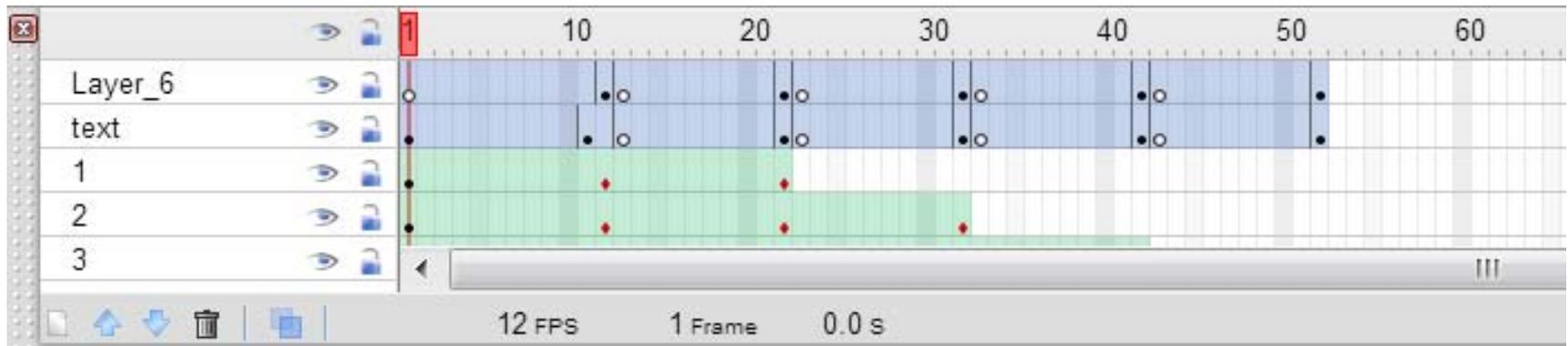# Adding Animations

## The Mugeda Team
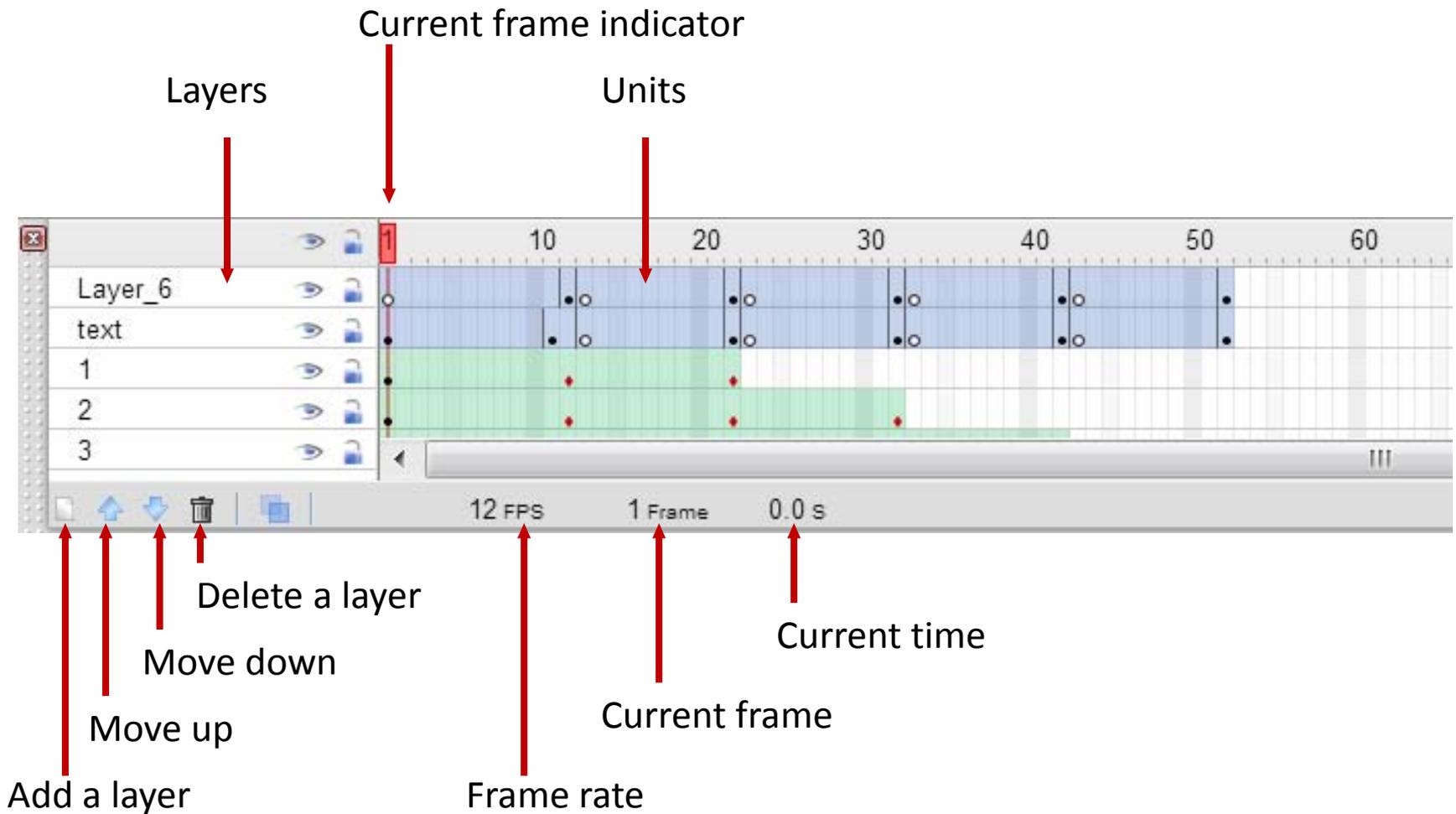
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May 19, 2013

# Timeline-based Animation



Animations are frame-based and are designed on a timeline. By creating layers and units on the timeline, you may create professional animations in minutes.

# Timeline UI



Current frame indicator

Layers

Units

Layer_6
text
1
2
3

12 FPS    1 Frame    0.0 s

Delete a layer

Move down

Move up

Add a layer

Frame rate

Current frame

Current time

# Layers

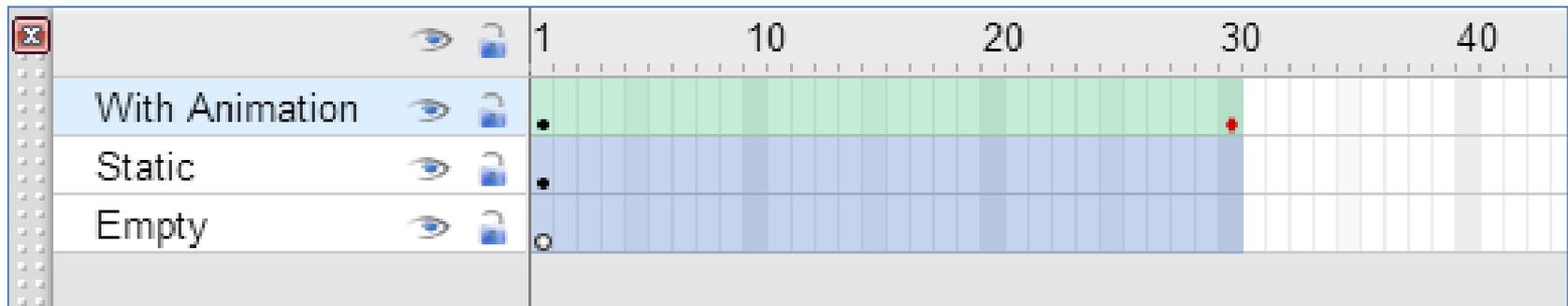## An animation layer is used to organize added elements

Each layer may contains one or more units (unit will be explained later)

Clicking a layer will make that layer the current layer

Elements added to a stage will be added to current layer

## An element must belong to a layer

Elements belonging to different layers will have different z-order layout, with the upper layer closer to a viewer, and a lower layer possibly occluded by a upper layer

# Edit Layers

Layer name (click to edit)

Toggle frame visibility (only affecting the visibility for editing)

Toggle frame lock status (elements in a locked layer are not editable)

Each layer may contains one or more units

Empty space in a layer with no unit covered

Clicking a layer makes it the current layer

Delete a layer

Move down current layer to a lower z-order
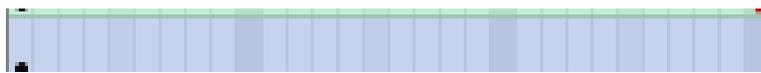
Move up current layer to a upper z-order
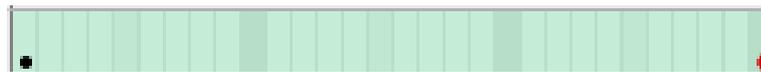
Add a new layer

# Animation Unit

An animation unit is the base to define an animation
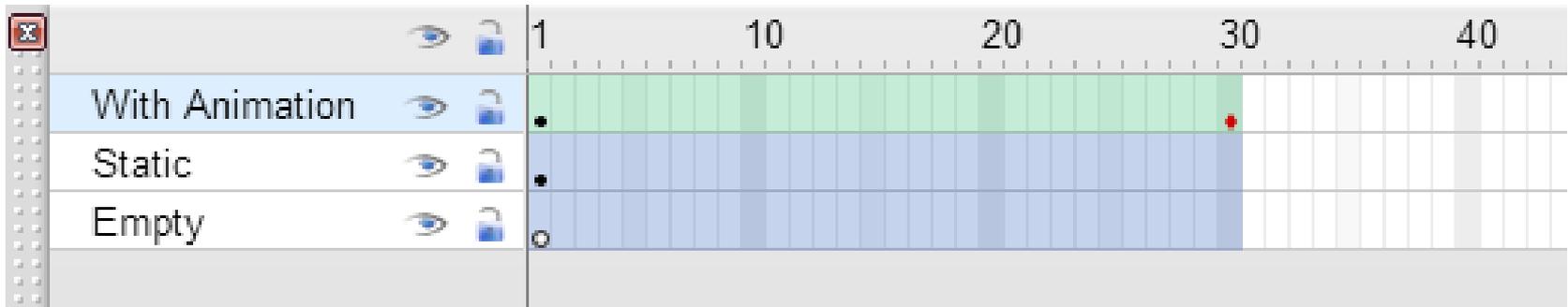


An empty unit

A unit with element(s)

A unit with animation

# Essential Properties of A Unit



Start frame                    End frame
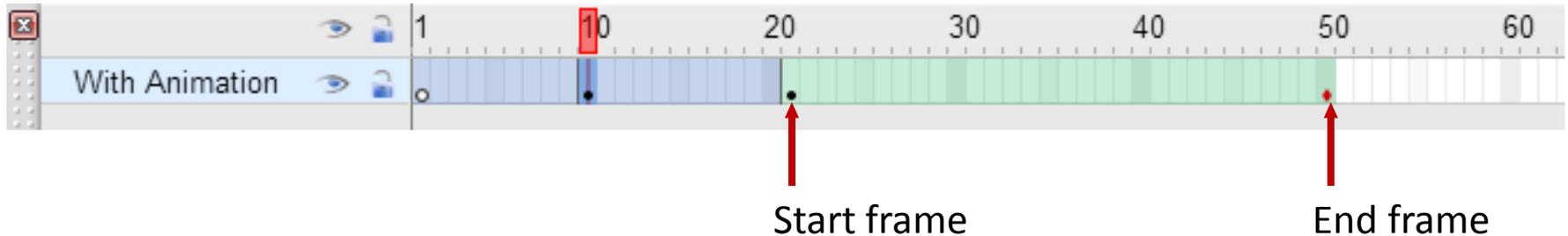
## Each unit consists of the following properties:

1. Start frame: the frame where the unit starts

2. End frame: the frame where the unit ends

3. Key frame: indicated as a hollow circle or on the unit.

## Each element must belong to one unit

Only the elements belonging to a visible unit can be seen on the stage. A visible unit is one whose frame range, defined by the start frame and end frame, overlaps with current frame location.
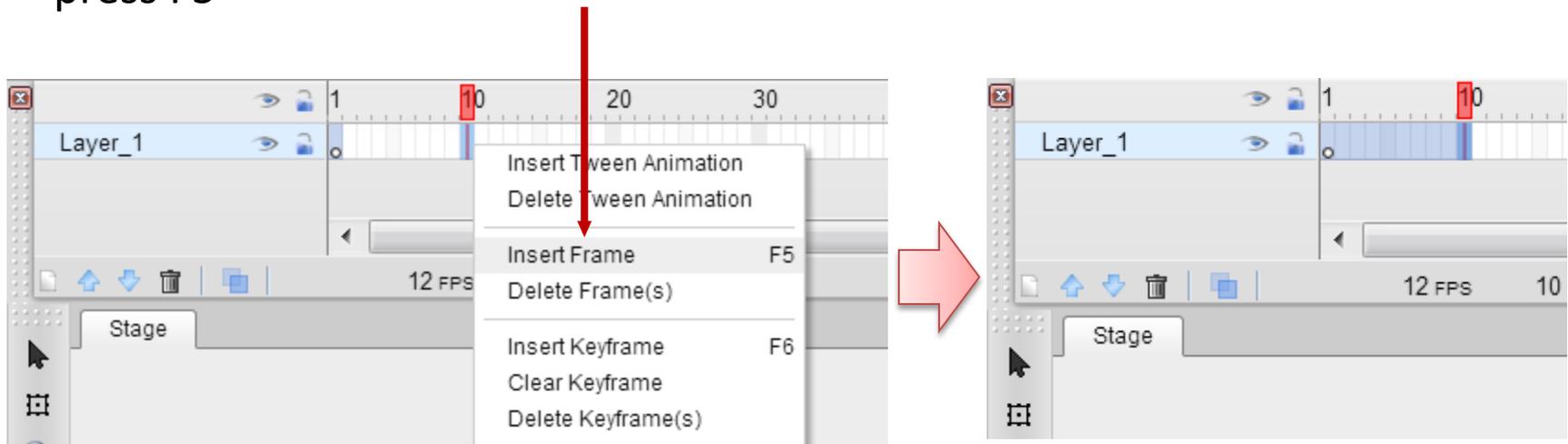
# Empty Unit

When a unit is newly created, it contains only one frame, and one empty key frame (indicated by a hollow circle) with no elements added into it yet.
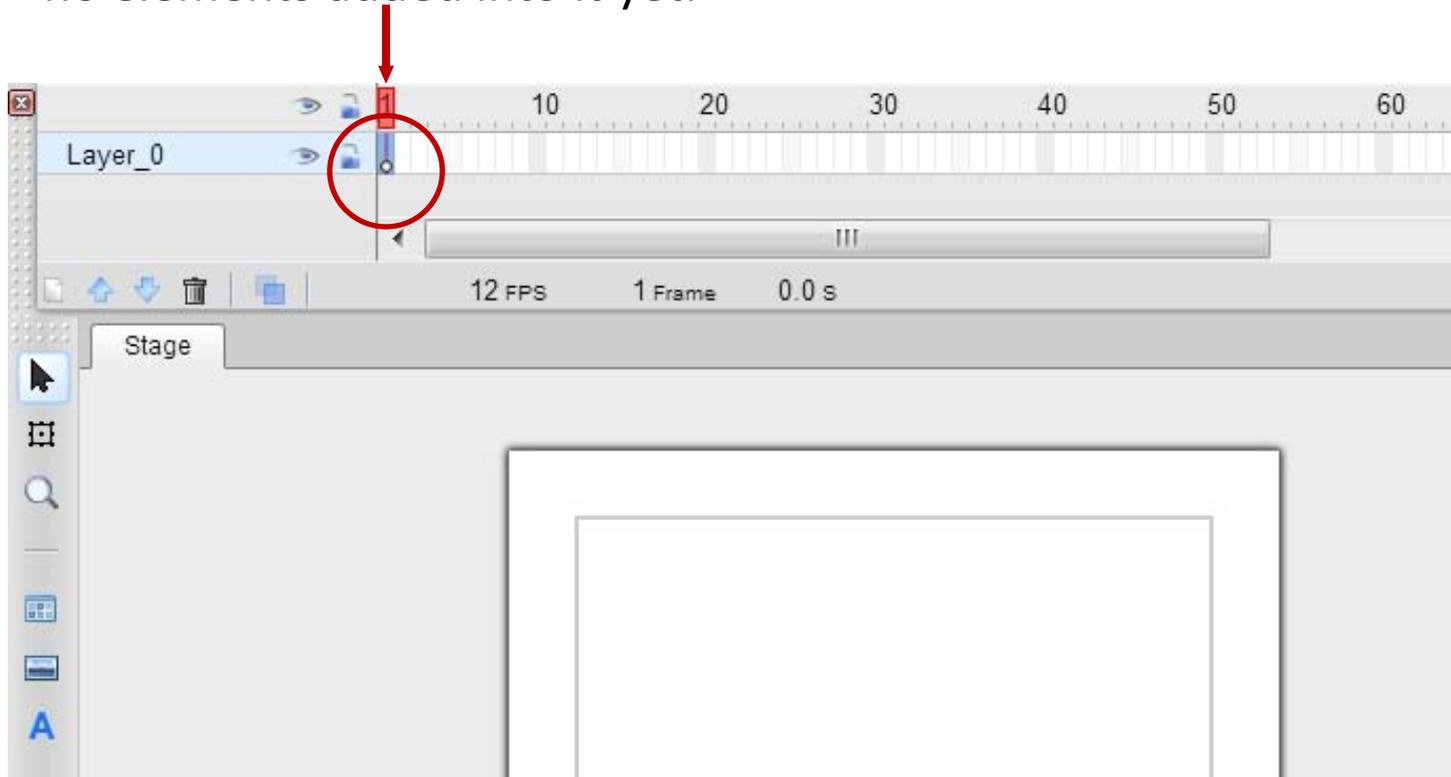
# Change A Unit's Frame Range

In order to extend the frame range of an unit, right click on the empty space of a desired layer, and choose "Insert Frame" from the popup menu, or press F5



Similarly, in order to reduce the frame range of an unit, right click within the unit, and choose "Delete Frame(s)" from the popup menu, or press Ctrl+F5
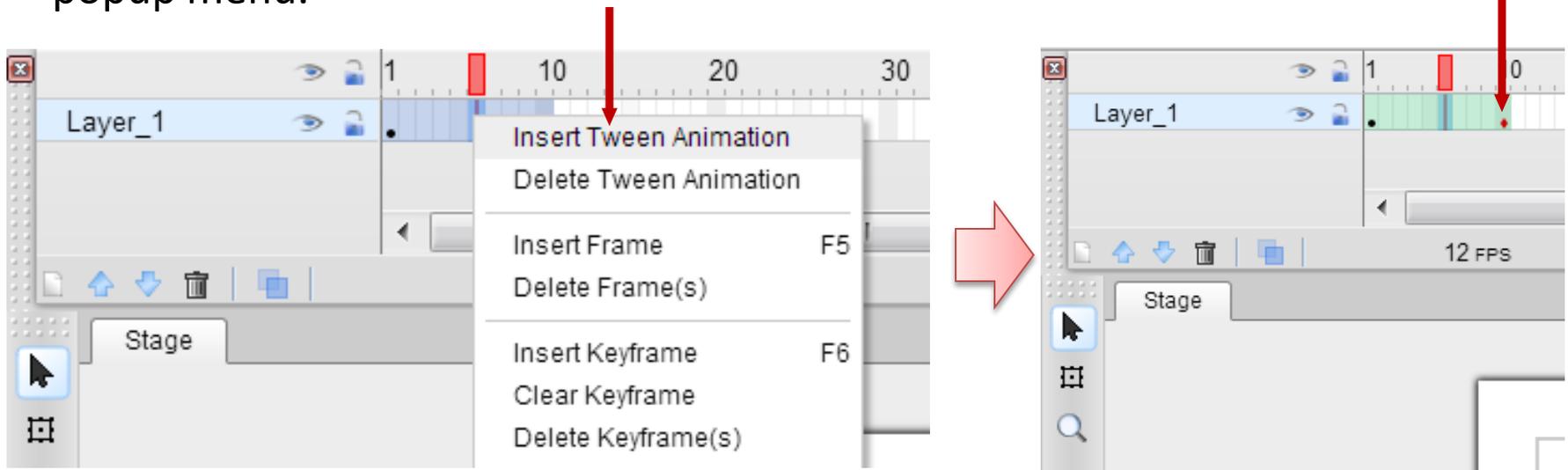
# Unit With Object

Once an element is added into the unit, the key frame will be marked with a black solid dot.
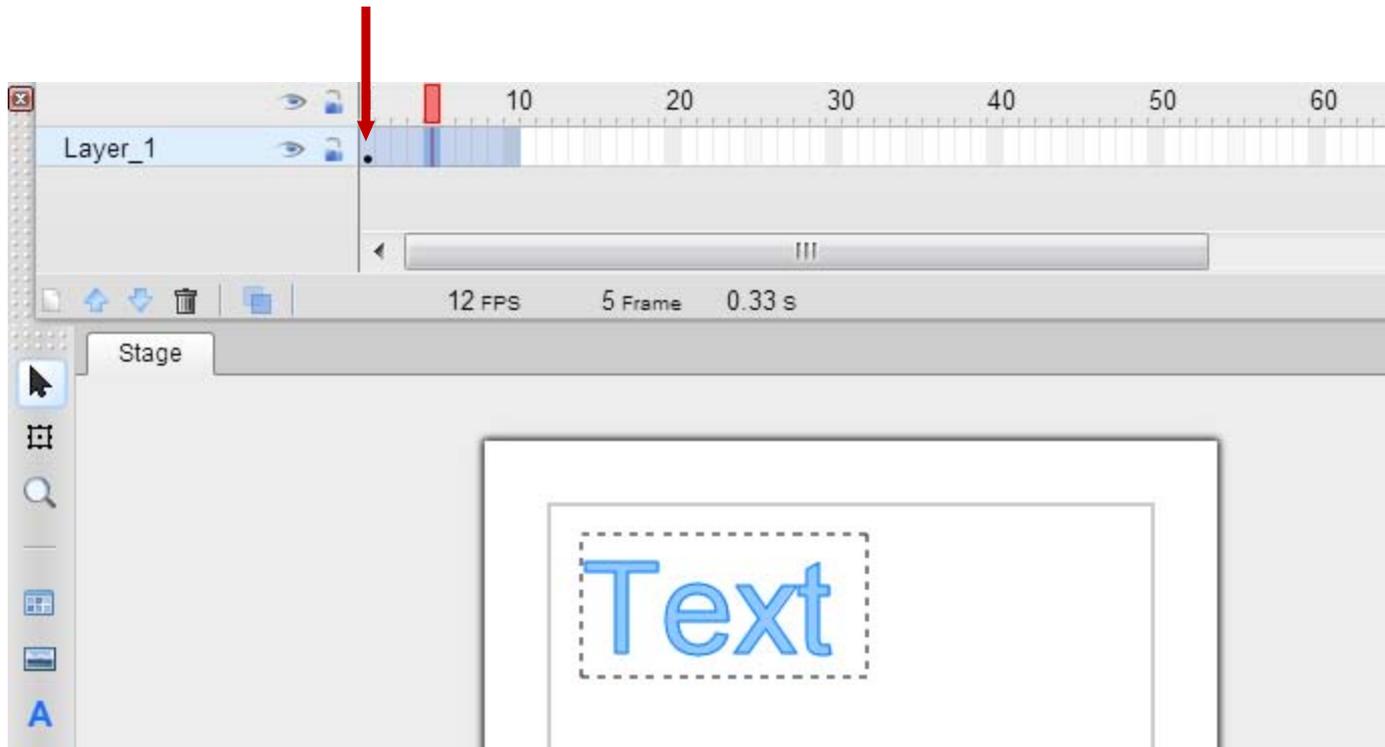
# Unit With Animation

In order to add animation to a unit, right click on the unit, and choose "Insert Tween Animation" from the popup menu.

An unit with animation is color coded with green, and has one more key frame indicated as a red solid dot.



Similarly, in order to remove animation of a unit, right click on the unit, and choose "Delete Tween Animation" from the popup menu.

# Edit Element Properties

After moving the current frame to a key frame, an element's property set (size, location, rotation, alpha value, etc.) can be edited on that key frame.
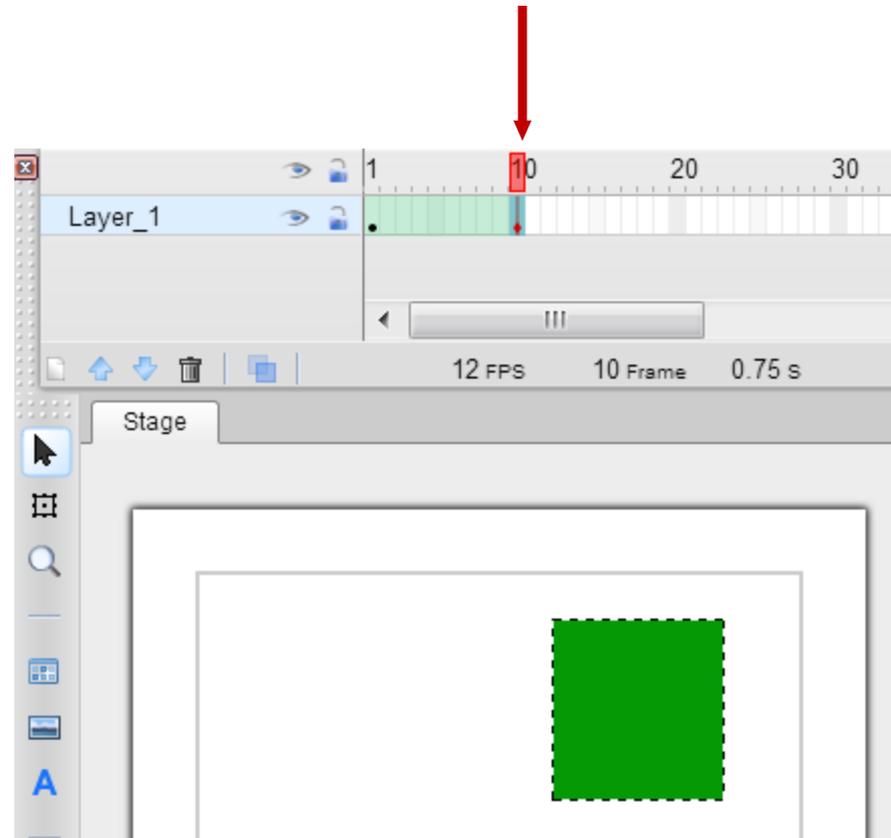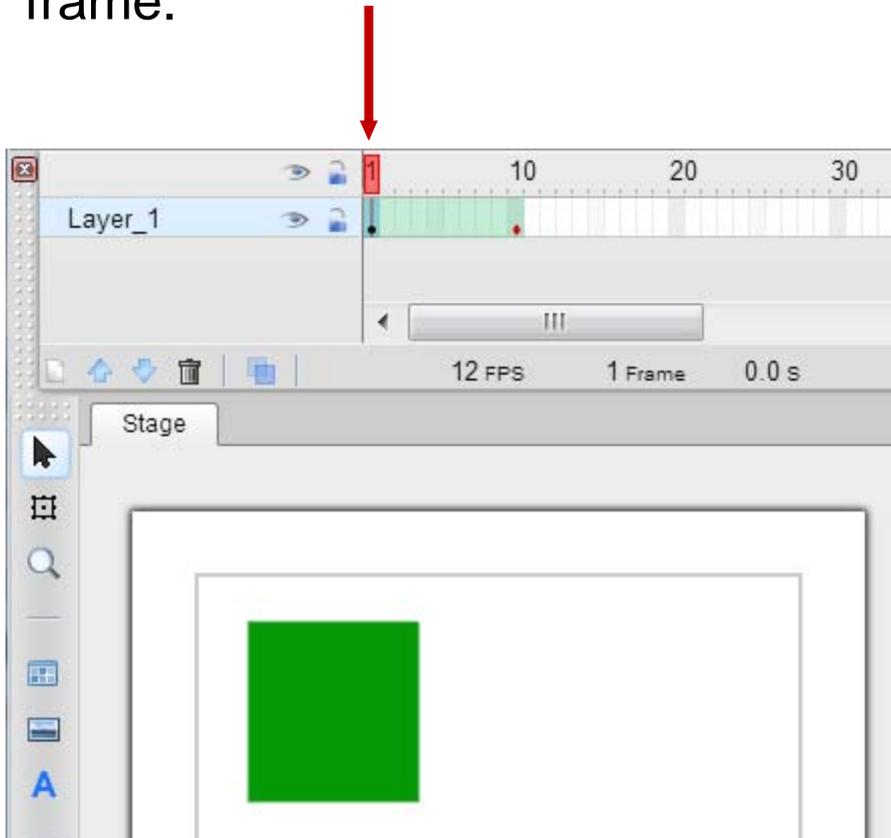
# Animation Rendering

For a unit with animation, elements are rendered using the following rules:
1. On a key frame, an element is rendered using the parameter set (size, location, rotation, alpha, etc) edited on that key frame
2. On a regular frame (with non solid dot), an element is rendered using the parameter set that is interpolated using two adjacent key frames
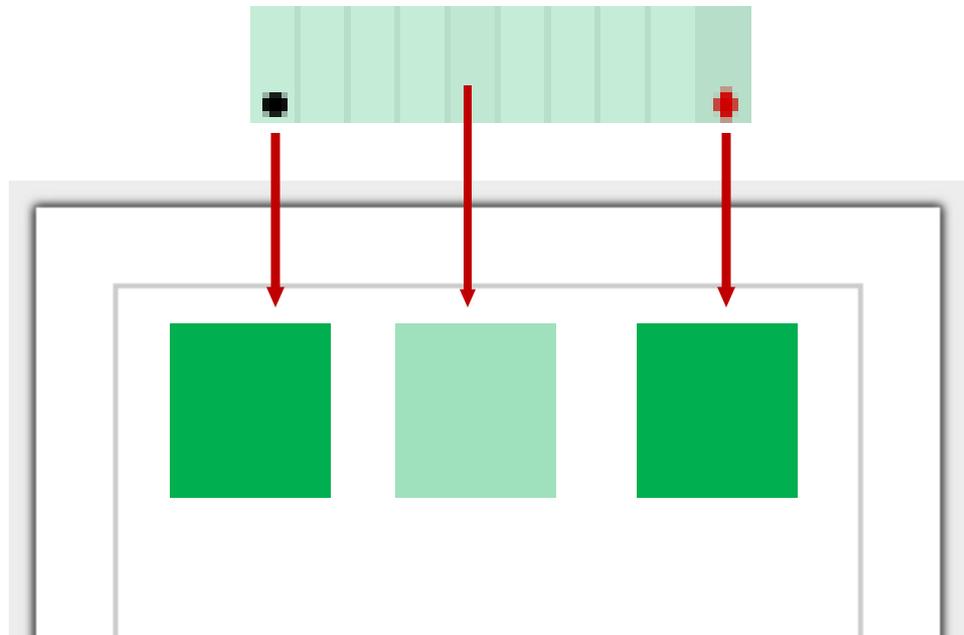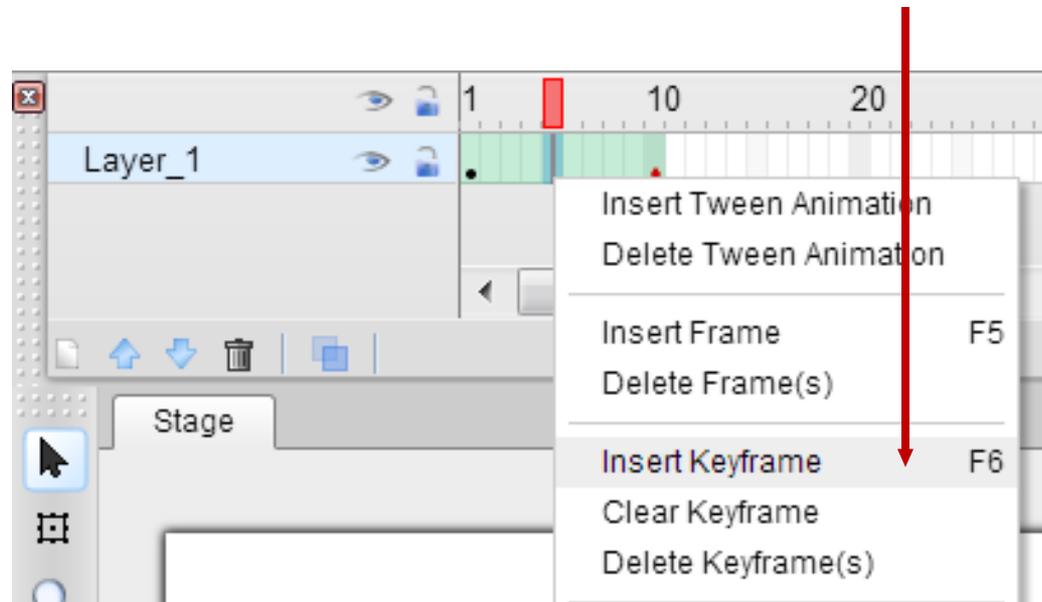
# Convert A Key Frame

Editing an element on a regular frame (not a key frame) will automatically convert that frame into a key frame
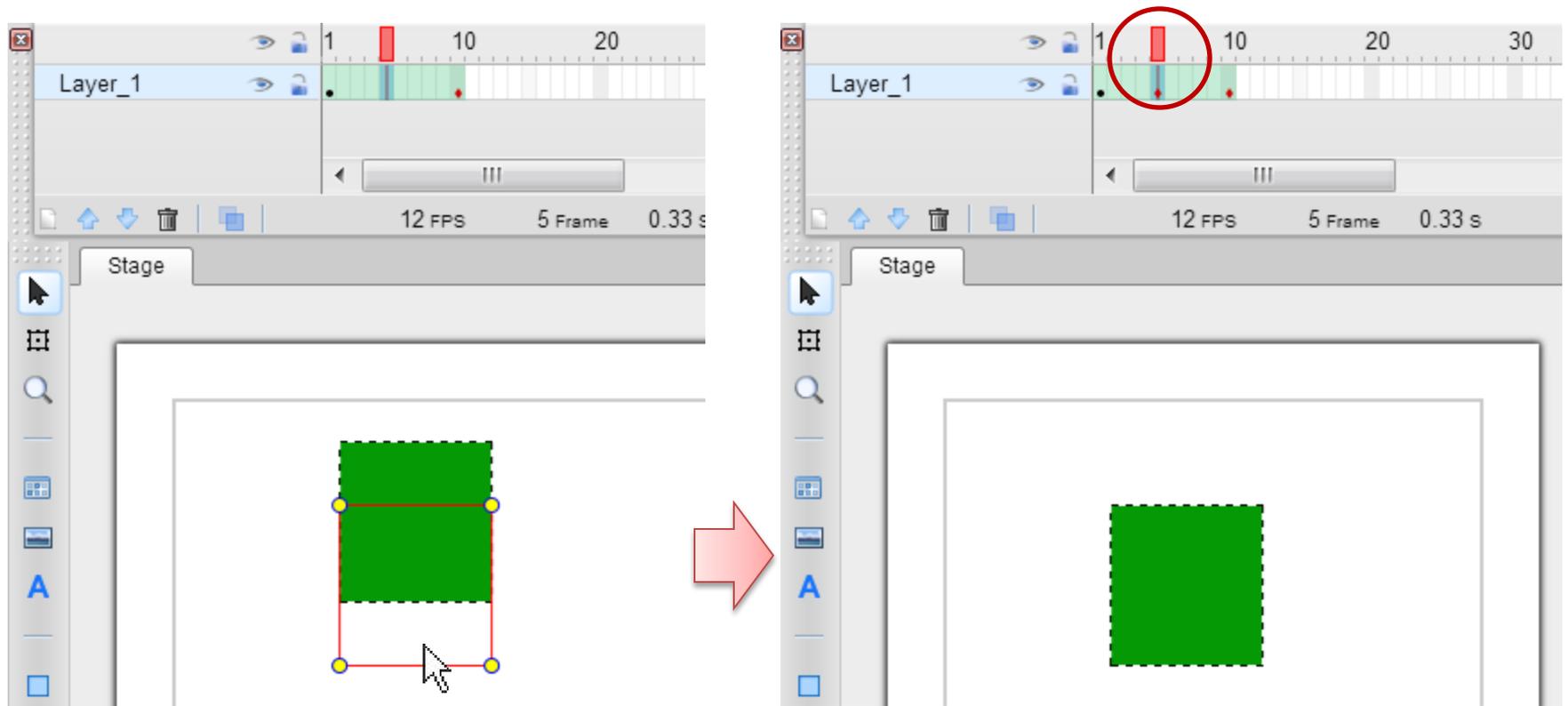
# Insert/Remove A Key Frame

Additional key frame may also be inserted into a unit by selecting a designated frame, and choosing "Insert Keyframe" from the popup menu, or press F6.



Similarly, a key frame may be removed from a unit by selecting a designated key frame, and choosing "Delete Keyframe" from the popup menu, or press Ctrl+F6.

# Show Animation Transition

Editing the mask window to adjust the frame range to display

Toggle "Glass Board" to show the motion transition of an animation

If "Glass Board" is toggled on, elements from multiple frames will be rendered simultaneously on the stage, with the version on the current frame highlighted.
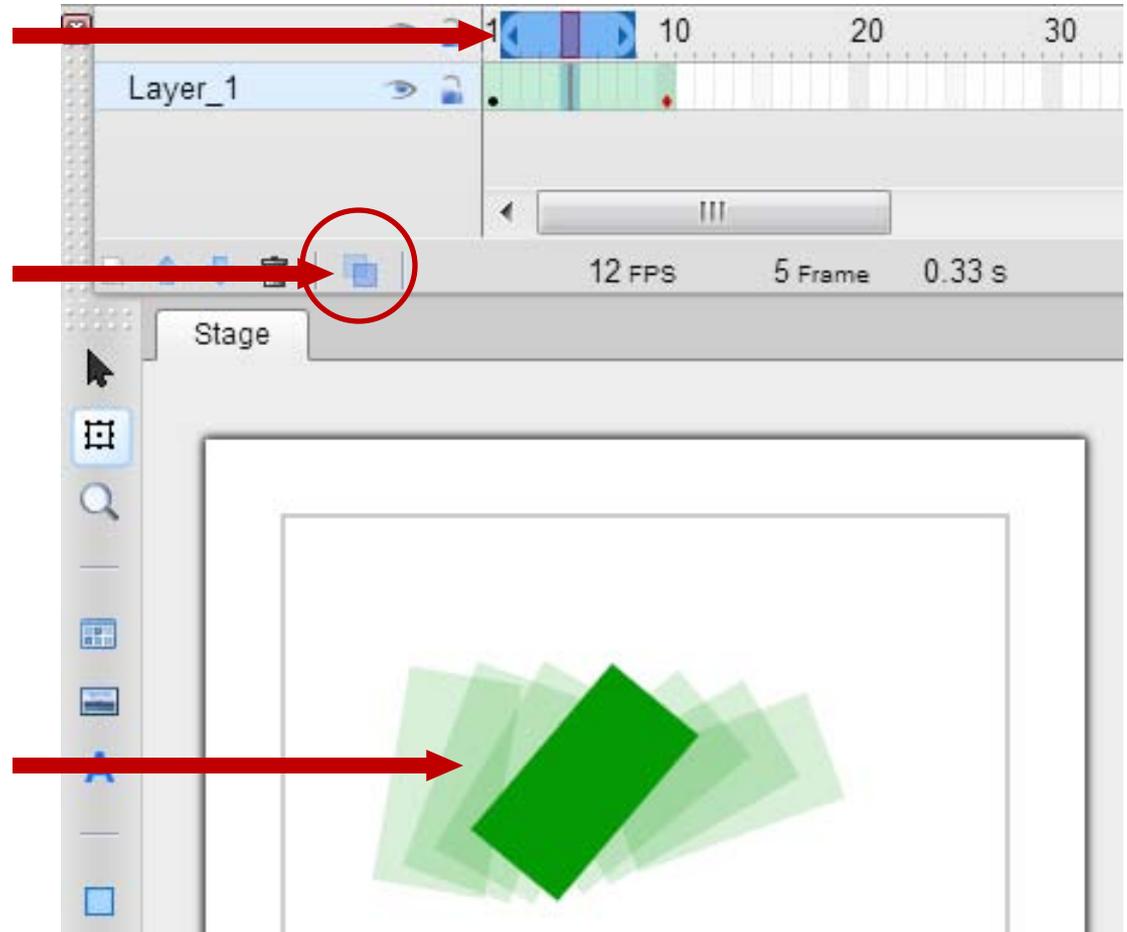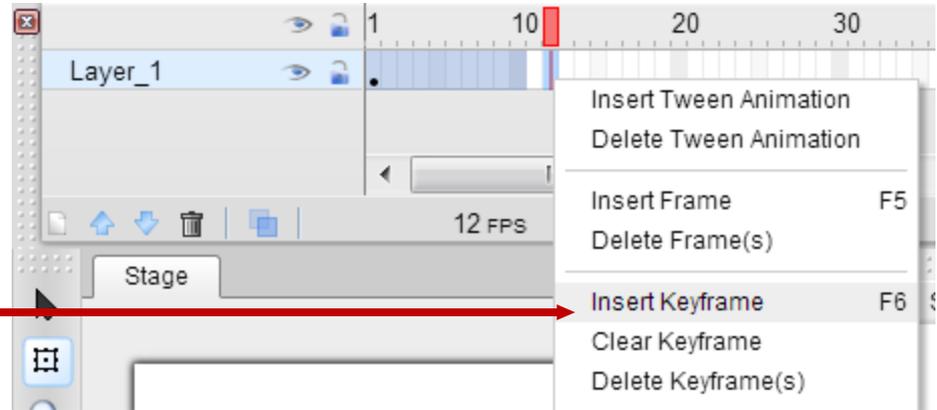
# Set Tween Mode

You may define a tween mode on each key frame. Different tweening mode has different interpolation behavior. The default tween mod is linear.
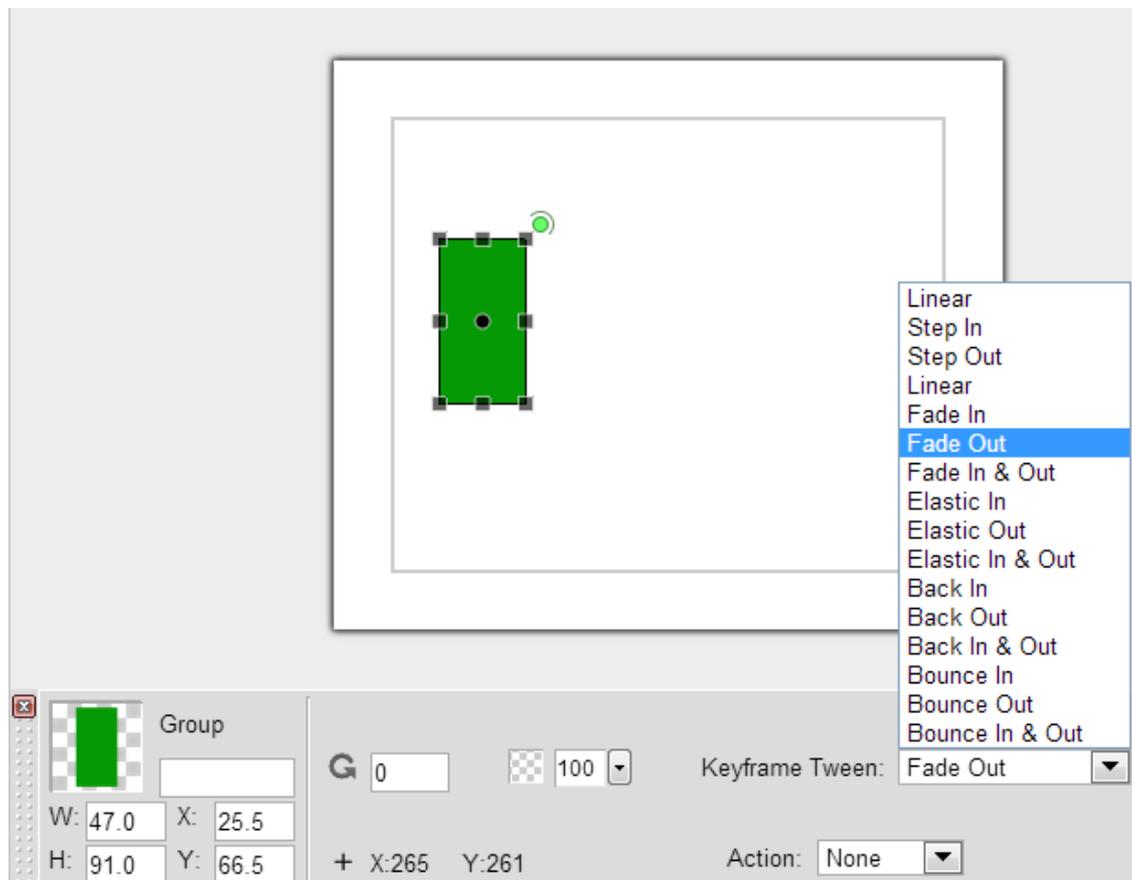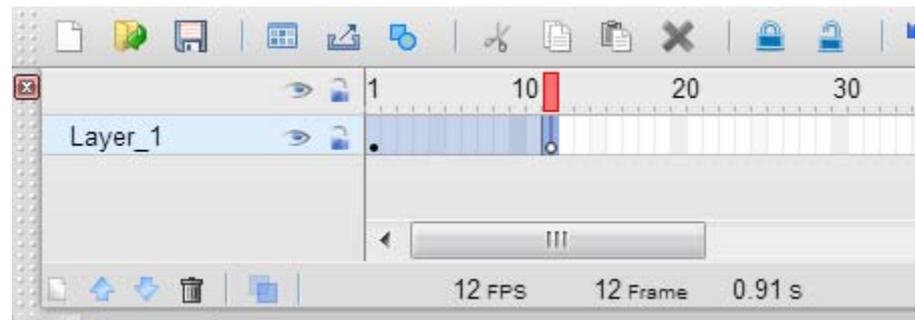
# Add New Unit

To add a new unit, right click on an empty space where you want to insert a new unit, and choose "Insert Keyframe" from the popup menu, or press F6.
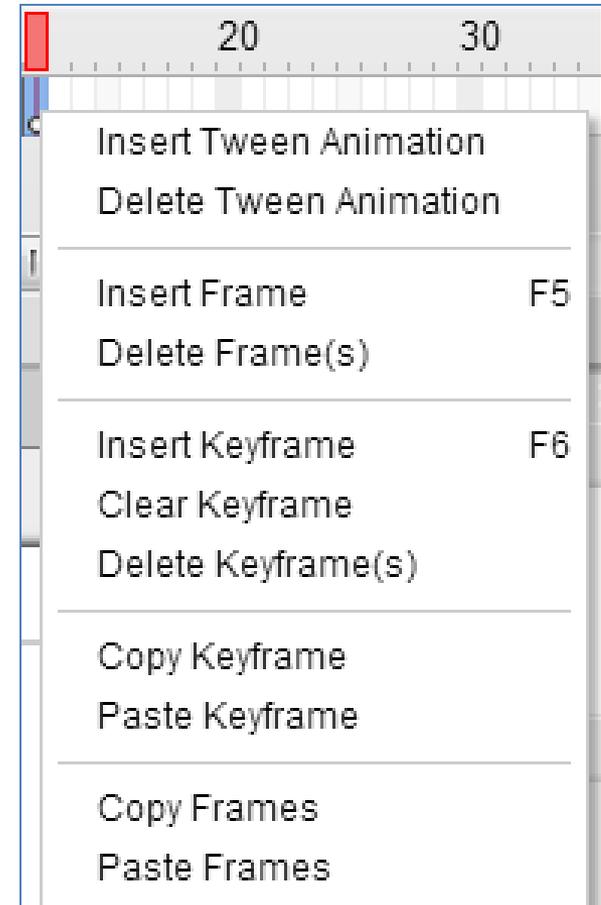
After the new unit is added, the frame range of previous unit will be automatically adjusted to fill the gap if any.

# Contextual Menu of Timeline

The popup (contextual) menu of the timeline provides many handy operations to manage layers, units, elements, and animations.

# Tips on Selecting Frames

Clicking a frame makes it the current frame, and makes its corresponding layer the current layer

Dragging a range within a unit may select a range of frames

Double clicking a unit may select all frames within the unit

# What's next

## Adding Actions

### The Mugeda Team
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