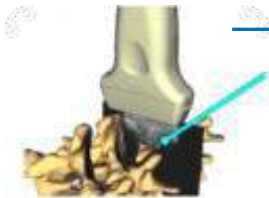


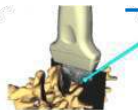
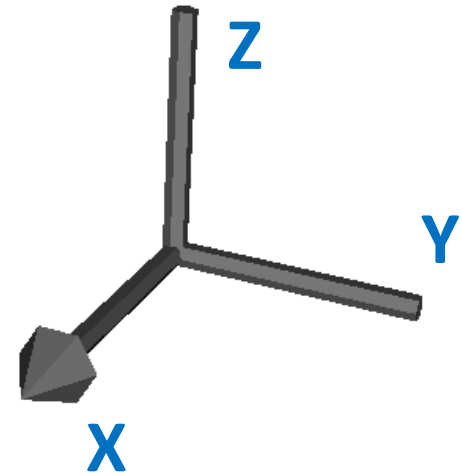
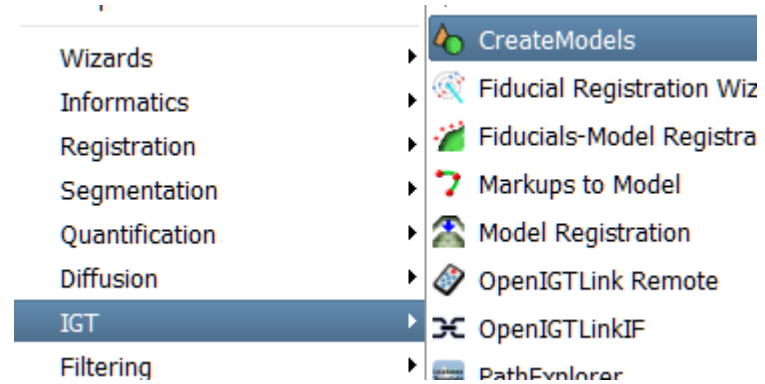
Tool models



SlicerIGT Tutorial Series

Create simple models

- Select **IGT / CreateModels** module
- Use the module widget on the left to create simple models with size parameters
- In the coordinate system model, X is marked with an arrow tip, Y and Z are defined if right-handedness is assumed

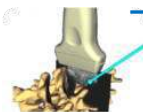
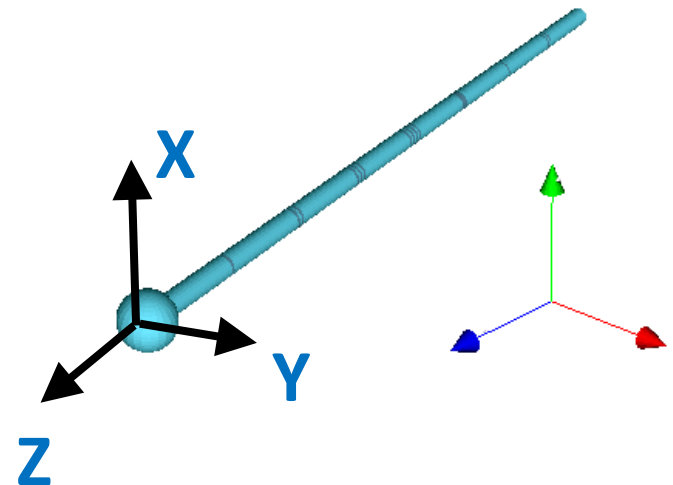


Needle / stylus models

- Optional depth markers can be created for the needle model. Marks are 10 mm apart as in most medical needles.
- Needle models and stylus models conventionally point towards the Z axis

Needle model

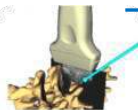
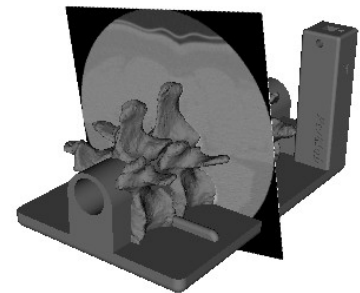
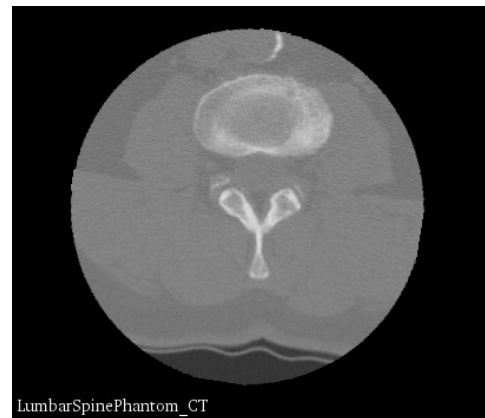
Length:	<input type="text" value="80.0"/>	(mm)	
Radius:	<input type="text" value="1.0"/>	(mm)	<input checked="" type="checkbox"/> Depth markers
Tip radius:	<input type="text" value="2.5"/>	(mm)	<input type="button" value="Create needle"/>



Load models from PLUS catalog

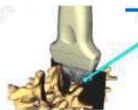
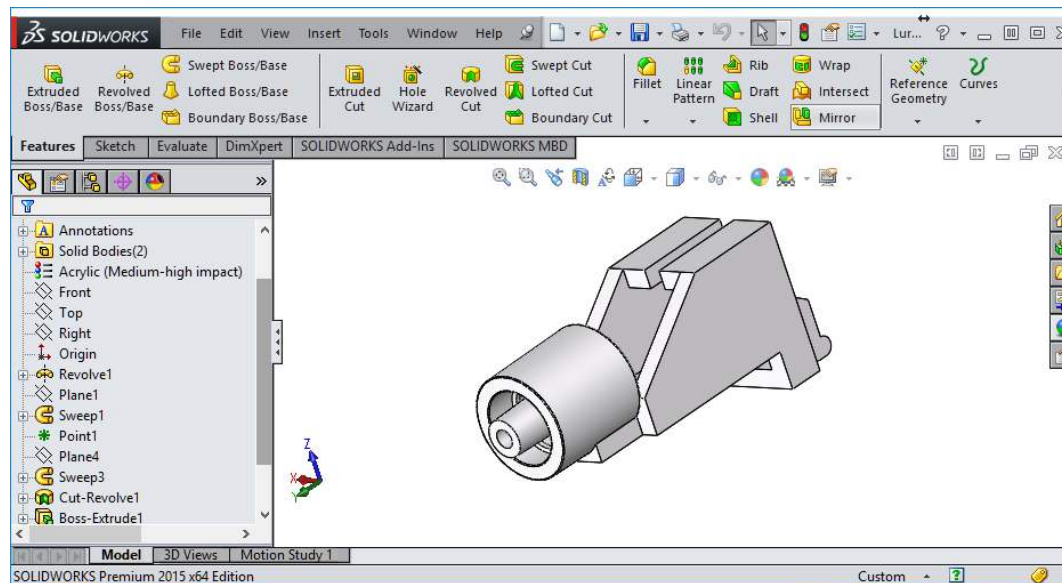
- Select IGT / Plus model catalog browser module
- Click Show/hide catalog to open the PLUS model catalog website
- Click on .stl files to download a model
- Additional files are also available, e.g. a CT volume of the spine model

[LumbarSpinePhantom.stl](#) (rev.4795)
[LumbarSpinePhantom_CT.mha](#) (rev.4795)
[Source file\(s\)](#)



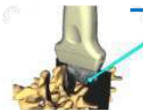
Create models in CAD software

- FreeCAD, SolidWorks, Blender, etc.
- Save in STL format, units should be millimeters
- When exporting model in STL, choose and document an intuitive coordinate system



Models by image segmentation

- Load **SkullPhantom1mm.nrrd** from the tutorial data folder
- Select Segment Editor module
- Click Add segment
- Use the segmentation tools ("**Effects**") to segment
- Hint: Such objects CT scanned in air can be quickly segmented using threshold followed by scissors
- Select **Segmentations** module
- Export a new model under the **Export/import segments** panel



Skull model from segmentation

1 Segmentation: Segmentation 2

Master volume: SkullPhantom1mm

+ Add segment Remove selected Create surface

Color	Name
	Segment_1

3

Effects

Threshold

Set segment based on master volume intensity range. All previous contents of this segment is overwritten on Apply.

Threshold range: -394.17 2840.00

4 5

Use For Paint

Apply

6

Effects

7

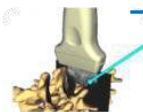
Scissors

Cut through the entire segment from the current viewpoint. Left-click and drag to sweep an outline, release the button when ready.

Operation: Erase outside

8

etc.

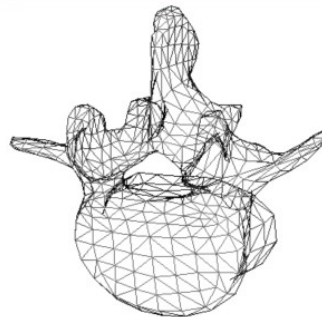


Models and Slicer model nodes

- Models are thin/hollow surfaces, most common objects in computer graphics
- Slicer wraps a **vtkMRMLModelNode** object around models, and keeps visualization properties in **vtkMRMLModelDisplayNode**
- <https://www.slicer.org/wiki/Modules:Models-Documentation>



surfaces



lines



points

