



3DXpert™ for SOLIDWORKS®

Support creation & Verification

Automatic region creation

14,0200,1599,1024(SP2)

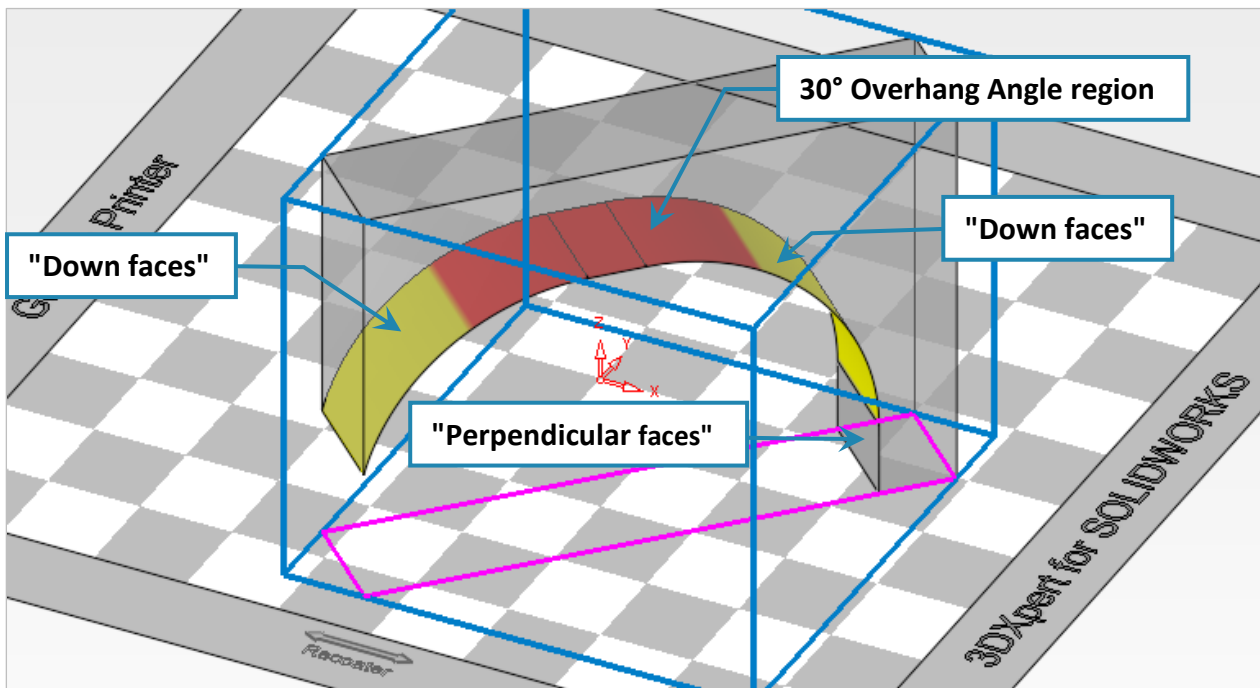
In this exercise, we will learn the foundation of **Automatic region creation**.

Region creation is required to identify those regions where a support is needed to the tray.

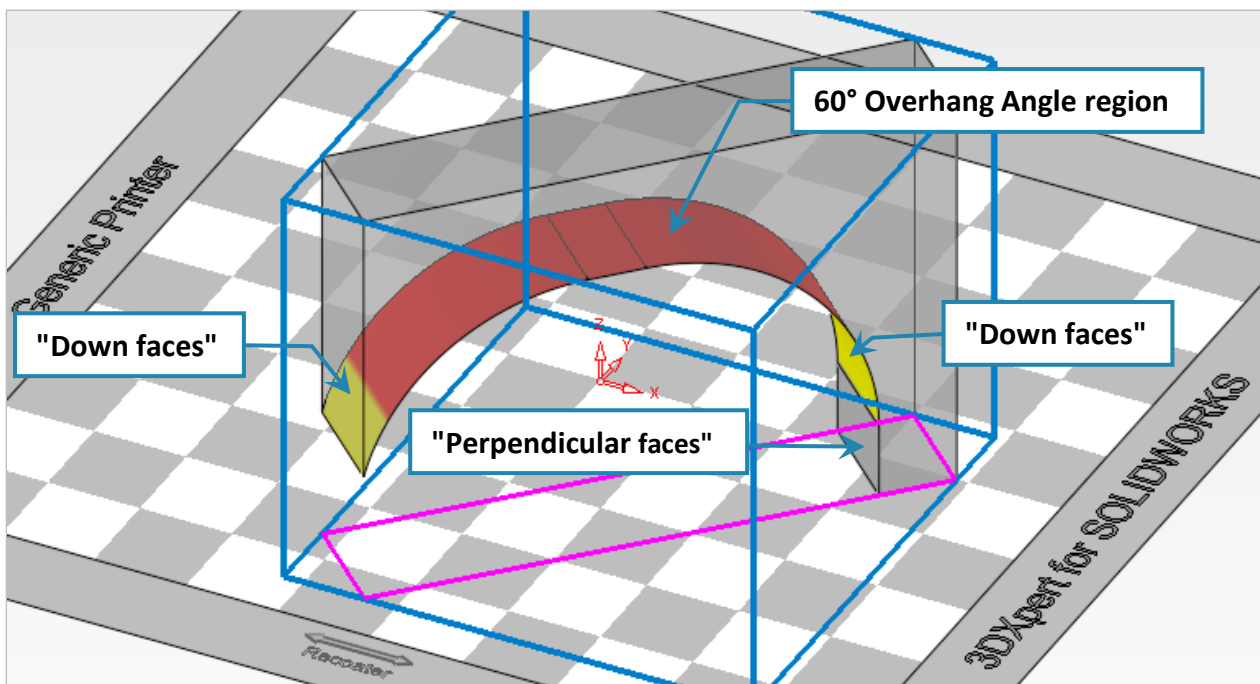
In theory, any area other than one which is perpendicular to the tray requires support. In reality, each printing technology, material and shape of the part dictate a different angle from which supports may be required.

Regions which require supports are considered to be areas which start from parallel faces to the tray up to the overhang angle definition. All faces from the overhang angle up to perpendicular to the tray are called "down faces".

30° Overhang Angle region:



60° Overhang Angle region:








Automatic region creation is the first stage in the **Support Manager** tool, to identify those regions as well as build the supports. It is activated within the 3D Printing Process Guide.

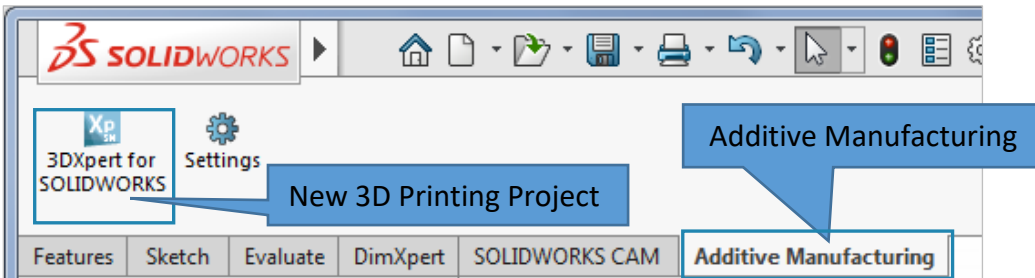
To use this command we need to follow few steps (guided):

- Load **Manifold_Automatic region creation** to SOLIDWORKS
- Launch **3DXpert for SOLIDWORKS**.
- **Position Body** – move and rotate the body to fit 3D printing considerations using dedicated analysis tools.
- **Automatic region creation**.

<p>!</p> <p>Notice/ Remember</p>		Left mouse button name is " <i>pick</i> "
		Middle mouse button name is " <i>Exit</i> "
		Right mouse button name is " <i>Click</i> "

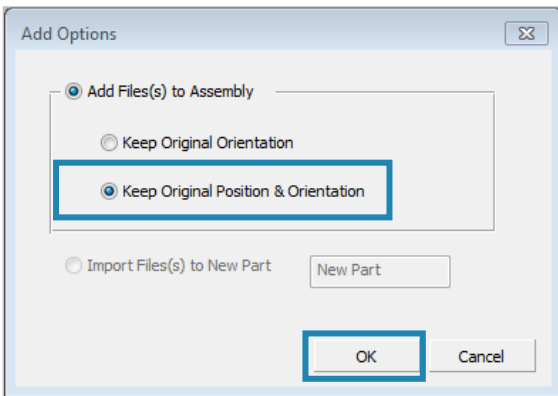
1. Load **Manifold_Automatic region creation.SLDPRT** to SOLIDWORKS from the folder that it was downloaded to.

2. From the Additive Manufacturing tab **pick 3XPert for SOLIDWORKS**  command.



This command will launch **3DXpert for SOLIDWORKS**.


3. After the **3DXpert for SOLIDWORKS** new window will open:

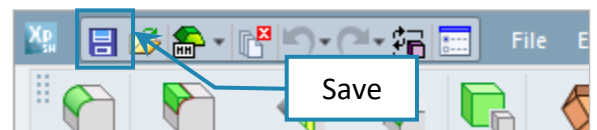


Pick Keep Original Position & Orientation and OK:

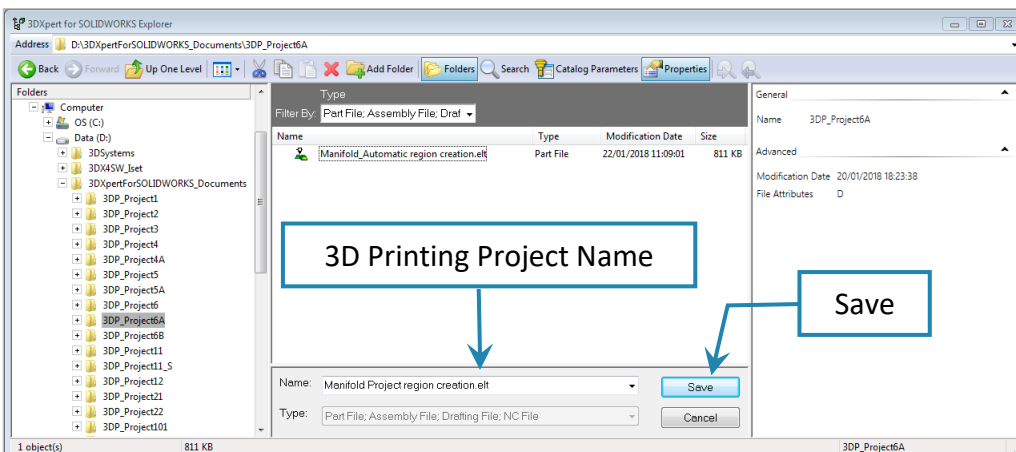
In this window we set the basic positioning of the part on the tray

- **Keep Original Orientation** means that the part will not rotate to any direction - XYZ of the part will be parallel to the XYZ of the tray - but the center of the bounded silhouette will move to the center of tray.
- **Keep Original Position & Orientation** means that the part will not rotate to any direction - XYZ of the part will be parallel to the XYZ of the tray - but the center of the part (UCS 0,0) will move to the center of tray.

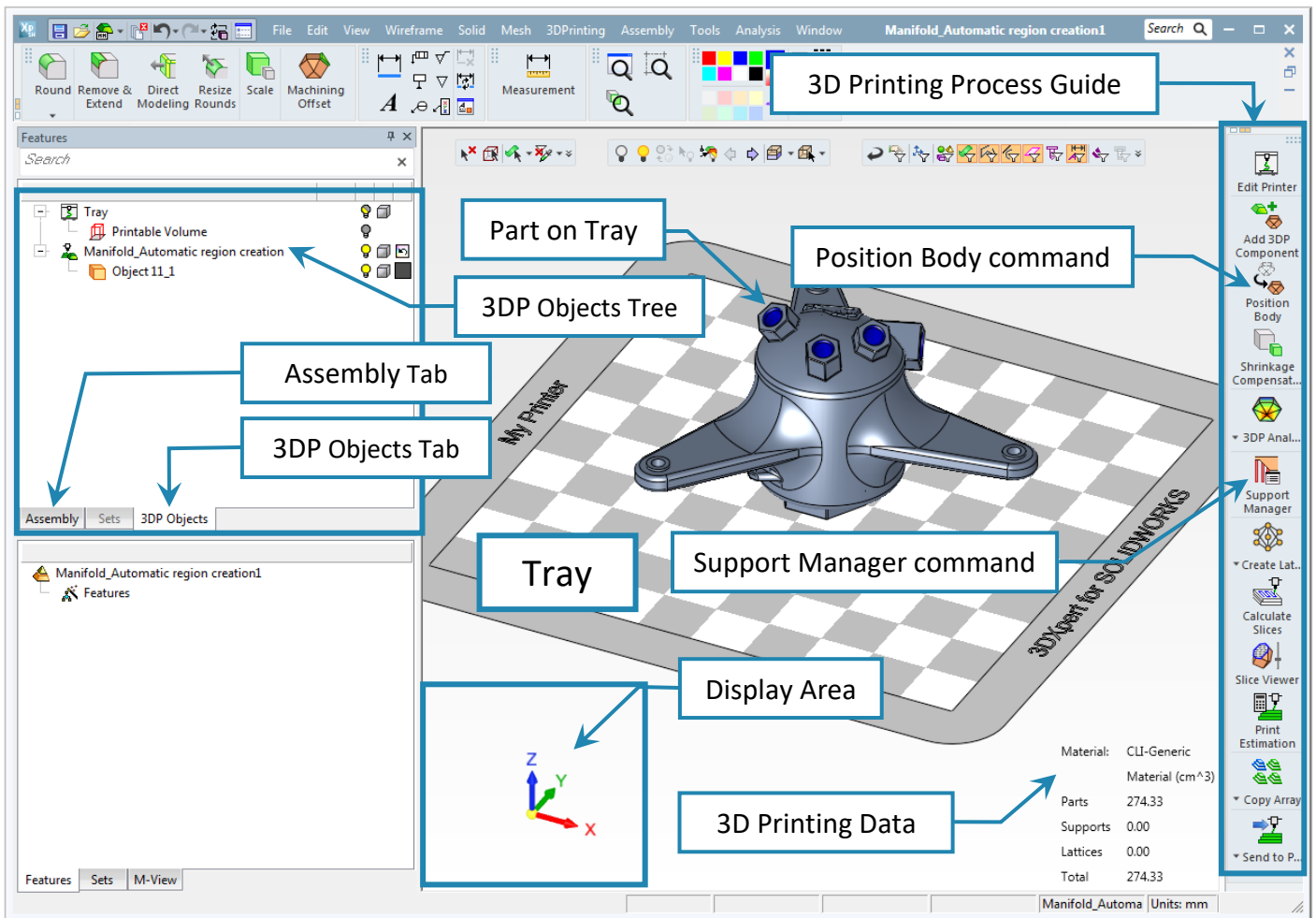
4. Save the project, pick the Save  command on top left corner.



This command will open the **3DXpert for SOLIDWORKS Explorer**. Save the file to the same folder with the downloaded files.



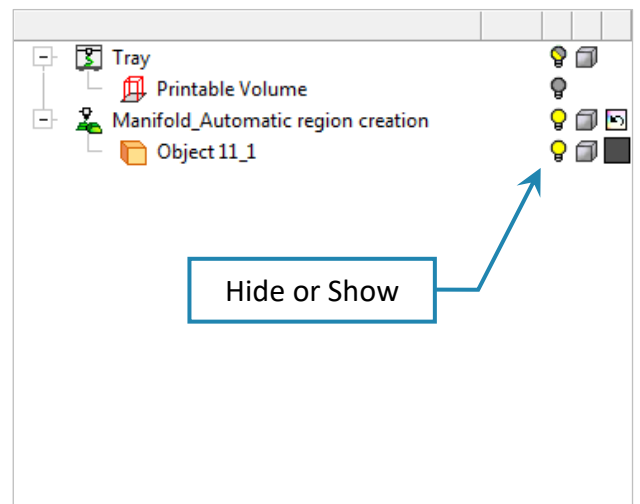
After the file is open the screen will look like this:



Notice the Process Guide on the right side of the screen. This guide contains most of the functionality to enable preparing the part for printing.

In the **3DP Objects Tree** it is possible to see that an object named **Tray** was automatically add to the tree, the **Tray** represents the printing area of the selected 3D printer.

For a clear view of the part, you can always hide or show the tray by pressing the bulb alongside the Tray part in the project's tree. This is also applicable for any other parts that we may add later on.






5. Position the part by using **Position Body** command, set parameters as shown in the pictures:

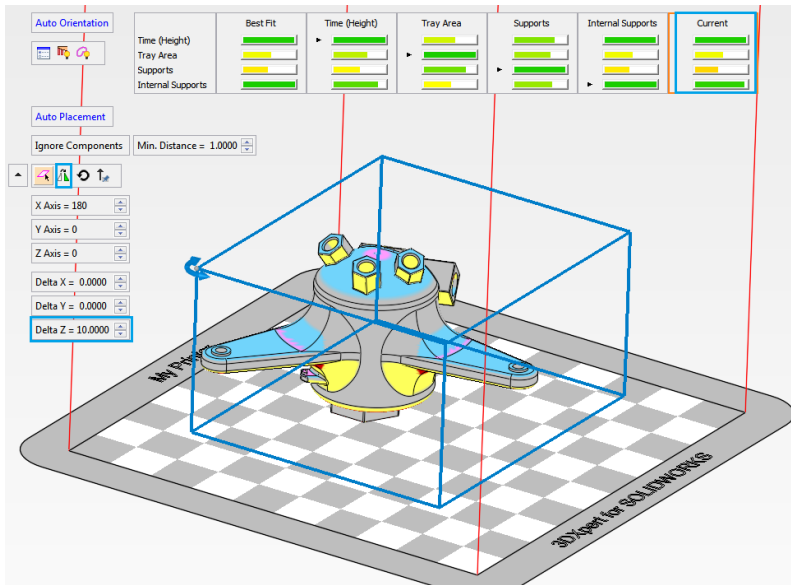
5.1 Press **Auto Orientation** and pick Internal Supports.

5.2 Pick Auto Placement to center the part on tray.

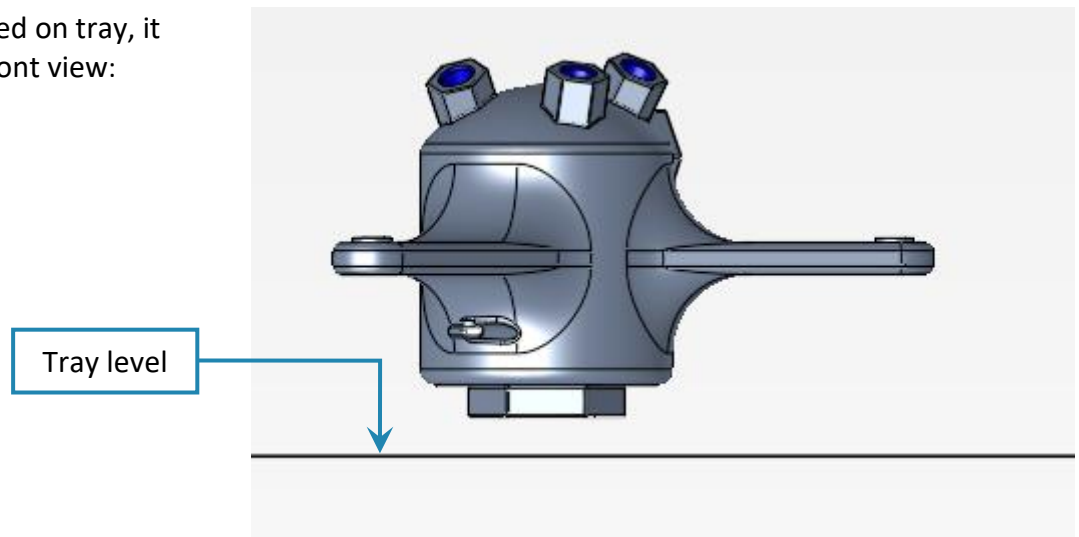
5.3 Set Delta Z to 10.00.

5.4 Press Flip.

5.4 Pick OK  in the Feature Guide To approve and finish.

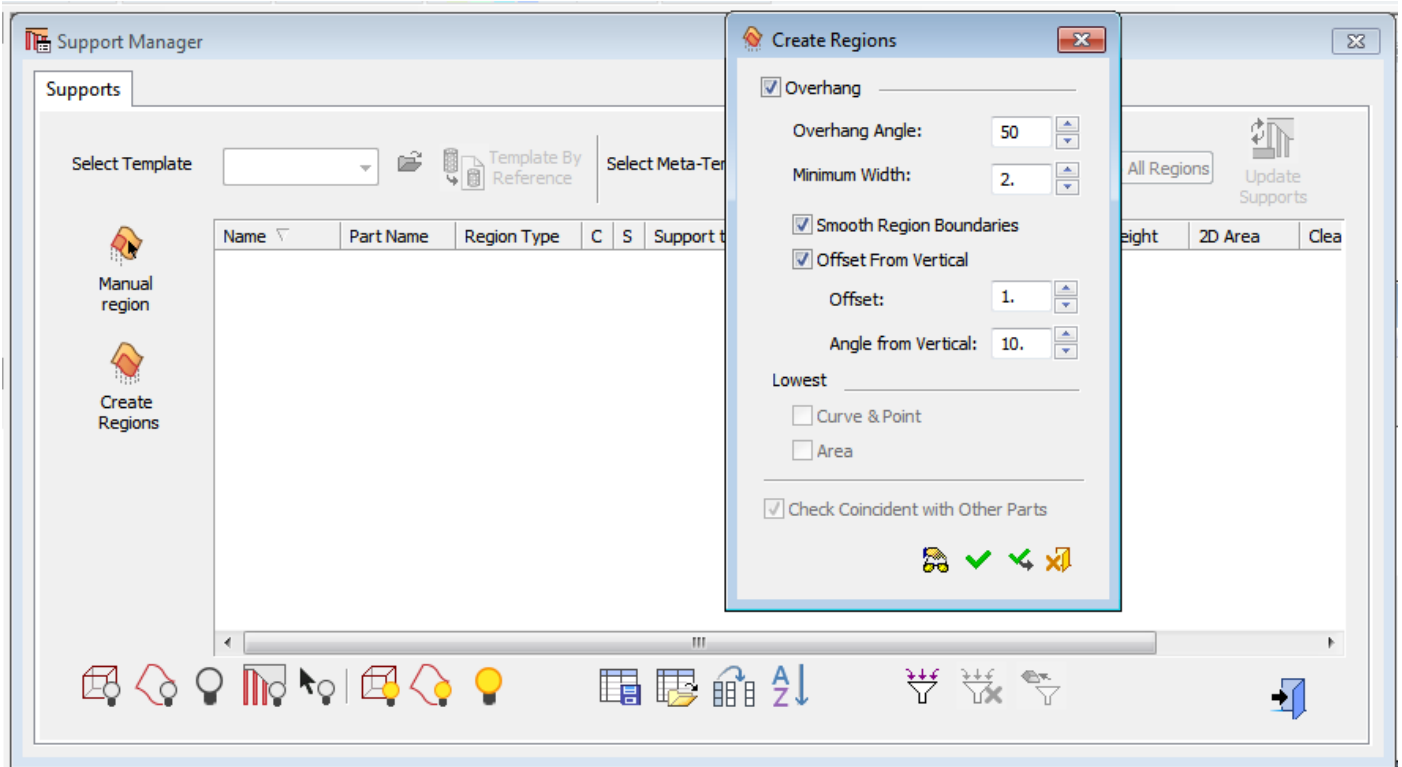


After the part is positioned on tray, it will look like this from Front view:



6. **Pick** the **Support Manager** tool.

Automatic region creation is done by the **Create Regions** analysis tool.

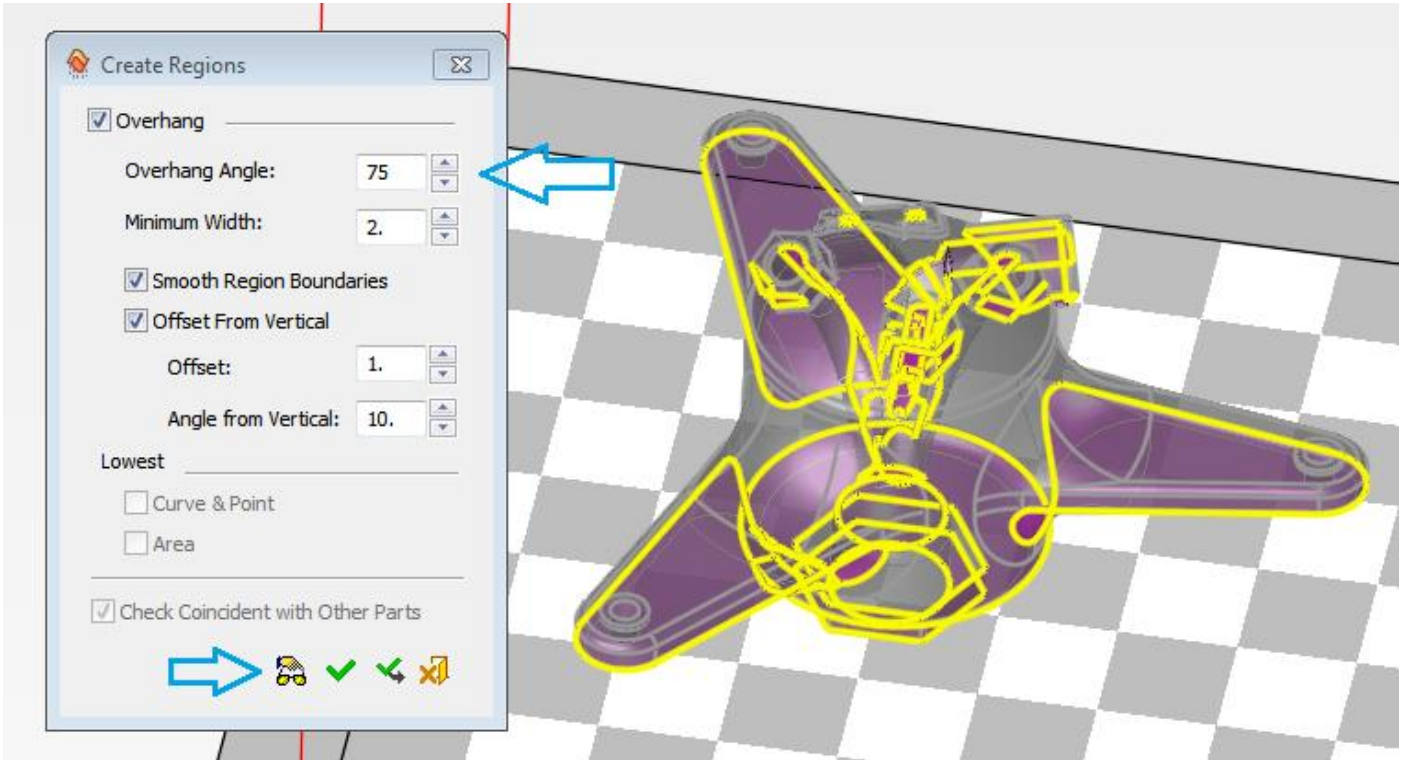


! Please notice:
 "Lowest Area" is shown but not available for use in the Standard package.
 It is available with the Professional package.

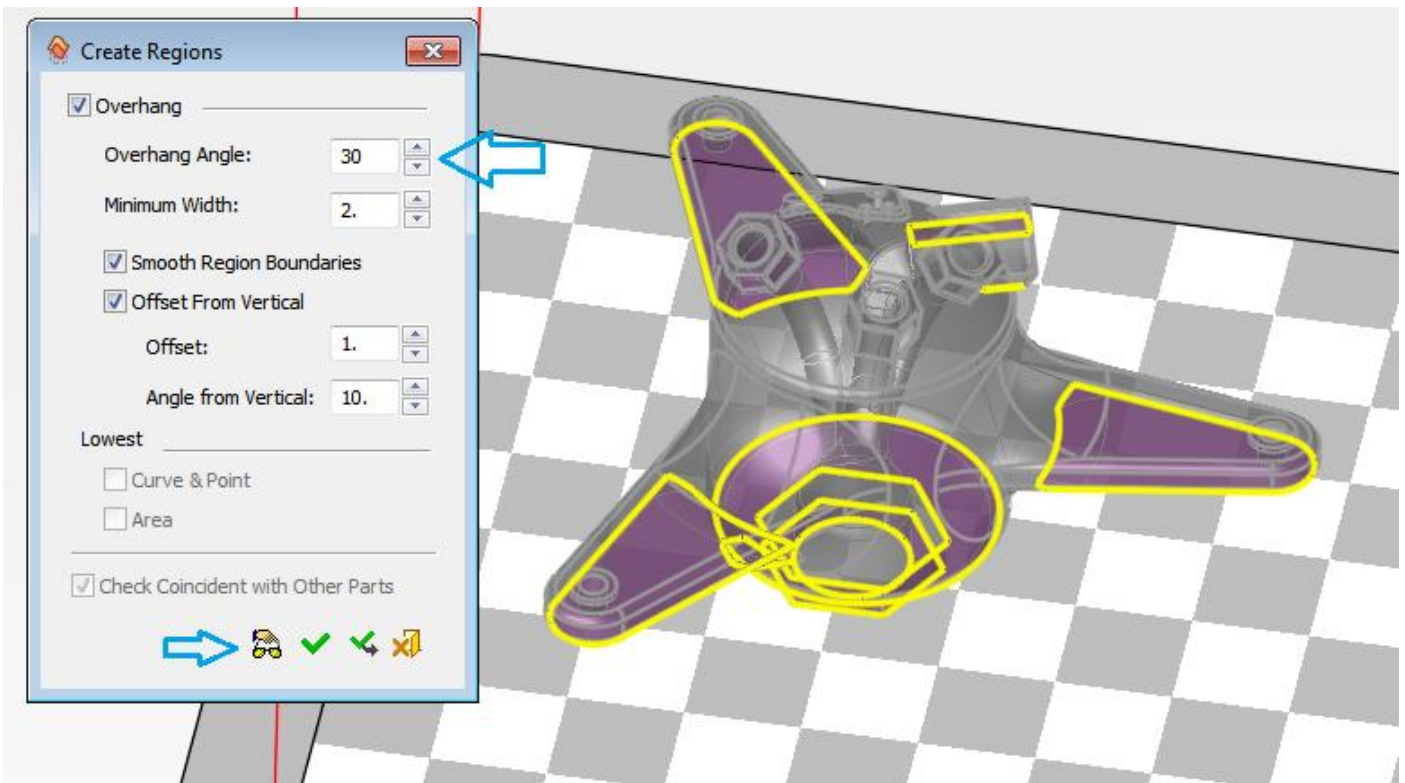
	<p>Overhang - when checked, search for regions which need to be supported. It is possible to define a different overhang angle than the one previously defined. Small regions can be ignored by setting a Minimum Width for them (small regions usually do not require supports). Smooth Region Boundaries - when checked, avoid sharp and narrow corners in supports.</p>
	<p>Preview to start regions analysis.</p>
	<p>OK to approve and continue to next step.</p>
	<p>Cancel Create Regions and continue to next step.</p>

! Please notice:
 It is possible to change data in the **Create Regions** window and **Preview**  the results as many times as needed.

Set parameters as shown in the following picture **75° Overhang Angle** and **pick** the **Preview** button.



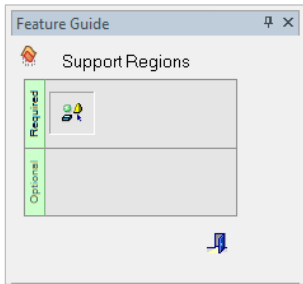
Set parameters as shown in the following picture **30° Overhang Angle** and *pick* the **Preview** button.



Please notice: A higher Overhang Angle means that more areas need supports.



Set parameters back to **50° Overhang Angle** and *pick* the OK button.
 At any point, it is possible to quit the command using the Feature Guide.



End of Exercise.