3.3.3 Editors - Animation - Dope Sheet

Dope Sheet

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Action Editor

In Blender *Actions* are a generic containers for F-Curves. Actions can contain any number of F-Curves, and can be attached to any data block. As long as the RNA data paths stored in the Action's F-Curves can be found on that data block, the animation will work. For example, an action modifying 'X location' and 'Y location' properties can be shared across multiple objects, since both objects have 'X location' and 'Y location' properties beneath them.

The *Action Editor* window enables you to see and edit the FCurve data-blocks you defined as actions in the *FCurve Editor* window. So it takes place somewhere in-between the low-level *FCurves*, and the high-level *NLA editor.* Hence, you do not have to use them for simple Ipo curves animations - and they have not much interest in themselves, so you will mostly use this window when you do *NLA animation* (they do have a few specific usages on their own, though, like e.g. with the *Action constraint*, or the *pose libraries*).

This is not a mandatory window, as you do can edit the actions used by the NLA directly in the *FCurve Editor* window (or even the *NLA Editor* one). However, it gives you a slightly simplified view of your FCurve data-blocks (somewhat similar to the "key" mode of the FCurve window, even though more powerful in some ways) - and, more interesting, it can show you all "action" FCurve data-blocks of a same object at once.

Additionally, it also allows you to affect timing of the different keys of the layers created with the *grease pencil tool.*

Each "action" FCurve data-block forms a top-level channel (see below). Note that an object can have several *Constraint* (one per animated constraint) and *Pose* (for armatures, one per animated bone) FCurve data-blocks, and hence an action can have several of these channels.

Action Data-Blocks

As everything else in Blender, actions are data-blocks. Unlike FCurve ones, there is only one type of action, which can regroup all FCurve of a given object. You'll find its usual data-block controls in the *Action Editor* header.

However, there is one specificity with action data-blocks: they have by default a "fake user", i.e. once created, they are always kept in Blender file, even if no object uses them. This is due to the fact that actions are designed to be used in the NLA, where you can affect several different actions to a same object! Yes, this is the only way to use different actions (and hence, different FCurve data-blocks of the same kind) to animate a same object. But as you have to assign an action to an object to be able to edit it (and an object can only have one action data-block at a time), to have "fake users" guaranties you that you won't lost your precious previously-edited actions when you start working on a new one!

This window shows, by default, the action data-block linked to the current active object. However, as with FCurvs, you can pin an *Action Editor* to a given action with the small "pin" button to the left of the data-block controls, in the header. This will force the window to always display this data-block, whatever the current selected object is.

Channel Menu

Delete (X)

> Deletes the whole channel from the current action (i.e. unlink the underlying FCurve data-block from this action data-block).

Warning
The X shortcut is area-dependent: if you use it in the left list part, it'll delete the selected channels, whereas if you use it in the main area, it'll delete the selected keyframes...

Settings ‣ Toogle/Enable/Disable a Setting (`Shift-W` / `Ctrl-Shift-W` / `Alt-W`)
Enable/disable a channel's setting (selected in the menu that pops-up) - currently, "lock" and/or "mute" only.
Toggle Channel Editability `Tab`
Locks or unlocks a channel for editing
Extrapolation Mode
Change the extrapolation between selected keyframes. More options are available in the Graph Editor.
Expand Channels, Collapse Channels (`NumpadPlus`, `NumpadMinus`)
Expands or collapses selected channels.
Move...
This allows you to move top-level channels up/down (`Shift-PageUp` / `Shift-PageDown`), or directly to the top/bottom (`Ctrl-Shift-PageUp` / `Ctrl-Shift-PageDown`).
Revive Disabled F-Curves

Clears 'disabled' tag from all F-Curves to get broken F-Curves working again
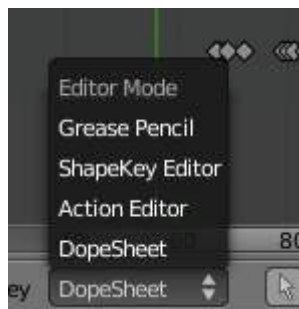
The Dopesheet

The DopeSheet

Classical hand-drawn animators often made a chart, showing exactly when each drawing, sound and camera move would occur, and for how long. They nicknamed this the 'dopesheet'. While CG foundations dramatically differ from classical hand-drawn animation, Blender's Dopesheet inherits a similar directive. It gives the animator a 'birds-eye-view' of every thing occurring within a scene.

Dope Sheet Modes

DopeSheet modes

There are four basic views for the Dopesheet.These all view different contexts of animation:

DopeSheet
     The dopeSheet allow you to edit multiple actions at once.
Action Editor
     Action Editor is the default, and most useful one. It's here you can define and control your actions.

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Shape Key Editor
> *ShapeKey Editor* is dedicated to the *Shape* Ipo data-blocks. It uses/edits the same action data-block as the previous mode. It seems to be an old and useless thing, as the *Action Editor* mode handles *Shape* channels very well, and this mode adds nothing...

Grease Pencil
> *Grease Pencil* is dedicated to the *grease pencil tool's* keyframes - for each grease pencil layer, you have a strip along which you can grab its keys, and hence easily re-time your animated sketches. As it is just another way to see and edit the grease pencil data, this mode uses no data-block (and hence has nothing to do with actions...). Note that you'll have as much top-level grease pencil channels as you have sketched windows (3D views, *UV/Image Editor,* etc.)

Interface

The *Action Editor* interface is somewhat similar to the *FCurve Editor* one, it is divided in three areas:

The Action Editor window, Action Editor mode, with an Object and Shape channels.

The header bar
> Here you find the menus, a first block of controls related to the editor "mode", a second one concerning the action data-blocks, and a few other tools (like the copy/paste buttons, and snapping type).

The main area
> It contains the keyframes for all visible action channels. As with the other "time" windows, the X-axis materializes the time. The Y-axis has no mean in itself, unlike with the FCurve editor, it's just a sort of "stack" of action channels - each one being shown as an horizontal colored strip (of a darker shade "during" the animated/keyed period). On these channel strips lay the keyframes, materialized as light-gray (unselected) or yellow (selected) diamonds. One of the key feature of this window is that it allow you to visualize immediately which channel (i.e. Ipo curve) is *really* affected. When the value of a given channel does not change at all between two neighboring keyframes, a gray (unselected) or yellow (selected) line is drawn between them.

The left "list-tree"

> This part shows the action's channel "headers" and their hierarchy. Basically, there are:
>
> * "Top-level" channels, which represent whole FCurve data-blocks (so there's one for *Object* one, one for *Shape* one, etc.). They gather *all* keyframes defined in their underlying FCurve data-block.
> * "Mid-level" channels, which seem currently to have no use (there's one per top-level channel, they are all named *FCurves,* and have no option at all...).
> * "Low-level" channels, which represent individual FCurve , with their own keyframes (fortunately, only keyed Ipos are shown!).
>
> Each level can be expended/collapsed by the small arrow to the left of its "parent" channel. To the right of the channel's headers, there are some channel's setting controls:
>
> * Clicking on the small "eye" will allow you to mute that channel (and all its "children" channels, if

any!).

- Clicking on the small "lock" will allow you to prevent this channel and its children to be edited (note that this is also working inside the NLA, but that it doesn't prevent edition of the underlying FCurve ...).

A channel can be selected (text in white, strip in gray-blue color) or not (text in black, strip in pink-brown color.), use LMB clicks to toggle this state. You can access some channel's properties by clicking Ctrl-LMB on its header. Finally, you can have another column with value-sliders, allowing you to change the value of current keyframes, or to add new ones. These are obviously only available for low-level channels (i.e. individual FCurve). See View Menu below for how to show these sliders.

View Menu
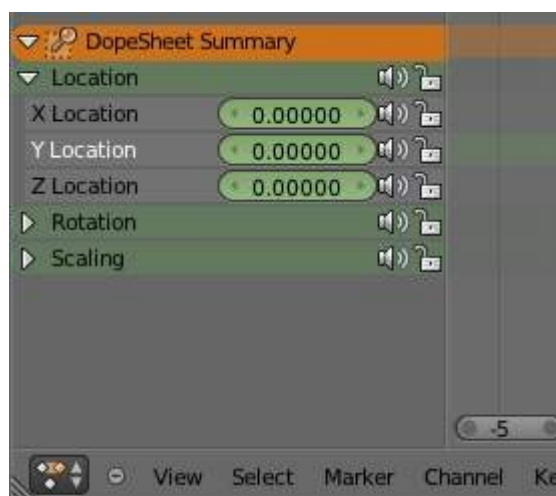
the action editor showing sliders

Realtime Updates
   When transforming keyframes, changes to the animation data are flushed to other views
Show Frame Number Indicator
   Show frame number beside the current frame indicator line
Show Sliders
   A toggle option that shows the value sliders for the channels. See the *The Action Editor window, Action Editor mode, with a group and sliders* picture above).
Use Group Colors
   Draw groups and channels with colors matching their corresponding groups.
AutoMerge Keyframes
   Automatically merge nearby keyframes
Sync Markers
   Sync Markers with keyframe edits
Show Seconds
   Whether to show the time in the X-axis as frames or as seconds
Set Preview Range P
   Interactively define frame range used for playback. Allow you to define a temporary preview range to use for the Alt-A realtime playback (this is the same thing as the *Playback Range* option of the timeline window header).
Clear Preview Range Alt-P
   Clears the preview range
Auto-Set Preview Range
   Automatically sets the preview range to playback the whole action.

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Marker Menu

See the *Markers page*.

Shape Key