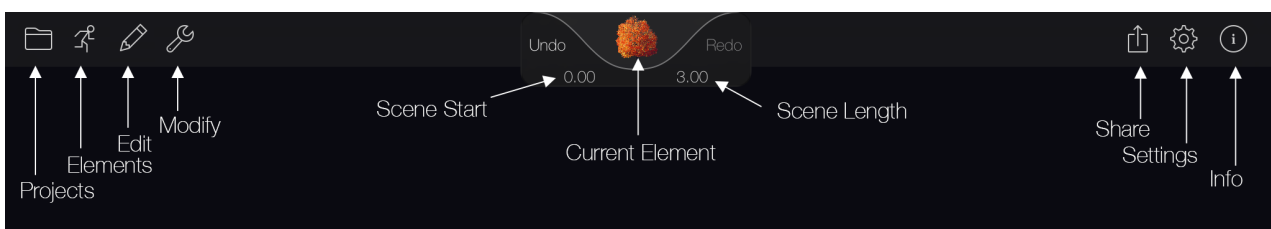


# MotionGraphix

## User Guide



## Quick Start

- Create a Project
- Add Elements
- Position, scale and rotate the elements
- Change the time and reposition, scale and rotate the elements
- Change the time again, etc.
- Double click on an element to fine tune things such as shadow and style
- Open the adjust drawer to further fine tune element style and state
- Press the share button to render and save

## Overview

MotionGraphix is a stereoscopic 2.5D animation system for iOS. It combines powerful, professional-level animation features like keyframing and algorithmic motions with a wide variety of graphic element types, from text or animated sprites to particle systems. MotionGraphix includes a set of ready-to-use motion templates, a variety of sprites, or cutout images, and some background images.

## Glossary of Terms

**2.5D Animation:** The term 2.5D animation refers to the animation of flat (2D) graphic elements in a virtual 3D space. The illusion of depth in the 2D animation is created by applying a perspective transformation to all elements based on their associated 'Z' coordinate, which the animator can control and keyframe in coordination with usual the X and Y coordinates. The Z coordinate is also used for element layering, so nearer elements obscure those behind it. By using a stereoscopic perspective transform, elements can be rendered with depth-appropriate parallax into stereo pairs, and formatted for anaglyph, 3DTV, or VR display viewing. The perspective and stereo transforms are based on a user-adjustable camera model, allowing artists to approximate the camera used for background footage.

**compositing:** The manipulated combination of at least two source images to produce an integrated result

**sprite:** General term for a (usually small) 2D element that is animated within a larger scene.

**sprite atlas:** an image with a grid of figures representing the different frames of a short animation. Such animations are typically short loops, like a walk cycle, so combining the animated sprite with a simple motion can create the appearance of much more sophisticated animation

**key frame:** Any frame in which a particular aspect of an item (its size, location, color, etc.) is specifically defined. The frames that are not key frames will then contain interpolated values.

**keyframe animation:** The process of creating animation using key frames.

**alpha channel:** The portion of a four-channel image that is used to store transparency information.

**anaglyph:** A stereoscopic image that requires the use of anaglyph glasses to view properly

**matte:** An image used to define or control the transparency of another image

**Z-depth compositing:** Compositing images together with the use of a Z-buffer to determine their relative depths or distances from the camera

**stereoscopic image:** Imagery that is designed to send a different image to each observer's left and right eyes, thereby producing a sense of depth.

**stereoscopic pair:** A pair of images (one for each eye) that comprise a stereoscopic image.

## 2.5 D Workflow

The term 2.5D animation refers to the animation of flat (2D) graphic elements in a virtual 3D space. The illusion of depth in the 2D animation is created by applying a perspective transformation to all elements based on their associated 'Z' coordinate, which the animator can control and keyframe in coordination with usual the X and Y coordinates. The Z coordinate is also used for element layering, so nearer elements obscure those behind it. By using a stereoscopic perspective transform, elements can be rendered with depth-appropriate parallax into stereo pairs, and formatted for anaglyph, 3DTV, or VR display viewing. The perspective and stereo transforms are based on a user-adjustable camera model, allowing artists to approximate the camera used for background footage.

## Projects

There are three types of projects in MotionGraphix: colored frame, still frame, and video. When you make a new project you can give it a name, a description and the length in seconds. The minimum length is 1 second and the maximum is 30 seconds for still frame projects. Video projects have no limit. You can also import stereoscopic stills and movies in side-by-side or top-and-bottom format. MotionGraphix will automatically split the input and create stereo output pairs that will use the appropriate background when rendering. In the adjust drawer there is an input filter where you can set the stereo mode based on whether your image is mono ('Flatty') side-by-side or top-bottom.

### Colored Frame Project

A colored frame project can be either a solid color or a gradient. The color or gradient is constant over time and cannot be animated.

### Still Frame Project

Still frame projects can either come from the collection of images that come with MotionGraphix, or photos on your device. It is also possible to pull a still frame from a video and use that as a background. To do this simply open a video from the photo browser. You will be prompted to pick a frame.

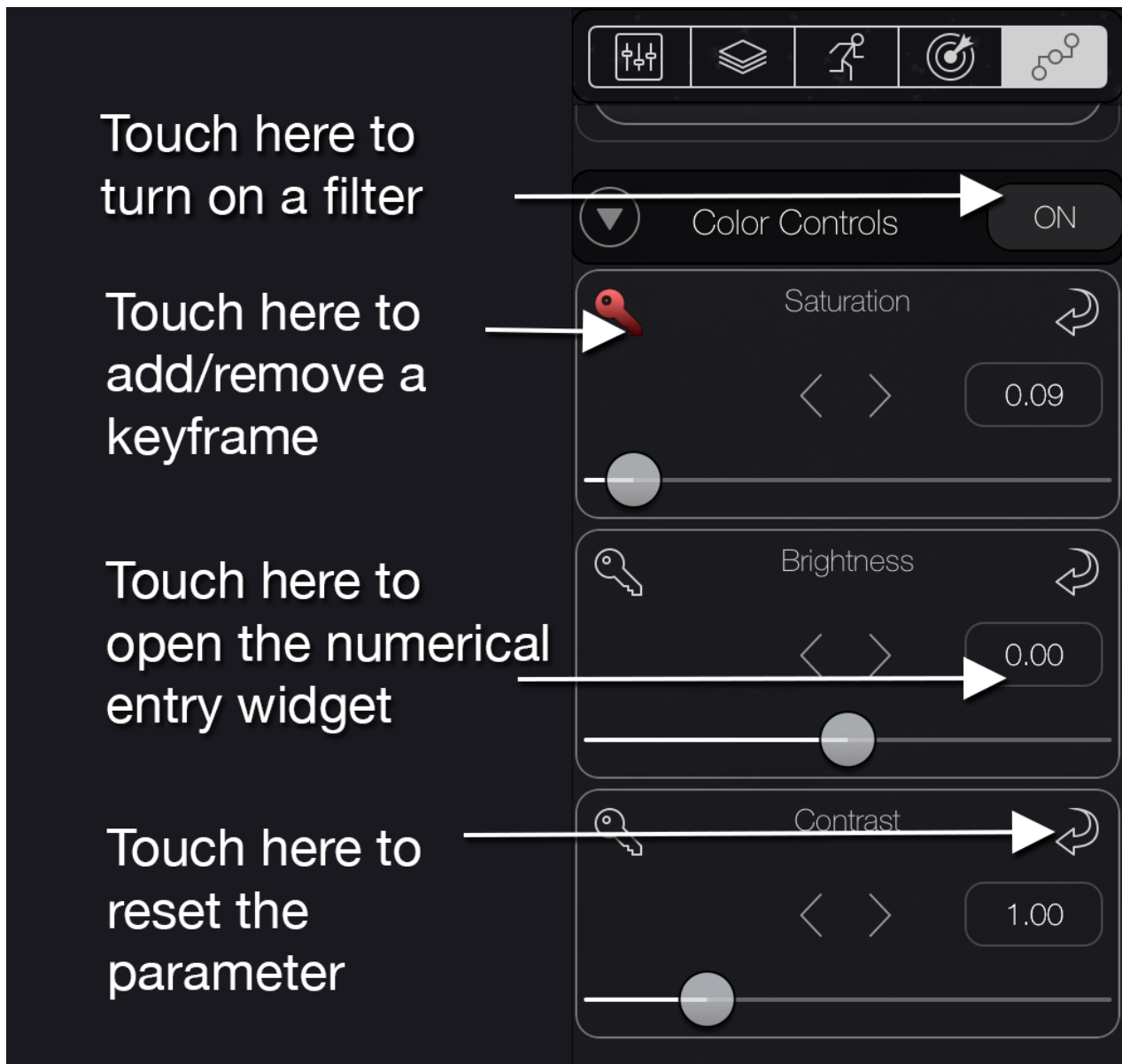
### Video Project

The video picker allows you to choose a start and end frame for your video, so you can use only a portion of a longer video if you want.

## Background Filtering

High-performance GLSL image filters can be applied to the background video providing keyframe-animated color correction and artistic stylization options. The controls for background filtering are found in the last section of the Adjust drawer.

To date, the available filters are input controls, saturation, brightness, contrast, gamma, curves, gloom and bloom. The filters are off by default. To use a filter, first press the off button to turn in on, then change the slider values to achieve the look you are after. Pressing the key button will add a keyframe. Once you add a keyframe all future changes will cause that channel to be animated. You can turn off a filter at any time by toggling the ON/OFF button.





## Elements

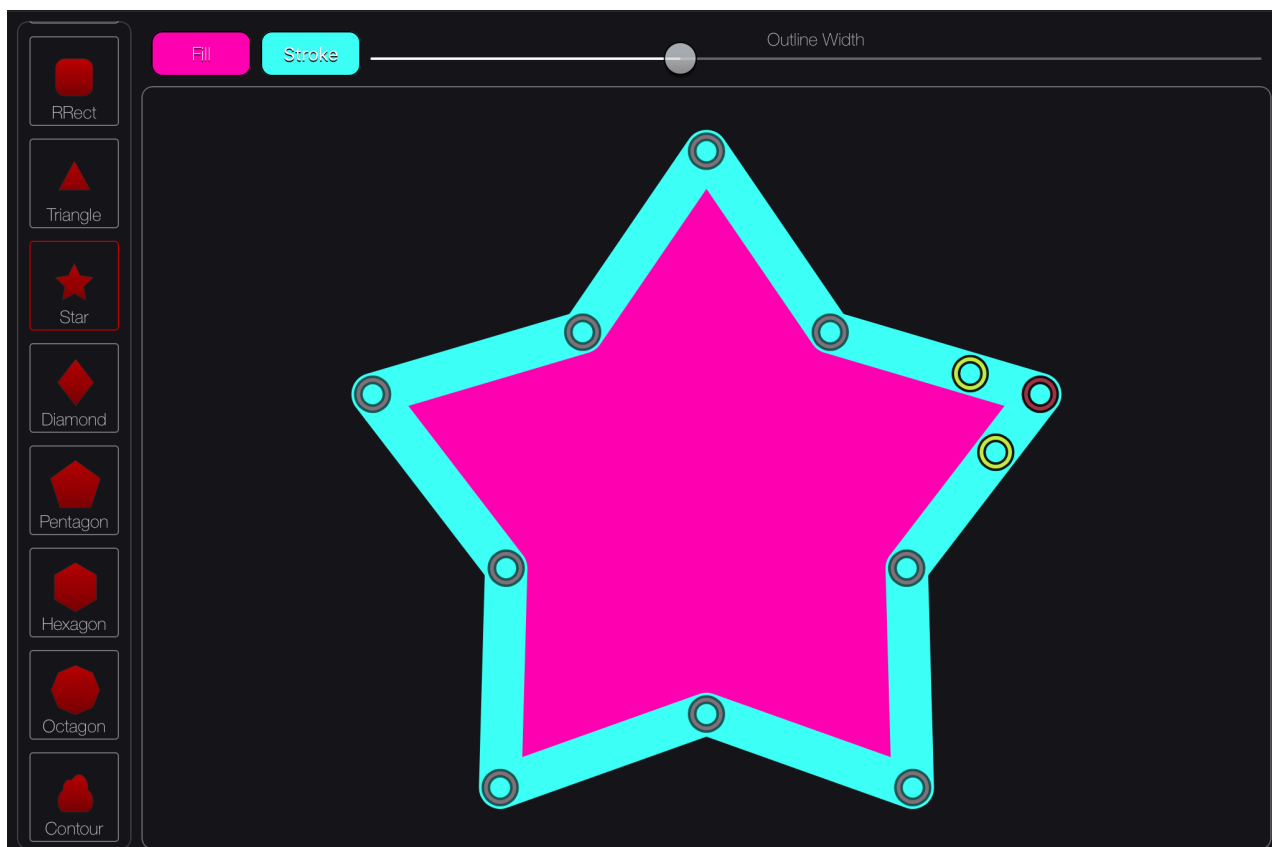
There are several types of elements that can be added to and animated in a MotionGraphix scene. Many element types have separate editors for initial creation and editing. All elements can have their position, zPosition, scale, rotation, opacity and shadow animated. When an element is added to the scene, it gets one keyframe added for the current position.

### Image Element

MotionGraphix includes a library of both animated and small still images with a transparent background. You can also import your own images from photos. Animated sprites are either animated GIF-format images, or static 'sprite atlas' images.

### Shape Element

You can choose from a variety of shapes or draw your own. All shapes have bezier handles for editing, as well as fill, gradient and outlines.

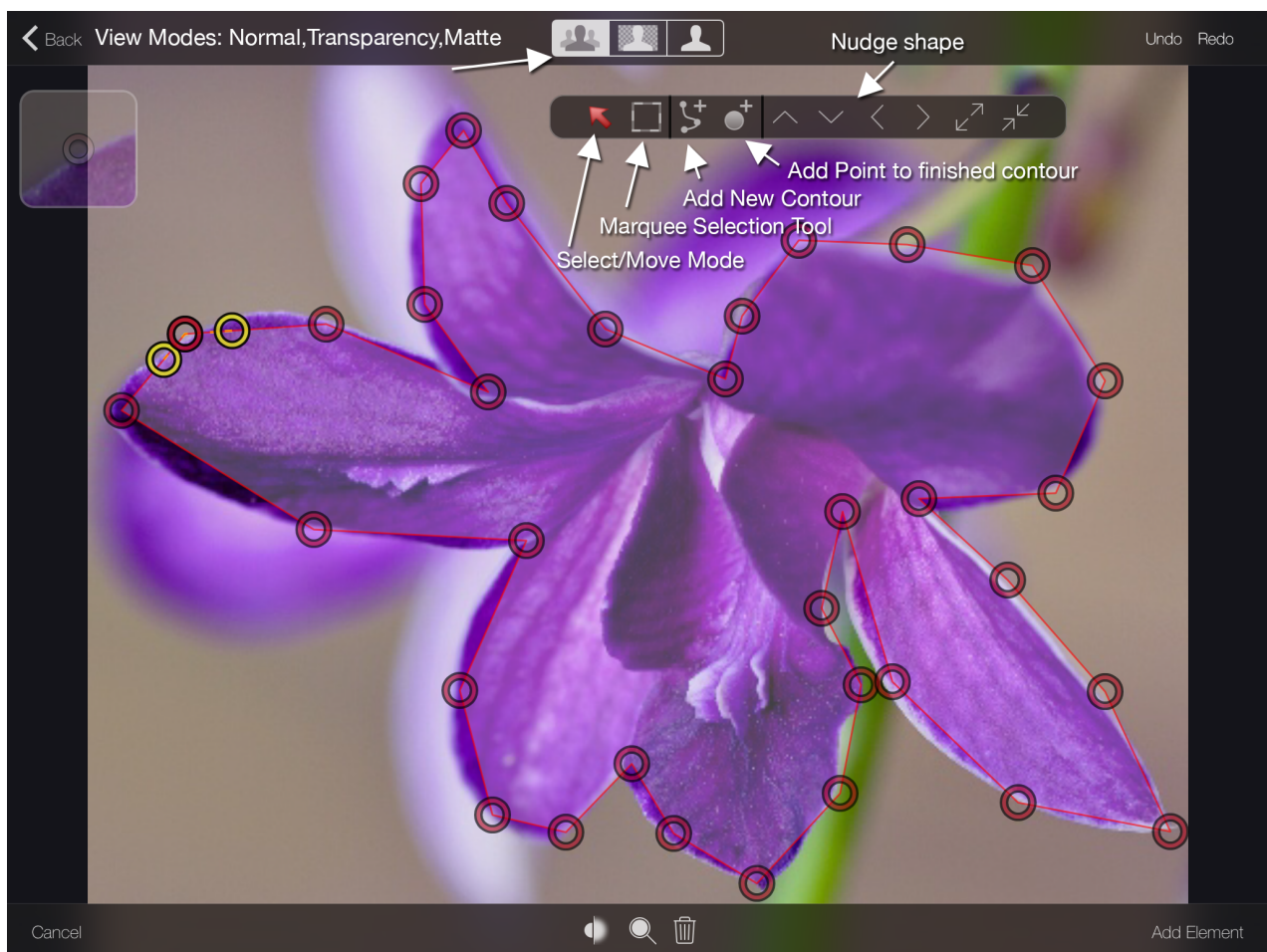


## Text Element

Text elements have editable font, alignment, outline and color. Text elements can be used to animate titles.

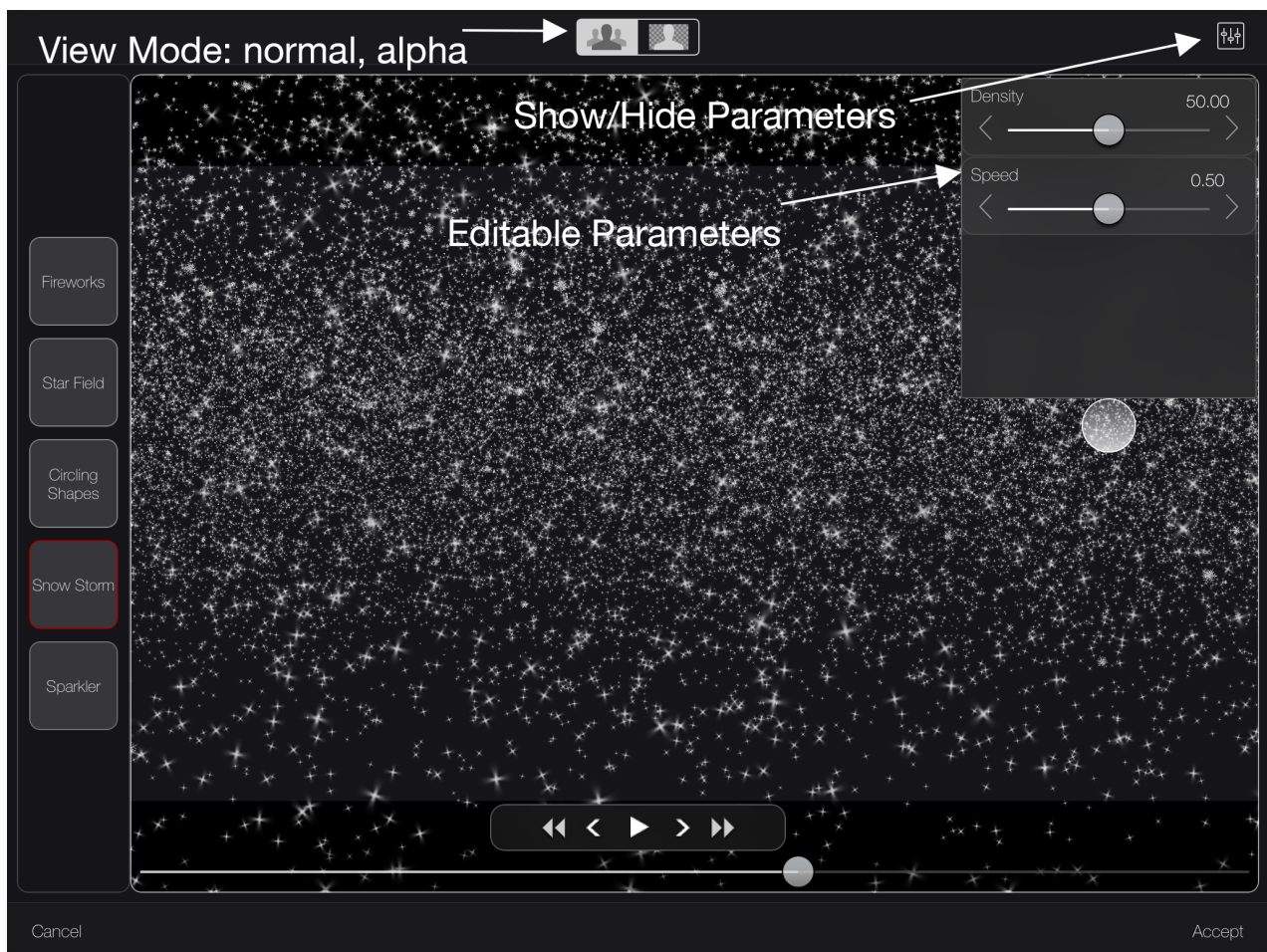
## Cutout Element

You can also cut out your own elements. Import any image from your photos and draw a contour to define the area of the image you want to keep. MotionGraphics will create an element with alpha for you to animate in your scene.



## Procedural Element

Procedural elements are animated replicators and particle systems. Each type has parameters which can be edited and animated, such as color, outline etc. Particle systems have a bit of run up time. They work much better in longer projects. Fireworks, for instance, will be difficult to see in a project of only three seconds. Because procedural elements are already animated, they have a player built into their editor.



### Draw-on Element

There is currently one draw on element. You can draw a stroke or strokes and have it animate on over time.

### Green-Screen Element

The green screen element is created from an image that has a solid color background, generally green, and a distinct foreground you would like to separate out. The parts of the image described by the key color are removed and result in transparent alpha. The editor offers a color picker and 3 views to aid in the keying process. You use the color picker to pick the key color and then refine the mask with the various view modes. Once you have created a mask it is often necessary to clean up either inside or outside the mask using the contours as garbage masks. You can add or subtract areas using the add mask or the subtract mask. Using the Clip contour you can cut away everything outside the contour.

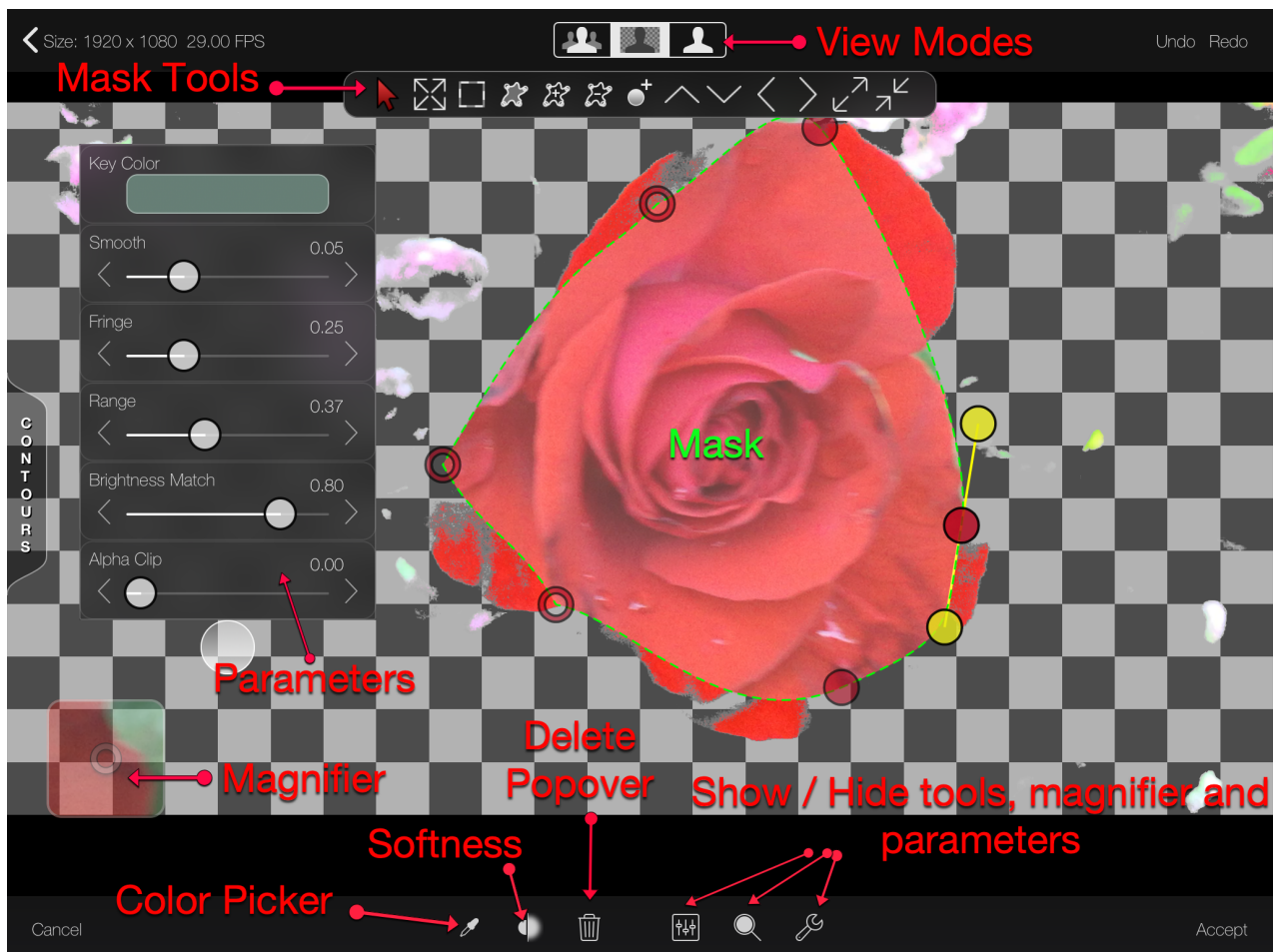


Original image



Keyed image

### Green-Screen Editor





## PARAMETERS FOR GREEN SCREEN REMOVAL

**Color** - The color to remove from the image. You can select the color by tapping on the color swatch and opening the color sliders, or by tapping on the eye dropper to pick a color from the image.

**Color Range** - the range around that color to remove. The higher the range, the more will be removed from the image.

**Edge Smoothing** - softens the transition at the edges.

**Fringe Erase** - removes some of the edge spill that can come from the surrounding background color reflecting on the foreground object.

**Mask Threshold** - cuts out the almost transparent parts of the key (removes grey and turns it black).

**Brightness Match** - cuts out the almost transparent parts of the key (removes grey and turns it black).

## MASK TOOLS



**Pick Tool.** This tool is the default tool. Select it to pick or edit a contour, move vertices, or break tangents.



**Transform Tool.** This tool lets you move contours around in the scene.



**Marquee Selection Tool.** This tool allows you to select / deselect multiple or single points at the same time. It is not possible to zoom or pan the workspace when in Marquee tool mode.



**Clip Contour Tool.** The Clip contour defines the outline of the sprite(s). This tool must be selected in order to add a new contour. Once the tool is active any touch in the workspace will add a new point. A simple tap will add a point which has broken tangent handles. A tap and short hold will add a point and let you pull its tangent handles right away. To finish adding a contour either double tap for the last point, or tap on (or very close to) the initial point. Once the contour is finished the tool will automatically switch to the pick tool.



**Add Contour Tool.** Add Contour adds the area under the contour to the end result. It is most commonly used in conjunction with Color or Depth Cutter as a garbage mask. It will keep the semi transparent areas under the contour completely white. The workflow for creating an "Add Contour" is identical to the adding a "Clip Contour".



**Subtract Contour Tool.** A “Subtract Contour” erases the area under the contour from the end result. It is most commonly used in conjunction with Color or Depth Cutter as a ‘garbage mask’. It will keep the semi transparent areas under the contour completely black. The workflow for creating a “Subtract Contour” is identical to the adding a “Clip Contour”.



**Add Point Tool.** This tool allows you to add a point to a contour. Tap and hold near the red contour line of a selected contour. An large aqua point will become visible under your finger, which can be pulled along the contour line. Once the point is where you want it, let go and a new point will be added. Once a point has successfully been added, the tool automatically switches to the pick tool.



**Nudge Up Button.** Pressing this button will nudge the selected contour up by one pixel.



**Nudge Down Button.** Pressing this button will nudge the selected contour down by one pixel.



**Nudge Left Button.** Pressing this button will nudge the selected contour left by one pixel.



**Nudge Right Button.** Pressing this button will nudge the selected contour right by one pixel.



**Scale Up Button.** Pressing this button will increase the size of the selected contour by a small increment.



**Scale Down Button.** Pressing this button will decrease the size of the selected contour by a small increment.

# Keyframe Animation

## Elements

MotionGraphix has a highly intuitive 'automatic keyframe' system for animating elements. Every change that is made to an element creates a keyframe. To animate the position for instance, move an element, adjust the time, move the element and so on. Non-positional parameters (i.e. opacity) are also automatically keyframed when adjusted from parameter editors.

## Background Filters

Background filters can be animated as well, but changes do not automatically add keyframes until you have added at least one. The background filter editor is in the adjust drawer. Once the keyframe button is pressed for one of the filter channels, it turns on auto-keyframing, and any additional change at a different time will add a keyframe. To remove a keyframe, simply press on the red key button. The key button turns red on frames where a keyframe is present.

## Path Animation

Path animation is an additional type of animation for position. A path animation has no keyframes, but simply a single procedural path. The only additional editing you can do to a path animation is to move it around your view. The way to create a path animation is to add a motion that is procedural, like the spiral or sine wave motions, or to draw a custom path.

## Digital Tracking

Digital tracking is a cool feature which allows you to quickly animate complex motions. To start digital tracking press the paw button in the Play Controls. The movement of your finger (digit) is recorded into position keyframes as the movie is playing. To start digital tracking, click the digital tracking button, tap and hold anywhere in the main view, and then move your digit where you would like to see your element move. It helps if you are on the first frame of your animation, but you don't have to be. Nothing will happen if you are on the last frame. When you lift your finger, the tracking is finished. The player will stop and a default element will show up at the end of your new animation curve. Simply open the element editor to change the element image. To apply this animation to an element type other than an image, it is necessary to save the animation, then add the new element and load and apply the saved animation to it.

## Scene and Element Modification

There are numerous scene and element editing features in MotionGraphix. The modify popover is opened by pressing the wrench icon.

### Edit

In the Edit section you will find functions for removing elements, clearing the scene, removing keyframes, duplicating elements and something called motion mover mode. When motion mover mode is turned on, any position change to an element will affect all keyframes in the animation. This is a great way to move an already fine-tuned animation, especially one that has a lot of keyframes to a new location in the scene. Without using this mode, moving an element would only create a new keyframe at the current time or move an existing one. When you are finished with motion mover mode, press the button that appeared in the upper portion of the main view.

### Snapshot

Making a snapshot of an element will store the current state of the element: position, scale, rotation, drop-shadow, etc. into a file that you can then paste onto another element. A snapshot does not contain animation.

### Animation

The entire animation for an element can be stored into a small file and then loaded onto another element. When you load an animation it will overwrite the current state of the element with the new animation.

### Motion

MotionGraphix contains a library of ready to use motion templates. These are pre-calculated actions which can be added to an element at any time in the workflow. Each motion has one or more channels that it affects. For instance the bounce motion animates the position channel and the fadeIn motion affects the alpha channel. One motion can be added per channel.

### Draw Path

Selecting this item will open an editor with the current image from the view. You can draw a path which the element will follow. When originally entering draw path mode, the tool mode is add path, once you have double clicked to finish adding a path, the tool mode switches to pick and you can edit the path.



## Scene

Storing a scene stores the state of all elements, including their animations into a small file. You can then load that file into a different project. You might want to do this if you have created an amazing set of elements with fine tuned animations, and you would like to add them to a different project, or to make a standard opening or closing title sequence.

## Change Background

The last item in the modify popover is 'Change Background'. You can change the background to any type you want. If the length of the new background is different from the original, element animations will either be shorter or too long. They will not be retimed in any way.

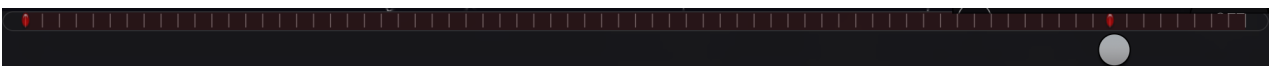
## Keyframe Bar

The keyframe bar displays the location of all keyframes for the selected element, or all keyframes for the background filters. The background filter keyframes are only displayed when the background filters editor is opened. You know you are seeing background filter keyframes when the background color of the bar is red.

Element Bar



Filter Bar

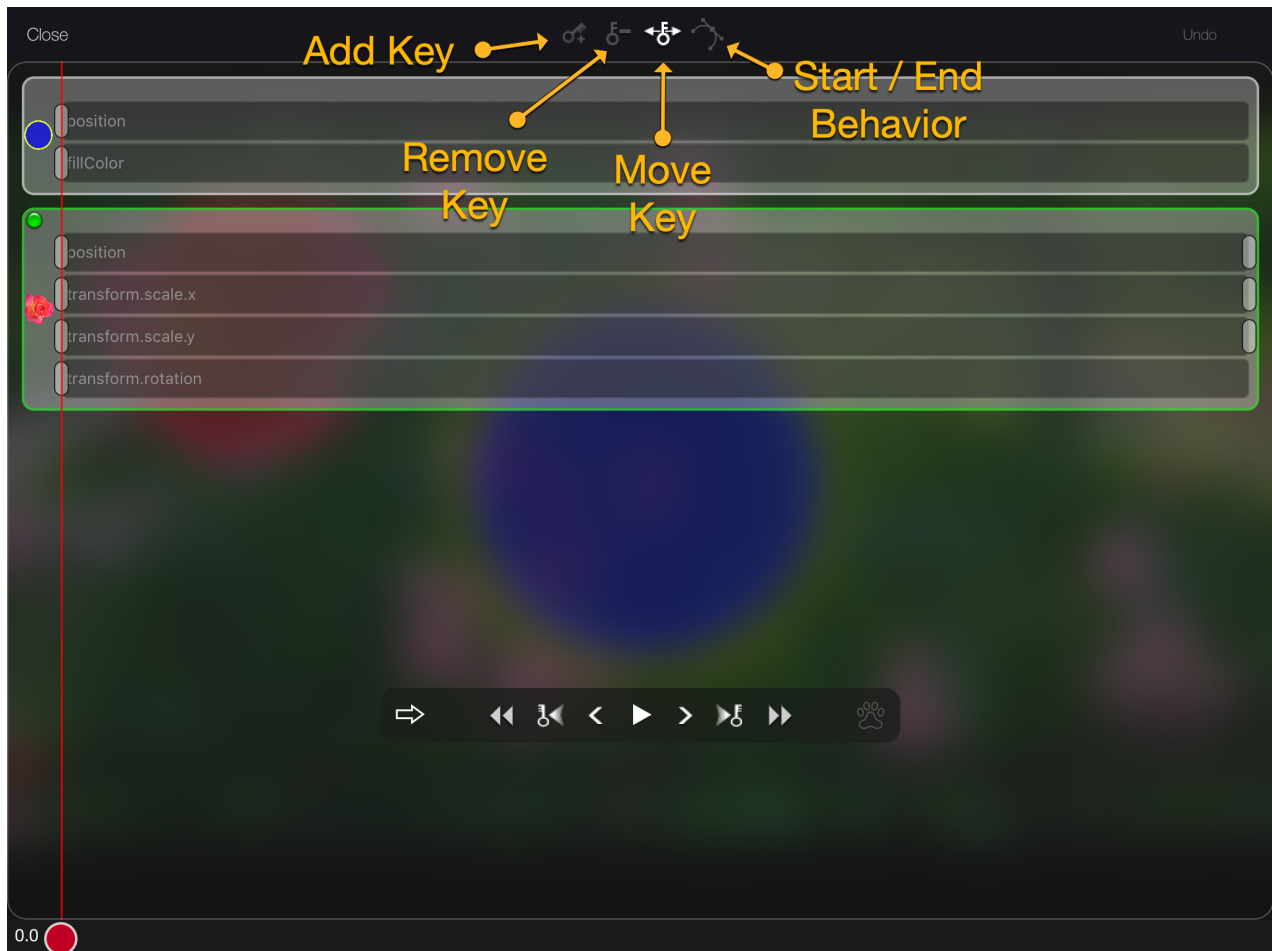


## Keyframe Editors

### Element

Each section in the keyframe editor represents an element. Each channel that currently has keyframes is visible. At a minimum, there is one channel per element for the default position keyframe. You can pan and zoom to make editing keyframes easier. Keyframes can be moved by turning on the move keyframe button and performing tap, hold and move on individual keyframes. Keyframes can be deleted by turning on the delete button and tapping on the keyframes you want to remove. To add keyframes turn on the add button and tap where you want a new keyframe. To change the keyframe type between ease in, ease out, ease in/out and linear, press the timing button. Every selected

keyframe will present the timing popover. A keyframe with linear timing is white, ease out is white on top and red on the bottom, ease in is red on top and white on the bottom, and ease in/out is red.



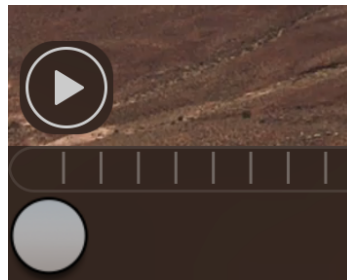
Select or deselect elements by tapping on their section. If no elements are selected, the goto next / previous keyframe buttons will take into account all elements in the scene. If an element is selected, only it will be taken into account when navigating keyframes

### Filter

Each section in the filter keyframe editor corresponds to one filter. All channels for each filter are displayed, whether they have keyframes or not. Using the remove and move keyframe buttons, you can delete and move keyframes in the same manner as the element keyframe editor.

## Individual element keyframe editor

At the bottom the interface above the time slider is a chevron button which expands and collapses the individual element keyframe editor.

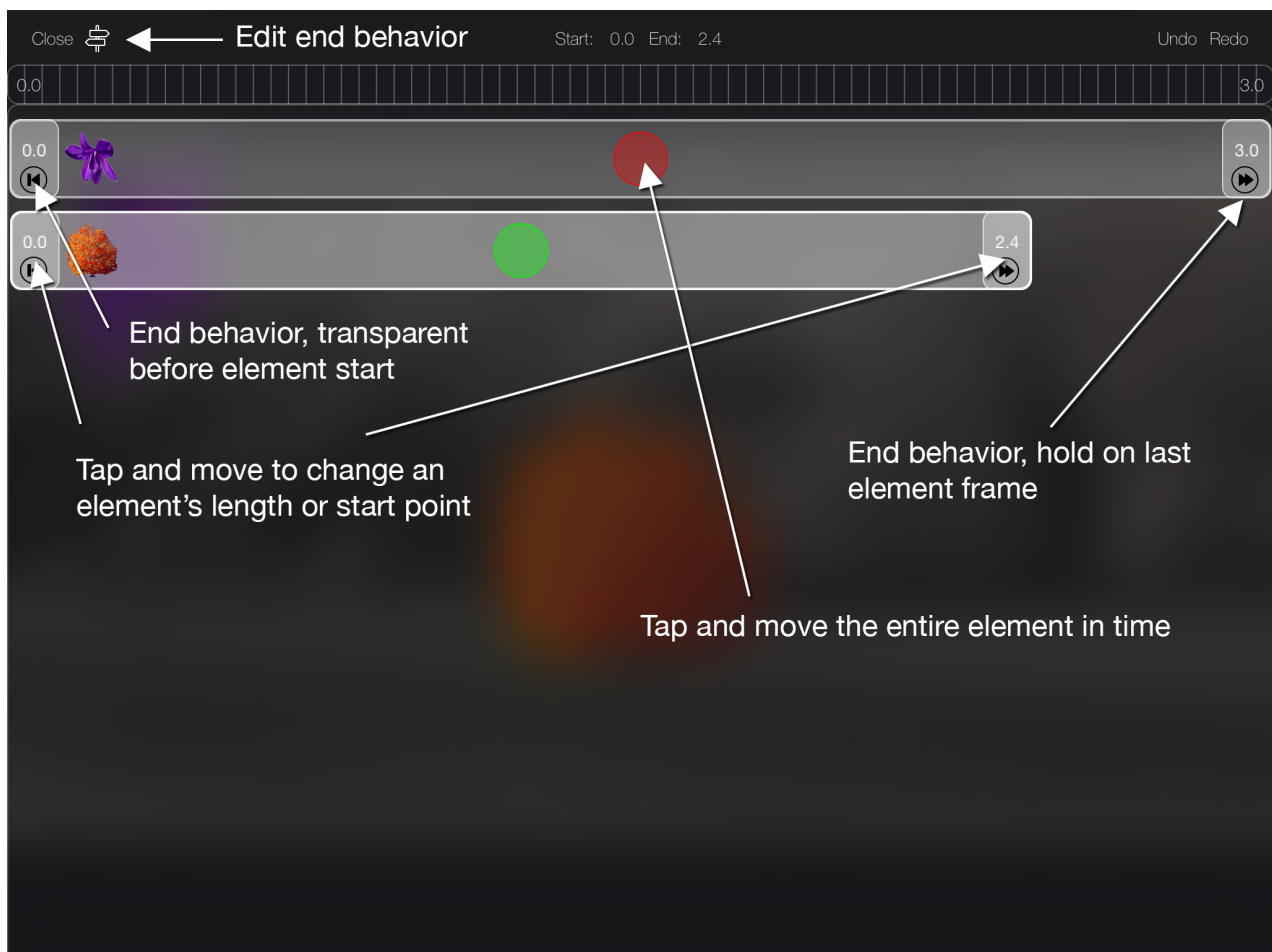


When expanded, the editor displays all animated channels for the selected element. The add, move, delete and end behavior buttons enable the same editing functions as the full keyframe editor.



## Timeline Editor

The timeline allows you to edit the timing of your elements. Each element is displayed as a segment in the timeline. To change the start time of the element drag on the white hot spot at the start of the segment. To change the length, drag on the white hot spot at the end of the element. To change the overall position of the element in time, drag on the circular colored hotspot in the middle. When an element is selected, you can also touch on the start or end values at the top to open a numeric entry keypad. When an element has had its time adjusted, it will not be visible in the output video outside its time range. In the editor, it will appear semi transparent when time is outside of its range. This helps keep track of where elements are, so they aren't completely invisible while you are working.

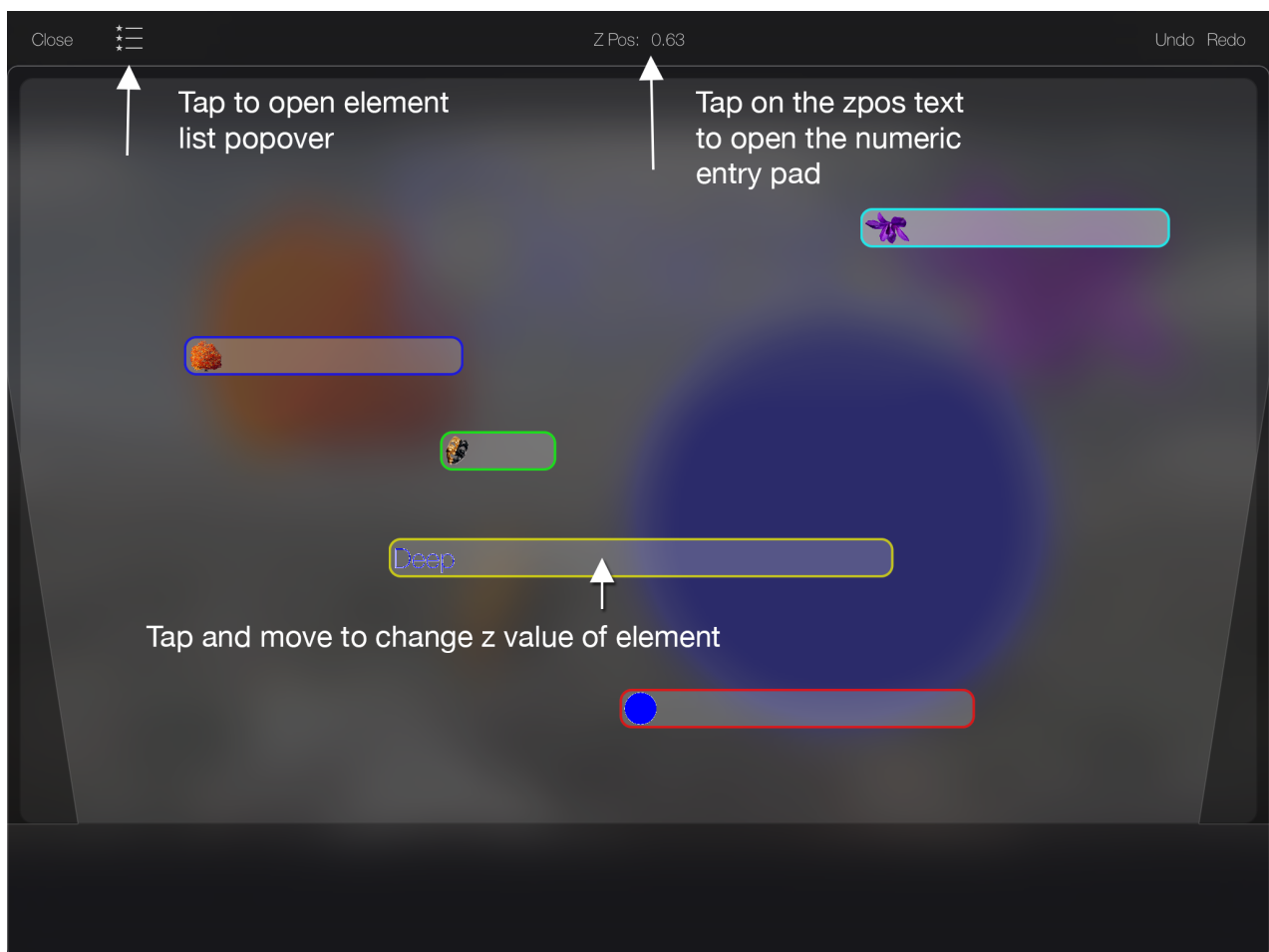


Element end behavior can be edited by selecting the sign post button. If the end behavior is set to transparent the element will be invisible in the final output and semi-transparent in preview. If the end behavior is set to hold, the element will hold on the first or last frame, depending if it is set for the start or end. Element start and end can

have different end behaviors. The default “element end” end behavior for animated sprites is hold, all other sprites have transparent as their default.

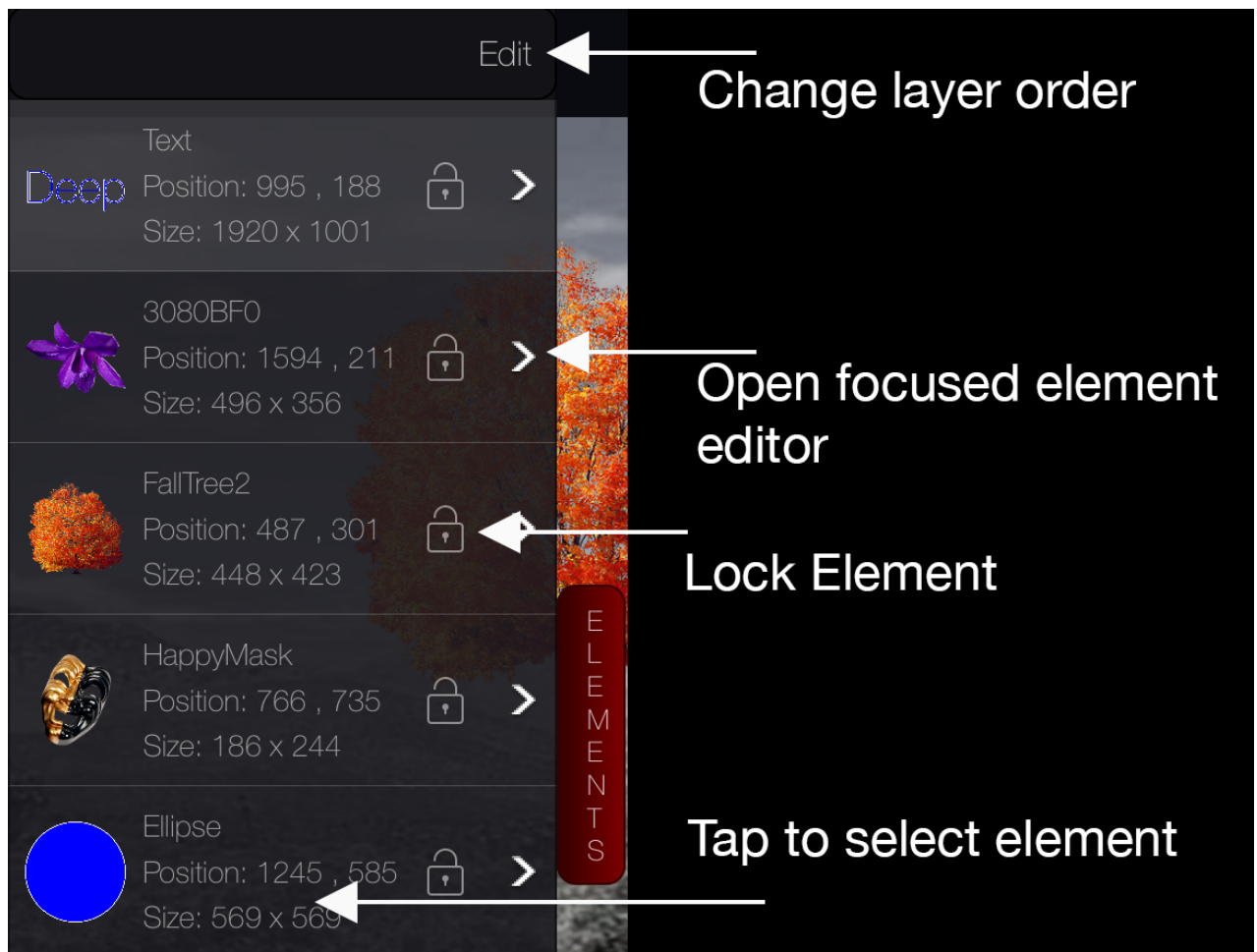
## Camera Editor

The camera editor allows you to edit the z position of each element from a top down view. At the bottom of the editor is the camera, the lighter area is the view frustum. It shows what will be visible in the scene. Dragging elements closer to the camera will make them bigger in the scene. Elements closer in Z will also appear over other elements. For precise placement you can also touch on the ZPos at the top to open a numeric keypad. There is also a popover available with sliders.



## Element List

The element list displays all elements in the scene. The elements list is in the drawer on the left. Touching the elements button will open and close the drawer. The elements are ordered based on layer order. The top element in the list is the top element in the scene. However, if you have edited z positions, this may no longer be the case. Z position takes precedence over layer order. If you haven't edited z positions, you can change the layering order of the elements by pressing the edit button and dragging the elements up and down in the table. If you have edited z position, changing the layer order may not make a visible change in the scene. You can lock an element from the elements list. This means the element is no longer selectable or editable. This is a helpful feature for editing, because selecting elements with touch can get difficult when there are lots of elements in a scene. Locking elements that you are finished editing can make editing the rest easier and prevent accidental changes. The right arrow button at the right takes you into the focused element editor.



## Element Adjustment Controls

The adjust drawer can be opened by pressing the adjust button on the right. The adjust elements drawer has editors for all channels of an element. There are 4 pages of element editing. The buttons on the top switch between the pages. From left to right:



### Element State

The element state controls consist of Name, Locked state, Position X, Y, Z, Scale X, Y, Rotation and Opacity. Animatable properties have a key button at the left. When the button is red it means the element has a keyframe at that time. If you press the button when it is red, it will remove the keyframe. Pressing the button when it is white will add a keyframe at that time with that parameter value. The downward arrow on the right resets the parameter to its default value. The left right arrows in the center increment the value by a small amount. The value button shows the current value of the property. If you press the value button a numeric keypad will open.

### Element Shadow

The shadow parameters consist of Offset X and Y (how far the shadow is moved from the element), Shadow Radius (the blur size of the shadow), Opacity and Color. The parameter controls are the same as element state.

### Element Style

The parameters found in the element style are all the parameters which are specific to a particular layer type. For instance a shape layer will have additional controls for line width, stroke color, fill color etc. Some elements will allow you to go back into the original editor to fine tune. Warning: If you go back into the original editor, animated channels will be lost.

### Element Pivot

The pivot of an element is its center of scale and rotation. Simply drag on the small cross to change it. As you move the pivot, your element will also move in the scene, as its center is updated. The pivot cannot be animated, don't even think about it.



## Background Filter

Background filter adjust drawer can be opened by pressing the filter button on the right. The background filter parameters consist of the controls for the six image processing filters available in MotionGraphix. The parameter controls work the same as those in element adjustment.

## Focused Element Editor

The focused element editor is basically a different view of the element adjustment controls. It allows you to focus on editing an element with all the controls you need surrounding the view. On the left are all the channels available for editing: state, shadow, and style. On the right are the sliders or controls available for the selected channel. There are nudge controls at the top for performing small incremental changes. You access the focused element editor by double tapping on an element.

Focused Element Editor

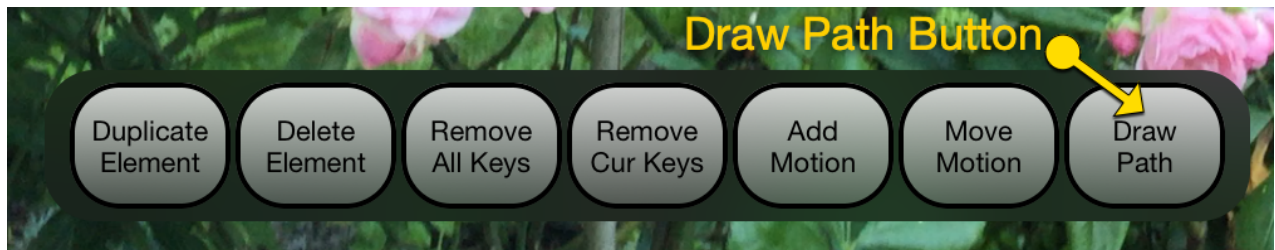




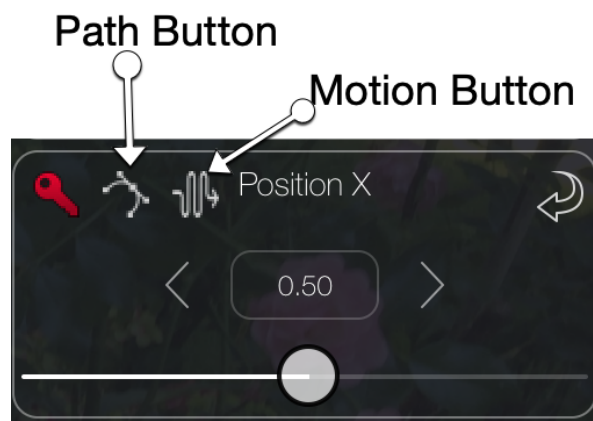
## Draw Path Editor

You can open the draw path editor from either the long tap contextual menu, or from the edit popover in the motions section or from the contour button in the parameters view.

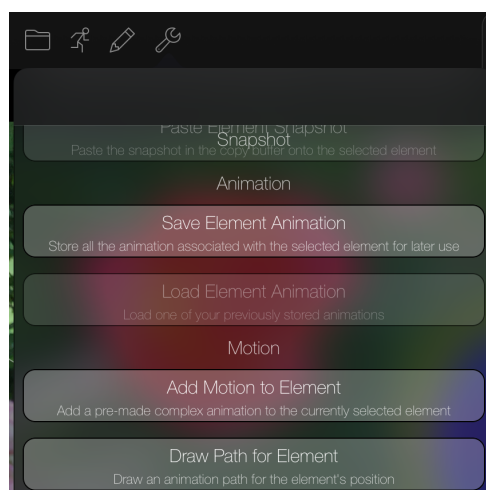
Long tap contextual menu:



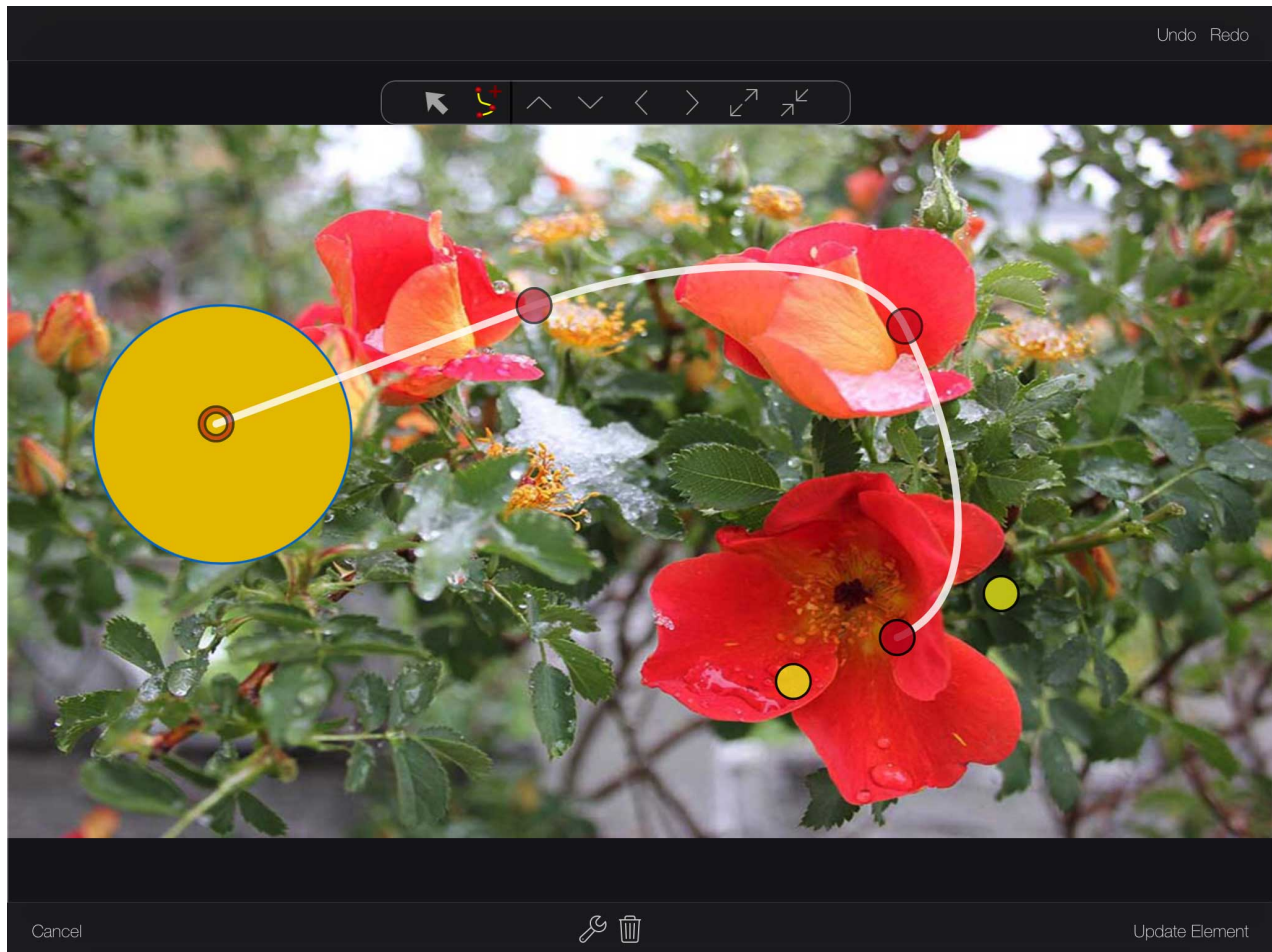
Contour button in Parameters View:



Edit Popover:



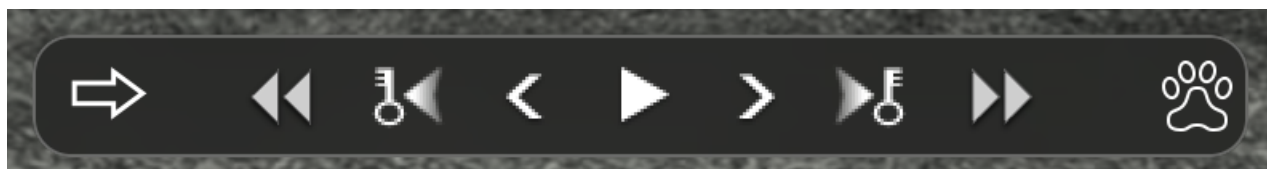
Once open, the UI has similar shape editing controls to the cutout and shape element editors.



When you first open the editor the tool is in Add path mode. Double click finishes adding and then editing can begin. Pulling on a point changes the shape, double clicking on a point breaks and joins the tangents. The wrench button at the bottom shows and hides the tools and the trash can button allows you to delete the shape and start over. Editing actions are undoable. When you are happy with the path, select update element to save the path the position animation of your element. The element will move to the start position of the path. To make a change, re-open the editor (from either the contextual menu or the popover), make your changes, and update again.

## Play Controls

There are numerous play controls in MotionGraphix. All have a sub-set of the following buttons.



**Play Mode:** loop or play to end

**Goto start:** if an element is selected that has a different start point than the scene, the goto start button will first navigate through the selected element's end and start points and then goto start. If nothing is selected, goto start will go straight to the beginning of the scene.

**Goto previous keyframe:** this button is only enabled when an element is selected or the background filter drawer is open. It will navigate time to the previous keyframe.

**Step back:** go back one frame

**Play:** plays to end or loops, depending on the play mode setting.

**Step forward:** go forward one frame

**Goto next keyframe:** this button is only enabled when an element is selected or the background filter drawer is open. It will navigate time to the next keyframe.

**Goto end:** if an element is selected that has a end start point than the scene, the goto end button will first navigate through the selected element's start and end points and then goto end. If nothing is selected, goto end will go straight to the end of the scene.

**Digital tracking:** is a toggle which needs to be turned on before you start digital tracking

## Rendering

When you are ready to render your animation, press on the share button. The popover has settings for size, type and format.

**Size:** you can render your movie to Full HD (1920x1080), HD (1280x720), Half HD (960x540) and SD (640x480)

**Type:** you can render to MP4 video, GIF movie, or PNG or JPEG images.

Format: the format defaults to flatty (non-stereo), but you can also render to stereo side-by-side, stereo top-bottom, stereo anaglyph, and VR (Google Cardboard class headsets)

At any time before you share your masterpiece you can view a preview of the current still frame with all the above mentioned settings.

## Sharing / Exporting

When you press the share button you are presented with all the options for sharing your movie or still frame. MotionGraphix supports saving to photos, YouTube and any other sharing methods you have available on your device.

## Settings

The settings popover lets you view the current state of your project, as well as rename and change the description. The overall scene camera distance can also be changed from [here](#).