PANOPLY

COMICS & SPLITSCREEN FOR UNITY

Reference Manual

v1.0

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Introduction

Panoply is a code library which brings the visual language of comics to the Unity platform. Its features include:

- Multiple on-screen panels, each of which is its own camera in 3D space
- Robust, grid-based panel layout options on a timeline
- Graphical, click-and-drag layout and keyframe editing
- Smooth gesture-driven navigation from panel to panel
- Parallax effects triggered by mouse or device motion
- Works with 2D and 3D assets
- Panel artwork management and choreography
- Dynamic dialogue balloons and captions
- Configure looped and one-shot audio effects that can be triggered at each step
- Built-in support for localization using the free LeanLocalization library
- Can easily be extended to integrate with other localization libraries
- Includes PlayMaker actions for triggering events at specific steps on the timeline

Panoply has been specifically designed to provide a smooth, satisfying digital comics experience that respects the readerly qualities of the medium while opening up a wide range of creative possibilities.

What's New

Version 1.0

- Added visual keyframe editor
- Added global keyframe insert and delete
- Added ability to set artwork position locally, globally, or based on its panel
- Added ability to globally disable navigation
- Added AudioTrack component with full keyframe editing support
- Panels now automatically space themselves apart from each other on the X axis
- Captions now automatically load default skins
- Performance optimizations
- Fixed bug that caused errors when extending the global timeline
- Fixed bug that doubled the object's transform values when the Artwork component was added to it
- Fixed a number of warnings and errors

Importing the Panoply Package

In order to use Panoply in your project, first you'll need to import its package, either by double-clicking on it or by using the Import Package > Custom Package… option in the Assets menu in Unity.

!	Always be sure to **back up your project before importing a new version of the package**—this is good practice before upgrading any component that plays a major role in your project.

QuickStart: Your First Panel

Here's a quick tutorial that will get you up and running with your first Panoply panel. The content? A cube. The action? Over the course of four steps, the panel will move on screen and then off again. Ready?

1. Create a new scene.

By default, Unity adds a camera to the scene. Go ahead and delete this camera.

2. Add the Panoply prefab to the scene.

Panoply needs this prefab in your scene to work its magic. You'll find it in Panoply > Prefabs.

3. Add a cube.

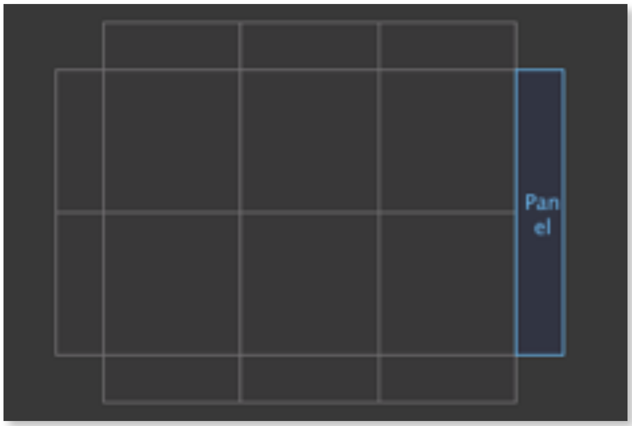
Position the cube at 50, 0, 5 and set its rotation to 30, 150, 0. Now we have something to look at.

4. Add a directional light.

Set the light's rotation to 50, 330, 0 to add some shading to the cube. If you're using Unity 5, you can skip this step, as new scenes include a directional light by default.

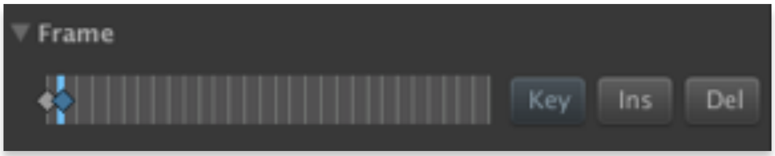
5. Add the Panel prefab to your scene and select it.

This creates a new panel. Notice the layout grid that appears in the Inspector when the panel is selected. Click and drag within the grid to set the panel's position to match the image below:

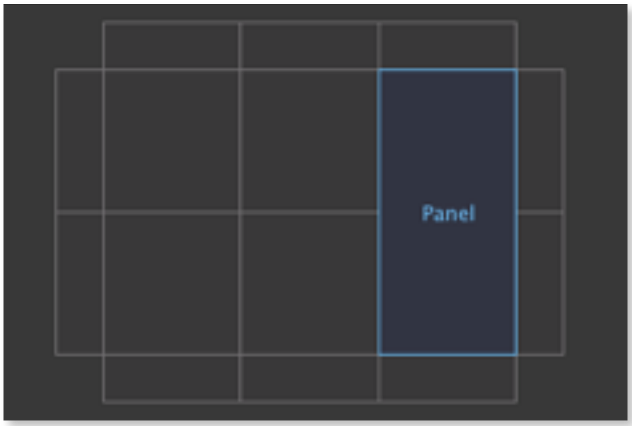


6. Drag the Global timeline slider to step 1.

Time to add a new keyframe at step one. Click the Key button next to the timeline above the grid to set a keyframe:

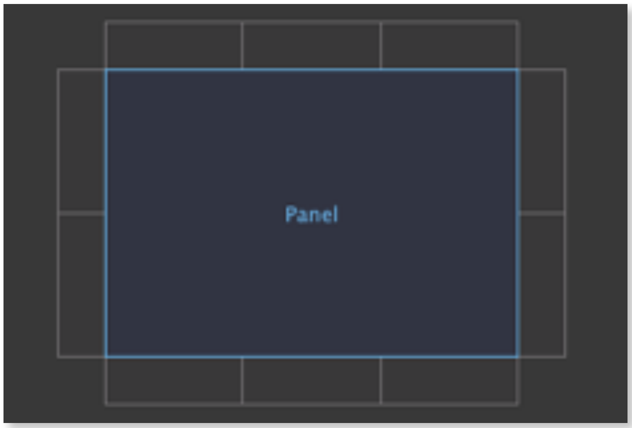


and then click and drag in the grid to set the panel's position as follows:



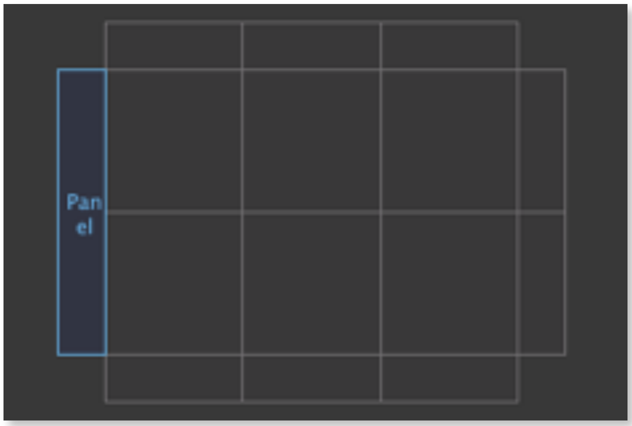
7. Drag the Global timeline slider to step 2.

Click the Key button again to set a keyframe at step 2, and then click and drag in the grid to set the panel's position as follows:



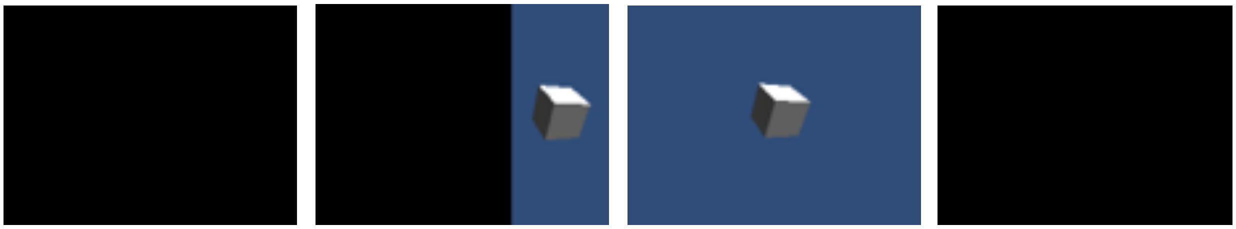
8. Drag the Global timeline slider to step 3.

Click the Key button again to set a keyframe at step 3, and then click and drag in the grid to set the panel's position as follows:



9. Play the scene.

You should see a black screen. Click and drag from right to left to advance to the next step, and your panel with the cube should slide in from the right, occupying the right third of the screen. Repeat, and the panel should expand to cover the whole screen. Advance one more time, and the panel should move offscreen to the left. The whole sequence should unfold like this:



That's it—you've created your first panel and choreographed its motion over time. Congrats!

The Creative Potential of Digital Comics

If you purchased Panoply because you're interested in making digital comics, welcome to a strange and wonderful world! You're probably itching to dive in and start making, BUT —if I can have a moment of your time—I just want to point out:

DIGITAL COMICS ARE REALLY DIFFERENT FROM PRINT COMICS!

Really. If you go into this thinking you're going to quickly spruce up your print comic with some animation, you're going to get frustrated fast. So, sit back, relax, and take a moment to unlearn all you have learned with these helpful tips…

Tip #1: There are no pages here.

Seems obvious, right? Sure, but what's less obvious is… what exactly does a comic become without pages? That leads us to Tip #2…

Tip #2: Your story is a series of steps.

A Panoply scene is a timeline made up of many discrete steps, and with each new step, something changes. Maybe a new panel appears. Maybe an existing panel moves. Maybe a character's expression changes, maybe the lighting shifts, maybe a sound plays, maybe anything! Your story is the sum total of all of the changes that happen along Panoply's timeline.

Tip #3: Each panel is a camera.

This is one of the coolest things about Panoply—each panel is its own window on a fully 3D world. This means that anything you can point a camera at in Unity can become part of your comic, whether it's 2D, 3D, static, animated, or anything in between.

Tip #4: The reader is in control.

One of the fundamentals of Panoply is that, just like in a print comic, the reader is always in control of the pace of the action. There's no built-in way to create "cut scenes" or pre-rendered sequences that play out while the reader passively watches. Why? Because in my experience, promising readers control and then yanking it away from them every few minutes so you can show a video is bad manners! And it can prevent people from immersing themselves in your story.

I hope these tips are helpful to you. Remember: this field is wide open, and there's tons of room for experimentation and new ideas. Maybe you'll come up with some of them! Be creative, thoughtful, and bold!

(Intrigued by this line of thought? Check out my site timeframing.com, where I post all kinds of thoughts and experiments about what comics and screens do together.)

Setting up a Panel

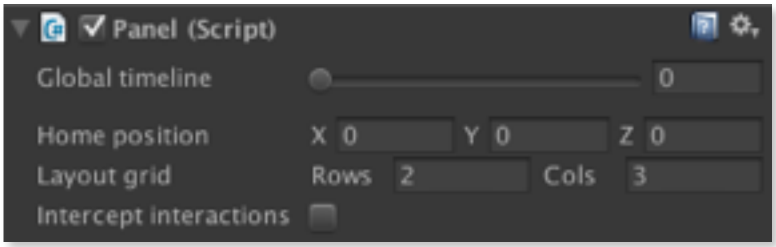
This tutorial digs deeper into the process of setting up a panel in Panoply, with explanations of the features and settings you'll encounter along the way.

1. Import your artwork.

If you're working with 2D artwork in Unity 4.3 or later, you'll generally want to import each piece of art as a Sprite, but Panoply works with any kind of asset you can point a camera at.

2. Drag the Panel prefab to the scene.

The prefab is a camera that will be used to render the panel's content. Select the prefab in the scene, and you'll see the Panel component appear in the Inspector window. The top of the Panel inspector includes some global settings, shown below.



☑ Panel (Script)

Global timeline 0

Home position X 0 Y 0 Z 0

Layout grid Rows 2 Cols 3

Intercept interactions □

Global timeline. This slider lets you preview the current state of the timeline by dragging from discrete step to discrete step. If you hold down Shift while dragging, you can preview how the smoothed transitions from step to step will look. As a shortcut, while in Play mode you can also use the left and right arrow keys to quickly move from step to step.

Home position. Since setting up a panel involves pointing the camera at artwork in Unity's world space, it's important to keep the artwork and cameras for each panel far enough apart so that one panel isn't able to "see" the artwork from another (you could also use Unity's Layers feature to prevent this). This parameter sets the default camera position for the panel. Normally you don't need to change this, as each panel you add to your scene will automatically offset itself on the X axis from the previous panel (to change the amount of this offset, see the Home Position X Offset field in the Panoply Prefab's Scene settings).

Layout grid. Comic panels are often laid out on a grid, and the Panel component follows this model to make layout easier. You can set the number of rows and columns in the grid for this panel.

Intercept interactions. Checking this box will cause touches and clicks within the panel to be ignored, instead of being used to trigger transitions from one step to the next.

This makes room for custom scripting to intercept those actions and use them to add interactivity within the panel.

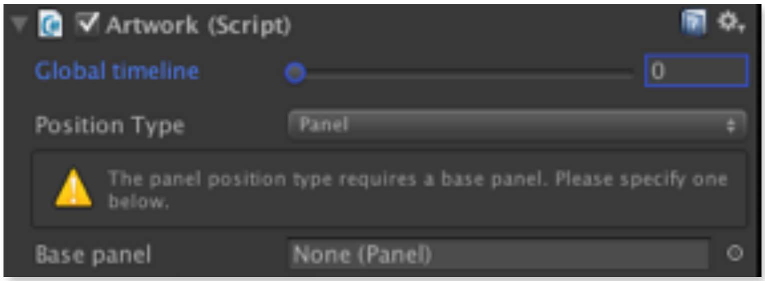
3. Add your artwork to the scene.

Position your artwork with respect to the new panel's camera as you want it to appear in the panel. Note that when working with 2D artwork, sometimes a larger layer that's further away from the camera can appear on top of a smaller layer that's closer to the camera but further away from the center of the camera's view. This is a common problem when working with 2D assets in a 3D environment, and can be solved using Unity's Sorting Layer functionality to assign the respective sprites to different layers that are drawn in the order you prefer.

4. Add the Artwork component to any 2D assets you want to arrange in depth.

One of the benefits of creating a comic in 3D space is depth. By arranging your layers on the z-axis, even very slight camera movements create a striking impression of dimension. Normally, however, moving an object further from the camera makes it appear smaller, which can become a problem with 2D artwork, as layers which are further from the camera are no longer registered properly with other layers which are closer. You could alter the scale of each layer to restore it's original apparent size, but this quickly becomes tedious.

The Artwork component takes care of this by automatically scaling up artwork according to its distance from the camera, so it remains properly registered. To use the component, drag it to the object you're working with. Select the object, and you'll see this in the inspector:



☑ Artwork (Script)

Global timeline 0

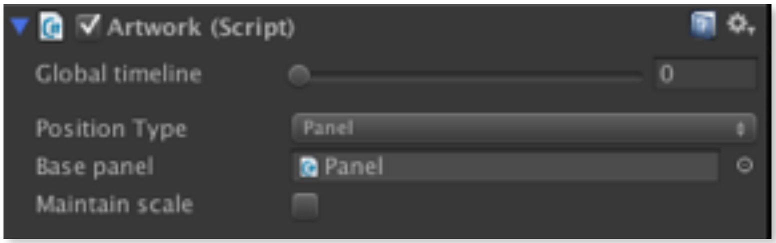
Position Type Panel

The panel position type requires a base panel. Please specify one below.

Base panel None (Panel)

Position type. By default, the Artwork component's Position Type is set to Panel, meaning it will base its position on the home position of a specific panel. This keeps the artwork aligned with the panel's camera. (Other position options include Local and Global.) Drag the panel you just created from the Hierarchy into the Base Panel field to link your artwork to the panel.

Now, the Artwork component should look something like this:



☑ Artwork (Script)

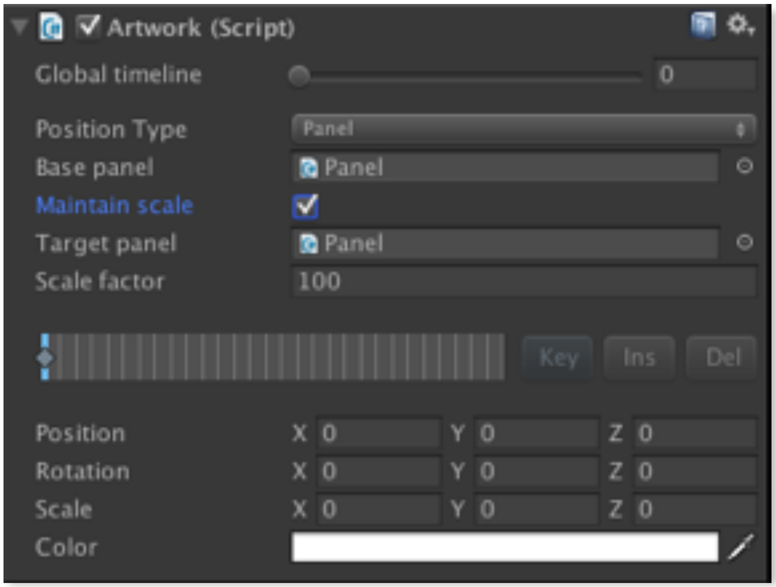
Global timeline 0

Position Type Panel

Base panel Panel

Maintain scale ☐

Maintain scale. This enables the auto-scaling. When this item is selected, additional controls appear (see below).



☑ Artwork (Script)

Global timeline 0

Position Type Panel

Base panel Panel

Maintain scale ☑

Target panel Panel

Scale factor 100

Position X 0 Y 0 Z 0

Rotation X 0 Y 0 Z 0

Scale X 0 Y 0 Z 0

Color

Target panel. Set this to the panel to be used for calculating the scale (you can drag the panel itself to this field to select it).

Scale factor. A multiplier value for the auto-scaling function, this lets you tweak the overall amount of scaling applied to the object (if your artwork appears too large or too small, you can adjust this value accordingly). Be sure to keep this value consistent across all layers in a given panel in order to keep them registered.

Keyframe timeline. Shows the location of artwork keyframes on the global timeline.

Position, Rotation, Scale, and Color. Once the Artwork component is added to a game object, these properties are managed here, and can be altered over time.

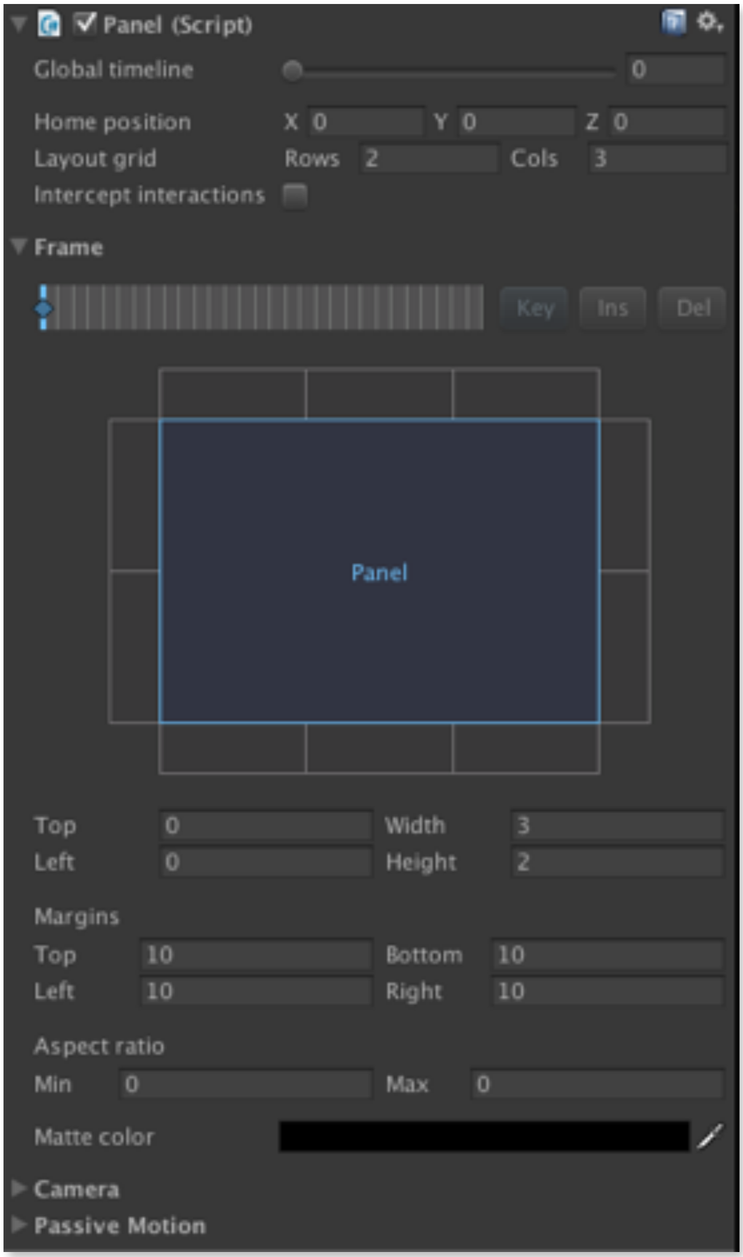
Once you have all of your artwork arranged in depth how you like it, proceed to the next step.

!

Note that these settings apply only to artwork within panels—if you want to set a whole panel to appear on top of any others you'll need to set the Depth value for that panel's camera to a higher value.

5. Open the panel's frame foldout.

Select the Panel you dragged into the scene again, and open the Frame foldout if it isn't already open. This is what you'll see:



Panel (Script)

Global timeline 0

Home position X 0 Y 0 Z 0

Layout grid Rows 2 Cols 3

Intercept interactions □

Frame

Top 0 Width 3

Left 0 Height 2

Margins

Top 10 Bottom 10

Left 10 Right 10

Aspect ratio

Min 0 Max 0

Matte color

Camera

Passive Motion

A panel's frame determines its position and size on the screen. Changing a panel's frame settings over time can cause it to move or change shape as the user proceeds from step to step.

Keyframe timeline. Enables editing of the panel's frame keyframes on the global timeline. Each keyframe is shown as a diamond on its corresponding step. You can click and drag the Global timeline slider or in the keyframe timeline itself to change the current step (see Keyframe Timeline Shortcuts for more quick editing features). Three buttons at right allow you to edit the keyframe timeline:

• The **Key** button adds a new keyframe at the current step, or removes the current keyframe if one has already been created.

• The **Ins** button inserts a step at the current timeline position. This can be done either within the frame timeline only, or across all panels, artwork, and captions in the scene.

• The **Del** button deletes a step at the current timeline position. This can be done either within the frame timeline only, or across all panels, artwork, and captions in the scene.

Layout schematic. This graphic shows the state of the layout grid in the current step on the global timeline. The selected panel is shown in blue, and all other panels are shown in gray. The center of the grid corresponds to the visible area of the screen, while the "wings" of the grid at the top, right, bottom, and left allow you to see and position the panel offscreen (this is how you create transitions in which a panel slides into view). To reposition the panel, just click and drag within the grid.

Top, Left, Width, and Height. These four values are a numerical way of specifying the panel's position in the layout grid. Top and Left set the position of the panel's top-left corner in grid units, while Width and Height set the size of the panel, also in grid units.

Margins. Contracts the frame of the panel by the specified number of pixels at its top, right, bottom, and left edges. Useful for fine-tuning layout and creating gutters.

Aspect Ratio. Enables you to specify a minimum and maximum aspect ratio for this panel that will be enforced above all other layout settings. This is useful for accommodating multiple screen sizes while still ensuring that panels don't change shape so much that they reveal the borders of your artwork. Normally, a given panel will crop its contents depending on its size—when aspect ratio constraints are set, the panel's content will be scaled to fit the panel's dimensions.

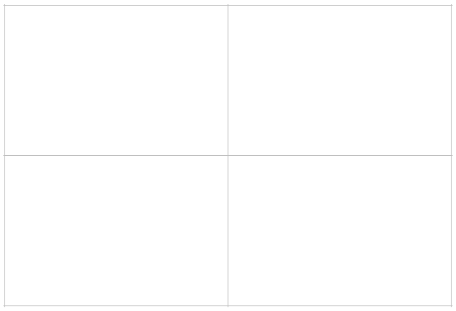
Matte Color. Set the color and opacity of a mask that covers the entire panel. Used for creating panels that appear to fade in and out from one state to the next.

6. Set up the first frame step.

Before beginning this step, make sure the **Global timeline is set to 0.**

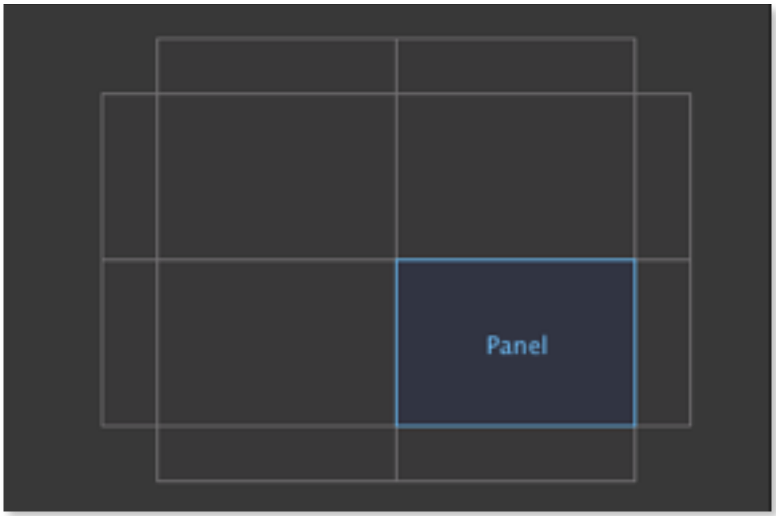
For the purposes of this tutorial, let's set up our new panel to appear in the lower-right corner, and then move and change shape to fill the left half of the screen. The first thing we need to do is to set up the panel's grid—this determines the possible positions it can occupy.

Since our two panel positions depend on the screen being divided into quadrants, we can **set the Grid Rows and Grid Cols values to 2 and 2, respectively.** This divides the screen into halves both vertically and horizontally, like so:



By setting Grid Rows and Grid Cols to 2 and 2, we've created an invisible grid that splits the screen into quadrants. We can then use the Layout Schematic to position the panel on this grid.

To set up the initial state of our panel, click and drag in the Layout Schematic to set up our panel's position and dimensions as follows:

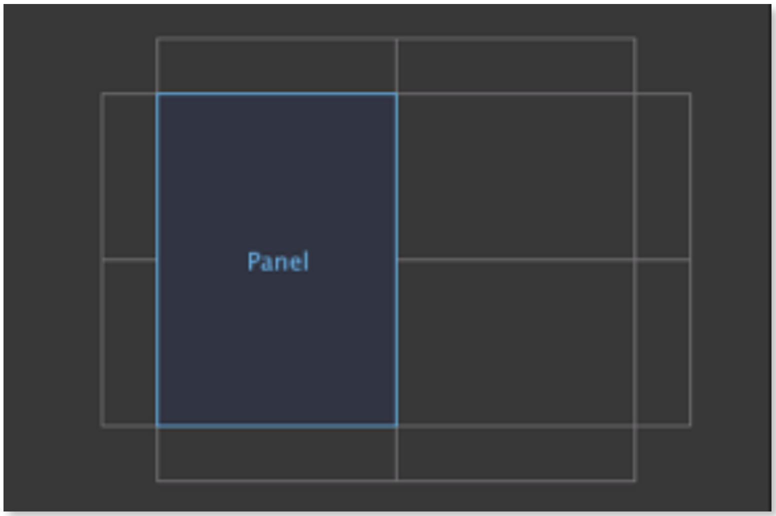


7. Set up the second frame step.

Drag the Global timeline to 1.

To create a new frame key for this step, **click the Key button.**

To move the panel to occupy the left half of the screen, click and drag in the Layout Schematic to set up our panel's position and dimensions as follows:



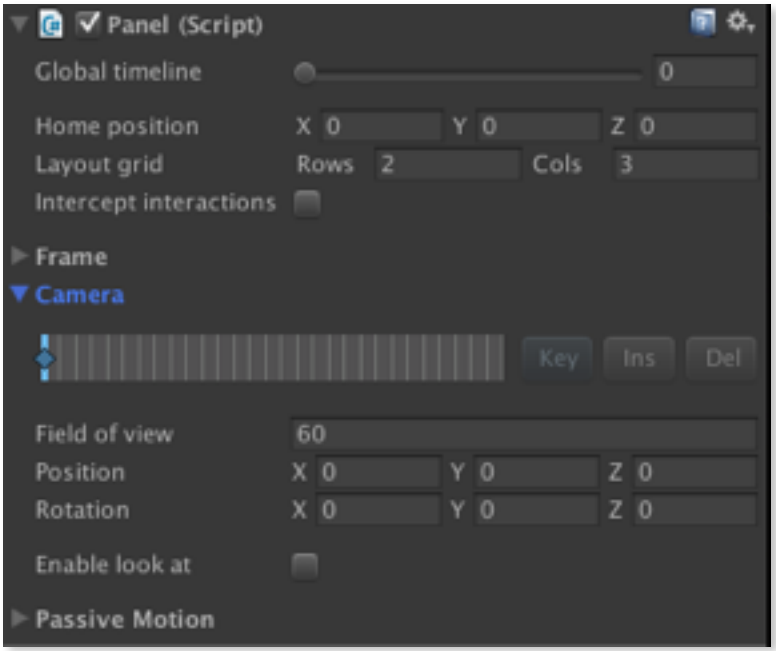
8. Test the transition.

That’s it! You’ve set up a panel and created a transition that moves it from one part of the screen to another. You can click the play button to try it out for real. Click and drag to the left to advance to the next step, and to the right to return to the previous step.

9. Explore the Camera foldout.

The controls in the Camera foldout let you choreograph the movement of the panel’s camera (i.e. its position and orientation in 3D space) independently of the layout of its frame.

Click the Camera foldout to open it, and this is what you’ll see:



☑ Panel (Script)

Global timeline 0

Home position X 0 Y 0 Z 0

Layout grid Rows 2 Cols 3

Intercept interactions □

Field of view 60

Position X 0 Y 0 Z 0

Rotation X 0 Y 0 Z 0

Enable look at □

Keyframe timeline. Just as in the Frame foldout, the Camera foldout lets you set keyframes along the global timeline (see Keyframe Timeline Shortcuts for quick editing features).

Field of View. The current field of view of the camera, in degrees.

Position. The current position of the camera, relative to the home position of the panel.

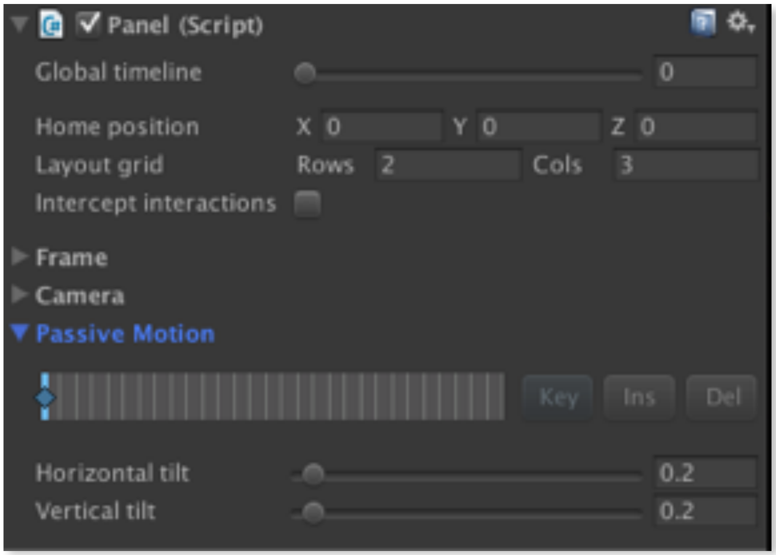
Rotation. The current rotation of the camera.

Enable look at. When checked, an extra set of fields appears allowing you to specify a target (X,Y,Z) for the camera to point towards. When combined with passive motion (see below), this can give the feeling that when the user tilts the device, they are tilting the camera as well, as opposed to just moving it in space.

10. Explore the Passive Motion foldout.

The controls in the Camera foldout let you choreograph the way in which "passive" movement (i.e. mouse or accelerometer movement) affects the panel camera. By default, each panel is set to impart a slight amount of passive motion to its camera, to enhance 3D effects when the user tilts their device or moves their mouse.

Click the Passive Motion foldout to open it, and this is what you'll see:



Global timeline 0

Home position X 0 Y 0 Z 0

Layout grid Rows 2 Cols 3

Intercept interactions □

Horizontal tilt 0.2

Vertical tilt 0.2

Keyframe timeline. Just as in the Frame foldout, the Passive Motion foldout lets you set keyframes along the global timeline (see Keyframe Timeline Shortcuts for quick editing features).

Horizontal tilt. Sets the amount of horizontal movement imparted to the camera when horizontal passive motion is detected.

Vertical tilt. Sets the amount of vertical movement imparted to the camera when vertical passive motion is detected.

Creating Captions

Panoply's captions allow you to create some of the most essential parts of comic visual language: narration boxes and dialogue/thought balloons. This is done using the **Caption** component. This section will show you how to add a caption to a panel and configure it as a standard narration box (the next section will cover creating dialogue balloons).

> Be sure to set the reference screen size on the PanoplyRenderer component of the Panoply prefab in your scene **before** you begin creating captions, as it can affect their size and position.

1. Add the Caption component to the panel.

Captions are linked to panels, and you'll need to add one instance of the component for every caption you want to add to a given panel. When you add the component to your panel, it will look like this:

Text. Here is where you enter the text of the caption.

Keyframe timeline. Just as in the Panel and Artwork components, the Caption component lets you set keyframes along the global timeline. This makes it possible to change a caption's position, look, or content over time (see Keyframe Timeline Shortcuts for quick editing features).

GUI Skin. This setting allows you to customize the look of the visual element that encloses the text. The Panoply package includes a default skin called CenteredRoundRectCaption that displays a white rounded rectangle behind the text. By customizing the Label settings of this skin, or by creating your own, you can vary the shape, color, font, padding, etc. of your caption.

For more information about creating your own GUI Skins, see Unity's documentation.

Color. A tint which is applied to the caption.

Width and Height. The dimensions of the caption.

Drop Shadow Offset. Determines the horizontal and vertical distance from the caption in pixels at which a hard-edged drop shadow will be drawn.

Is Dialogue Balloon. Check this option to turn the caption from a standard text box into a dialogue/thought balloon with a tail (see below for explanation of the additional options that become available when this option is selected).

Alignment. Aligns the caption with the vertical/horizontal edges or center of the panel.

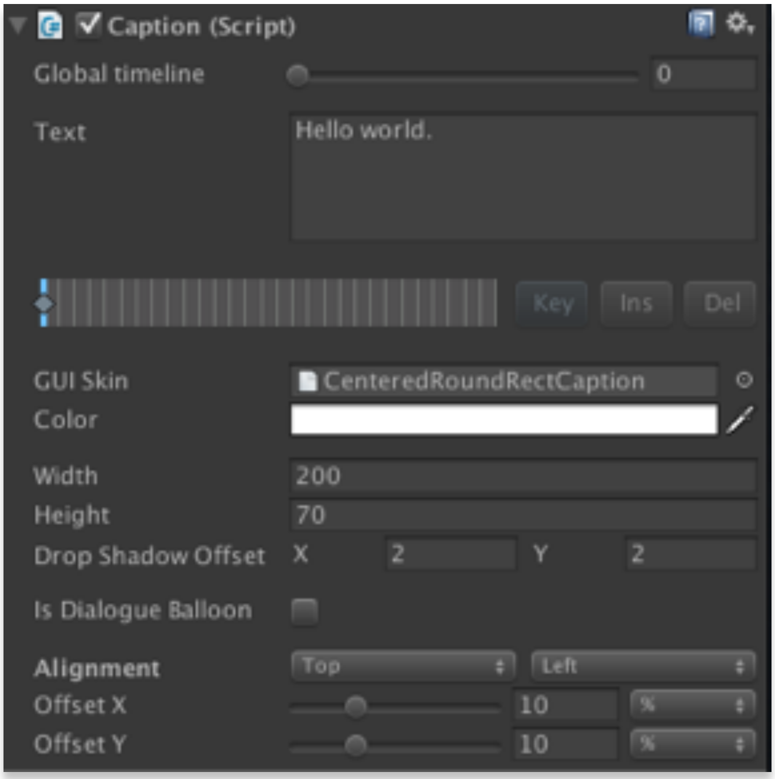
Offset. Horizontal and vertical pixel offset from the alignment position.

2. Enter caption text.

If your panel is currently visible, you should see the text appear in very small type at the top left.

3. Drag the CenteredRoundRectCaption to the GUI Skin parameter.

This will give the caption a more conventional appearance, with standard-sized text on a while round rectangular background.



☑ Caption (Script)

Global timeline 0

Text Hello world.

GUI Skin CenteredRoundRectCaption

Color

Width 200

Height 70

Drop Shadow Offset X 2 Y 2

Is Dialogue Balloon □

Alignment Top Left

Offset X 10 %

Offset Y 10 %

4.Adjust width and height.

Captions do not auto-size to fit their contents, so pick some values that fit your text nicely.

5.Set alignment and offset.

Use the alignment settings to position your caption where you want it to appear in your panel. You can even use negative values to make the caption overlap the edges of the panel, or even appear entirely outside of the panel.

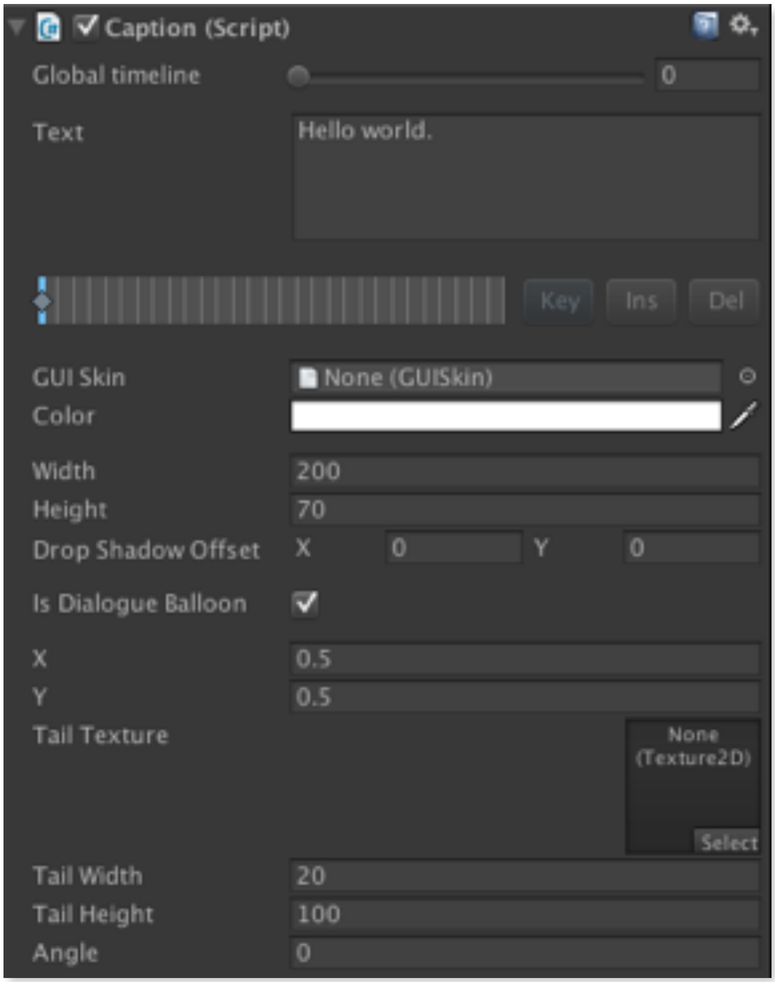
That's all it takes to create for a standard narration box—of course you can customize the GUI Skin you use to add more personality to your own captions. Next we'll look at how to convert this caption into a dialogue balloon.

Creating Dialogue Balloons

In the previous section we walked through creating a standard narration box. The same Caption component is used to create dialogue balloons. This section will cover creating just such a balloon.

1. Add the Caption component to the panel.

Captions are linked to panels, and you'll need to add one instance of the component for every caption you want to add to a given panel.



☑ Caption (Script)

Global timeline 0

Text: Hello world.

GUI Skin: None (GUISkin)

Color

Width: 200

Height: 70

Drop Shadow Offset: X 0 Y 0

Is Dialogue Balloon ☑

X: 0.5

Y: 0.5

Tail Texture: None (Texture2D)

Tail Width: 20

Tail Height: 100

Angle: 0

See the previous section for an explanation of the parameters above the Is Dialogue Balloon checkbox.

2. Select the Is Dialogue Balloon checkbox.

This will cause the controls at the bottom of the component to change, like so:

X and Y. These values determine where the pointy end of the balloon's tail is located, as a ratio of the panel's size. An X value of 0 will position the point at the left edge of the panel, while a value of 1 will move it to the right edge. Similarly, a Y value of 0 will place the point at the top edge of the panel, while a value of 1 will position it at the bottom edge.

Tail Texture. Sets the texture that will be used to draw the tail of the balloon. Panoply includes a default texture called balloon_stem that can be used to draw a standard straight and pointy tail.

Tail width and height. Allows you to set the dimensions of the tail.

Angle. Controls the angle of the tail and thus the direction at which the dialogue balloon extends from it.

3. Enter balloon text.

If your panel is currently visible, you should see the text appear in very small type at the top left.

4. Drag the CenteredRoundRectCaption to the GUI Skin parameter.

This will give the caption a more conventional appearance, with standard-sized text on a while round rectangular background.

5. Adjust width and height.

Captions do not auto-size to fit their contents, so pick some values that fit your text nicely.

6. Set the drop shadow offset.

Setting both X and Y values to 3 will add a nice drop shadow to your balloon.

7. Drag the balloon_stem texture to the Tail Texture parameter.

This will give your balloon a visible tail. You can also provide your own custom tail artwork instead.

8. Adjust the angle of the balloon.

Change the angle parameter so that your balloon's tail is pointing in the direction you want.

9. Adjust the position of the balloon.

Use the X and Y values to point the tail of the balloon as a specific position within the panel.

10. Adjust the width and height of the tail.

Use these settings to fine-tune the shape and size of your balloon's tail.

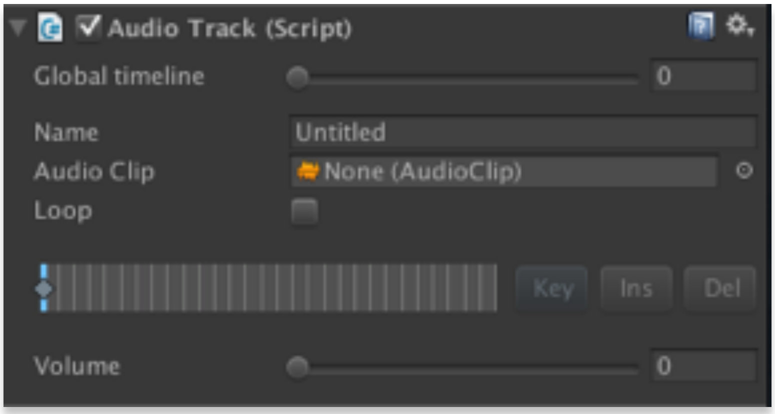
That's all it takes to create a dialogue balloon! Remember, you can customize or create your own GUI Skin and Tail Texture to create different styles of dialogue and thought balloons.

Adding Audio

To add a soundtrack to your scene, apply the AudioTrack component to any game object. Each AudioTrack handles playback of a single Audio Clip across the duration of your scene. You can add multiple AudioClips to a single game object, or spread them across multiple game objects, perhaps by type or panel (recommended).

1. Add the AudioTrack component to a game object.

When you add the component, it will look like this:



☑ Audio Track (Script)

Global timeline 0

Name Untitled

Audio Clip None (AudioClip)

Loop □

Volume 0

Name. Enter a name for the track to help you remember what it contains.

Audio Clip. Drag in the audio clip for the sound you want to play.

Loop Checkbox. If the sound should should loop, check this box.

Keyframe timeline. Just as in the Panel, Artwork, and Caption components, the Audio Track component lets you set keyframes along the global timeline. This makes it possible to change a sound's volume over time (see Keyframe Timeline Shortcuts for quick editing features).

Volume Slider. Drag the slider to set the volume of the sound in the current step.

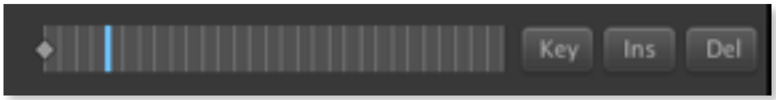
Keyboard Shortcuts

A few keyboard shortcuts are available to speed up navigation while your scene is running in Play mode.

Left arrow	Go to the previous step
Right arrow	Go to the next step
Up arrow	Go to the first step (only works in the editor)
Down arrow	Go to the last step (only works in the editor)

Keyframe Timeline Shortcuts

The keyframe editor has a few hidden features for making keyframe editing easier.



Click or click and drag to set timeline position. You can navigate the timeline easily without using the global timeline slider just by clicking or clicking and dragging in the timeline.

Click and drag to move a keyframe. Any existing keyframe (except the first one) can be moved on the timeline simply by clicking and dragging it to a new position.

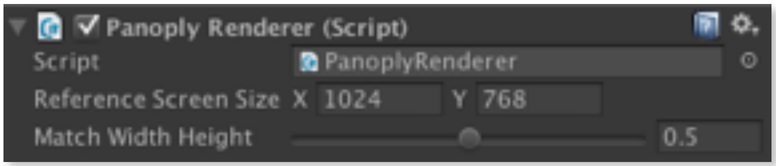
Click to add or remove a keyframe. Clicking the current position on the timeline will add a keyframe there, or remove an existing keyframe. If you mistakenly add or remove a keyframe with this technique, just Undo the action.

The Panoply Prefab

The Panoply prefab contains components with global settings that affect the engine.

Renderer Settings

The **PanoplyRenderer** component let you change settings relating to how content is rendered.



Panoply Renderer (Script)
Script PanoplyRenderer
Reference Screen Size X 1024 Y 768
Match Width Height 0.5

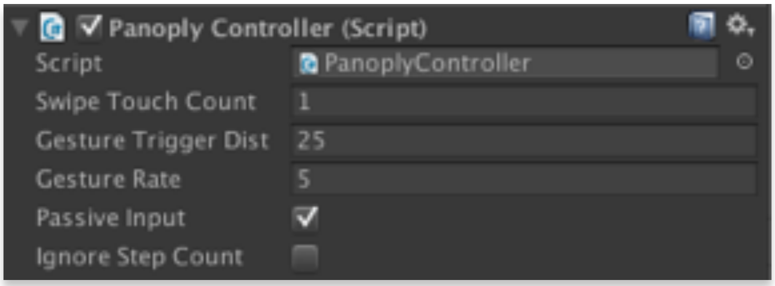
Reference Screen Size. The base screen dimensions to use when calculating how much to scale captions. In general, this should be set to the "ideal" screen dimensions of your content on your primary target device.

> **!** Note that it's very important to set the reference screen size **before** you begin creating captions, as it can affect their size and position.

Match Width Height. The degree to which captions are scaled to match the screen's current horizontal vs. vertical dimensions with respect to the reference screen size. A value of 0 means that only the horizontal dimension is considered, while a value of 1 means that only the vertical dimension is considered. Intermediate values blend horizontal and vertical scaling.

Controller Settings

The **PanoplyController** component lets you change settings relating to how user input is handled.



☑ Panoply Controller (Script)

Script	PanoplyController
Swipe Touch Count	1
Gesture Trigger Dist	25
Gesture Rate	5
Passive Input	☑
Ignore Step Count	☐

Swipe Touch Count. The number of simultaneous touches required to trigger a swipe.

Gesture Trigger Dist. The number of pixels the reader must drag or swipe to trigger advancing the scene to the next step.

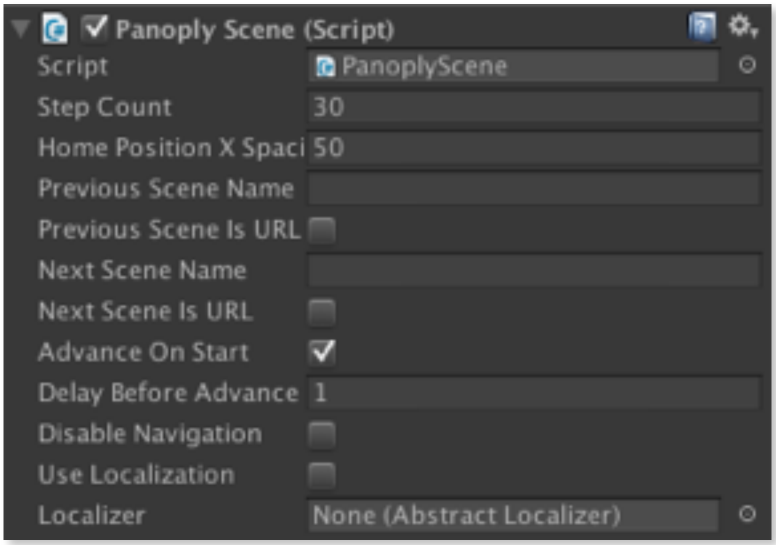
Gesture Rate. The rate at which the transition from step to step occurs. Larger numbers mean faster transitions.

Passive Input. Enables passive input from sources like mouse position or the accelerometer, which can be used for parallax 3D effects.

Ignore Step Count. Allows user to navigate to steps beyond the scene's maximum step count, effectively disabling automatic navigation to the previous and next scene.

Scene Settings

The **PanoplyScene** component lets you change the duration of your scene and designate what scene the reader should be taken to when they navigate past its beginning or end.



☑ Panoply Scene (Script)

Script	PanoplyScene
Step Count	30
Home Position X Spaci	50
Previous Scene Name	
Previous Scene Is URL	☐
Next Scene Name	
Next Scene Is URL	☐
Advance On Start	☑
Delay Before Advance	1
Disable Navigation	☐
Use Localization	☐
Localizer	None (Abstract Localizer)

Step Count. This is the total number of steps in your scene.

Home Position X Spacing. Determines the amount of automatic spacing between the Home Position of each new panel added to the scene and the Home Positions of the previous panels.

Previous Scene Name. The name of the scene the reader should be taken to when they swipe backwards from the first step of the current scene.

Previous Scene Is URL. When checked, Panoply will attempt to load the previous scene name as a URL instead of as a Unity level.

Next Scene Name. The name of the scene the reader should be taken to when they swipe past the last step in the current scene.

Next Scene Is URL. When checked, Panoply will attempt to load the next scene name as a URL instead of as a Unity level.

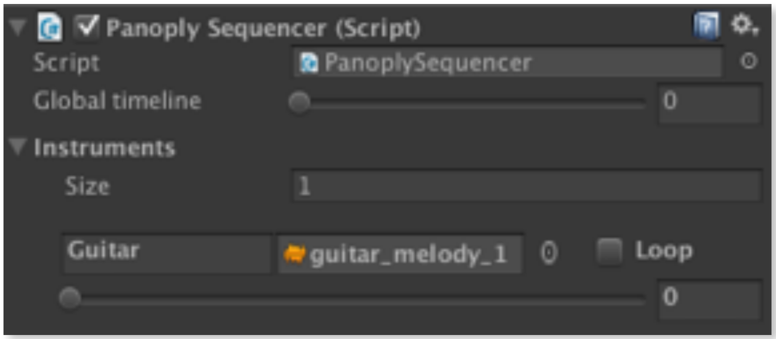
Advance On Start. Whether or not the scene should automatically advance to step 1 upon starting up.

Delay Before Advance. The delay in seconds before the scene automatically advances to step 1 (when enabled).

Disable Navigation. Prevents the user from swiping to the next or previous step. When set programmatically from your code or a PlayMaker action, this can be useful if you want to temporarily allow other interactions without worrying about the user accidentally swiping to the next step.

Use Localization / Localizer. When Use Localization is checked, Panoply will use the component set in the Localizer field to handle localization of captions and balloons. The text of the caption or balloon will be used as the "key" to retrieve the correct translation from the localizer for the device's current system language. For details, see Localizing Captions and Balloons.

Audio Sequencing



☑ Panoply Sequencer (Script)
Script: PanoplySequencer
Global timeline: 0
Instruments
Size: 1
Guitar | guitar_melody_1 | □ Loop
0

The **PanoplySequencer** component let you set up sound effects to be played when the user arrives at specific steps on the timeline.

> ! The **PanoplySequencer** component is included for legacy compatibility only. It is recommended that you use the **AudioTrack** component for audio features going forward, as it uses the same user-friendly keyframe interface as the other components, and unlike PanoplySequencer, it responds to global insert and delete keyframe actions.

Global timeline. This slider lets you preview the current state of the timeline by dragging from discrete step to discrete step.

Instruments. Each channel of audio in the sequencer is called an Instrument. You can set the total number of instruments to be used in the scene by changing the number in the Size parameter.

Each Instrument has four components:

Name. Enter a name that will help you remember what the instrument is.

Audio Clip. Drag in the audio clip for the sound you want the instrument to play.

Loop Checkbox. If the sound should should loop, check this box.

Volume Slider. Drag the slider to set the volume of the sound in the current step.

Setting up your audio sequencing is a matter of adding an Instrument for each sound you want to be played in the scene, deciding whether the sound should loop, and then setting the volume of the sound for each step of the scene by dragging the global timeline slider and then adjusting the volume for each instrument.

Background Settings

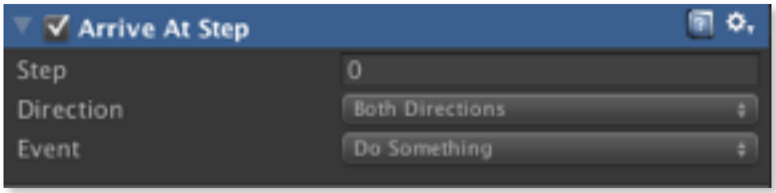
If you expand the Panoply prefab in the Hierarchy you'll see that it contains a **Background Camera** which provides the background color for the gutters between panels but which will not render any content of its own. To adjust the background color (set to black by default), you can edit the camera's Background setting.

PlayMaker Actions

PlayMaker is a popular third-party visual scripting package for Unity (for details, see hutonggames.com). You can download a separate Unity package (get it here: http://opertoon.com/downloads/panoply/PanoplyPlayMakerActions.zip) that includes PlayMaker actions for triggering events from specific steps on the Panoply global timeline. Once this package is imported, the actions can be accessed under "Panoply" in PlayMaker's Action Browser.

Arrive At Step

The **Arrive At Step** action lets you trigger an event when the reader arrives at a specific step on the global timeline.



☑ Arrive At Step

Step: 0

Direction: Both Directions

Event: Do Something

Step. The step on the global timeline at which the event is to be triggered.

Direction. Determines whether the event can be triggered whenever the step is reached, or only while traveling forward or backward along the global timeline.

Event. The event to be triggered.

Disable Navigation

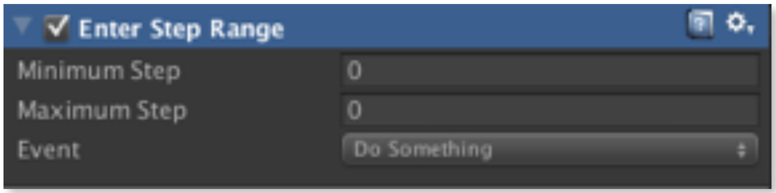
The **Disable Navigation** action turns off all swipe navigation. This can be useful if you want to temporarily allow other types of interaction without the possibility of the user accidentally swiping to a new step.

Enable Navigation

The **Enable Navigation** action turns on swipe navigation, enabling the user to swipe to the next or previous step.

Enter Step Range

The **Enter Step Range** action lets you trigger an event when the reader enters a specific range of steps on the global timeline.



☑ Enter Step Range

Minimum Step 0

Maximum Step 0

Event Do Something

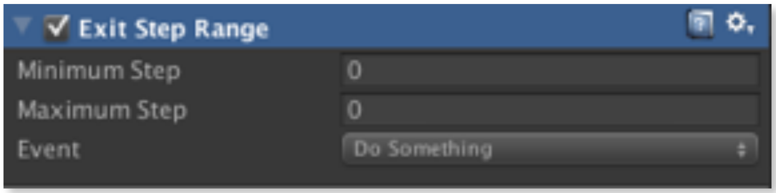
Minimum Step. Defines the low end of the range of steps on the global timeline.

Maximum Step. Defines the high end of the range of steps on the global timeline.

Event. The event to be triggered.

Exit Step Range

The **Exit Step Range** action lets you trigger an event when the reader leaves a specific range of steps on the global timeline.



☑ Exit Step Range

Minimum Step 0

Maximum Step 0

Event Do Something

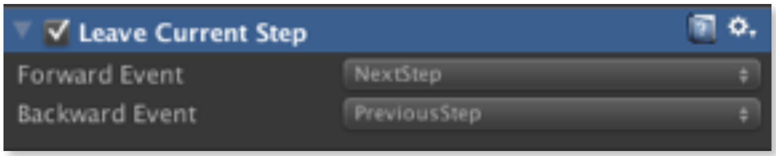
Minimum Step. Defines the low end of the range of steps on the global timeline.

Maximum Step. Defines the high end of the range of steps on the global timeline.

Event. The event to be triggered.

Leave Current Step

The **Leave Current Step** action lets you trigger an event when the reader leaves the current step on the global timeline.



☑ Leave Current Step

Forward Event NextStep

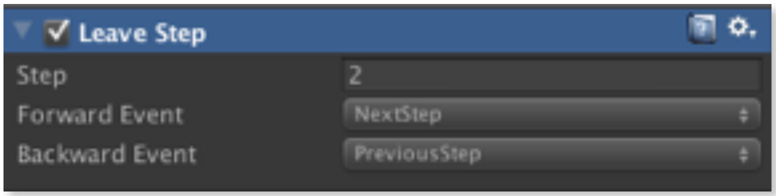
Backward Event PreviousStep

Forward Event. The event to be triggered when the user moves to a step following the current step.

Backward Event. The event to be triggered when the user moves to a step prior to the current step.

Leave Step

The **Leave Step** action lets you trigger an event when the reader leaves a specific step on the global timeline.



☑ Leave Step

Step: 2

Forward Event: NextStep

Backward Event: PreviousStep

Step. The step on the global timeline which, when left behind, triggers the event.

Direction. Determines whether the event can be triggered whenever the step is left behind, or only when leaving while moving forward or backward along the global timeline.

Event. The event to be triggered.

Localizing Captions and Balloons

Panoply includes built-in integration with the free LeanLocalization asset (http://u3d.as/bdU) so you can easily localize your project's captions and balloons. If you'd prefer to use a different localization system, writing code to connect it to Panoply is easy.

When creating localized captions and balloons for Panoply, instead of putting the desired text in the inspector directly, you enter a "key" which is then used to retrieve the text in the desired language. For example, while in a non-localized English project a caption that reads "Good morning!" would simply contain that text, in a localized project the caption might contain the key "greeting," which is then associated with "Good morning!" in the English translation, and "Bonjour!" in the French.

Note that caption and balloon sizes do not vary depending on the language, so you must make sure each instance is large enough to accommodate all of your translations.

Getting Started with LeanLocalization

LeanLocalization by Carlos Wilkes (available here: http://u3d.as/bdU) is a simple and free localization library appropriate for smaller teams and projects.

1. Download and install the LeanLocalization library.

You can find it here: http://u3d.as/bdU

2. Add the LeanLocalization game object to the hierarchy.

Select GameObject > Lean > Localization.

3. Download and install Panoply's LeanLocalization package.

You can find it here: http://opertoon.com/downloads/panoply/LeanLocalizationForPanoply.zip

4. Drag the LeanLocalizationForPanoply prefab to the hierarchy.

You'll find it in Panoply/Localizers/.

5. Activate Panoply's localization.

Select the Panoply prefab and check the Use Localization checkbox in the PanoplyScene inspector. Then, drag the LeanLocalizationForPanoply prefab to the Localizer slot in the inspector.

6. Add languages.

Select the LeanLocalization game object. In the Inspector, click the Add button to the right of Languages to add your first language. Select a language. Repeat this process for as many languages as you wish to add.

7. Add phrases.

Click the Add button to the right of Phrases to add a phrase. Enter the "key" that identifies the phrase (this is the same text you will enter in your captions and balloons). Repeat this process for as many phrases as you need.

8. Add translations.

For each phrase and language, click Create Translation and enter the translated text.

9. Select a language.

Select the language you want to work with first by clicking the List button and choosing one of the available options. (Note: This is for testing purposes only. When the final app is run on a device, this selection will be overridden with the device's current system language.)

10. Create captions and balloons.

Add your captions and balloons to your Panoply panels, entering the key you created for the phrase you want to appear into the Text field for each.

11. Test.

Be sure to test your localizations early and often, both within the Unity Editor and on your target devices, to make sure they display appropriately.

How to Integrate with Other Localization Systems

Integrating Panoply with other localization systems is easy. You simply need to create a new script that extends the AbstractLocalizer class, replacing the two default methods with your own. Note that authoring will be easiest if the localization system you choose works in the Unity Editor outside of Play mode, since Panoply captions and balloons can only be authored outside of Play mode.

Your new script needs only to contain the SetLanguage and GetLocalizedText methods for setting the current language and retrieving localized text, respectively. See the LeanLocalizationForPanoply script (shown below) for an example of how this is done.

```
using UnityEngine;
using System.Collections;
using Lean;

// Panoply localizer for LeanLocalization asset (http://u3d.as/bdU)
// Last tested with version 1.0.6

namespace Opertoon.Panoply {

      public class LeanLocalizationForPanoply : AbstractLocalizer {

           public override void SetLanguage( string language ) {
                LeanLocalization.Instance.SetLanguage( language );
           }

           public override string GetLocalizedText( string key ) {
                return LeanLocalization.GetTranslationText( key );
           }

      }

}
```

Integrating With Your Own Code

For more advanced integration with your project, you may find it helpful to access aspects of Panoply from your own code. This can be used to trigger actions when the reader arrives at specific points on the global timeline, or to change the reader's position on the timeline.

Panoply is written in C#, and is in the namespace Opertoon.Panoply.

PanoplyCore

Static Properties

PanoplyCore.interpolatedStep float

The current interpolated position on the global timeline. Panoply is constantly changing this value to approach the current targetStep value. Use this property to determine or set the user's current position on the global timeline.

PanoplyCore.scene PanoplyScene

A static reference to the current PanoplyScene object.

PanoplyCore.targetStep int

The current destination step on the global timeline. Panoply will always try to smoothly transition to this step.

Static Methods

DecrementStep ()

Decrements the targetStep (current destination step on the global timeline) by one.

GoToFirstStep ()

Sets the targetStep (current destination step on the global timeline) to zero.

GoToLastStep ()

Sets the targetStep (current destination step on the global timeline) to its maximum value for the current scene.

IncrementStep ()

Increments the targetStep (current destination step on the global timeline) by one.

SetInterpolatedStep (step : float)

Sets the interpolatedStep (current interpolated position on the global timeline) to the specified value.

SetTargetStep (step : int)

Sets the targetStep (current destination step on the global timeline) to the specified value.

PanoplyEventManager

Events

OnTargetStepChanged

Triggered every time current destination step on the global timeline is changed.

PanoplyScene

Properties

disableNavigation bool

When disableNavigation is set to true, Panoply will ignore clicks, drags, and swipes. You can use this property to temporarily turn off navigation so the the user can interact with the contents of a panel.

Version History

Version 1.0

- Added visual keyframe editor
- Added global keyframe insert and delete
- Added ability to set artwork position locally, globally, or based on its panel
- Added ability to globally disable navigation
- Added AudioTrack component with full keyframe editing support
- Panels now automatically space themselves apart from each other on the X axis
- Captions now automatically load default skins
- Performance optimizations
- Fixed bug that caused errors when extending the global timeline
- Fixed bug that doubled the object's transform values when the Artwork component was added to it
- Fixed a number of warnings and errors

Version 0.9.4

- Added localization features
- Fixed bug that caused one-shot audio to loop

Version 0.9.3

- Renamed the product (previously known as Opertoonity)
- All scripts namespaced and converted to C# (see update instructions below)
- Implemented new graphical layout tool
- Removed standalone components

Version 0.9.2

- Tweaked content scaling to behave more naturally
- Added an event (OnTargetStepChanged) which is triggered whenever the destination step
  on the global timeline is changed
- The LeaveStep and LeaveCurrentStep PlayMaker event now support sending separate
  events when the reader moves to the next and previous steps on the global timeline
- Fixed bug that didn't reset the global timeline to zero when starting a new scene
- Fixed bug that immediately loaded the previous scene when Advance On Start was set to
  true and a previous scene was specified
- Package should no longer trigger warnings when imported into Unity 5

- Fixed bug that prevented keyboard navigation from triggering PlayMaker actions

Version 0.9.1

- Fixed bug that showed a one-pixel row of content for panels positioned below the bottom of the screen
- Added volume control to non-looped sounds
- Using the up/down arrows to skip to the beginning or end of the current scene now only works in the editor
- Specify the number of fingers required to trigger swipe gestures
- Captions are now scaled based on a reference screen size
- Improved handling of aspect ratio constraints for panels
- Fixed bug that didn't set the current step to zero when arriving at a new scene that had auto-advance turned off

Version 0.9.0

- Automatic advancement to step 1 can be turned on or off
- Set the delay before automatic advancement occurs
- Sample multi-panel scene
- Five PlayMaker actions that trigger events at specific steps
- No longer necessary to manually add Hold or End steps to Panels, Captions, or Artwork
- Documented how to access and set the current timeline step from code (see "Integrating With Your Code")
- Documented keyboard shortcuts

Version 0.8.9

- Set the length of your scene in steps
- Specify the previous and next scenes to which the reader can navigate
- Per-step audio sequencing