Opening Doors (and Closing Them Again)

Objective:
To create doors that will slide open and close onClick.

Actions:
Create the Doors
1. Open Flux Studio
2. Use Top View
3. Click on the "Create Box" icon to place a box node in your scene.
4. Zero it for Y & Z axes and change X to "-0.5". This is approximately ½ the size of the box so it will move it slightly to the left. along the X axis.
5. Name this box "left_door".
6. Place a second box node in your scene.
7. Zero it for Y & Z axes and change X to "0.5". This is approximately ½ the size of the box so it will move it slightly to the right. along the X axis.
8. Name this box "right_door".

NOTE: Zeroing first isn't absolutely necessary but in the long run it does help to keep track of where things start and helps to keep things aligned. It's a good habit to get into.

If you want to change the any of the doors' properties (width, height, texture, etc) now is the time to do it. Once you have made all your changes double-check the Transitions tabs of both boxes to make sure they are both still lined up the way you want them to be. Changing width or depth may affect this.

9. Click **Create > Create Group**
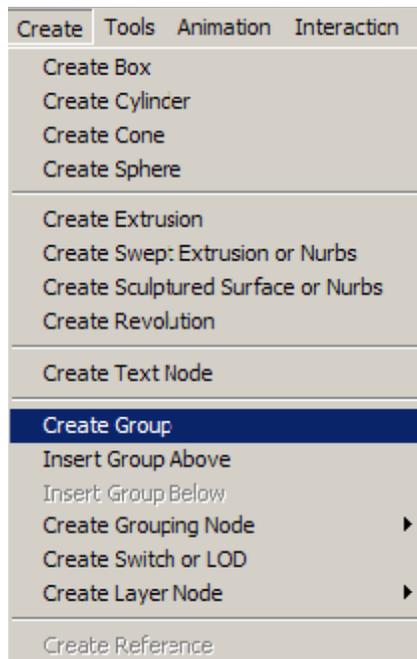
NOTE: The cursor will change to a 3-headed Group arrow when you move it over the View windows.

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10. Using the Top View, click inside the window to place a Group Node and zero it for all 3 axes.
11. Drag both boxes into the new Group node.

NOTE: Grouping your doors isn't absolutely necessary but it will make your tree a lot neater and make it a whole lot easier to keep track of your objects when your scene gets more complicated. I highly recommend grouping whenever possible.

Set up the Door Animations
1. Click **Animation > Create Animation** and click in the window. It doesn't matter where you place it but I usually put it somewhere on the edge of my scene.
2. Click on the new TimeSensor node in the Tree window and drag it into your Doors Group.
3. In the new Time Sensor properties window select the "General Node Parameters:" tab and change the name to "door_open".
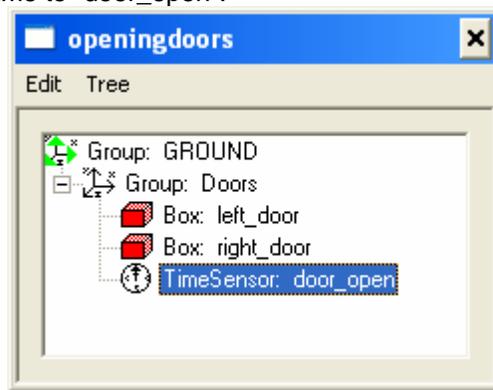

4. Go to the "Animation" tab and change "Period:" to "5" and click on the "Loop" checkbox to deselect it (or your doors will keep opening and shutting).
5. Next click Add Node.
6. Then move your cursor over the Tree window.
7. You will see a small icon on the cursor - click on one of the door sides (one of the boxes) to place it as an Animated Node.

PERIOD CHANGED TO 5

LOOP DESELECTED

ANIMATED NODE SETTINGS WITH BOTH BOXES (DOORS) ADDED.

8. Repeat step 6 to add the other box to the Animated Node
9. When you click the down arrow for Animated Node you should see both boxes (door sides) listed.
10. Repeat steps 1 through 9 to create a second TimeSensor Animation in the Doors Group named "door_close" and add both boxes to it.

**Set up the Touch (onClick) Interactions:**

1. Click **Interaction > Create Touch Sensor** and then click anywhere in the View window to place a new TouchSensor in the scene.
2. In the Tree window drag it into the Doors Group.
3. In the TouchSensor properties window select the "General Node Parameters" tab and change the name to "sensor_open".
4. Repeat steps 1 through 3 to add a second TouchSensor and name it "sensor_close".
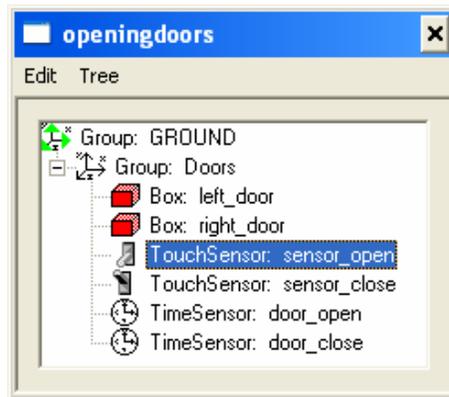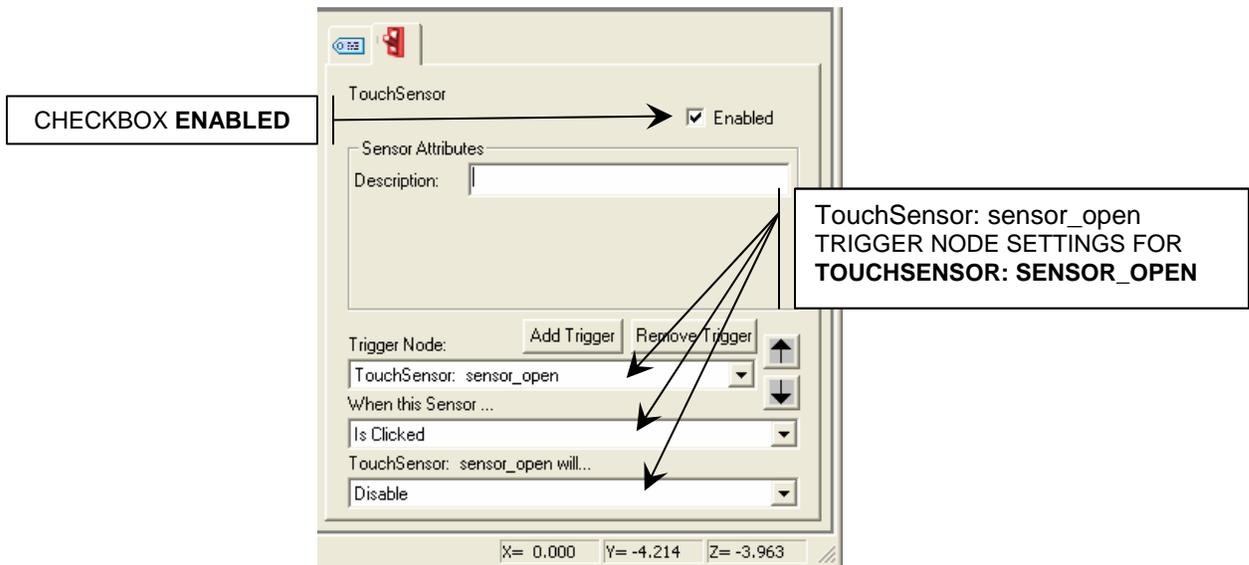

5. Select "TouchSensor: sensor_open" in the Tree window to open its Properties window.
6. In the "TouchSensor" tab for "TouchSensor: sensor_open" click the **Add Trigger** button.
7. Using the special "Add Trigger" cursor, click on "TimeSensor: door_open" in the Tree window to add it to the Trigger Node.
8. Leave the other 3 areas **for this sensor** ("Enabled", "when the Sensor …" and "TimeSensor: door_open will …") set to the default settings as shown in the example below.

CHECKBOX **ENABLED**

TouchSensor: sensor_open
TRIGGER NODE SETTINGS FOR
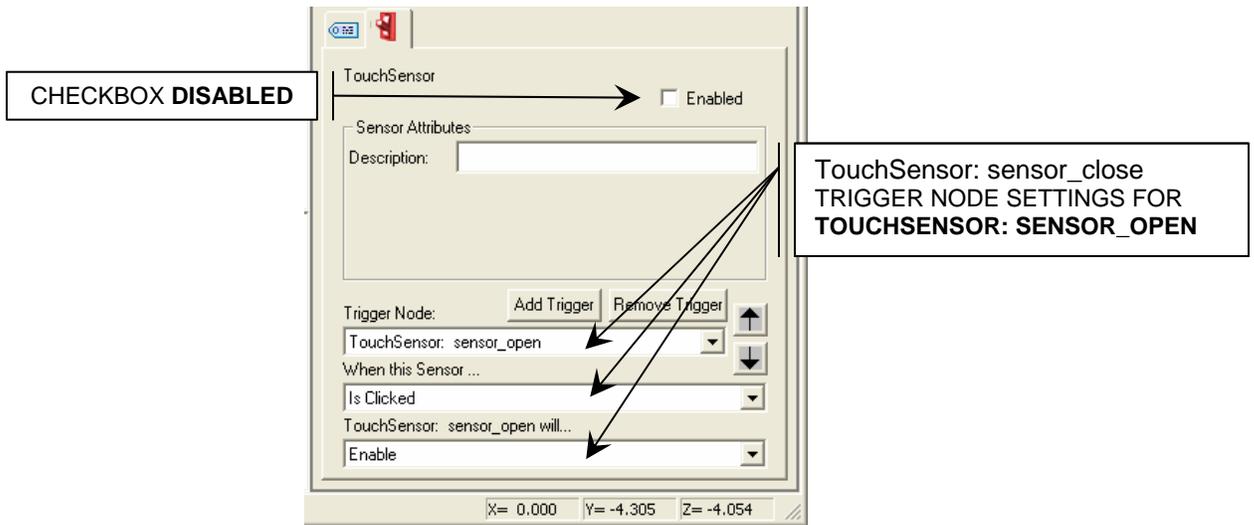**TIMESENSOR: DOOR_OPEN**
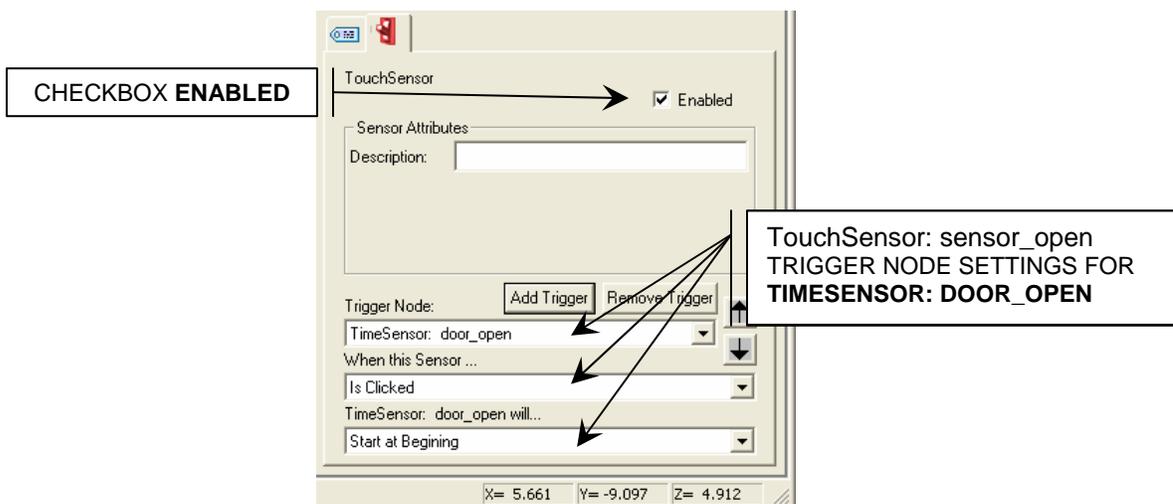
9. Leave the "Enabled" checkbox selected.
10. Repeat the previous step to also add TouchSensor: sensor_close to the Trigger Node.
11. Again leave the default settings for the 2 other text areas.

CHECKBOX **ENABLED**

TouchSensor: sensor_open
TRIGGER NODE SETTINGS FOR
**TOUCHSENSOR: SENSOR_CLOSE**
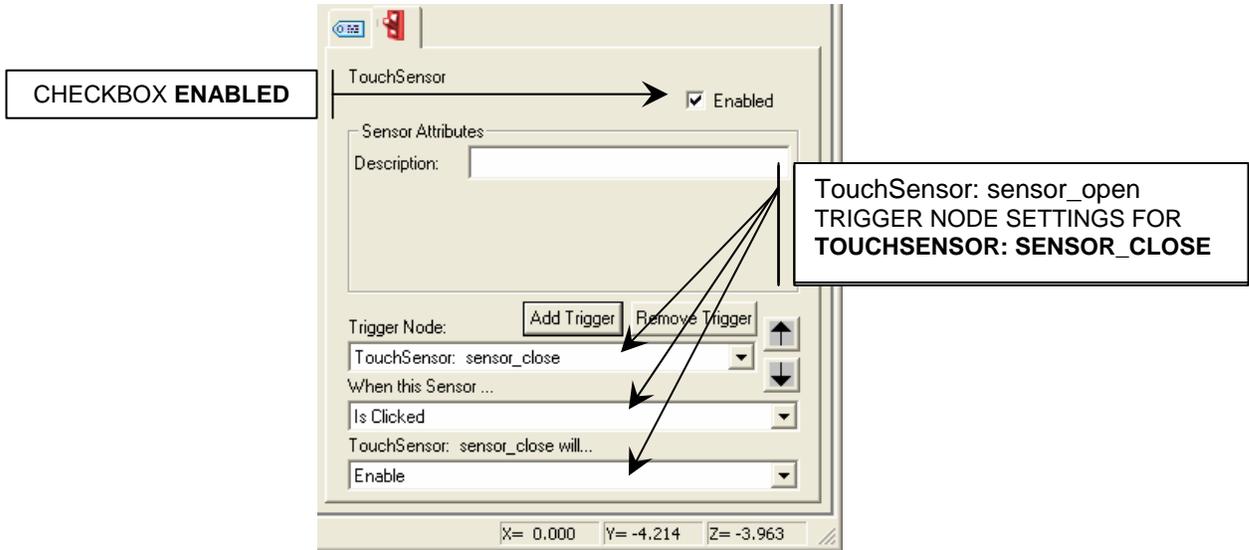
12. Repeat the previous steps to also add TouchSensor: sensor_open to the Trigger Node.
13. This time change the setting for "TouchSensor: sensor_open will …" to "Disable".

CHECKBOX **ENABLED**

TouchSensor: sensor_open
TRIGGER NODE SETTINGS FOR
TOUCHSENSOR: SENSOR_OPEN

14. Make sure the "Enabled" checkbox is selected.
15. Now select "TouchSensor: sensor_close" and repeat the previous steps to add it to the Trigger Node.
16. Make the following changes to the Trigger Node properties for "TouchSensor: sensor_close":
   ★ For "TouchSensor: sensor_open" set "TouchSensor: sensor_open will …" to "Enable".

CHECKBOX **DISABLED**

TouchSensor: sensor_close
TRIGGER NODE SETTINGS FOR
TOUCHSENSOR: SENSOR_OPEN

★ Set "TouchSensor: sensor_open will …" to "Disable".

CHECKBOX **DISABLED**

TouchSensor: sensor_close
TRIGGER NODE SETTINGS FOR
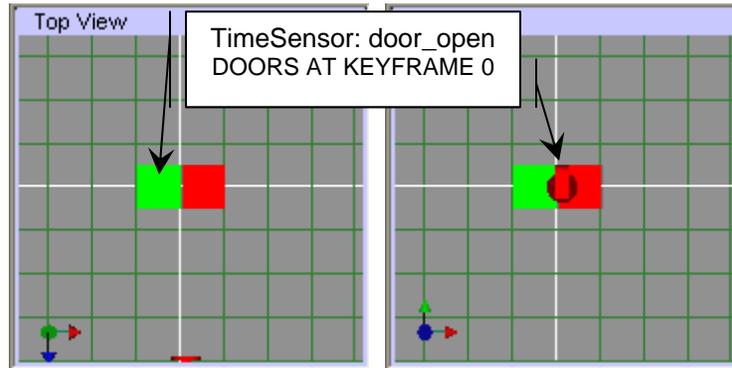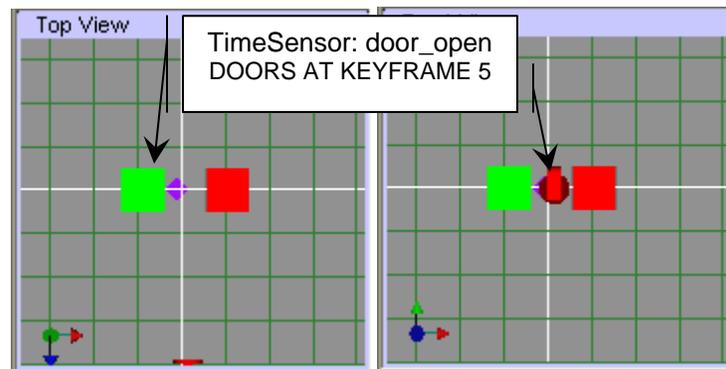**TOUCHSENSOR: SENSOR_CLOSE**
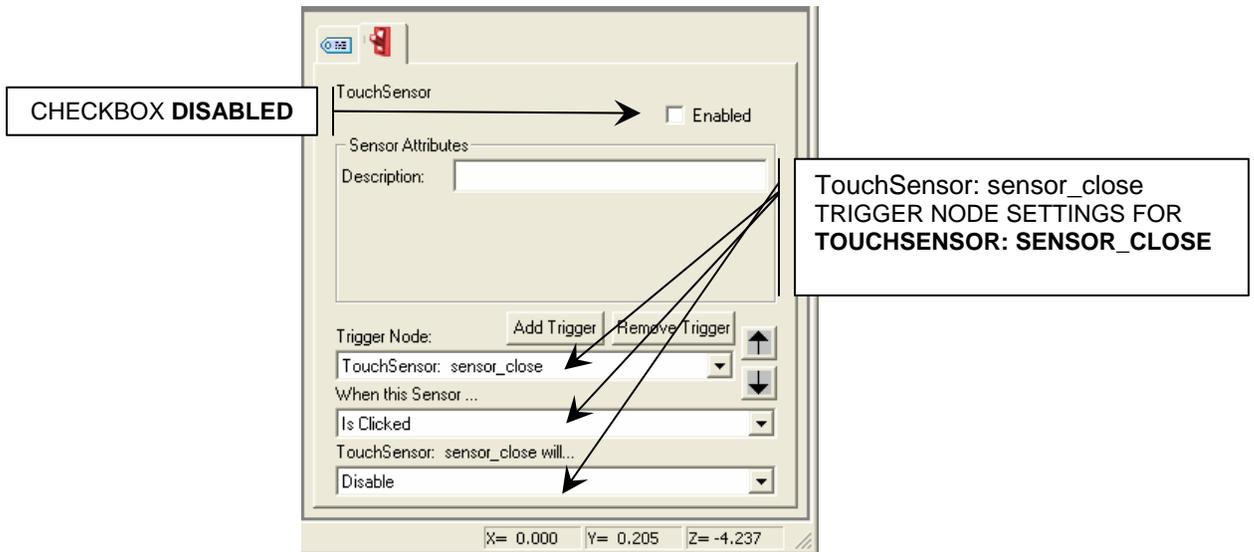
Set the Timelines:
1. Click on "TimeSensor: door_open" to open its Properties window.
2. In the "Animation tab" click on the **Animation Timeline** button to open the timeline window.
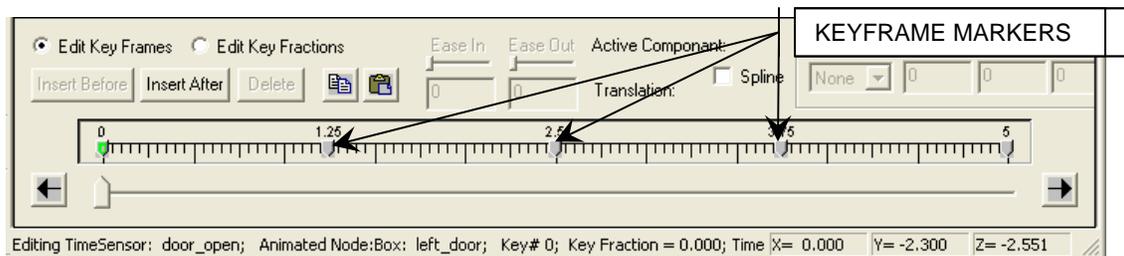
KEYFRAME MARKERS

3. In the Timeline window delete the keyframe markers in the Timeline at 1.25, 2.5 and 3.75 by clicking on each of them and then clicking the **Delete** button.
4. Then click on the keyframe marker at 0.
5. Look at your View window – either Top or Front View (or both).
6. The 2 boxes should be in their original location (closed) – sitting side-by-side on the X axis.

TimeSensor: door_open
DOORS AT KEYFRAME 0

7. Then click on the keyframe marker at the extreme right end of the Timeline.
8. Carefully move the 2 boxes apart (open) a short equal distance along the X axis.

TimeSensor: door_open
DOORS AT KEYFRAME 5

9. Click on the **Timeline** button to close the Timeline.
10. Click on "TimeSensor: door_close" to open its Properties window.
11. In the "Animation tab" click on the **Animation Timeline** button to open the Timeline window.
12. In the Timeline window delete the keyframe markers in the Timeline at 1.25, 2.5 and 3.75 by clicking on each of them and then clicking the **Delete** button as you did before.
13. Then click on the keyframe marker at 0.
14. For "TimeSensor: door_close" you need to move the boxes apart (open) in the 0 keyframe. Try to move them exactly as you did for door_open.

TimeSensor: door_close
DOORS AT KEYFRAME 0
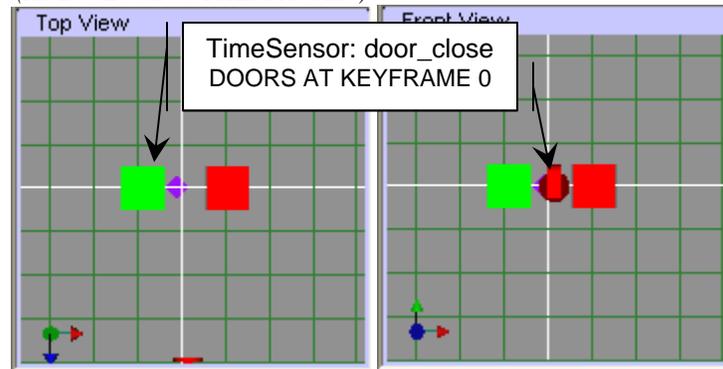
15. Click the Timeline at keyframe 5 and leave the boxes together (closed) at the end of the Timeline.

TimeSensor: door_close
DOORS AT KEYFRAME 5
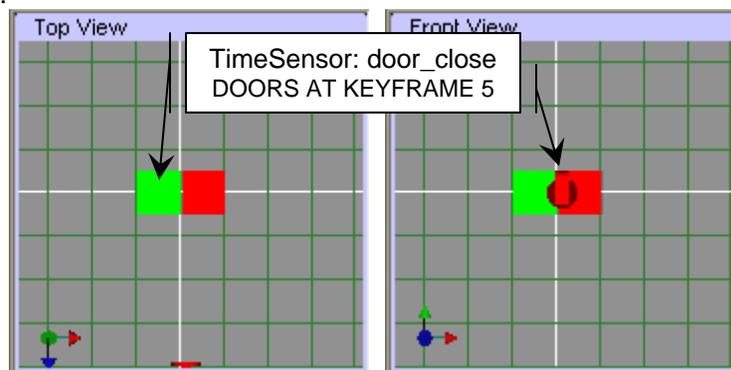
16. Close the Timeline.
17. Now test your doors, you should be able to click on them once to open and then again to close.
18. If you find they are jumping around or you just need to tweak positions as they open and close, go back and click on the **Animation Timeline** button for the appropriate TimeSensor and do that now.

NOTE: Any time you make changes make them one at a time and Preview after each small change so that if you get a strange action you can easily back up and do it over.

Summary:
RE: Keith – "I think the best is to have two TouchSensors, as you touch one sensor, it starts the appropriate animation, and also disables itself, and enables the other TouchSensor. See example at http://www.vizx3d.com/doors/doors.zip. This example is slightly more "evolved" and uses extruded shapes for the doors.

If you want your doors to open in other directions you just need to play with their placement in their Timelines.

Words to Know:
       ★ **Extruded Shape**- A simple cookie cutter-style shape created along the Y axis using the Extrusion node. You can specify the depth of the extrusion.
       ★ **Keyframe Markers** - A keyframe is a frame where you define changes in the animation. It is identified on the Flux Timeline by a small triangular shaped button that can be edited by adding, deleting or moving.