Introduction

The following tutorial will guide users in the processes of;

1. 3D printing a multi-material (rigid and compliant) aneurysm model
2. Generate a model-specific support removal tool

In SpaceClaim:

1. Split the input mesh (shell, or faceted body) to remove the base segment
   1. Cap meshes
2. **Splitting Original Mesh**

Splitting requires an understanding of the mesh’s function. Here we divide the mesh into two segments, the aneurysm and the base.

* 1. Create a Cut Plane using *Design > Create – Plane*
  2. Move Cut Plane to Position using *Design > Edit – Move* (figure)
  3. Cute the Mesh using *Facets > Modify – Split*

NOTE: The split tool features option to close or cap meshes. These options are not recommended.

1. **[new] Regularize Mesh**
2. **Separate Surfaces from Single Mesh**

* The splitting process will result into two open meshes (not watertight)
* Within the context of the aneurysm model, each open mesh consists of an inner and outer surface (Figure 4.1)
* Surfaces can be separated by using *Facets > Organize – Separate*
* The operation will result in two separate faceted bodies (Figure 4.2)

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| Figure 4.1: Open mesh of aneurysm model featuring outer and inner surfaces. Mesh holes resulted from the splitting process | Figure 4.2: Open mesh separation |

1. **[old] Capping Meshes**

The splitting process will result into two open meshes. Open meshes are also described as “not watertight.”

NOTE: The split tool features option to close or cap meshes. These options are not recommended.

* 1. Close Holes using *Facets > Cleanup – Holes* (figure)

NOTE: It is highly recommended that one hole be closed per operation. Multiple simultaneous closures may produce errors.

* 1. Repeat the process for every hole (figure)

1. **Mesh Check**
2. **Mesh Regularization**
3. **Thickening Mesh**