FREEFORM™
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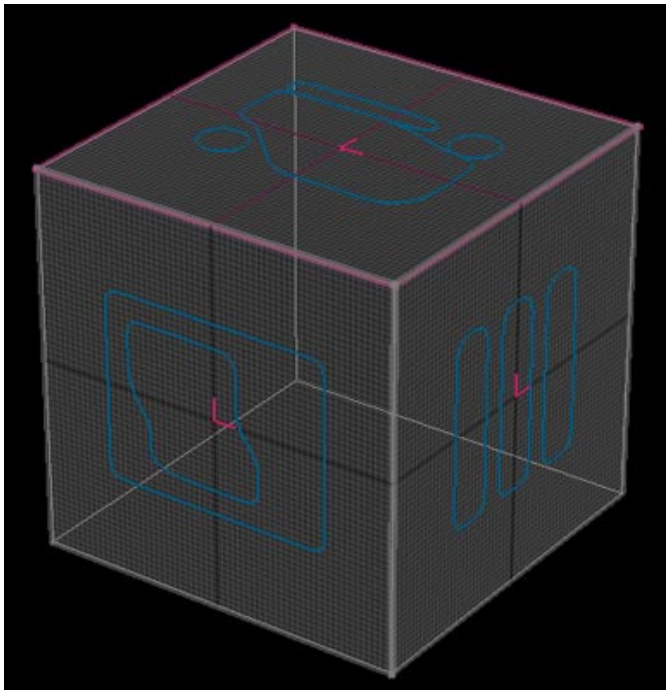
FreeForm Modeling System
Importing Multiple View 2D Curve Data



Modeler: Mark Conahan, FreeForm Product Specialist

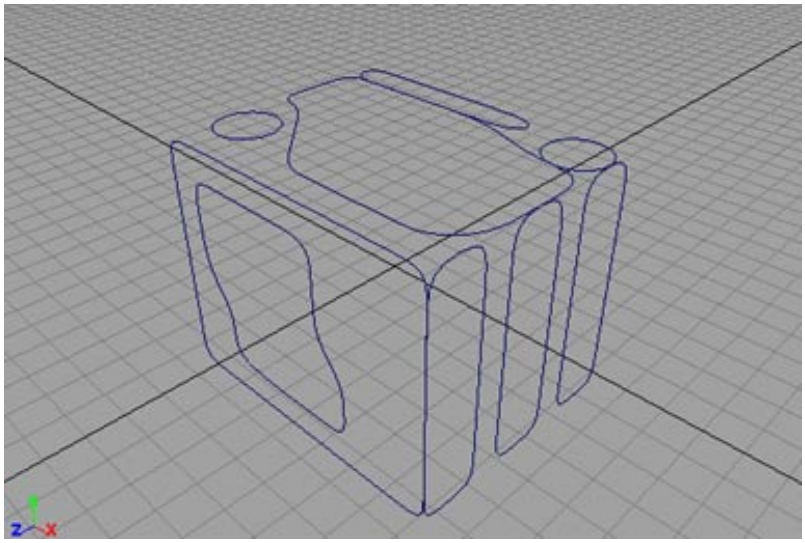
Description: A quick tutorial outlining how to import multiple views of 2D data into FreeForm modeling with both positional and dimensional accuracy.

Time: Not applicable.

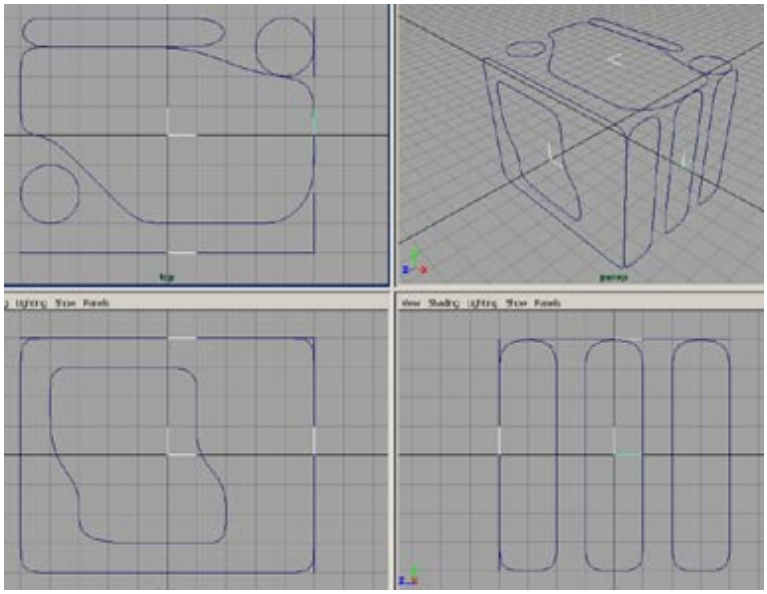
Software Version: FreeForm™ modeling system, Version 4.

Step 1) Preparing the Data in the External Application

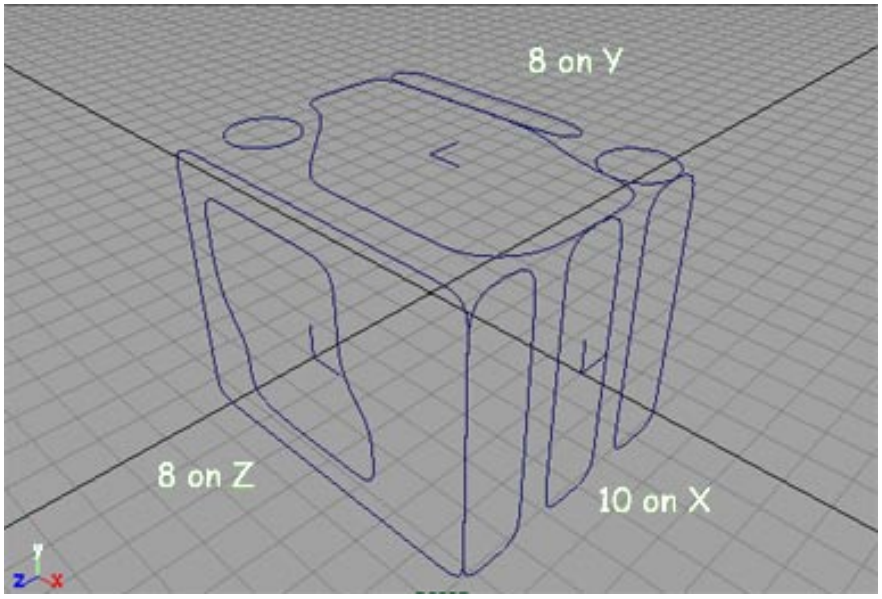
1. Create or open your curve data in its native application. In this example, we'll be using data from Alias|Wavefront Maya®.



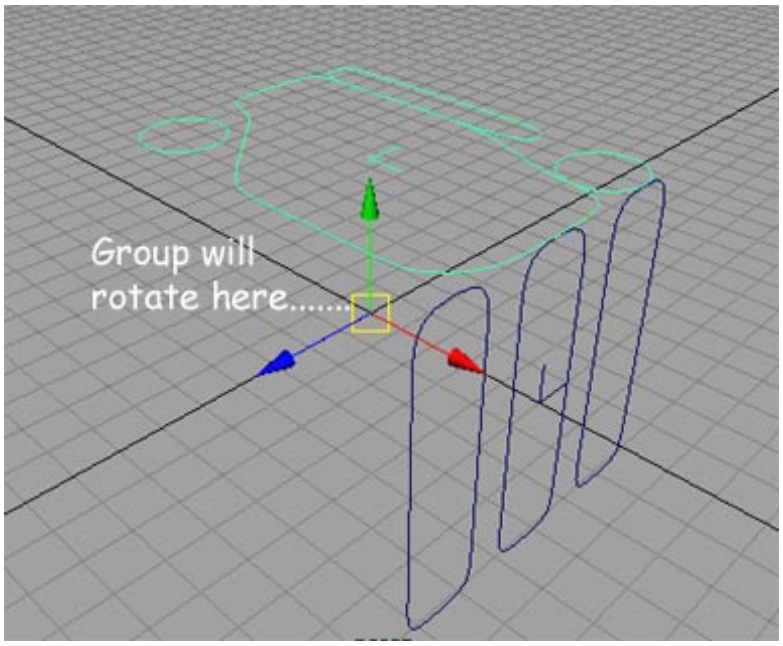
2. Add a small calibration mark at the origin of each orthogonal view. This can simply be a small "L" shape formed by two straight lines whose intersection is (0,0) in that view. This mark will be used to orient the data upon import into FreeForm modeling.



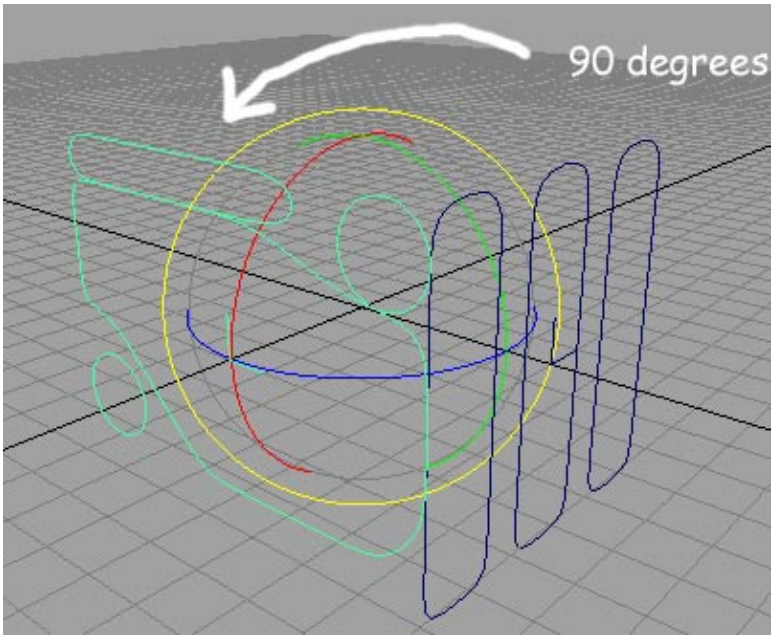
3. Rebuild the curves as degree 3 curves, as FreeForm modeling does not import curves with a degree higher than 3. Note the location of the curves in relation to the origin so that they can accurately be placed once inside the FreeForm application. In this example, the curves in the XY plane are at 8 units on the Z axis; the XZ curves are at 8 units on the Y axis; the YZ curves are at 10 units on the X axis.



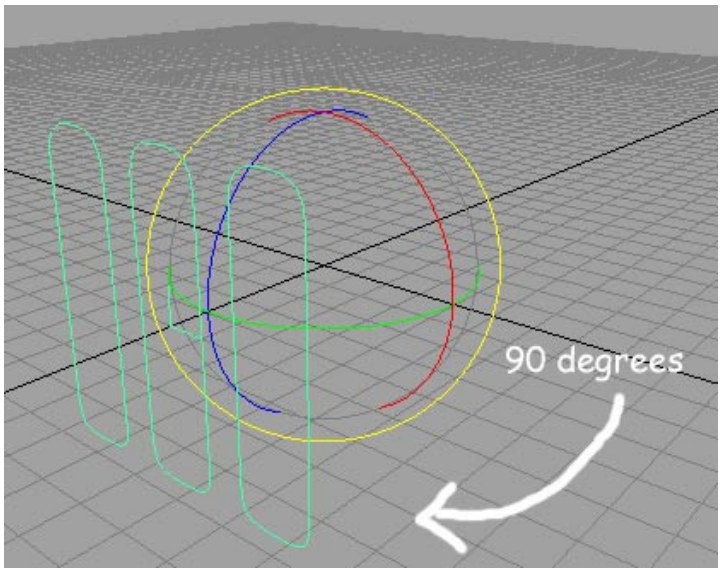
4. Export the curves on the XY axis first. Hide the just exported curves. Now, the curves in the YZ and XZ planes will have to be rotated into the XY plane, as FreeForm modeling disregards 2D curves that are not on the XY plane. Group the XZ curves (including the calibration mark) so that each curve in that group has the same rotation point. Ensure that the rotation point is the center of the workspace (0,0,0).



5. Rotate the XZ curves along the X axis so that the curves are centered in the XY plane. Export the curves.



6. Hide the just exported group of curves. Repeat the grouping and rotating steps, this time using the YZ curves, and rotating along the Y axis. Export the curves.

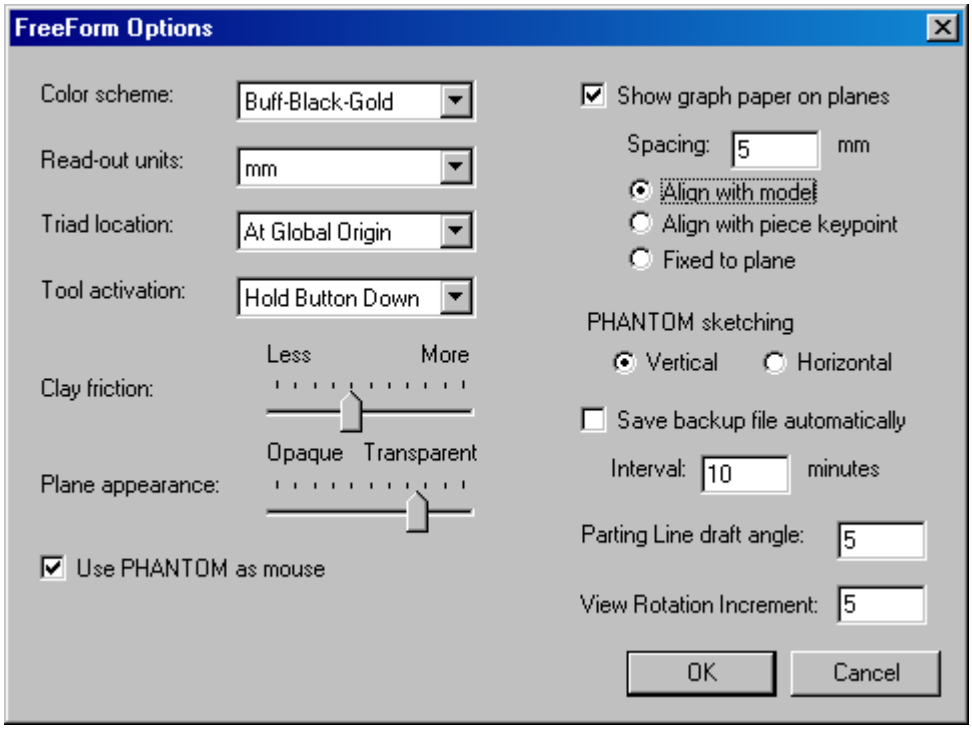


Step 2) Importing the Curves into FreeForm modeling

1. Create an empty workspace in FreeForm modeling by choosing **File→New** and using the *Start with Empty Model* option. The empty workspace should be slightly larger than the curves that will be imported.

2. Open the **Object List** (**o** hotkey, or **View→Object List**), and right-click on "Piece 1." Choose **Reposition**, and then open the *Advanced Settings* dialog via the  on the Dynabar. Set the *Translate X*, *Translate Y*, and *Translate Z* values to 0.

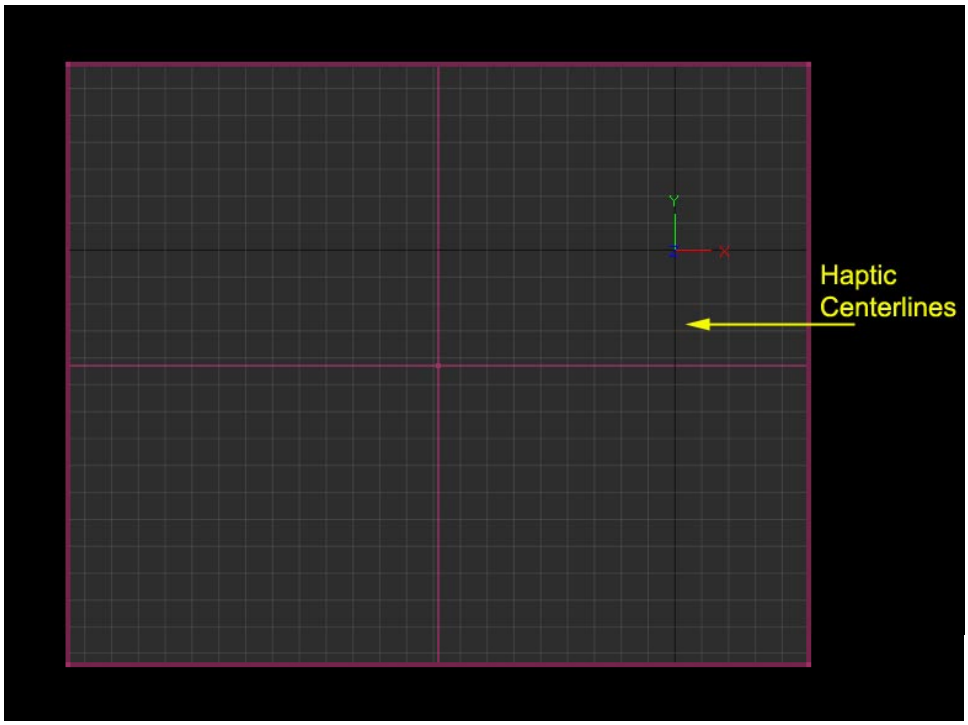
3. Enter **FreeForm Options** (**Tools→Options**). Ensure that the "Show graph paper on planes" option is checked, and that it is set to *Align with model*. Set the "Triad Location" to *At Global Origin*. Click **OK** to exit the Options dialog.



4. Under the **View** menu, turn on the **Triad** (**View→Triad**).

5. Create new planes on each side of the workspace that you will be loading the 2D data (the XY, XZ, and YZ sides). Scale the planes by dragging on one of the corners to ensure that the planes are large enough to handle the 2D data (if the planes are not large enough, the FreeForm application will scale the sketches down to fit on the plane, which is not the desired behavior in this case).

6. Enter into **Sketch** on one of the planes, choose **File→Import→Sketch**, and import the corresponding sketch. Using the **Select** tool, drag a box around the sketch, and then drag the selected items via the calibration mark. Drag the selected sketch items to the centerlines of the plane, and snap the sketch to the intersection, which is the origin of the plane.



7. Repeat the previous step, importing the sketches for the other planes and lining the sketches up via the calibration mark.

8. Using the **Object List**, right-click on a plane, choose **Reposition**, and then open the *Advanced Settings* dialog via the  on the Dynabar. Move the planes to the appropriate locations (in this example it was 8 units on the Z axis, 8 units on the Y axis, and 10 units on the X axis).