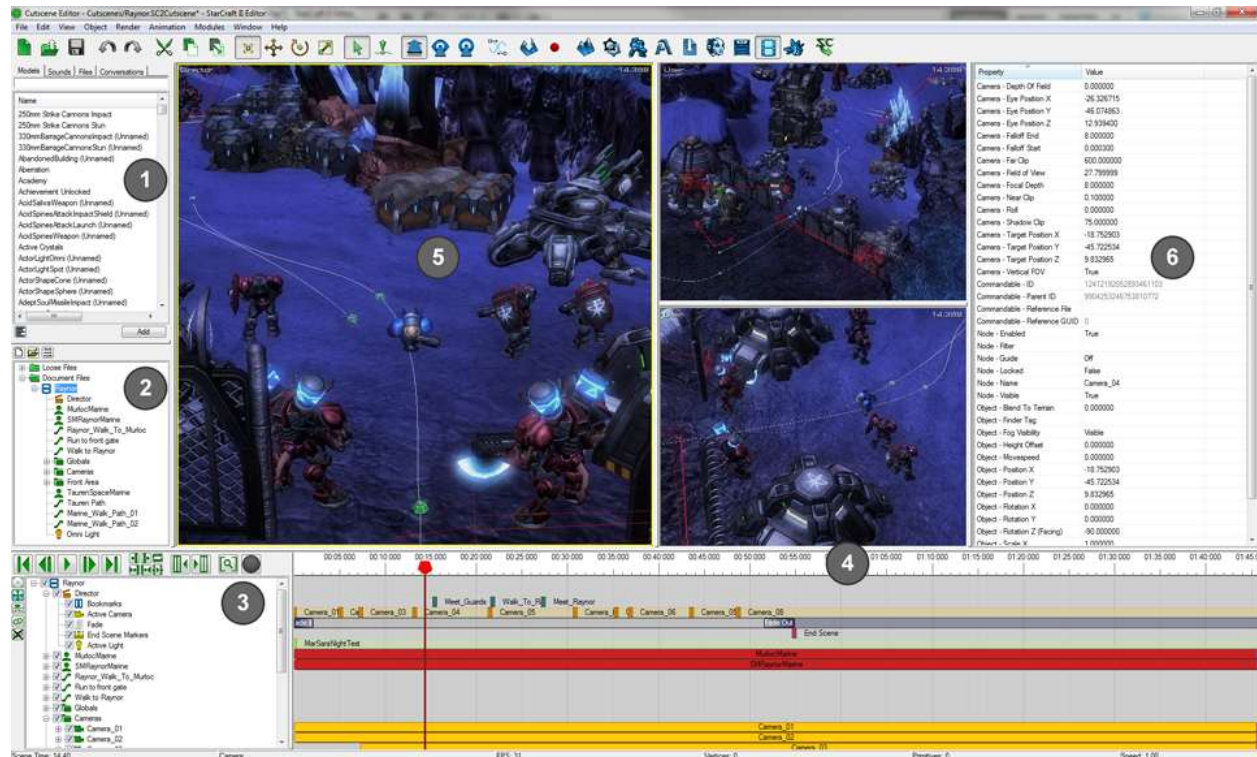# Cutscene Editor Instructions

The Basics

The Cutscene Editor allows you to visually create scripted sequences that can be played back in the game. These sequences can range from full cinematic moments like those found in StarCraft II's Story Mode or can be small one-off events.

What's On Screen

1. The **Library** lists available files and allows you to add them to your current scene.
2. The **Scene List** shows all scenes saved in your map and all objects in those scenes. Selecting objects here displays them in the timeline.
3. All selected objects in the scene are shown in the **Timeline Tree**. This is where you can access additional properties on an object, such as active animations, conversation lines, and position. The timeline tree defines the "what" of your scene.
4. The **Timeline** shows all actions that will take place in your scene as well as the current time. You can move and resize blocks to change the timing of your scene and scrub the ruler to change the current time. The timeline defines the "when" of your scene.
5. There are three **Viewports** by default. You can remove some via the Window -> Show Panes menu. Each viewport is a separate view into your scene. You can select, position, and rotate objects in the viewports.

6. The **Property Pane** displays all the properties of the current selection. You can double-click a cell to enter edit mode and change any value.

The Library
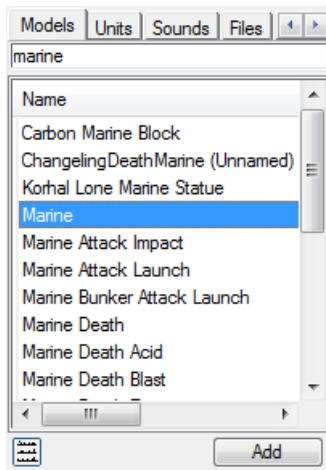
You can add an object by double-clicking the object name in the library browser on the top left. This list contains all objects for the currently selected tab (Models, Units, Sounds, Files, or Conversations).

IF AN OBJECT ISN'T LISTED, CONFIRM THAT YOU HAVE THE CORRECT MAP OR DEPENDENCY LOADED.

You can filter the list by typing in the text area above the list. All object names containing the typed text will show in the list.

You can toggle between list view and tree view using the button on the bottom left.

Object entries are loaded with all object data -- (in the case of models: facial controller, required anims, foley events, etc.). If you want to add a raw file without associated data, you can do so by browsing the Files tab. This tab lists all loose files that can be added to the scene.

YOU SHOULD ONLY ADD FILES IF YOU HAVE A SPECIFIC REASON. IN ALMOST ALL CASES, THE DATA ENTRY IS THE BETTER CHOICE.

Viewports

The viewports are where you can see the scene at the current time and perform some editing. There are three viewports by default, but you can change the number via Window->Viewports.

The active viewport is marked with a yellow border. Commands specific to a viewport (such as changing the camera or setting view options) are sent only to the active viewport.

YOU CAN TOGGLE DEBUG OBJECTS IN A PARTICULAR VIEWPORT VIA RENDER->SHOW HELPERS->SHOW DECORATORS.

Camera Controls

We support two different camera control schemes -- Editor and Alternate. Editor has all the same camera controls as the Terrain Editor along with the Free camera controls (middle mouse controls).

The Free Camera controls are typically best when navigating a cutscene because they allow for any camera movement and work well in small scenes. The Free Camera controls work as follows:

- **Middle Click**: Truck along the ground plane
- **Shift-Middle Click**: Zoom in and out
- **Alt-Middle Click**: Orbit around the target
- **Ctrl-Alt-Middle Click**: Mouse look
- **Ctrl-Middle Click**: Pan in the camera plane
- **Ctrl-Shift-Middle Click**: Field of View

- **Alt-Shift Middle Click**: Roll
- **Button 5 Click**: Set the target to the mouse position

Scene List

All scenes in your map or data source will show here along with all objects in each scene. An object is a model, sound, camera, director, or anything else that creates something in your scene.

You can only have one active scene at a time. To activate a scene, right-click it and choose Activate. You can also add new scenes to your map through the right-click menu.

BY DEFAULT, THERE IS ALWAYS A SCENE NAMED (PREVIEWER). THIS SCENE IS NOT SAVED WITH THE MAP AND IS ONLY USED TO PREVIEW ASSETS.

REMEMBER THAT ALL MODIFICATIONS ARE MADE TO THE CURRENT ACTIVE SCENE. THIS INCLUDES ACTIONS SUCH AS OPEN OR NEW. THESE ACTIONS WILL OVERWRITE THE EXISTING SCENE UNLESS YOU CHOOSE OTHERWISE AT THE PROMPT.

When you create or load a cutscene, you will be asked if you want to add it to your map. All cutscenes to be played in a given map should be added to that map. The Cutscene Editor does support loading loose .SC2Cutscene files, however, so that you can see what a cutscene looks like without adding it to your map. You can tell the difference between Loose Files, Document Files, or Dependency Files (cutscenes located in dependencies to your map) by which folder they belong to in the Scene List.

ONLY DOCUMENT FILE CUTSCENES ARE SAVED WHEN YOU SAVE YOUR MAP.

The Scene List is also used to filter what appears in your timeline. All selected objects in the Scene List will appear in the Timeline. This is very useful for viewing only those objects that you are actively working on.

If you have a lot of cutscene files in your map, use the button "Toggle Active Scene Only" above the Scene List to only show the active cutscene.

Timeline Tree

All objects selected in the Scene List appear here. The objects are the parent nodes in the tree, and their children define something that the object does or happens to the object. For example, the actor

SMX1KerriganDezerged has an Animation Layer child. The Animation Layer child says the actor will play specific animations.

You can add more children by right-clicking the object and adding an appropriate node. Different node types support different kinds of children. The actor Marine can have a Conversation child while a sound

object can have a Property Value - Volume child.

Each node in the tree has its own context menu, allowing you to perform commands on that node. The tree supports multiple-selection.

Timeline

The timeline displays the current time via the red cursor. You can click and drag anywhere on the ruler to change the current time. All objects and properties will update in the viewport.
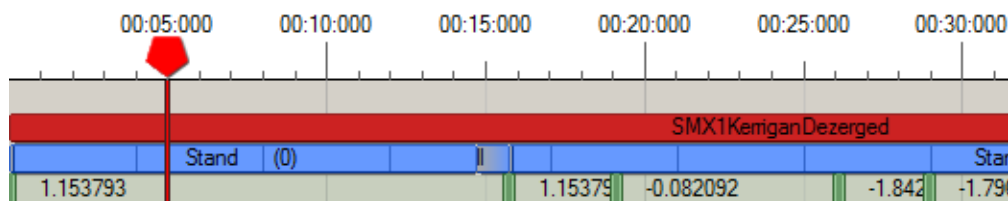
You can play and pause the scene by pressing the Spacebar. Playback will continue until it reaches the end of the scene or an End Scene marker. It will then loop back to the beginning.

Scroll the mousewheel to zoom in and out of the timeline and use middle-mouse drag to pan the timeline left or right.

Finally, you can hold Shift and drag to highlight a portion of the timeline. Selected regions are used for specific timeline commands (see below).

ALWAYS BE AWARE OF YOUR CURRENT TIME. MANY OPERATIONS DEPEND ON THE CURRENT TIME, SUCH AS ADDING ELEMENTS OR AUTOKEY. THE CUTSCENE EDITOR IS PRIMARILY A TIME EDITOR, SO TIME MATTERS.

Timeline Elements

All objects, events, and animated property changes display in the timeline. There are two main types of elements -- events and blocks. Events fire a single action at specific time -- camera cuts, actor messages, and bookmarks are all examples of events.

Blocks have duration and maintain during that time, such as animation blocks, object lifetime, and dialogue lines.

All elements can be moved on the timeline by clicking and dragging them. Blocks can be resized by stretching them at either edge. You can use the arrow keys Left and Right to nudge an item one pixel or Ctrl-Left and Ctrl-Right to nudge it five pixels. The amount of time moved depends on your current zoom level.

Blocks cannot overlap each other. When positioning a block, you'll be unable to move it past an adjacent block. Events can be moved past each other, but if you place an event on top of another event, the two will collapse into a single event.

YOU CAN COPY AND PASTE ELEMENTS -- ALL PASTING OCCURS AT THE CURRENT TIME AND WILL SPLIT AND OVERWRITE ANY EXISTING BLOCKS THAT ARE IN THE WAY.

Timeline elements can be multi-selected to move or command together. Click and drag on an empty area in the timeline for box selection. You can also use Shift-Click to select a range of elements on a single row or Ctrl-Click to add/remove elements to your current selection.

Ghost Mode

If you want to move a block past another one, you can use Ghost Mode (Ctrl+G). Ghost Mode allows you to move or resize a block on top of another one. When you release the move or resize, any blocks in the way will be cut to make room for the new block.
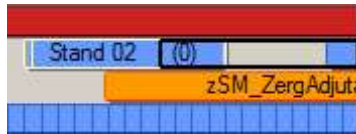
To enter Ghost Mode, click the Ghost Mode toolbar button to the left of the Timeline Tree. You'll know you're in Ghost Mode if you see a silhouette of your block as you're moving it. Return to Move Mode (Ctrl+M) by pressing the Move Mode above Ghost Mode.

YOU CAN ENTER GHOST MODE FOR A SINGLE ACTION BY HOLDING CTRL-SHIFT WHILE MOVING OR RESIZING A BLOCK.

Snapping

When moving timeline elements, they will attempt to snap to other elements in the timeline and the current time.

Locked to End

Most timeline elements are automatically Locked to End. This means that as the cutscene's end time changes, they automatically update to match it. An element will have a purple endcap if it is locked to end and will stretch as the end time changes.
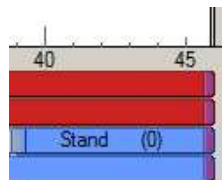
To unlock an element, right-click it and uncheck Locked to End. When unlocked, the end time of the element only changes when you move it. In addition, the end time of the entire scene cannot be sooner than the last unlocked element.

Playing a Cutscene

Saving your cutscene generates an .SC2Cutscene file that is saved in your map. This is simply an XML file that describes your cutscene.

IF YOU KNOW WHAT YOU'RE DOING, YOU CAN HAND-EDIT AN .SC2CUTSCENE FILE, BUT THERE BE DRAGONS DOWN THAT PATH! A MALFORMED XML FILE CANNOT BE LOADED BY THE EDITOR.

Once saved, that cutscene can be played back in a map by using the **Create Cutscene** action. You can choose among available cutscenes in the value tab when setting the cutscene parameter in your action. If AutoPlay is enabled, the scene will immediately play.

CUTSCENES MAY HAVE A POSITION OR FACING WHEN PLAYED BACK IF YOU DO NOT WANT TO BE AT THEIR DEFAULT POSITION. USE THE ACTION CREATE CUTSCENE AT POSITION.

You can use the Last Created Cutscene function to get an ID back to the cutscene. Additional actions can be performed on the cutscene, such as Pause, Set Time, Go To Bookmark, and others.

While a cutscene is playing, any bookmarks passed in the cutscene will fire an event that can be listened for by the Trigger Editor. This allows the game to respond to cutscenes. The cutscene will also fire an event when it has ended.

AN EVENT WILL BE FIRED FOR EACH INDIVIDUAL PLAYER WATCHING THE CUTSCENE. KEEP THIS IN MIND IF YOU INTEND ON PERFORMING AN ACTION AFTER ALL PLAYERS PASS A BOOKMARK.

Objects

Scene objects include Actors (i.e. models), Cameras, Sounds, and anything else that adds something to your cutscene.

Manipulating

All objects can be positioned, rotated, and scaled via the Transform Manipulators. First, select the object you wish to transform (in the tree or by clicking in the viewport). By default, the Translate Manipulator will appear, allowing you to move the object in any direction.

YOU CAN DISABLE SELECTION HIGHLIGHT VIA RENDER->SHOW HELPERS->SHOW SELECTION HIGHLIGHT.

THE MANIPULATORS ONLY APPEAR WHEN YOUR CUTSCENE IS PAUSED SINCE YOU CANNOT TRANSFORM AN OBJECT DURING PLAYBACK.

Drag along any axis or plane to move the object.

There are four manipulator modes available, in order: None, Translate, Rotate, and Scale. The hotkeys are Q,W, E, R, which match 3dsMax.

Eye vs. Target Manipulation

Certain objects, such as Cameras and Spot Lights allow you to separately manipulate the eye or target. You can set the Manipulator Mode with the Edit menu or with the toolbar buttons below:

Normal Mode is the default behavior, and it moves the Eye and Target together when translating. Eye Mode allows you to move only the eye whereas Target Mode allows you to move only the target.

Lifetime

All objects only exist in the scene for the duration of their lifetime. This is represented by the timeline block that lines up with the object itself.
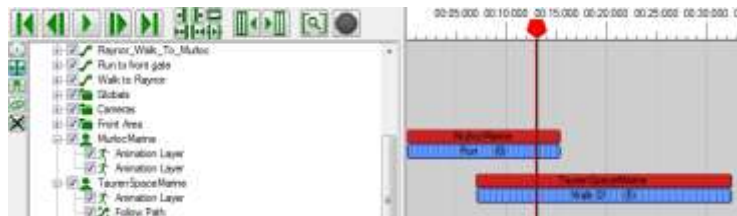
Try to keep objects in the scene only when necessary to improve performance and reduce clutter in your timeline.

IF YOU CANNOT FIND AN OBJECT WHERE YOU EXPECT IT TO BE IN THE VIEWPORT, CONFIRM THAT IT IS CURRENTLY ALIVE AT THAT TIME AND NOT DISABLED OR INVISIBLE.

Folders

You can add folders to your cutscene to keep nodes organized by clicking the Add Folder button above the Scene List. Some commands can be performed on a folder to affect all its children. For example, you can set a folder as invisible to mark all its contents as invisible.

Guide

You can mark any node as a Guide via the context menu. Guide nodes are only visible in the editor and will not be played back in the game. This is useful for seeing how objects line up with models outside of the cutscene.

Locking

Any node can be locked via the right-click menu or Ctrl+T. A locked node cannot be edited or selected in the viewport. It is usually convenient to lock nodes you know you don't want to accidentally edit, such as the set objects or conversation timing.
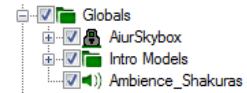
Disabling

You can disable a node by unchecking it in the Timeline Tree. Disabling means something different depending on the node. A disabled Actor will not exist in your scene. A disabled Animation Layer will not perform its animations. A disabled Camera will still exist but will not draw its camera model. Disabled nodes remain disabled when played back in the game.

Animation

Models are animated via Animation Layers. All models start with one Animation Layer by default, and additional layers can be added via the context menu in the timeline (Ctrl-A).
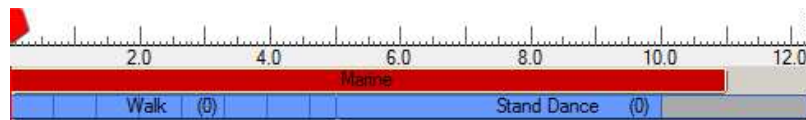
You can add a new animation block via context menu (Alt-A). You can change the animation by right-clicking the block and choosing Change Animation (+/-). You can right-click a block and select Reset Animation Duration to set the block to its original duration.

You can have multiple Animation Layers. When animation blocks overlap in different layers, the highest priority animation will play. This can also be used to layer partial animations (such as Angry Eyes) with full body animations.

Blending

By default, animations will blend over 150 ms with the previous animation. This is marked with the grey gradient at the start of their blocks. The blend time can be modified via the Property Sheet. Animations have both Blend In and Blend Out properties, which modify exactly how they blend into each other.

Start Offset

By default, animation blocks start the animation at time 0 of the sequence. This can be changed by specifying a start offset.

M3A Files

You can add M3A Files to actors. First, select the actors you want to add M3As to. Then browse for the M3A file in the Files tab in the Library. Double-click the M3A file to add it to the selected actors. Any new animations added by the M3A will be immediately available.

M3AS ARE GLOBALLY ADDED TO A MODEL FILE. THIS MEANS ALL COPIES OF THE SAME MODEL WILL HAVE THE NEW ANIMATIONS AVAILABLE.

Cameras

You can add Cameras to your scene via Object->Add Node (Alt-X). This adds a camera that matches the view of the active viewport.
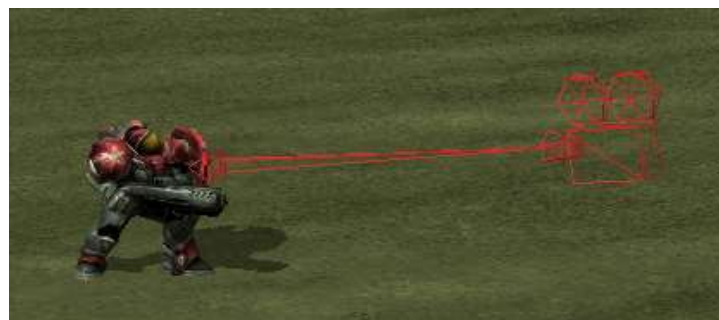
You can look through any camera or change that camera to the current view via the camera's context menu. The hotkey V provides fast access to looking through a camera. Alt-V will set the selected camera to your current view. All cameras also show in the View->Camera menu.

You can live-edit cameras via the Edit Camera command on the camera's context menu. When live-editing a camera, the viewport's border will turn red and you'll see "EDITING!" next to the camera's

name at the top of the viewport. While live-editing, any changes made to the viewport will apply to the edited camera.

The Camera Editor (View->Camera Editor) is useful for fine-tuning values or accessing properties that aren't available via the viewport, such as Depth of Field.
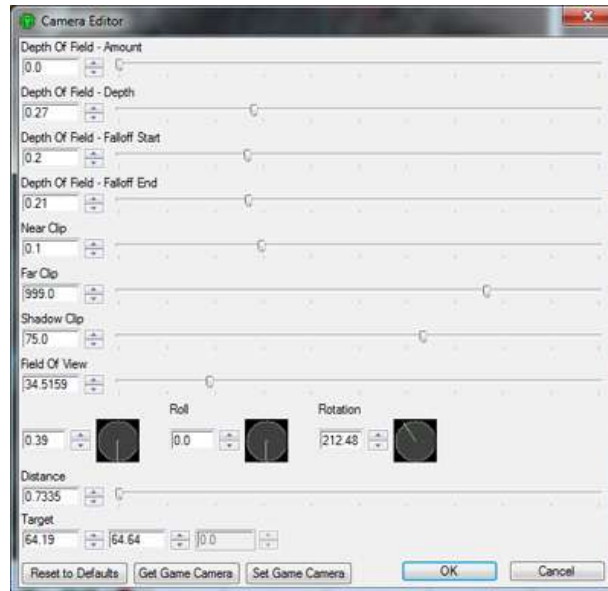
The Director track is responsible for managing which camera is the current active camera. See below.

YOU CAN ENABLE ASPECT RATIO GUIDES UNDER THE VIEW MENU TO HELP FRAME YOUR SCENE.

Game Camera vs. Target Camera

There are two types of cameras you can create -- Game or Target Cameras. The difference between the two is their list of properties, and this affects how they animate.

A Game Camera is the classic camera type, which includes a target position and Yaw, Pitch, Roll, and Distance properties to determine the eye position. When animating, these cameras are better for orbital motion, such as spinning around an object.

A Target Camera specifies two positions -- one for the target and one for the eye. The direction of the eye is locked to the target position. When animating, these cameras are better for trucks, pans, and other linear motion.

Director

The Director is a special scene object that manages the cutscene itself. It is responsible for the current active camera, the end of the scene, and any environment changes. You can add a Director via Object->Add Director Node (Alt-D).

Active Camera

The most common use of the Director is to set the Active Camera. You can add an Active Camera Layer from the Director's context menu.

Right-click the Active Camera Layer to add a camera cut. The Add Camera Cut menu will list all cameras currently available -- all camera objects plus all cameras embedded in models. Select a camera from that menu to change the active camera at the current time.
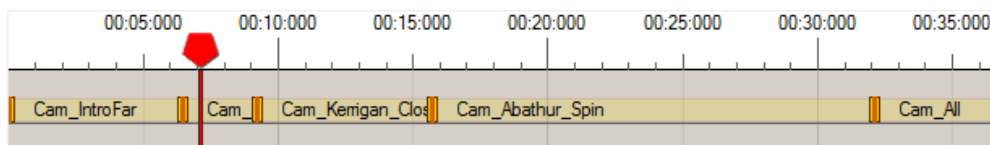
ONCE YOU SET AN ACTIVE CAMERA, THAT WILL OVERRIDE THE CAMERA IN-GAME. IF YOU DO NOT WANT YOUR CUTSCENE TO AFFECT THE GAME CAMERA, DO NOT SET AN ACTIVE CAMERA.

While a camera is active, the view will follow that camera through all its motions. When you change to another camera, that cut is instant.

MAKE SURE YOUR CAMERA IS ALIVE FOR THE FULL DURATION THAT IT IS ACTIVE.

Director Window

The Director Window is used to show you exactly how your scene will look in-game. You open the Director Window via the View menu. In the Director window, the camera is locked to the active camera, and all debug objects, manipulators, and help text are not visible.

YOU CAN SET A CUSTOM SIZE OR ASPECT RATIO FROM THE DIRECTOR WINDOW'S VIEW MENU. IF YOU CHANGE THE SIZE OF THE VIEWPORT, YOU MAY NEED TO RESIZE THE WINDOW TO SEE THE WHOLE IMAGE.

Director Camera

You can look through the eyes of the Director in any viewport by selecting the Director Camera via the View->Camera menu or pressing the D hotkey.

ACTIVE LIGHT

The Director can also control the active environment light in the cutscene. Add an Active Light node by right-clicking the Director and choosing Add Active Light. Like the Active Camera Node, this adds a node where you can add elements to cut or blend to different lights.

The Active Light Node can change the lighting to either a light in data (found in the Lighting Window) or an available Environment Light Object in your scene. To use an existing light found in data, select Use Light ID when adding the Active Light Element. You can then set the Light ID property in the Property Sheet. Otherwise, you can choose an existing light in your scene from the context menu.

See the Lighting section below for information on adding Environment Light Objects.

Fading

The Director can cause the scene to fade to and from any color. Add a Fade Node to the Director via the right-click menu. You can then right-click the Fade Node to add new Fade events. The Fade Event can be moved or resized like any other block, and you can toggle between Fade Out and Fade In by right-clicking the element.
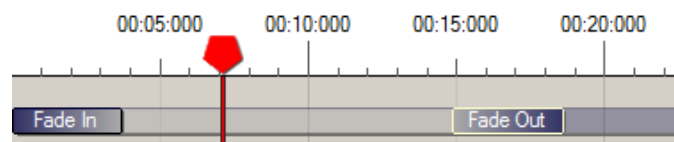
End Scene Markers

You can add an End Scene node to the Director for fine control of the end of your scene. By default, a scene will end when all blocks are complete. You can see that via the vertical dashed line on the ruler.
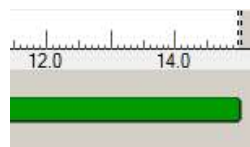
To end the scene earlier, add an End Scene node to the Director via the Director's context menu. You can then add End Scene Marker events to that node. When the time advances to that event, the scene will end.

Bookmarks

Bookmarks are generic event markers used to mark a specific time. There are triggers available to jump to a bookmark, and when a bookmark is passed, an event is sent to the trigger system.

Bookmarks allow the map designer the ability to control the playback flow or respond to events in the cutscene. The subscene system mentioned above heavily relies on bookmarks. Below you see how each subscene is marked with a Start Bookmark and an End Scene node. The game can decide which subscene to play based on game logic, and only that portion of the cutscene will play.
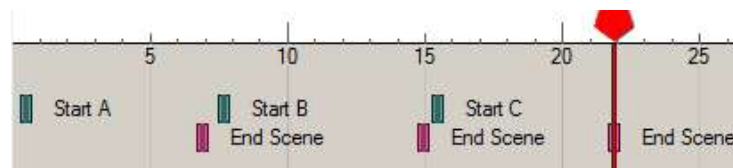
Bookmarks are also useful for synchronizing game actions. If you want to hide UI or perform an action at a specific point in the cutscene, you can do so by responding to the Cutscene Bookmark Fired event.

YOU CAN USE THE COMMANDS JUMP TO NEXT BOOKMARK (SHIFT+PG UP) AND JUMP TO PREVIOUS BOOKMARK (SHIFT+PG DOWN) TO SET THE CURSOR TO THE NEXT/PREVIOUS BOOKMARKS.

Master Sound

The Master Sound node allows you to specify the master soundtrack of a cutscene. The master sound track forces the cutscene to stay synchronized to the sound as it plays.

Properties

All objects, nodes, layers, and elements are made up of a set of properties. Many properties, such as position or start time, can be manipulated graphically (via the manipulator or timeline). However, all properties can be viewed and edited via the Property Sheet.

The Properties Pane is visible by default on the right side of the screen. If you'd rather see it as a window, you can select Properties Window from the Window menu.

The Property Sheet always lists the values for the currently selected node or element.

THE NODE AND ELEMENT OF AN OBJECT ARE TWO SEPARATE ENTITIES. THE NODE CONTAINS PROPERTIES FOR "WHAT" THE OBJECT IS WHILE THE ELEMENT CONTAINS PROPERTIES FOR "WHEN" THE OBJECT IS.

MANY PROPERTIES HAVE FRIENDLY VALUES, SUCH AS "ON" OR "OFF". YOU CAN TYPE THE FRIENDLY VALUE OR THE UNDERLYING NUMBER (0 OR 1, IN THIS CASE) TO SET THE VALUE.

Property Value Layers

Property Value Layers allow you to change property values over time. To add a Property Value Layer, right-click an object and select the property from the Property Value Layer submenu. Almost all properties can be animated with Property Value Layers.

A Property Value Layer controls that property's value over time. You can add value keys to change to another value.

Once a Property Value Layer is added, any changes to that property are sent to the current key in the layer.

You can right-click a Property Value element to change its curve type. This will affect how the property blends from one value to another.

Auto Key

Auto Key allows you to automatically add layers and keys to an object any time you make a change. To enable Auto Key, toggle the Auto Key button just to the left of the timeline ruler. A large red border will be visible around the active viewport to indicate that you are in Auto Key mode.

When Auto Key is on, any change to a property will automatically add a new Property Value Layer if one doesn't exist and add a new key at the current time. If the current time is very close to an existing key, it will modify that key instead.

BE AWARE OF WHEN AUTOKEY IS ENABLED! WHILE IT IS ON, ALL CHANGES TO A PROPERTY WILL ADD A KEY. BE SURE TO TURN AUTOKEY OFF WHEN YOU ARE FINISHED.

Curve Editor

By default, all value changes occur over a linear curve. The Curve Editor gives you full control of how one value changes to another. You can open the Curve Editor via the toolbar.

The Curve Editor displays all the keys for the selected Property Value Layers. Each control point in the curve editor represents the time and value of the corresponding key. You can move these control points in the curve editor to directly change their time and value. You can also set the values via the text boxes on the top.

IF YOU DON'T SEE YOUR CURVE, MAKE SURE IT IS SELECTED IN THE TIMELINE TREE.

You can add new points by clicking the Create Mode button in the toolbar. You can also Shift-Click and drag a key to duplicate it.
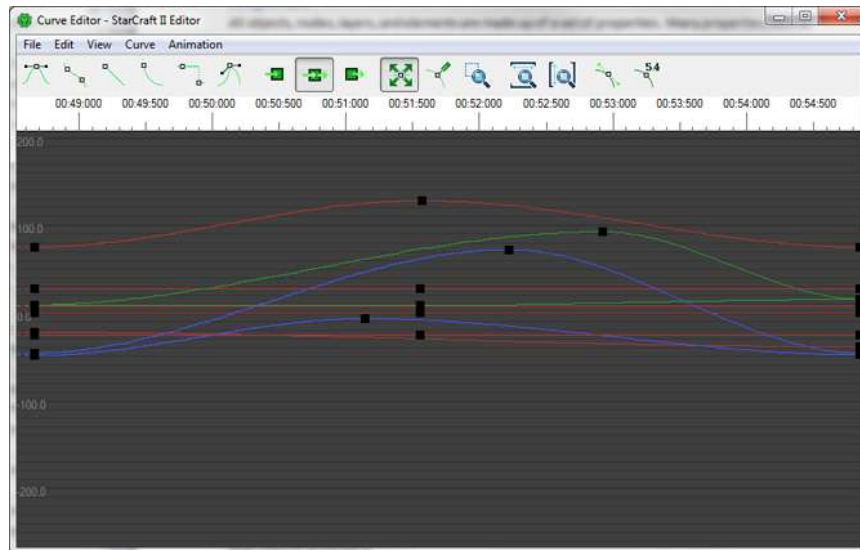
View Controls

Use the middle mouse button to drag the view and the mouse wheel to zoom in and out. Change to Custom View mode to draw a box specifying the area you want to view.

IF YOU LOSE YOUR PLACE, CLICK BOTH ZOOM EXTENTS X AND ZOOM EXTENTS Y TO ZOOM TO FIT.

You can view the tangents and values of selected points by enabling those options in the Toolbar.

Curve Types

Each control point has a curve type for both in and out. You can change these types by selecting the control point and pressing the Smooth, Linear, Slow, Step, or Custom buttons. The value will be set for either In, Both, or Out, depending on which mode you're in.

When you select a Custom curve type, tangent controllers are displayed. You can move the tangent controller to set exactly how the value curves in or out of the control point.

Lights

There are three kinds of lights you can add and animate in your scene: Omni Lights, Spot Lights, and Environment Lights.

Omni and Spot Lights

Omni and Spot Lights are light objects you can add to your scene via the Object->Add Node menu. An Omni Light will light in all directions (like a lightbulb) whereas a Spot Light will light a cone in a specific direction (like a flashlight).

Lights, like any other object, have a position and rotation, and they can also be colored. In addition, lights have a number of unique properties:

AmbientOcclusion
Enables whether or not this light is affected by Ambient Occlusion (Requires Extreme Shaders)

AttenuationStart
This is at what distance the light begins to fade away from maximum brightness. For Omni Lights (see image below), this affects the light radius. For Spot Lights, this affects the distance from the light source to the target.

<div align="center">

Low Attenuation   *High Attenuation*

</div>
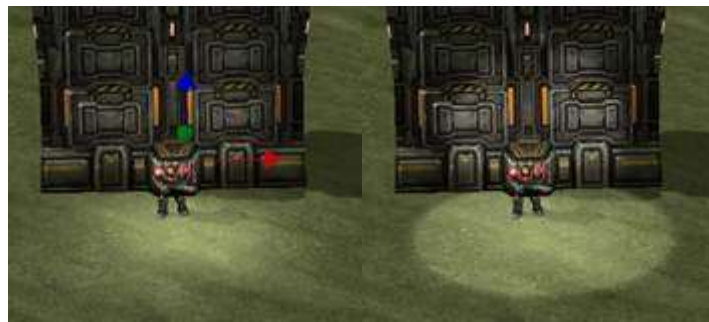
ColorMultiplier
This is essentially the intensity of the light. Zero will disable the light, values below 1 are dim, and values above 1 are extra bright.

<div align="center">

Low Color Multiply   *High Color Multiply*

</div>

Falloff
Spotlights Only. This is the distance at which the spot light is fully dimmed.

Hotspot
Spotlights Only. This is the size of the bright spot in the center of the spot light before it begins to fall off.

Range

For Omni Lights, it's the radius the light affects. For Spotlights, it's the distance from the light source to the target.

ShadowCasting

Spotlights Only. Whether or not a light casts shadows. This requires Medium lighting or higher.

Specular

Whether or not a light causes specular highlights. (Requires Ultra Lighting).

SpecularColor

The color of the specular highlights created by this light. Only has effect if Specular is enabled. (Requires Ultra Lighting).

ALL LIGHT PROPERTIES CAN BE ANIMATED, SO HAVE FUN WITH THE LIGHTS!

Environment Lights

Environment Lights control the three directional lights in your scene (Key, Fill, and Back) as well as the HDR and Colorization options of the scene. These are the exact same lights you will find in the Lighting Window.

Like cameras, only one Environment Light may be active at a time, so the Director controls this with an Active Light Node (See Above).

You can use an existing light from data, or you can add a new Environment Light Node to your scene via the Object->Add Node menu.

AN ENVIRONMENT LIGHT NODE DOES NOT HAVE AN EFFECT ON THE SCENE UNLESS IT IS ACTIVE.

Environment Lights are not objects in the scene – they do not have a position or lifetime. They act like Fog in the sense that they just exist.

Once added, you can edit any of the 80+ properties via the Property Sheet, most of which can be animated. However, the easiest way to edit them is with the Lighting Window. You can access the Lighting Window under the Window->Lighting menu.
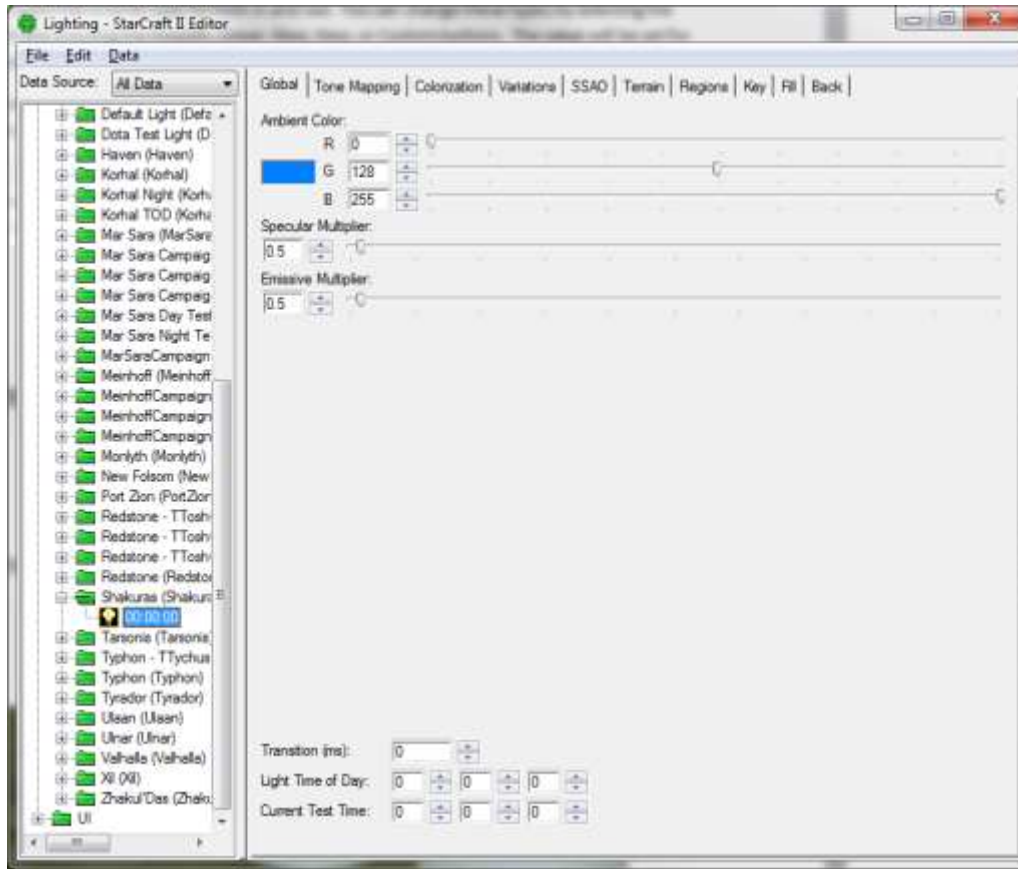
With the Lighting Window open, you can select an Environment Node in your cutscene. That will update the Lighting Window and allow you to edit it. When you are happy with your changes, you can then select Data->Set Cutscene Light to send the changes to all selected Environment Lights. If autokey is enabled, the values will be sent as new keys.

MAKE SURE YOU SAVE YOUR CHANGES FROM THE LIGHTING WINDOW TO YOUR ENVIRONMENT LIGHT NODE BY SETTING THE CUTSCENE LIGHT! ALTHOUGH THE VIEWPORT WILL UPDATE WHILE EDITING THE LIGHT, THE VALUES ARE NOT SAVED UNTIL YOU DO SO.

REMEMBER, WHILE THE LIGHTING WINDOW IS OPEN, THAT CONTROLS THE LIGHTING OF YOUR SCENE. YOU WILL NEED TO CLOSE THE LIGHTING WINDOW IN ORDER FOR YOUR ACTIVE LIGHT NODE TO CONTROL THE SCENE AGAIN. ALSO, MAKE SURE YOUR LIGHTING MODE IS SET TO "DEFAULT LIGHTING" UNDER RENDER->LIGHTING.

Sounds

Sounds are added through the Sounds tab on the Library. Adding a sound will add the sound object to your scene and the element at the current time.

Sounds with variations choose a random variation when they are added, but they will always play the same variation each time the cutscene is played. You can change the variation in the Property Sheet.

Sounds also contain Volume and Pitch properties. Volume can be animated like any property, but Pitch cannot.

REMEMBER THAT 3D SOUNDS HAVE A POSITION. YOU CAN MOVE THE POSITION OF A SOUND WITH THE MANIPULATOR LIKE ANY OTHER OBJECT. IF YOU CAN'T HEAR A SOUND, LIKELY YOUR CAMERA IS TOO FAR AWAY FROM THE SOUND.

Text

Text Nodes allow you to add text to the world. These text objects have a position, like all objects, but they are always facing the camera and have a constant size regardless of how far the camera is. They have all the properties of standard objects, and they can be animated, attached, or placed on a path.

You can add special dynamic tags to text nodes to auto-replace the text. Currently the only two are:

- (frame) - Displays the current frame
- (time) - Displays the current time

Case is not sensitive, but the parentheses must be included.

You can also use any text tags available to set the color, add an image, or do anything else you can typically do with text.

Conversations

Conversation Layers specify dialogue that your characters will speak. To begin, add a Conversation Layer via an actor's Context Menu.

While a Conversation Layer is selected, all sounds added to your scene will be interpreted as dialogue and add a block to that Conversation Layer. When the block is hit, the sound will play and facial animation and subtitles will trigger if found.

A CONVERSATION LAYER MUST BE SELECTED IN ORDER TO ADD A NEW CONVERSATION BLOCK. OTHERWISE, THE SOUND WILL BE INTERPRETED AS A GENERAL SOUND OBJECT.

Conversation Driver

You can add a Conversation Driver node to the Director by adding a Conversation Object from the library when the Director is selected. A Conversation Driver node specifies which region of your cutscene belongs to which conversation line.

To add a line, right-click the Conversation Driver node and select Add Line. This opens the Conversation Import Window (see below).

When a conversation is set up to drive a cutscene (via the Data Editor), that cutscene is automatically played in the game. The conversation engine in the game will tell the Conversation Driver node to jump to the active line as the conversation progresses. When that line is complete, the conversation engine is notified, it selects the next line, then jumps the cutscene to that line.

YOUR CONVERSATION LINES IN THE CUTSCENE NEED NOT BE IN THE SAME ORDER AS THEY PLAY BACK. WHEN LINES ARE IN THE CORRECT ORDER, HOWEVER, THE CUTSCENE WILL NOT JUMP TO THE NEXT LINE, BUT INSTEAD IT JUST CONTINUES PLAYING. FOR THIS REASON (AND TO AVOID CONFUSION WHEN EDITING), IT'S BEST TO KEEP THEM IN ORDER. CHANGING THE ORDER OF THE LINES IN DATA WILL NOT REQUIRE YOU TO REBUILD YOUR CUTSCENE, THOUGH.

Import Conversation

Adding lines to the Conversation Driver will open the Conversation Import Window. This lists all lines in the conversation data for the conversation the driver is linked to. Select the lines you want to add then click Import to add them to your scene.

NEW LINES ARE ADDED IN THE ORDER THEY APPEAR IN THE CUTSCENE.

When adding lines to your driver, the importer will attempt to construct the scene for you. Added lines perform the following tasks:

- Adds the line to the Conversation Driver for the duration of the sound asset.
- If it finds an actor with the appropriate Speaker Tag property set, it adds the conversation block and animation for that line.
- If it finds a camera with the appropriate name, it sets the active camera to that camera for the duration of the line.
- Sets up all linking.
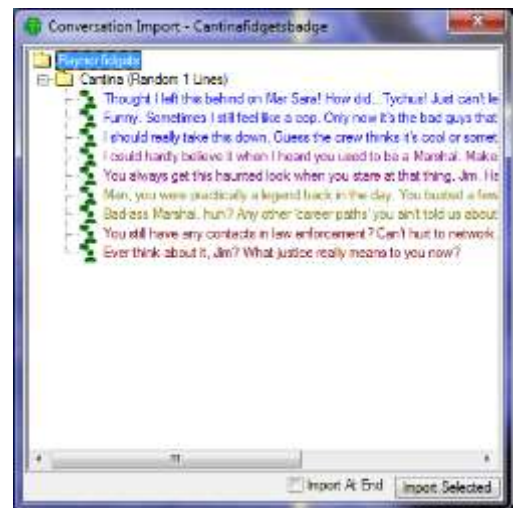
The created scene should be equivalent to what you would get in the game. This is meant as a starting point -- you can then edit the scene in any way.

BECAUSE CONVERSATIONS ARE SYNCHRONOUS AND CUTSCENES ARE ASYNCHRONOUS, THERE CAN BE A SMALL AMOUNT OF LAG DURING CONVERSATION PLAYBACK. TRY TO AVOID HAVING KEY MOMENTS OCCURRING WITHIN THE LAST 100 MS OF A LINE.

Attachments

You can attach any object to any other object, including attachments points on models. To do this, right-click the object and select Attach To. This will list all objects and their attachment points, if any.

When you attach an object, an element is added to the timeline. The object is only attached during the duration of the element.

You can specify a position and rotation offset on the attachment element. You can also specify whether or not you want to inherit scale and visibility from the host object.

THE SYSTEM AUTOMATICALLY PREVENTS CIRCULAR ATTACHMENTS. IF YOU DO NOT SEE A MODEL LISTED, IT IS BECAUSE THE MODEL EITHER HAS NO ATTACHMENT POINTS OR IT WOULD CAUSE A CIRCULAR ATTACHMENT. DO NOT FORCE CIRCULAR ATTACHMENTS BY EDITING THE XML FILE – IT'S KIND OF LIKE CROSSING THE STREAMS.

MODELS THAT ARE ADDED VIA THE FILES TAB DO NOT HAVE ALL MODEL DATA LOADED. BECAUSE OF THIS, THEY ARE FORCED TO INHERIT SCALE AND VISIBILITY FROM THEIR HOST, AND OFFSETS DO NOT FUNCTION.

Look At

Look At allows you to have a Story Mode character with the proper data to look toward any object or attachment point. It's useful to cause a character to look in any direction and can also be used to simulate head bobbing, nodding, or shaking.

Look At is set up similarly to attachments. Simply right-click the actor you want to do the looking, choose Look At, and choose the target. While the Look At Element is active, the character's gaze will always follow that object. You can animate the target however you wish, and the looker will follow.

You can change the type of Look At by right-clicking the Look At element. Types include the speed at which to blend into the Look At and how strongly the character looks in that direction.

Pathing

You can add a path node via the Object menu. The path node defines a path that any object can follow.
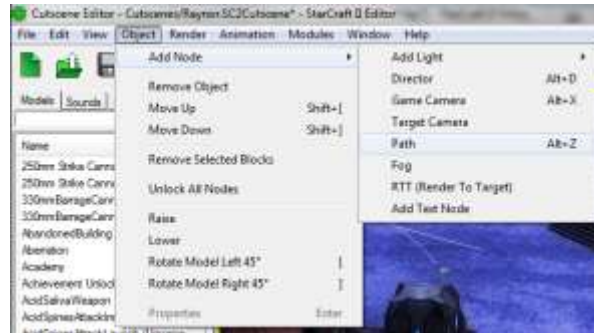
With the Path Node selected, change your brush mode to Create (the right button below):

In this mode, clicking anywhere in the scene will add a path marker there. Each path marker defines the next point in the path. You can change the order of path markers via the timeline tree on the bottom left.

If you change to Selection Mode, you can click a Path Marker to select it and move it with the translate manipulator.

After creating your path, you can tell an object to follow the path by adding a Follow Path node to that object. To define when to follow which path, add a Follow Path block.

While the block is active, the object will follow the path. The movement speed, by default, is determined by the current animation. For example, the Marine will follow the path so long as he's playing a Walk animation. If he's playing Stand, he won't progress down the path. All animation blocks have a Movement Speed property. You can change this value via the Property Sheet.

You can change the In and Out Tangents of our path markers to modify the shape of the curve.

Follow Terrain

By default, objects follow the path exactly as defined. You can force them to snap to terrain by setting the Blend to Terrain property to 1.0. When that is enabled, the object's height is determined by the terrain, not the path. Follow Terrain is also respected for non-path movement. That value can be anywhere between 0 and 1 to smoothly blend to/from full terrain snapping.

Always Point Up

By default, objects rotate as they move up and down a path. If you want the object to always point up, set the property Always Point Up on the Follow Path block.

Active Shot

It is often necessary to show or hide objects only when a specific camera is active. For example, if you have custom lighting set up for each camera angle or if an object is in the way of a specific camera, you can make it so that these objects automatically show/hide based on the current shot.

To use this feature, right-click the object that you want to tie to a shot and select "Active For Shot…". You can then check on any camera you want the object to be active for. You can also select Current Active Shot to enable the object for whichever camera is currently active.

While those cameras are active, the object will be visible. For all other cameras, the object will be invisible. You'll also see this in the timeline – the blocks will be grey during shots they are not active for.

You can copy and paste the active shot setup from one object to another to easily transfer that data to other objects.

Filtering

You can add a filter to objects so that they are only active under certain conditions. For example, if you want a green light to appear when the player wins or a red light to appear when the player loses, you can accomplish this with filtering.

To setup the example above, add both lights to your scene. You can then set the filter property on those nodes to "red" and "green". Normally, both lights will be visible, but if you set a filter via triggers, only nodes with filters that match the current filter will be visible. In this way, when you play back the cutscene, you can set the filter (per player) to match the game condition.

If you want to see what your scene looks like under different filters, you can set the Filter Test property on the Director. That property is not saved – it is only used to preview what your scene will look like with a given filter.

Fog

You can add and animate fog in the scene by adding a fog node (Object->Add Fog Node). Once added, you can set the properties of fog or animate them like any other object.

Render To Texture

Render to Texture allows you to render the view of a camera onto a texture. This is useful for things such as television screens, mirrors, and other similar objects.

RENDER TO TEXTURE ONLY WORKS WHEN "CAMPAIGN MODE" RENDERING IS ENABLED. IN THE CUTSCENE EDITOR, THIS IS DONE VIA VIEW->CAMPAIGN MODE. IN THE GAME, YOU NEED TO USE THE TRIGGER "ENABLE STORY MODE".

An RTT Node specifies which camera controls which channel. There are seven different channels that can be controlled, and the material on the art is generally set to a specific channel. You can change which channel the node controls via the context menu.

Once the channel is set, you can add a block for when a camera is bound to that channel. While that block is active, the corresponding camera will render its view onto the node's channel, affecting any correctly setup art. This may require a bit of experimentation when you first start.

CURRENTLY ONLY CAMERAS FOUND INSIDE MODELS CAN BE USED FOR RTT (I.E. NOT CAMERA NODES). THERE ARE MODELS AVAILABLE THAT ARE NOTHING BUT A SINGLE CAMERA.

Linking Timeline Elements

Elements can be linked to one another to maintain a time relationship. This is useful if you want to keep a fixed time distance between elements. This relationship is maintained even if the asset changes due to localization or being changed.

Adding Links

To link objects, change the timeline to Linking Mode. You can then drag the start or end of any element to the start or end of another element. This causes the first element to be locked to the second element.

In the example above, if you move or resize the bookmark, both the end scene marker and the animation will move to maintain the fixed distance.

Most importantly, if they were linked to a dialogue line, and that line has a different duration in another language, that fixed distance will still be maintained. You can set up an entire chain of links for a complicated scene to make sure all camera cuts, animations, dialogue lines, and other timed events are properly maintained when localized durations change.

Linked objects draw with a special end cap. To view the linking lines, enable the option under the View menu.

YOU CAN LINK BOTH THE START AND END OF A BLOCK SEPARATELY. THIS WILL CAUSE THE BLOCK TO STRETCH OR SHRINK ACCORDINGLY.

IT IS GOOD PRACTICE TO HOLD OFF ON COMPLEX LINKING UNTIL THE SCENE IS MOSTLY COMPLETE. ONCE LINKS ARE ESTABLISHED, IT MAY BE DIFFICULT TO MOVE BLOCKS IF IT WOULD CAUSE ANY BLOCK IN THE CHAIN TO OVERLAP ANOTHER ONE.

Removing Links

You can remove a link by selecting the element and pressing the Remove Link button next to Link Mode.

Advanced Timeline Functions

The Timeline offers a number of advanced features for editing. Most of these features work off the selection in the timeline. You can shift-click on the ruler to select a portion of time. You can also set the In Marker or Out Marker at the current time using hotkeys I and O.

By itself, the selection doesn't change anything. If you want to keep the cursor locked inside the selection, you can Toggle Loop In Out. The cursor will then loop back to the start of the selection when it reaches the end. You can also jump to the start or end of your selection with hotkeys Alt+I and Alt+O.

Splitting Blocks

Blocks can be split to allow you to move them around in pieces or remove portions of them. To split a block at the selected time, select the block and choose Split Selected Blocks (Ctrl+K). The block will be split along the time cursor (vertical red line).
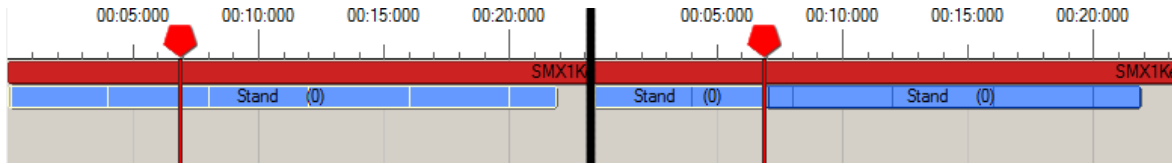
Split All Blocks (Ctrl+Shift+K), as you'd expect, will split all blocks at the current time. This includes blocks that are not currently visible.

MOST BLOCK TYPES, SUCH AS ANIMATION AND SOUND BLOCKS, WILL MODIFY THE START OFFSET OF THE SECOND BLOCK SO THAT SPLITTING IT HAS NO EFFECT ON THE PLAYBACK OF THE CUTSCENE.

OBJECT LIFETIME BLOCKS CANNOT BE SPLIT SINCE THERE CANNOT BE MORE THAN ONE BLOCK FOR A GIVEN OBJECT.

Non-Linear Editing

You can also use the selection area to add or remove time to your cutscene. With a time region selected, you can Insert Time (=) to add a new block of empty time in that region. All blocks previously in the region are spliced and pushed out to make room for the new area.
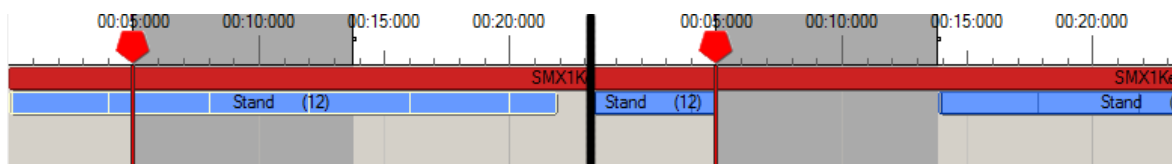
Similarly, you can Remove Time (-), which splices all blocks in the selected region, removes them, and compresses everything that came after the selection.

Importing

You can import objects from another cutscene by right-clicking the source cutscene and choosing Import. Select the objects to import and press the Import Button. This will add a copy of that object to your scene.

If you want to re-import an object that has changed, check Overwrite. If that object was previously imported, it will be replaced with the new version.
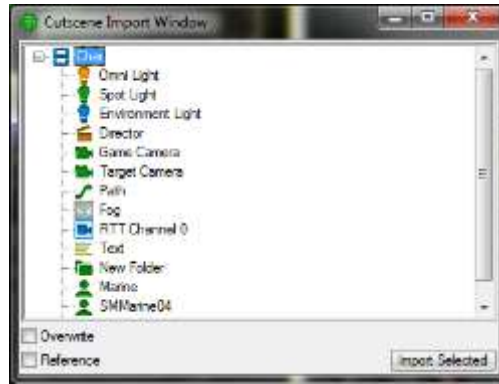
References

You can also import an object as a reference. Instead of making a copy of that object, it simply imports a reference to the object in the other file. If that object changes in the source file, it will also change in your scene.

In this way, you could create a cutscene file that is nothing but a library of useful cameras that can be used in other files. If you change the camera in the source file, you won't need to make any changes to all the places it's used.

YOU CANNOT MAKE CHANGES TO A NODE IMPORTED AS REFERENCE.

Exporting

You can export your cutscene via the File Menu to create a .SC2Cutscene file. You can then open it again via File->Open Cutscene. If you want to add it to the current map, select Yes at the prompt. Otherwise, it will be considered a loose file and will not be saved with your map.

Map Import

You can import the terrain and placed objects of the current open map by clicking the Import Terrain button on the toolbar. This looks at your preferences set under File->Map Import, and imports all the checked components of your map.

You cannot edit the terrain in the Cutscene Editor, and you will need to re-import if you make changes.
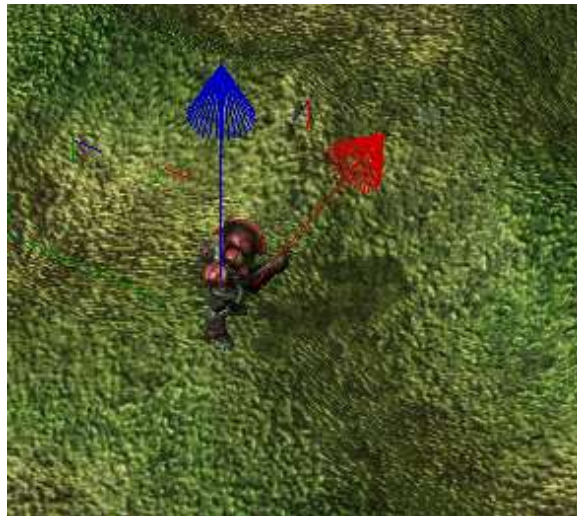
Appendix – Property Reference

Commandable

Basic type that all nodes and elements derive from.

ID	The unique ID of the node or element.
Parent ID	The ID of the parent node or element
Reference File	The cutscene an imported object is referencing.
Reference GUID	The ID an imported object is referencing.

Node

The "what" of a scene. These are objects and other things that perform an action.

Enabled	Enables or disables the node.
Filter	Allows you to conditionally enable the node based on the current filter.
Guide	When enabled, the node will not be enabled during playback in game.
Locked	The node cannot be modified or selected in the viewport.
Name	The display name of the node.
Visible	The visibility state of the node. The node is still enabled, but it is not rendered.

Element

The "when" of a scene. They dictate when actions take place or objects exist.

Duration	The amount of time this element persists, in milliseconds.
End Link Distance	The distance in time between the end link and its target.
End Link to Point	The location within the element the end is linked to (start or end)
End Linked to GUID	The GUID of the element the end is linked to.
Start Link Distance	The distance in time between the start link and its target.
Start Link to Point	The location within the element the start is linked to (start or end)
Start Linked to GUID	The GUID of the element the end is linked to.

Start Time	The time this element starts

Object

Something that exists in the scene, including models, sounds, and cameras.

Blend to Terrain	When set to 1.0, the object will be snapped to the current terrain height. The value can be anywhere between 0 and 1 to blend the snapping.
Finder Tag	A tag set so that external actor systems can look up the object's actor.
Fog Visibility	Determines if the object is visible under Fog of War: • Hidden: The object is not visible under Fog of War. • Snapshot: A snapshot is taken when the object enters Fog of War. • Dimmed: The object is dimmed under Fog ofWar. • Visibile: The object is fully visible under Fog of War.
Height Offset	A distance to offset the object's height. This is similar to the object's Position Z.
Movesped	The speed at which an object will follow a path if "Use Object Movespeed" is enabled on a Follow Path Node.
Position	Position X of the object, relative to the cutscene position.
Rotation	Rotation X (pitch) of the object.
Scale	Scale X of the object

Actor Node

An animatable model in your scene.

Actor Alias	The alias of an actor to mimic. When this actor is created, it will look up an actor in the world with the set alias. If it finds one, it will create a new actor identically matching that actor and use that in the cutscene instead of the one defined.
Editor Model	This is the model to use in the editor only. It can be useful if you want something to look one way in the game and another way in the editor.
Enable Physics	When enabled, the model is used for physics.
FXA Override	Specifies a different FXA Facial Animation file to load on this model.
Model Link	The model data entry to use for this object.
Model Path	The model path to an .m3 file to use for this object.
Opacity	The Opacity of the model. 1.0 means fully opaque and 0.0 means fully transparent.
Shadow Box	When enabled, the shadow box of this model is used. There can only be one model with a shadow box enabled in your scene. The shadow box specifies a custom area that shadows are rendered in.
Speaker Tag	The Speaker Tag of a model is used during conversation import. It must match the speaker in a conversation for automatic importing to work.
Texture Quality	An override value for texture quality on this model. Legal values are Default, Low, Medium, High, and Ultra.
Tint Color	A tint color to apply to the model.
Unit Link	(Unsupported) The unit data entry to use for this object.
Use Anim Movespeed	When enabled, animation movement speed is used for following paths.

	When disabled, the object movement speed is used.
Variation	The variation number to use on this model. Variations are randomly chosen when a model is added to a scene, but it can be changed in this property.
Walk	Automatically move forward based on animation movement speed.
Team Color	The team color to apply to this model. Diffuse properties are used for standard materials (a marine's armor) and emissive properties are used for glowing materials (a zealot's blade).

Animation Layer

A node containing a list of animation events.

Animation Element

An element that determines when and how to play a specific animation.

Animation	The name of the animation to play.
Animation ID	(Read Only) The animation ID of this animation. You can use this ID to refer to this animation in Actor Messages.
Blend In Time	The amount of time to blend into this animation.
Blend Out Time	The amount of time to blend out of this animation.
Looping	(Read Only) Whether or not the animation is a looping animation.
Movespeed	The speed to follow a path or walk while this animation is playing.
Original Duration	(Read Only) The duration of the animation in the asset.
Original Movement Speed	(Read Only) The original value of movement speed in the asset.
Play Forever	When enabled, looping animations continue and non-looping animations hold their final pose after the original duration.
Play Once	When enabled, animations are cleared after their original duration.
Priority	(Read Only) The priority of the animation in the anim stack.
Right-Aligned	When enabled, the animation block is aligned to the right such that the end of the block corresponds to the end of the animation.
Start Offset	The time within the animation to begin at the start of the element.
Time Scale	A scale to apply to the playback speed of an animation.

Look At Node

A node containing a list of Look At elements.

Look At Element

An element that directs an actor model to "Look At" another object. The model must be properly set up for this element to take effect.

Attachment	The attachment point the object is looking at.
Ignore Eyes	Do not apply this Look At to the eye bones. This is useful if you want to use separate Look Ats for the head and eyes.
Target GUID	(Read Only) The GUID of the object to look at.
Type	The Look At style type.

Conversation Node
A node containing a list of conversation elements.

Conversation Element
A single line of dialogue to be spoken by an actor model.

Conversation Line	The Line ID to use for this conversation element.
Conversation Link	The conversation data entry to use for this conversation element. Conversation elements can be played by Sound Link or by Conversation entry.
Duration Offset	The offset between the original duration and the actual duration. This is used when automatically adjusting scenes due to localization.
Facial Anim	The facial animation entry to play for this line.
Facial Group	The facial animation group the animation exists in.
Sound Link	The sound link to use for this conversation element. Conversation elements can be played by Sound Link or by Conversation entry.
Start Offset	The start time within the sound to begin playing.
Variation	The variation of the sound to play.
Volume	The volume scale to apply to the sound file.

Follow Path Node
A node containing a list of Follow Path elements.

Follow Path Element
An element that tells an actor model to follow a path in your scene.

Always Point Up	Always orient the object following the path such that it points up as opposed to following the slope of the path.
Path GUID	(Read Only) The GUID of the path object to follow.
Path Rotation Offset	A rotation offset to apply when following the path.

Attachment Node
A node containing a list of attachment elements.

Attachment Element
An element that tells an object to attach to another object. When attached, the object will follow the parent wherever it goes.

Attachment GUID	The object to attach to.
Attach Point	The attachment point to attach to.
Inherit Scale	Automatically inherit the scale of the parent object.
Inherit Visibility	Automatically inherit the visibility of the parent object.
Offset	The amount to offset the position by when attaching.
Rotation	The amount to offset the rotation by when attaching.

Property Value Node
A node that controls how a specific property changes over time.

Property	(Read Only) The property this node is controlling.

Property Value Element

An element that specifies when a property value should change and how that change occurs over time.

Value	The value to change the property to when this element is passed.
In Tangent Data	The tangent of the in point when curving this element.
In Tangent Type	The curve in style of this element.
Out Tangent Data	The tangent of the out point when curving this element.
Out Tangent Type	The curve out style of this element.

Sound Node

A sound object in your scene. The lifetime of the sound determines when it is played.

Actor Alias	The alias of an actor to mimic. When this actor is created, it will look up an actor in the world with the set alias. If it finds one, it will create a new actor identically matching that actor and use that in the cutscene instead of the one defined.
Model	(Read Only) The sound type – 2D, 3D Relative or 3D World.
Pitch	A pitch scale to apply to the sound. Values higher than 1.0 are high-pitched and cause the sound to speed up. Values between 0 and 1 are low-pitched cause the sound to slow down.
Sound Link	The sound data entry to use for this sound node.
Start Offset	The starting point within the sound to begin from, in milliseconds.
Variation	The variation number to use on this sound. Variations are randomly chosen when a sound is added to a scene, but it can be changed in this property.
Volume	A multiplier on the volume of this sound.

Camera

A camera object in your scene. You can make a camera active through the Director's Active Camera node.

Depth of Field	The amount of blur to apply due to depth of field.
Distance	The distance from the target of the camera to the eye of the camera.
Eye Position	The position of the camera's eye.
Falloff End	The distance from the start of falloff until depth of field is fully blurred.
Falloff Start	The distance from the focal point until depth of field begins to blur.
Far Clip	The distance at which far away objects are no longer visible.
Field of Field	The angle of the lens.
Focal Depth	The distance at which the camera is focused.
Height Offset	An offset of the camera's Z height
Near Clip	The distance at which near objects become visible.
Pitch	The vertical angle of the camera.
Roll	The tilt of the camera.
Shadow Clip	The distance at which shadows are no longer visible.
Target Position	The position of the target of the camera.

Vertical FOV	When enabled, measure Field of View as a vertical value.
Yaw	The facing angle of the camera.

Director Node
A special node that controls scene-level properties in your cutscene.

Active Camera Node
A node containing a list of active camera elements that control when to cut to specific cameras.

Active Camera Element
A single camera cut event.

Camera Index	The index of the camera within the camera object to cut to.
Object ID	The ID of the camera object to cut to.

Active Light Node
A node containing a list of active light elements that control when to change the main environment light.

Maximum Light Level	The maximum graphics quality level at which this node functions. Allows you to specify different lighting depending on graphics options. Legal values are None, Low, Medium, High, and Ultra.
Minimum Light Level	The minimum graphics quality level at which this node functions. Allows you to specify different lighting depending on graphics options. Legal values are None, Low, Medium, High, and Ultra.

Active Light Element
A single light change event.

Blend Time	The amount of time to blend into this light change.
Light GUID	The GUID of the Environment Light object to change to. Active Light elements can change to Environment Light Objects or entries in data.
Light ID	The light data entry to change to. Active Light elements can change to Environment Light Objects or entries in data.
Light Index	The index of the light within the data entry to change to.

Fade Node
A node that controls when to fade in and out of your cutscene.

Fade Element
An element that specifies when and how to fade your cutscene.

Amount - Faded	The opacity level when the fade element is fully faded.
Amount – Unfaded	The opacity level when the fade element is fully unfaded.
Color	The color of the fade.
Fade In	When true, specifies the fade element goes from Faded to Unfaded. When false, specifies the fade element goes from Unfaded to Faded.

Bookmark Node

A node containing a list of bookmarks.

Bookmark Element

A generic time event that can be referenced by other systems.

Bookmark Name	The name of this bookmark. Naming a bookmark allows you to reference it elsewhere.
Jump to Bookmark When Hit	Allows you to specify a bookmark to jump to when this bookmark is passed. Useful when you want your cutscene to loop.
Pause When Hit	When enabled, the cutscene will automatically pause when this bookmark is hit.

Path Node

A path object in your scene. The path is defined by a series of Path Marker Nodes

Path Marker Node

A single point in a path.

In Tangent Type	The curve type when curving into this path marker. Legal values are Fast, Flat, Linear, Slow, Smooth, Step, and Auto.
Out Tangent Type	The curve type when curving out of this path marker. Legal values are Fast, Flat, Linear, Slow, Smooth, Step, and Auto.

Light

An object that emits light in your scene. It can be either a Spot Light or Omni Light.

Ambient Occlusion	When enabled, this light contributes to Ambient Occlusion.
Attenuation Far	The distance at which the light is fully faded out.
Attenuation Near	The distance at which the light begins to fade out.
Color	The color of the light.
Color Multiplier	The intensity of the light.
Eye Position	The position of the "eye" or source of the light.
Falloff	(Spot) The distance at which the spotlight is fully dimmed.
Hotspot	(Spot) The radius of the bright glowing center of a spotlight.
Light Opaque Objects	When enabled, this light affects opaque objects.
Light Transparent Obects	When enabled, this light affects transparent objects. Transparent lighting is expensive, so use sparingly.
Minimum Light Level	The minimum graphics option level at which this light appears. Legal values are None, Low, Medium, High, Ultra.
Shadow Casting	When enabled, this light casts shadows.
Specular	When enabled, this light contributes to specular lighting. Specular lighting is the bright points you see on shiny materials.
Specular Color	The color of specular highlights this light creates.
Target Position	(Spot Only) The target position of the spot light.

Fog

An object that controls the fog of your scene.

Color	The color of the fog
Density	The thickness of the fog
Falloff	The distance at which fog blends from invisible to fully visible
Start Height	The height at which fog begins

Text

An object that draws text in the world.

Color	The color of the text
Text	The text value. Any valid text tags are legal here. You can also specify the value "(frame)" or "(time)" to substitute the current frame or time for the text.

RTT Node

An object that controls "Render to Texture".

RTT Channel	The channel this RTT object renders to.

RTT Element

An element that defines when a specific camera should render to a texture.

Aspect Ratio	The aspect ratio of the texture to be rendered to.
Camera Index	The camera index of the camera to render onto the texture
Object GUID	The GUID of the camera object rendering onto the texture.

Conversation Driver Node

Conversation Link	The conversation data entry associated with this driver node.

Conversation Driver Element

Alternate Line ID	An alternate Line ID this driver element is legal for.
End Buffer Time	The amount of time before the end of this driver line where we send the synchronous message saying the line is complete. Increase this value if you are experiencing issues in multiplayer games where your lines bleed into each other.
Line ID	The Line ID that this conversation driver element controls.