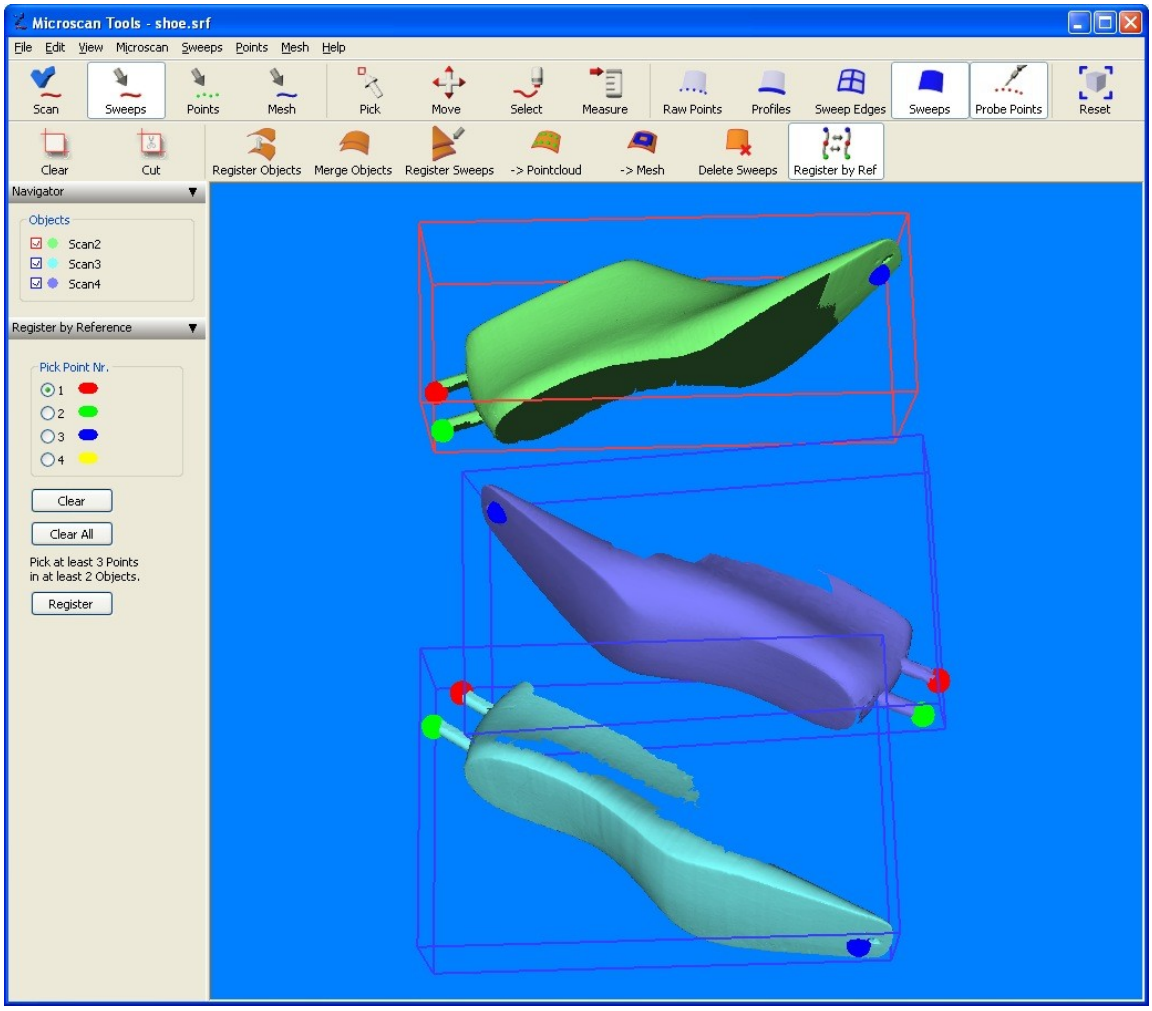
Tutorial based on shoe.srf:

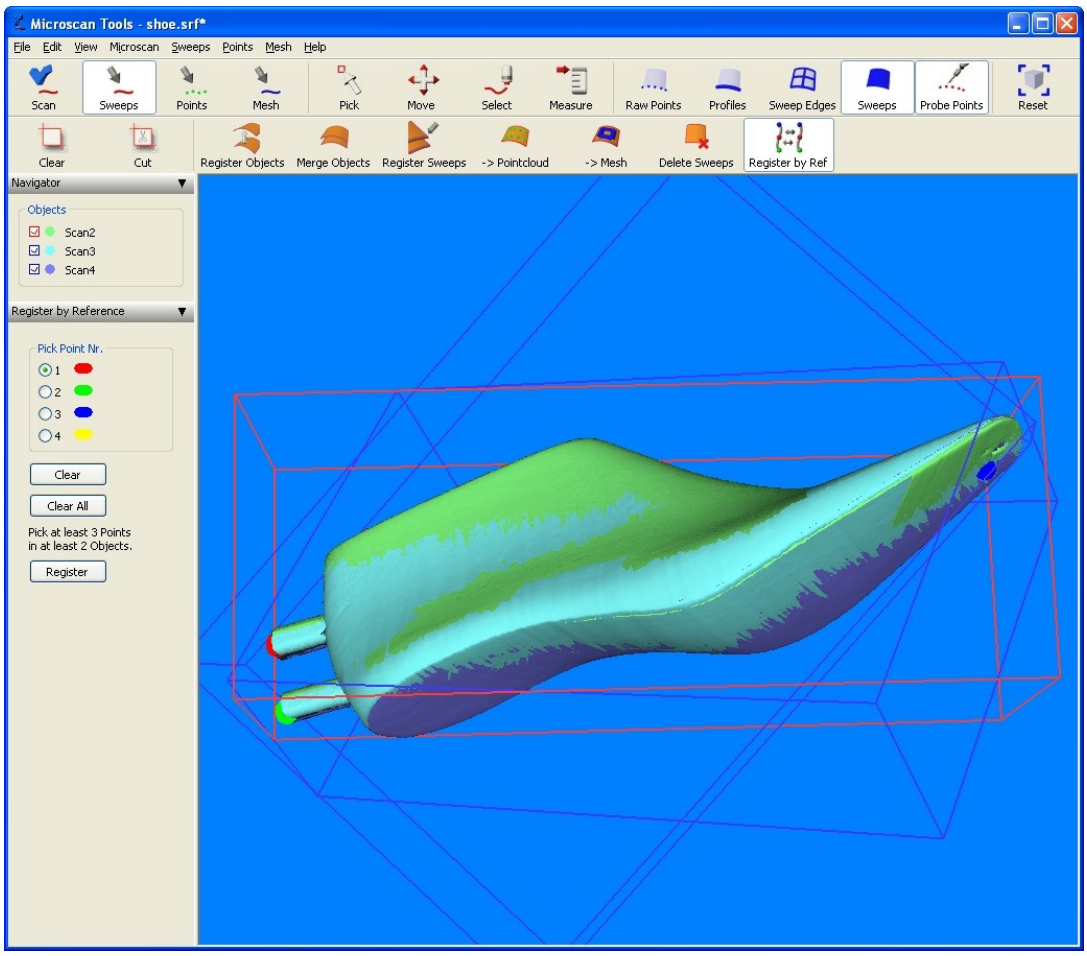
Aligment of Objects

In this section you will align the 3 objects together with help of the „Register by reference function“. Go to sweep mode and select „Register by reference“ - the „Register by Reference“ toolbar will appear on the left side of the screen.



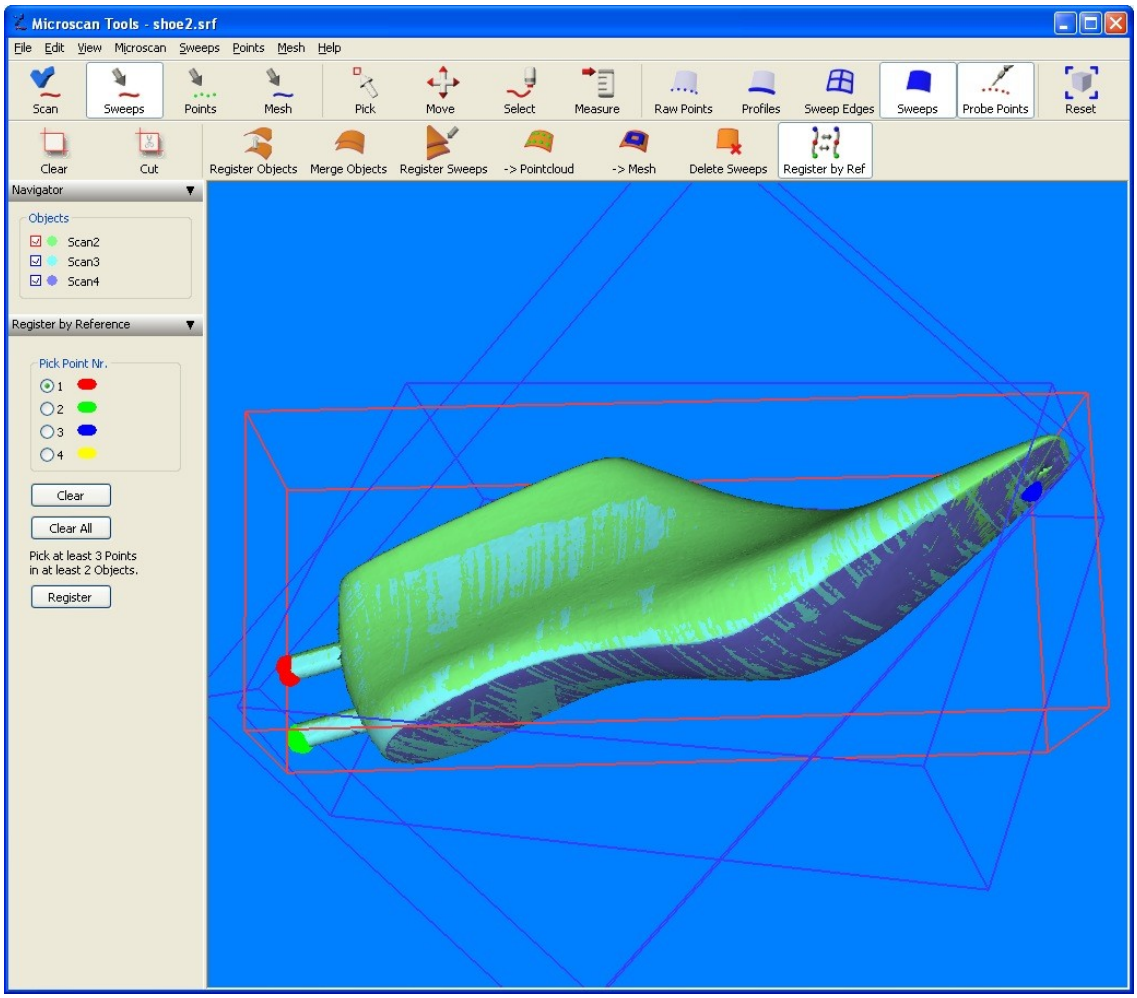
Pick 3 Points on each of the objects like shown in the picture above. For picking a point you have to select the object in the Navigator window and click with the left mouse button on the spot on the object where you want the reference point to be.

After that select all objects simultaneously in the navigator window and press „Register“. For selecting more than one object hold the control key while clicking on an object in the navigator window. After pressing „Register“ the objects will be registered by the reference points you have chosen previously (see picture below).



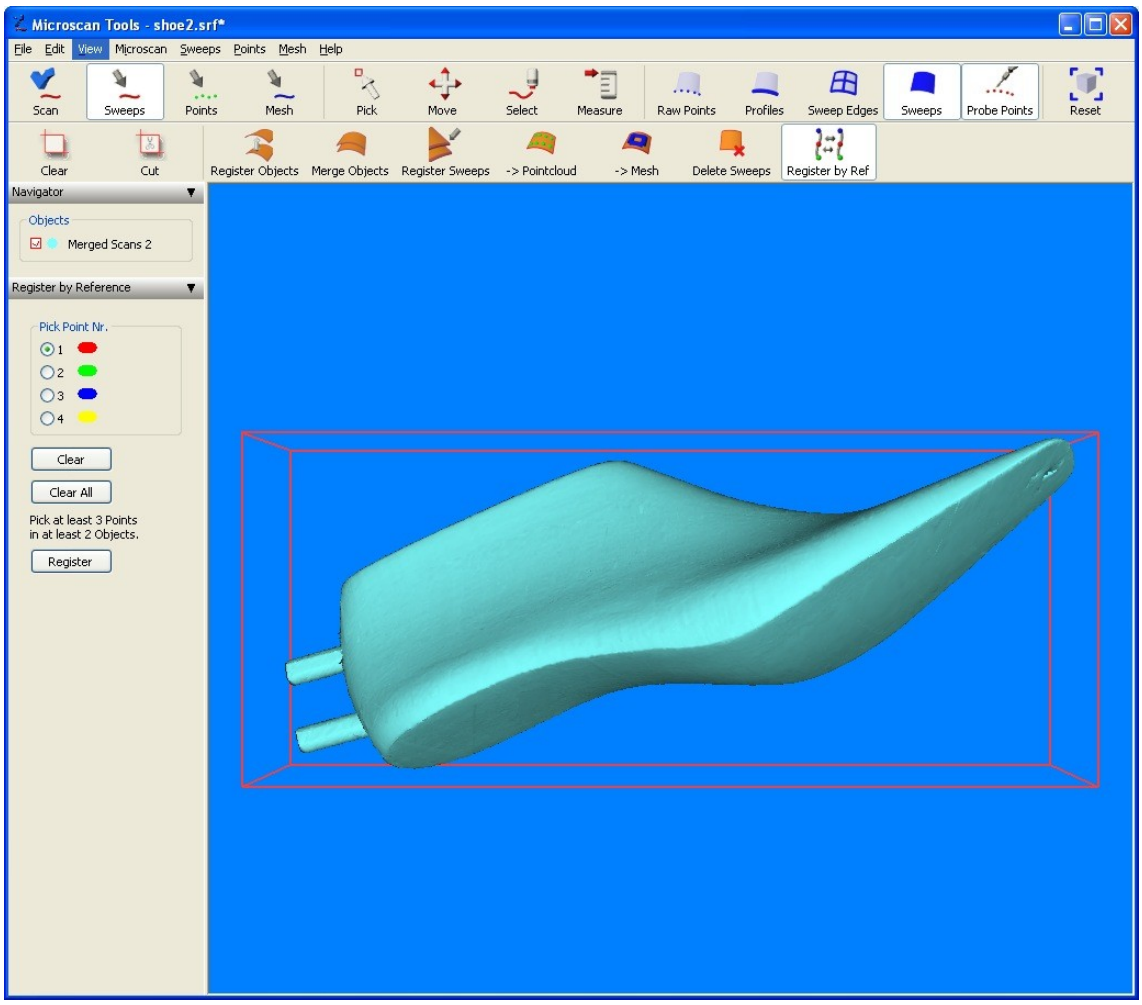
The alignment by the reference points isn't very precise, because you picked the points by eye measure. To bypass this – you are performing an automatic registration by distance. The alignment by the reference points which you did before is only a coarse alignment which will serve as a starting point of the automatic registration. Select the „Register Objects“ button and enter the values like they are shown in the dialog below.

After the function finished processing the result will look like in the picture below. The changes between the green and blue color indicate that the 2 objects are close together – in other words well aligned.



Merging of Objects

Now that the objects are aligned they can be merged. Select all 3 objects in the navigator window (use Ctrl key + left mouse button) and select the „Merge“ button in the toolbar. The result will look like in the picture below.

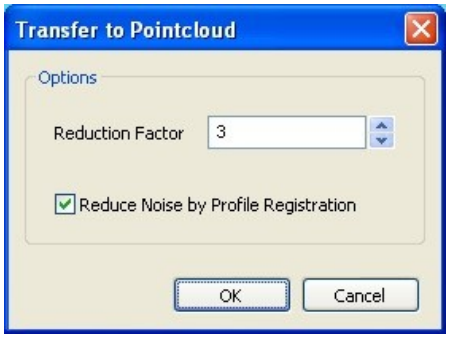


Registering Sweeps

The next step is to register the sweeps in the merged object. The registering of the sweeps reduces the distance between the sweeps which is caused from measurement noise during scanning. Registering sweeps allows the software to compensate the noise and to generate better meshes with more detail. For registering sweeps select the „Register Sweeps“ button in the toolbar and enter the values from the dialog below.

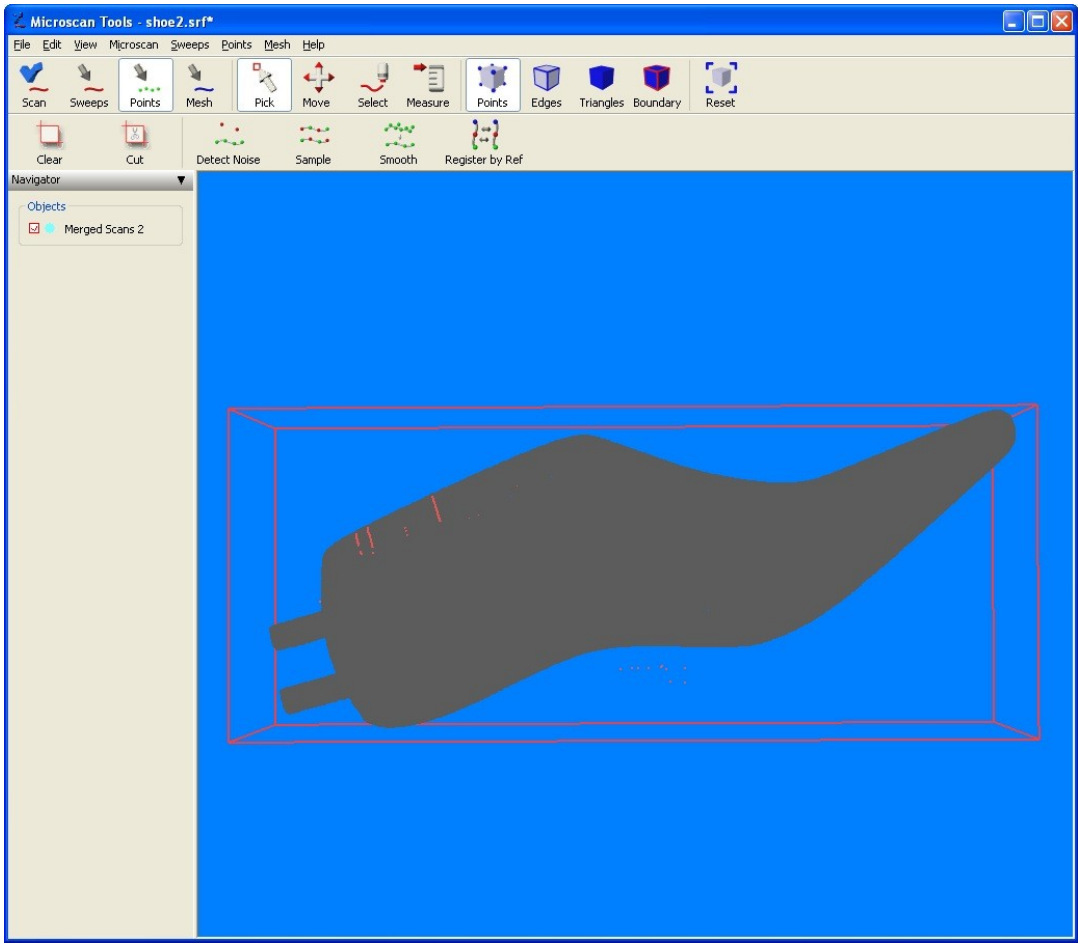
Transfer to Pointcloud

The next step is to transfer the sweeps into a Pointcloud for further postprocessing. Select the „-> Pointcloud“ button in the toolbar and enter the values from the dialog below.



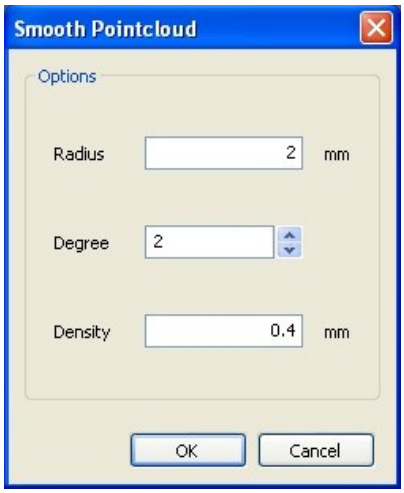
Detecting Noise in the Pointcloud

Switch the program to „Point Phase“. The second toolbar row will change to the point phase toolbar and the pointcloud of the shoe object will be shown on the screen. Select the „Detect Noise“ button in the toolbar and go with the proposed values. After finishing processing some points of the pointcloud (the ones which the functions considers as noise) will be selected (shown in red like in the picture below). Delete these points by pressing delete on the keyboard or press the „Cut“ button in the toolbar (or select „Cut“ from the edit menu).



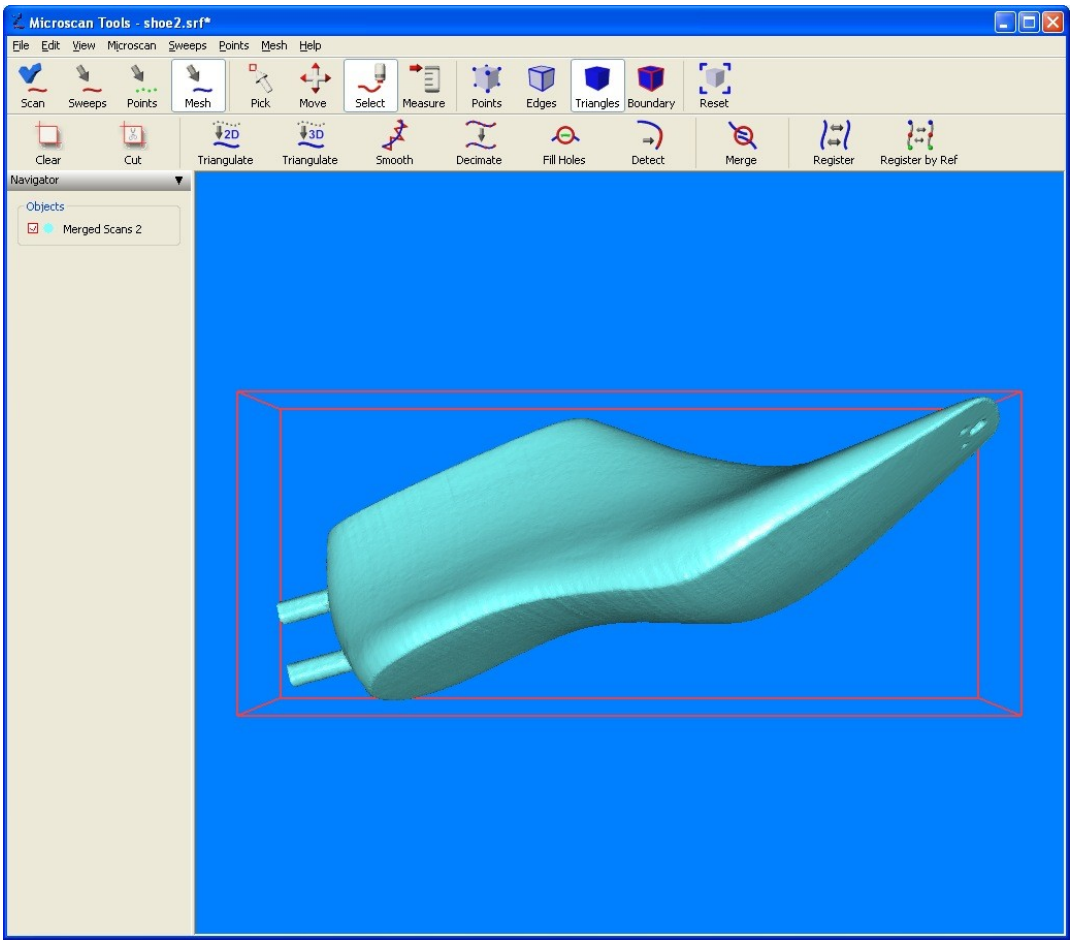
Smoothing Pointcloud

Select the „Smooth“ button in the toolbar and enter the values from the dialog below.



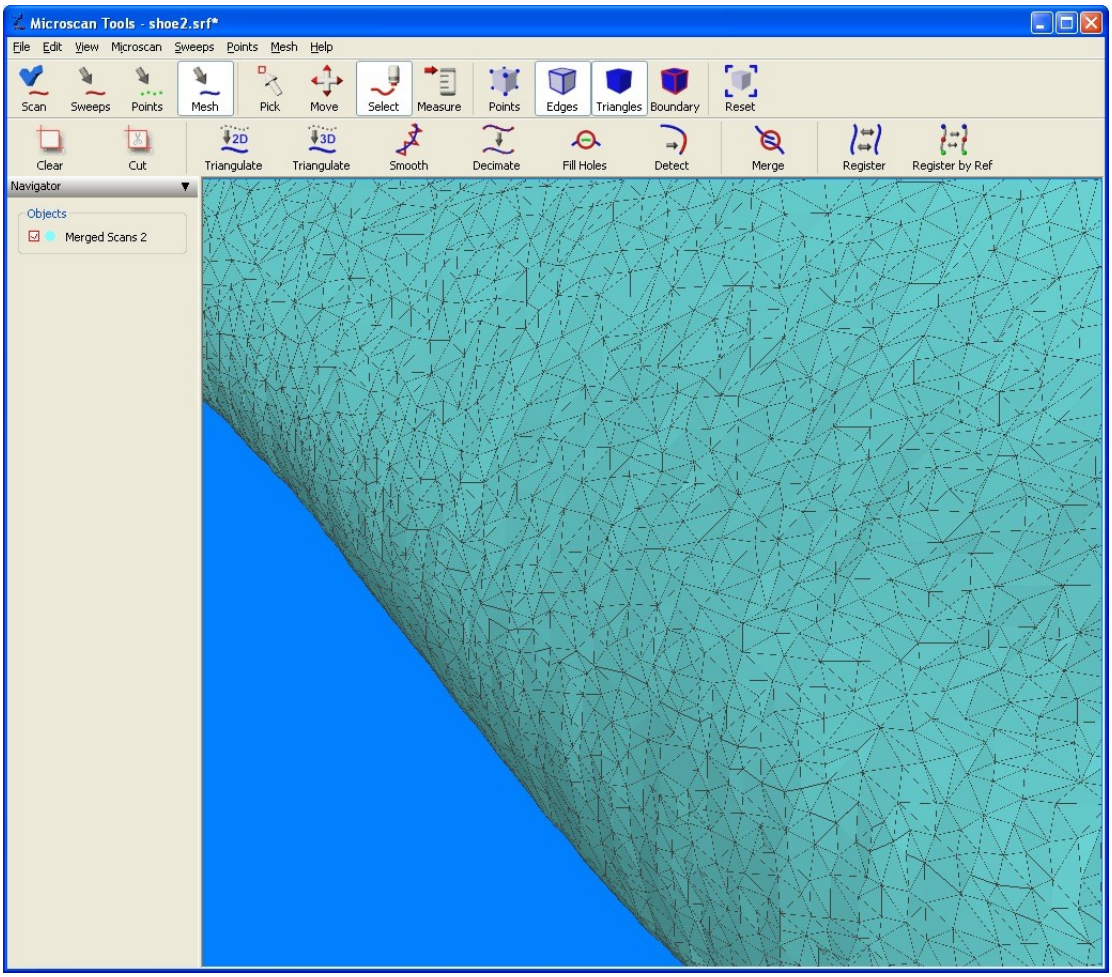
Triangulating Pointcloud

Switch the program to „Mesh Phase“ and select the „Triangulate 3D“ button in the mesh toolbar. When prompted for the object type, select „Closed“. After the processing is finished the triangulated mesh will appear on the screen (picture below).



Decimate and Export

After the triangulation is done you should usually decimate the object to get rid of redundant data. For decimating select the „Decimate“ button and enter a percentage of 20%. This means that the mesh is reduced to 20% of it's original size. 20% is a good value – usually there is no detail lost with that amount of reduction.



Finally you can export your object in various triangular mesh formats. Select „Export“ from the file menu.

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