



# conservationtechnologies

## 3d recording

As part of National Museums Liverpool and based at the award-winning Conservation Centre, Conservation Technologies provides a tailor-made solution to a wide range of sculpture and monument conservation issues, as well as actively developing new technologies and opportunities for the museum and heritage sector.

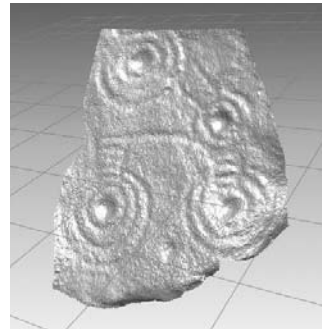
# 3d recording



3D recording of a classical marble statue

**Conservation Technologies** has extensive experience in using the latest laser scanning techniques to undertake high quality three-dimensional recording of cultural artefacts.

Using a low power laser beam, the surface of any object can be precisely measured in three dimensions, without any contact with its surface. The process is completely harmless. Conservation Technologies can undertake scanning in almost any location on objects with dimensions ranging from a few centimetres to several metres. Scanning can be carried out in the secure environment of the Conservation Centre of National Museums Liverpool. All 3D data collected during the recording of an artwork is handled with the utmost sensitivity.



Detail of scan of bronze age rock carving

The result of laser scanning is a highly accurate, three-dimensional digital model that can be viewed on a standard computer. This valuable addition to the archival record of the artwork can be used for a number of important applications:



3D digital model of medieval carved graffiti (Historic Royal Palaces)

## archive

A 3D digital model provides a very accurate record of the artwork at the time of the scan. This can be used as a means of characterising changes to the surface as a result of weather, pollution, accidents or vandalism. It also provides an insurance policy in case the artwork is stolen or destroyed, as a highly accurate replica can be created from the digital model.

## replication

Conservation Technologies specialises in creating highly accurate replica sculpture through the precise use of non-contact 3D recording techniques and subsequent manufacture into both synthetic and real materials such as marble, limestone and bronze. Skilled conservators then provide a hand-finish to the work, creating an authentic patina.

Replica sculpture is produced to the highest specification possible, enabling high value and rare artworks to be accessed and utilised without the risk of physical damage to the original. Such replicas have been created by Conservation Technologies for inclusion in museum exhibitions, to replace artworks removed from their original locations (due to threats from weathering, pollution and theft), to aid restoration of sculpture and to generate income for museums.



Original classical marble bust and replica before patination

# 3d recording



3D recording of Peter Pan

## education and research

The ability to closely examine 3D digital models of original pieces is a powerful educational tool. A digital model is easily manipulated on-screen to allow close examination of the surface by viewing from different directions and under different lighting conditions. The user can also zoom into the surface to reveal fine detail and precise measurements can be made. The technique also improves access to cultural artefacts as digital models can be sent from one museum to another. Objects in a museum's store can be put on display 'digitally' and can be set into a virtual environment to create exciting interactive displays. This means that 'virtual' exhibitions can be created without an artwork having to change location.

## 'touch' technology

Conservation Technologies is actively researching and developing new technology which can bring benefits to conservation and the study of sculpture. Virtual Reality Touch Technology (Haptics), allows a person to 'feel' the 3D digitized model of a sculpture. This technology is being used to produce new, tactile and interactive displays for exhibition and educational uses.



Exploring a Roman marble relief panel using 'touch' technology

## virtual restoration

The 3D digital model of an artwork can be 'restored' digitally by replacing missing parts, repairing areas of damage and by the addition of colour. Such a restoration can be used to recreate earlier appearances of an artwork without interfering with the artwork itself. It also allows parts of a sculpture on display in different locations to be brought together and assembled digitally to 'reconstruct' the original.

## client list

Conservation Technologies undertakes 3D recording work for clients from many different areas, including museums, ecclesiastical organisations, local authorities and private clients. Our client list is extensive and includes:

British Museum • Victoria and Albert Museum Enterprises Ltd • Historic Royal Palaces  
Glyptotek Museum (Copenhagen) • English Heritage • Liverpool City Council  
Breedon-on-the-Hill Church • Prestbury Parochial Church Council

# case studies



3D digital model of Norman doorway  
(Prestbury Parochial Church Council)

The following case studies provide an overview of the range of projects that Conservation Technologies carry out.

Conservation Technologies scanned a 1 m tall sandstone Saxon cross in the grounds of St. Peter's church, Prestbury (Cheshire) for Prestbury Parochial Church Council. The badly weathered cross was in a fragile condition and scanning provided a highly accurate 3D archival record, prior to conservation work. A stone doorway, measuring 3 m wide by 6 m tall, of a Norman chapel at St. Peter's church was also scanned. The stone was badly weathered and much of the detailed carving has been lost. The 3D record provides a detailed 'snapshot' of the condition of the doorway at the time of scanning.



Detail of replica Roman tombstone  
(Manor House Museum, Ilkley)



Detail of face of replica marble bust  
of Caligula (Glyptotek Museum)

Conservation Technologies used laser scanning to record prehistoric rock art in situ at Rombald's Moor (West Yorkshire) as part of a study carried out by the Institute of Archaeology. Three petroglyph panels were recorded to sub-millimetre accuracy. Examination of the digital models revealed features in the stone surface not readily discernible on site or by using other 3D recording techniques.

Historic Royal Palaces commissioned Conservation Technologies to laser scan examples of medieval graffiti carved by prisoners at the Tower of London. Laser scanning was undertaken in situ and the precise digital models were used to create highly accurate replicas for display in a new permanent exhibition. The replicas were created without touching the fragile surface of the original carvings. Laser scanning was also used by Conservation Technologies to create a precise 3D digital model of a Roman marble bust of the emperor Caligula, from which a high quality replica was created in marble for the Glyptotek museum in Copenhagen. The replica bust was used to demonstrate the use of colour in Classical sculpture.



3D digital model and mirror image of  
detailed bronze figure from statue of Buddha

Other projects have included: creation of highly detailed missing figures from a bronze statue of Buddha; virtual restoration and replication of the only Romano-British skull found on Merseyside for facial reconstruction; replication of a 1.5 m tall Roman tombstone, a slate Viking Cross and a 1.3 m limestone Saxon carving of an angel; production of an edition of replica terracotta cherubs by the sculptor Rysbrack for museum retail.

## enquiries

For further information on any of the services we provide, please contact:

### Conservation Technologies

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