

# UterUS Annotation Instructions

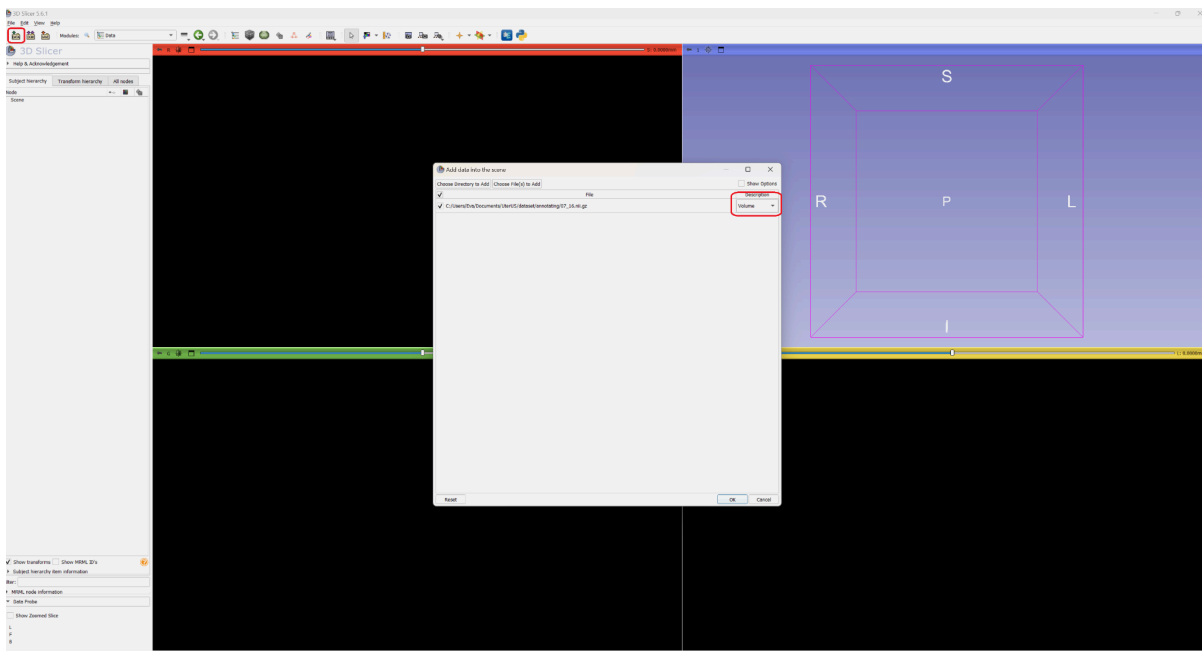
## Getting started

### Download 3D Slicer

Begin by downloading the latest version of 3D Slicer from the [official website](#).

### Adding Data to the Scene

Open 3D Slicer. Add your data to the scene by either dragging and dropping the volumes into the Slicer window or clicking on "Add Data". Ensure you select the *volume* option when importing to correctly load your data. If you are trying to load a segmentation, choose *segmentation* here.



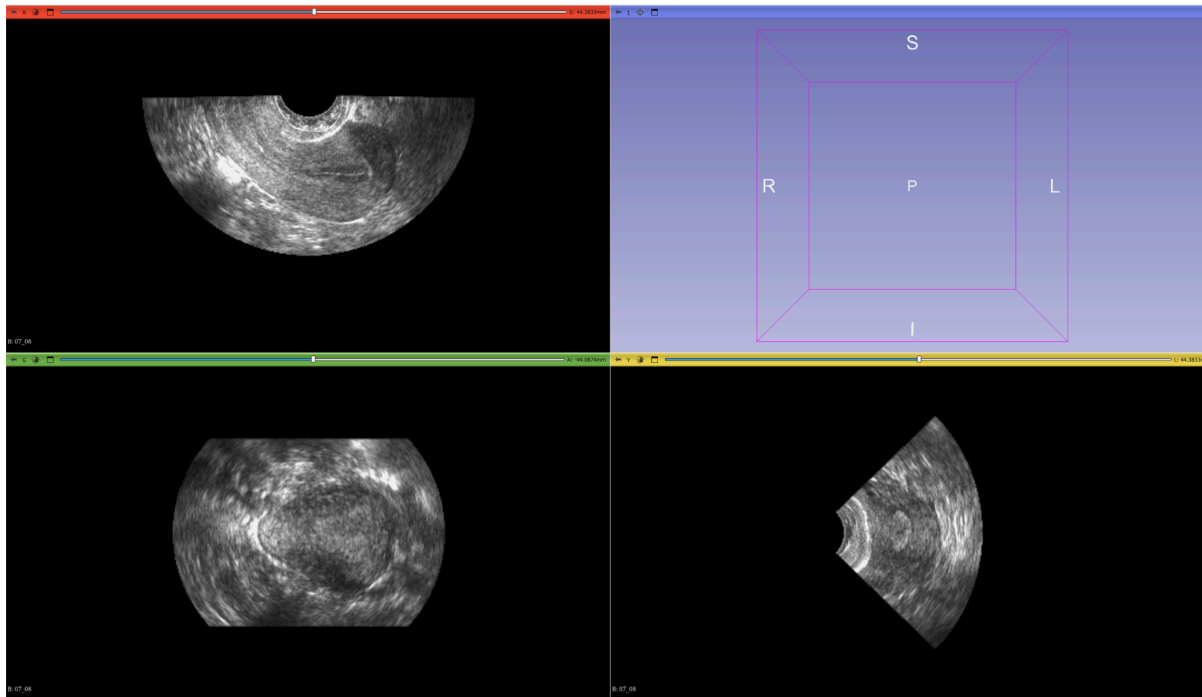
## General Framework

Once your volume is loaded, it will be displayed in three orthogonal views:

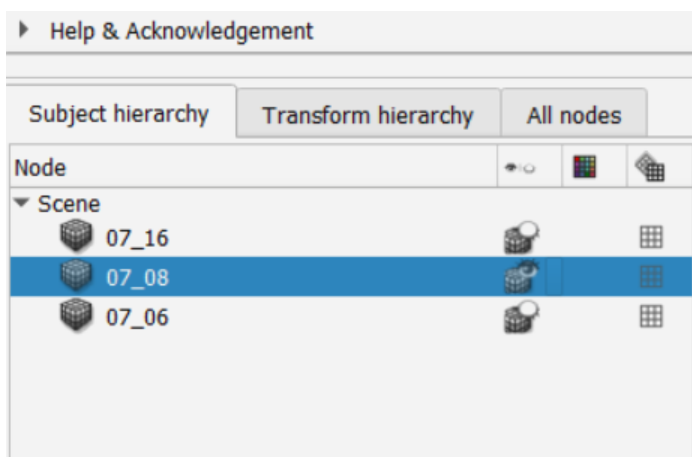
- Axial (red)
- Coronal (green)
- Sagittal (yellow)

To navigate through the slices in any view scroll or move the blue slider above the view.

To align all views to the same point, hold Shift and move your cursor to the desired point in any view.

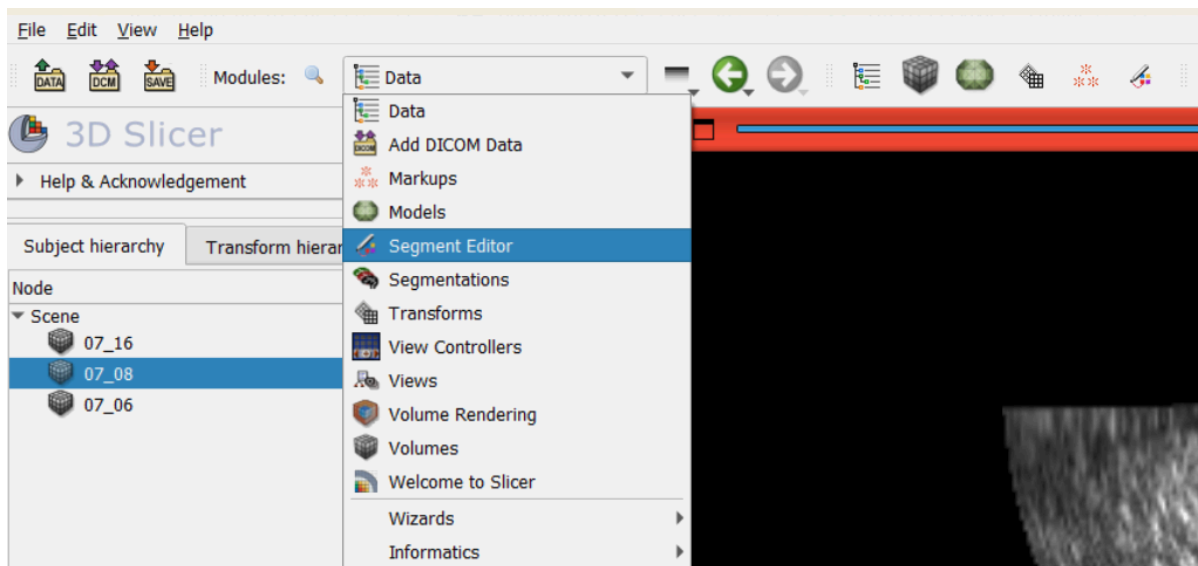


If you've imported multiple volumes, switch between them by clicking on the eye icon next to the volumes listed in the *Subject Hierarchy*.



# Adding Segmentations

To start adding the segmentation, move to the *Segment Editor* module.



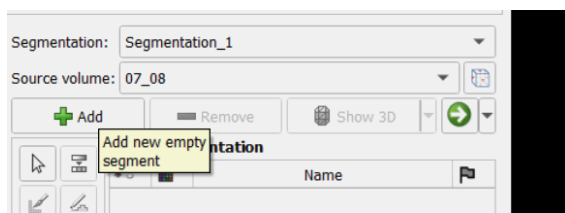
## Creating a new segmentation

A new empty segmentation will be created automatically the first time you open the editor. If you are working on more volumes within the same session, you will have to create a new segmentation. Each volume needs its own segmentation file and not just a new segment.

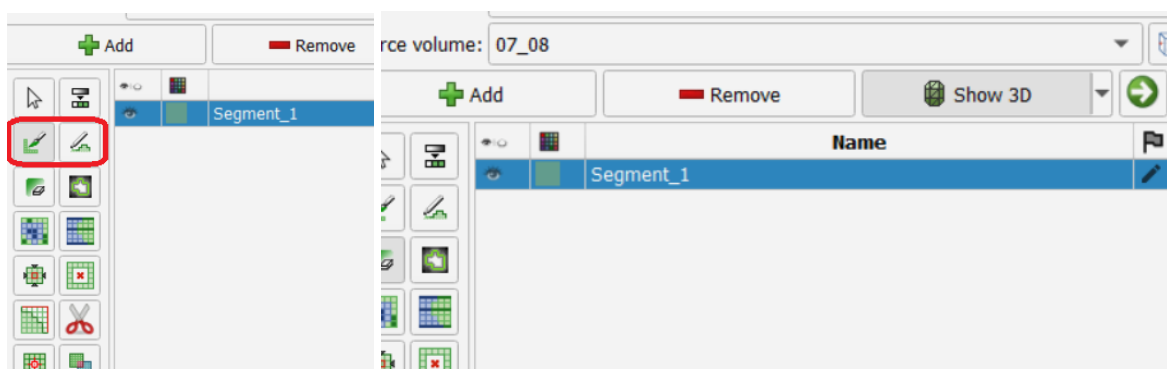
Make sure that the *Source volume* is correct.

## Adding Segments

Click on the *Add* button to create a new segment.



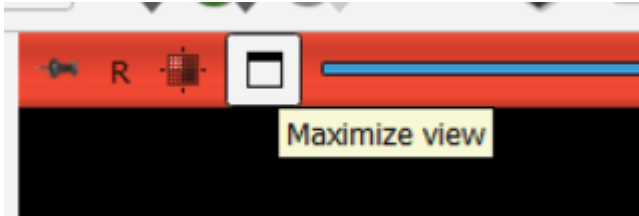
Segmentations can be added in different ways, mainly paint and draw (and erase). Paint works as a brush, with draw you outline what you want to paint and click enter (or right mouse click) to fill it. In most cases, I find draw to be more useful, but you can use whichever you prefer.



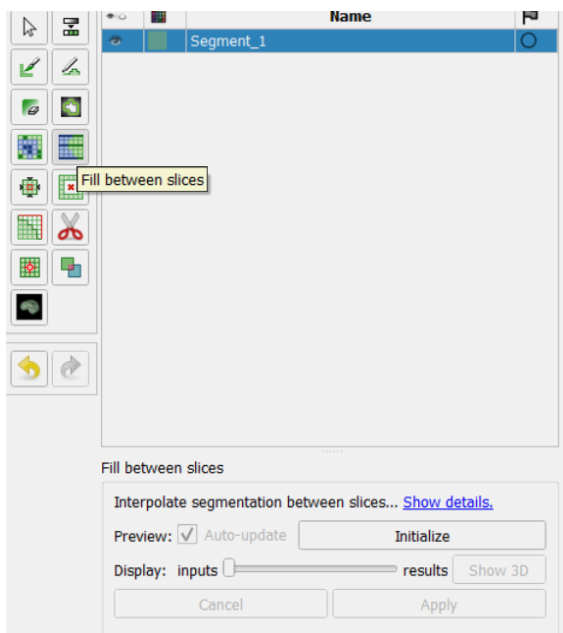
By selecting Show 3D, the 3D visualization of the current segmentation will show up in top right window.

## Annotation Process

Start your annotation on the axis where the boundaries of the area you wish to delineate are most clearly visible. This is typically found somewhere in the middle of the volume. Once you've chosen an axis (axial, coronal, or sagittal), maximize the view for that particular axis. It is easier to start slow and as accurate as possible then to go back fixing it.

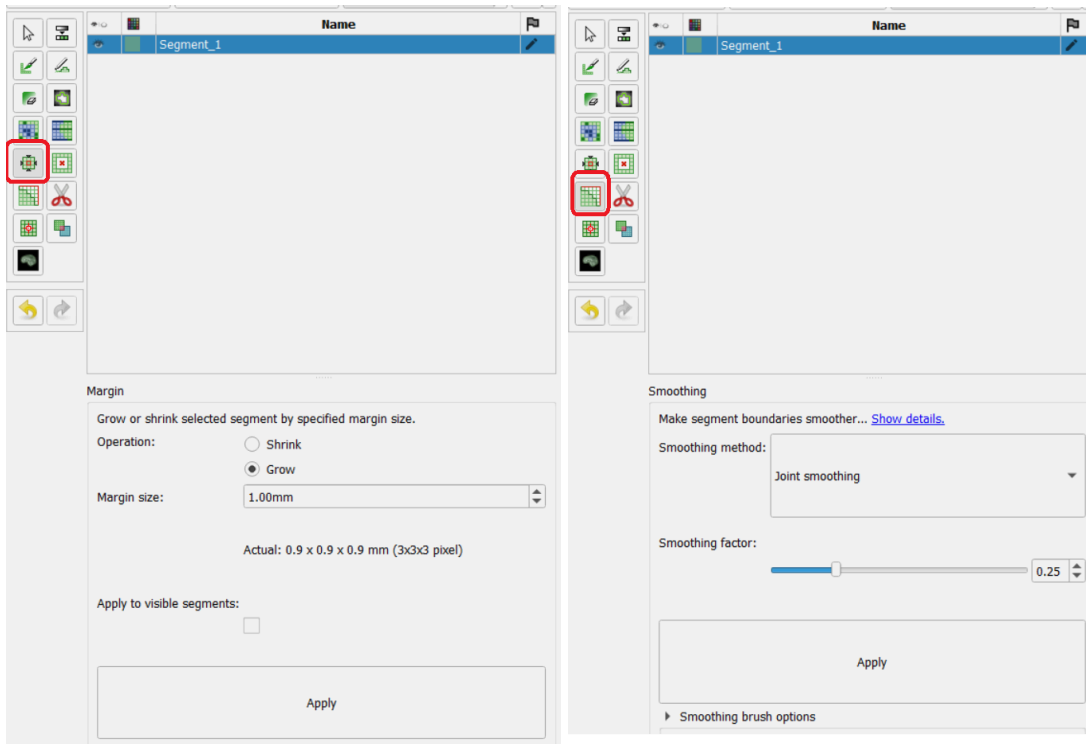


You can annotate every other slice and fill the space between the slices with a *fill between slices* tool. Always interpolate between slices when you finish drawing on one axis. If you switch between the axes and try to fill between slices after, it might interpolate them weirdly.



After completing annotations on one axis, review your work in the other two axes to ensure consistency and accuracy across all dimensions. It's not uncommon for certain parts of the segmentation to appear more clearly on one axis than on others. Therefore, adjustments may be necessary to align the annotations accurately across all three axes. If you're lucky, the annotation will immediately fit on all three axes, but most likely it will need some adjusting between the axes to make an accurate final segmentation.

When finished with everything, you smooth the edges a bit (only do this once at the end not to over smooth the segmentation). First increase the *margin* by 1mm (so the smoothing doesn't decrease the size of the segmentation) and then smooth it with *Joint smoothing* with the smoothing factor set to 0.25-0.3.



If you find your own workflow producing accurate/correct segmentation, you are of course free to use whatever tools available.

## Saving the annotation

When finished, you save the segmentation in .seg.nrrd format and name it the same as the volume.