

Overview of core 3D Slicer features

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How to get 3D Slicer

- Download binary release (Win, Linux, Mac)
 - For just using existing functionalities
 - For developing scripted modules (in Python, TCL)

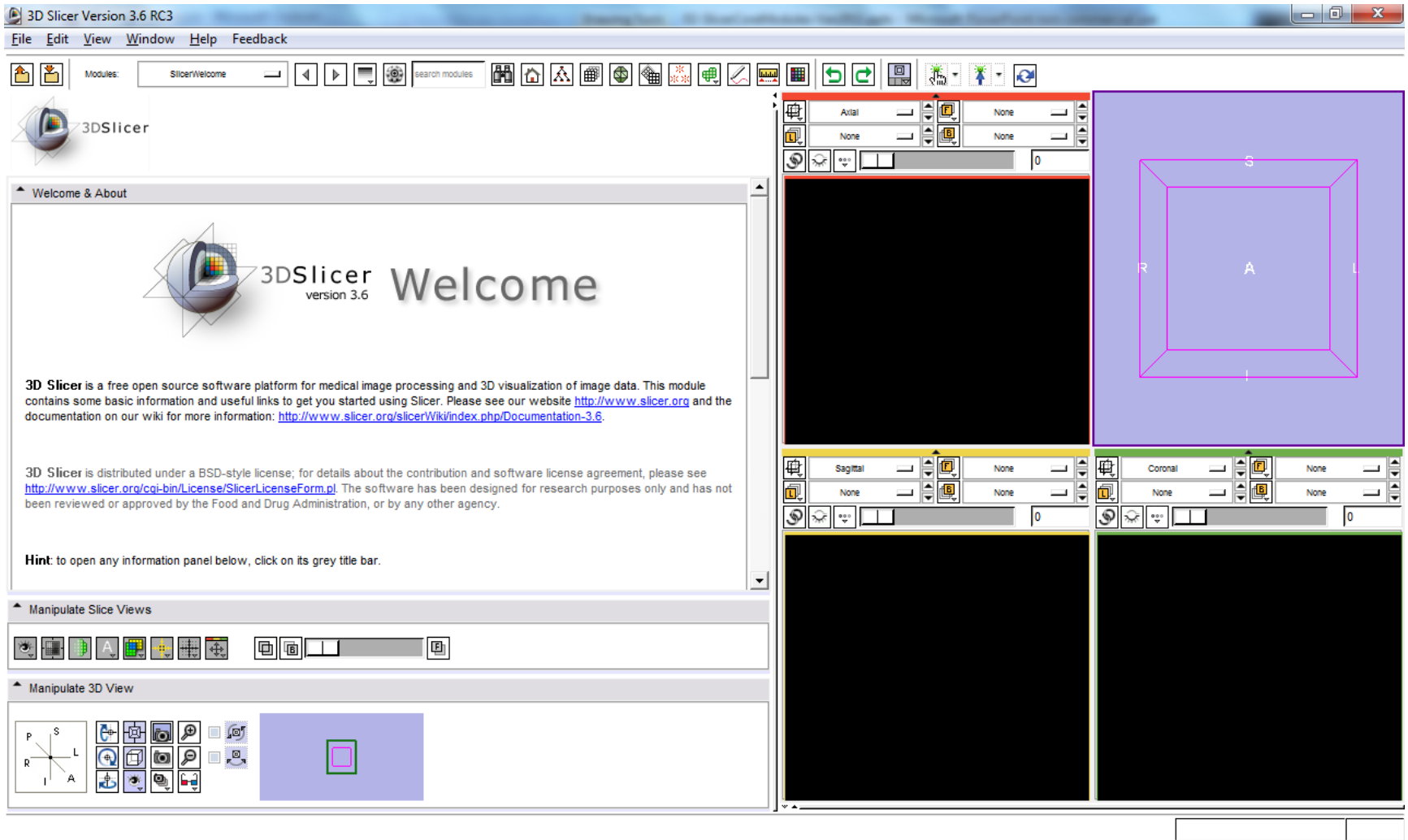
<http://www.slicer.org/pages/Special:SlicerDownloads>
- Build your own release
 - For developing modules in C++, full access to Slicer internals
 - Slicer3 build may be tricky, Slicer4 build is simple

<http://www.slicer.org/pages/DeveloperOrientation>
- Release for today:
 - Slicer3-3.6-RC3 release with latest OpenIGTLink

<https://qshare.queensu.ca/Users01/ungi/public/Slicer3-3.6-RC3-perk.exe>



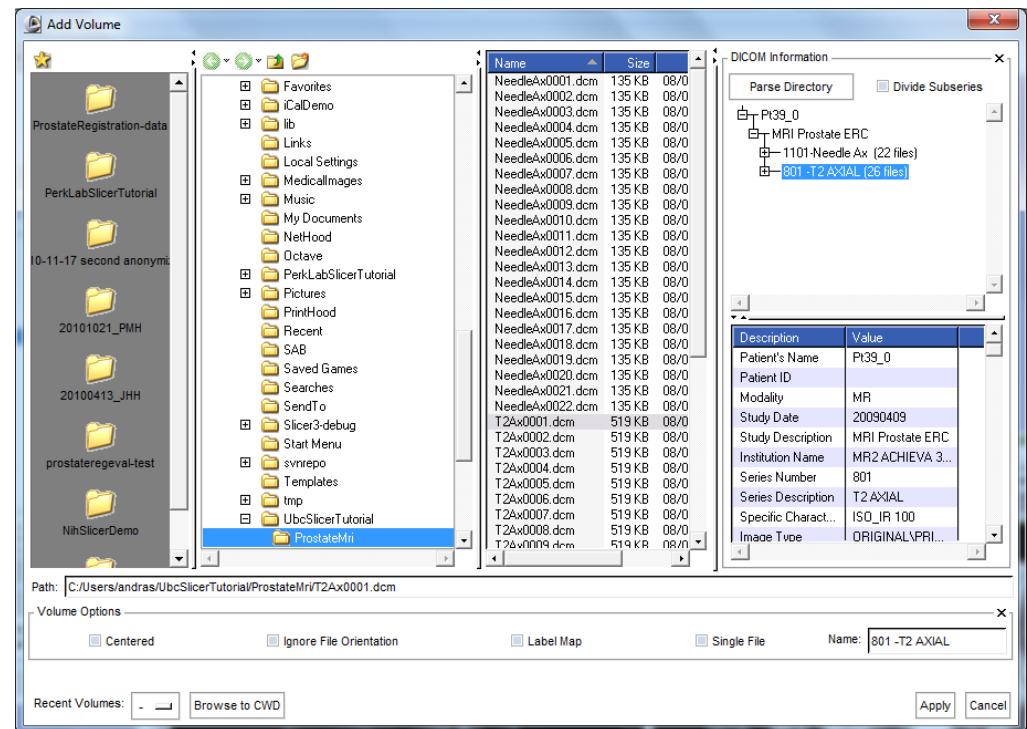
Screen layout



Load DICOM image

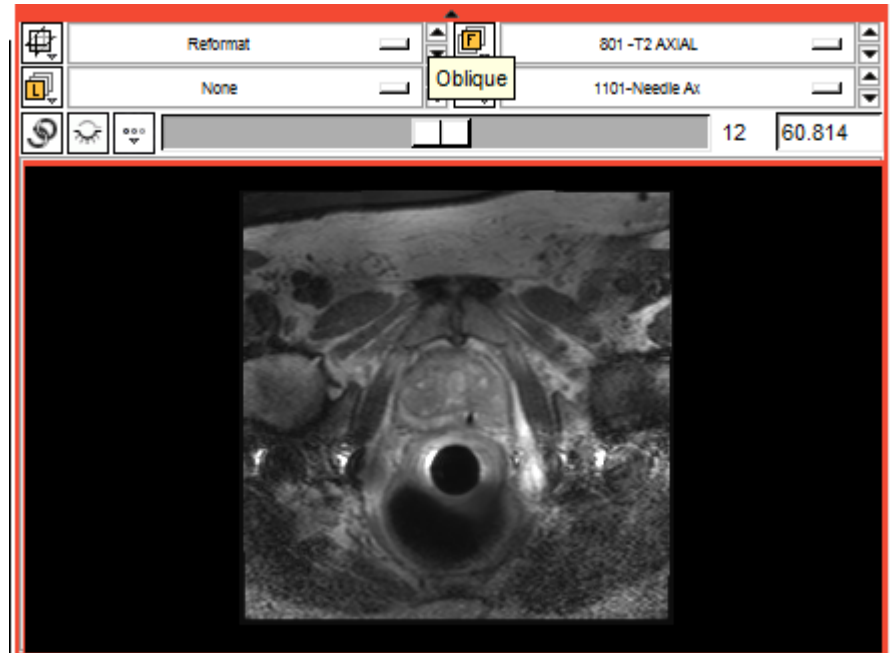
- Click *File / Add Volume...*
- Select directory: **ProstateMRI**
- Click *Parse Directory*
- Select **801-T2 Axial**
- Click *Apply*

- Click *File / Add Volume...*
- Select **1101-Needle Ax**
- Click *Apply*



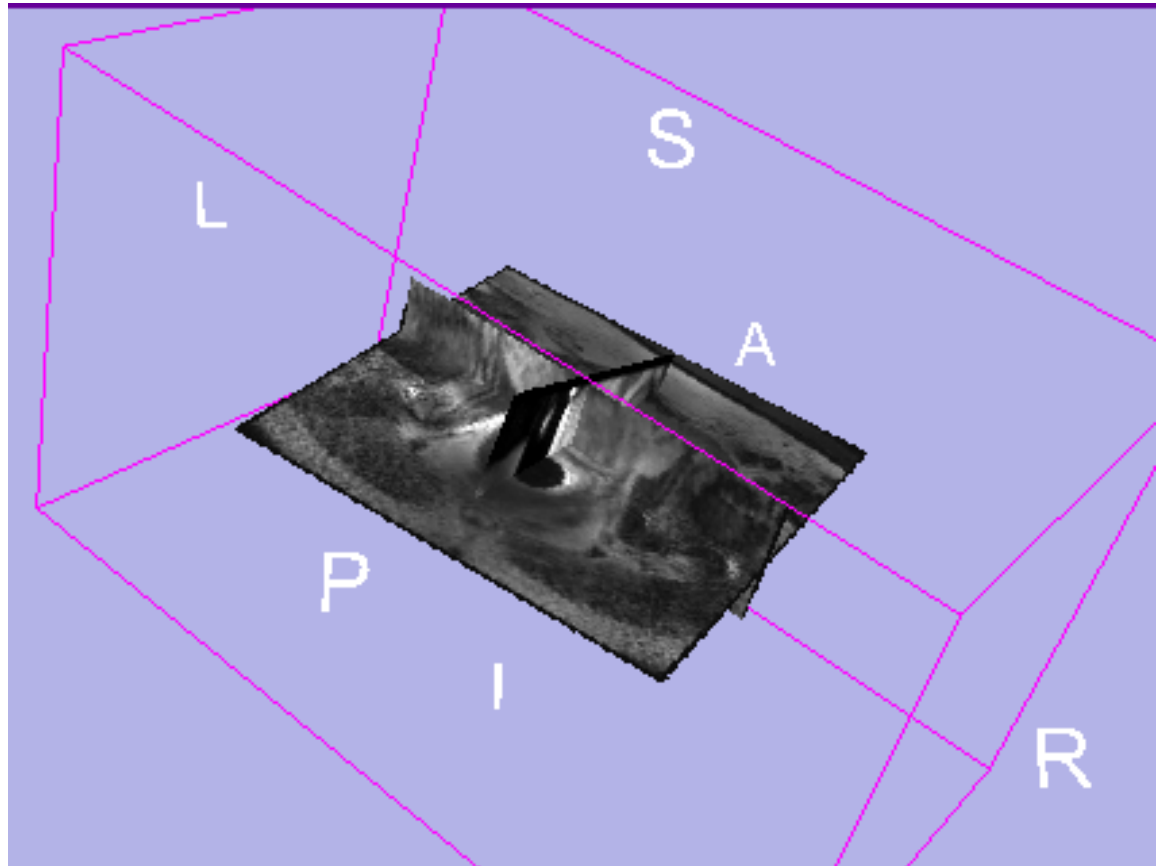
Slice viewers

- 3 slice viewers (red, yellow, green)
- Foreground/Background
- Show/hide slice
- Slice selection slider
- Zoom in/out
- Window width/level
- Slice orientation
- Fit to window
- Rotate to volume plane
- Link controls



3D viewer

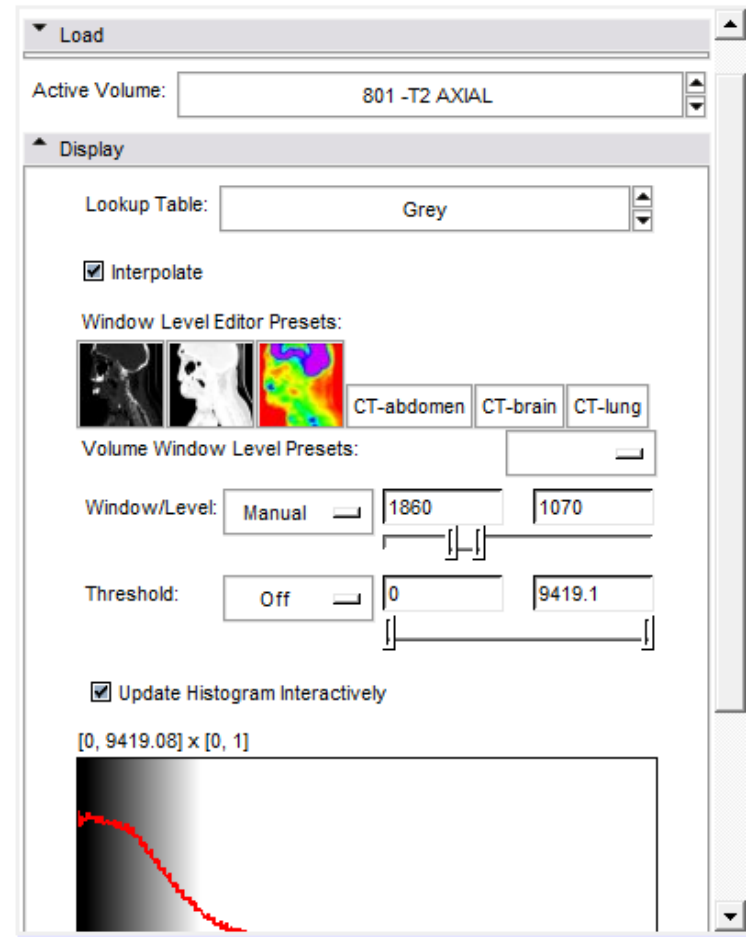
- Zoom/rotate
- Center
- Perspective
- Spin/Rock
- Stereo



Volumes module

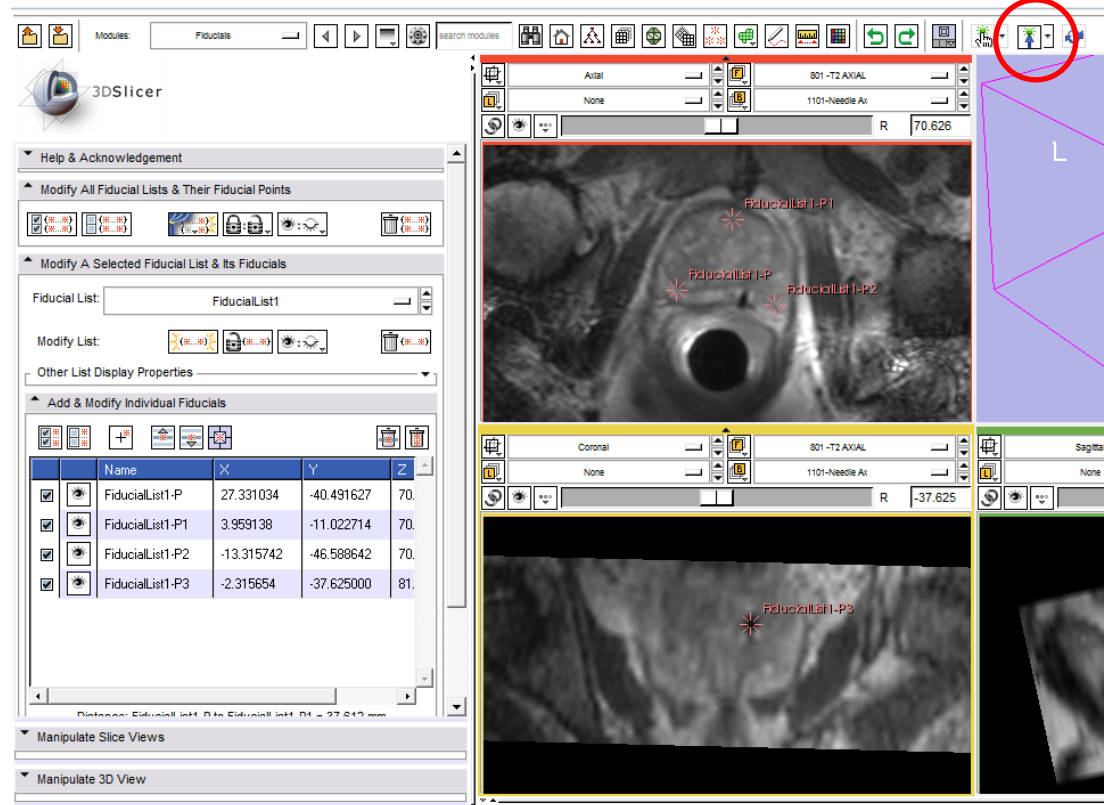


- Select volume
- Window width/level
- LUT
- Dimensions, spacing, origin



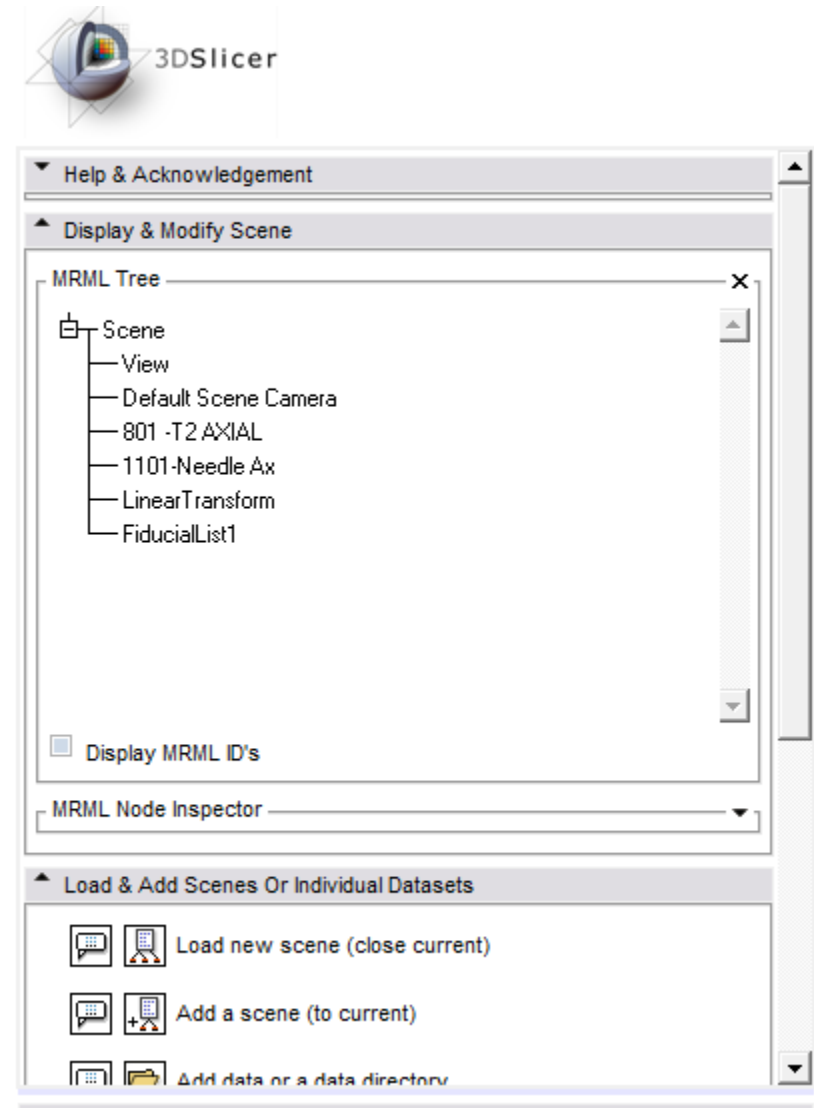
Fiducials module

- Click *Create new FiducialList*
- Click *Use mouse to Create-and-place persistently*
- Click on the image to add fiducials



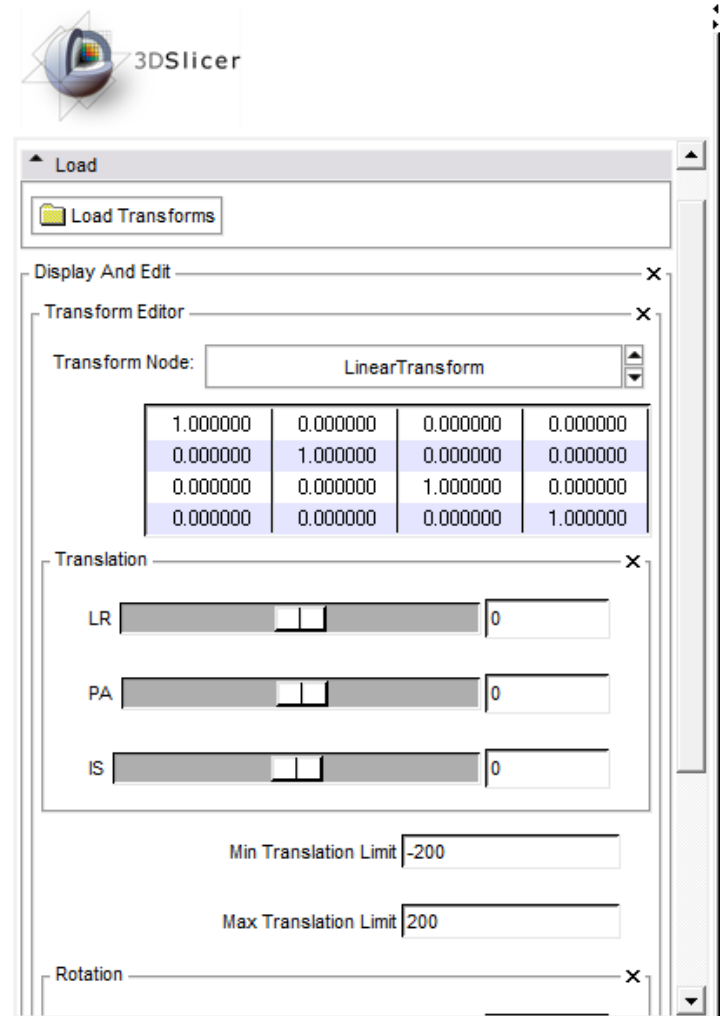
Data module

- All data is stored in MRML (Medical Reality Modeling Language) nodes
 - Node types: volume, fiducial list, transform, etc.
 - Modules can change nodes
 - Modules can observe nodes (get notification about changes)
- Transforms: the transform is applied to all child elements
 - Drag-and-drop a volume under a transform



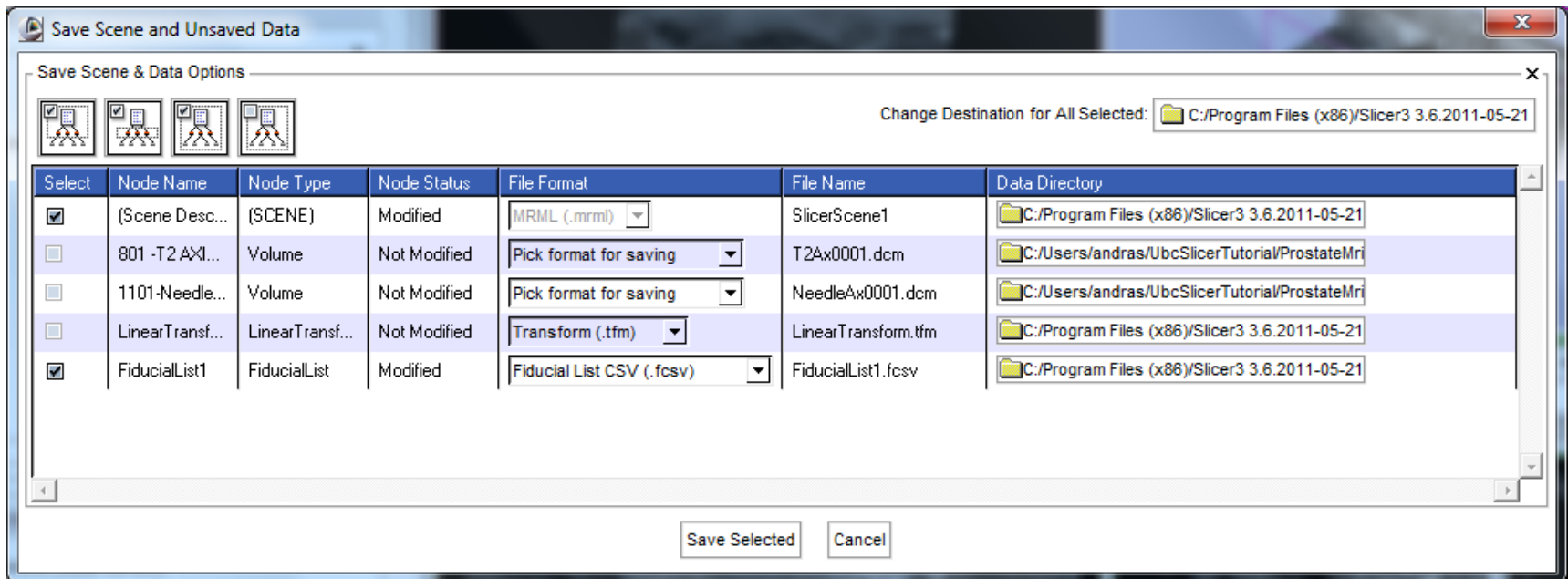
Transforms module

- Create new transform
- Manually modify



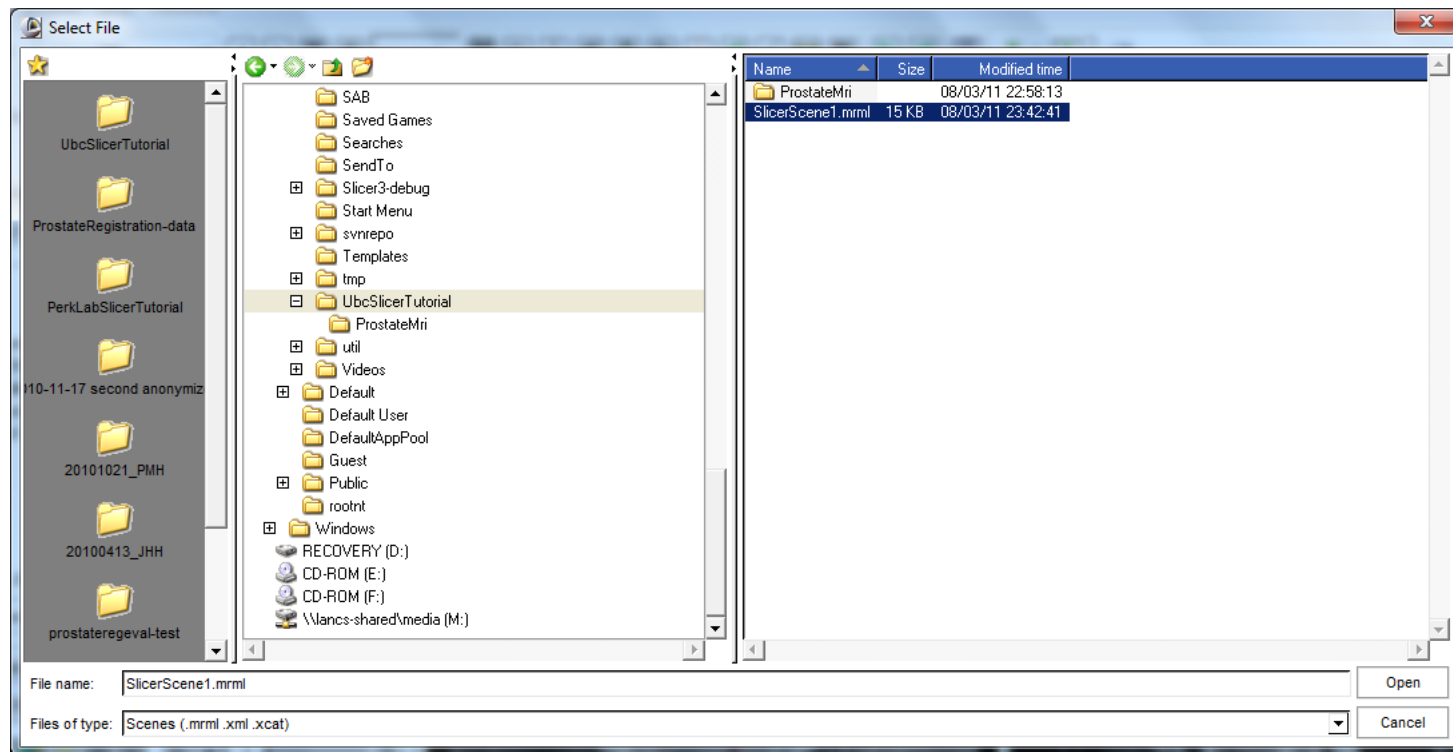
Save scene

- Click *Change destination for all selected*
- Select directory
- Click *Add to favorites*
- Click *Save Selected*



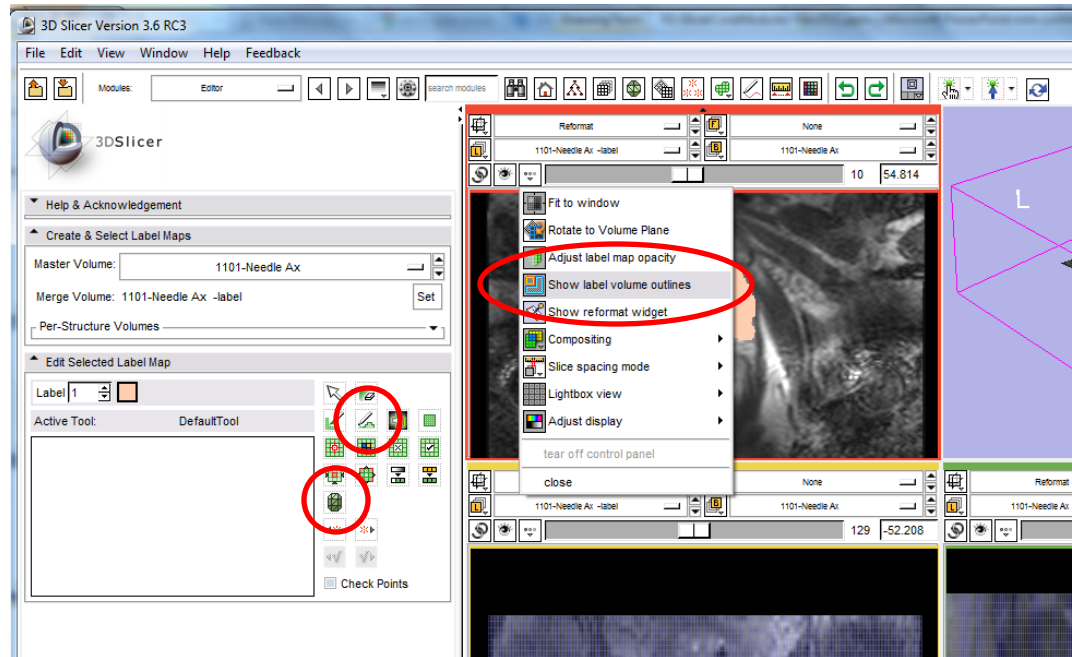
Load scene

- **Load Scene:** replaces current scene (mostly this one is used)
- **Import Scene:** add to current scene



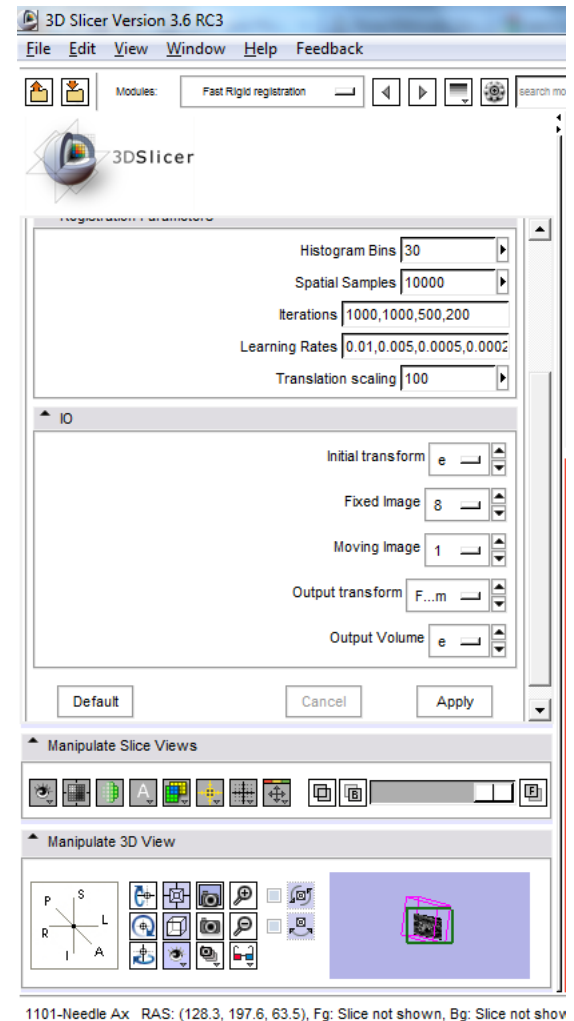
Editor (manual segmentation)

- Select label
- Click *Draw*
- Click *Show Label Volume Outlines*
- Draw the contour on the slice viewer
- Right-click when ready
- Mouse wheel to go to next slice
- Click on *Make model* when contouring is completed
- Click *Apply*



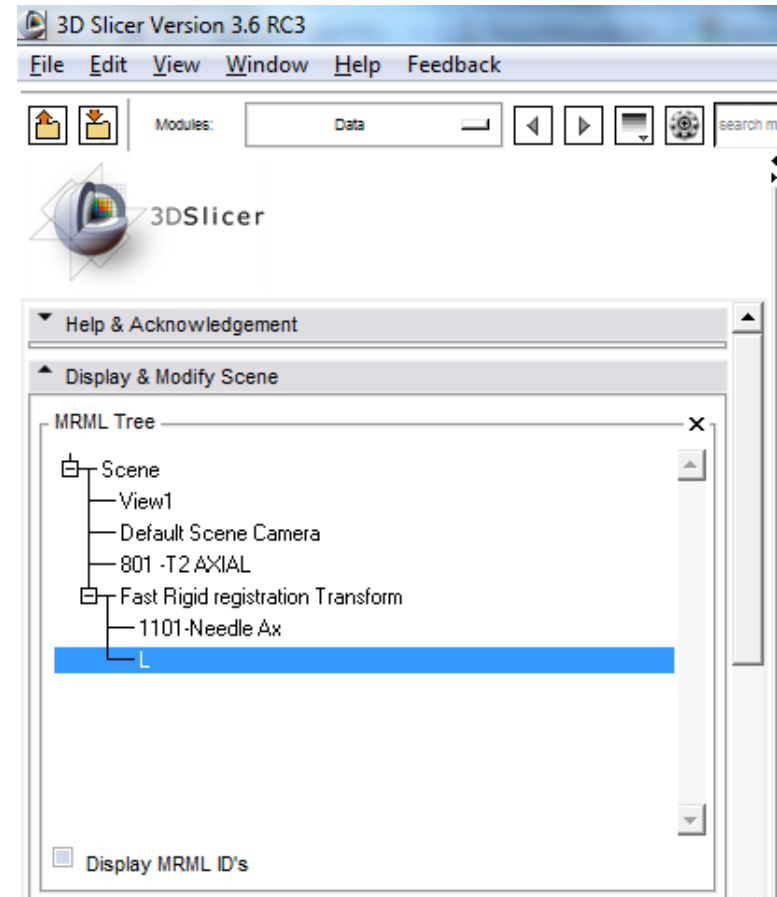
Registration /1

- Set foreground and background volumes
- Fade between volumes
- Open *Fast rigid registration* module
- Fixed: **801 – T2 Axial**
- Moving: **1101 – Needle Ax**
- Output transform: *Create new LinearTransform*
- Click *Apply*
- Fade between volumes



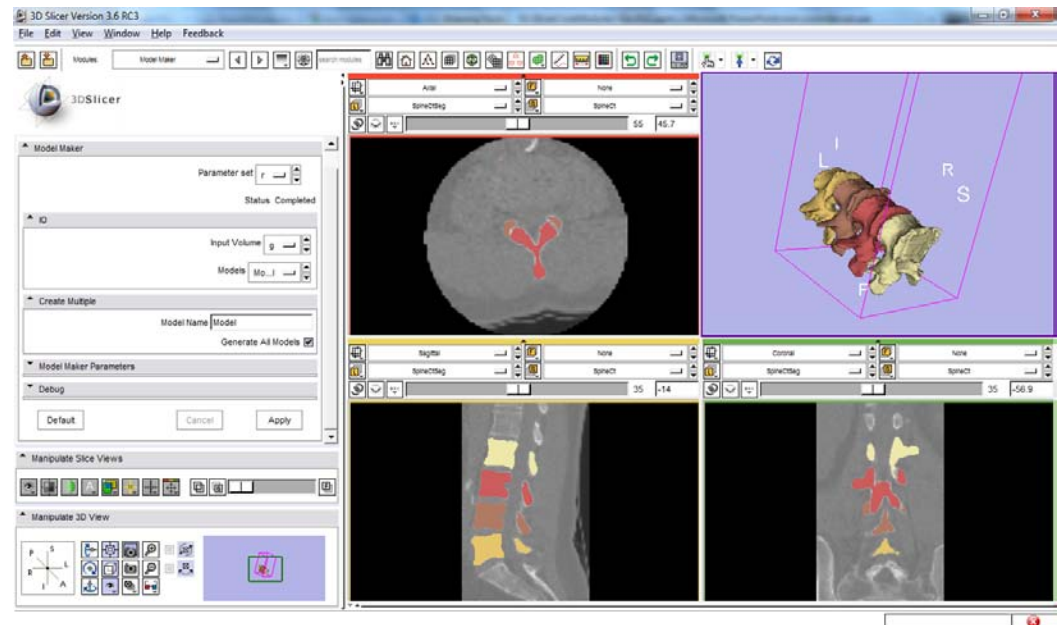
Registration /2

- Open *Data* module
- Drag-and-drop 1101-NeedleAx to the root (Scene) element
- Fade between volumes
- Add a fiducial to the needle void on 1101-NeedleAx
- Move both the fiducial list and 1101-NeedleAx under the *Fast Rigid registration Transform*
- Reached target position is now marked in the planning (T2) image coordinate system



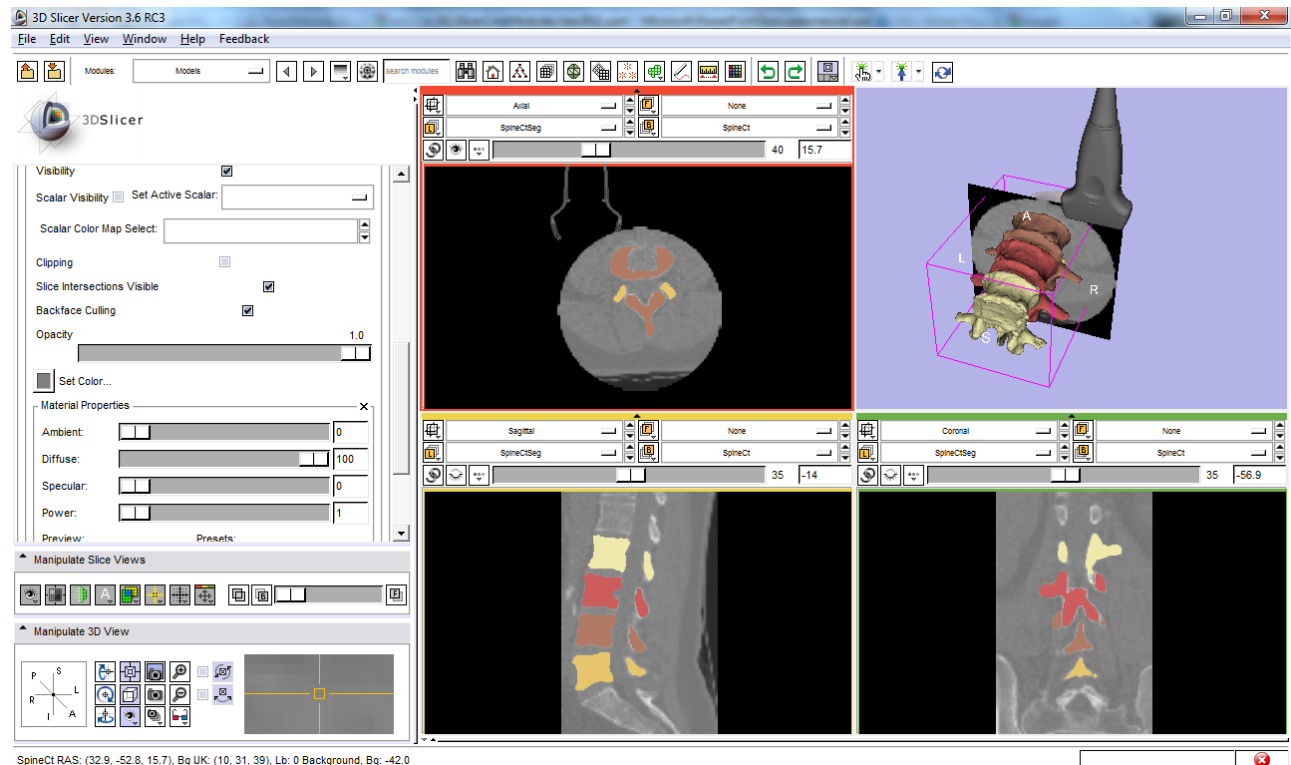
Models

- File/Add volume: **SpineCt.mha**
- File/Add volume: **SpineCtSeg.mha**
 - Click *LabelMap* checkbox before clicking *Apply*
- Select *Model Maker* module
- Input volume: SpineCtSeg
- Models: Create new model hierarchy
- Click *Apply*
- Open *Models* module
- Select model in tree
- Visibility
- Opacity



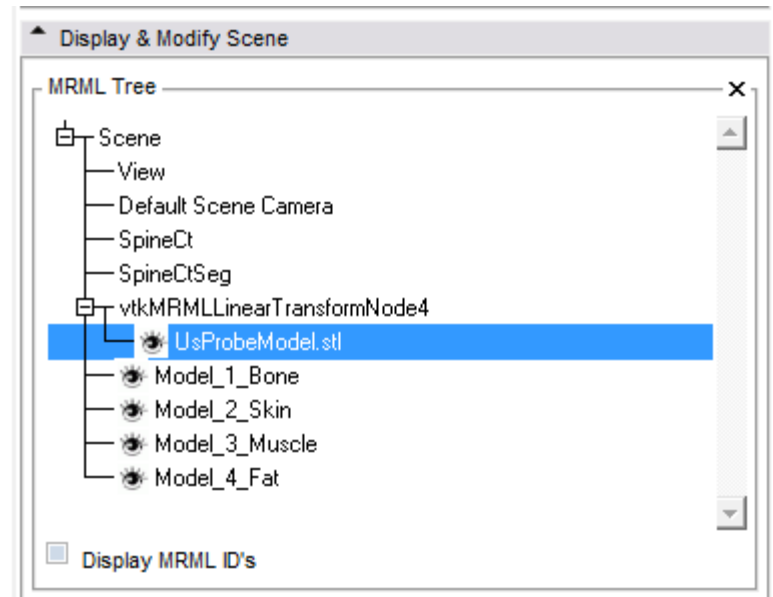
Models

- File/Add data
- Click *Add files*: **UsProbeModel.stl**
- Click *Apply*
- Slice intersections visible

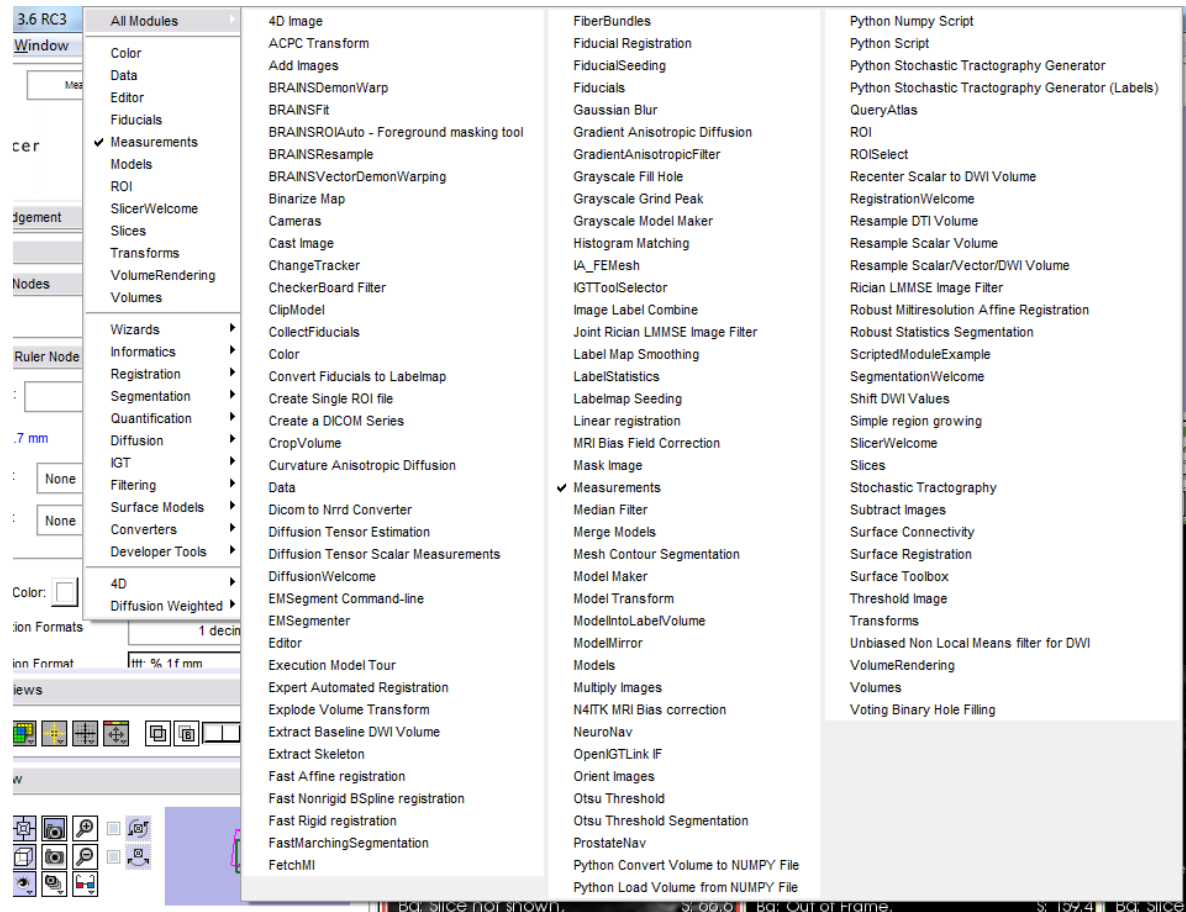


Apply transform to model

- Data module
- Insert transform
- Drag-and-drop UsProbeModel.stl
- Edit transform



Many more modules...



<http://www.slicer.org/slicerWiki/index.php/Training>

