3D Modeling - Using Saved Results

Purpose

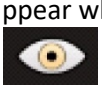
3D Modeling allows to view volumetric images of anatomical structures, perform segmentation, edit and combine segmented elements (tissues) into a 3D model.

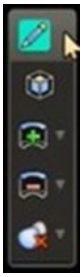
Benefits

- Studies of CT & MR can be used for creating a single 3D model of the same patient. The application provides tools that allow the user to align between the volumes of interest in the images.
- 3D Modeling batches files can be easily exported in standard formats such as STL, with the option to also provide a 3D PDF as an additional mean for results sharing with 3D printing or other services(1) .
- The user may determine the information related to the exported elements of the 3D model such as smoothness and output mesh size.
- Contours can also be exported as RT Structures.

Workflow

To create a 3D model using saved results:

1. Select a study with saved results and launch 3D Modeling  .
2. Workflow Step 1: **Segment 3D Model**. A tissue list will appear where Individual tissues can be activated by clicking  (**Show Tissue**) or deactivated by clicking  (**Hide Tissue**).
3. A variety of easy to use tools can be used to quickly make necessary changes to the segmentation if needed.
   - To edit a tissue, select a tissue from the tissue list
   - Click the **Volume Rendered** or **MPR** image to display the editing tools

Volume Rendered Image  **MPR Image** 

4. The Tissue List operations that allows Merge, Subtract, Expand, Erode, Create Hollow tissue, fill holes and delete tissues can be performed only on active tissues.

5. For more information on how to use each of the segmentation and editing tools, refer to the *Instruction for Use*.
6. Workflow step 2: **Preview 3D Model**. Preview 3D Model allows editing of the Smoothness and Mesh Size. Inspect the accuracy of the mesh by clicking **Show contours** before exporting to print.

Note Any change in the smoothness and mesh size will be recalculated and displayed.

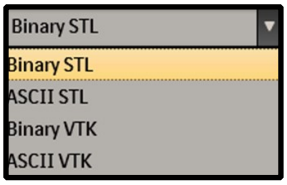
7. Workflow step 3: **Export to 3D Model**. The Export to 3D model window opens. A preview of the model is displayed to check tissue accuracy. When smoothing is used, the application checks the accuracy level of the smoothed tissue by calculating, for each pixel, the distance between the location of a point on the unsmoothed surface to the smoothed surface. If the application suspects that there might be an accuracy

loss, it will show a warning indication near the tissue.

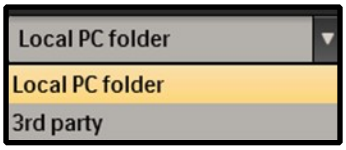
- Display distance map button near the tissue in order to see the following comparison image
- Mesh Size can be used to reduce the output size (image compression), move the slider to the right.

Note For all reduction actions, the entire model is recalculated with the new compression value and is displayed on the tissue model viewport.

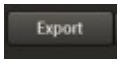
8. Each tissue should contain a **Filename Prefix**.
9. Select a **File Output** from the drop-down list.
   - **File per tissue** - export each tissue to a separate file
   - **Single combined file** - export the whole model as one STL file.
   - **3D PDF only** - create a PDF file in the same folders as the STL.
10. Select the **Format** from the list of drop-down list.



11. Select the **Destination** from the drop-down list.



Note 3rd party name appears according the preferences: Stratasys or 3D systems.

12. Click 

(**Export**) to export to 3D.
13. **Save Results** will save all the segmented tissue, attributes and settings for smoothing and inclusions. The results can be editing at a later time.

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