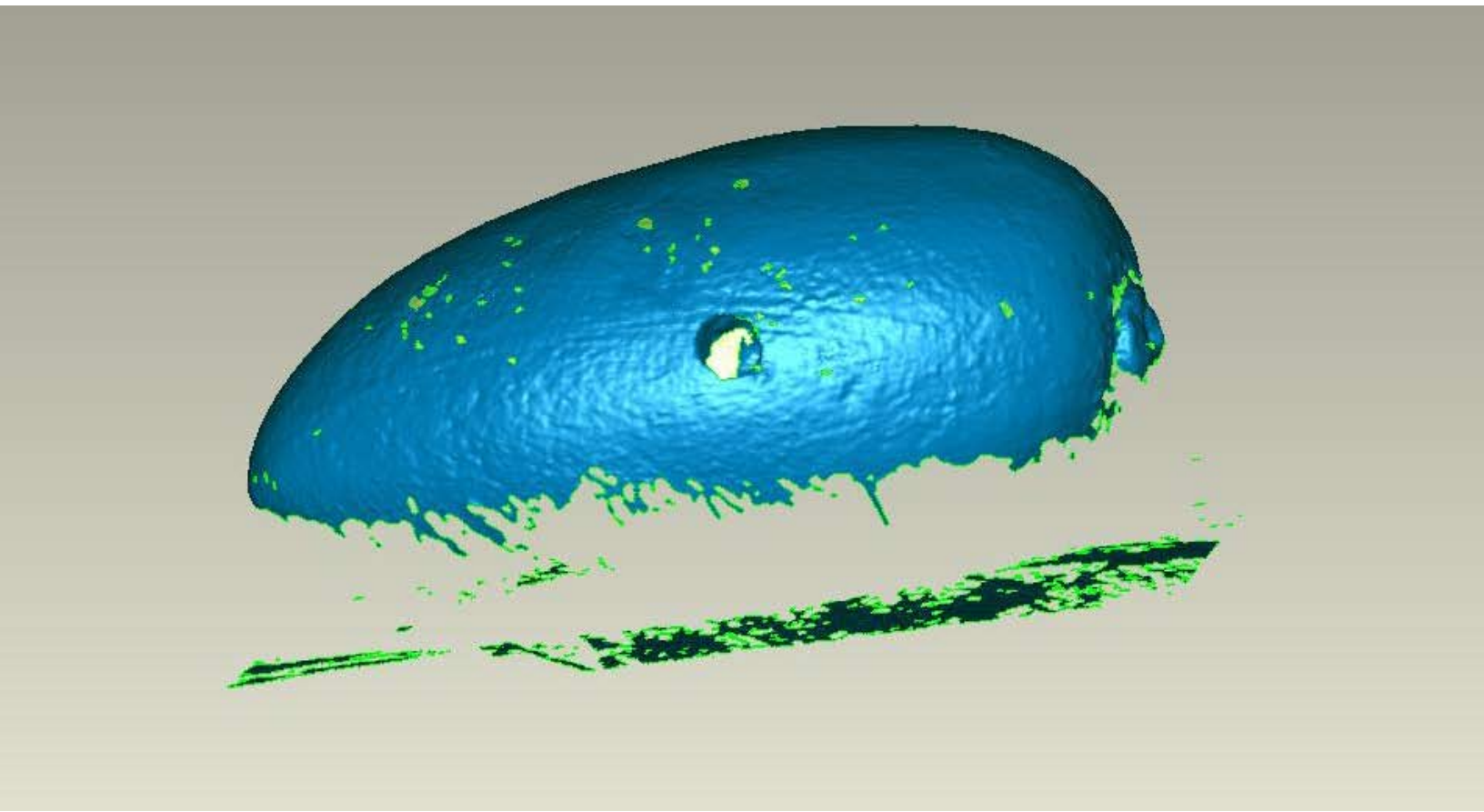
FLAAR Reports

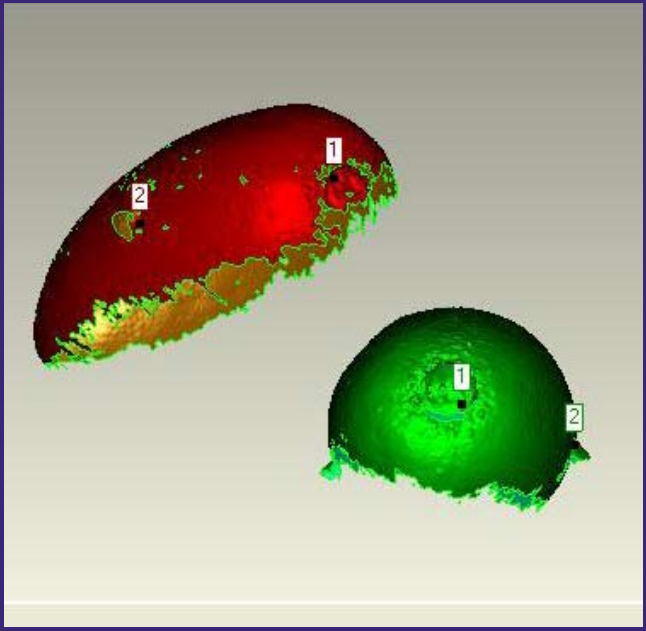
March 2010

3D Software for Maya Ethnobotany Zapote



Geomagic

Author: Cindy Contreras



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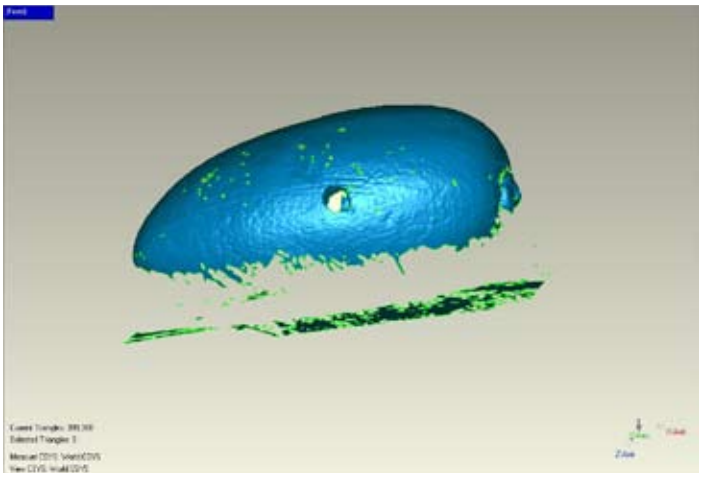
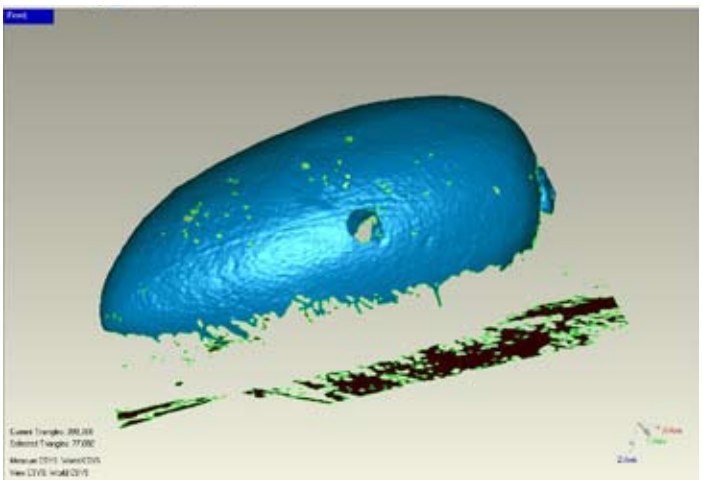
In December 2009 two persons of the FLAAR staff, together with FLAAR director, attended a special three-day 3D scanner training course at Z Corp, where they learned how to handle the portable ZScanner 800 and how to process the data from it. They came back to Guatemala with a ZScanner 800 and a HP laptop with one licensed copy of Geomagic installed; both lent from Z Corp for 90 days.

This report shows the processing of the zapote we scanned at the FLAAR studio.

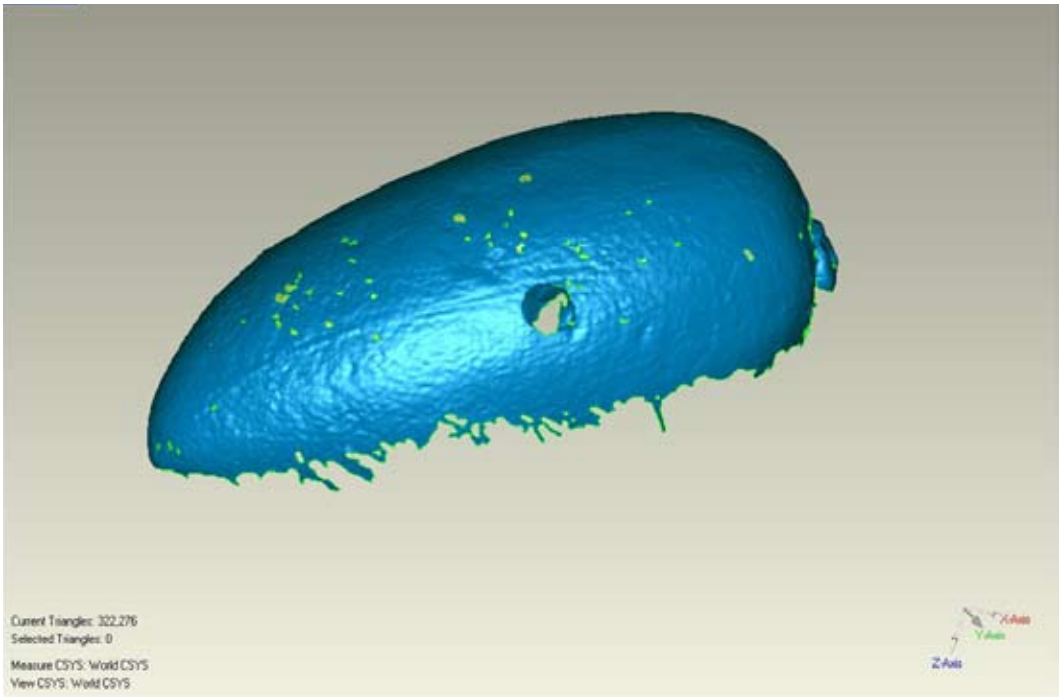
Zapote is a native fruit of Mesoamerica that is why we are interested in studying it.

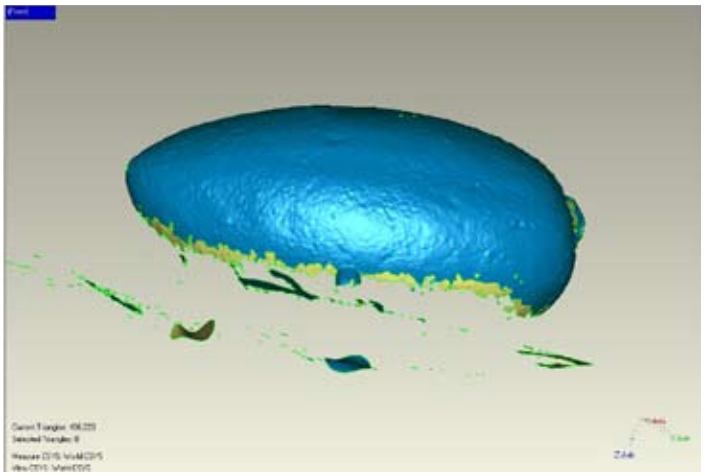


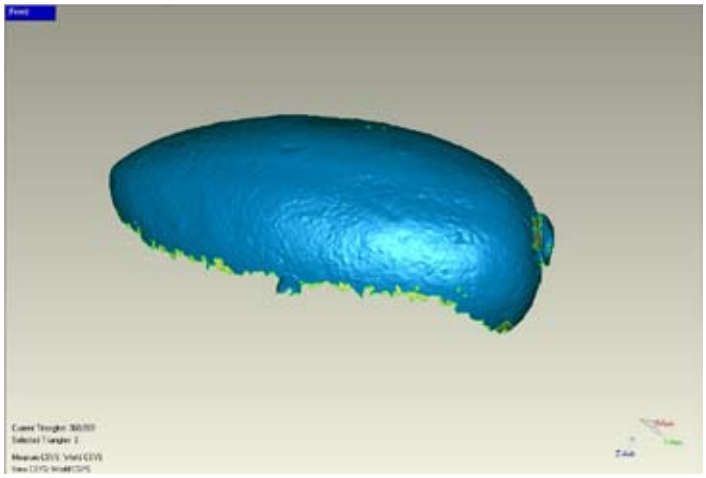


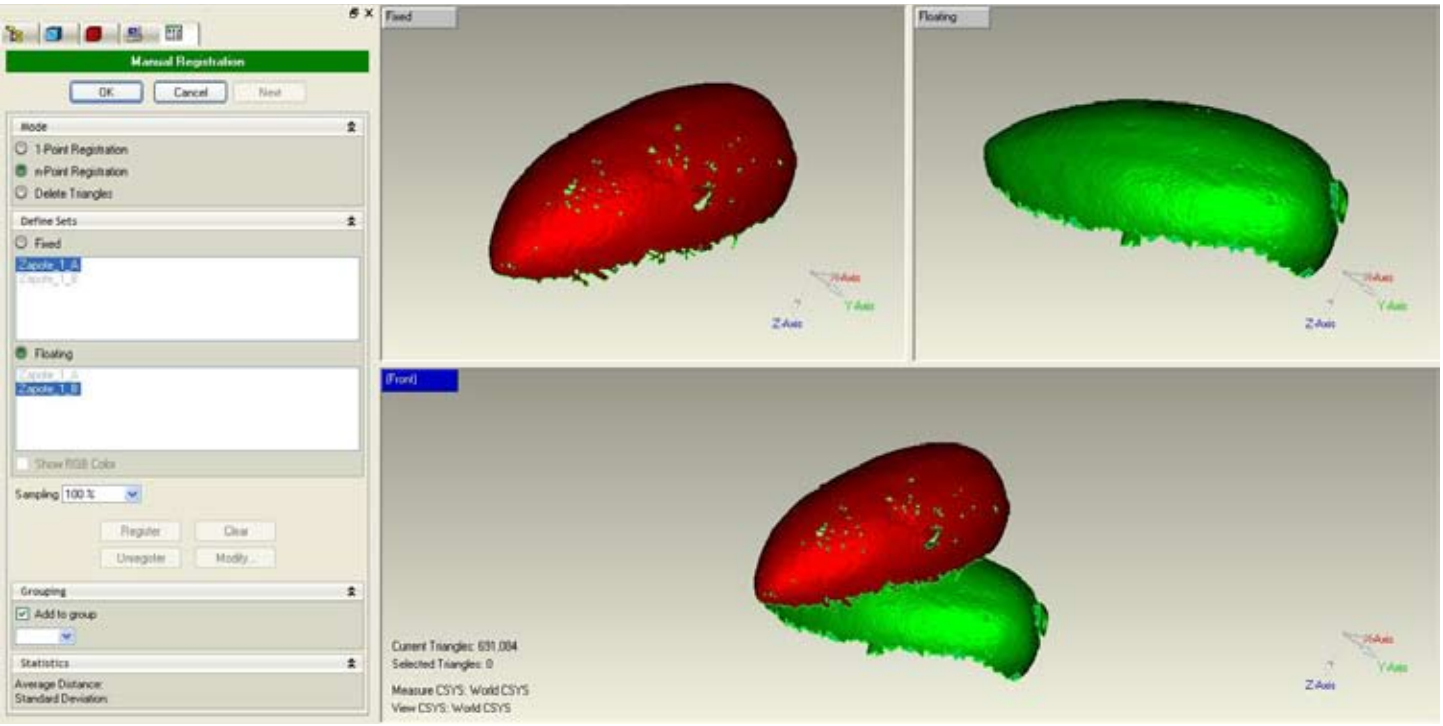
The zapote was made out of two scans. While scanning the scanner might also capture some other elements, so it is necessary to get rid of them.

An easy way to do it is going to Edit > Select > By Area; to select the areas that are not attached to the biggest portion of the scan, and then just delete them.

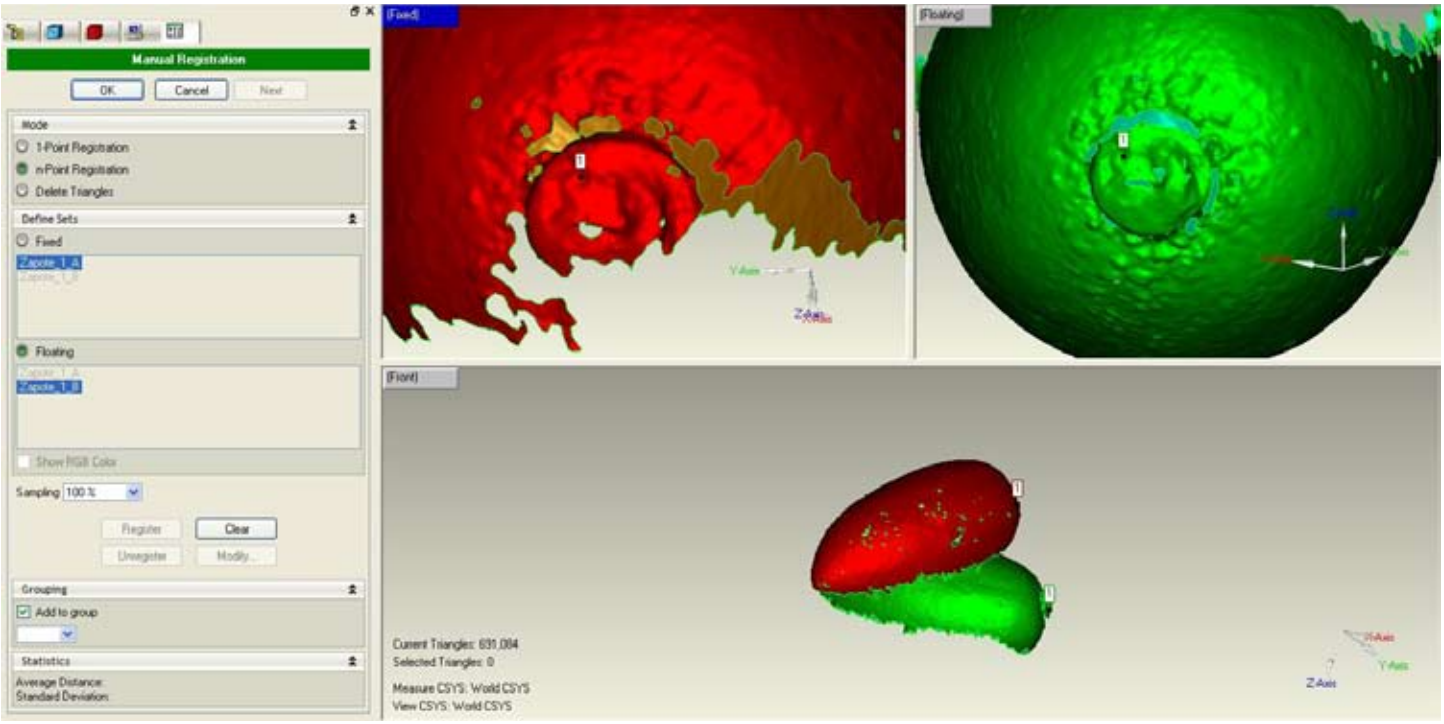




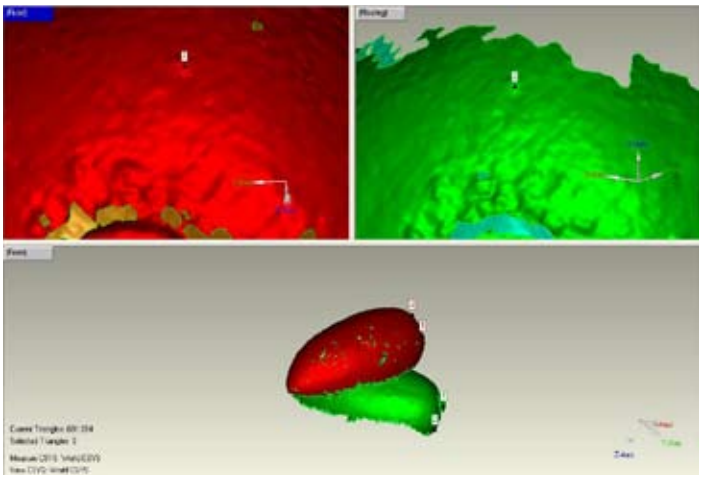


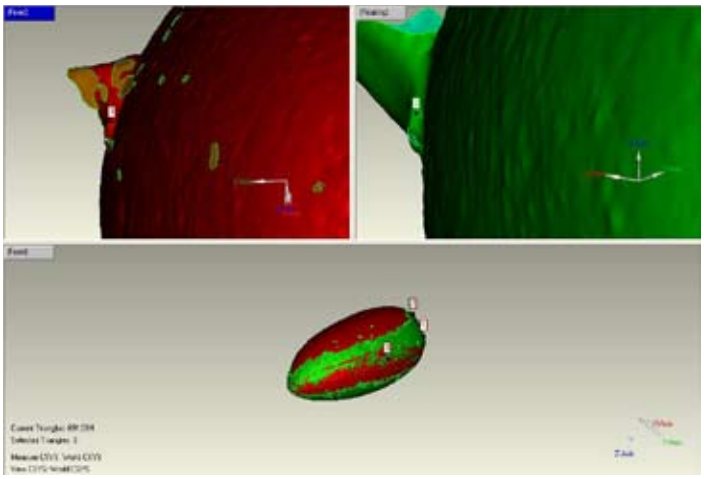


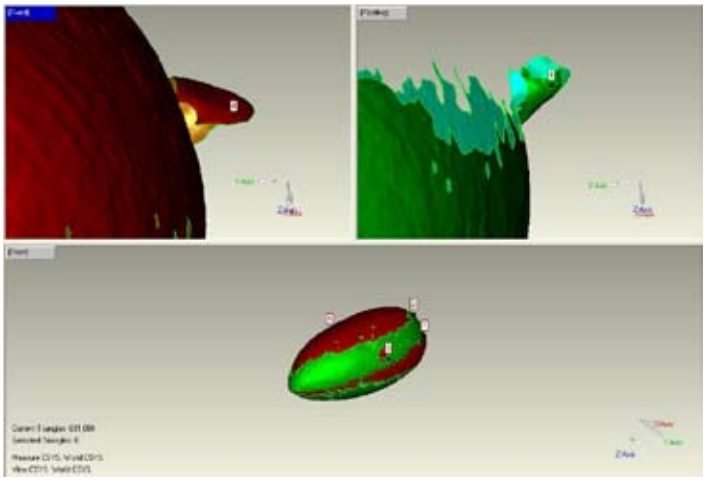
After cleaning up the scans, they are ready to be registered. We select all the scans from the left panel and then go to Tools > Registration> Manual Registration.

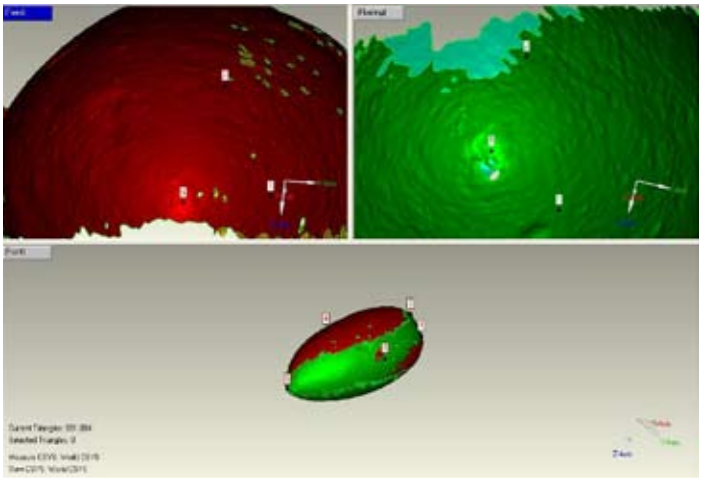


The viewing area is divided in three. From the left panel we select one scan to be fixed and one to be floating. The bottom frame shows how the scans are being aligned. To make the registration points we move the fixed and floating objects until they are in the same angle and click in the same spots. The registration points are indicated with a number, in this case: 1.





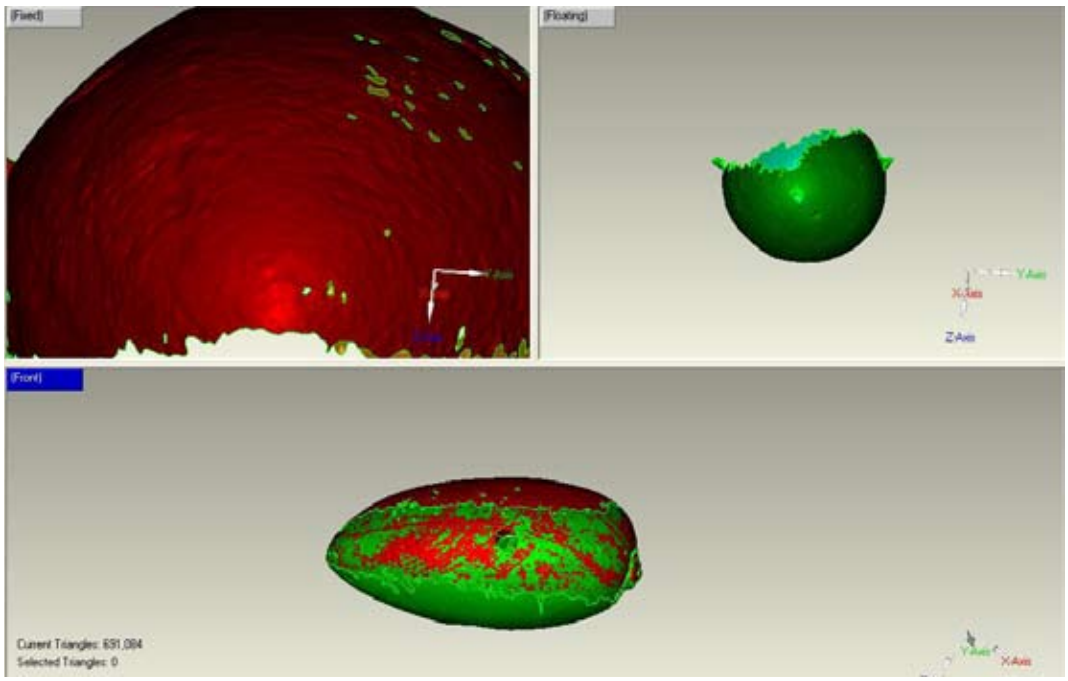


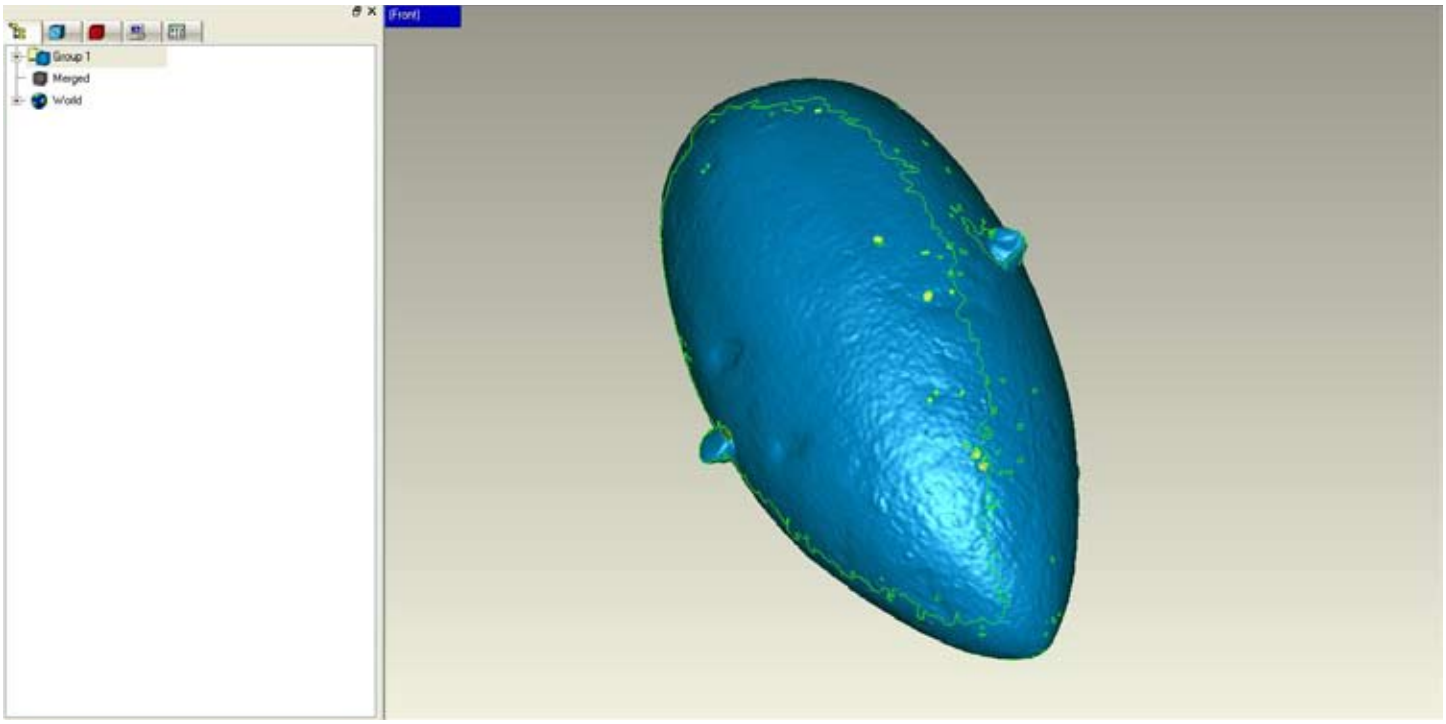


This is the process of how the two scans of the zapote were registered.

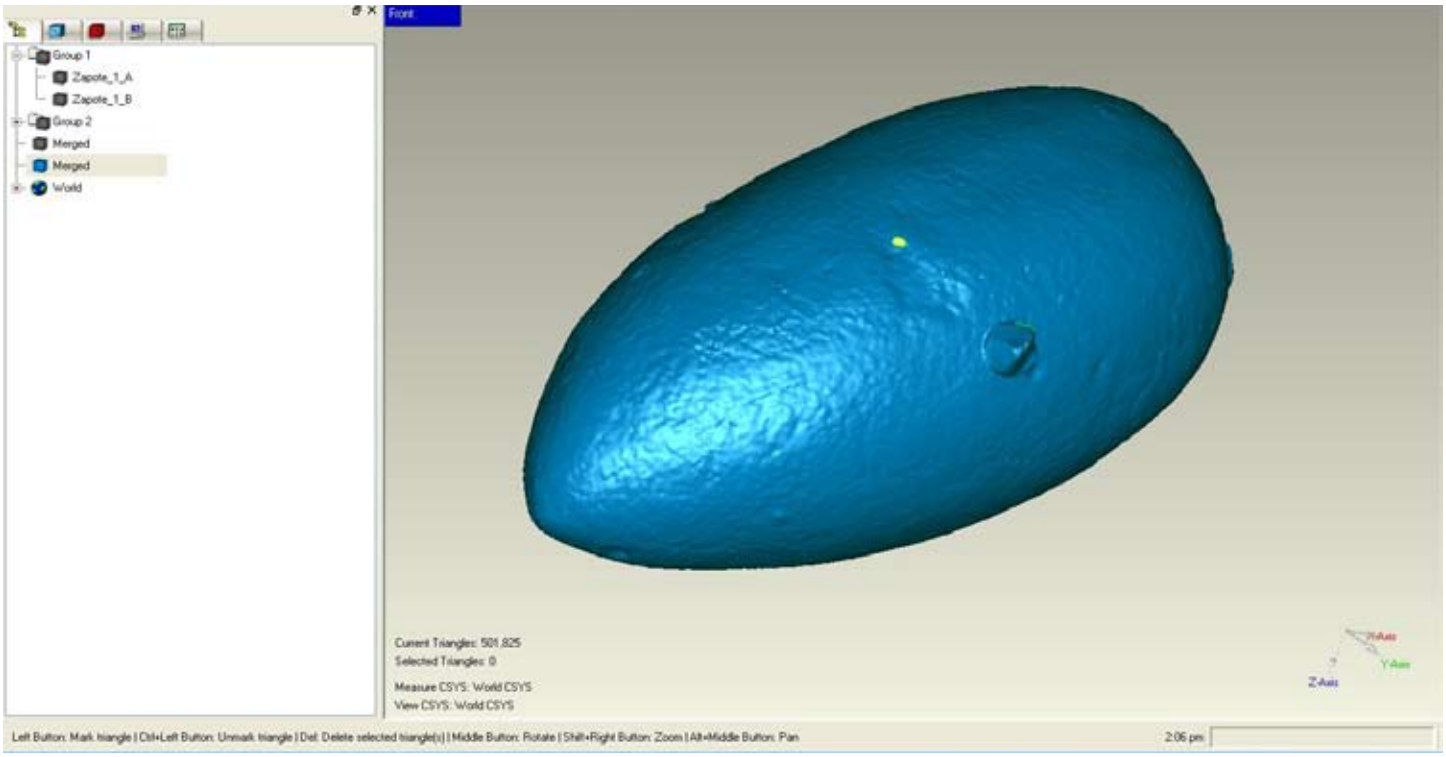
We used five registration points. You can see at the bottom frames how the scans mix better with every registration point. Even though the scans looked aligned at the registration point number three, it is better to put more registration points to make sure the two scans are well aligned from all sides.

In this case since there are no more scans to register, click Register and then OK.

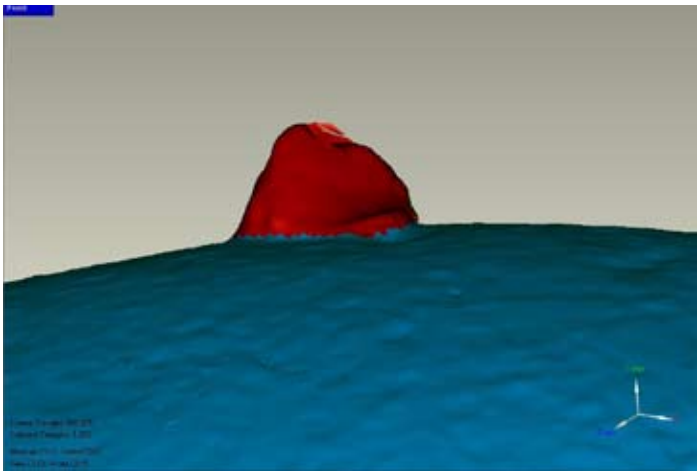


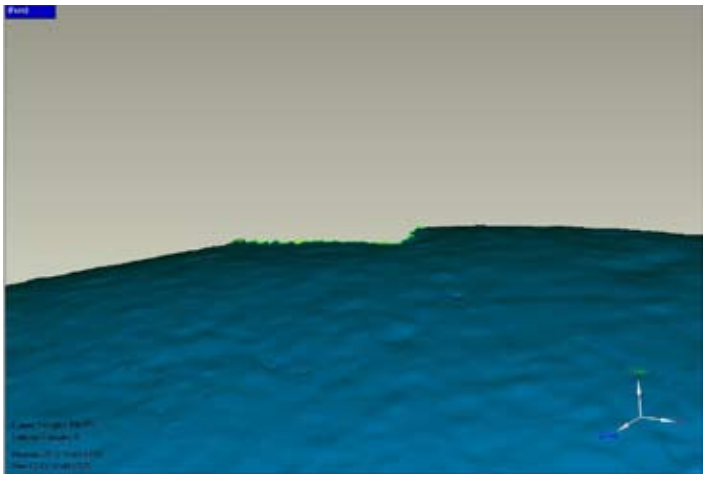


This is the zapote after registration. The scans are still separated in the carpet called Group 1, the green lines shows the border of each scan, so we need to transform them into one object.

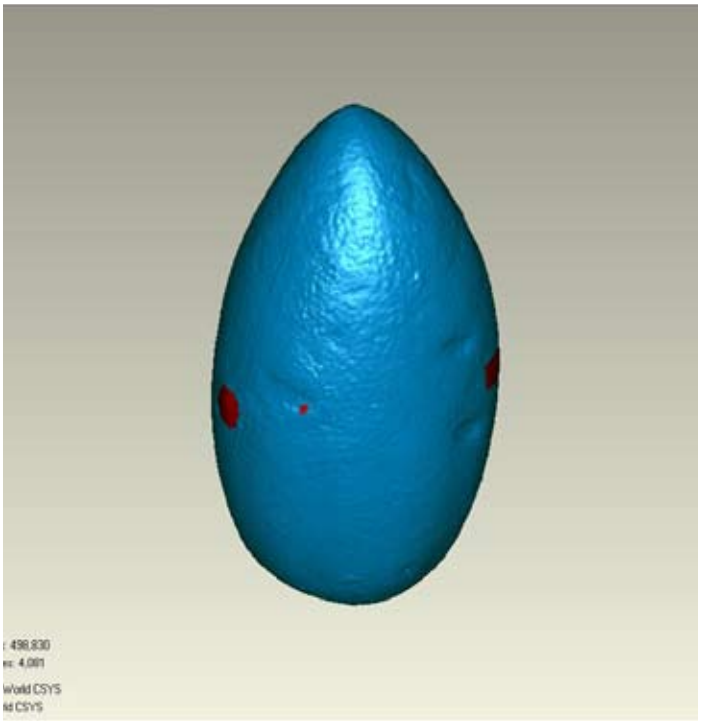


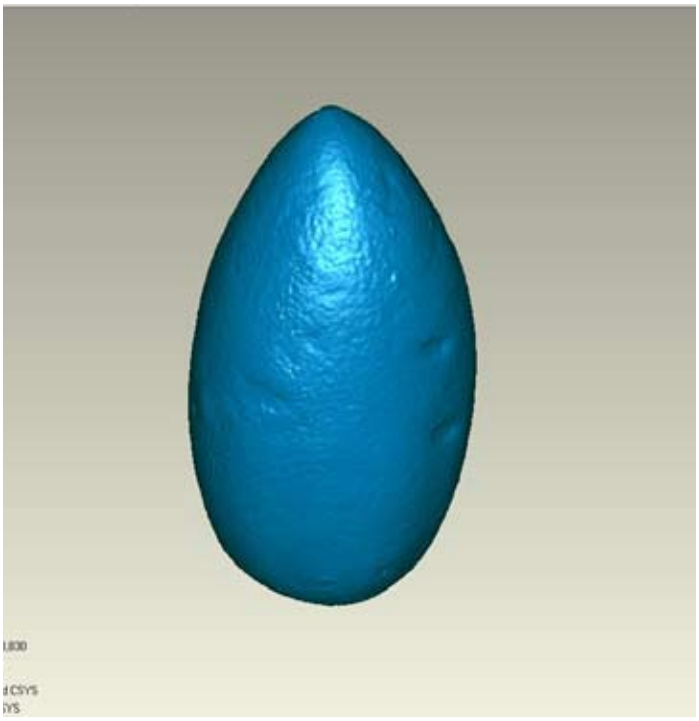
This is our object after applying Merge. In the left panel there is still the carpet named Group1 but now there is a new object called Merged.



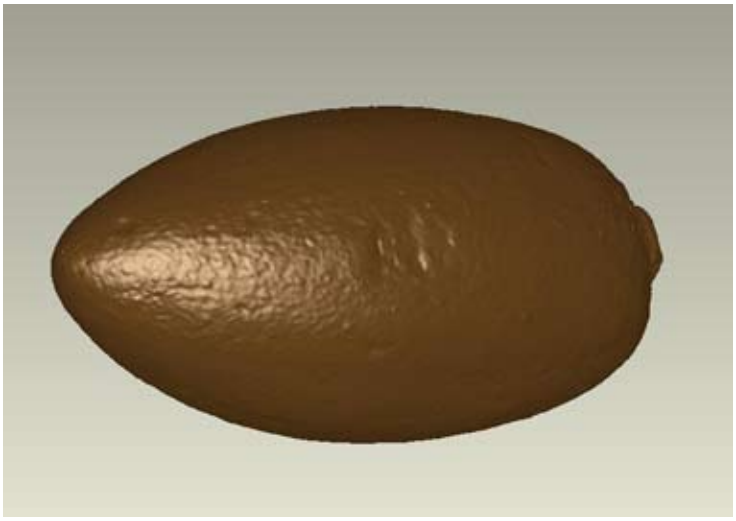


While scanning the zapote we put some modeling clay on it to use as a reference for the registration process. Since the zapote has a regular surface, it would have been extremely difficult to do it without a reference. To remove it we just selected them very carefully and then deleted them, leaving several holes.





To make the holes disappear we go to Polygons > Fill Holes. There are several options, depending on the type of hole you want to fill out. Normally the default setting will do a good job. By clicking on Fill All, the software will fill all the holes indicating them with a red color as shown in the picture to the left. If you are satisfied with the result, just click OK. The image to the right shows the zapote after filling out the holes.



To give it a more realistic look we applied color to the zapote. The left image is the final version of the scan and the right image is a picture of the actual zapote so you can make a comparison.

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