3D Software for Maya Ethnobotany Papaya
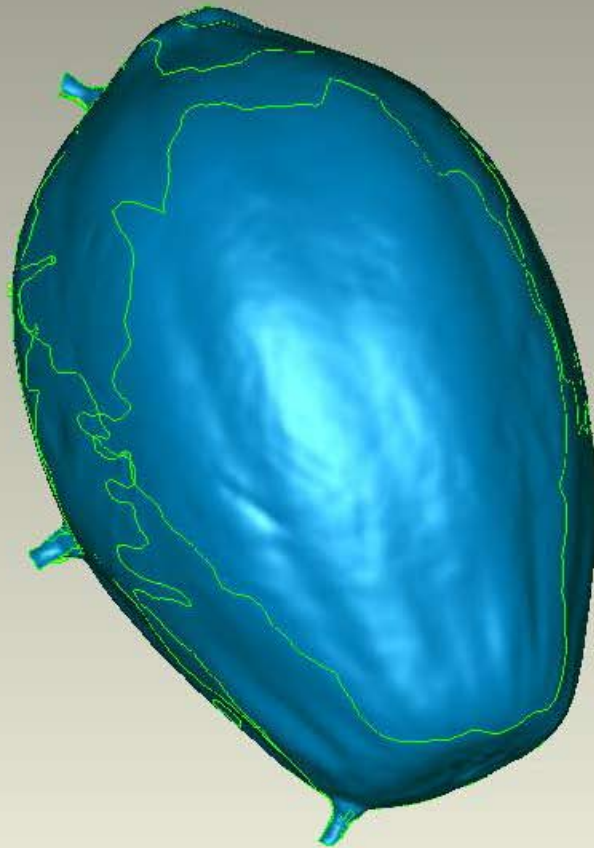
Geomagic

Author: Cindy Contreras

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Please Note

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 process of a papaya scans in Geomagic.

We are interested in studying papaya because it is a native fruit and it might be represented on maya iconography.
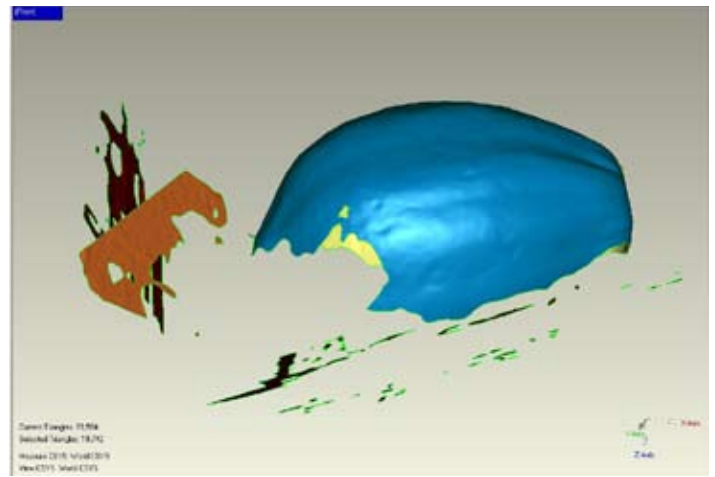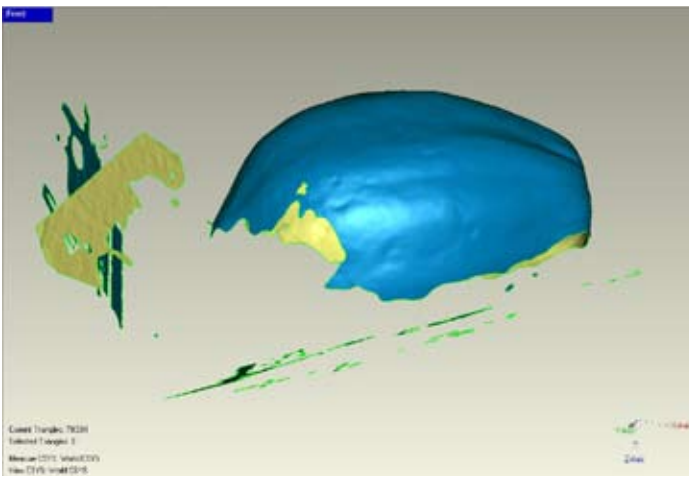
First of all we clean up the scan. An easy way to do it is going to Edit > Select > By Area; to select the areas that are not attached to the biggest portion of the scan, and then just delete them.
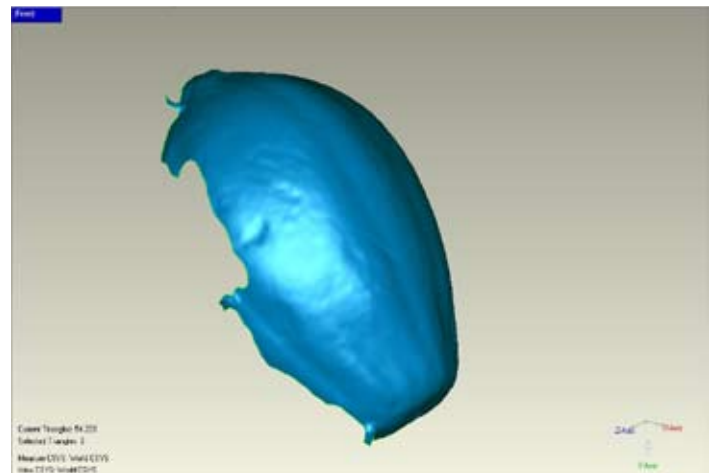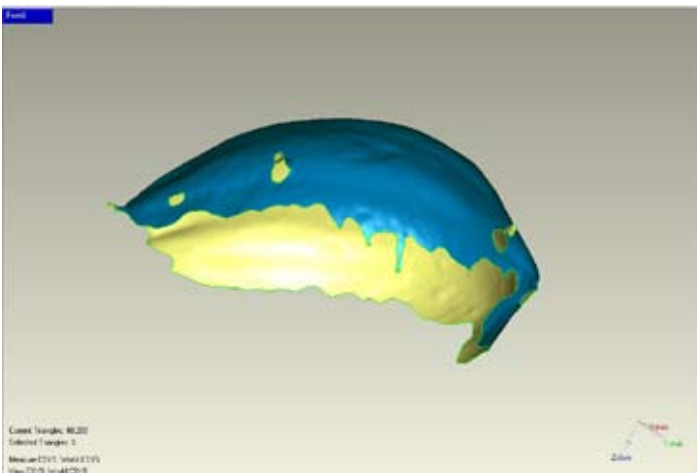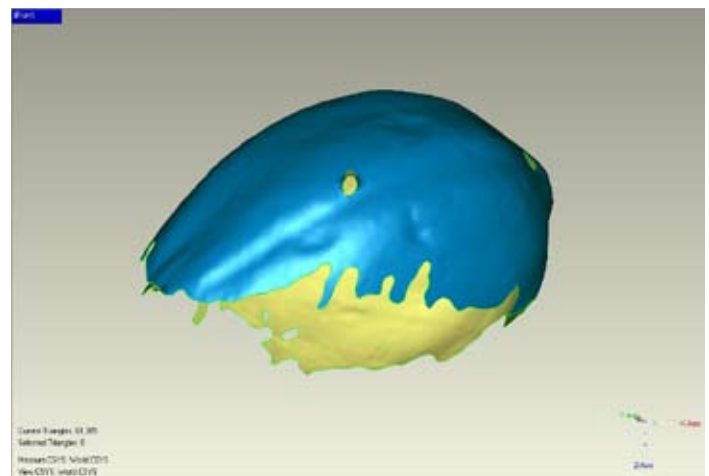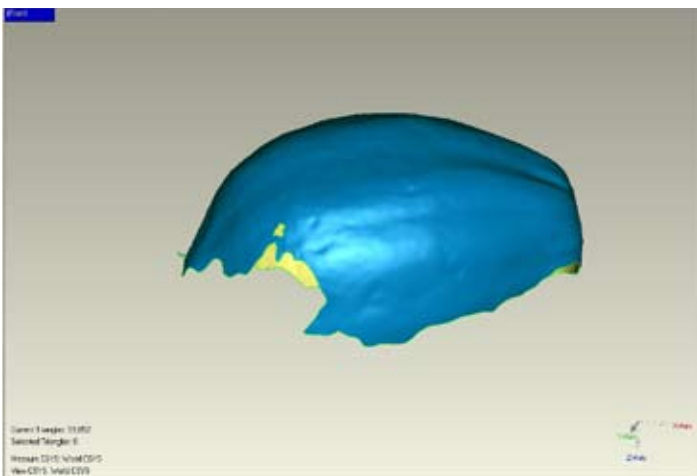
After cleaning up the scans, the next step is to register them. These are the scans that were made to build up the papaya.
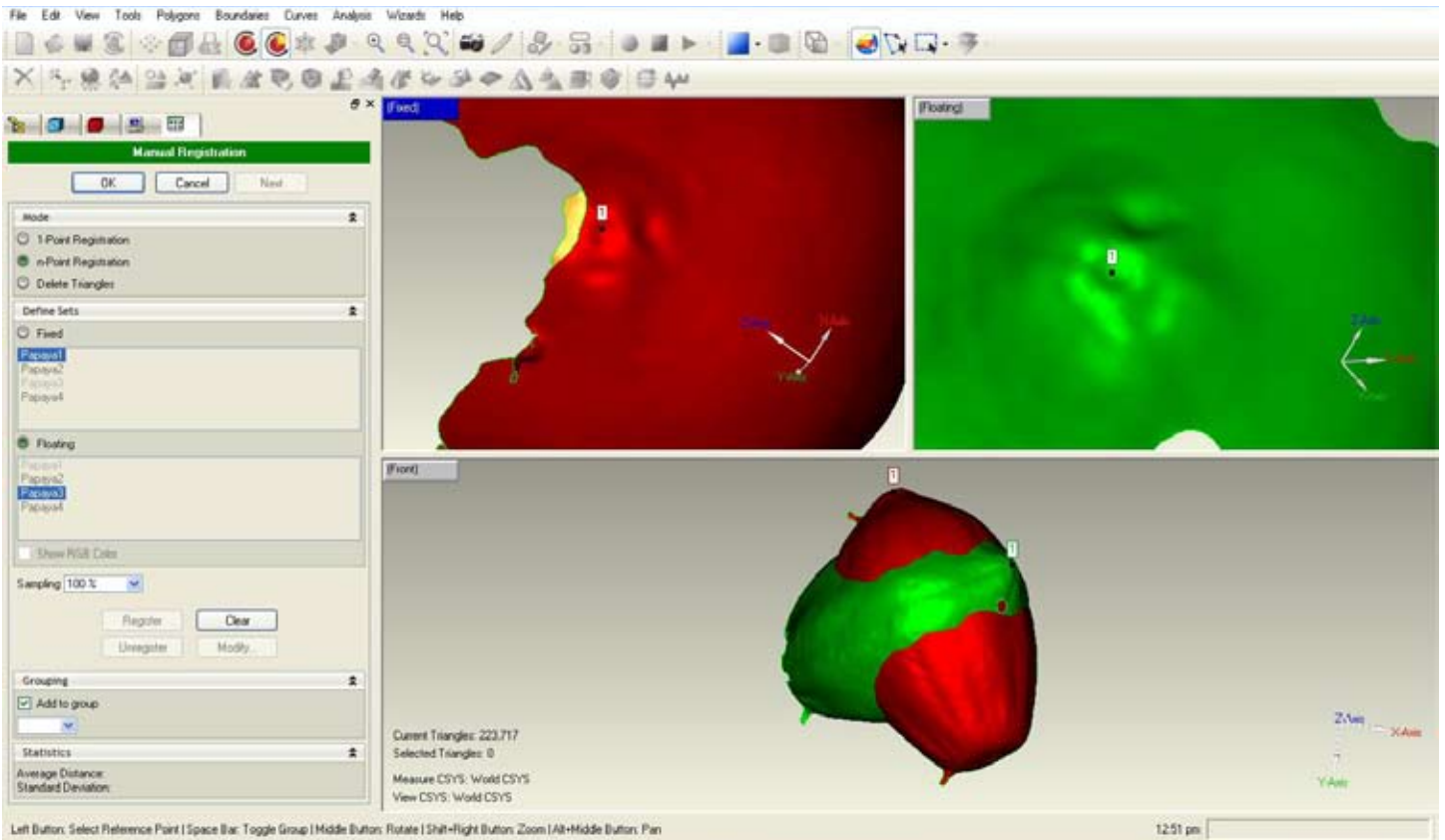
To register the scans, select all the scans from the left panel and then go to Tools > Registration> Manual Registration. Now the viewing 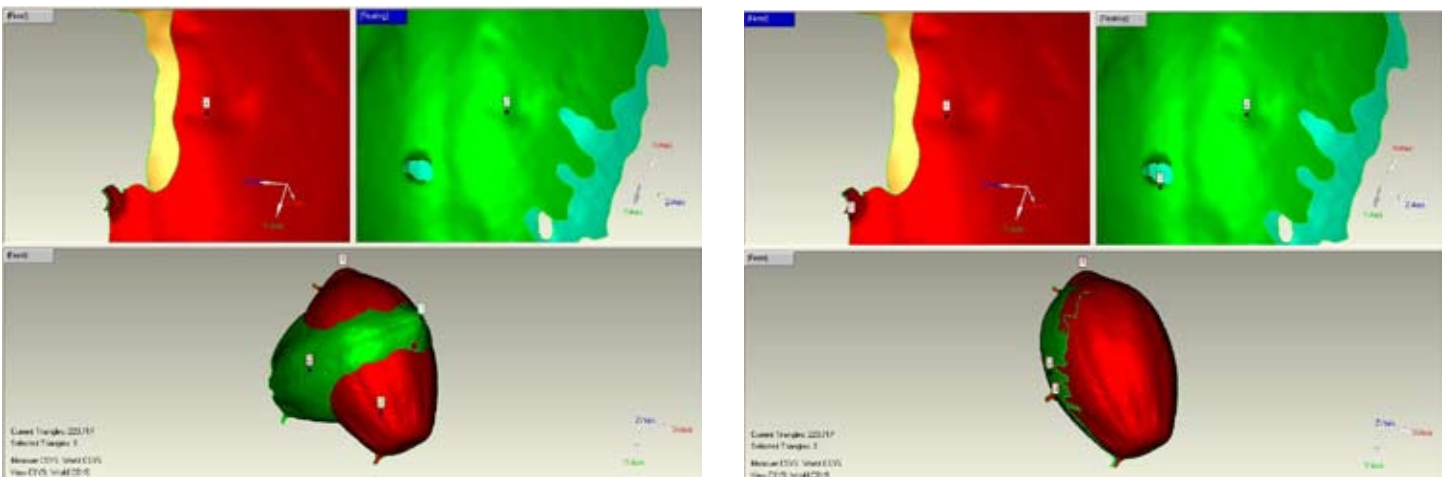area is divided in three. From the left panel we select one scan to be fixed and one to be floating. The bottom frame shows how the scans are being aligned. To make the registration points we move the fixed and floating objects until they are in the same angle and click in the same place. The registration points are indicated with a number, in this case: 1.

The image to the left shows the second registration point and the image to the right shows the third registration point. See how the two scans get aligned.
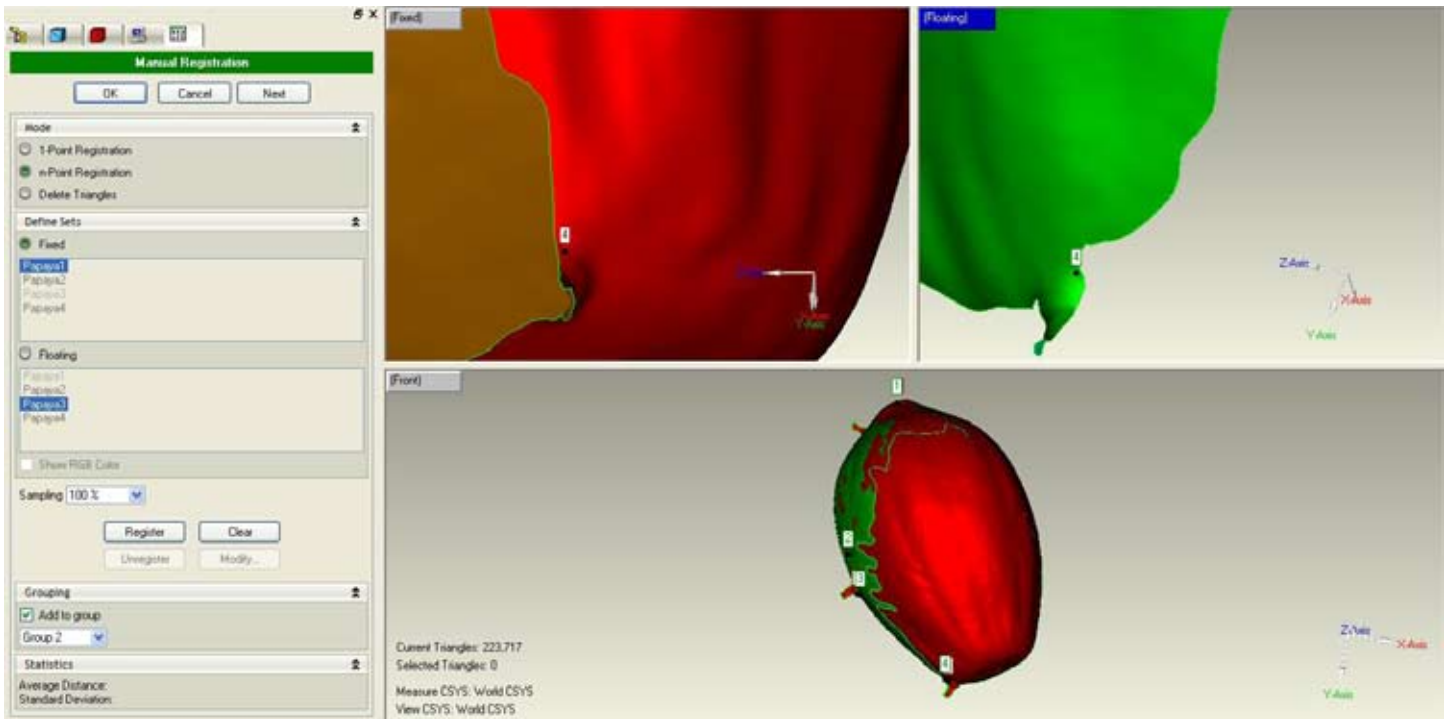
To align these two scans we used four registration points.
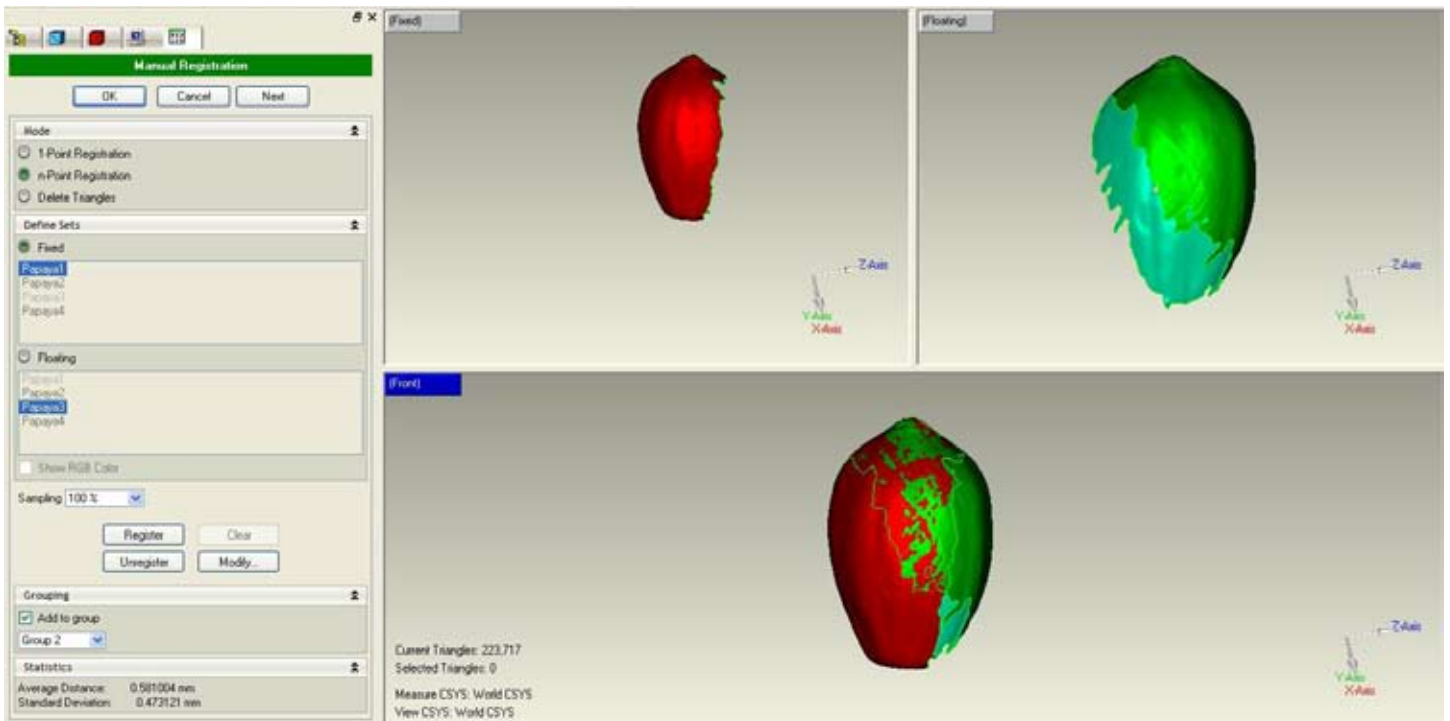
After the fourth registration point we select Register and then Next, to register the following scan, and follow the same procedure of the first two scans. Notice that the registered scans appear in the left panel as a group now, each new registered scan will be added to that group.
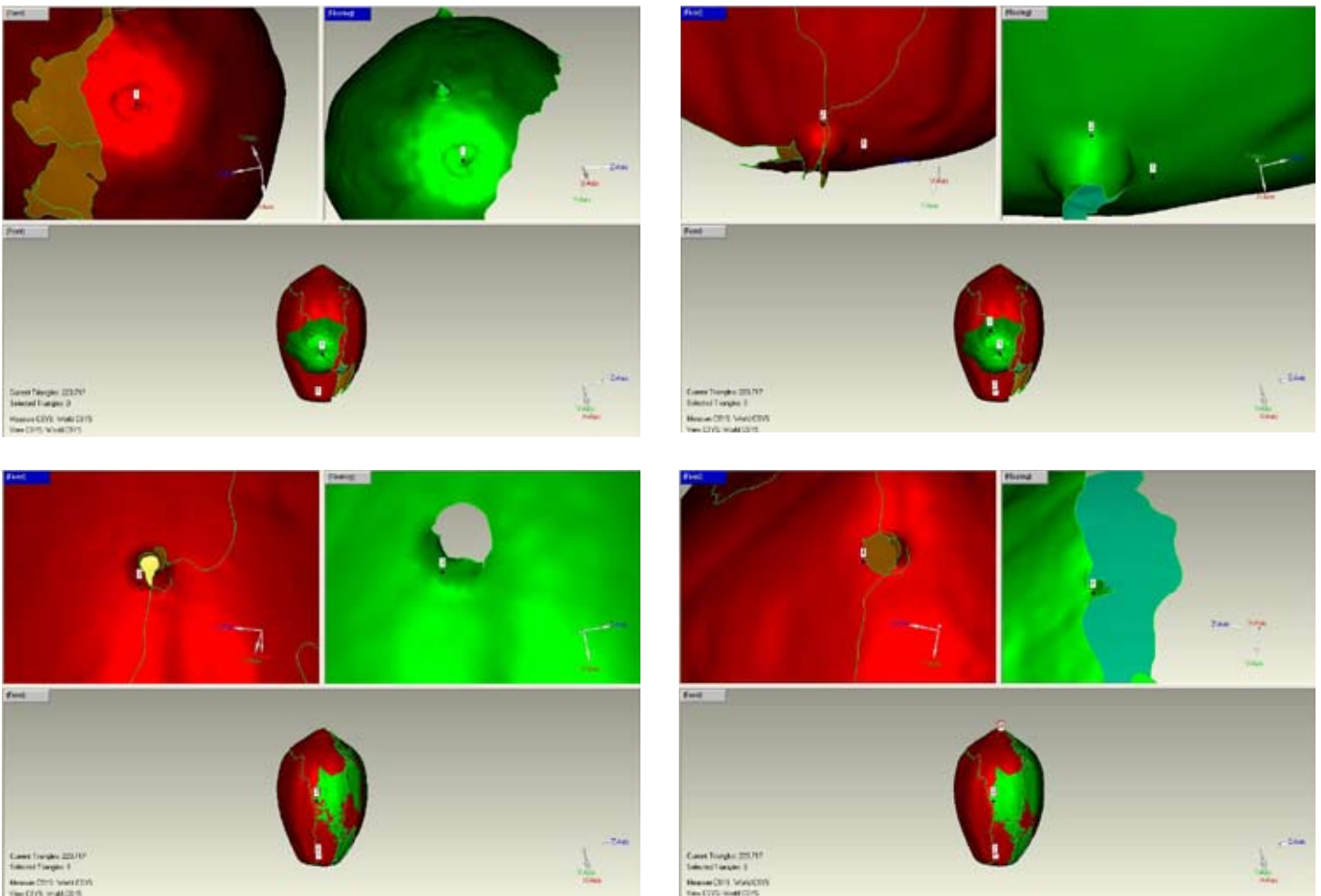
We followed the same procedure to make the registration points of the third scan. These images show the registration points we made for the third scan.
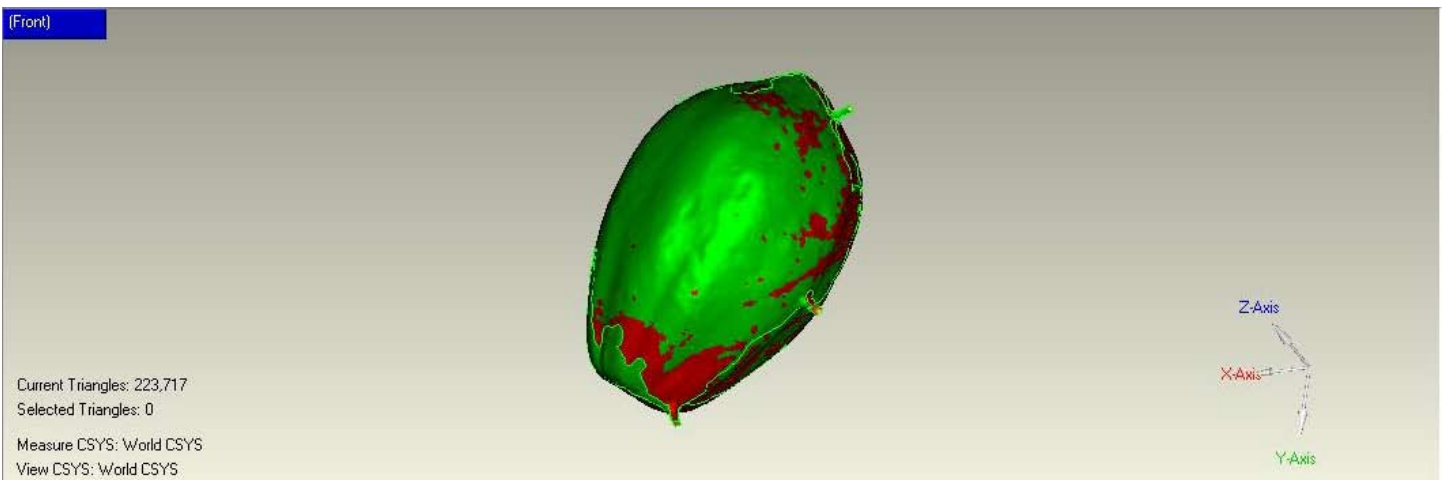
This is how our papaya looks like after registering the third scan.
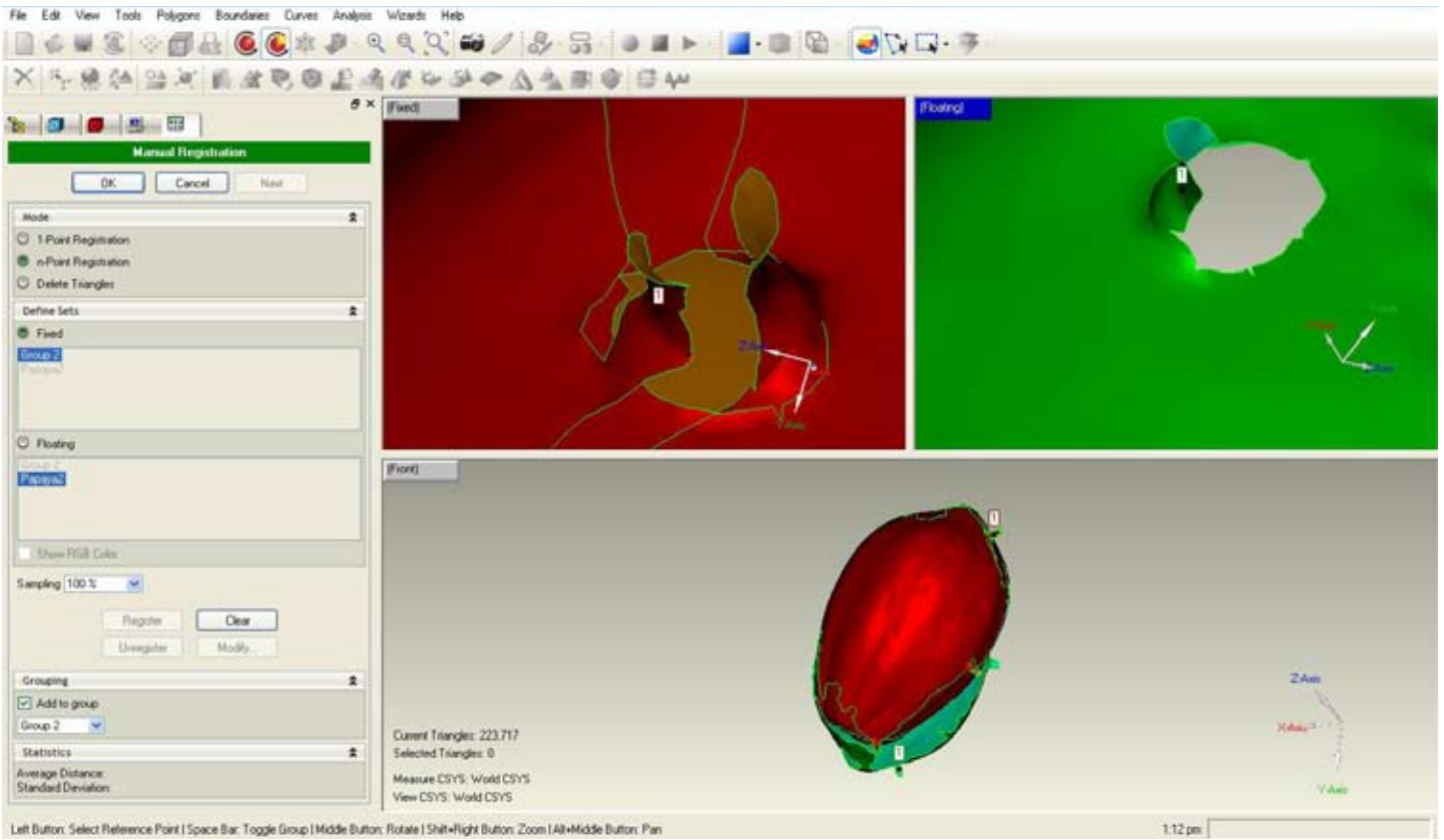
To align the remaining scan we followed the same procedure. From the left panel the object called Group2 is the one with the registered scans. This image shows the first registration point.
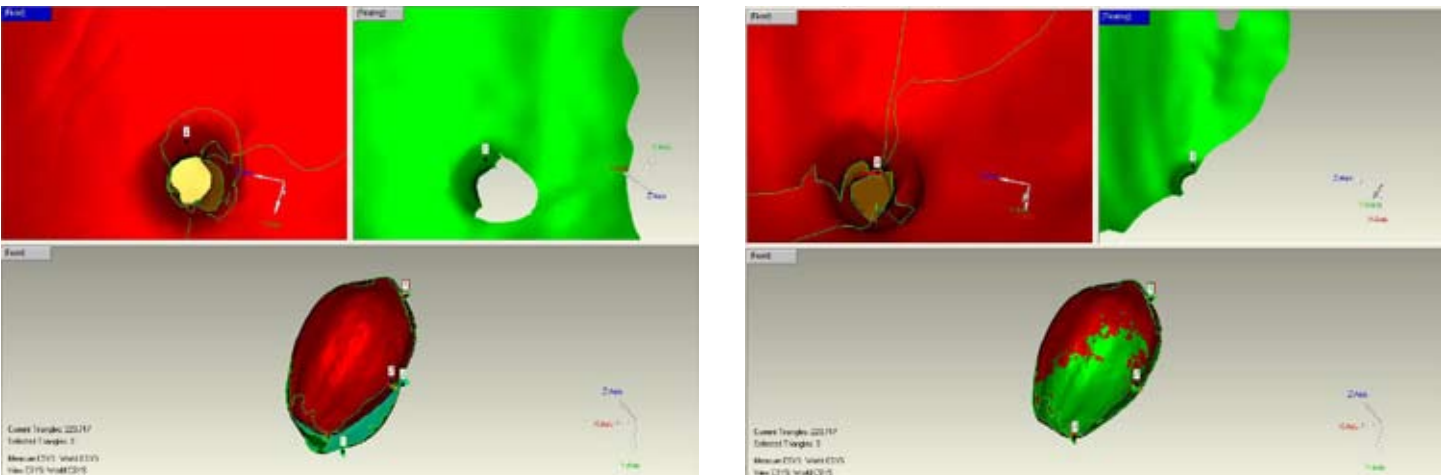
These images show the second and third registration points. See how the scans get aligned in the bottom frame.
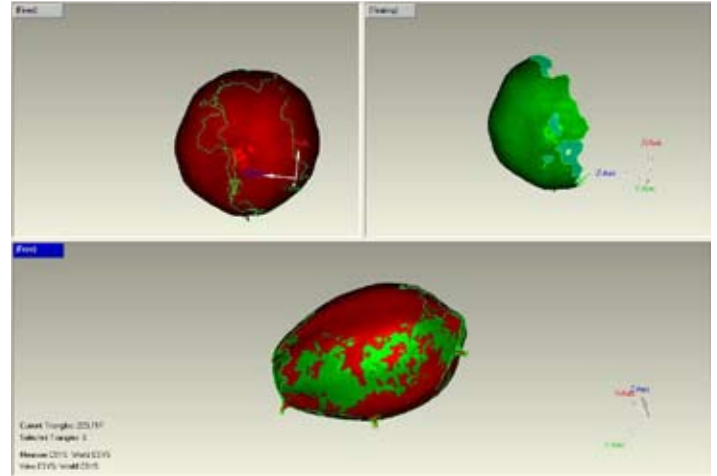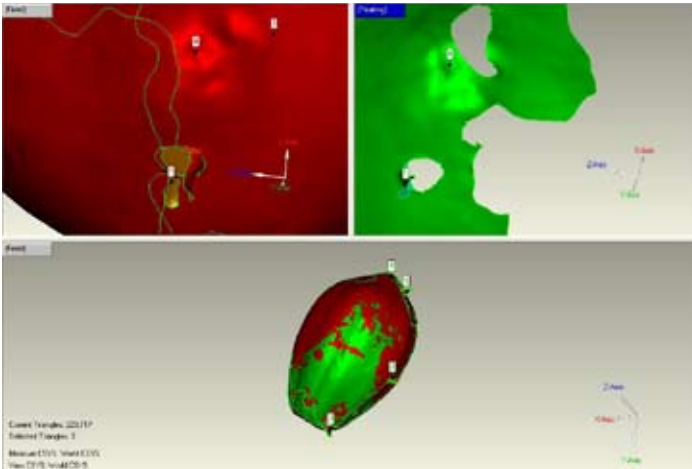
We used four registration points to match the last scan. These images show the fourth registration point and the papaya at the end of the registration process.
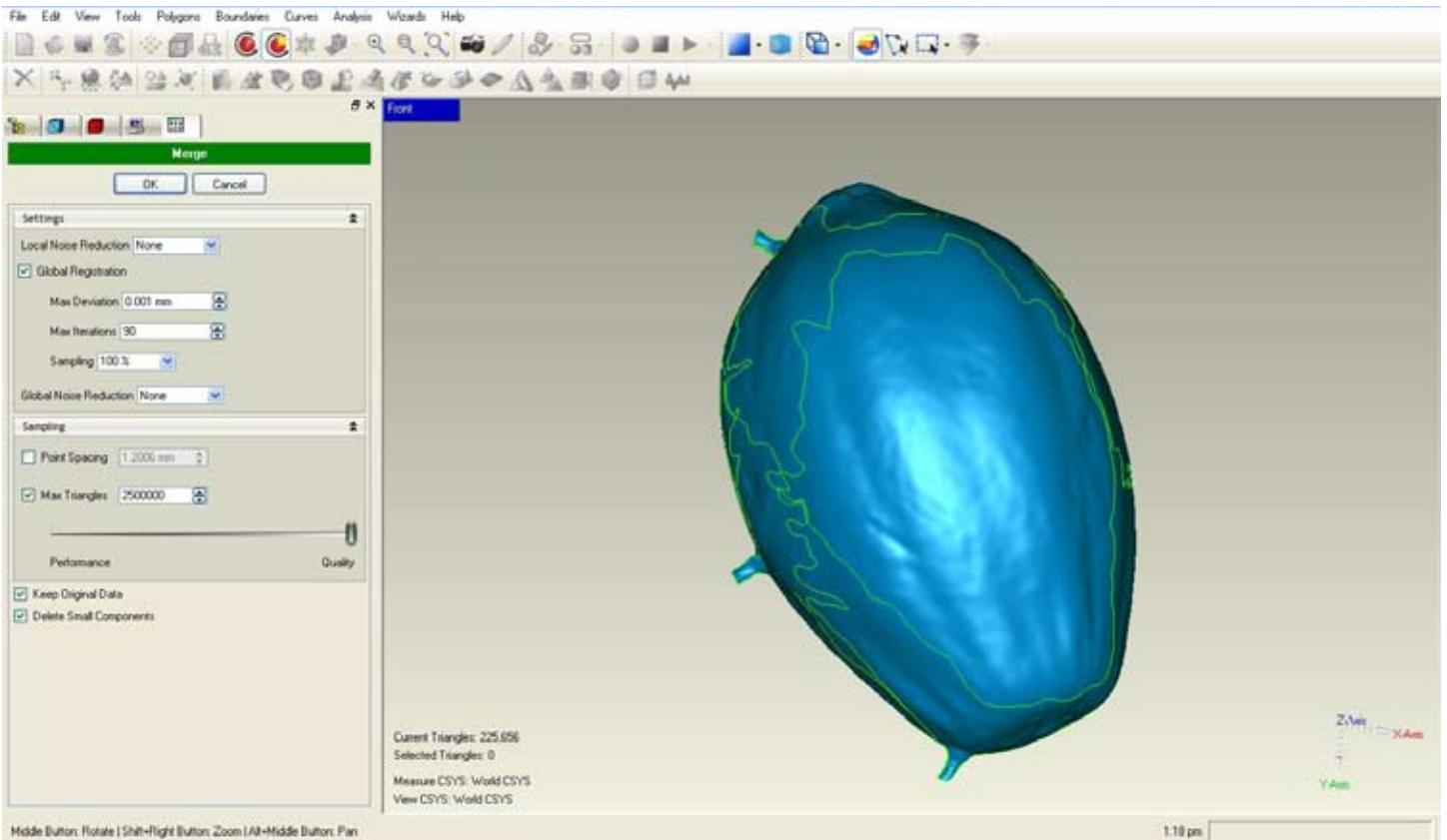
This is our squash after the registration process. Even though it is aligned, the two scans are still separated in the carpet named Group 1. The green lines indicate where the scans meet. So, we need to merge it. We select the Group1 and click on the Merge icon.
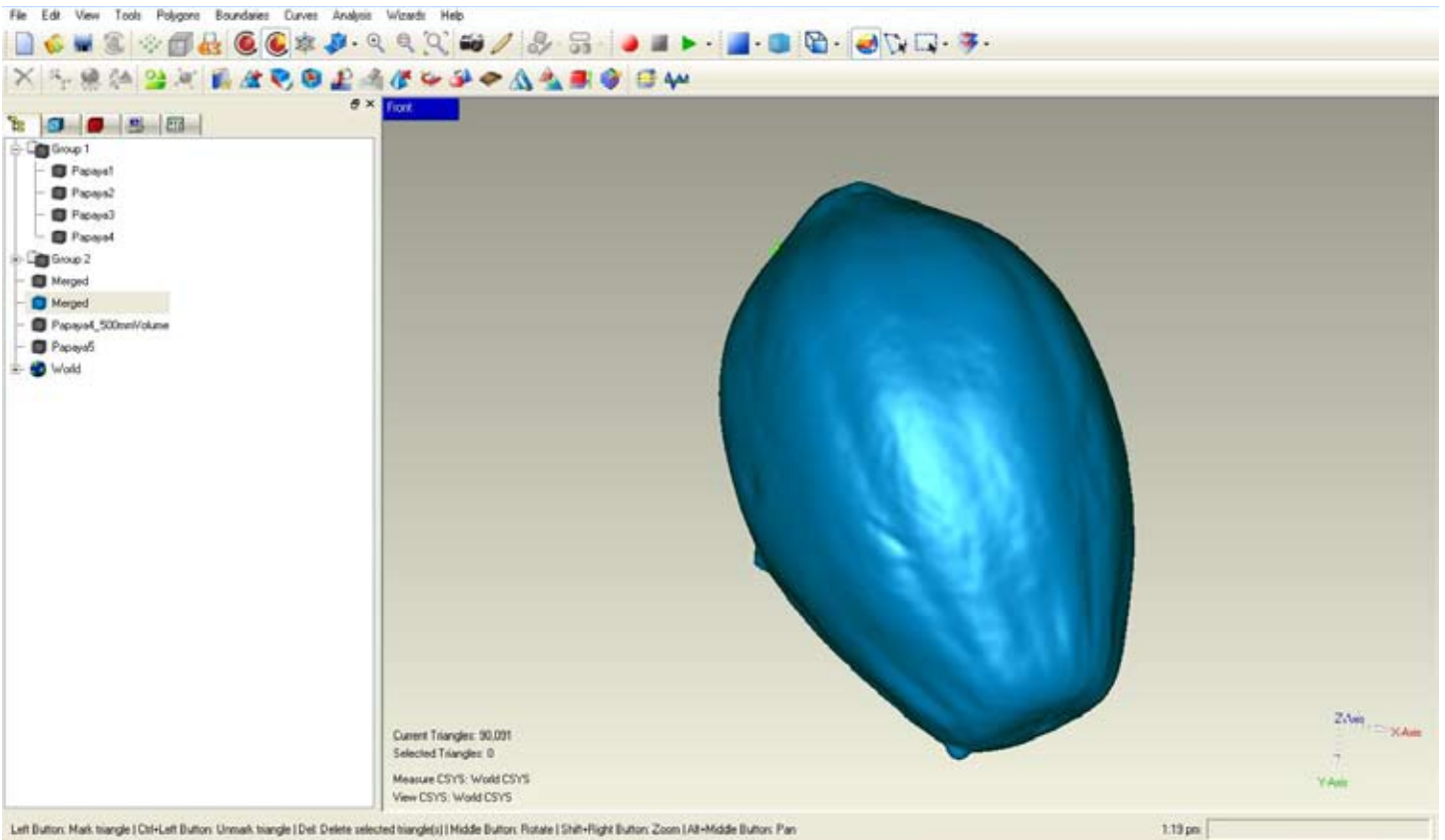
This is our object after applying Merge. You can see in the left panel, Geomagic saves the carpet named Group 1 and makes a new object named Merged. Now our papaya is one object.
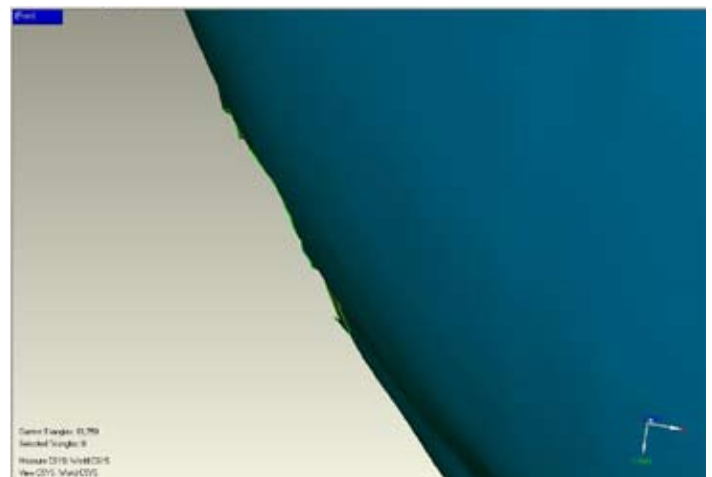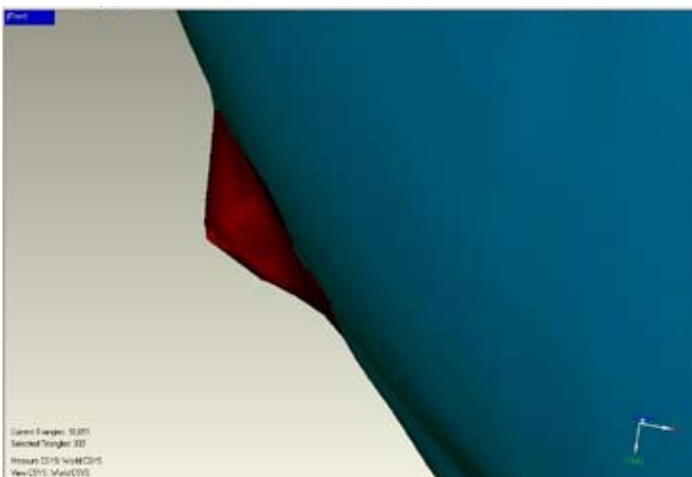
When we scanned the papaya we placed some thumbtacks on it to use as references, since this is an object with a very smooth surface and a regular shape, it would have been very difficult without any reference points. After merging our object we deleted these bumps simply by selecting and deleting them as you can see in the images above.
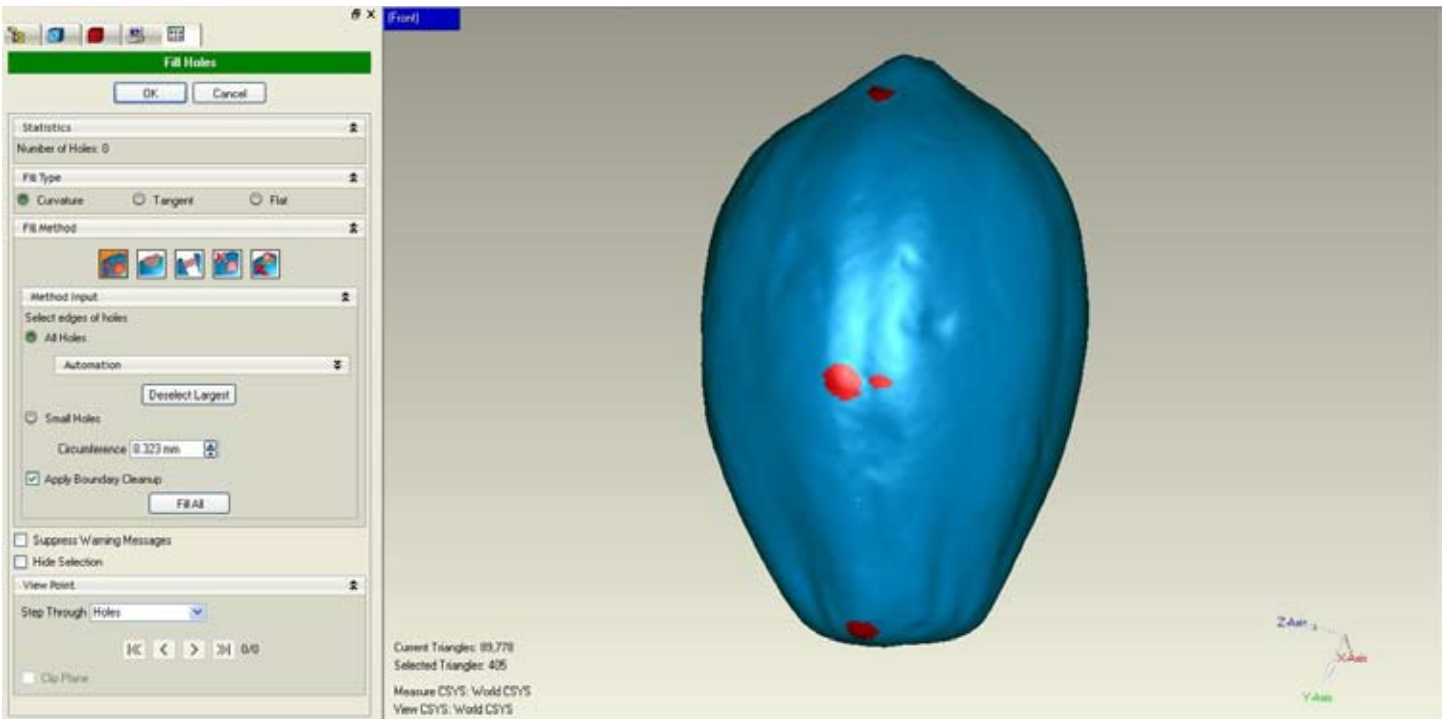
After removing the remains of the thumbtacks there were some holes in the papaya, so we applied the Fill Holes tools. The red areas show where the holes were and how they will be filled out. Normally the default settings will do a good job.
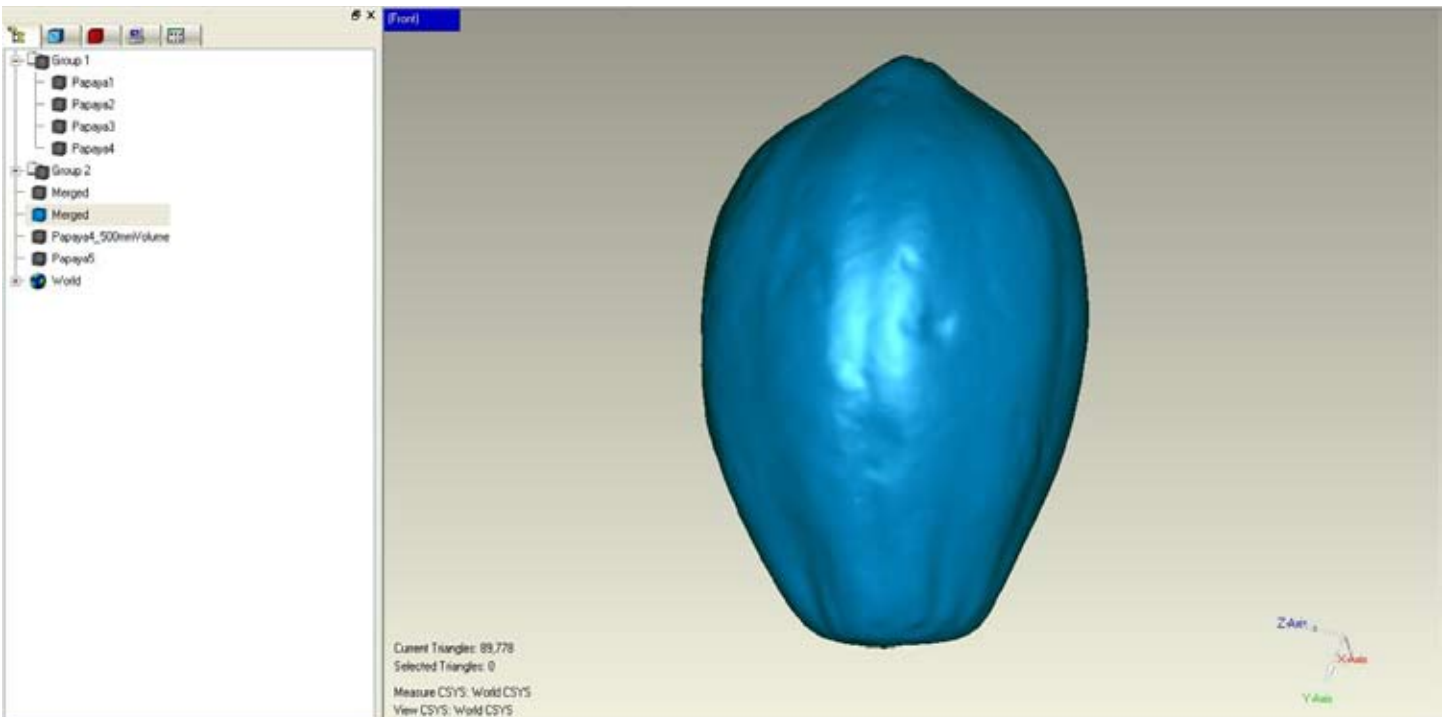
This is the papaya after filling out the holes.
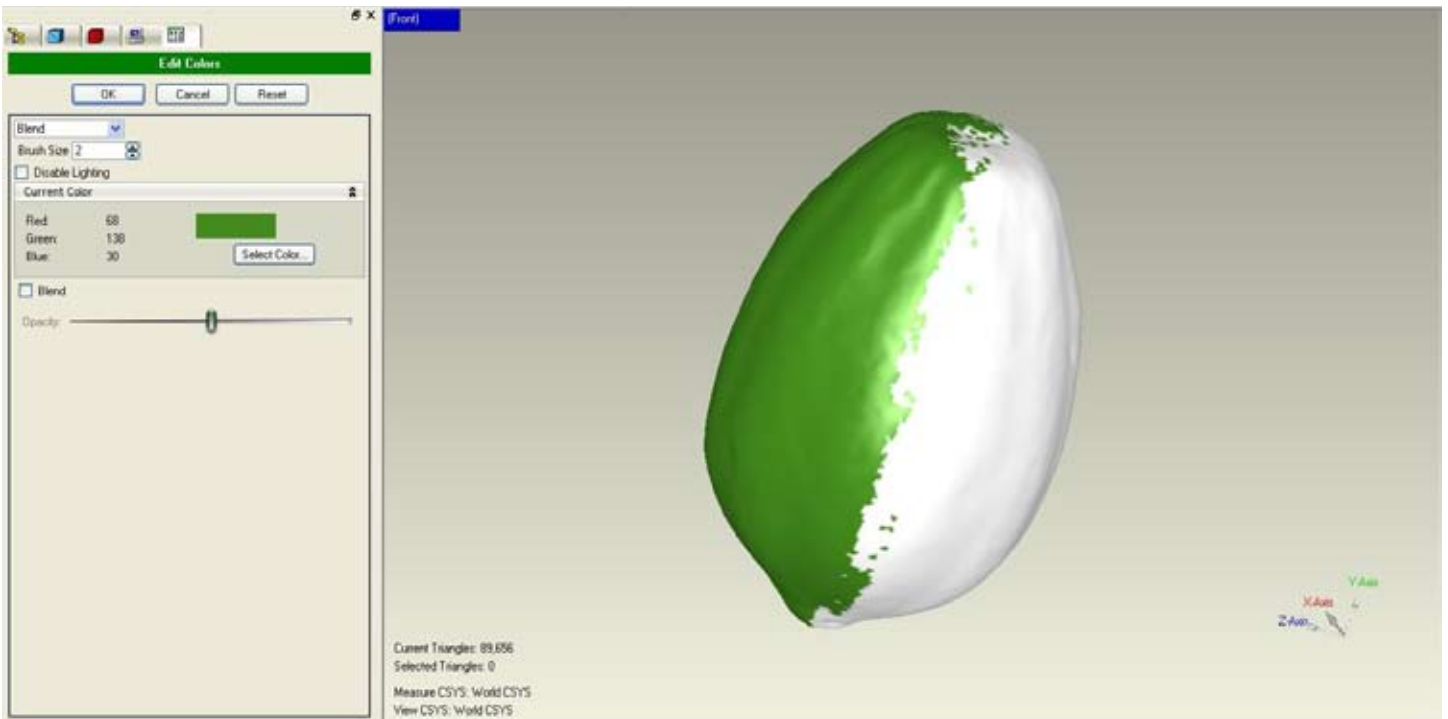
At the end we applied some color to the papaya to give it a more realistic look.
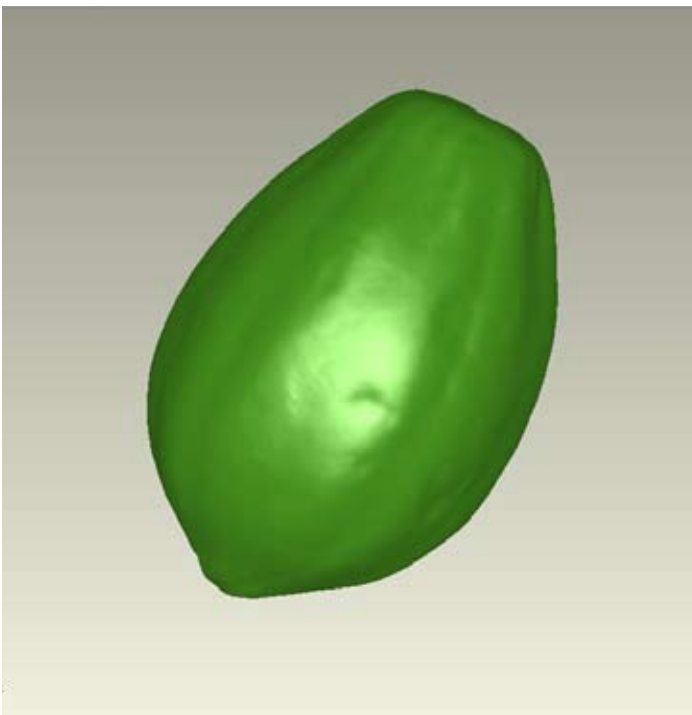
Here you can make a comparison of the scanned papaya and a real papaya.

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