

3D scanning of the Marine Corps War Memorial

Although our [3D scanners](#) have been developed for [metrology](#) purposes, we are often called upon to scan objects for miscellaneous applications. Heritage preservation is a very interesting application because it is an opportunity to expand one's general knowledge. In July, I was asked to scan the United States Marine Corps War Memorial replica, located at the Marine Corps Recruit Depot in South Carolina. The statue is also known under the name of Iwo Jima Memorial.



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This famous statue brings back to life the actions depicted in this Joe Rosenthal picture, which enabled him to win the Pulitzer Prize for photography in 1945.



The United States Marine Corps War Memorial commemorates the moment the flag was heaved at the top of Mount Suribachi, south of Iwo Jima island, on the 23rd of February in 1945. It occurred during the Battle of Iwo Jima by 5 marines and 1 Navy medic (Sgt. [Michael Strank](#), Cpl [Harlon Block](#), PFC [Franklin Sousley](#), PFC [Rene Gagnon](#), PFC [Ira Hayes](#) and PM2 [John Bradley](#)).

The Battle of Iwo Jima is meaningful within the Marines. About one third of marines that died during World War II were killed during this battle. Also, one quarter of the medals of honour were awarded following the invasions of Iwo Jima. While the 3D scanning project was carried out, veterans and civilians visited and paid homage to the battle, a testament of the importance of this monument despite all the time that has gone by since.

The statue, located at the Marine Corps Recruit Depot, is actually a smaller replica of the statue of Felix de Weldon, located close to Arlington National Cemetery in Virginia. A few replicas are found throughout the United States as well. These are tributes to all Marine Corps military personnel that died fighting for their nation since 1775.

Since this replica is made out concrete and knowing this material deteriorates with time, the Marine Corps Recruit Depot wanted to get a 3D model of the statue in case it would need repairs in the future. For instance, if a portion of it detaches and breaks on the ground, the Marine Corps Recruit Depot will be able to remould and repair with very high accuracy the lost piece.

Scanning such a statue is a project that has its own challenges: the size, the number of details, the fact that it is located outdoors, etc. In addition to these challenges, this part of South Carolina is subject to unpredictable downpours during the summer time. Therefore, our team had to use a fast way to acquire the data.

In order to do so, I chose to use a combination of a long-range sensor (Surphaser 100HSX) and our [HandySCAN 700™](#).

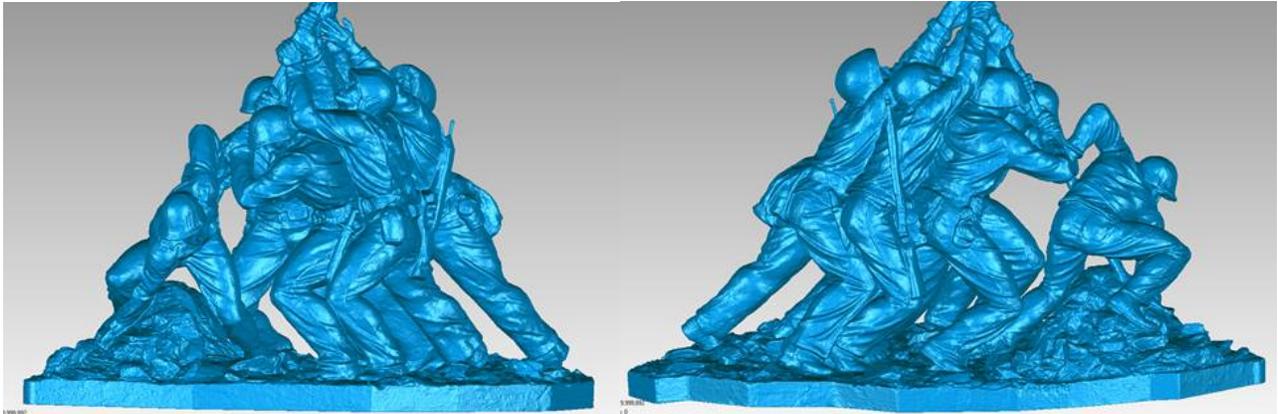


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Thanks to the Surphaser 100HSX, I have been able to create, very rapidly, a 3D model of the whole exterior surface of the statue. This device helps to acquire a high level of details. Consequently, I did not need to scan the same portions with the HandySCAN.

However, many portions of the surface had not been scanned (not visible when standing in periphery); this is where HandySCAN 700 was of great help.

The file created with the long-range sensor was used as a 3D reference in order to optimally fit all the scanned areas that were scanned with the help of the HandySCAN 700. This was achieved thanks to the seven laser crosses! Indeed, there used to be a time when acquiring such a large amount of data would have required many days! With this new technology, I finished the job in just a few hours. After a few manipulations with the files, a .stl file was created.



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Being used to working in the manufacturing industry, I love projects that take me out of my comfort zone. This project was spectacular, intriguing and culturally stimulating. I will have fond memories of my visit to the Marine Corps Recruit Depot in South Carolina!