up will rotate clockwise. Dragging left or down will rotate counterclockwise. When this tool is active the right arrow key will rotate clockwise and the left arrow key will rotate counterclockwise for fine adjustment. The actor rotation tool can also be selected via the hot key combination of CTRL + R.

- ### Flip Actor Horizontal



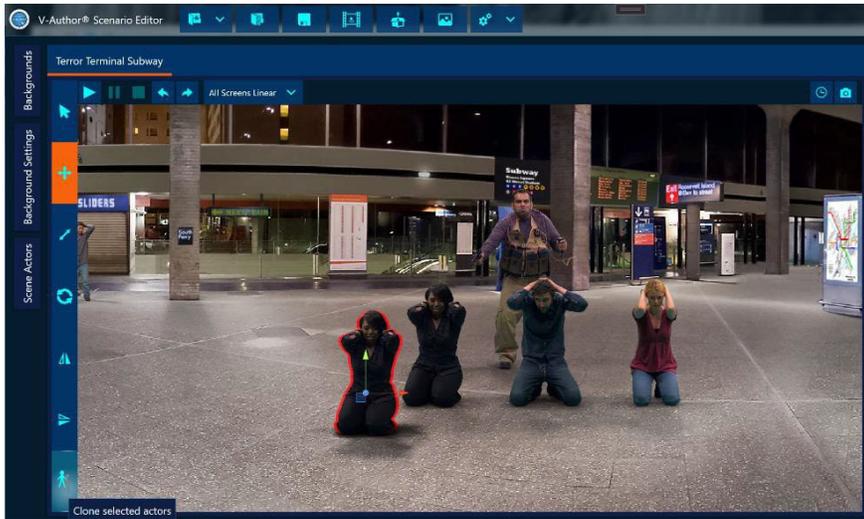
Clicking on this tool will cause an immediate flip of the selected actors in the horizontal direction. Their appearance will now be a horizontally mirrored appearance from their previous appearance.

- ### Flip Actor Vertical



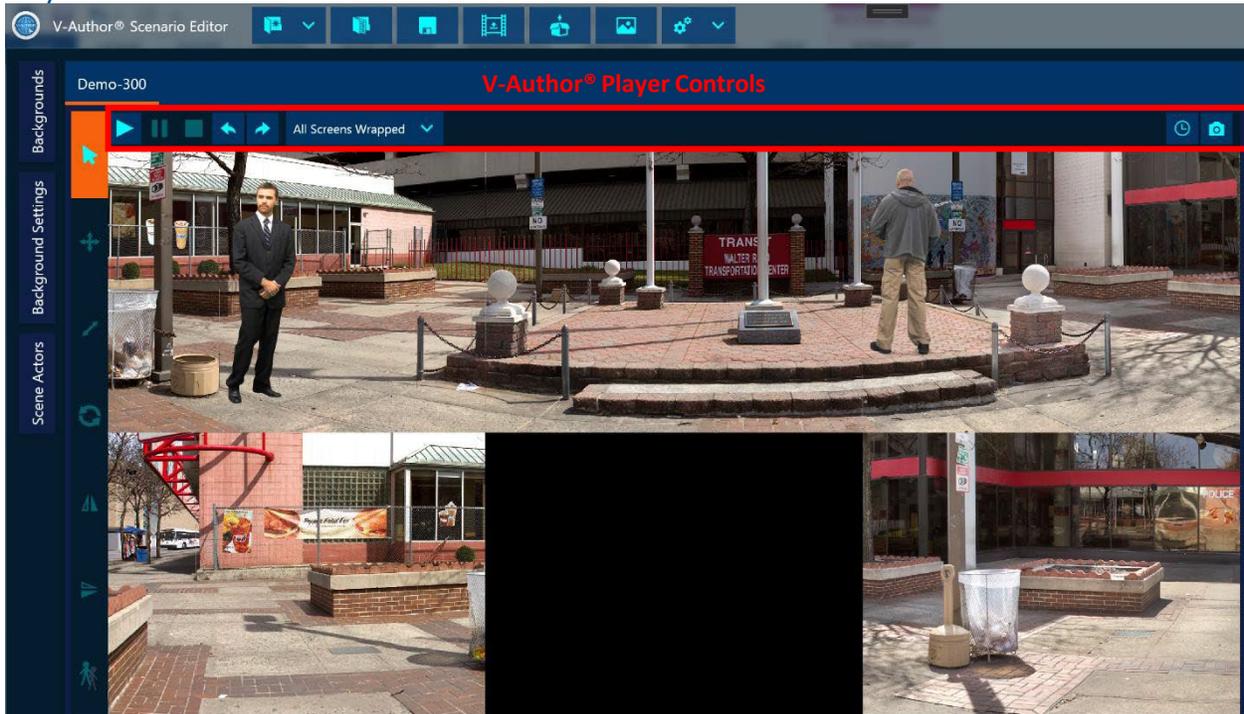
Clicking on this tool will cause an immediate flip of the selected actors in the vertical direction. Their appearance will now be a vertically mirrored appearance from their previous appearance.

- Clone Actor



The clone actor tool will create exact copies of all currently selected actors in the scene. Since they will have the exact same position, the clones will appear directly on top of their originals. Here, the move tool has been used to move the clone away from the original actor it was cloned from. An important note about clones is not only the scene asset itself is cloned but also all of the existing behavior logic of the original is cloned into the new actor as well.

**Player Controls**



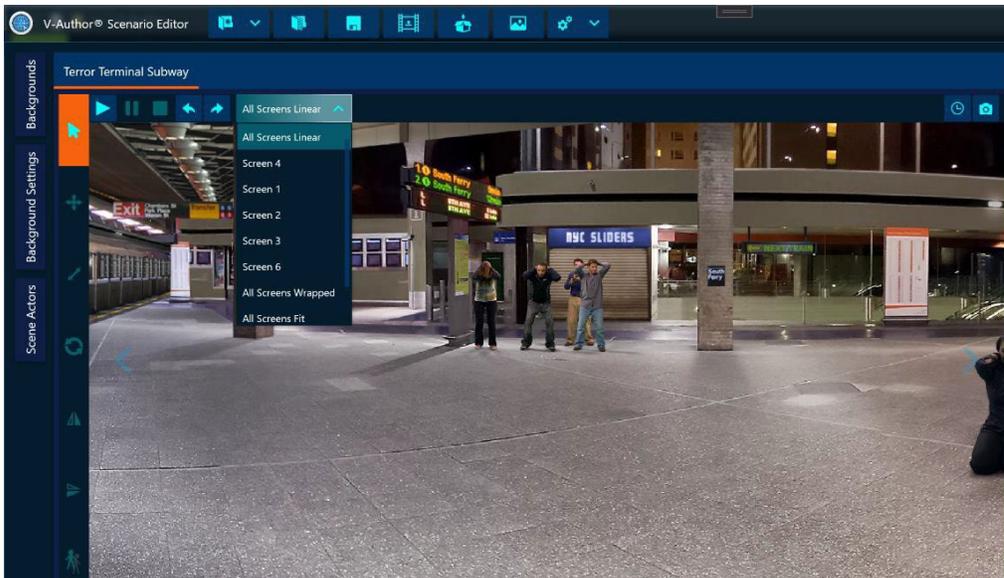
Player controls are available along the top of the player window. The available controls are context sensitive so some of them will only be available when it is appropriate for those controls. For example, a single screen scenario will not show the display mode selector for multi-screen display modes. Instructor options will only be available when the scenario is run not during authoring.

- Scenario Play Controls** 

Standard play, pause and stop controls. Play will load the scenario and run it in the player window enabling instructor options and instructor shots via the mouse. All authoring functions will be disabled while the scenario is running. Pause will freeze a running scenario allowing it to be resumed with the play button. Stop will end a running scenario and reload the scenario for authoring enabling all authoring capabilities.
- Undo / Redo** 

The leftward undo button will undo the last undoable edit applied to the scenario. Undoable edits include actor tool modifications to scene assets, adding / removing assets, switching backgrounds, etc. The rightward redo button will reapply the last undone edit.
- Display Mode Selector**

Provides options on how the player window should display a multi-screen scenario.

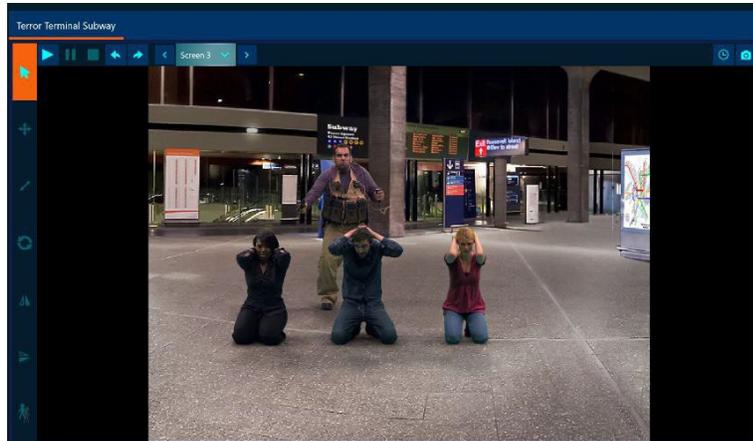


For the V-300™ scenario in this example there are 5 screens the scenario play on. The options for display are:

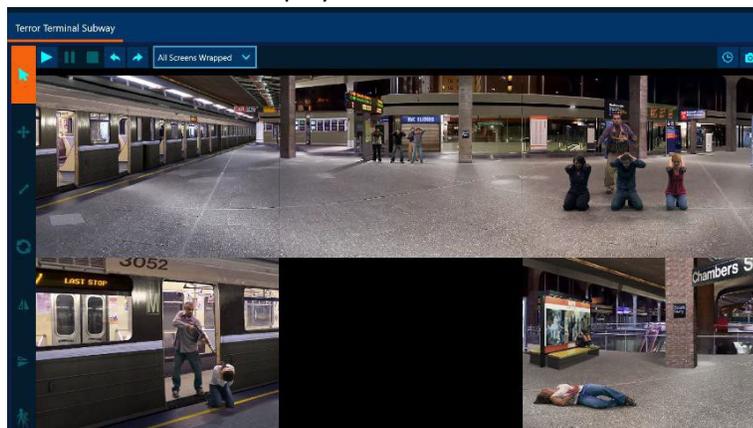
- All Screens Linear

This is the default for multi-screen scenarios. The player renders the scene to fill the available space in the player window as one continuous scene. Holding down the right mouse button and dragging left or right scrolls the scene in that direction. The user can also click on the overlaid arrow controls on the left and right sides of the player window to scroll the scene.
- Screen #

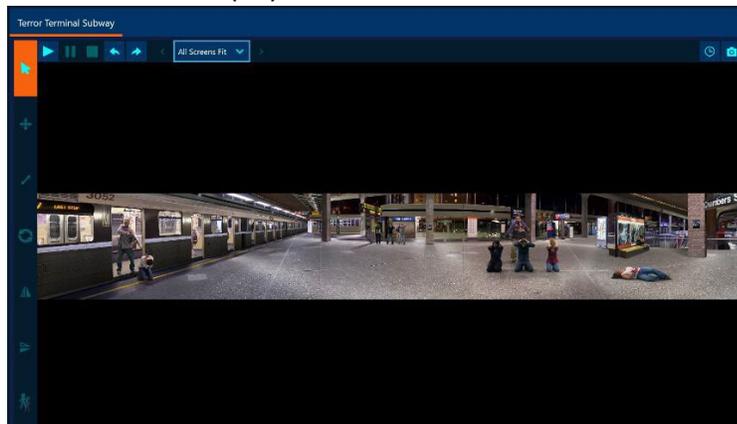
A specific screen number can be chosen so the player only shows what that screen renders. In this mode, arrow buttons appear on either side of the selected screen option to navigate to the screen to the left or right of the current screen.



- All Screens Wrapped  
This display mode is only available for 5 screen scenarios and shows the middle 3 screens across the top half of the player window, the left and right screens on the bottom half of the left and right sides of the player window. This is also the display mode VOST™ uses to display 5 screen scenarios on the instructor station.

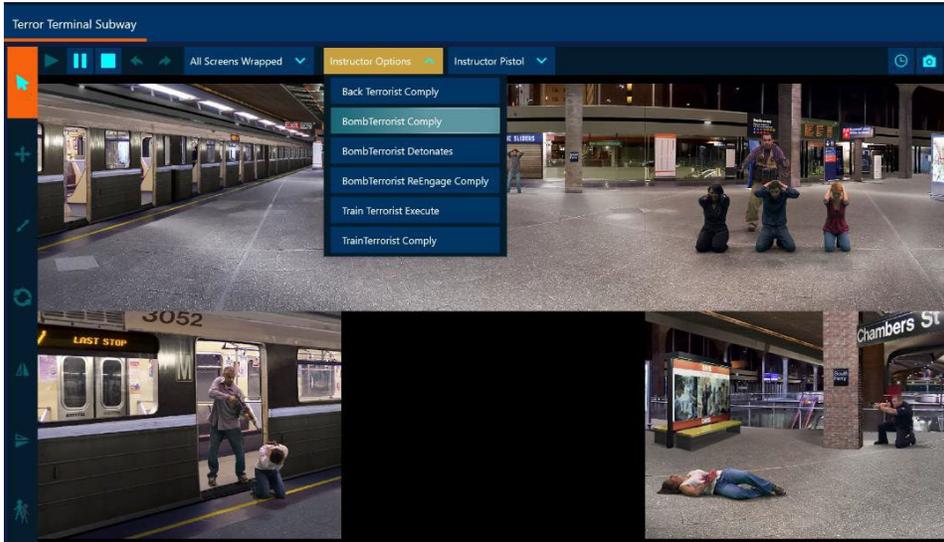


- All Screens Fit  
This display mode makes sure the entire scenario width is fit into the player window in one continuous display.



- **Instructor Options**

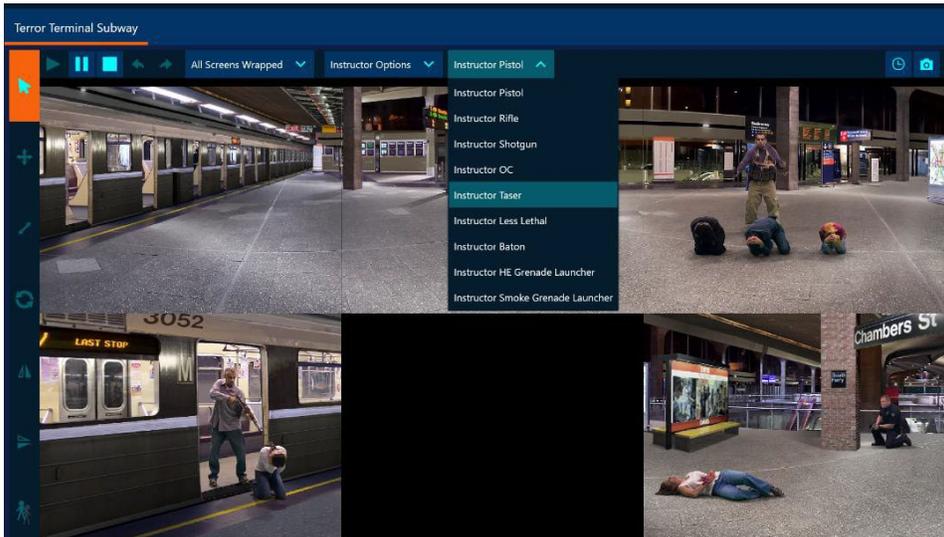
When the scenario is running any available instructor options will be immediately available in the player window as shown below.



Clicking on the option triggers that option in the scenario. Instructor options are also available in the playback options window.

- **Instructor Weapon Selector**

When the scenario is playing the mouse serves as an instructor weapon. Clicking in the player window will generate an instructor shot at that position with the selected instructor weapon. Weapons can be selected with the instructor weapon drop down as shown.



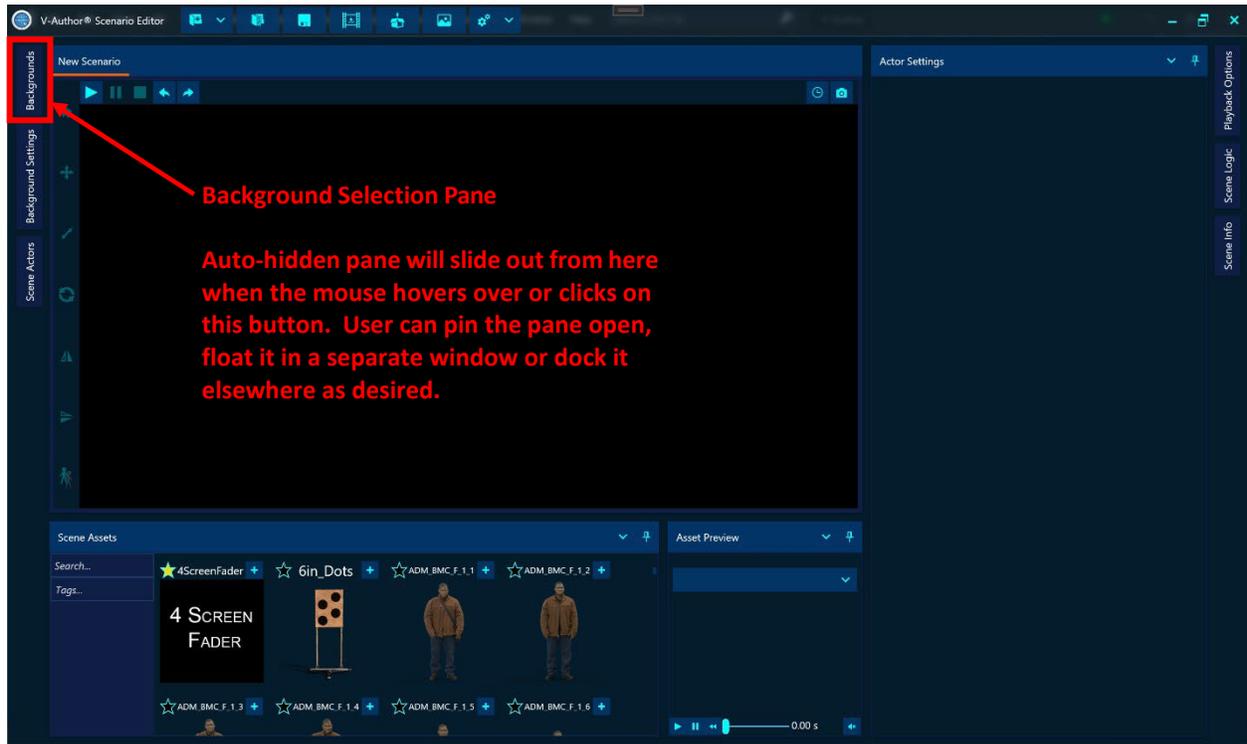
- **ProTimer™ Toggle** 

This toggle button in the upper right corner of the player window turns the VirTra ProTimer™ overlay on or off. When running a scenario with ProTimer™ actions the ProTimer™ may be left in an enabled state, this button allows it to be turned off via the editor.

- **Take Screen Shot** 

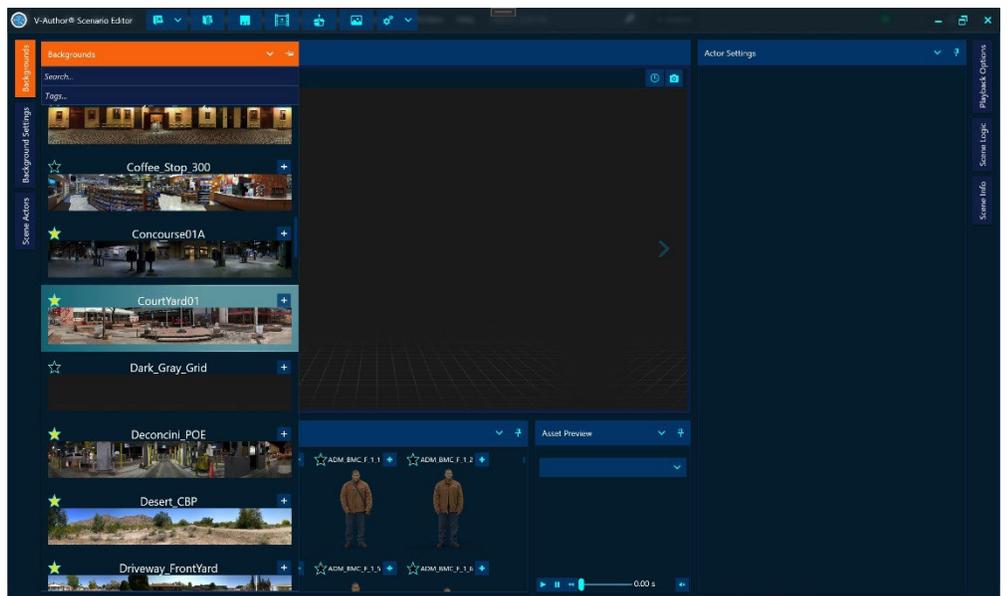
This button in the upper right corner of the player window allows the user to take a screen shot of whatever is currently being rendered in the player window and save it to a file. It will bring up a file browser to have the user select a destination file for the screen shot.

## Background Selection Pane

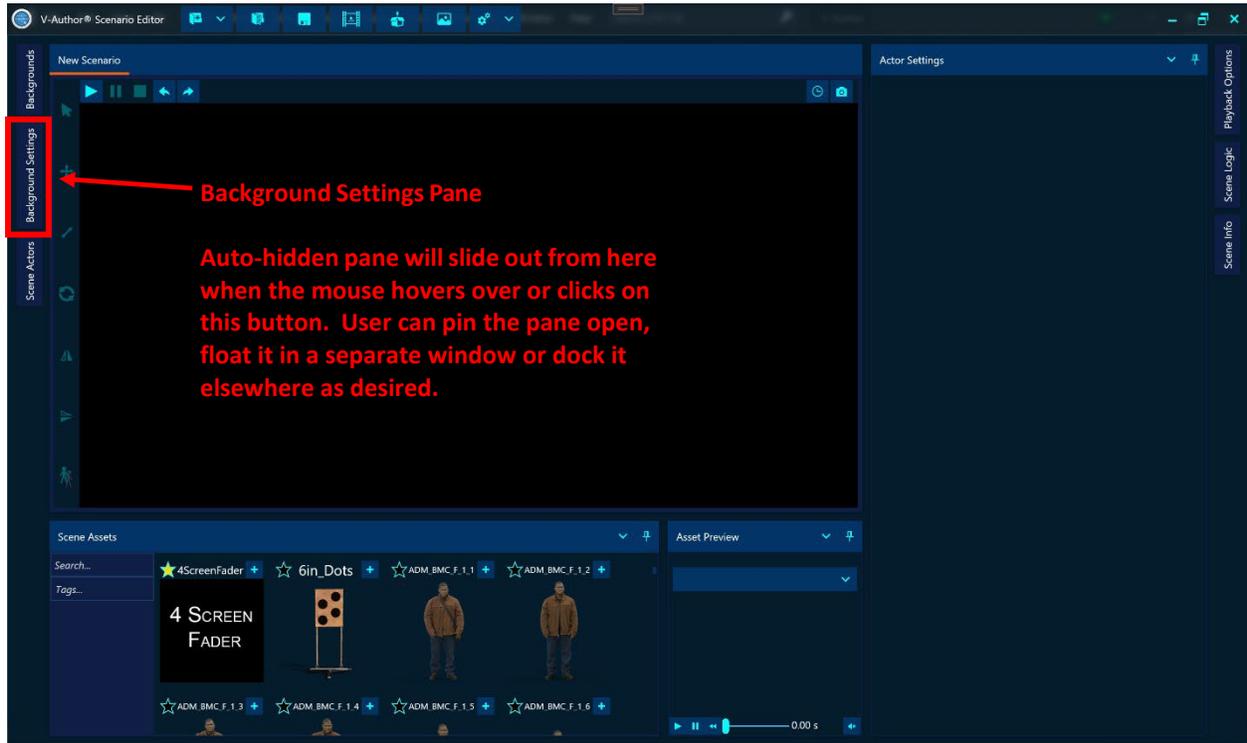


The background selection pane allows the author to select the background image to use for the scenario. In the default layout the background selection pane is unpinned and slides out from the left side of the application when the mouse hovers over or clicks on the backgrounds button. This pane can be pinned, docked elsewhere in the application or floated alternatively. The pane will show all the backgrounds available on the local system that are compatible with current scenario.

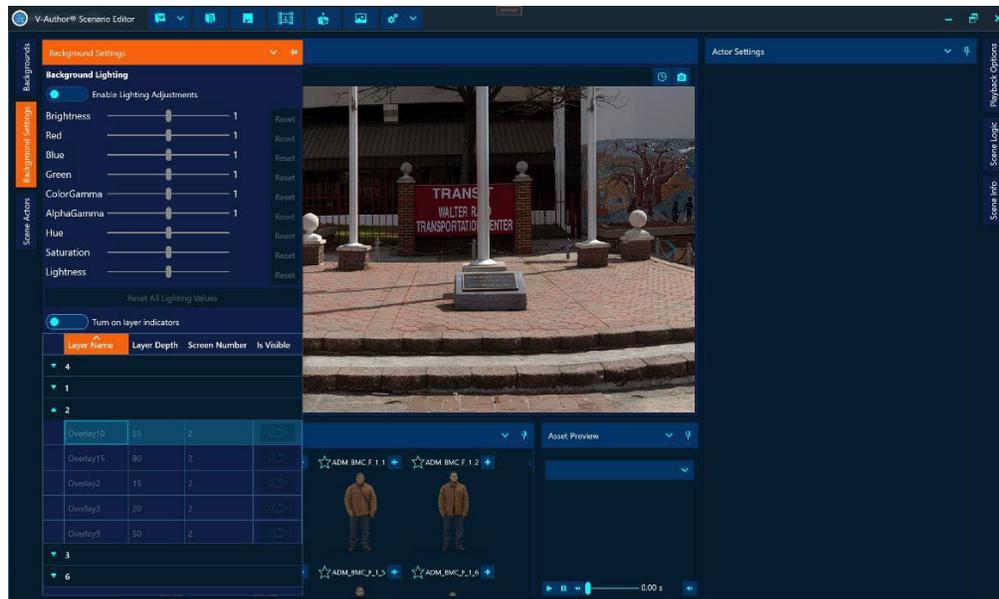
Backgrounds can be filtered by search term and/or tags. The top left corner of background items has a star that can be clicked to mark that background as a favorite which can then be filtered using the favorite background tag. To add a background, the author can click on the '+' button in the upper right corner of the desired background item or drag and drop the background item into the player window.



## Background Settings Pane



The background settings pane provides settings that affect the rendering of the currently selected background. In the default layout the background settings pane is unpinned and will slide out from the left border when the mouse hovers over or clicks on the background settings button.



- **Background Lighting**

Version 5.1 of V-Author® allows the author to completely alter the lighting for a given background. Note that lighting adjustment is not supported by legacy V-Author® players so using this feature will not allow the scenario to be exported to legacy. By default, lighting adjustment is disabled. Toggle the enabled lighting adjustments switch and modify the lighting sliders to set the desired background lighting conditions. Using the various sliders can achieve many different lighting effects. For example using brightness, green and saturation sliders a night vision look can be achieved.

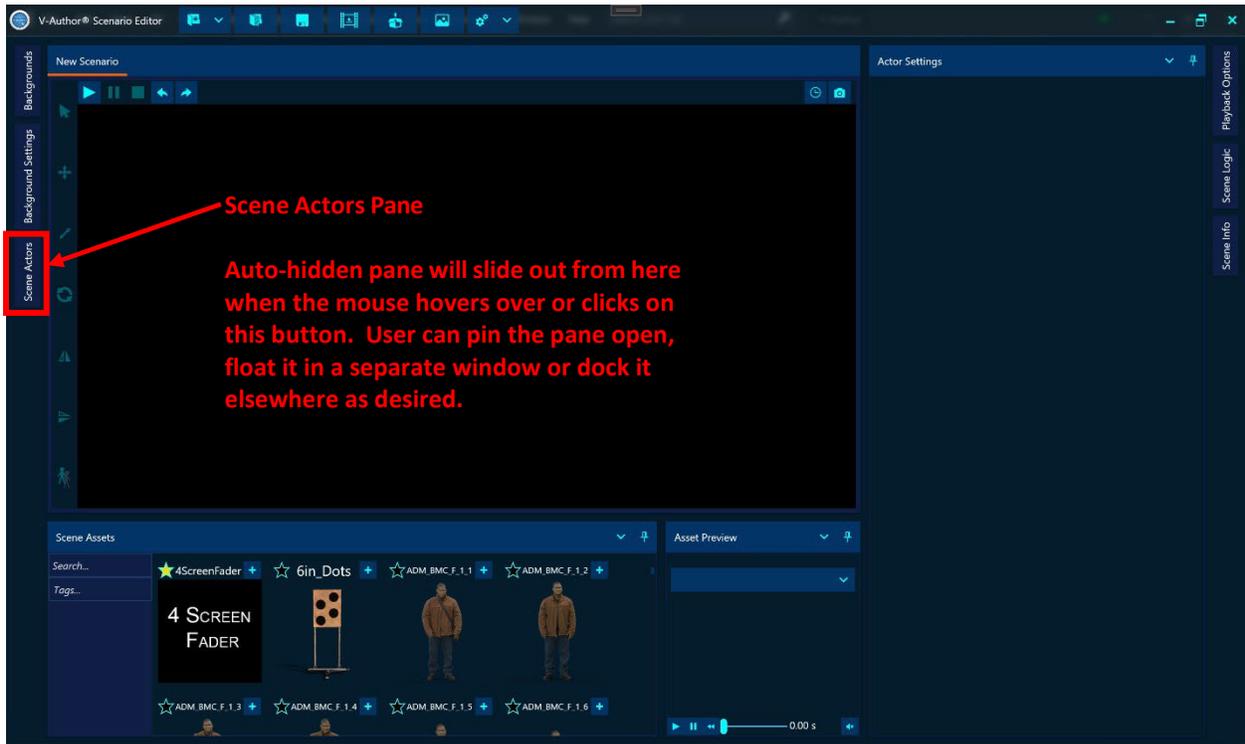


- **Layer Indicators**

V-Author® backgrounds are not just flat backdrops, they also have cutout layers set at different render depths that allow assets to be placed in front of or behind these background layers. This is what gives the scenario an illusion of three-dimensional depth and allows actors to be hidden by or pop out from cover. V-Author® Editor allows the author to see where these layers are along with what render depth values are set for those layers by turning on the background layer indicators. Background layers are also presented in a list under each screen number with the name for the layer, its depth value and an eye toggle to turn its visibility on or off in the player window. All layers are rendered with transparency to help with positioning assets behind them properly.



## Scene Actors Pane



The scene actors pane is a simple listing of all the actors currently in the scenario. In the default layout the scene actors pane is unpinned and slides out from the left side of the application when the mouse hovers over or clicks on the scene actors button.



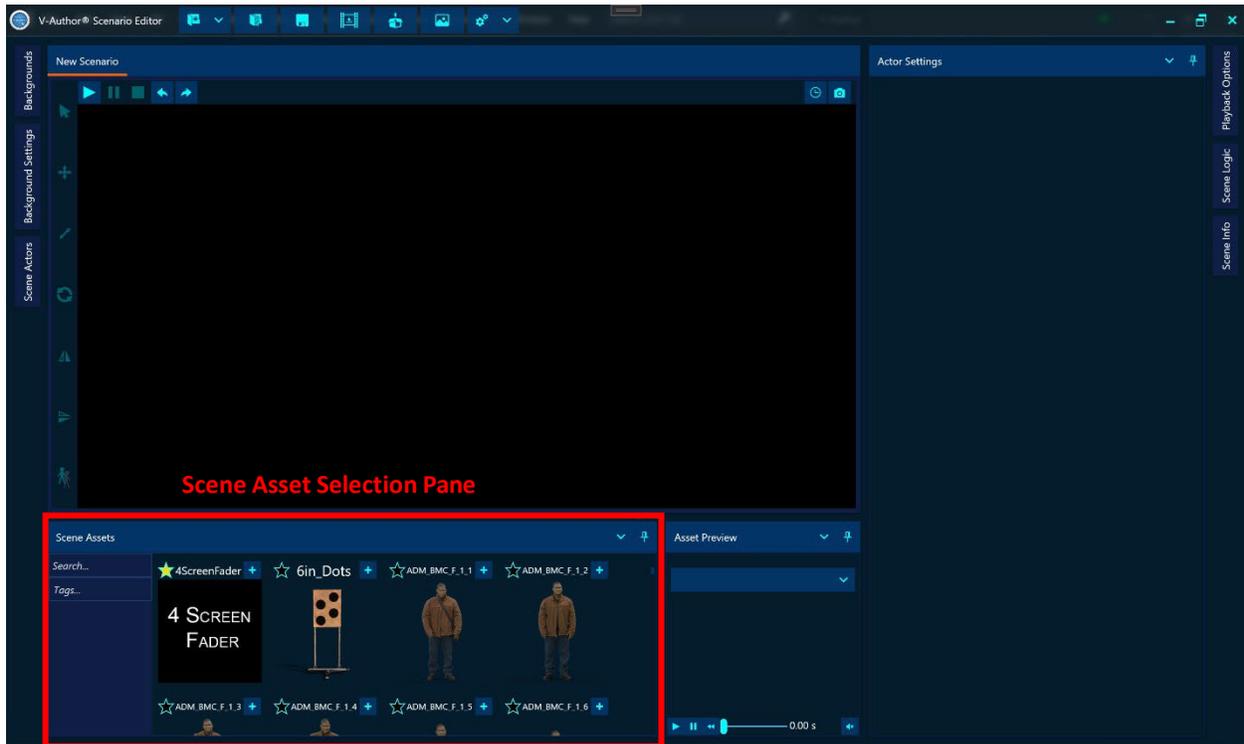
Selecting an actor in the scene actors list selects it in the player window and vice versa. All normal windows multi-select list behavior is supported. Multiple actors can be selected in the list by holding down the control key and clicking on additional actors to select or using the SHIFT key to select all actors between a range. CTRL + A will select all actors when the actors list pane has focus. There are also buttons at the top of the actor list pane to select all or unselect all actors. Each actor item shows an actor icon, the name given to the actor and controls on the right side to delete the actor or show/hide the actor in the player window.



For large actor lists a search box allows the author to search for a specific actor by name. The actor list tools at the top of the actor list pane are as follows:

- **Select All Actors**   
Selects all the actors in the actors list as well as the player window
- **Deselect All Actors**   
Unselects any currently selected actors in the actors list as well as the player window
- **Paste Copied States To Selected Actors**   
This button will only be enabled if there are actor states that have been copied to the clipboard. The paste operation will paste clipboard state behaviors to any matching states of the currently selected actors. Note that only matching state names will have their behaviors pasted from the matched clipboard states so generally this is only useful for copying and pasting states for multiple actors with the same underlying character types (e.g. multiple balloons). Any actors that were modified by the paste operation will be identified in a dialog popup after the paste operation is completed. If no actors are modified, no notification dialog will appear.
- **Send All States Back To Default**   
This button will modify the all the states of the selected actors to transition back to the default state for the actor on completion.
- **Send All Die States Back To Default**   
This button will modify all the die states of the selected actors to automatically transition back to the default state for the actor on completion of the die state.

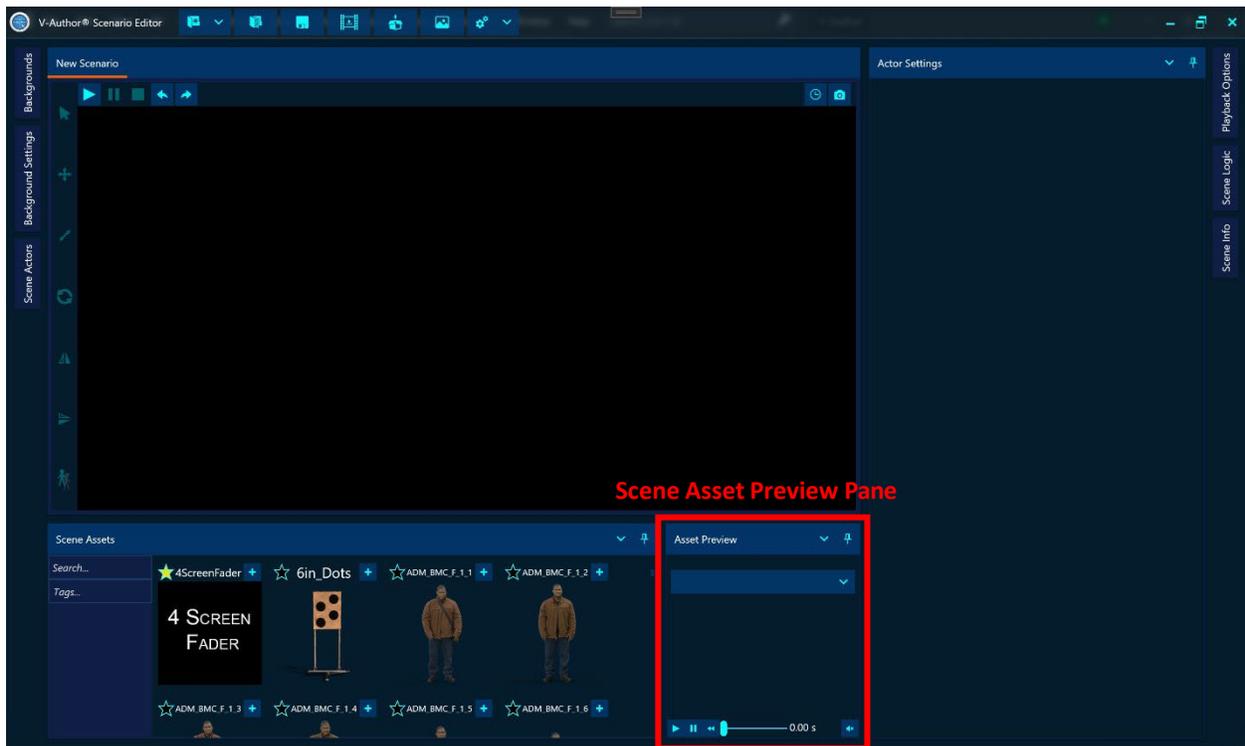
## Scene Asset Selection Pane



The scene asset selection pane shows all the assets available to add to a scenario. In the default layout the scene asset selection pane is pinned to the bottom left of the editor under the player window. V- Author® Editor comes with a large selection of built-in assets including interactive characters, props, special effects, targets, etc. Assets can be filtered to find a specific asset with both a search box to match text and by specifying asset tags that will show all assets with the selected tags. The tags box has an autocomplete feature so as the user types the matching asset tags will appear in a drop down. To see all available asset tags, type a space in the tags box. Tags can be thought of as asset categories like Character, Vehicles, SpecialFX, etc. Each asset item presents an asset icon, its character name, a favorites toggle and an add button. Clicking the star at the top left of an asset item toggles it as a favorite asset which will show up with the “Favorite” asset tag. The asset can be added to the scene by clicking the ‘+’ button at the upper right corner of the asset item or dragging the asset item into the player window. This will cause the player window to show a partially transparent image of the asset that can be dragged around the scene and will be placed in the scene when the author clicks the left mouse button. The newly added asset is automatically selected with the move actor tool activated.

Selecting an asset in the scene asset selection pane will place that selected asset in the asset preview pane where an author can exercise all the animations the asset provides.

## Scene Asset Preview Pane

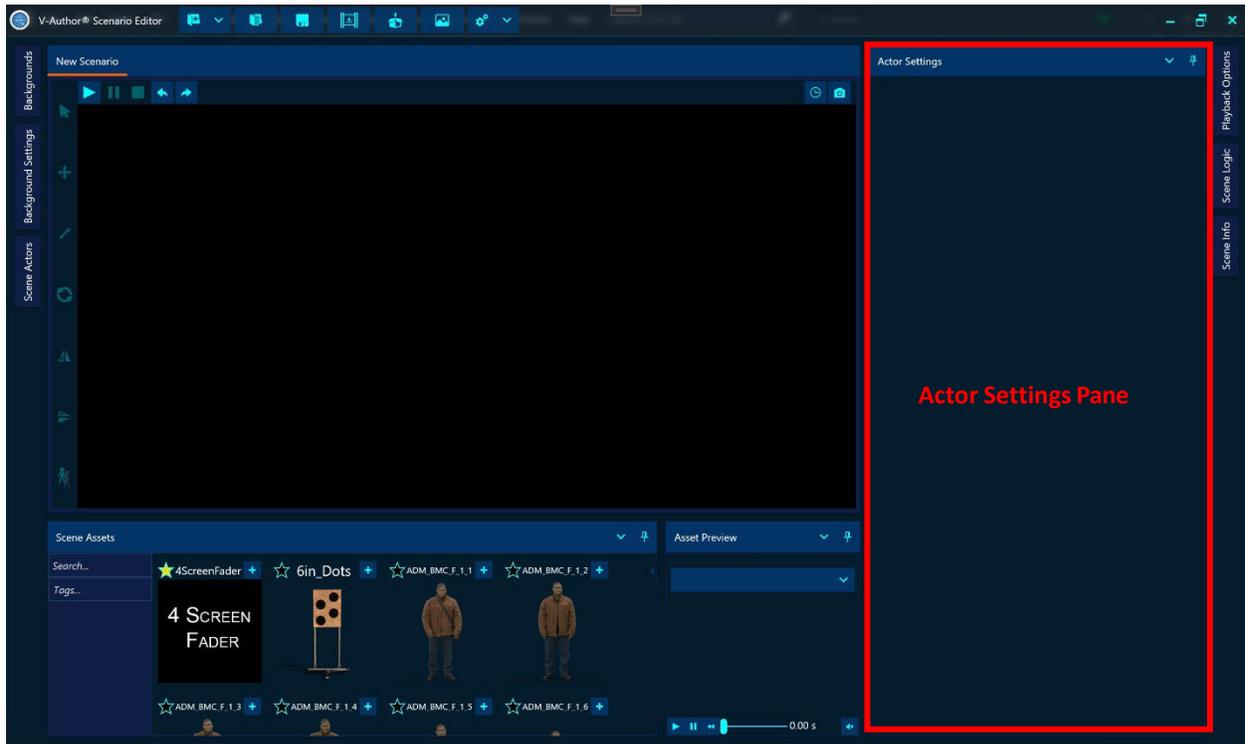


The scene asset preview pane allows an author to inspect all the animation states a particular asset provides without adding it to the scenario. In the default layout this pane is docked to the bottom of the editor on the right side of the scene assets pane. When an asset item is selected in the scene assets pane, that asset is automatically shown in the asset preview pane.

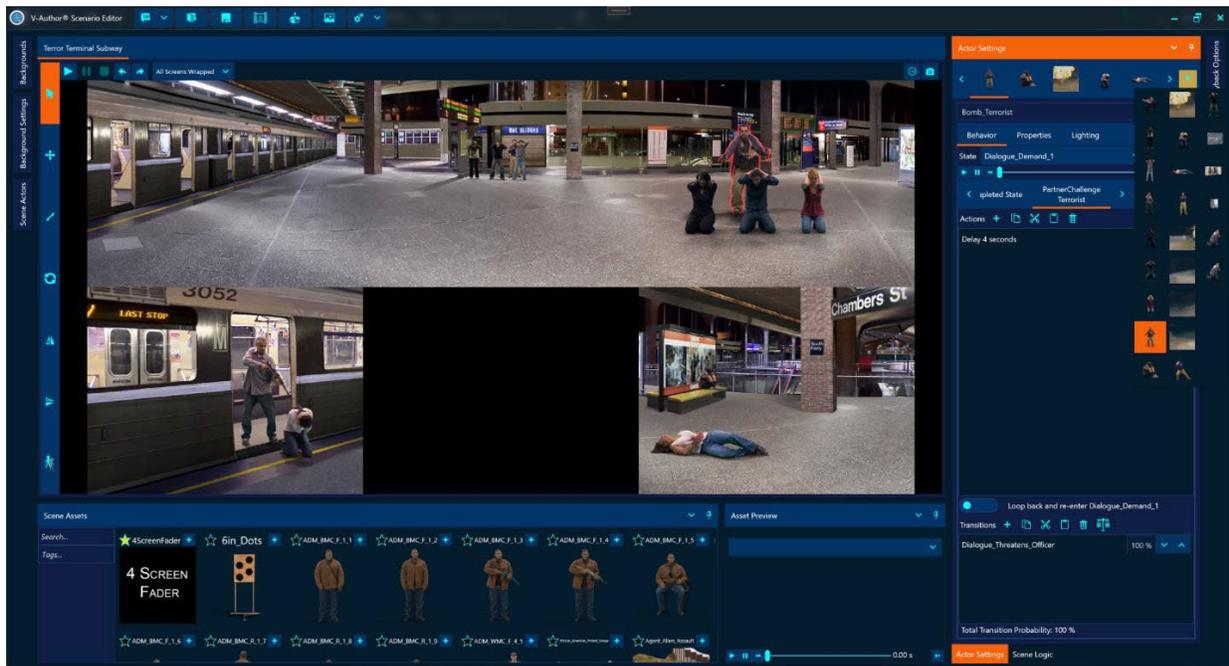


The asset preview provides a drop down to select a character state. Below the character play controls are provided to play that state animation, pause it, rewind it or scrub the state directly with a slider. The state animation time in seconds is shown to the right of the animation slider. Audio can be toggled on or off for the preview with the mute button in the lower right corner of the asset preview pane.

## Actor Settings Pane



Every actor in V-Author® gets an individual actor settings window to modify that actor with. These actor settings will appear as tabs inside the actor settings pane which in the default layout is docked to the right side of the editor and pinned open.

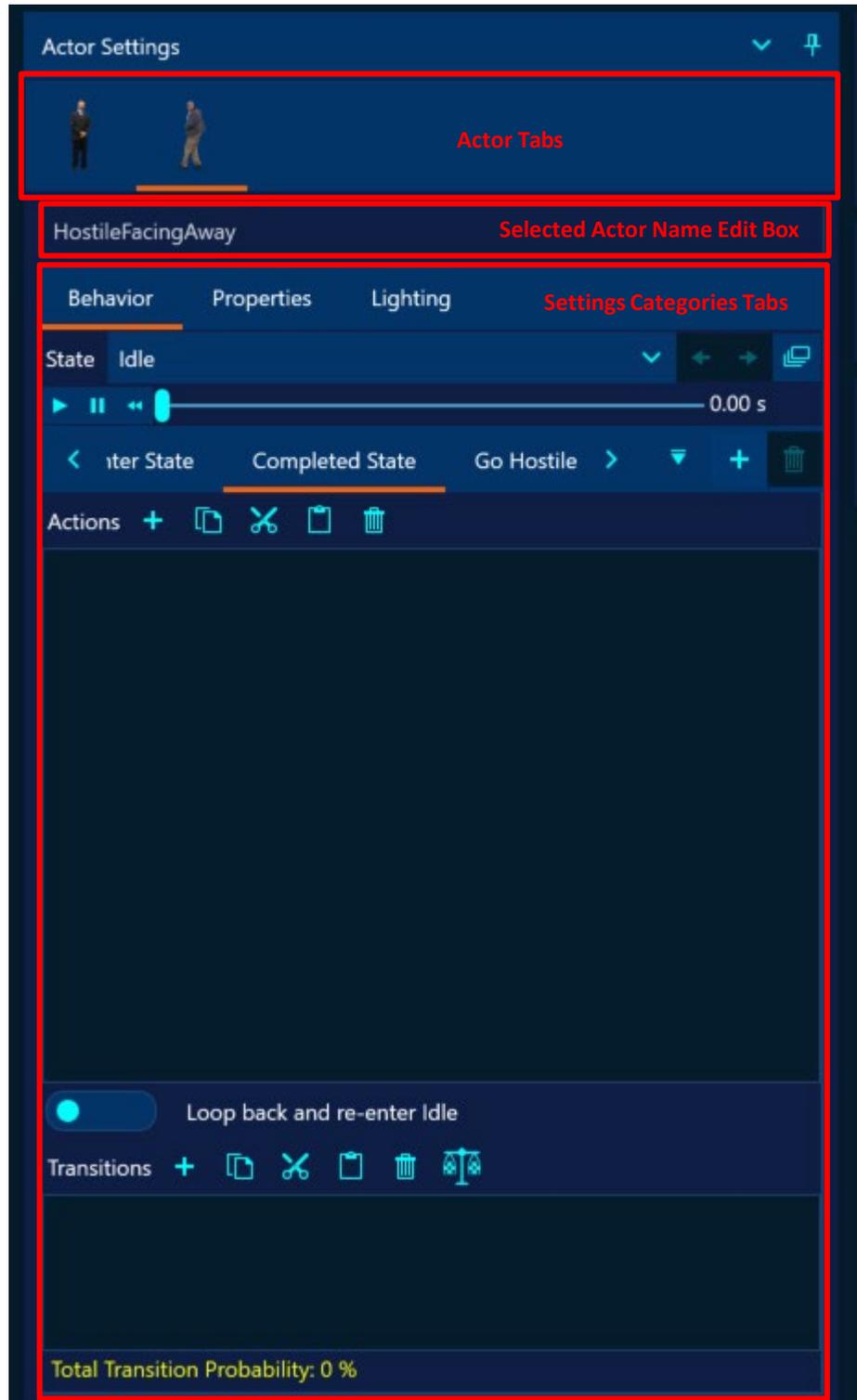


Selecting an actor tab will also select the actor in the player window and actors list as well as the other way around. If there are more actors than space available for their tabs, the actor tabs can be scrolled left or right with the arrows on either side of the actor tabs and all tabs are available via a drop down on the far-right side of the tab row.

### Actor Settings Windows

When actors are added or loaded for a scenario an actor settings window is dynamically generated for that new actor and shows up as a new tab in the actor settings pane. Each of these actor settings windows can be pulled out to a floating window or docked with other actor settings floating windows. Due to their dynamic nature, actor settings windows can only dock with other actor settings windows or within the actor settings pane and not in any other editor docking regions.

Each actor settings window has three internal tabs for different categories of actor settings. These categories are “Behavior”, “Properties” and “Lighting.” At the top of the window is an edit box where the scenario name for the actor can be modified.



- Actor Behavior**

Characters supply a number of states that correspond to a particular animation sequence for that character. For convenience characters also have automatic transitions from hit zoned states to an appropriate shot reaction state for that hit zone so these do not have to be explicitly authored. If you shoot a character with a lethal weapon that character will automatically transition to the shot reaction state for the state it was hit in. Authoring can be added however to change this default behavior if desired.

Behaviors are defined as a series of optional actions followed by an optional state transition that occurs when triggered by a specific event while in a particular animation state. So, each state for an actor can have a number of behaviors triggered by various events. Authoring a behavior starts with selecting the state in which the behavior takes place. The top row of the behavior tab has a drop down for selecting from all the available actor states.

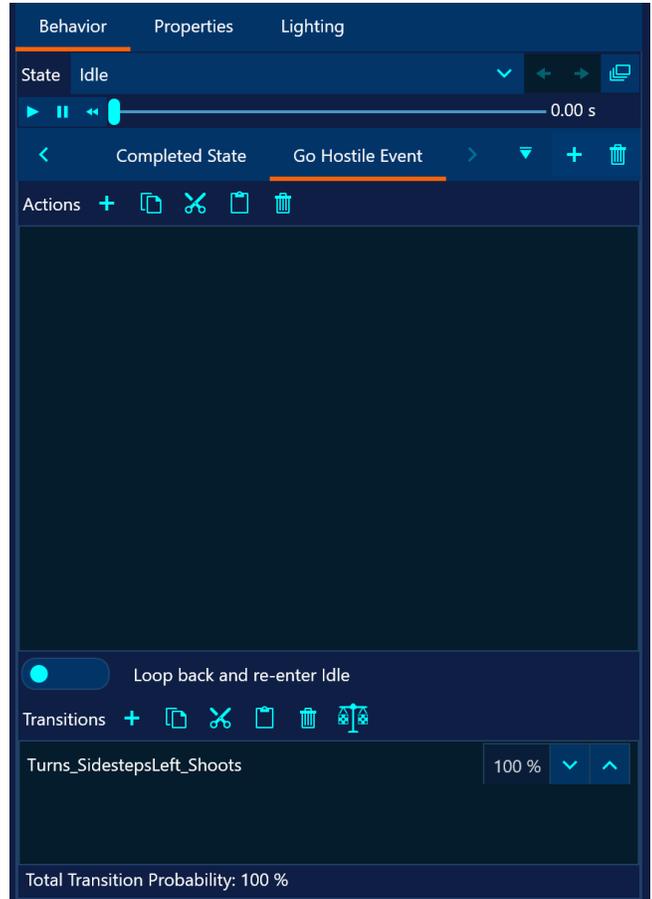


The arrow buttons to the right of the state drop down will navigate back to the previously selected state or forward to the next selected state. The button on the far right of this row will bring up a dialog with various bulk behavior edit options. Bulk edit features allow authors to generate and transfer large amounts of behavior logic quickly and easily that would normally be tedious to manually create. Bulk actor edits are covered elsewhere in this manual.

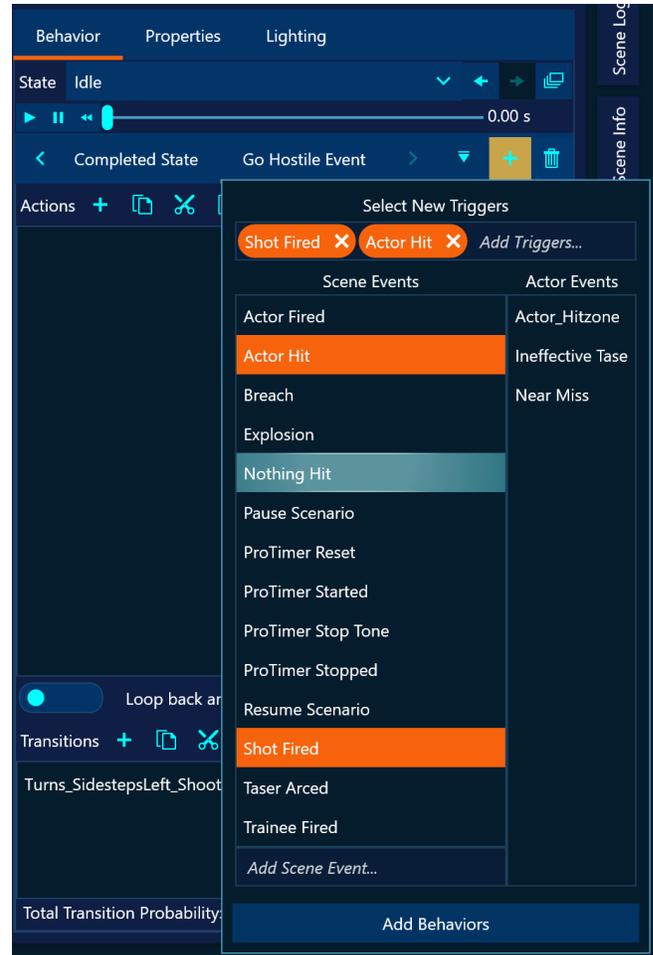
The next row provides state play controls and timeline scrubber that will play the selected character state in the player window. This allows the author to visualize how the actor will interact with the background and other actors in the scenario and make adjustments as needed. It also provides time information for the state animation that can be used to author actions to execute at a specific point in the state animation.

[Adding / Removing State Behaviors](#)

The third row of the behavior tab shows the defined behavior triggers for the selected state and allows the author to select a specific behavior to author, add new triggered behaviors or remove a behavior.



All character states automatically define two behaviors which are the “Enter State” and “Completed State” behaviors. As their names suggest, the “Enter State” behavior is triggered immediately when the character first enters this state from another state or from the start of the scenario while the “Completed State” behavior is triggered on the last frame of the state animation. Authors can add behaviors by clicking the ‘+’ button and selecting triggers for the new behaviors in the drop down presented. There are three sources of behavior triggers that can be selected. The first column of choices will show the scene events that can be used to trigger a behavior when those events occur in the scenario. V-Author® has a number of built-in events that are always defined but additional scene events can be added without limit other than requiring unique event names. The bottom of the scene events column allows new scene events to be defined in a text box by just typing in a unique event name and hitting enter. The new scene event will be automatically created and selected. The second column presents the available actor events which are specific to this actor that can trigger a behavior. If a background provides them, a third column of zone events will be presented that are raised when an actor enters a background zone. The drop down allows the user to select multiple events to create multiple behaviors at once. Double clicking an event will automatically add a behavior triggered by that event and close the add behavior drop down. Otherwise click the “Add Behaviors” button to add new behaviors for all the selected event triggers.



Behaviors are deleted with the trash button on the far right of the behavior trigger row. The delete button will be disabled for the “Enter State” and “Completed State” behaviors as they are not removable.

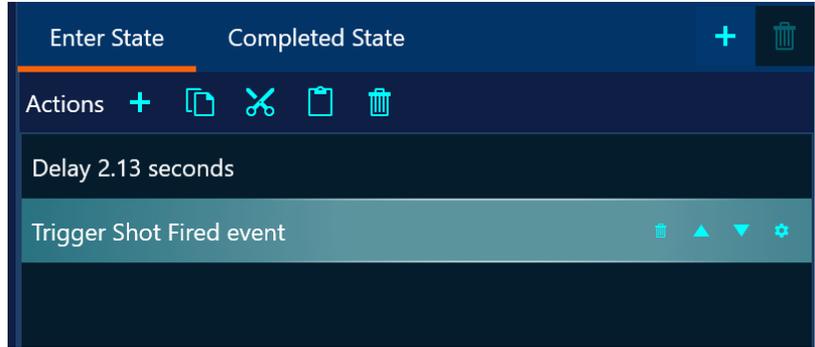
A behavior gets executed when the triggering condition for the behavior occurs while in the state for which the behavior is defined. Execution of the behavior first performs any actions that have been defined in the behavior actions sequentially from the top of the action list to the bottom. If all actions have been executed, the behavior then performs any transitions to other states or immediately looping back to the beginning of the current state that have been authored.

### Behavior Actions

Behavior actions are added or removed using the action menu at the top row of the action list.



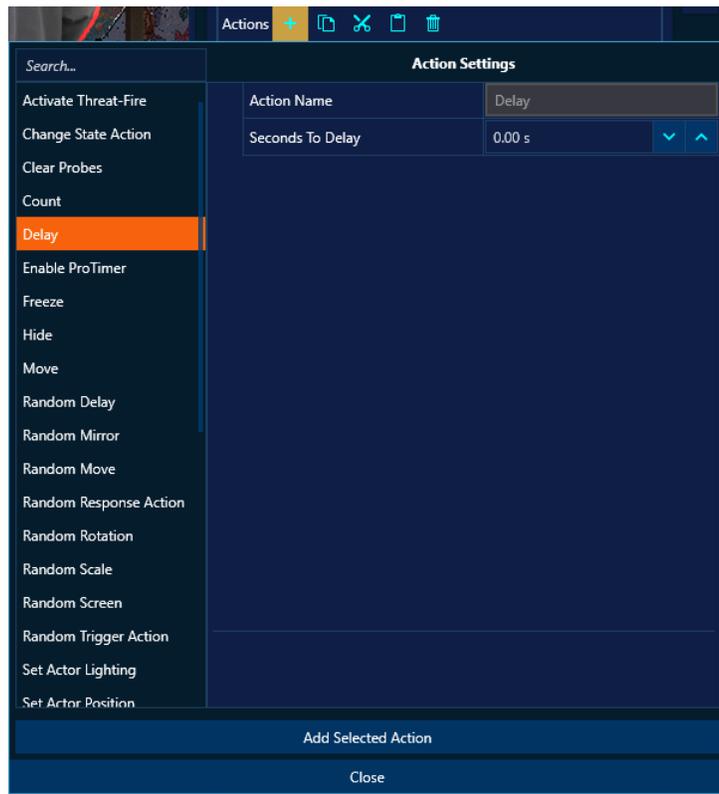
Behavior actions are listed in order of execution from top to bottom in the action list with a textual description of what the action does. Moving the mouse over an action item will show an action item menu on the right side of the item with buttons to delete the action, move the action up in the list, move the action down in the list and a drop down to configure the action if it



has settings to configure. Action items can also be reordered by dragging them with the mouse in the list. Multiple actions in the list can be selected holding down the CTRL key while clicking on action items or holding down the SHIFT key to select a range between two actions. The copy button  in the action menu will copy all the selected actions to the clipboard. The cut button  will copy the selected actions to the clipboard and remove them from the action list. If there are actions currently on the clipboard, the paste button  will copy those actions into this action list. The delete button  in the top-level action menu will delete all selected actions (the one on the action item itself will only delete that specific action). Standard windows keyboard gestures for select all (CTRL-A), copy (CTRL-C), cut (CTRL-X) and paste (CTRL-V) will also work in the action list when it has input focus.

### Adding Actions

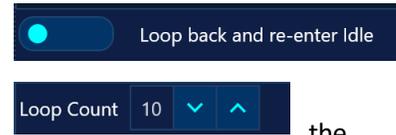
Actions can be added to a behavior by clicking the add button in the action menu which shows the add action drop down window. All available actions are shown in the left column. A search box is available at the top of the actions column to filter the listed actions to only those that match the search term. Selecting an action will show settings for the action in the right column. Most actions present settings in a property grid with property names in the left column and values on the right. Clicking on a particular property will display a description of that property at the bottom of the property grid. Clicking the “Add Selected Action” button will add the currently selected action with its configured action settings to the end of the action list. The add action drop down will remain open allowing additional actions to be selected, configured and added until the “Close” button is clicked.



Alternatively, the author can double click an action to immediately add it to the end of the action list and close the add action drop down window. The available actions are documented in the “[Actor Behavior Actions Reference](#)” section of this manual.

Behavior Transitions

Behaviors can be configured to transition to a different state or loop back to the loop start of the current state after all its behaviors have been executed. First the behavior checks for an immediate loop back transition to the current state. This is set by switching on the loop back switch and entering a count for the number of times it should loop back in the current state. Note that this loop back takes place immediately after actions have finished regardless of where the actor is in its state animation. Some state animations have automatic looping behavior built in when it gets to the end of the state animation (e.g., many idle states do this). The loop back switch is only for the rare case that the behavior should immediately loop back after actions are executed. Setting the loop count to 0 turns off the loop back switch.

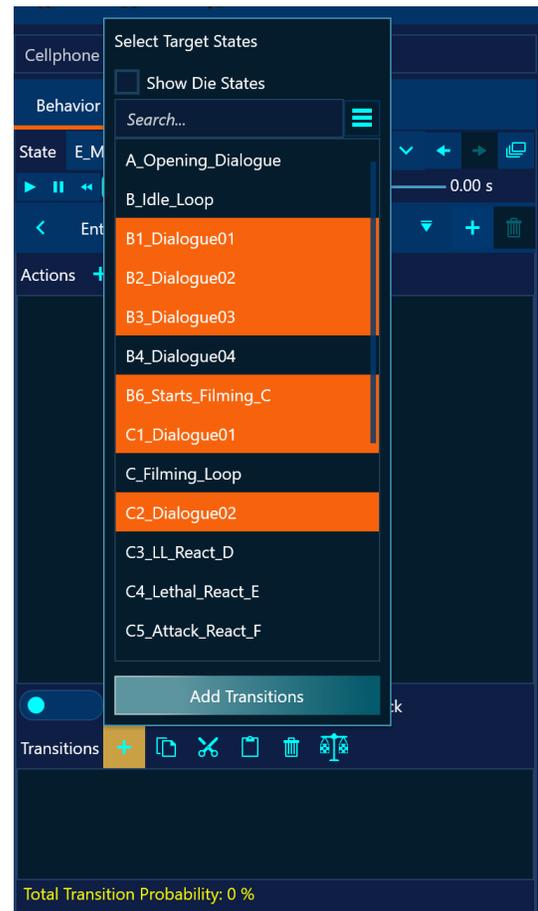


The last step of a behavior is to randomly execute a transition to a state in the random transition list for the behavior. The random transition list consists of target states along with probabilities for transitioning to each target state. Transitions are added or removed using the transition menu on the top row of the transition list.

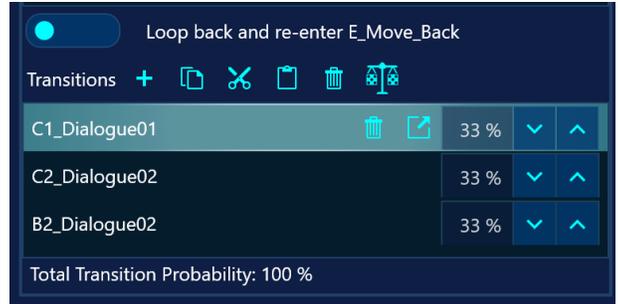


The **+** add button will open a window to select target states from which the behavior will

randomly choose to transition to. All available states will be presented in a list from which the author can select one or more target states. By default, only the non-die states are shown since die states are automatically transitioned to if the character takes a lethal hit. If the author however does want to transition to a die state for some reason the “Show Die States” checkbox will include them in the list of available states. A search box is also provided to narrow the list to matching states which can be useful for characters with a very large number of states. After selecting all the potential transitions, clicking the “Add Transitions” button will add all the selected transitions with equal probabilities to the transition list and close the add transitions window. The author can also double click a state in the available states and a transition to that state will be immediately added to the transitions list and the add transitions window closed. The options  button brings up a menu with additional transition selection options to clear all selection, select all states that are neither die nor idle states, select all idle states and select all die states.



Transitions that have been added will show up as rows in the transition list with the state name and the probability of transition to that state. The probabilities can be edited directly or with up/down arrows next to the probability value. Setting a probability to a value that would cause the total for all probabilities to exceed 100% will automatically adjust the probabilities of all other transition items to make the total transition probability 100%. The bottom of the transition list shows the current probability of the behavior performing a state transition and will be yellow if it is less than 100% to warn the author. Hovering the mouse over a transition item will bring up a button menu to the left of the probability for that transition item. The  trash button will remove that transition from the list and the  go-to button will set the selected state for the actor to the state for that transition item. Transition items in the list can be reordered by dragging the transition items themselves although the order of the transition in the list does not matter in terms of execution. Multiple transitions in the list can be selected holding down the CTRL key while clicking on transition items or holding down the SHIFT key to select a range between two transition items. The copy , cut  and delete  buttons in the top level transition list menu will apply to the selected transition items. If transitions are currently copied onto the clipboard, the paste  button will paste them into the transition list. Standard windows keyboard gestures for select all (CTRL-A), copy (CTRL-C), cut (CTRL-X) and paste (CTRL-V) will also work in the transition list when it has input focus. The last transition menu button  when pressed will make all the transition probabilities for the transitions currently in the transition list equal.



**Bulk Edit Dialog**

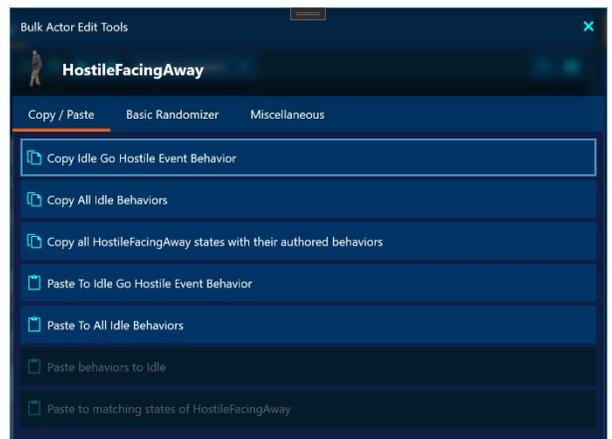
Bulk edit capabilities are accessed by clicking the bulk edit button to the right of the selected state column of the behavior tab. This will bring up a bulk edit dialog for the actor.



The bulk edit dialog is organized into three tabbed categories of bulk edit tools. These are copy/paste tools for behaviors and states, a basic randomization logic generator, and miscellaneous bulk edit tools.

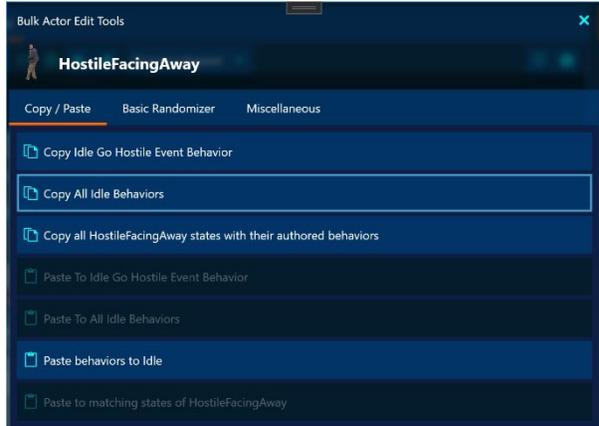
**Bulk Edit Copy/Paste Tools**

The bulk edit copy/paste tab provides three copy operations and three paste operations for the actor. The topmost copy operation will copy the single selected behavior for the actor to the clipboard. This single behavior consists of the sequence of actions and transitions for the currently selected behavior. In the example shown this will copy the “Idle” state behavior that is triggered by the “Go Hostile Event” to the clipboard. If there is a single behavior copied on the clipboard, this will enable the first two

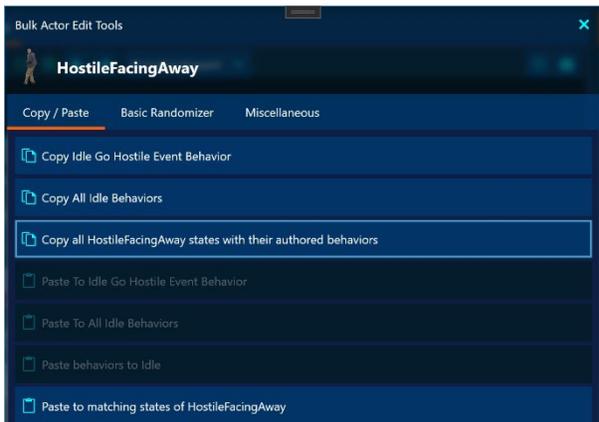


paste operations to paste those same actions and transitions to the currently selected behavior for the actor or paste them to all the defined behaviors for the currently selected state.

The second copy operation will copy all of the behaviors defined for the currently selected state to the clipboard. In this case we have three triggered behaviors in the “Idle” state for this actor (“Enter State”, “Completed State” and “Go Hostile Event”) so all three behaviors with all their configured actions and transitions would be copied to the clipboard. If the clipboard contains multiple behaviors like this, second bulk paste operation is enabled to paste all those behaviors to the currently selected state of the actor.

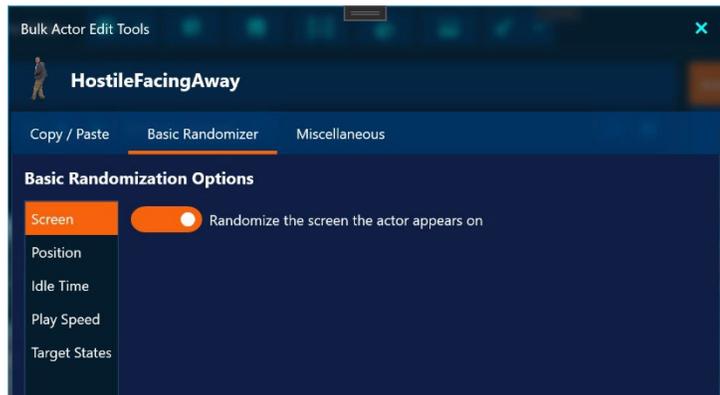


The third copy operation will copy all of the actor’s states with all of the behaviors for those states to the clipboard. This is all of the authored behavior logic that currently exists for the actor. If multiple actor states are currently copied on the clipboard, the third paste operation will be enabled. This paste operation will paste any clipboard state logic to any matching state that the actor possesses. Note that since this relies on matching state names and since most character states have names specific to that character, this bulk copy/paste operation is generally only useful for copying logic to another instance of the same character (e.g., multiple balloons).



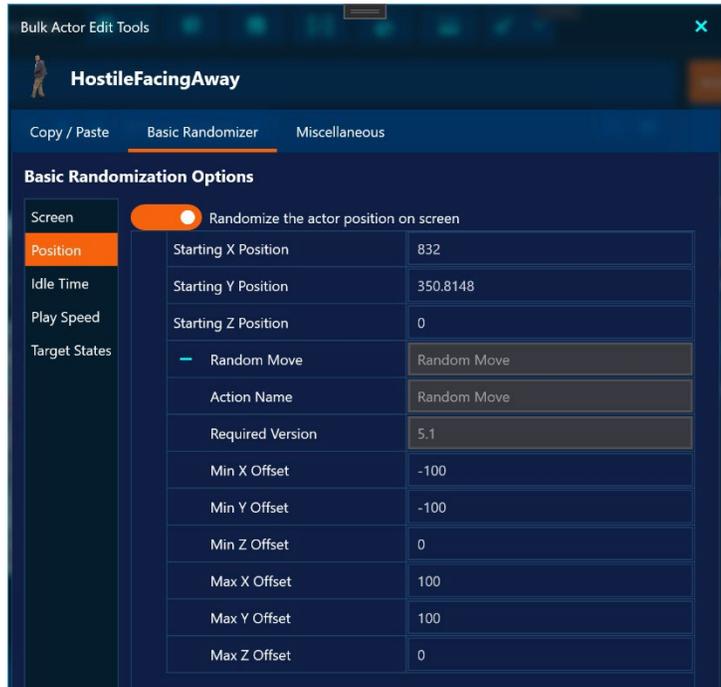
**Basic Randomizer**

V-Author® has a number of randomization features for creating scenarios that run differently every time making them less predictable to trainees that have already been exposed to the scenario. To facilitate creating the logic needed to randomize an actor’s behavior the basic randomizer can be used as either a starting point or the final logic. The author is presented with categories of randomization which they can enable or disable and configure to suit their scenario. If the scenario is targeted to a multi-screen system, the first randomization option will be to randomize the screen the actor

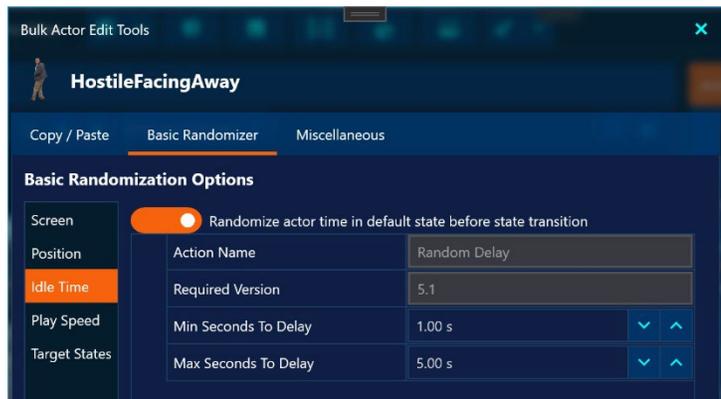


appears on when entering their default state. For single screen scenarios this option will be automatically disabled.

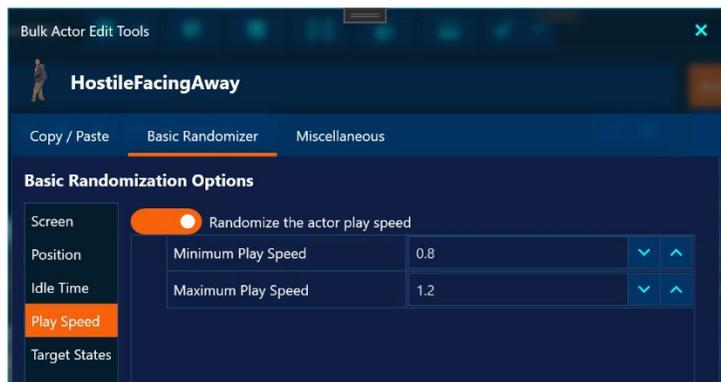
Position randomization will randomize the starting position of the actor within a range of its initially set position. As with all basic randomizer options, position randomization can be disabled so the randomizer will not create position randomization logic. The settings for this randomizer are the starting actor position on the screen and the minimum and maximum offsets in each dimension to randomly adjust the actor position from the starting coordinates. These coordinates are screen relative pixel coordinates from the upper left corner of the screen. The z value is a rendering order depth where larger values render behind smaller values.



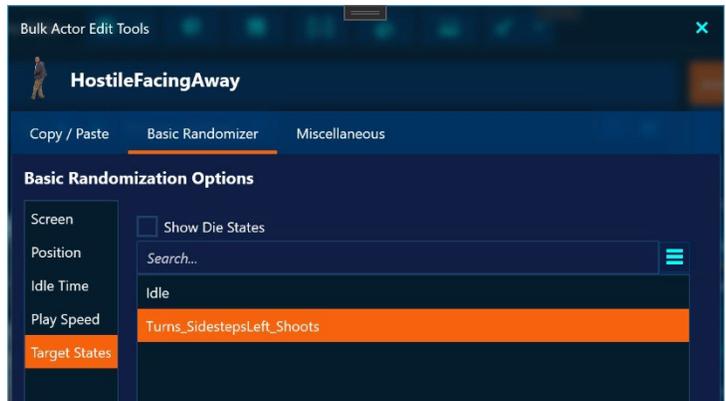
Idle time is the next basic randomization option. Whatever is set as the default state for the actor will be considered the idle state. Many characters have built in looping idle states from which they branch to other states depending on events. This randomization feature allows the user to enter a range of time to randomly delay after idle state is entered before transitioning to a different state of the actor.



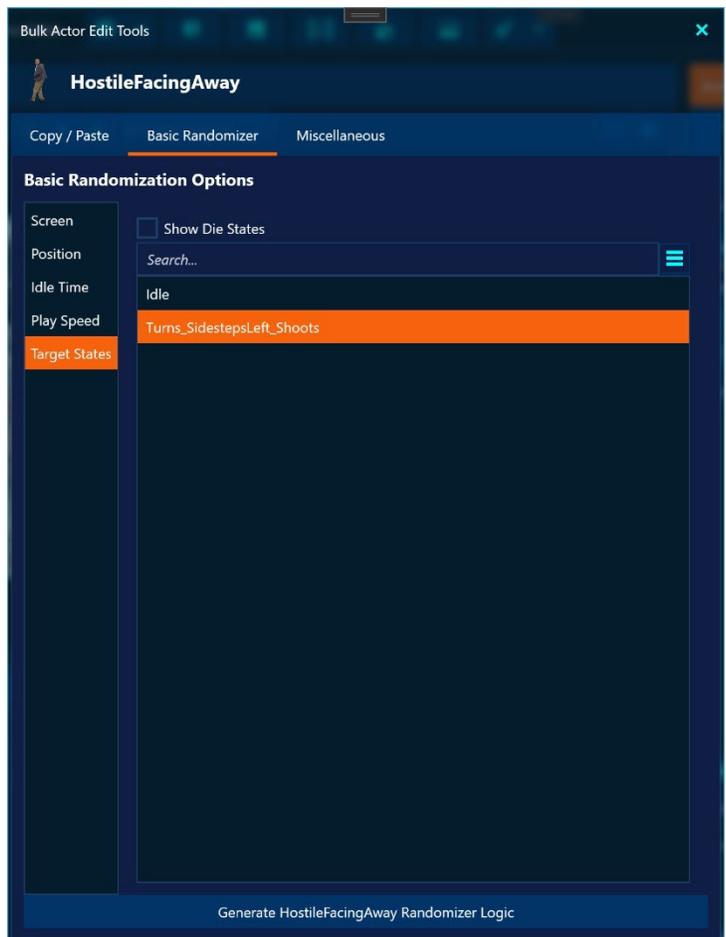
The speed at which actors play their state animations can be varied by +/- 20%. The play speed basic randomizer will randomly set a play speed between a minimum and maximum value whenever the actor enters its default state. Play speed is specified as a multiplier of the default play speed between .8 and 1.2.



The final basic randomization option is selection of the target states the actor will randomly transition to from its default state after the random idle time delay or when the idle state animation reaches its last frame. By default, all non-die and non-idle states will be selected as target states and none of the die states will be visible in the available states list. If die states are desired as target states, the “Show Die States” checkbox can be checked. A search box is provided to filter to matching states which can be useful for characters with a large number of states. The  options button brings up a menu with additional transition selection options to clear all selection, select all states that are neither die nor idle states, select all idle states and select all die states. The states highlighted in orange are the target states for the random idle transition. The basic randomizer will add logic to all the target states to automatically transition them back to the default character state on completion.

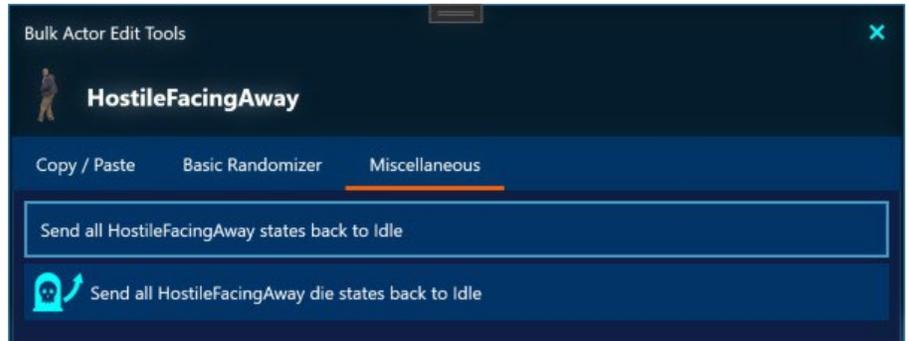


After all basic randomizer options have been selected and configured, clicking the generate randomizer logic button at the bottom of the basic randomizer tab will automatically generate all the behaviors and logic needed to achieve the basic randomization specified. Part of basic randomization logic is to send all non-default states back to the default state on completion. This allows for a continuous scenario with the same character that presents in a starting state and randomly transitions to a different state with all the randomized settings specified and after conclusion of that state will then reset back to the default state to randomly execute again. The logic generated by the basic randomizer can also be inspected and used to generate a different style of randomized behavior for different scenario requirements.



Miscellaneous Bulk Edit Tools

The final tab of the bulk edit dialog provides miscellaneous tools for bulk actor logic generation. This provides a button to send all non-default actor states back to the default state on completion. A second button is provided to send all the die states of the actor back to the default state automatically.



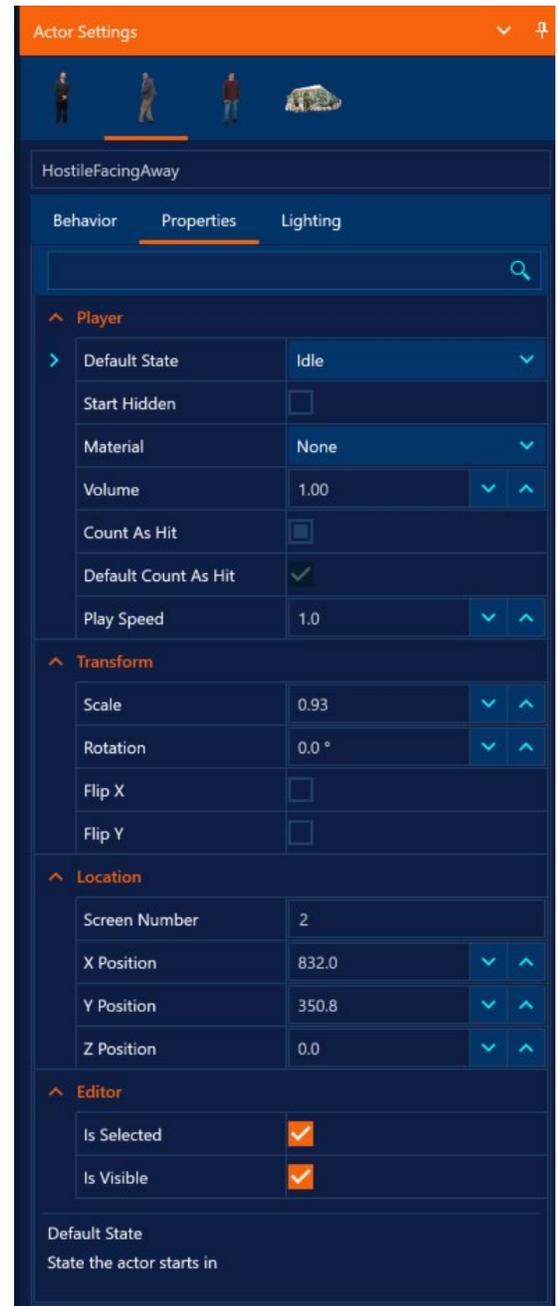
- **Actor Properties**

The second tab of the actor settings window provides direct access to the editable properties for the actor. The properties are presented in a categorized grid with property name / value pairs. The top of the properties tab has a search box to narrow the visible properties to only those matching the search term. The bottom of the property grid shows a description for the currently selected property designated by the arrow in the left column. The properties are divided into four categories:

- **Player Properties**

Player properties affect the actor when the scenario is running in the V-Author® player.

- **Default State**  
This is the state the actor will start in when the scenario starts.
- **Start Hidden**  
If checked when the scenario starts the actor will not be visible. The actor will only be shown if a "Show" action is executed in an actor behavior.
- **Material**  
The material affects whether or not shots can penetrate the actor. Default of "None" always stops shots. "Empty" will force any hits on the actor to count as misses. This is useful for inanimate objects that cannot be penetrated that should never be counted as hits.



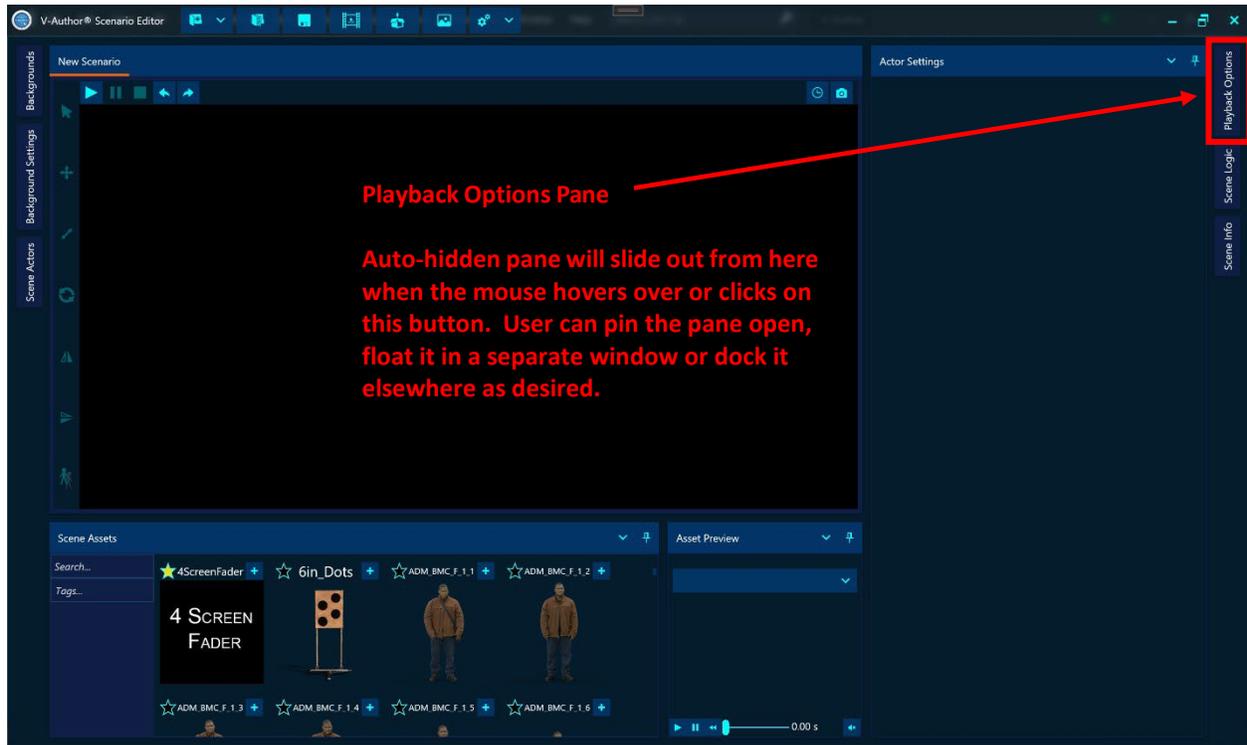
- Volume  
The volume for the character audio can be decreased below the default value of 1
- Count As Hit  
This is a 3 state checkbox that can be checked, unchecked or left unset which is indicated by a filled in box. If the actor material is set to empty, this will always be unchecked and shots on this actor will not count as hits. Otherwise, if checked shots on the actor will count as hits, if unchecked they will count as misses. If left unset the “Default Count As Hit” read only property value will be used to determine if shots should count as hits or misses.
- Default Count As Hit  
This property cannot be edited and just serves to indicate the default value for counting shots on this actor as hits or misses if the “Count As Hit” property is not set explicitly.
- Play Speed  
Play speed multiplier for the actor. A value greater than one plays the actor animations faster, less than one slower. Allowed range is .8 to 1.2 which is a +/- 20% range for play speed.
- [Transform Properties](#)  
Actor transform properties affect how the character is rendered in the scene.
  - Scale  
Multiplier that scales the rendered size of the actor in the scene. A value greater than one increases actor size, less than one decreases size.
  - Rotation  
Amount to rotate the actor in the scene in degrees.
  - Flip X  
Displays the actor flipped horizontally
  - Flip Y  
Displays the actor flipped vertically
- [Location Properties](#)  
Actor location properties affect where the character is placed within the scene.
  - Screen Number  
All actor coordinates are referenced from the top left corner of their assigned screen. This property assigned the actor to a specific screen that then serves as the coordinate origin for the actor position.
  - X Position  
Horizontal x location of the actor with respect to actor screen left in screen pixels

- Y Position  
Vertical y location of the actor with respect to screen top in screen pixels. Increasing Y values move the actor down on the screen.
- Z Position  
Actor Z depth into the screen. This is a render order or layer depth value where higher Z values render behind lower Z values. This allows actors to appear behind other actors or background layers to give the illusion of actual 3-dimensional depth.
- [Editor Properties](#)  
Actor editor properties apply to the actor in the editor player window only, not when the scenario runs.
  - Is Selected  
Check box to indicate or set whether or not the actor is currently selected in the editor. In the player window selected actors will have an orange outline highlight to indicate their selection status. This also affects selection in the scene actors list.
  - Is Visible  
If unchecked this hides the actor in the editor window.

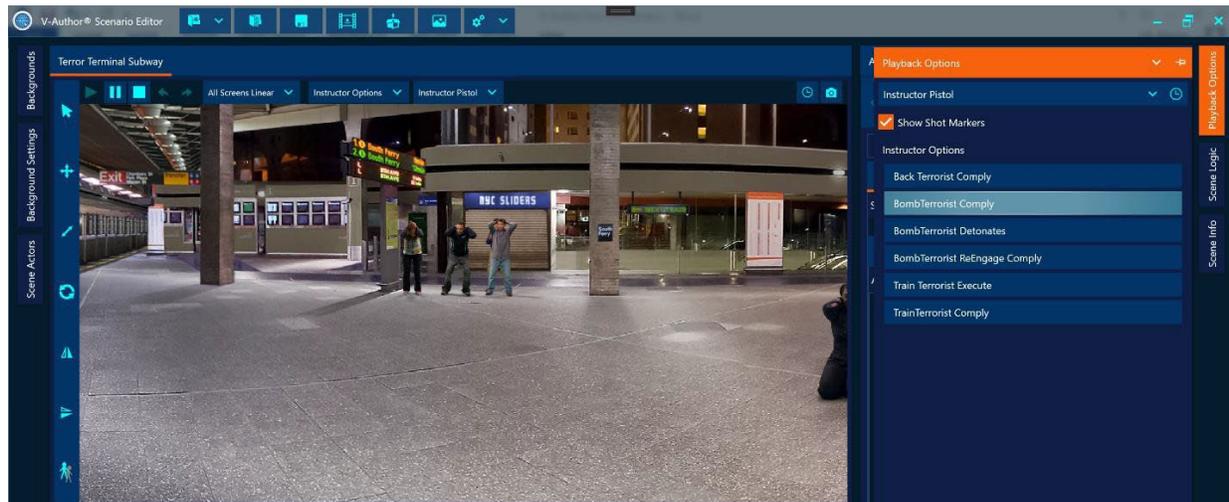
- [Actor Lighting](#)  
V-Author® characters are shot on green screens under a single lighting condition. When dropped into a scene often the character lighting does not match with the lighting of the selected background. V-Author® version 5.1 and later allows for the actor lighting as well as the background lighting to be adjusted so they match each other. Note that lighting adjustment is not supported by legacy V-Author® players so using this feature will not allow the scenario to be exported to legacy. By default, lighting adjustment is disabled. Toggle the enabled lighting adjustments switch and modify the lighting sliders to set the desired actor lighting. The actors' appearance will change live in the player window as the sliders are adjusted. A switch to unselect the actor is provided so that it doesn't have the selected orange glow outline which can interfere with matching the actor lighting to the surroundings.



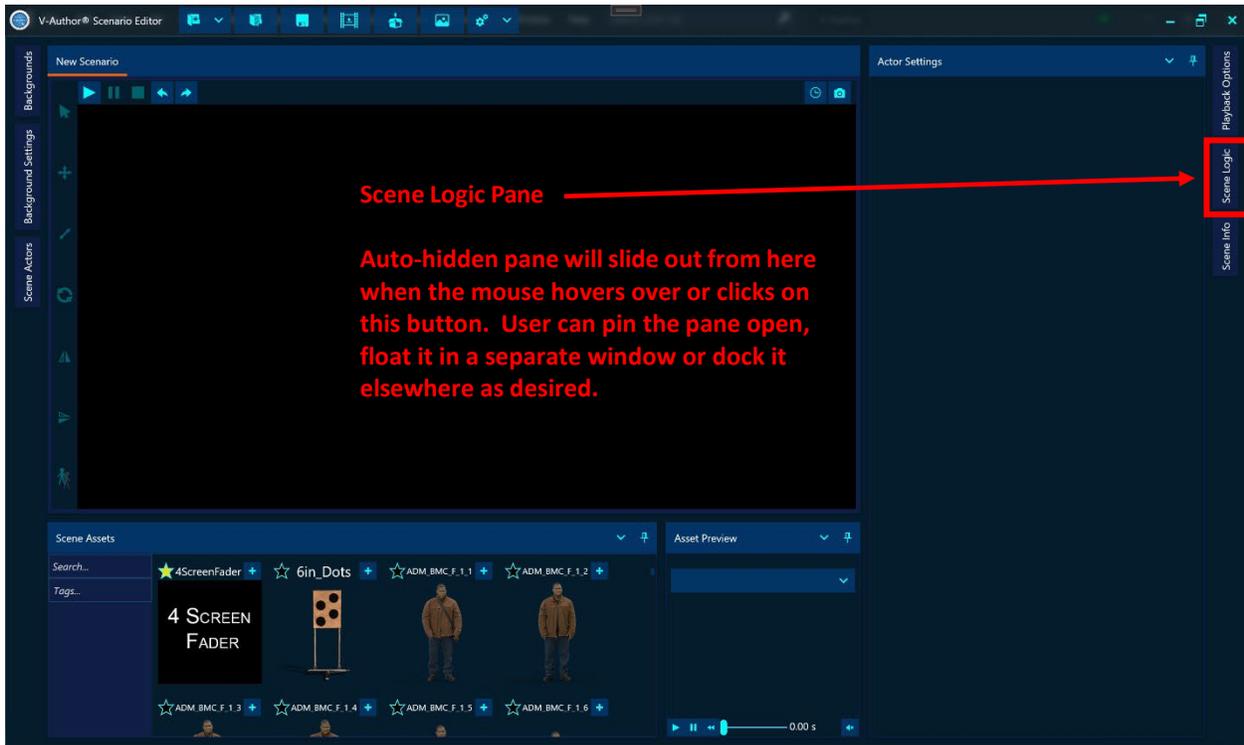
## Playback Options Pane



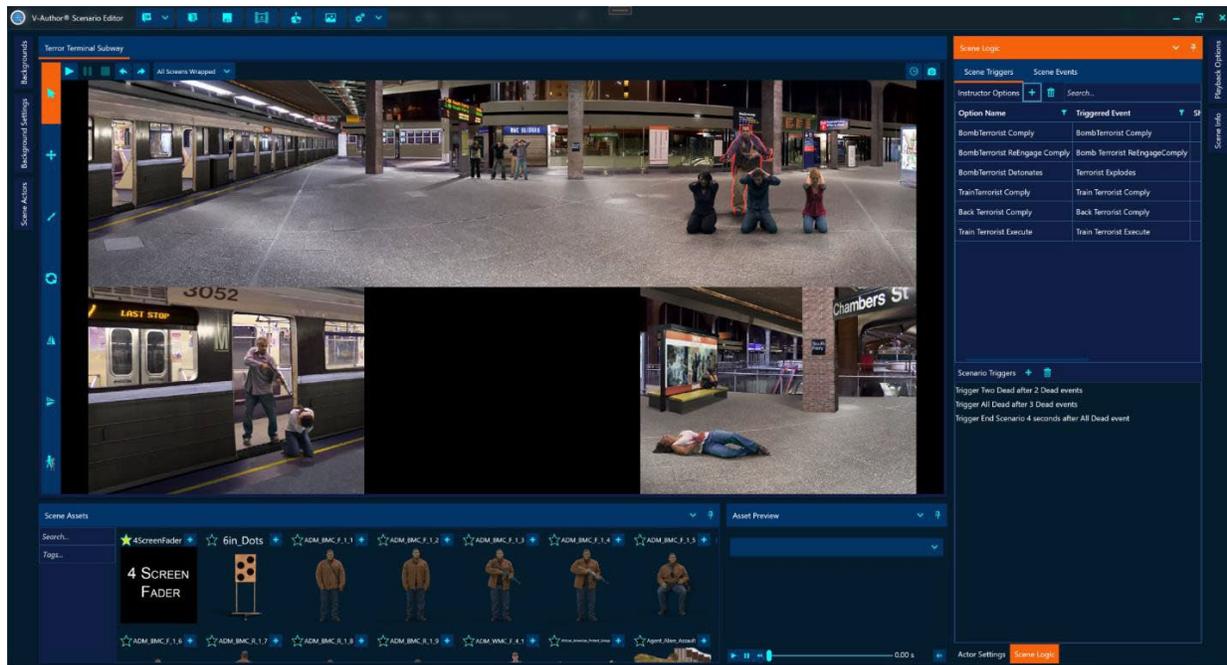
The playback options pane provides settings used when running the scenario in the player window. In the default layout this pane is unpinned and slides out from the right side of the editor when the mouse hovers over or clicks on the playback options button. When the scenario is not running, this pane allows selection of an instructor weapon, ProTimer™ toggle and enabling/disabling of shot marker display during playback. If the scenario is running, any instructor options available will also appear here as buttons to trigger that option. Note that instructor options, weapons and ProTimer™ toggle are also available directly in the player window, but weapons only when the scenario is running.



## Scene Logic Pane



The scene logic pane provides the author the ability to edit and inspect available scene events and scene triggers. In the default layout this pane is unpinned and slides out from the right side of the editor when the mouse hovers over or clicks on the scene logic button. The scene logic pane consists of two internal tabbed panes, one for editing scene logic, the other to inspect and add scene events.



## Scene Triggers

Scene triggers are mechanisms to trigger scene events in various ways. The scene triggers tab is divided into two sections. The top section is where the author can define instructor options that show up when the scenario is played to allow the instructor control how a scenario branches during play. The bottom section allows for the creation of automatic scenario triggers that fire when certain conditions are met.

## Instructor Options

Instructor options allow the author to give control to the instructor for branching the scenario in different directions. Options will show up as buttons in the instructor control station. Created instructor options appear in a grid with a fixed leftmost column showing the option name that will appear on the instructor option button. The following

Option Name	Triggered Even	Shortcut	Sort	Enable Event	Disable Event	Limit
BombTerrorist Comply	BombTerrorist Com		1	Start Scenario	End Scenario	0
BombTerrorist ReEngage Comply	Bomb Terrorist ReEr		1	Start Scenario	End Scenario	0
BombTerrorist Detonates	Terrorist Explodes		1	Start Scenario	End Scenario	0
TrainTerrorist Comply	Train Terrorist Comf		1	Start Scenario	End Scenario	0
Back Terrorist Comply	Back Terrorist Comf		1	Start Scenario	End Scenario	0
Train Terrorist Execute	Train Terrorist Execu		1	Start Scenario	End Scenario	0

columns show all settings for that instructor option. Each cell can be directly edited in the grid by double clicking the cell value. A search box is provided to filter the viewed options to only those matching a search term. Options can also be sorted by column value with the filters at the top of the grid columns. Multiple options can be selected via standard windows selection gestures and then delete button will remove all selected options.

The add button will show a window to define a new instructor option that will be added to the list after clicking the “Add Instructor Option” button. This button will be disabled until all the required option settings have been specified. The settings are edited in a property grid with property name / value pairs. The bottom of the property grid will show a description of the selected property indicated by an arrow in the leftmost column.

- **Option Name**  
The name of the option as it will be presented to the instructor when available during the simulation run
- **Triggered Event**  
The scene event that will be triggered when this instructor option is activated
- **Option Shortcut**  
Optional shortcut key that will activate the instructor option when available. Pressing the desired shortcut key when the value cell has focus will set the shortcut gesture to that key with the CTRL key held down
- **Enable Event**

Option Name	My Option Name
Triggered Event	My Scene Event
Option Shortcut	M + Ctrl
Enable Event	Start Scenario
Disable Event	End Scenario
Usage Limit	0
Sort Order	1

Option Shortcut  
Optional shortcut key that will activate the instructor option when available

Add Instructor Option

Close

The scene event that enables this instructor option when triggered. By default this will be set to “Start Scenario” so the option is immediately available when the scenario begins. Authors can control when the option appears by setting this to a different scene event that gets triggered by other scenario events. The option will not appear to the instructor until the enable event has fired.

- **Disable Event**

The scene event that disables this instructor option when triggered. By default, this will be set to “End Scenario” so that the option is always available. Authors can remove options during the scenario by setting this to alternate scene events that are triggered by the scenario.

- **Usage Limit**

Limits the number of times this option can be activated. A value of 0 means it has unlimited use and can be activated as much as the instructor wants when available. A non-zero value will disable the option for the remainder of the scenario after this limit is met.

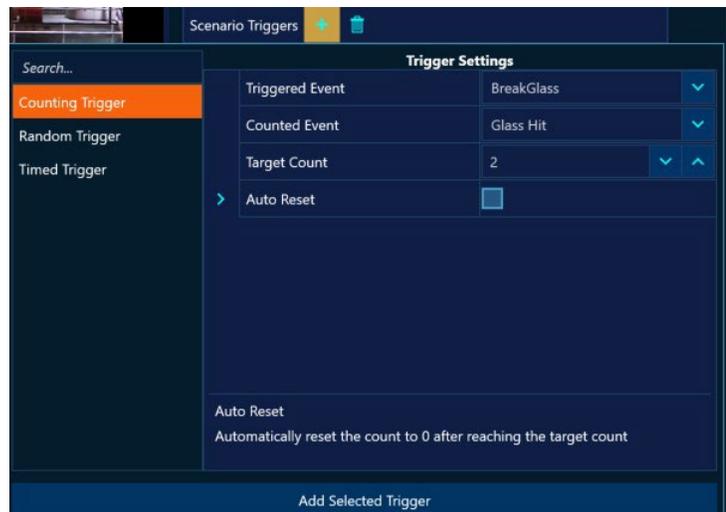
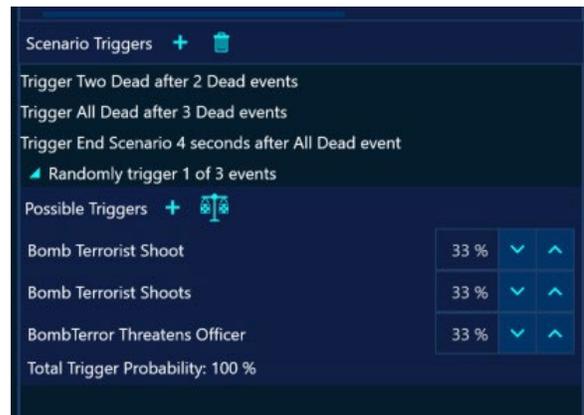
- **Sort Order**

By default, options are presented to the instructor in a list in alphabetical order. The author can override this ordering by explicitly setting the sort order values for the options where lower values appear before higher values.

### Scenario Triggers

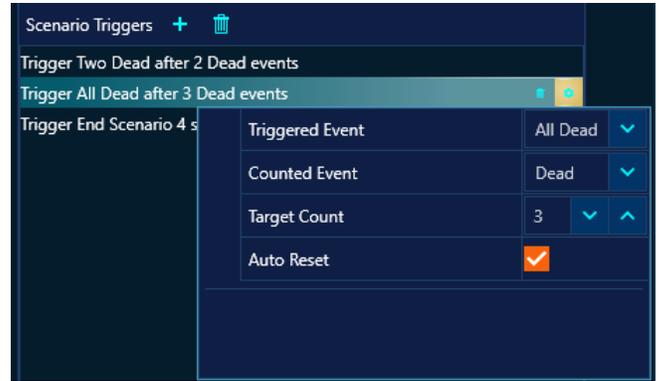
Scenario triggers will trigger a scene event according to a set of specified conditions for that particular trigger. Created scene triggers will be presented in a list with a description for that trigger. The top row of the scenario triggers region has a button menu for adding new triggers and deleting any selected triggers. Trigger items can be selected by clicking on them and using standard windows selection gestures for multiple selection. Selected trigger items will be highlighted in orange. The delete button will remove all currently selected trigger items.

The add triggers button will bring up a window to add a new scenario trigger. The left column shows the different types of scenario triggers available to add. When a trigger type is selected, the right side of the window will present settings for that trigger type in a property grid. After all required settings for that trigger have been entered, the “Add Selected Trigger” button will be enabled to add that configured scenario trigger to the list. Hovering the



mouse over a trigger item will bring up a button menu to the for that trigger item. The  trash button will remove that trigger item. The  gear button brings up a window to configure the properties for the trigger item.

There are 3 different types of scenario triggers to choose from.



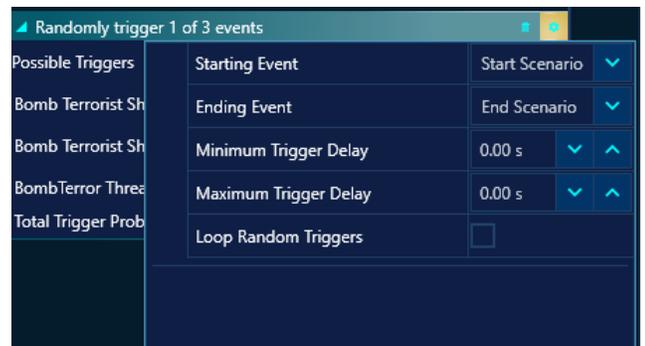
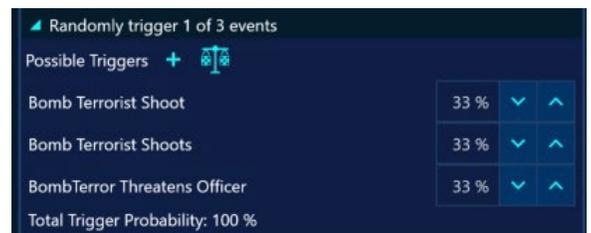
- **Counting Trigger**

Counting triggers count the number of times a specified event is fired and when it reaches a target count, triggers a target event.

- **Triggered Event**  
This is the event that will be triggered once the target count is reached
- **Counted Event**  
The event that is counted every time it occurs in the scenario
- **Target Count**  
When the number of times the counted event occurs reaches this target count, the triggered event is raised
- **Auto Reset**  
If checked the count will be reset to 0 when the target count is reached so the count starts over and the triggered event will be raised again if the target count is reached

- **Random Trigger**

Random trigger will trigger a single event randomly selected from a list of possible triggers. Each potential trigger has a configurable probability for selecting that trigger. Random triggers have both a configuration screen for the trigger settings and an inline collapsible expander window to show all the possible triggers and to add / remove / configure the possible triggers. The expanded trigger list presents a possible triggers menu to add  new triggers or balance  all trigger probabilities to be equal. Individual probabilities can be directly edited or adjusted with up / down arrows. Setting any individual probability to a value that would make the total trigger probability greater than 100% will adjust all other probabilities to make the total 100%. In addition to the random trigger list shown in the expander the random trigger also has a configuration drop down to edit its properties.



- Starting Event  
The random trigger is enabled by a starting event. Once the starting event occurs, a random trigger will be chosen to trigger after the random delay. By default, the starting event is set to the beginning of the scenario.
- Ending Event  
The random trigger will be completely disabled when the ending event occurs. Even if looping no more random triggers will execute. By default, the ending event is set to the end of the scenario.
- Minimum Trigger Delay / Maximum Trigger Delay  
After the starting event occurs, the random trigger will choose a random time span between this minimum and maximum trigger delay values. After this random time span has passed, a random trigger from the list of possible triggers will be chosen and activated.
- Loop Random Triggers  
If unchecked the random trigger will only execute once and then never trigger again. If checked the random trigger will execute every time the starting event occurs until the ending event occurs.
- **Timed Trigger**  
Timed triggers will raise an event after a set delay each time a specified starting event occurs.
  - Triggered Event  
The event that will be triggered when the starting event occurs
  - Starting Event  
When this event occurs, the timer will start for firing the triggered event
  - Trigger Time  
The triggered event is fired this many seconds after the starting event occurs

### Scene Events

Scene events are events that can be triggered by either actor actions or scene triggers. These events can then in turn activate actor behaviors and/or scenario triggers. All interaction between entities in the scenario takes place via raising scene events and reacting to scene events. All scene events that are currently defined for the scenario are shown in the scene events tab of the scene logic panel. The scene events are divided into two categories, authored scene events and built-in events.

#### Built In Scene Events

Built in events are predefined events that are always available to use. Some scene events cannot be triggered by any authoring and are only raised by the V-Author® player itself. These events can still be reacted to or for things like enabling events. The built-in events that cannot be triggered by authoring are:

- **Start Scenario**

This event is raised right when the scenario begins and is generally only used in authoring as the default for enabling events of actions, instructor options or triggers

- **Trainee Fired**

This event will be raised whenever a trainee shot is detected by the scenario to indicate a shot has been fired specifically by a trainee. This will also automatically raise a generic “Shot Fired” event.

- **Actor Fired**

Characters that have built in “Fires Weapon” markers will automatically raise both “Actor Fired” and “Shot Fired” scene events. Older legacy characters that do not provide character markers can still be authored to raise “Shot Fired” events in which case an “Actor Fired” event will also automatically be raised. Shot events are separated into “Trainee Fired” for shots from trainees, “Actor Fired” for shots from authored actors and both of them will also have associated generic “Shot Event”. This allows for authoring different behaviors based on trainee verses actor shots.

- **Nothing Hit**

This event is raised when a trainee shoots and nothing in the scenario is hit

- **Actor Hit**

Event raised when a trainee shot hits an actor in the scenario

- **Taser Arced**

Event raised when a Taser arc switch is activated

- **ProTimer Started**

Event raised when an enabled ProTimer is started and shot splits begin to be recorded

- **ProTimer Stop Tone**

Event raised when an active ProTimer sounds the stop tone. ProTimer continues to track shots after stop tone has sounded to show shots after stop tone

- **ProTimer Stopped**

The screenshot shows the 'Scene Logic' interface with a search bar and a list of events. The events are categorized into 'Authored Scenario Events' and 'Built In Scenario Events'.

Scene Logic			
Scene Triggers		Scene Events	
Authored Scenario Events		Search or add scene event...	
All Dead	Back Terrorist Comply		
Bomb Terrorist ReEngageComply	Bomb Terrorist Shoot		
Bomb Terrorist Shoots	BombTerror Threatens Officer		
BombTerrorist Comply	BombTerroristDie		
BreakGlass	Dead		
ENTERED_ZONE1	Execute Train Hostage		
OFFICER_EXPLO_REACT	Officer Shoots		
OfficerArrived	PartnerChallenge Terrorist		
Run Pop Out Die	Run Terrorist Die		
Run Terrorist Shoot	RunCover		
Running Terrorist Shoots	RunTerrorist Covered		
Send In Officer	Terrorist Explodes		
Train Terrorist Comply	Train Terrorist Execute		
TrainTer_popedup	TRainTerr_Popedout		
TrainTerrorist Cover	TrainTerroristDie		
TrainTerroristPopUp	Two Dead		
Built In Scenario Events			
Start Scenario	End Scenario	Pause Scenario	Resume Scenario
Shot Fired	Trainee Fired	Actor Fired	Nothing Hit
Actor Hit	Taser Arced	Breach	Explosion
ProTimer Started	ProTimer Stop Tone	ProTimer Stopped	ProTimer Reset

Event raised when the ProTimer has been stopped and no longer tracks shot splits

- ProTimer Reset

Event raised when ProTimer is reset clearing currently recorded information

Other built-in events can be triggered by authoring in an actor action, instructor option or scene trigger depending on the event.

- Shot Fired

Event raised to indicate a shot was fired whether by the trainee, actor or instructor. This is automatically raised for any trainee or instructor shot. The latest character assets that have “Fires Weapon” markers will also automatically raise this event. Older character assets will not raise the event but can be made to in authoring by adding the logic to do so.

- End Scenario

Whenever this event is triggered, the scenario will end and go to debrief

- Pause Scenario

Freezes the scenario when raised. The scenario can be continued by raising a “Resume Scenario” event

- Resume Scenario

Resumes playing a paused scenario

- Explosion

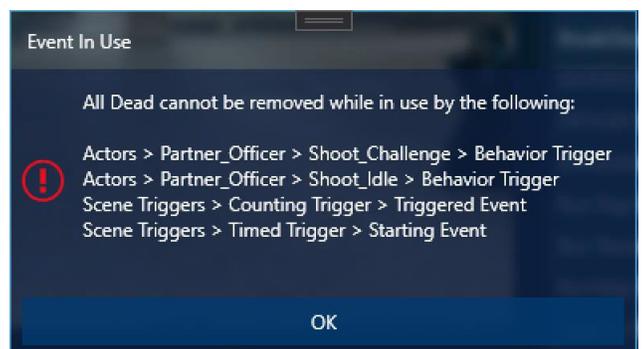
This event is generally used when a scenario is authored with explosive effects to trigger this event when an explosion occurs to allow actors to react to the explosion

- Breach

This event will be automatically raised if a VirTra breach device is activated. Otherwise, it can also be raised in authoring to simulate a breach event in the scenario.

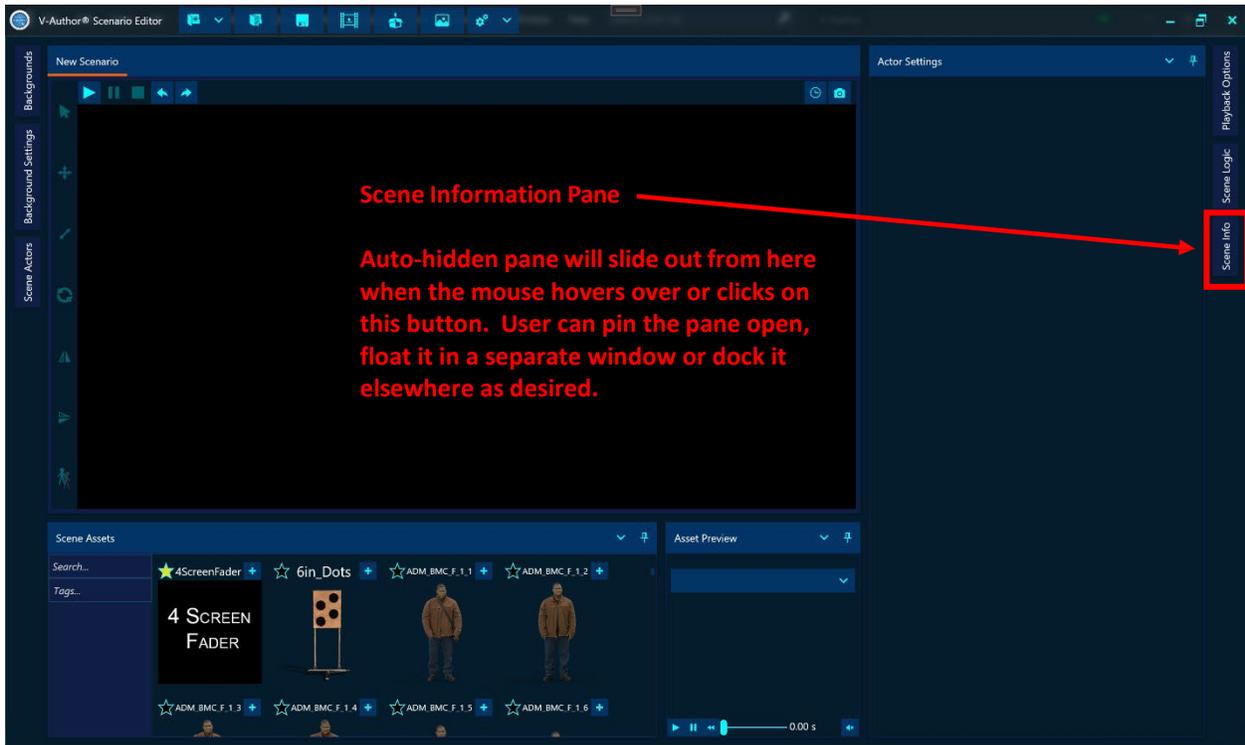
### Authored Scene Events

Authored scene events are events added by the author to create interactions between actors, trainee and instructor. The only requirement for adding a new scene event is that it has a unique name. The scene events tab of the scene logic pane allows for adding new scene events by typing an event name in a search box and hitting enter. This box also serves as a search filter to find a specific event. Hovering the mouse over an authored scene event shows a button menu for that item to edit the event name or delete the event. If the author tries to delete an event that is in use by the scenario, it will not be allowed and a dialog will show to indicate where the event is being used. Once all usages of an event have

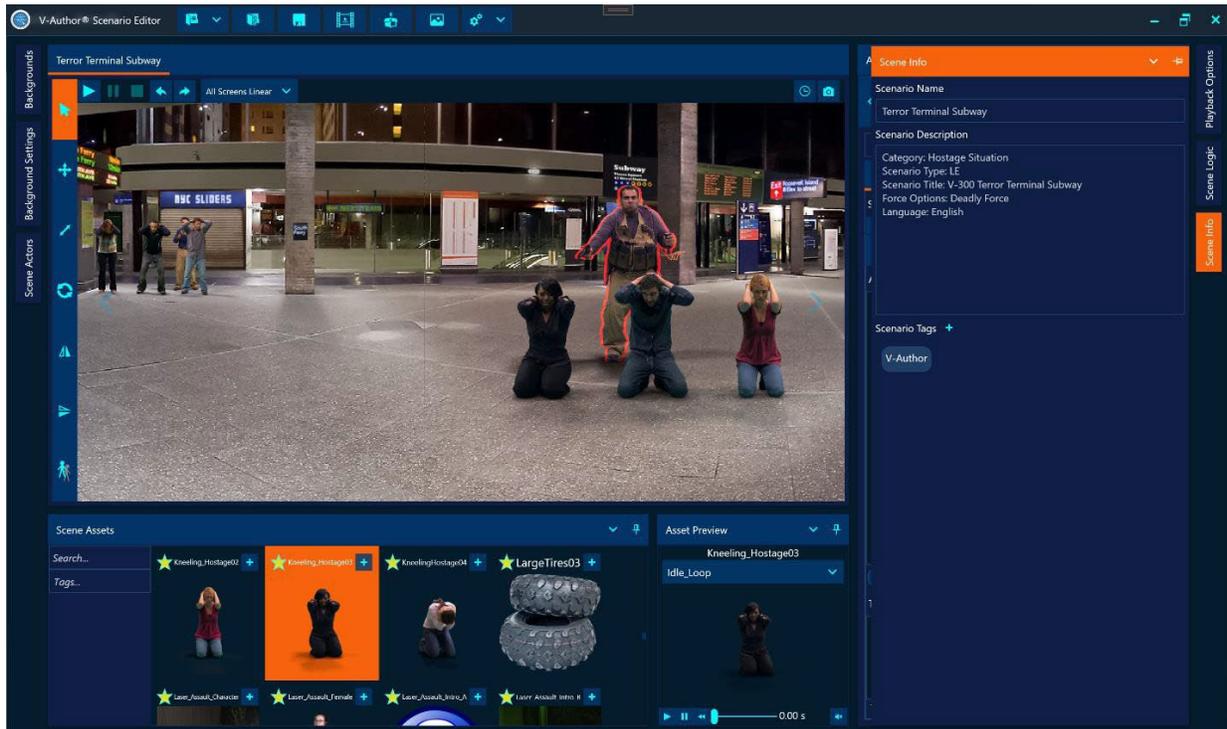


been removed, the event itself can be deleted. Editing the event name will automatically update all authoring that uses the event to the new name. It should also be noted that all places where scene events are presented to select from include a text box to add a new scene event directly so the author does not have to come to the scene logic panel every time a new scene event is needed.

## Scene Information Pane



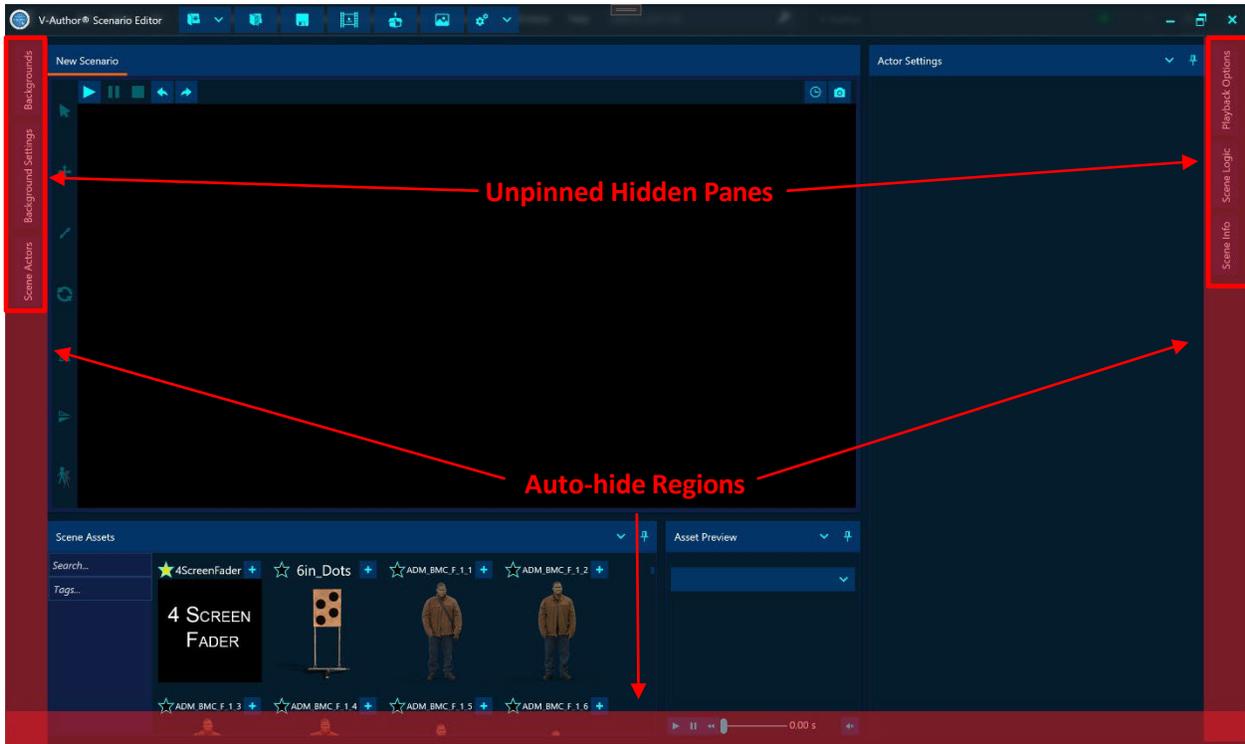
The scene information pane provides the ability to edit and inspect general scenario information. In the default layout this pane is unpinned and slides out from the right side of the editor when the mouse hovers over or clicks on the scene info button.



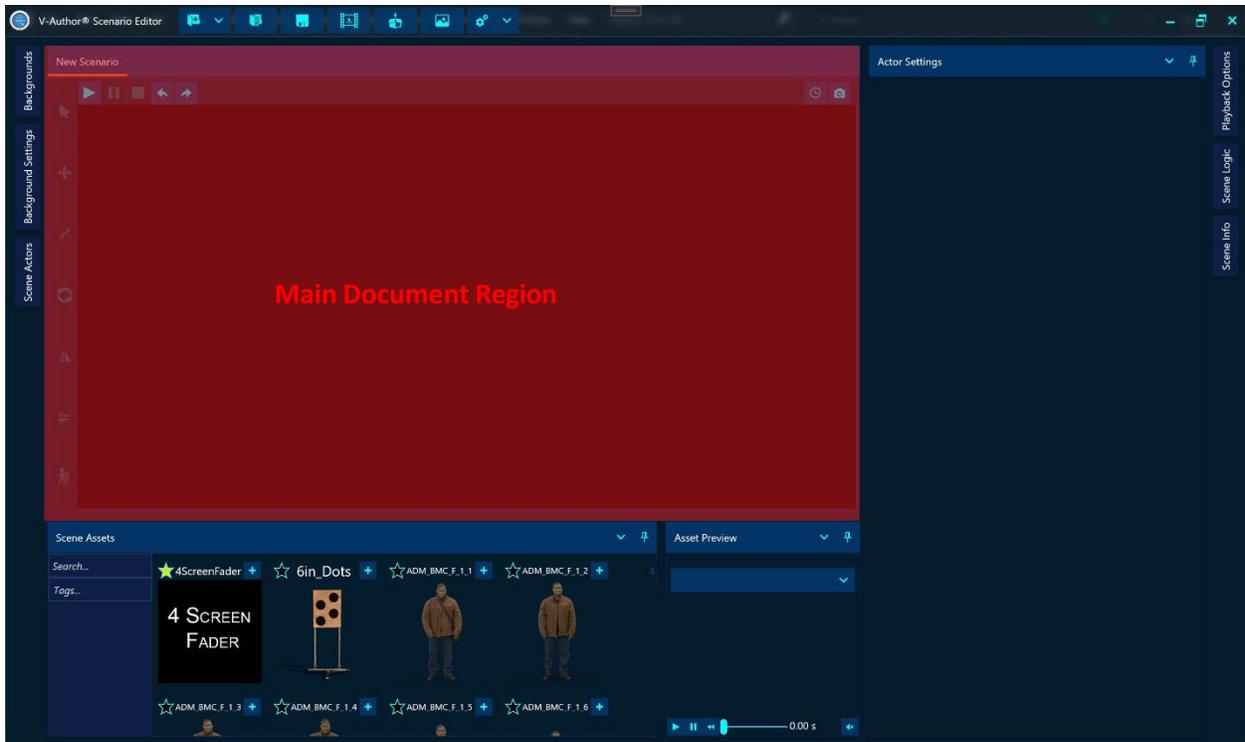
The author can rename the scenario here which will update the scenario name everywhere else in the editor. There is a description box to add a scenario description that will be displayed as part of the scenario information when it is selected in VOS™. Scenario tags can also be added here which are used to filter scenarios in VOS™. All V-Author® scenarios get an automatic read-only tag of “V-Author”. Additional tags are completely up to the author.

## IV. V-AUTHOR® WORKSPACE CUSTOMIZATION

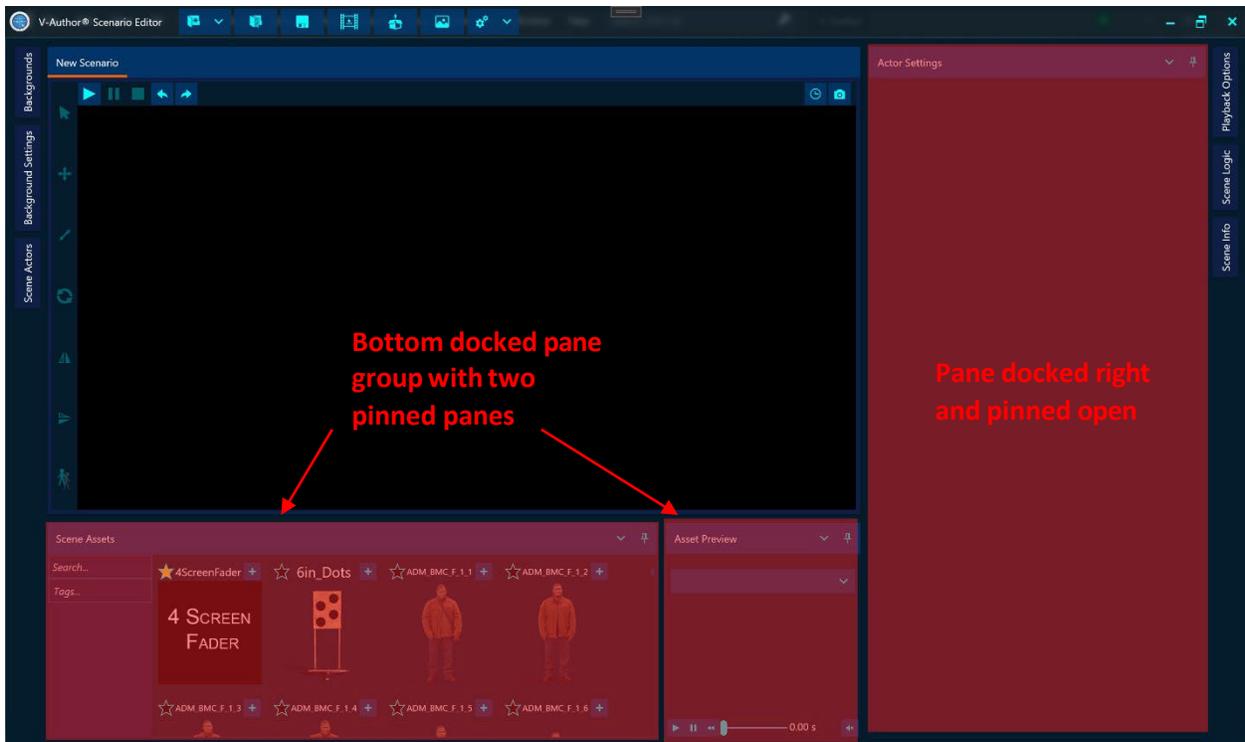
V-Author® Editor provides a highly customizable layout docking system allowing users to create a workspace optimized for their system and preferences. The main V-Author® Editor window is divided up into regions which in turn can be divided into sub-regions that can hold the workspace window panes. First the outer left, right and bottom borders of the application serve as auto-hide regions for docked windows that are not pinned open. The unpinned hidden windows slide out from these borders when the mouse hovers over or clicks on the pane button displayed in these auto-hide regions.



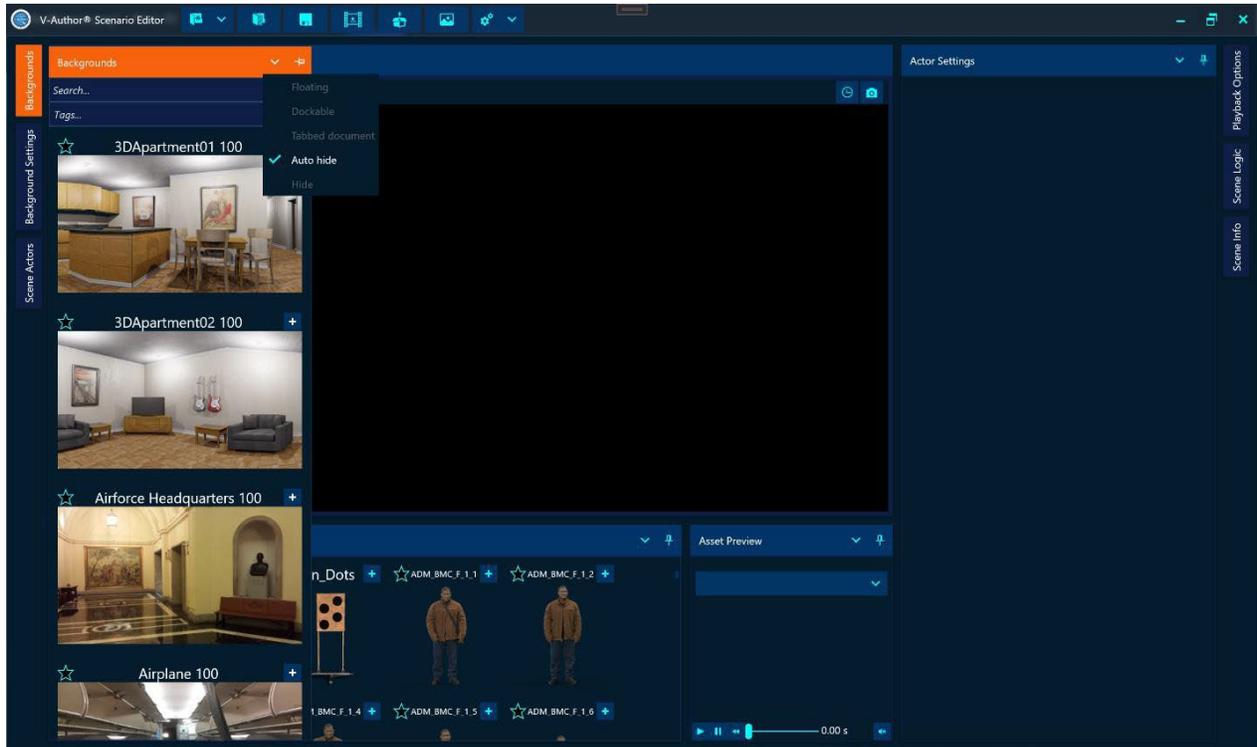
The main document region provides a tabbed document interface for all workspace panes docked as a tabbed document. In the default layout only the player window is in this region.



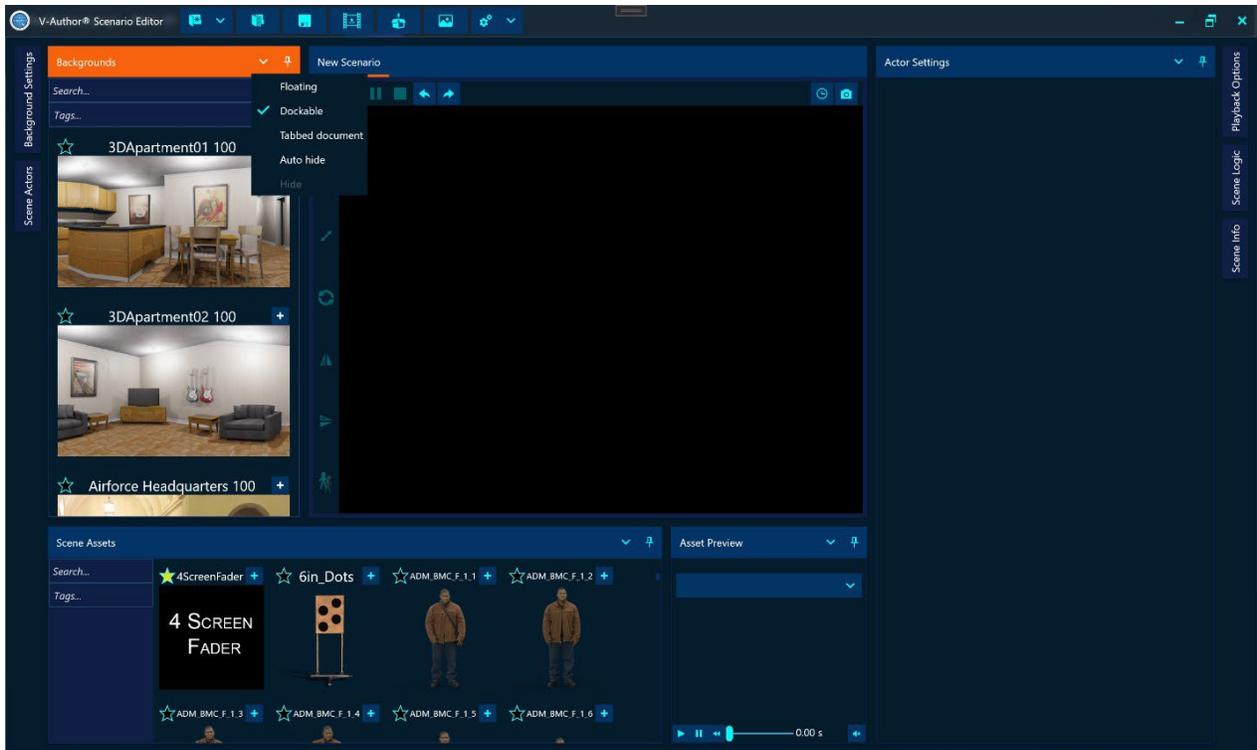
The rest of the main window areas consist of docked panels that have been pinned open.



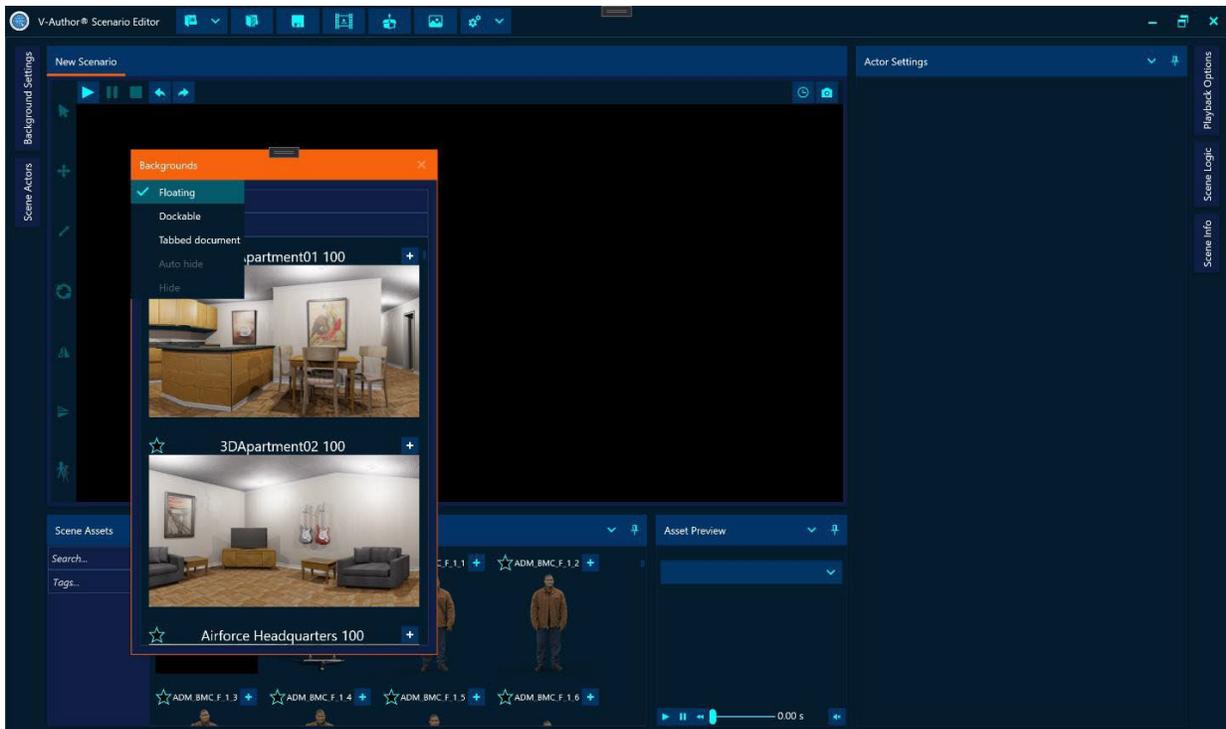
Individual panes can also be floated into their own windows and docked with each other as separate tabs within those floating windows. Each workspace pane has a menu that allows the user to adjust that pane's layout behavior. Hidden panes will slide out from their auto hide buttons when the mouse hovers over or clicks on those buttons. The pane menu is accessed by a drop down on the top right of the opened pane and for unpinned panes will show the auto hide menu item checked.



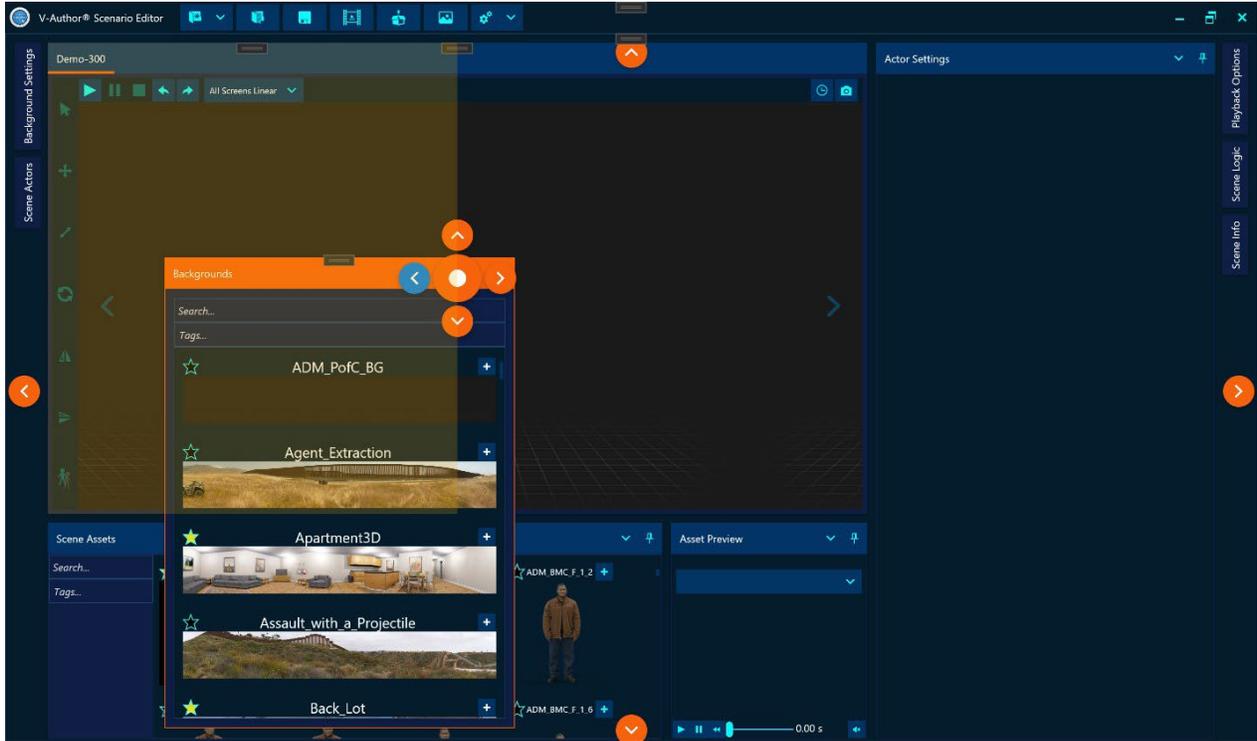
The pin button in the upper right also serves as a quick toggle of the auto hide menu item. The pin in the horizontal position means unpinned and has auto hide behavior when focus changes to another pane. Unchecking the auto hide item or toggling the pin button will automatically select the dockable menu item and the pane will then be pinned open with the pin icon becoming vertical and adjusting all the internal windows to allow the pinned pane space.



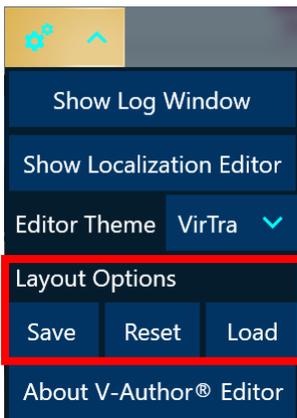
Selecting the tabbed document menu item will turn the pane into a tab in the main document region of the application. Selecting the floating menu item will detach the pane and put it in its own floating window.



Floating panes dragged around the application window will bring up docking controls to allow the users to dock the pane to a specific region of the application, sub-region or to combine floating windows transforming them into tabs in a single floating window. Docking controls take the form of compass arrows that when a floating window is dragged over show where the window will be docked if the mouse button is released over that arrow.

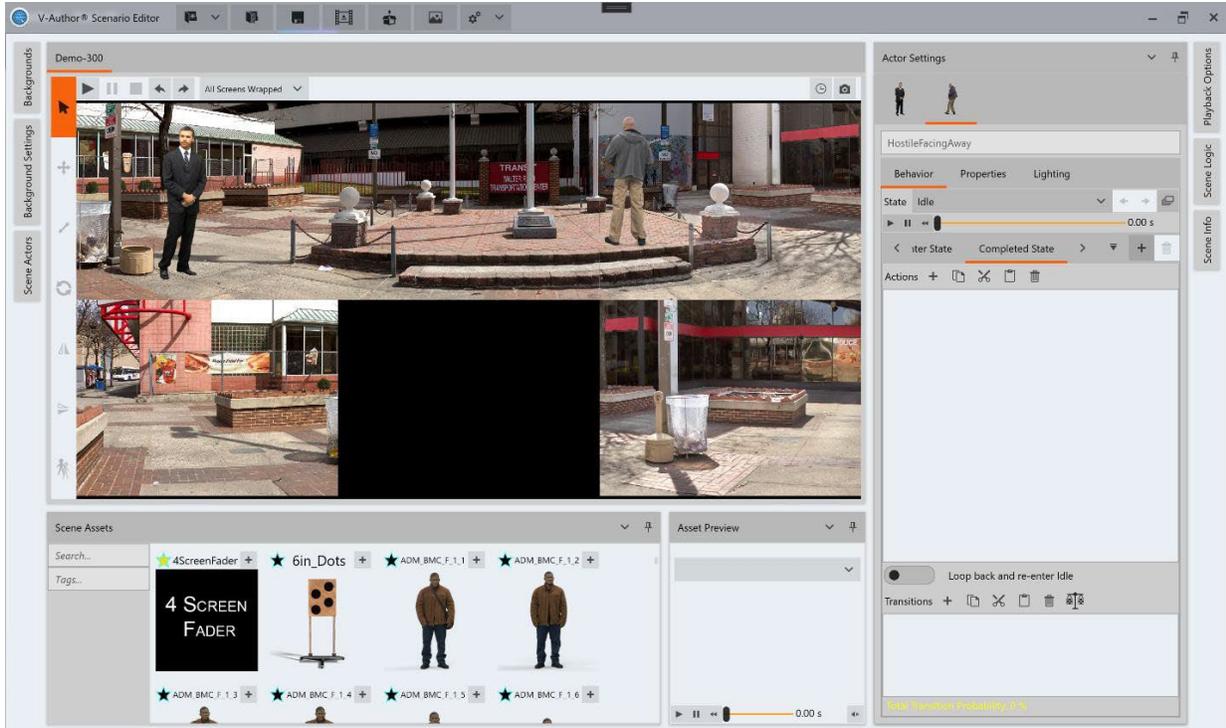
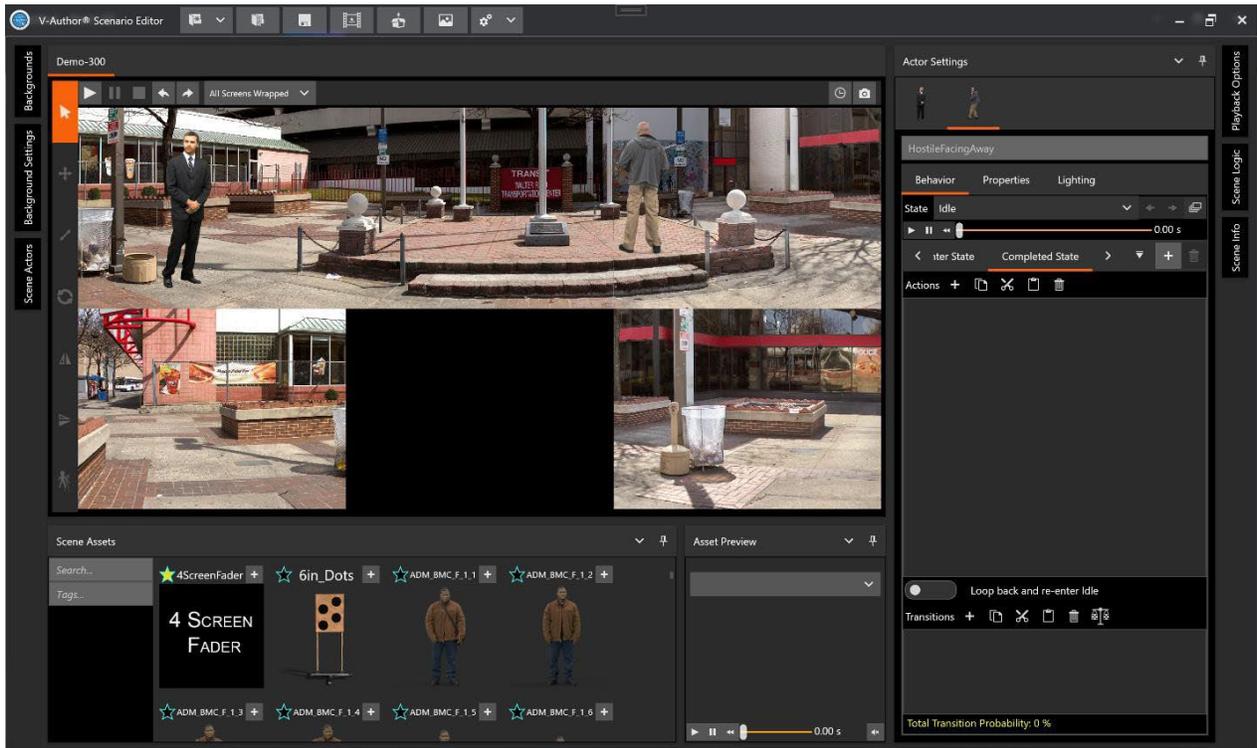


When V-Author® is shut down, the layout at shutdown is automatically remembered and restored the next time V-Author® is launched. Specific layouts can also be saved to and restored from layout configuration files via the options drop down on the right side of the application menu at the top of V-Author® editor.



The “Reset” button will restore the layout to the default V-Author® editor layout and theme.

These editor options also allow the user to select a color theme for the editor. By default, it uses the VirTra theme. V-Author editor also provides a dark and light theme.



## V. ACTOR BEHAVIOR ACTIONS REFERENCE

### Activate Threat-Fire

This action can be used to activate one or more VirTra Threat-Fire devices assigned to the trainees.

- **Required Version**  
Shows the required V-Author® version of 5.1 for this action, not compatible with legacy
  
- **Activate Mode**  
There are three different activation modes when this action executes
  1. **Activate All**  
All assigned Threat-Fire devices will be activated
  2. **Activate Random**  
A single assigned Threat-Fire will be randomly selected and activated
  3. **Activate Trainee Number**  
Any Threat-Fire assigned to the specified Trainee number will be activated. Trainee number refers to its position in the trainee set.
  
- **Trainee Number**  
This setting is only used with the “Activate Trainee Number” activate mode. This should be set to the position of the trainee in the trainee set (i.e. 1 is first trainee, 2 is second, etc.)

### Change State Action

State changes are normally handled in the transitions however it can also be done via this action.

- **Required Version**  
Shows the required V-Author® version of 5.1 for this action, not compatible with legacy
  
- **Target State**  
This is the state the action will transition the actor into. This cannot be set until the action is actually in the actors action list in order for the action to know what states are available to select.

### Clear Probes

This action will clear any currently attached Taser probes on the actor so they will not be affected by re-arcs. There are no settings. This is a legacy compatible action.

### Count

Action that simply counts up from 0 incrementing by 1 every time it is executed. When the action reaches a target count, it continues to the next action. This is a legacy compatible action.

- **End Count**  
The number of times the action must be executed before continuing on to the next action

## Delay

Action that delays for a specified amount of time before continuing to the next action. This is a legacy compatible action.

- **Seconds To Delay**  
Number of seconds to delay before continuing to the next action

## Enable ProTimer

Action that will enable the VirTra ProTimer™ feature bringing up the ProTimer™ shootable control buttons and information widgets. There are no settings associated with this action.

- **Required Version**  
Shows the required V-Author® version of 5.1 for this action, not compatible with legacy

## Freeze

Action that freezes the actor state animation. The actor will remain frozen until an Unfreeze action is executed. This is a legacy compatible action.

## Hide

Action that makes the actor invisible. Note this does not freeze the actor, the actor will continue to run its state animation invisibly. Associated sounds will still occur. There are no settings for this action and it is a legacy compatible action.

## Move

Action to move a specified amount from the actor's current position. Note that x,y coordinates are screen coordinates with respect to the upper left corner of the actor screen while the z coordinate refers to depth into the screen as a render order.

- **Required Version**  
Shows the required V-Author® version of 5.1 for this action, not compatible with legacy
- **X Offset**  
Amount to move in horizontal direction with respect to actor screen left in screen pixels
- **Y Offset**  
Amount to move in the vertical direction with respect to screen top in screen pixels. Positive values move down, negative values move up.
- **Z Offset**  
Amount to adjust z depth into the screen by. This is a render order or layer depth value where higher Z values render behind lower Z values. This allows actors to appear behind other actors or background layers to give the illusion of actual 3-dimensional depth.

## Random Delay

Action that delays by a random amount of time between a minimum and maximum delay before moving on to execute the next action.

- **Required Version**  
Shows the required V-Author® version of 5.1 for this action, not compatible with legacy
- **Min Seconds To Delay**  
Minimum number of seconds to delay before executing the next action
- **Max Seconds To Delay**  
Maximum number of seconds to delay before executing the next action

## Random Mirror

Action that will randomly flip the actor in the horizontal and/or vertical directions when executed

- **Required Version**  
Shows the required V-Author® version of 5.1 for this action, not compatible with legacy
- **Randomly Flip X**  
If checked this will randomly flip the actor in the horizontal direction when the action is executed
- **Randomly Flip Y**  
If checked this will randomly flip the actor in the vertical direction when the action is executed

## Random Move

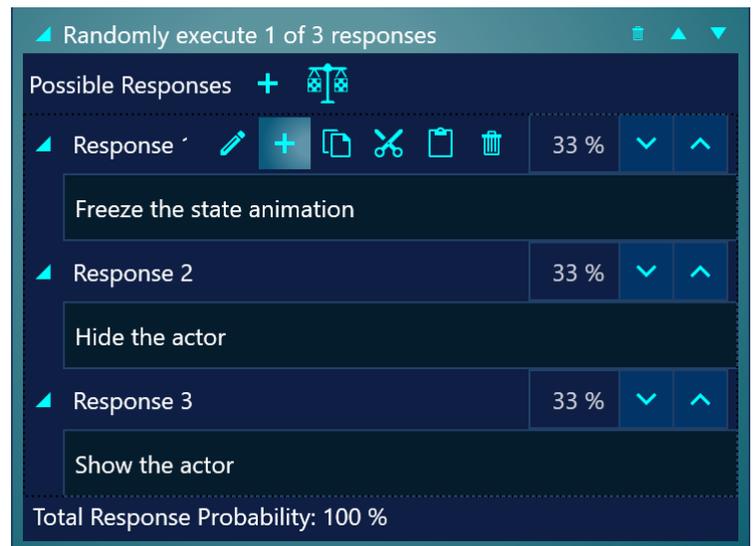
Action that will randomly move the actor within a region defined by the starting actor position and minimum and maximum offsets from that location in each dimension.

- **Required Version**  
Shows the required V-Author® version of 5.1 for this action, not compatible with legacy
- **Min X Offset**  
Minimum random amount to move in horizontal direction with respect to the starting X position in screen pixels
- **Max X Offset**  
Maximum random amount to move in the horizontal direction with respect to the starting X position in screen pixels
- **Min Y Offset**  
Minimum random amount to move in the vertical direction with respect to the starting Y position in screen pixels. Positive values move down, negative values move up.

- **Max Y Offset**  
Maximum random amount to move in the vertical direction with respect to the starting Y position in screen pixels. Positive values move down, negative values move up.
- **Min Z Offset**  
Minimum random amount to adjust Z depth into the screen by. This is a render order or layer depth value where higher Z values render behind lower Z values
- **Max Z Offset**  
Maximum random amount to adjust Z depth into the screen by. This is a render order or layer depth value where higher Z values render behind lower Z values.

## Random Response Action

This action allows the author to define alternative sets of response action lists with associated probabilities of execution. When the action is executed, it will choose one of its possible response action lists according to their probabilities and execute the actions within that randomly chosen response. The random response action presents an expander window showing all the possible responses. New responses can be added with the **+** add button in the Possible Responses menu. The  balance probabilities button will equalize all the possible response probabilities to add to 100% total response probability. The total response probability is shown at the bottom of the random response expander window and will be yellow if it does not equal 100% probability. Hovering the mouse over a possible response item will present a menu for that possible response allowing the author to edit the response name, add actions, copy / cut / paste actions and delete selected actions. The response probabilities can also be directly edited in the possible response item. Setting any response probability to a value that would make the total probability exceed 100% will adjust all other response probabilities to make sure the total stays at 100%. This action requires V-Author® version 5.1 or later and is not compatible with legacy.



## Random Rotation

Action that will rotate the actor by a random amount between a minimum and maximum rotation value.

- **Required Version**  
Shows the required V-Author® version of 5.1 for this action, not compatible with legacy
- **Minimum Rotation**  
Minimum random rotation amount to rotate the actor by

- **Maximum Rotation**  
Maximum random rotation amount to rotate the actor by

## Random Scale

Action that will scale the actor by a random amount between a minimum and maximum scale value

- **Required Version**  
Shows the required V-Author® version of 5.1 for this action, not compatible with legacy
- **Minimum Scale**  
Minimum random amount to scale the actor by
- **Maximum Scale**  
Maximum random amount to scale the actor by

## Random Screen

Action that will set the actor screen to a random screen. If this action is used with a single screen scenario it has no effect.

- **Required Version**  
Shows the required V-Author® version of 5.1 for this action, not compatible with legacy

## Random Trigger Action

Randomly selects an event to trigger from a list of scene events according to assigned probabilities. The random trigger action presents an expander window with a Possible Triggers menu and all the possible triggers configured for the action. The possible triggers menu has an add **+** button to add new possible triggers and a balance button to equalize  the



probabilities for all triggers such that the total trigger probability adds up to 100%. Hovering the mouse over individual trigger items brings up a button to delete that trigger. Each item also has an edit control for the probability of that event being triggered. If any individual probability is set to a value that would make the total probability exceed 100%, all other probabilities will be adjusted to keep the total probability at 100%. The total probability of triggering an event is displayed at the bottom of the expander and if it is less than 100% will be highlighted in yellow. This action requires V-Author® version 5.1 or later is not compatible with legacy.

## Set Actor Lighting

Action to set the actor lighting to specified values when executed. The settings for this action include all the lighting sliders and toggles to unselect the actor in the player window and to enable lighting adjustments that are found in the [actor lighting tab](#) of the actor settings. However, enabling lighting

adjustments and modifying lighting sliders will not change the appearance of the actor in the player window unless the preview toggle in the upper right corner of the action settings is enabled. This toggle appears as a closed eye when preview is not enabled and an open eye when preview is enabled. Enabling preview of the action lighting will also put the same eye toggle in the actor lighting tab itself so the author can disable the action preview from the actor lighting tab directly. This action requires V-Author® version 5.1 or later and is not compatible with legacy.

### **Set Actor Position**

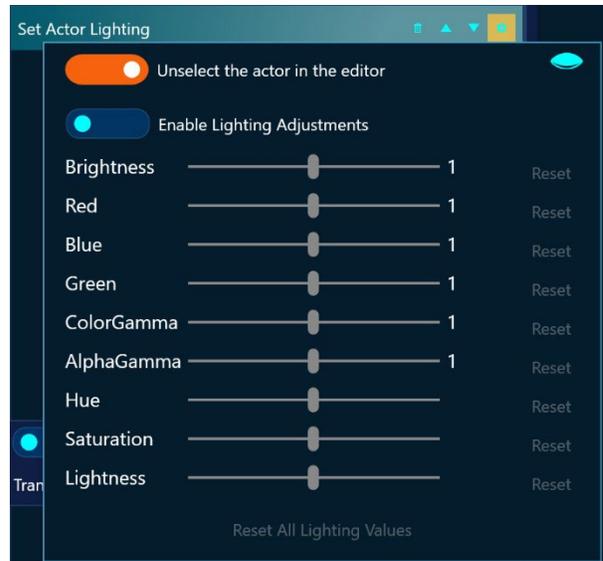
Action that sets the actor position in the scenario to a specified value. This position includes the actor screen number and coordinates with respect to the upper left corner of that screen.

- **Required Version**  
Shows the required V-Author® version of 5.1 for this action, not compatible with legacy
- **Screen Number**  
The screen number to place the actor on. A value of 0 indicates the actor should stay and whatever screen they are currently on.
- **X**  
Horizontal X location of the actor with respect to actor screen left in screen pixels
- **Y**  
Vertical Y location of the actor with respect to screen top in screen pixels. Increasing Y values move the actor down on the screen.
- **Z**  
Actor Z depth into the screen. This is a render order or layer depth value where higher Z values render behind lower Z values. This allows actors to appear behind other actors or background layers to give the illusion of actual 3-dimensional depth.

### **Set Actor Screen**

Action to set the actor screen number moving the actor to that screen. The top left of the new screen would then serve as the coordinate origin for the actor position coordinates.

- **Required Version**  
Shows the required V-Author® version of 5.1 for this action, not compatible with legacy
- **Screen Number**



The screen number to place the actor on. A value of 0 indicates the actor should stay and whatever screen they are currently on.

## Set Depth

Action to set the Z depth of the actor into the screen. This is a legacy compatible action.

- **Depth**  
Actor Z depth into the screen. This is a render order or layer depth value where higher Z values render behind lower Z values. This allows actors to appear behind other actors or background layers to give the illusion of actual 3-dimensional depth.

## Set Mirror

Action to set the actor mirror values to flip the actor in X and/or Y.

- **Required Version**  
Shows the required V-Author® version of 5.1 for this action, not compatible with legacy
- **Flip X**  
If checked this will flip the actor in the horizontal direction when the action is executed
- **Flip Y**  
If checked this will flip the actor in the vertical direction when the action is executed

## Set Play Speed

Action to set the play speed for the actor animations. The play speed can be increased or decreased by up to 20% from the normal speed.

- **Required Version**  
Shows the required V-Author® version of 5.1 for this action, not compatible with legacy
- **Play Speed**  
Play speed multiplier value. Greater than 1.0 plays the actor faster, less than 1.0 plays the actor slower

## Set Rotation

Action to set the rotation of the actor

- **Required Version**  
Shows the required V-Author® version of 5.1 for this action, not compatible with legacy
- **Rotation**  
Rotation value in degrees to rotate the actor by

## Set Scale

Action to set the scale value for the actor

- **Required Version**  
Shows the required V-Author® version of 5.1 for this action, not compatible with legacy
- **Scale**  
Scale value to apply to the actor size

## Set Volume

Action to set the volume level for actor sounds

- **Required Version**  
Shows the required V-Author® version of 5.1 for this action, not compatible with legacy
- **Volume**  
Volume level for actor sounds where 1 is normal volume, greater than one increases volume, less than 1 decreases volume

## Show

Action to show the actor making it visible if it was previously hidden. There are no settings for this action and it is a legacy compatible action.

## Start ProTimer

Action to start the ProTimer™ running which will kick off the configured ProTimer™ startup sequence sounding the start tone and initiating shot split timing. There are no settings for this action. This action requires V-Author® version 5.1 or later and is not compatible with legacy

## Stop ProTimer

Action to stop an active ProTimer kicking off the configured ProTimer end sequence which may include showing shot splits and scoring. There are not settings for this action. This action requires V-Author® version 5.1 or later and is not compatible with legacy

## Swap Background

Action to swap in a specified background for the scene. The settings for this action have two tabs, a tab for selecting the background to swap and a tab for setting the lighting values of the swapped in background. A drop down is provided on the



first tab to select a background to swap in from all the available backgrounds. If the selected background has an alternate appearance, the “Show Alternate Background” checkbox will be enabled to specify whether the alternate version should be shown. The upper right corner of the settings also has a preview toggle to show the selected background in the player window with the action’s lighting settings. The preview toggle will show as an open eye when enabled. If lighting settings are enabled for this

action, it requires V-Author® version 5.1 or later to execute and is not compatible with legacy. If lighting settings are not enabled in this action, it is legacy compatible.

## Trigger Event

Action to trigger a specified scene event when the action is executed. This is a legacy compatible action.

- **Event Name**  
The name of the scene event that should be triggered. A drop down gives all available scene events and an edit box to enter and create a new scene event directly in the drop down.
- **Trigger At End Of State**  
If this is checked, the event will not be triggered until the current actor state completes. If the state changes before the end of state is reached, the event will not be triggered. If not checked the event is triggered immediately when the action executes.

## Unfreeze

Action to unfreeze a frozen actor making it resume its state animation and sounds. There are no settings associated with this action and it is compatible with legacy.

## VI. CONTACT VIRTRA

For any questions or additional help with any part of this manual, please contact VirTra via the information below.

### VirTra Service Department

# VirTra

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