



## **Module 10: Digitizing 3D Collections**

### **Webinar Series Review**

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The webinar *Data Applications in Cultural Heritage* presented by Harry Abramson from Direct Dimensions covers uses for 3D digitization within museums. As technology evolves there is more opportunity for organizations to develop their 3d collections. Above all, it is most important that this process is mission driven rather than by the technology itself.

3D Digitization is the process of converting a physical object into a three-dimensional digital format. Tools used can range from larger industrial scanners to an iphone camera. An accurate model is made from data collection using light and combined with geometric modeling and texture mapping. These digital copies of artifacts aid in conservation, allowing museum staff to record and replicate precise 3d models of an object. The size of projects range from the whole exterior of a building, to recreating the inside galleries, and small details on artifacts. These models can be publicly or privately archived for posterity as objects can deteriorate over time as they are displayed, weathered, and handled.

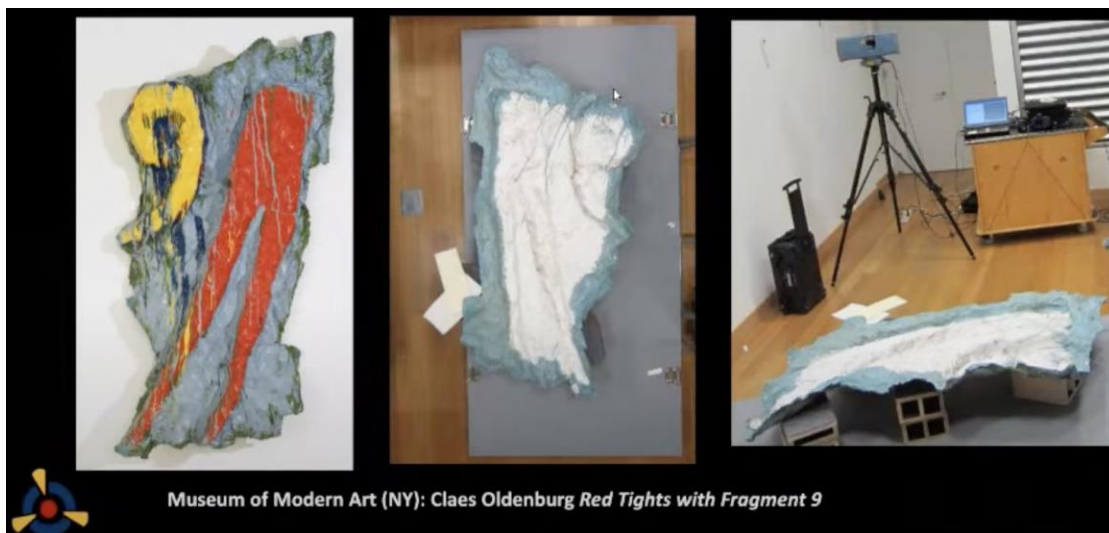
Public archives allow for a wider audience to engage with the artwork for academic and creative ventures. Visitors can now tour a museum virtually through 3d scans of exhibition spaces and the objects that fill them. [Google Arts and Culture](#) has a database of over 2000 museums and archives which people can access for free. More people from a farther distance can enjoy these spaces due to the lowered barrier of entry.

Museums can further engage with their audience, using crowdsourcing to collect new data. This is an opportunity for better diversity, equity, access, and inclusion (DEAI) representation and updating information that may be incorrect. Experts including people who have personal cultural relationships can more easily contribute to the narratives within museums.

These databases are also an opportunity for creative studies as people are now able to replicate artifacts. When 3D digitization is combined with fabrication methods such as a 3D router or 3D printer. A museum's audience can now have scaled replicas of their favorite pieces in their homes, schools and offices. Projects such as the archive [Scan the World](#) give access to 3D models which then can be 3D printed at home.

Museum staff can now use replicates as facsimiles when artifacts need to move off the floor for research or conservation purposes. Scanning is much cleaner than traditional molding and casting techniques. With digitization, the artifact goes through a less risky replication process while more detail is captured. This opens up the possibility of using precise 3D models as touch objects within galleries. Audiences can feel more connected to the pieces and there is opportunity to serve the visually impaired community.

In addition to producing replicas, 3D imagery can aid in the protection of the artifact itself. As objects can deteriorate over time, 3D scans can offer a precise snapshot for conservators. Multiple scans over a period of time can inform where deterioration occurs and give insight on the rate of change. Conservators can also use the negatives of artifacts to create storage options for delicate objects. Protective elements such as foam can be carved to the precise measurements of the artifacts, creating a perfect match.



Museum of Modern Art (NY): Claes Oldenburg *Red Tights with Fragment 9*

Example 3D artwork being scanned: Museum of Modern Art (NY) Claes Oldenburg's *Red Tights with Fragment 9*

With so many opportunities available, databases will keep growing over time. This raises some questions for long term sustainability and ethics. I believe there will be more discussion about what needs to be preserved and how all the information will be stored. How can we make sure users can find what they are looking for in such a large database? Can artifacts be deaccessioned if the information is already collected and archived? Who “owns” the art if everyone has access? What needs to be considered when recording 3d stories of people who will eventually pass?

These questions may shape the way museums work in the future and are a sign of change. With all the opportunities available I believe this change is growth as museums reconsider how they can use technology to engage with their audiences.

### **Resources and Technologies Featured**

The Museum Learning Hub Module 10 instructors discussed a wide range of software platforms, equipment, and other technologies that might be involved in the digitization of 3D works and objects and note that these technologies are always evolving. Here are a few for consideration:

[Scan the World](#)

[Google Arts and Culture](#)

[Video Intro To Reflectance Transformation Imaging \(RTI\)](#)

[3D scanning for Archaeology](#)