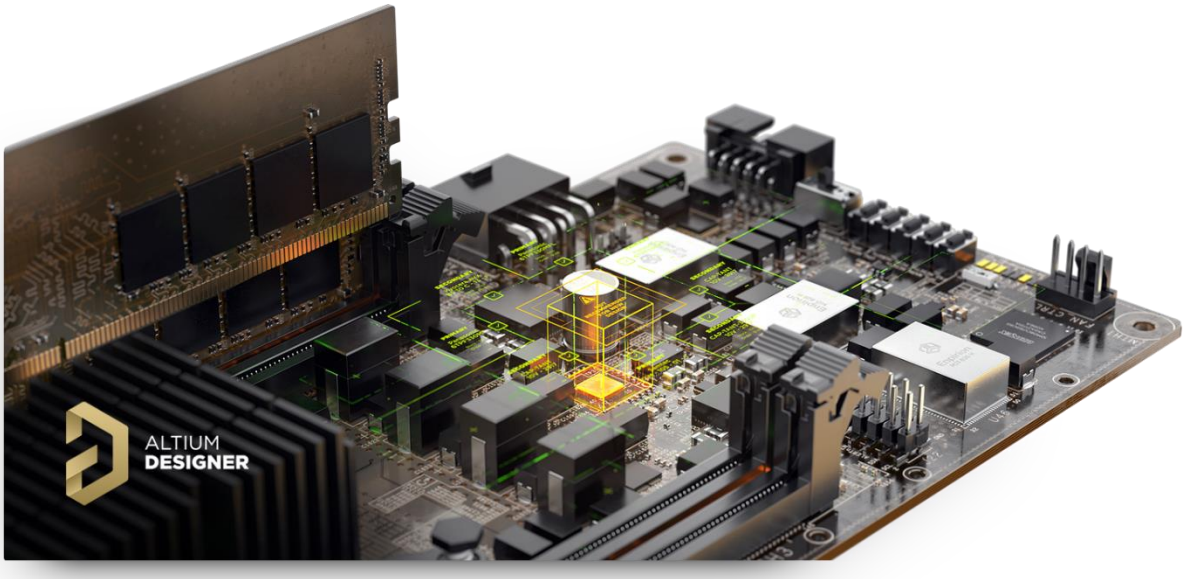

Altium Designer

Advanced Course

Module: Defining the Board Shape from a 3D model

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Defining the Board Shape from a 3D model

1.1 Purpose

The board shape, also referred to as the board outline, is a closed shape that defines the boundary or extents of the PCB. Defining the board shape from selected objects is typically done when the board shape has been defined and imported from another tool, such as a mechanical CAD package. As the enclosure is being designed, the MCAD designer typically includes a solid model of the raw PCB, which can be referenced directly by Altium Designer to define the board shape. In this exercise you will define the board shape using a 3D body imported as a STEP assembly.

1.2 Shortcuts

Shortcuts when working with Defining the Board Shape from a 3D model

F1:	**Help**
P-O:	**Place a 3D Model**
2 :	**2D Mode**
3 :	**3D Mode**
CTRL+S:	Save Document

1.3 Preparation

1. **Close all existing projects and documents.**

1.4 Defining the Board Shape

2. Create a new local Project with the name `Defining Board Shape from a 3D Model` in a folder of your choice.
3. From the **File** menu, select **New » PCB**. This will create and open a new PCB document. It's okay if it uses a pre-defined PCB template.
4. Save the PCB as `Defining Board Shape from a 3D Model.PcbDoc`.
5. To add a STEP model in the PCB, go to **Place » 3D Body.**
6. The 3D Step Model `DT01.STEP` can be found in the `Defining the Board Shape from a 3D Model` folder.
   Select the file and click **Open**.
7. With the 3D body on your cursor, hit the **TAB key** to pause the placement.
8. In the *Properties* panel, change the *Rotation Z*° to `90` as shown in Figure 1.

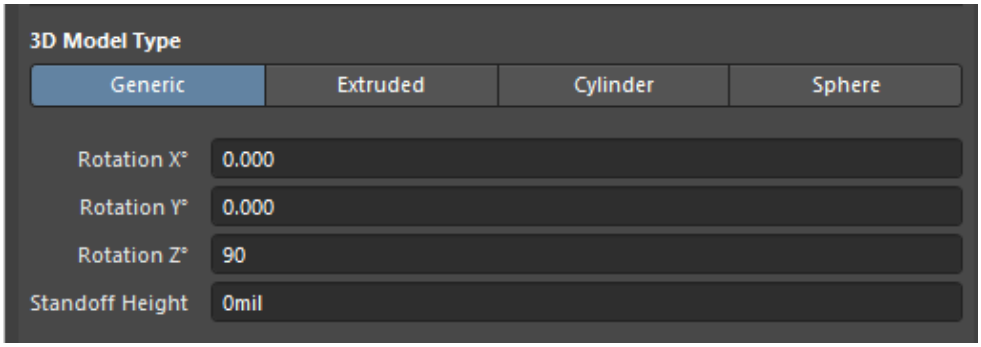

Figure 1. Change Model Rotation in 3D Body Dialog

9. Click on the **Pause** icon to continue placing the 3D body.
10. Left-click to set the location of the 3D body within the current board shape.
11. Right-click to exit the command.
12. Left-click in any open space to deselect the 3D Body.
13. Switch to the 3D view by pressing the **3** key on the keyboard. You will see the added 3D model as shown in Figure 2 below.

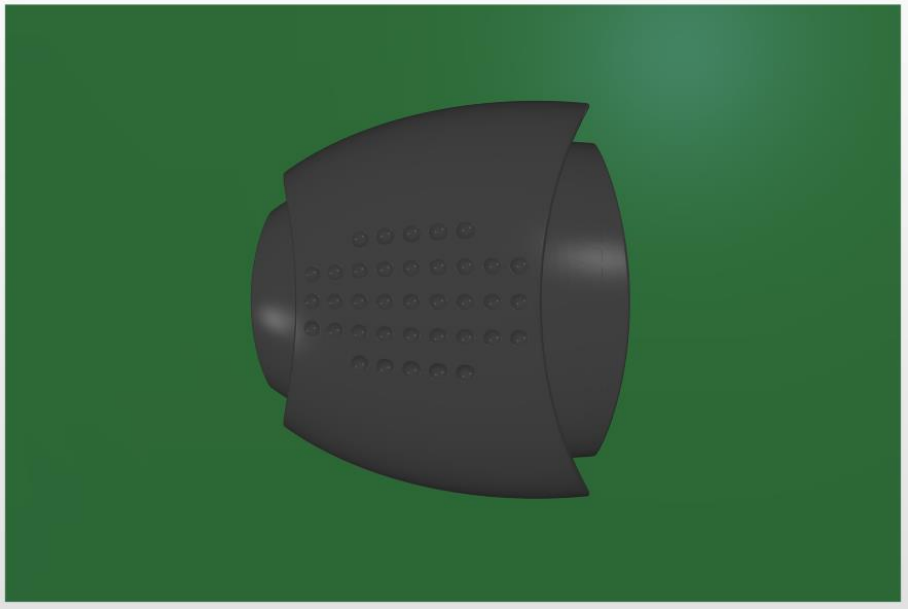

Figure 2. 3D View of Placed STEP Assembly

14. Open the *PCB* panel from the **Panels** button.
15. From the drop-down list at the top the panel, select **3D Models** as shown in Figure 3.

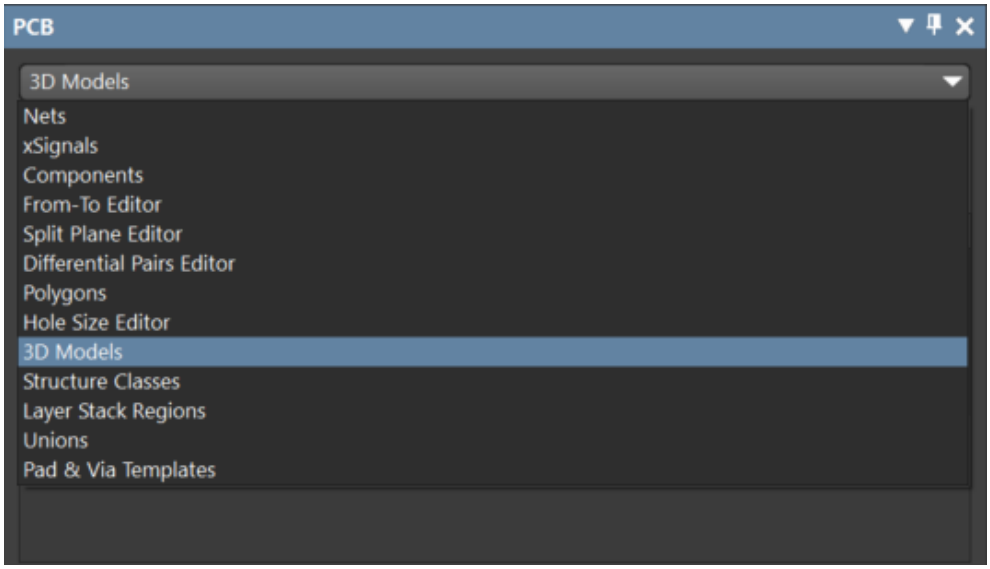

Figure 3. 3D Models from the PCB panel

16. In the *PCB* panel, you'll see the *Free Models* section. Click on *Free Models.* You'll then see the `DT01` assembly in the *Model* section as shown in Figure 4.
17. Click on the arrow to the left of `DT01` to expand all of the models included in this assembly. It has three parts:
    a) `Case - bottom half-2`
    b) `Case top half-2`
    c) `PCB Assembly-2`

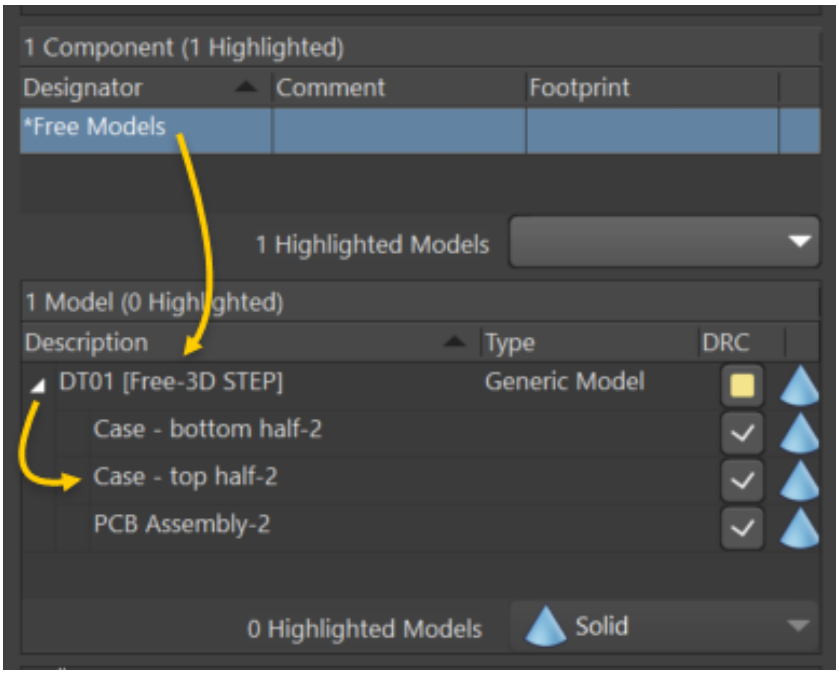

Figure 4. DT01 models from the PCB panel

18. To create our board shape, we will need to select one of the faces of the enclosure. To help us with this, we will hide the `Case - bottom half-2` and `Case - top half-2` by clicking on the blue cones until a red `X` appears as shown in Figure 5.

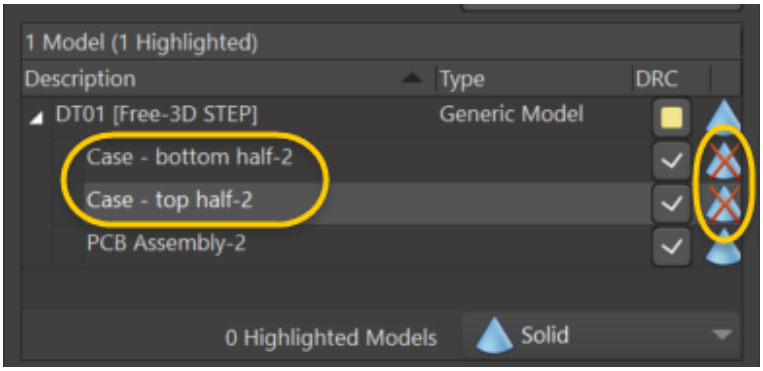

Figure 5. PCB panel with3D Models

19. To define the new board shape, go to the **Design** menu and select **Board Shape » Define Board Shape from 3D body**.
20. With the cross on your cursor, left-click on the white model itself.
21. After the first left-click, you'll be prompted to select the face which you want to create the outline from. Left-click on the white face again.
22. If successful, you'll be prompted with a *Board Outline Creation Successful* dialog.
23. Accept the default values for the *Board Outline Creation Successful* dialog by clicking on the **Close** button as shown in Figure 6. The board shape is now defined as shown in Figure 7.

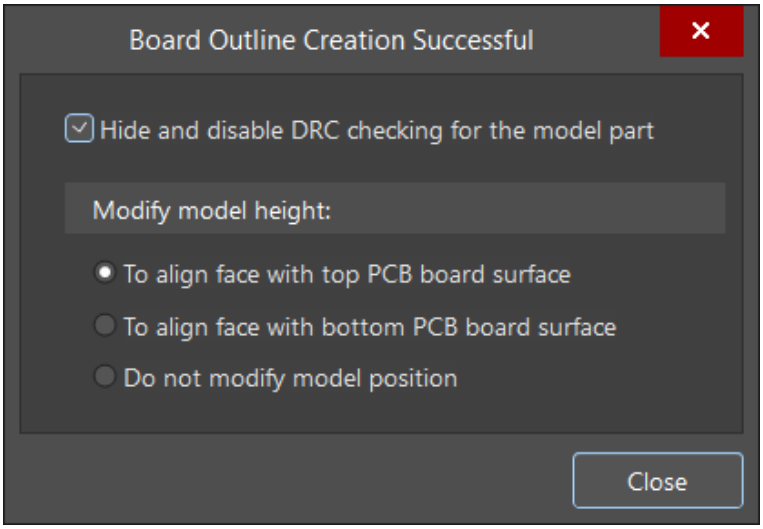

Figure 6. Board outline successful dialog

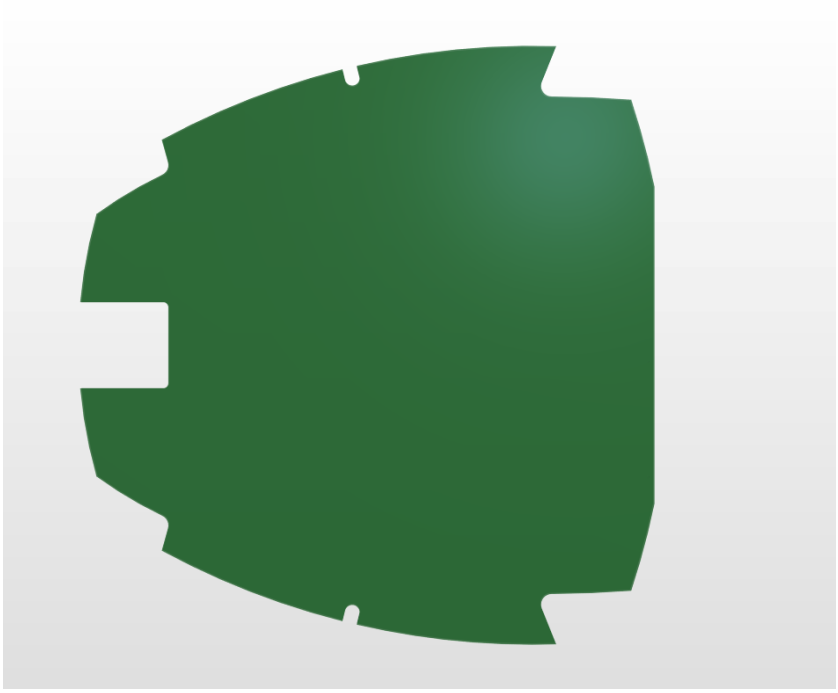

Figure 7. Resulting Board Shape in 3D Mode

24. Return to the 2-dimension view by pressing the **2** key. You'll notice your new PCB board outline. It's not necessary to keep the 3D enclosure in your design, however, it is recommended to keep the enclosure for 3D clearance checking.
25. To hide the 3D body in 2D, we can hide the mechanical layer it resides on using the *View Configuration* panel, in the *Layers & Colors* tab.
26. Back in 3D, you can enable the visibility of the `Case - bottom half-2` and `Case - top half-2` by clicking on the blue cones in the *PCB* panel to change their opacity. The result should look similar to Figure 8.

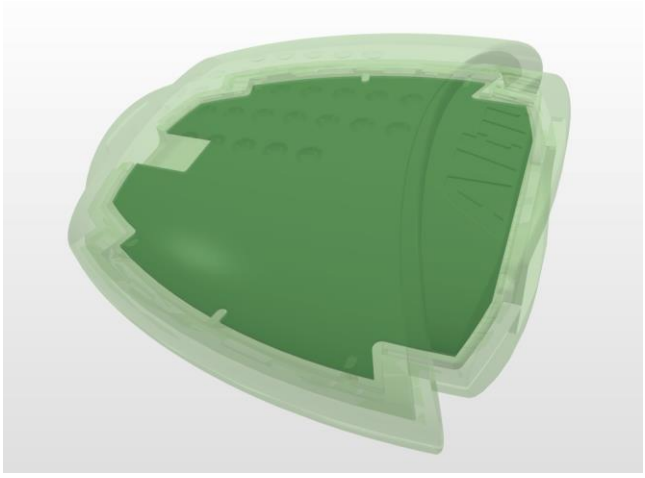

Figure 8. A Final Assembly in 3D Mode with the enclosure opacity set to 25%

27. Close the project and documents, feel free to save the files.
28. **Close the project and any open documents.**

Congratulations on completing module

Defining the Board Shape from a 3D model

from the

Altium Designer Advanced Course

Thank you for choosing Altium Designer