

Veteran Memorial Bronze Statue 3D Scan Project

The model to be 3D scanned was made from mannequins that were dressed in military outfits and painted. The company creating the bronze statue added a clay base and also added clay to the models in certain areas to prepare them for the casting process. The project was to 3D Scan the model, make some changes and scale the data so the model is 9 feet tall. The data would then be used to CNC machine a master pattern for the investment casting process.

Step 1

EMS used their very high resolution Surphaser and Creform MetraSCAN 3D Scanners to 3D scan the soldiers, clay base and accessories.



3D Scanning of the soldiers with the Surphaser 3D Scanner



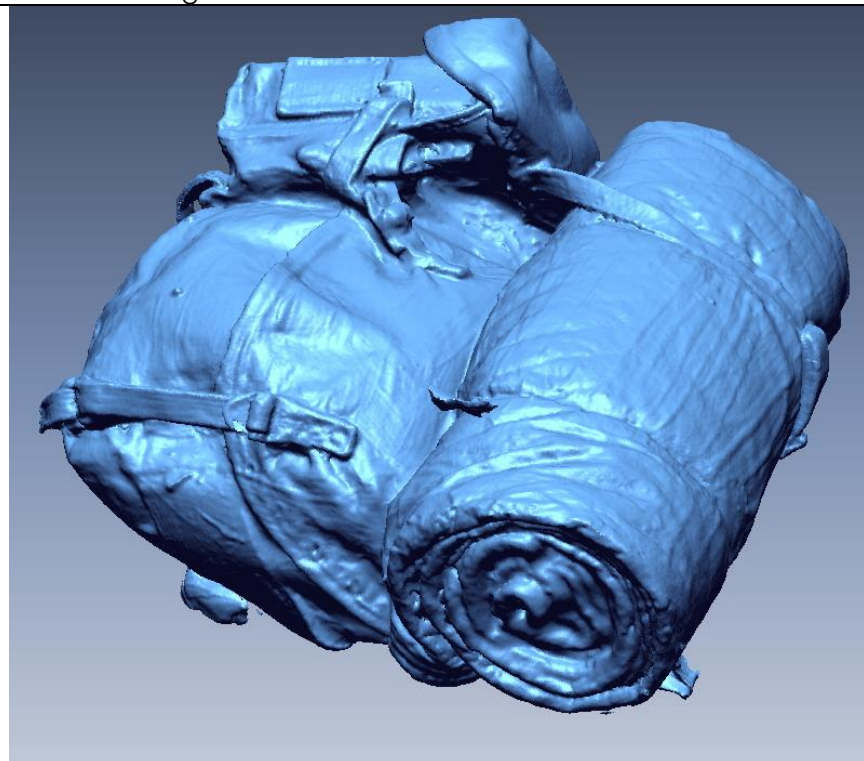
Close up of the model.



Close up of model – notice the rough finish in many areas.



3D Scanning the soldier's accessories including backpacks, canteens, ammo packs, grenades and more using a Creaform MetraSCAN hand held 3D Scanner.



3D Scan data of back pack

Step 2

The second step was to align, edit and merge all the Surphaser scan data. Once this was completed, EMS used SensAble Technologies FreeForm Modeling Plus (FFMP) virtual clay modeling tool to smooth all the scan data and fill in any areas the scanner could not "see". For example, behind the soldiers arms and guns, under their helmets and other areas. Also the support poles and other items were removed and the data smoothed in some rough areas.



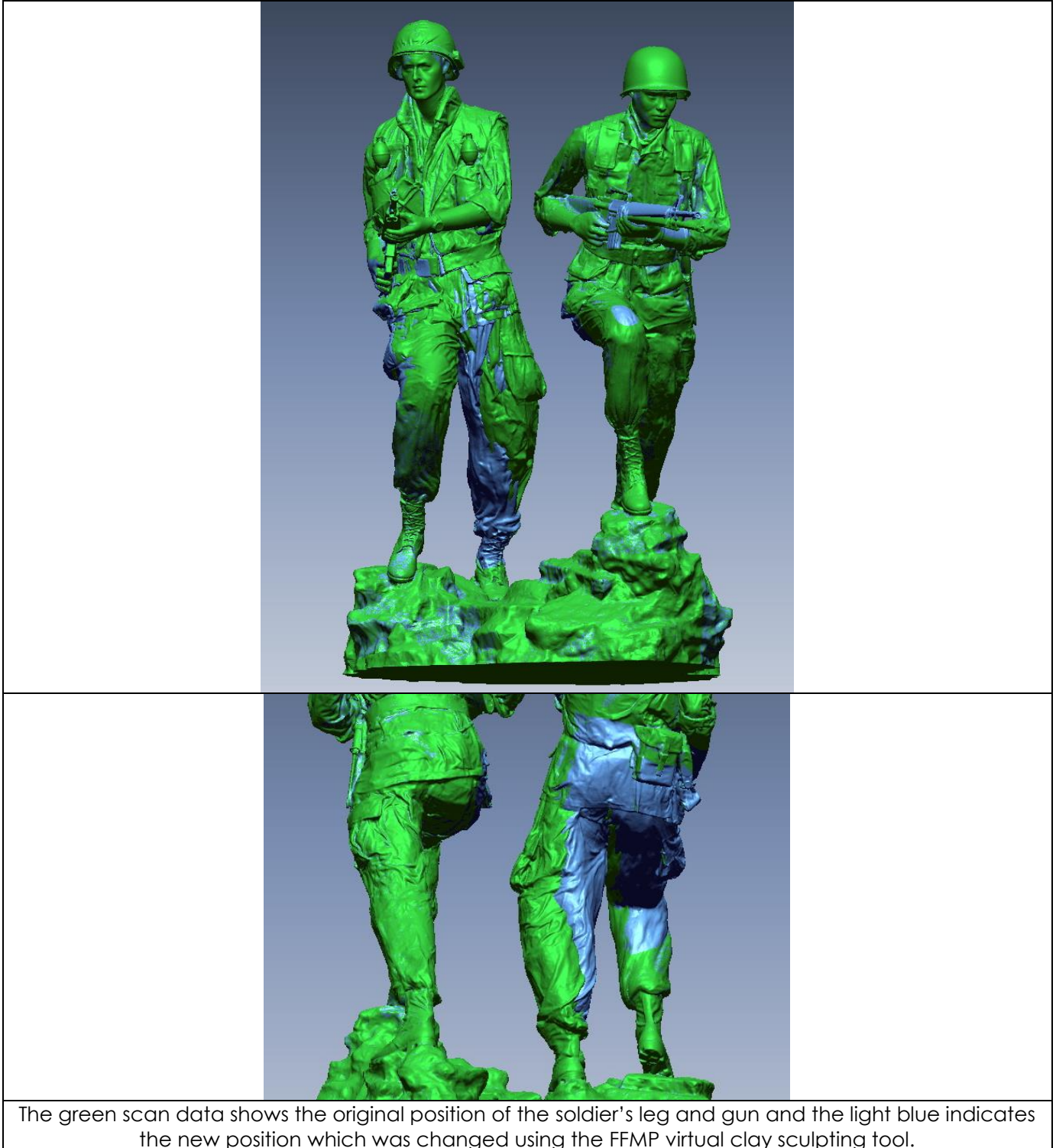
Completed 3D Scan model ready for review by the customer.



Close up of scan data

Step 3

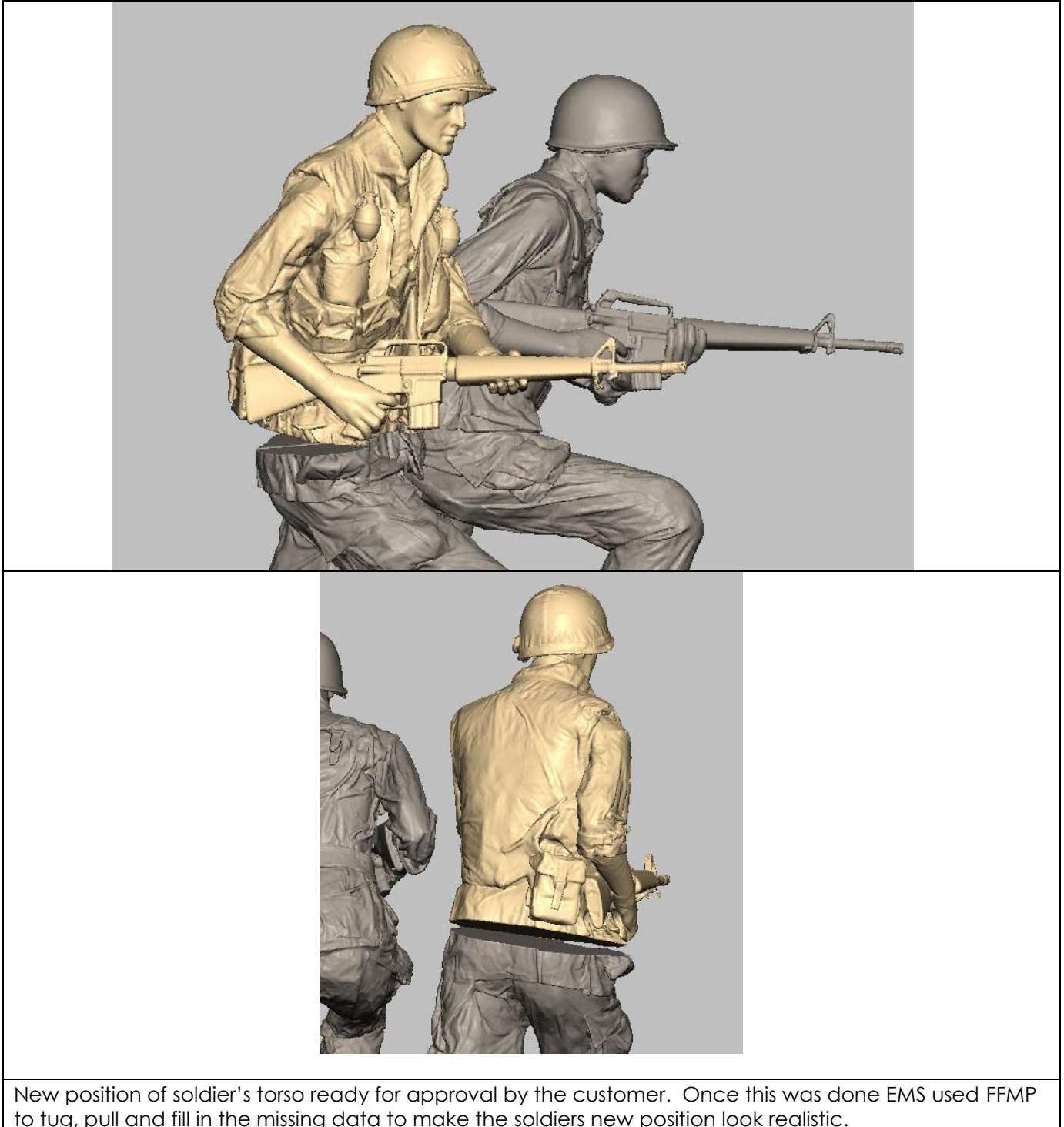
The customer reviewed the scan data and wanted to make some changes to the scan data model. Specifically they wanted the location of one of the soldier's guns and the leg/knee location of the other soldier moved. EMS used the FFMP tool again to make these changes.



The green scan data shows the original position of the soldier's leg and gun and the light blue indicates the new position which was changed using the FFMP virtual clay sculpting tool.

Step 4.

After reviewing the new model the customer wanted one of the soldier's torsos to be tilted more forward. Because this was a major change to the model, EMS first cut the model at the waste in FFMP to put it in the right position. Once the customer approved the new torso position, EMS used FFMP to tug, pull, carve, smooth and fill in the 3D scan data.



New position of soldier's torso ready for approval by the customer. Once this was done EMS used FFMP to tug, pull and fill in the missing data to make the soldier's new position look realistic.



Original position in green and new position in light blue after using FFMP to move, pull, tug, combine and smooth the new model.



The final model looks completely natural and no detection of all the changes made.



Final Model



As a thank-you EMS 3D printed a high resolution scaled model of the final scan model using their ProJet 3D Printer.

With these new changes the customer was very satisfied with the final scan data model. The model was now scaled up and it was approved to start the CNC machining process. The finished pattern will then go back to the foundry to start the investment casting process to create the final bronze statue.



The final statue is complete and put in place in Orlando Veterans Memorial Park so that everyone can honor our fallen heroes.



All the detail of the original model is preserved in the bronze casting thanks to 3D scanning.

To learn more visit www.ems-usa.com

5803 Breckenridge Pkwy • Suite D • Tampa • FL • 33610 Phone 813•971•2700 Fax 813•936•4752
Email: sales@ems-usa.com www.ems-usa.com