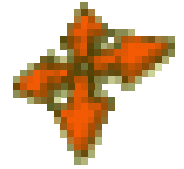# MOVEALONG

Extend the native SU Move Tool

USER MANUAL – V1.2

1. Overview

MoveAlong is a standalone script which is part of **FredoTools**. It allows Moving and Copying entities, as well as Rotating components and groups by their center along axes.

MoveAlong is similar to the native Sketchup Move tool but provides some additional features:
- Additional inferences (centers of arc, face, component / group)
- Additional auto-lock directions
- Lock of custom direction
- Move along Direction, with possibility to pick and choose direction in the model
- Move along Plane, with possibility to pick and choose plane in the model
- Non-interactive Move (easier to reach targets that would be occulted by the moving object)
- Remote inferences (on points and directions)
- NO inferences (with Alt modifier)

MoveAlong supports the other features of the native SU Move tool: copy, multiple copies, locking on axes, rotation of group / component, etc…

When you launch **MoveAlong**, a button palette is displayed. Note that all functions are also available from the keyboard shortcuts, mouse and contextual menu.
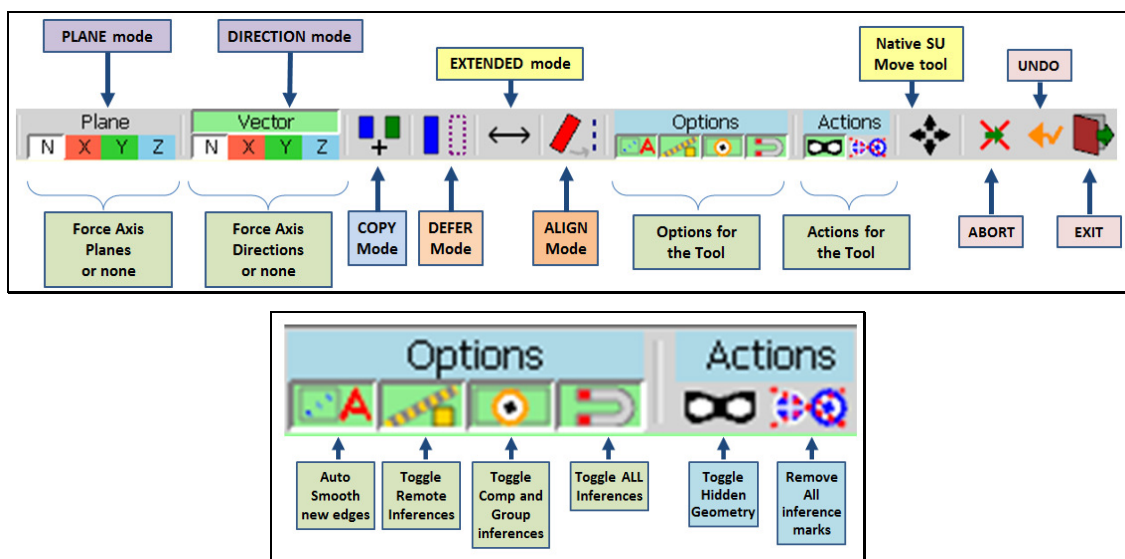
MoveAlong offers 3 working modes that can be combined:
- **COPY mode**: as in the native tool, this creates a copy by an offset
- **DEFER mode** (non-interactive): while dragging the object, the object itself will not move. Instead a wireframe will be displayed to show the movement. This allows better reaching targets when that would otherwise be occulted by the moving object.
- **EXTENDED mode**: when picking the origin in auto-selection, this will trigger the selections of curve or edge sequence by continuity when picking a single edge. Similarly, when picking a face, all neighboring faces will be picked.
- **ALIGN mode**: allow to automatically move and orient the selection along a selected direction (axes, custom vector, remote inferences)

MoveAlong provides several modes for constraining the movement:

- **VECTOR mode**: movement is constrained along a line (degrees of freedom = 1).
- **PLANE mode**: movement is constrained by a plane specified by its normal (degrees of freedom = 2)
- **LOCK mode**: you can temporarily lock the current direction
- **INFERENCE Directions**: depending on the origin picked, MoveAlong will provide some sticky directions (like axes, follow edge, …)

The buttons in the palette allows to set constrain on axes, but there are other ways to impose a direction or a plane via the keyboard and mouse.

MoveAlong fully supports Ctrl-Z (and Ctrl-Y) for **Undo** within the plugin.

2. Selection: pre-selection and auto-selection

Pre-selection

You can launch **MoveAlong** on a pre-selection of entities. If so, the Move operation will apply to this pre-selection. You can however cancel the pre-selection by typing ESCAPE.
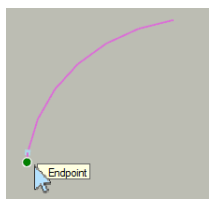
Auto-selection

When there is no selection, you are in **Auto-selection mode**. Hovering over entities will select them, as in the native SU Move tool. If you click and drag, the Move operation will apply to the auto-selected entities.

Case of Sketchup Curves, you have the same behavior as in the native SU tool:

- If you pick one of the two extremities of the curve, then the curve will be DEFORMED instead of being moved; same behavior as in the native SU tool.
- If you just pick an edge or an inner vertex, then the whole curve is selected

The same applies to edges, where you are in Deformation mode if pick an extremity. You therefore need to pick the edge itself to Move it.

For convenience, the curve or sequence of edges is highlighted in purple to signal a Deformation.

Picking an extremity of a curve
➔ *DEFORMATION*
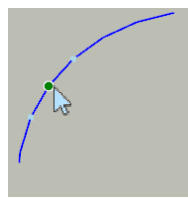
*Picking an inner vertex or an edge*
➔ *WHOLE SELECTION*

MoveAlong includes an **Extended mode**, which modifies this behavior:

- For Curves, whether you pick an extremity, an inner vertex or an edge, the whole curve is selected.

- If you pick an edge or one of its extremities, MoveAlong will extend the selection to all edges in continuity

Similarly, if you pick a face, the Extended mode will extend the face to all its neighbors forming a contiguous surface, regardless of the display option "view hidden geometry".

The Extended mode is toggled by **Shift** (press & release). A small arrow is shown at the cursor.

Extended mode: OFF	*Extended mode: ON*	*Extended mode: OFF*	*Extended mode: ON*
Picking edges (not in curve)		*Picking an extremity of a curve*	
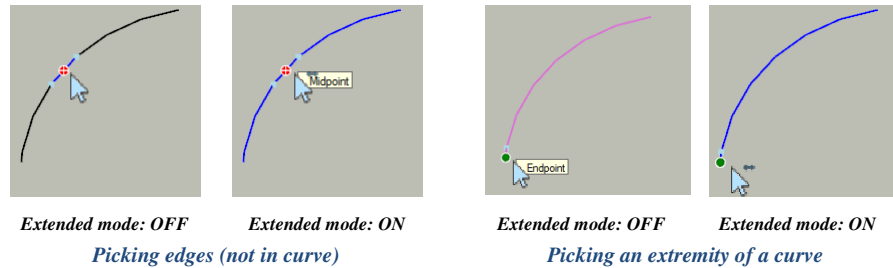
Cumulative Auto-selection

When you are in auto-selection mode, **you can select more than one object**. Press the **Shift** key when hovering on the object and release the key when the mouse is no longer on the object. This will store the object in the selection. You can then redo it on other objects, even if in a distant part of the model.

3. Additional Inferences

MoveAlong implements the basic inferences of the SU native Move tool (endpoints, midpoints, edges, faces, etc…) at top level or embedded in components / groups. It does offer additional ones:

Additional Inference Points

- **Center of Arcs and Polygons:** when hovering the mouse over an arc or a polygon (as considered by Sketchup), the center of the arc or polygon is displayed (as a red cross **+**) and can be used as an inference for origin and target.
- **Center of Faces:** when hovering the mouse over a face, the center of the face is displayed (as a blue cross **+**).
- **Center and Corners of Components / Groups**: when hovering the mouse over the elements of a component or group, the center and bounding lines of its bounding box are displayed. This works at any level of embedding. The center of bounding box is useful because it may be physically hidden within the component / group. With **MoveAlong**, you can still pick it in all cases. The center and corners of the bounding box can be used for origin and target.
- **Anchor and Leader of Text Labels** (if this matters!)

Additional Inference for on-the-fly direction lock

When you move the mouse for picking the target from the origin, **MoveAlong** automatically detects certain privileged directions and make them sticky. The native SU Move tool only locks direction on model axes. **MoveAlong** detects axes but also provides additional sticky directions, depending on the origin:

- **On Edge or midpoint of Edge** → direction of the edge
- **At Vertex** → directions of all edges at vertex
- **On Face** → direction of the face normal
- **Component / Group Bounding box** → local axes if different from model axes
- **On Guide Line** → direction of the guide line

Each inference has a dedicated visual mark, color and tooltip.

NO Inferences

You can select the origin and target with **NO inference at all**. Use the **ALT** key, in toggle mode or pressed down (or palette button, or contextual menu), to set / unset this NO inference mode.

Note that when you hover the mouse over a face, **MoveAlong** record the plane of the face to be used later as a reference if you pick a point in the empty space.

Remote Inferences

This feature is slightly different from what the native Sketchup tool offers. The intention here is to provide an **explicit way to use remote points and directions to guide the Move**, but also to be able to **enter a distance value in the VCB** (as opposed to the SU remote inferencing which is not controlled by the user and where you cannot type the distance in the VCB).

Origin From a Remote Point

Hover the mouse over a vertex, edge midpoint, guide point and wait for about 1 second. A small yellow mark ▯ will appear at this *Remote Point*. Then, if you move the mouse and its position is roughly aligned with a characteristic direction of the Remote Point (ex: edge direction) or an axis, a yellow dashed line -- will appear.
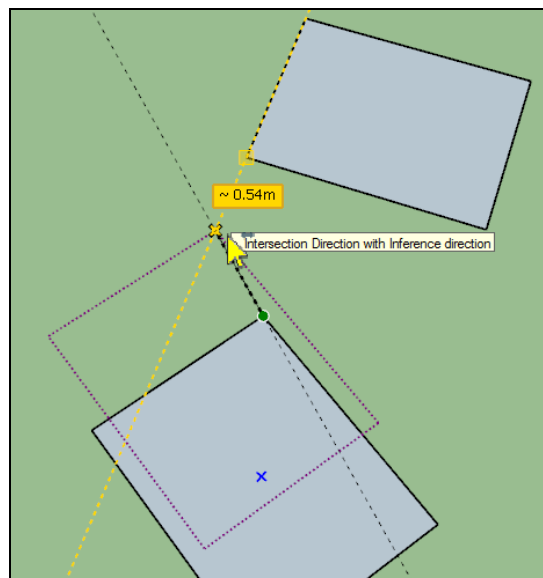
The distance is indicated in the VCB. You can type a new distance to set the origin.
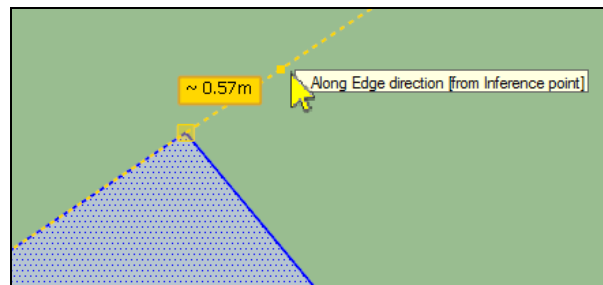
Note: in MoveAlong, this mode is only available if you have a pre-selection or a cumulative selection.

Target From a Remote Point

The mechanism is similar. The distance is indicated in the VCB. You can type a new distance to set the Target by reference to the Remote Point.
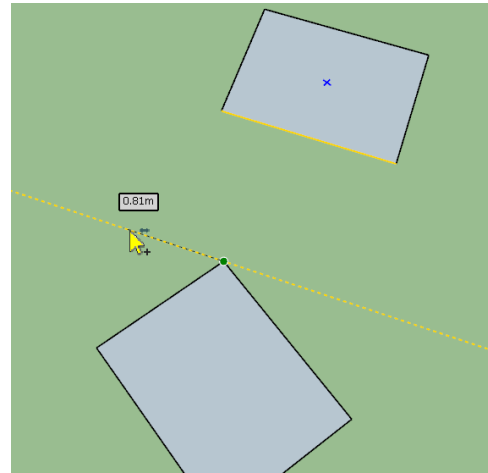
Target From a Parallel direction

When in Target mode, <u>hover the mouse over an edge or guide line and wait for about 1 second</u>. The edge or guide line will be highlighted in yellow, indicating the *Reference direction*. Then, if you move the mouse and the line origin-target is roughly parallel with this Reference direction, then it will appear as a yellow dashed line and be sticky.
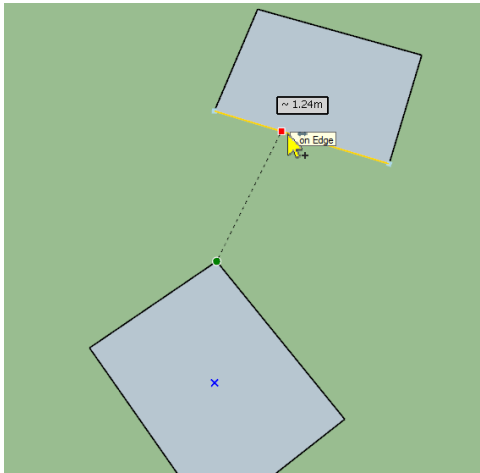

Hover over edge – wait 1 second   *Use the direction to place the target*
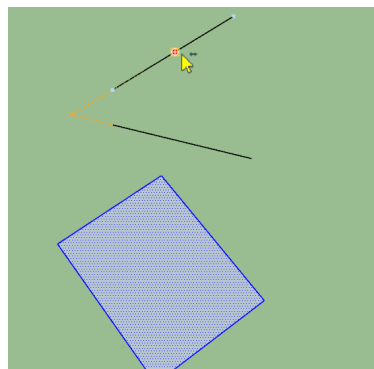
Intersection from 2 Reference directions

This mode allows highlighting the intersection of 2 reference directions, such as the crossing point of the edge directions.
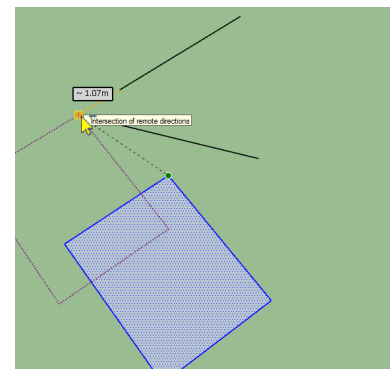
1) **Select the first set of reference directions** by hovering the mouse over a point or an edge / guide line, as seen above (i.e. hover and wait 1 second for the yellow mark)

2) **Select a second set of reference directions** (hover, wait 1 second). The intersections of the two set of reference directions will be shown in orange. These intersections can be selected to place the origin or target.
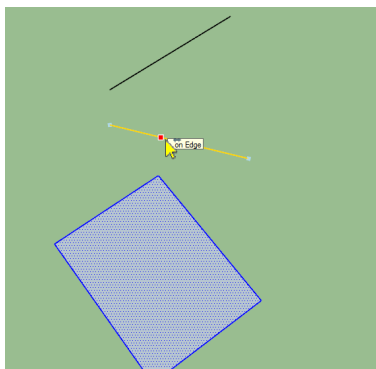
Select first direction   *Select second direction*   *Use the intersection to place*
   Intersection is shown   *the Target*

Disabling / Enabling Remote Inference

You can toggle this mode via a dedicated button in the palette

4. Locking Direction and Plane

**MoveAlong** offers two modes for constraining permanently the movement:

- **Vector mode**: Movement follows a direction (cursor is yellow)
- **Plane mode**: Movement is constrained on a plane (cursor is light blue)

A locked direction is always indicated by a *colored guide line* crossing the whole screen.

Locking the Current direction

When you move the mouse to pick the target, you can lock the current direction origin-target by pressing / releasing SHIFT. This function is <u>available whether you are in Vector mode or in Plane mode</u>.

The direction is locked and you can freely adjust the offset by dragging the cursor or via the VCB. This is useful if you wish to set the direction by a point in the model, but you have a different offset.
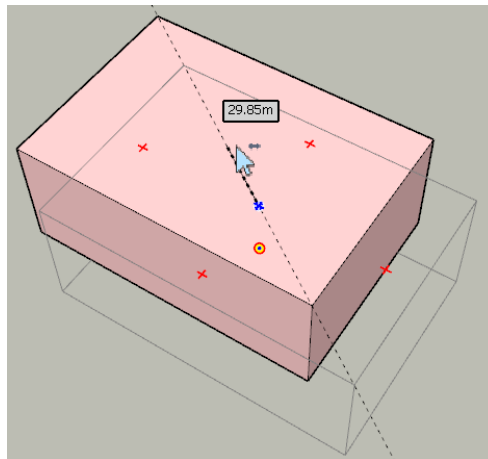
Lock Current Direction (Shift)

To unlock the direction, press Shift again or Arrow down.

Locking Axes direction

This is set via the Arrow keys (or buttons in the palette X, Y, Z, as well as contextual menu):

- **Arrow Right**: X axis
- **Arrow Left**:   Y axis
- **Arrow Up**:   Z axis
- **Arrow Down**: Unlocked all constrained directions or plane

In Vector mode, you fix a direction of the selected axis

In Plane mode, you fix the plane whose normal is along the selected axis. A small transparent plane appears:
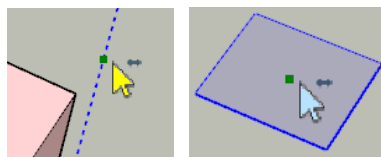
Switching between Plane mode and Vector mode

You can set the current mode via the button in the palette ('Vector' or 'Plane').

If you press an Arrow key, you will <u>stay in the current mode</u> when the key pressed is <u>different</u> from the direction already set or there is no constrained direction.

For instance, if you press Arrow Left and the current direction is locked on the X axis, then you do not change the mode. Same if there was no mode set (button 'N' highlighted).

You will <u>change the mode</u> when you press the <u>same</u> Arrow key as the direction already defined.

For instance, if you press Arrow Left and the current direction is locked on the Y axis, then you will change the mode. Same if there was no mode set (button 'N' highlighted) and you press Arrow Down.

Picking a Custom Direction and Plane in the model

You can set a direction or plane by picking it from elements anywhere in the model.

This can be done by just hovering over the element and either pressing **ENTER** or making a **Long-Click**.

In Vector mode

– Picking an Edge or a midpoint → direction of the edge

– Picking a Face → direction is the normal to the face

– Picking a Guide Line → direction is the line of the guide line
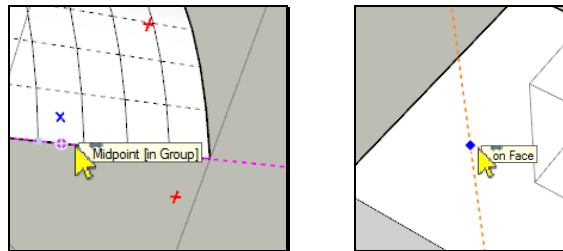
In Plane mode

– Picking an Edge or a midpoint → plane perpendicular to the edge

– Picking an Vertex with 2 Edges → plane defined by the 2 edges

– Picking an extremity (vertex with one edge) → plane perpendicular to the edge

– Picking a Guide Line → plane perpendicular to the guide line
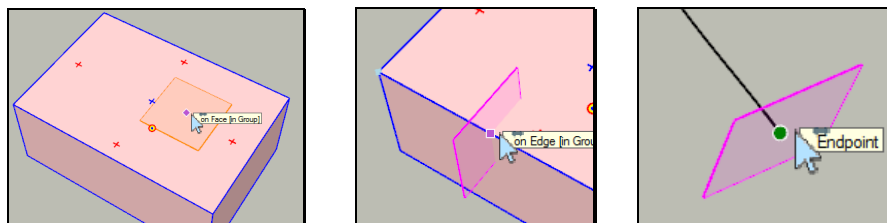
To unset the constrained direction or plane, just press **Arrow Down**.

Note: when you move entities along a plane, the degree of freedom is 2. As far as possible, **MoveAlong** tries to detect the intersection of the plane with linear elements such as edges and guide lines.

5. Copy mode

As for the native SU Move tool, you switch to **Copy mode** by pressing <mark>Ctrl</mark>. As small ✚ appears at the cursor. Press Ctrl again to disable the Copy mode.

6. Defer mode (non interactive)

The native SU Move tool always moves the selected entities interactively. The drawback is that the moving selection may occult the target you want to reach.

MoveAlong provides a **non-interactive mode** to avoid this inconvenience. You can enable / disable it by pressing <mark>TAB</mark> (or button in palette or contextual menu).

A wireframe is moved instead of the selected entities so that you can access any point of the model, or even select a target belonging to the selected entities (for instance to move a vertex of a face to its own center).

- **Move mode**: wireframe is in dashed line
- **Copy mode**: wireframe is in plain, thick line
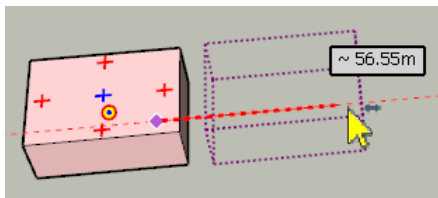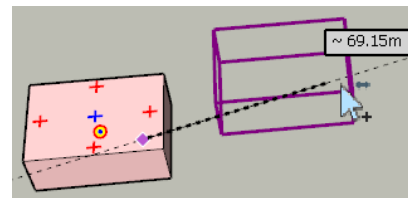

In Move mode   *In Copy mode*

7. Align mode

You switch to **Align mode** by pressing <mark>Shift-TAB</mark>. In Align mode, could can not only move the object but align it along a direction determined by a target, based on the direction corresponding to the origin picked, typically:
- Normal for faces
- Vector for edges, midpoint, construction lines
- Average vector for vertex

For instance, if you pick the object by a face and move it to the extremity of an edge, the selection will automatically rotate to make the selection perpendicular to the edge (this can be useful when you then want to use a FollowMe command).
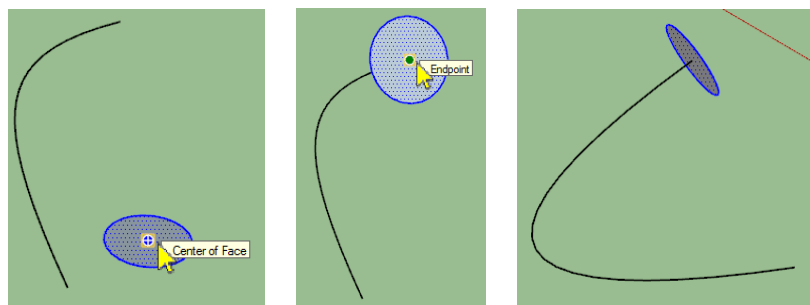
Important Note: because there are usually two possible orientations (at 180° each), type <mark>+</mark> and <mark>Enter</mark> in the VCB or click on the small button at the cursor location to choose the alternate one is the orientation is what you wish.

Using the Remote inferencing, you can align the selection to a remote direction by a given distance that you can adjust via the VCB.
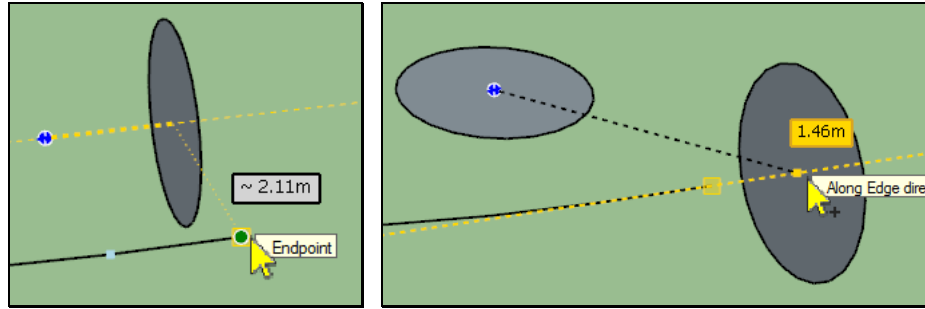

You can also align component 'in situ' along the current forced direction (axes or picked in the model or parallel remote inference on an edge or guide line). For this, when you have a pre-selection:
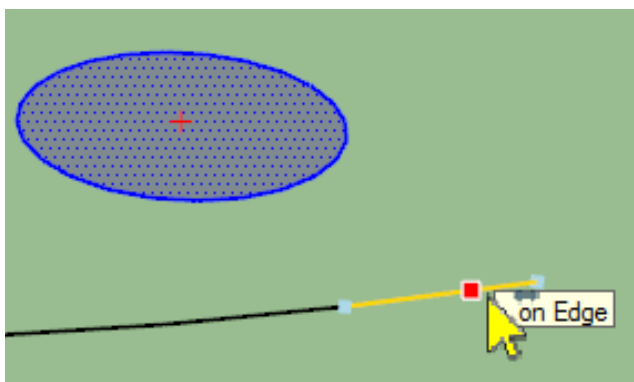
− If an axis or custom direction is set, just double click on the origin from which you want to perform the pivoting.

− Otherwise, hover the mouse over an edge to fix the direction (yellow line) and then double-click on the origin in the selection
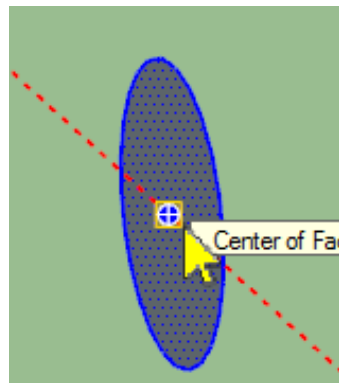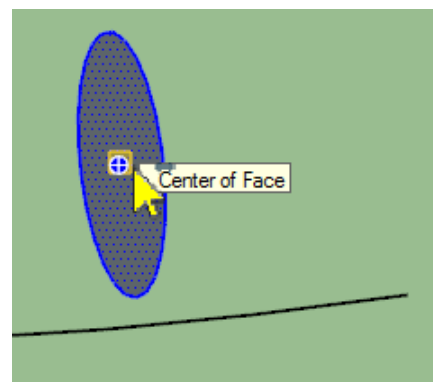

Red axis is set
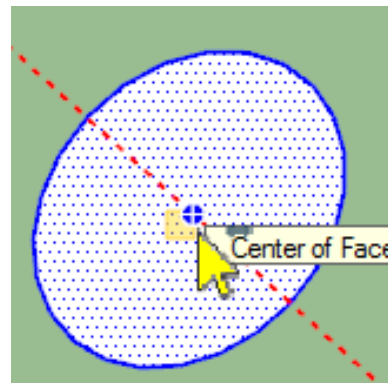
Just double click on face center
*To pivot the selection*

Remote direction is set

Just double click on face center
To pivot the selection

8. Rotation of Components and Groups

As with the native SU Move tool, you can rotate the selected component and group by their axes. The interface and method is similar, with red crosses that you can pick in order to perform the rotation. Note that the angle is <u>Positive for anti-clockwise</u> rotation.
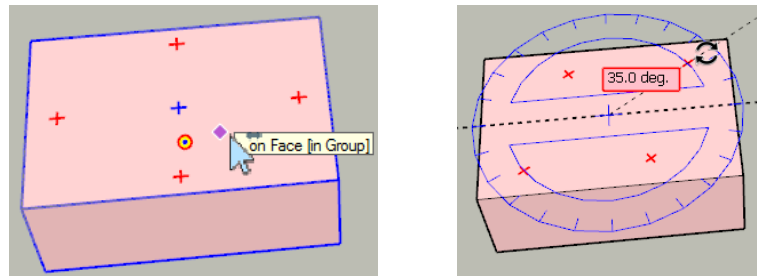
9. Auto Smooth

When you move individual vertex or edges, you deform the shape rather than moving it. Sketchup may create new edges by its auto-folding mechanism. **MoveAlong** provides an option to <u>automatically smooth these new edges</u>, following **thomthom's** quad conventions for diagonals *(Smooth = Soft = true, Cast Shadows = false)*. This option can be set or unset via a button in the palette.

10. Post-Movement adjustment - VCB

Important: *space* or *semi-comma ';'* are used as separators in the VCB, because the dot and comma are reserved as valid decimal separators for international users.

At any time during or after the move, you can adjust parameters via the VCB in a similar manner to the native SU tool.

- **Rotation angle for Groups / Components**: just type the **numeric value for degrees**, or a value followed by a letter for specifying unit, for instance 30d (degrees), 3.14r (radians), 100g (grades), 50% (slope).

- **Offset or Distance for remote inferencing**: just type the **numeric value**,
  a) without unit means in current model units, ex: *33.5* or *3'4"*
  b) with units, ex: *3.2cm*

- **Specified translation vector**: as in the SU Move tool, you can type the coordinate of a vector to specify the translation (direction <u>and</u> offset) by entering the value for each axis. For instance *3 4 5* will set the move vector to 3 in X, 4 in Y and 5 in Z.

  You do not need to enter all values and use the semi-comma ';' as separator when non-ambiguous: ex: *;;4* will move by 4 unit along the Z axis (*0 0 4* would work as well), *50.3;* will move by 50.3 units along the X axis (*50.3 0* would work as well).

- **Multiple copies**: this is similar to the SU Move tool:
  o **Multiple of offset**: **n* or *nx* are supported, ex: **3* or *3x*
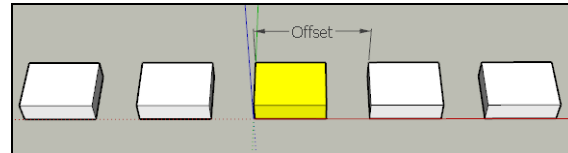 o **Divide of offset**: */n* is supported, ex: */3*

  <u>Note</u>:
  a) If you type a **negative value** (ex: **-3*, *-3x*, */-3*), then multiple copies are generated <u>on each side</u> of the original copy.
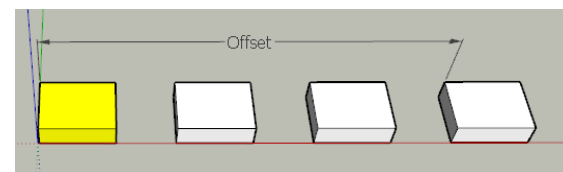
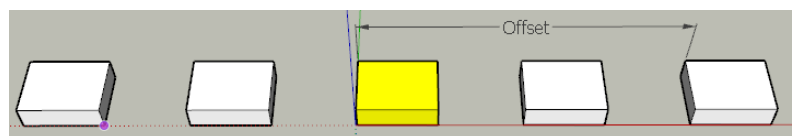b) If you type a multiple or divide value, you will get Copies, even if the move was not done in Copy mode.
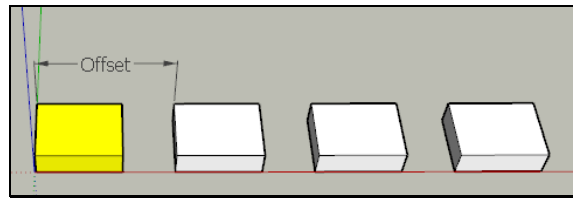
*3 Copies in Multiple → ***3***

*2 Copies in Multiple on each side → ***-2***

*3 Copies in Divide → **/2***

*2 Copies in Divide on each side → **/-2***

11. Repeating Movement and Rotation

Once you have moved a first object, you can move another object by the same vector and offset by double-clicking on it.

Similarly, when you have rotated a group or component, you can double click on a red cross of another group or component to perform the same rotation.

12. Default Parameters for MoveAlong

You can adjust the **precision for picking** and the **angle for auto-locking the directions**, as well as the **delay for remote inferencing** in the **Default Parameters dialog box of LibFredo6**:

Inference settings for Origin - Target picker		
Precision for Picking (in pixel)	7	
Angle for alignment on privileged directions (in degree)	6	
Delay for activating Remote points for inference (in second)	1.0	

Note that these parameters are shared with other plugins, such as DrawAlong.