“A” KEY TUTORIAL

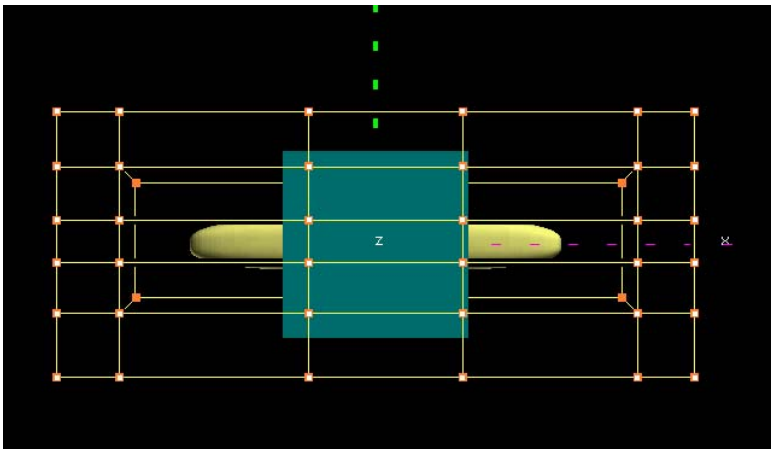
This tutorial will guide you through the different features of the A key used in GridPro. Although these same properties can be applied directly from the TOPO submenu, the A key allows to accomplish these tasks in a practical and efficient way.

What You Will Learn

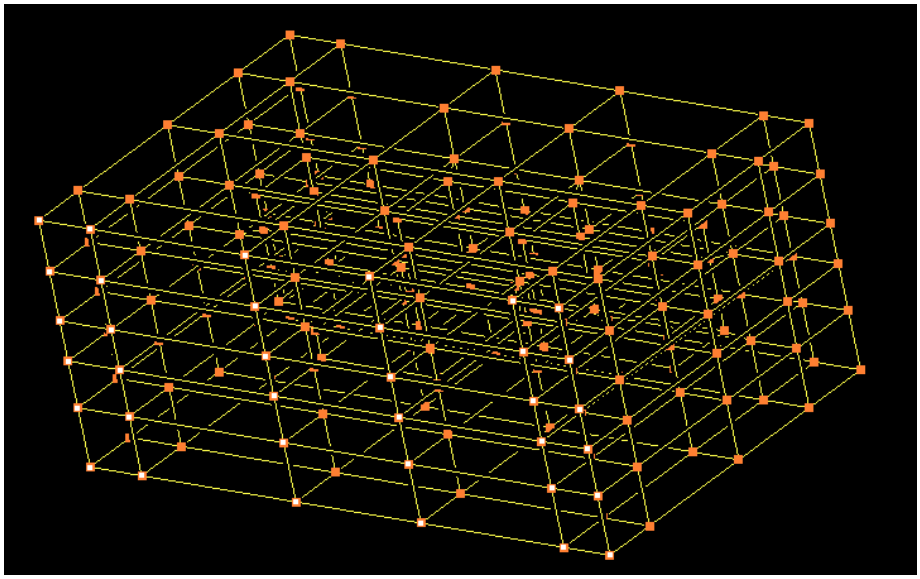
- Adding, subtracting, and intersecting sheets in a topology.
- Assign and unassign current surfaces

Step 1 Load-up the file

Load-up the **initial.fra** file, which has the topology created for the idealized-wing body on tutorial 2, part II. The topology is shown in the picture below.



Turn off the Cut-Plane, the Axis, and the surface by going to the SHOW: submenu and click on the SURF option. Rotate the topology and zoom-in to get a better view.

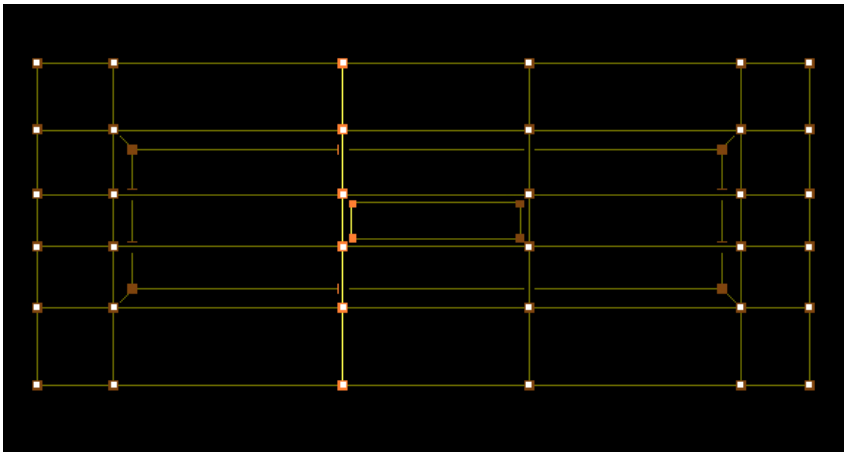


This topology contains two wraps. One was created for the fuselage and the other for the wing. Zoom in to see these details.

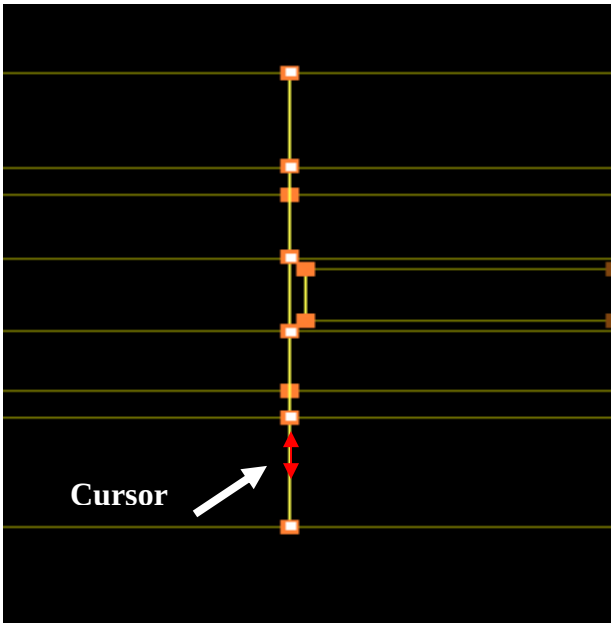
Step 2 Adding Sheets

Let's start learning how to add sheets in a topology by using the **A** button on the keyboard.

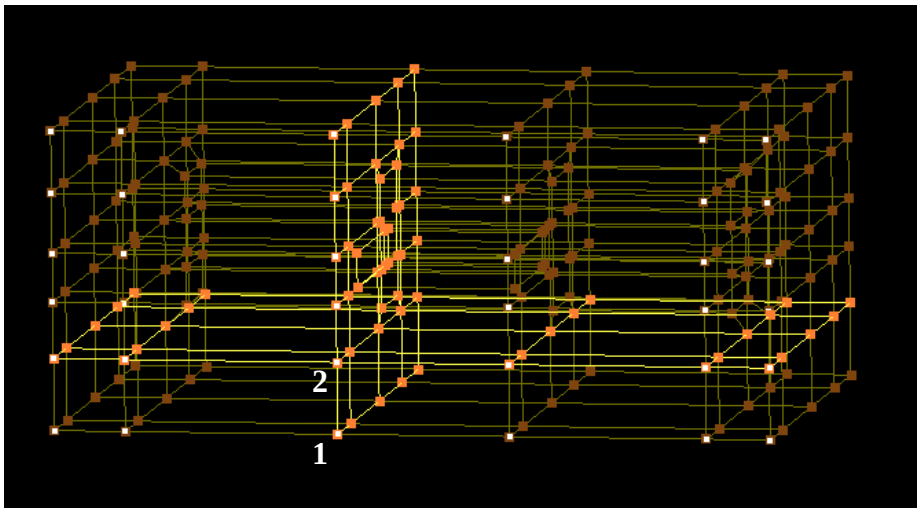
First select **Group 1** on the TOPO: submenu and add a sheet as is usually done, selecting the + button and dragging a box holding the right-click mouse button on any of the edges.



Having this group on, select once again the + button on the TOPO: submenu, hold down the **A** button and left click close to one of the edges of the sheet as shown in the picture below.



A new sheet is added to the group. Rotate to get a better view.



Notice that by using the **A** button, the action is taken where the cursor is the closest to. In this case, the cursor was closer to corner “2” than to corner “1” (as shown in the picture above) therefore the sheet is added on corner 2.

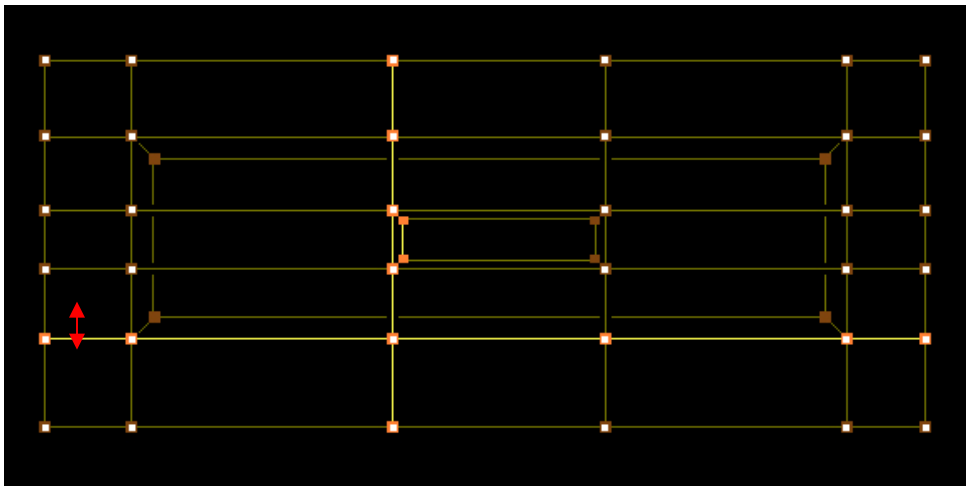
To start using the **A** button, a sheet must be added first selecting the + button and dragging a box around an edge. Then, the **A** button feature can be applied.

Step 3 Subtracting Sheets

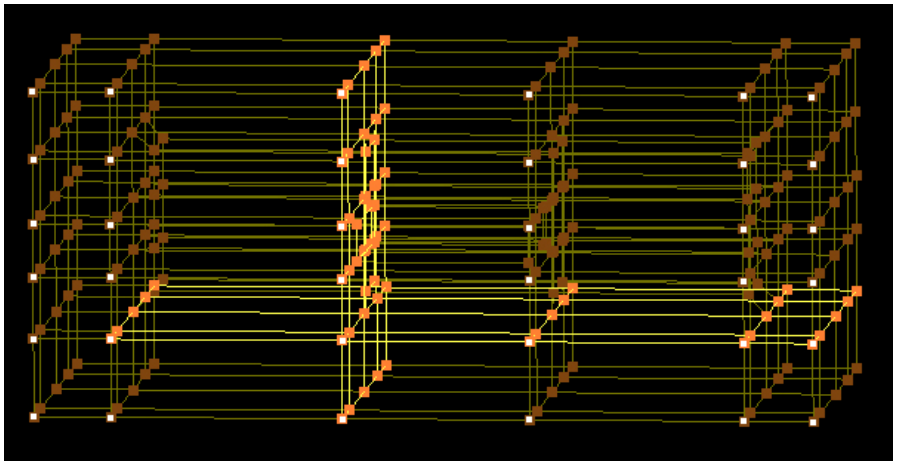
Subtracting sheets from the topology using the **A** key is as easy as adding sheets.

Select the button from the

submenu and place the cursor at the edge where the sheet is going to be subtracted from.



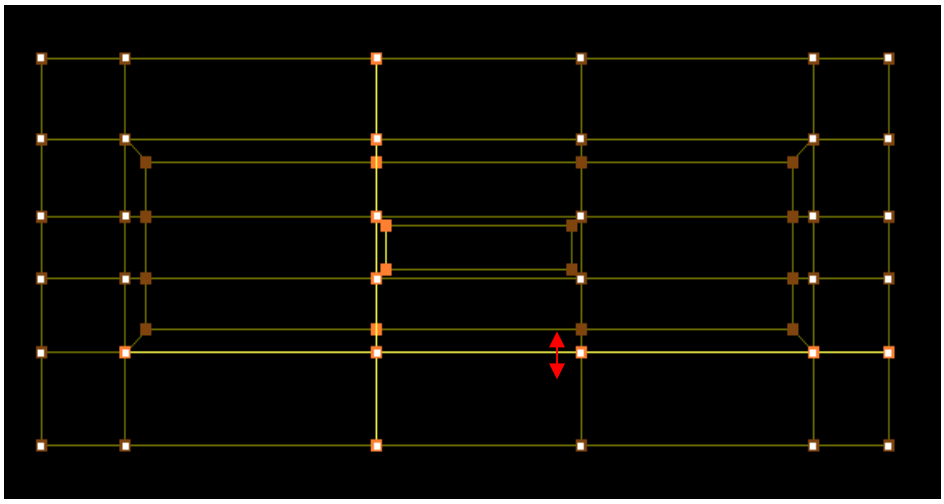
Hold down the **A** button and left-click to subtract the edge from the topology, Rotate the topology as shown in the picture below.



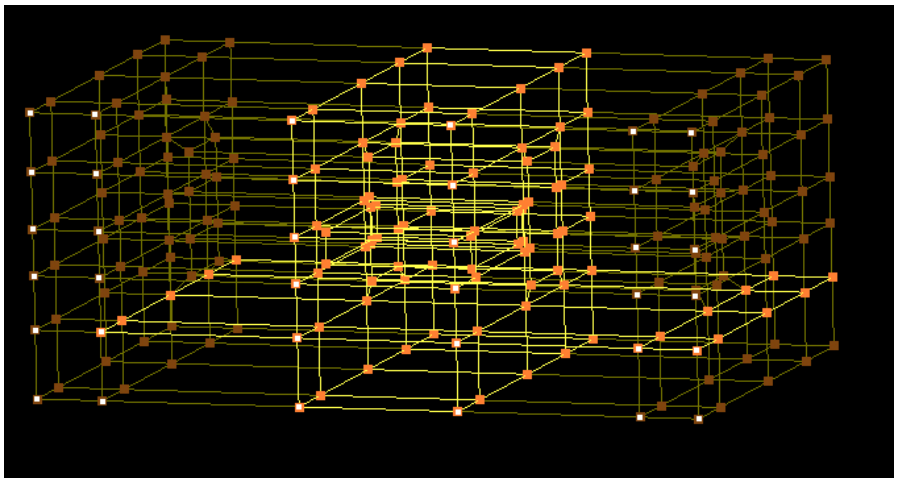
Notice that an edge has been subtracted from the group on the left-hand side where the cursor was placed closer to.

Step 3 Intersecting Edges

As similar as adding and subtracting, intersecting is done the same way, just selecting the function and holding down the **A** key.
First, let's add another sheet to the group using the **A** key method. Select the button from the submenu and add a sheet to the group as shown in the picture below.



A new sheet has been added to the topology, rotate for a better view.

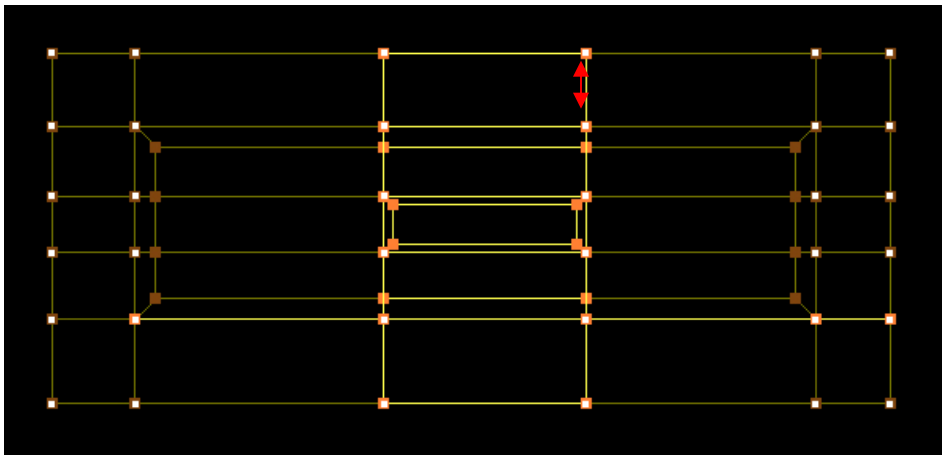


Let’s now intersect these two sheets and see what the result is. Snap the topology to

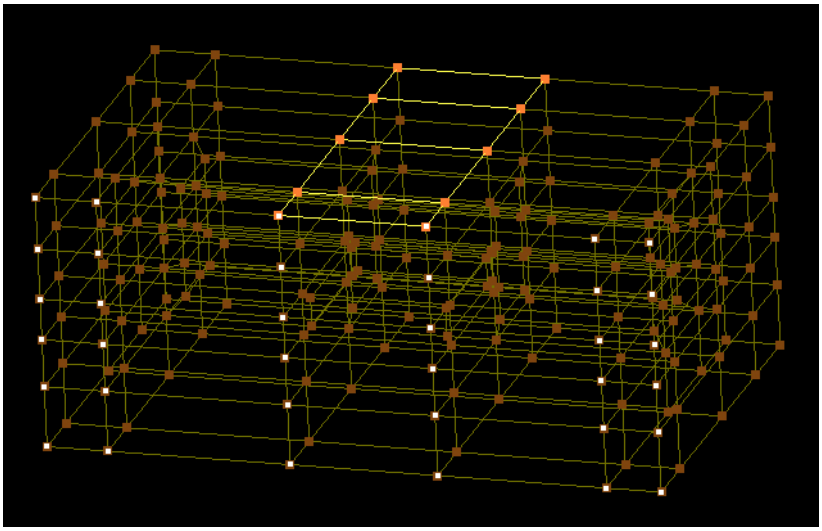
and select the

button from the

submenu. Click on one edge as shown in the picture below.



The intersection function allows the topology to get only those corner points that are “intersecting” in the group. In this case, the top edge contains the intersecting corner points of the selected topology. Rotate the topology to get a better view.

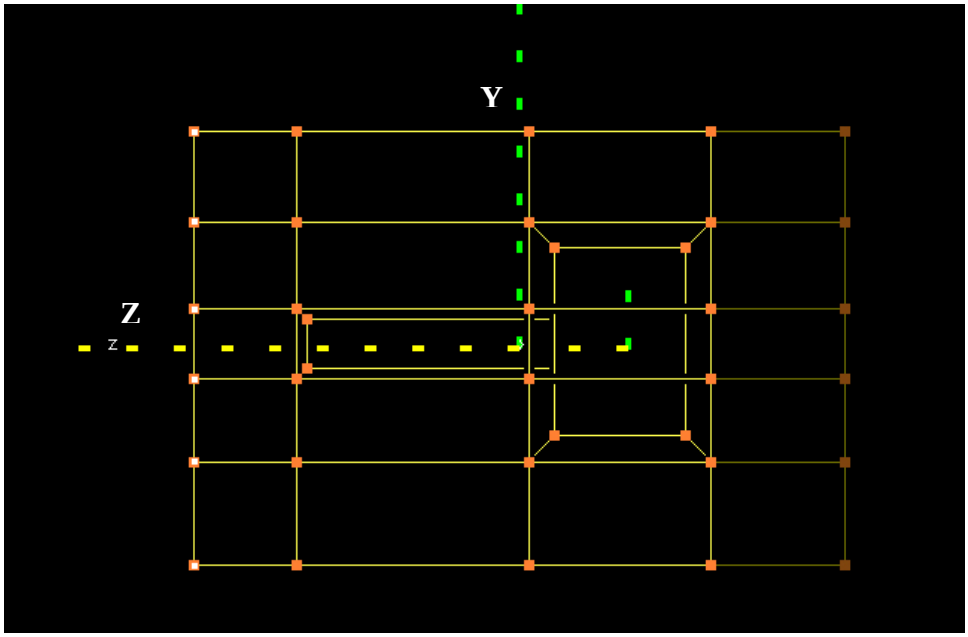


Step 4 Intersecting + Propagation mode

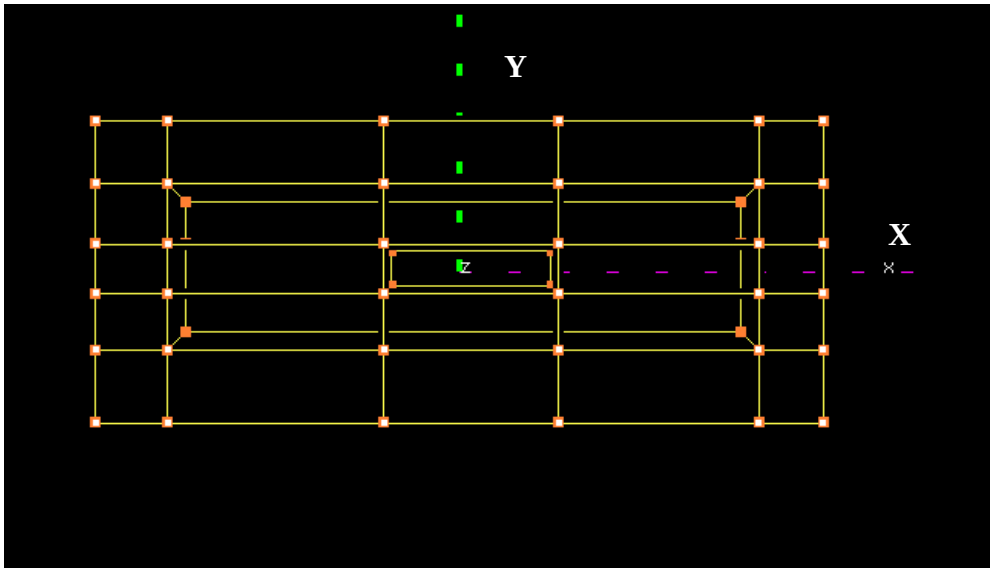
Using the intersecting feature, an intersection can be obtained depending on the type of propagation mode applied.

In this case, we are going to use a feature called propogation mode: group which allows us to get the intersection within the group we are working on.

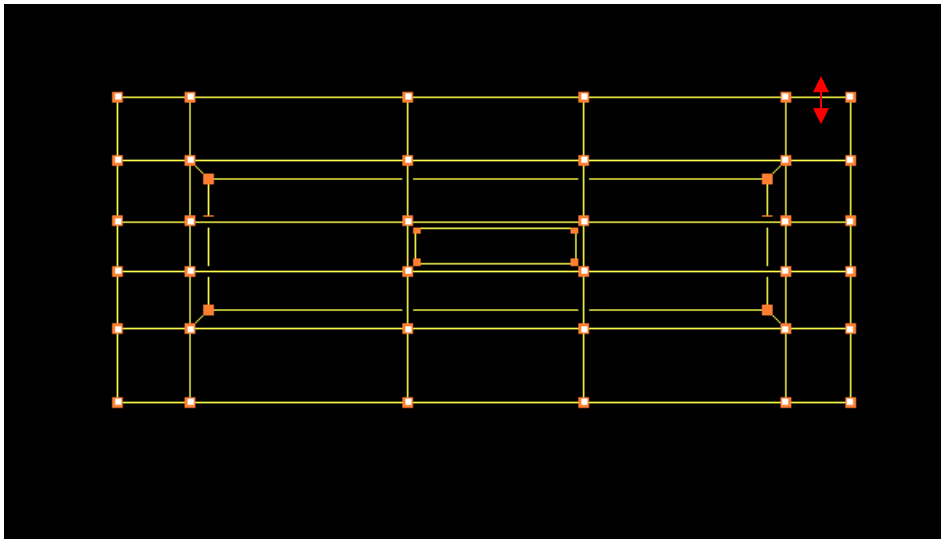
Rotate the topology to the y-z axis and add it to Group 1 leaving the outer right sheet unselected as shown in the picture below.



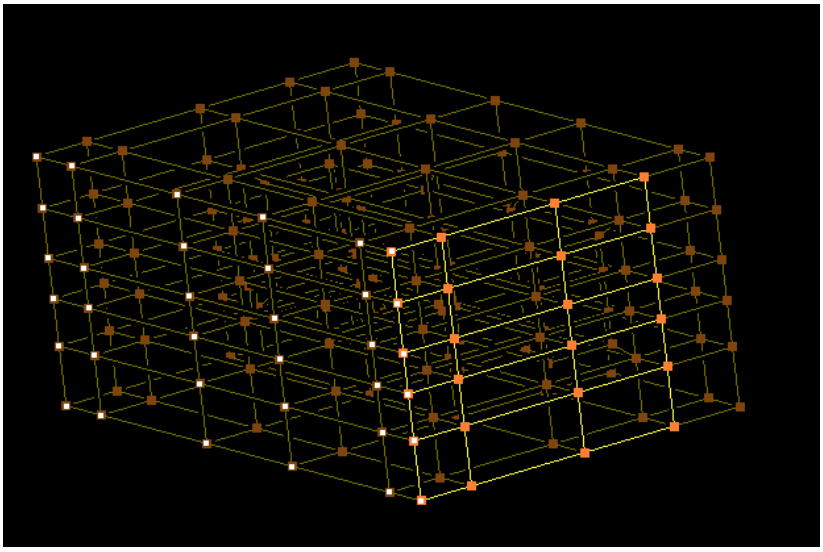
Rotate the topology to the x-y axis to get a better perspective and be able to execute the intersection. The topology is shown in the picture below.



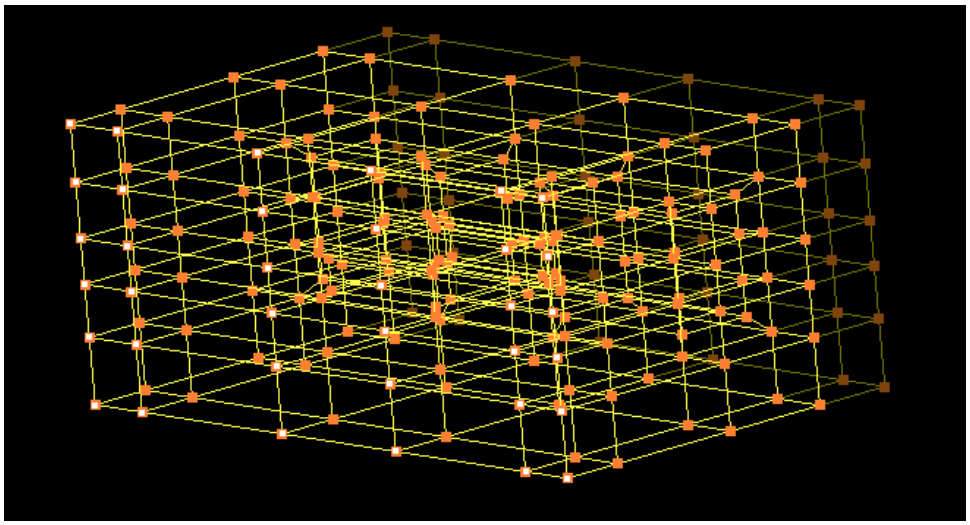
Turn off the axis, go to the p:g option in the TOPO: submenu and select propogation mode: group and the * button. Place the cursor in one of the topology corners as shown in the picture below. Notice that this feature is selected by default.



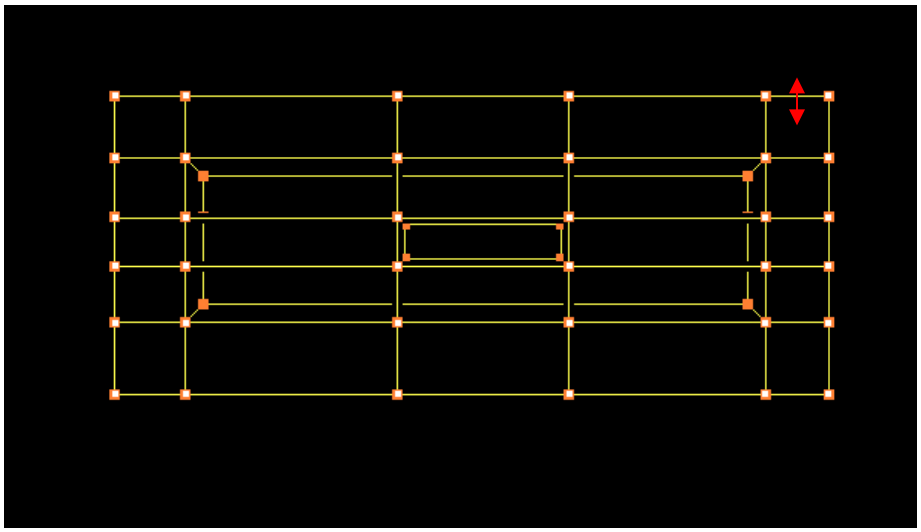
Rotate the topology to see the new intersection. This intersection is only obtained within the group that is selected, as shown in the picture below.



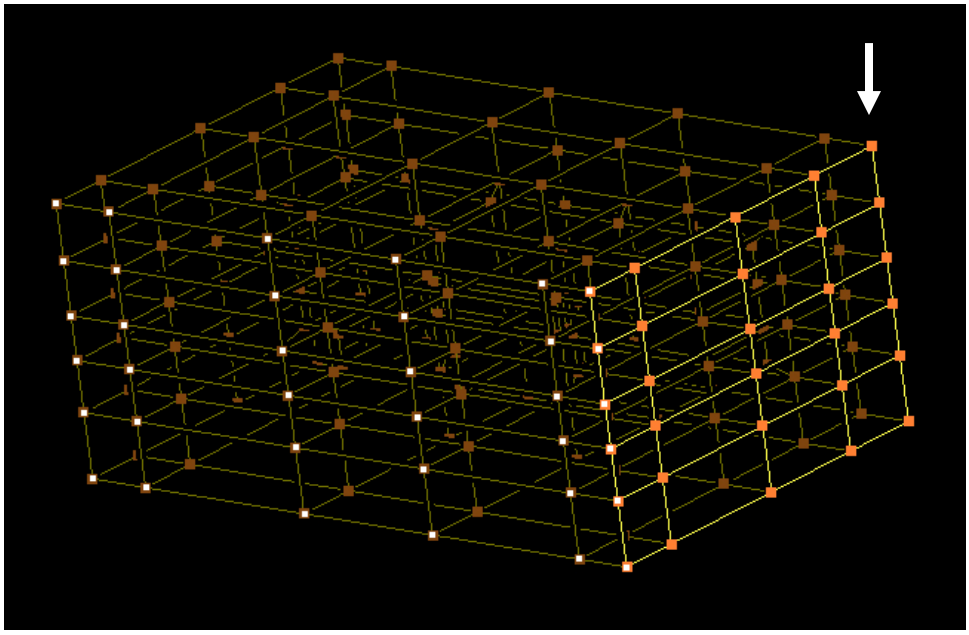
The Propagation Mode also has a feature called propogation mode: all which allows getting an intersection from the topology as a whole. Retrieve the topology, to get the previous selection as shown in the picture below.



Rotate the topology to the **x-y axis** and select p:a from the TOPO: submenu and click on the same edge as done before holding down the **A** button on the keyboard.



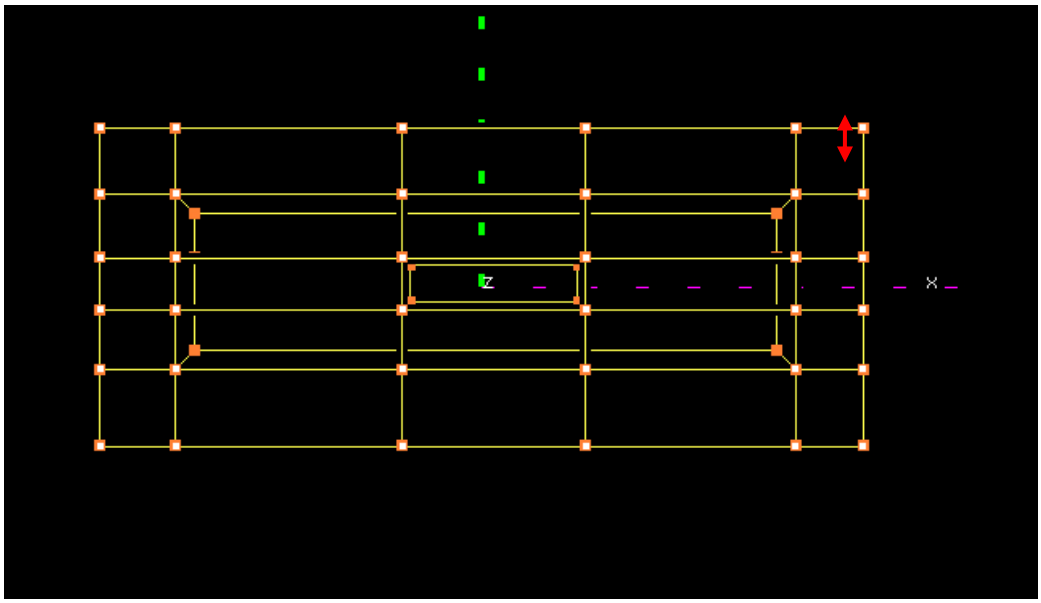
The new intersection obtained is shown in the picture below. Notice that this intersection now contains the topology that was not selected prior in the group.



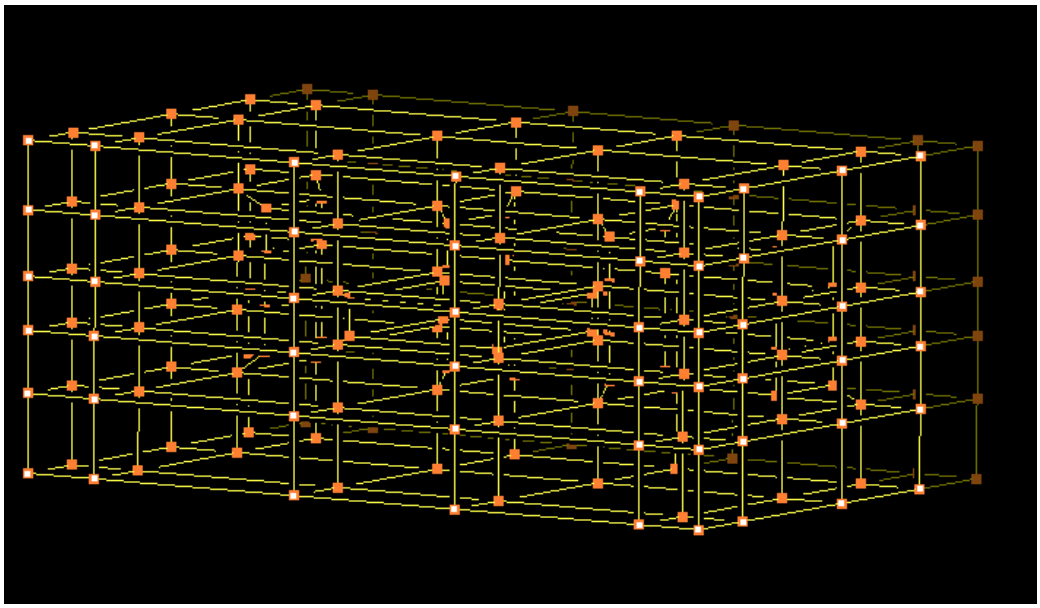
Step 5 (Un) Assigning Surfaces

Assigning surfaces using the **A** key is as easy as the other functions explained before.

Retrieve the topology and rotate it to the **x-y axis.** Select from the submenu, hold down the **A** key and click on the edge as shown in the picture below.

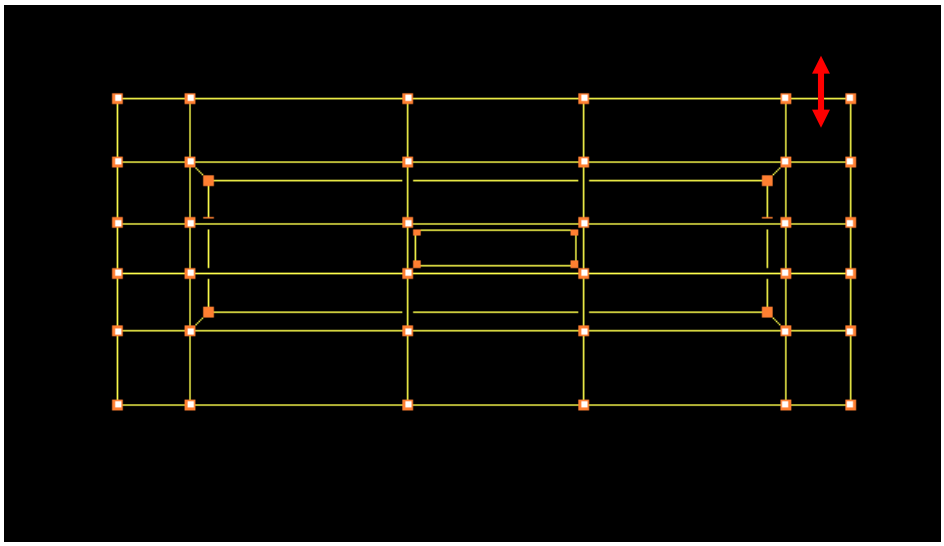
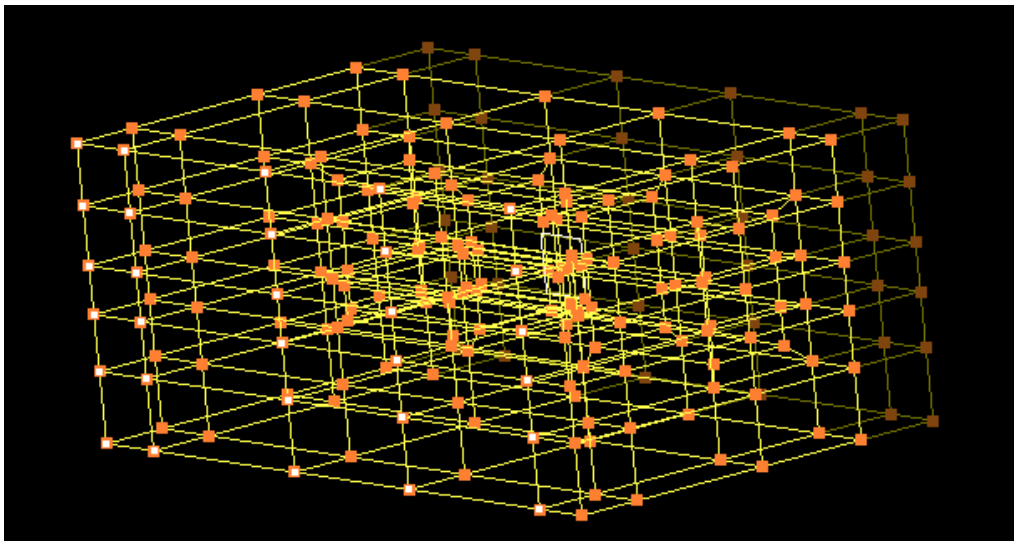


The new assignment surfaces obtained are shown in the following picture. Rotate the topology for a better view.



Follow these same steps to do ‘unassigned surfaces’. Select the button from the

submenu and click on the sheet where the surface is going to be ‘unassigned’.



Rotate the geometry to see the resultant topology.