

Leica Geosystems **TruStory**

Digitally documenting history for future generations



The more than thousand-year old Benedictine Archabbey of Pannonhalma, a UNESCO world heritage site, is one of the oldest historical monuments in Hungary and the second largest territorial abbey in the world. The wonderful wood carvings of the red marble Porta Speciosa, the original main entrance to the church during the Middle Ages, is the first masterpiece of the Hungarian classic Gothic style. In January 2014, engineers using the HDS7000 from Leica Geosystems, were able to document the fine details of this great portal, digitally preserving it for future posterity.

The SziMe3D AR project helps to preserve national historical monuments and artefacts of outstanding importance by creating high definition 3D models. The project is co-financed by the European Union

and uses highly technical laser and photo technologies to produce 3D models of objects and artefacts, reconstructing them as close to their original state as possible, to be able to visualise them in cultural, research, touristic and educational environments.

For the digital documentation of the Porta Speciosa at Pannonhalma, project engineers used the high-speed HDS7000 laser scanner that is able to record more than one million points per second, making it a particularly efficient tool for measuring the complicated and elaborate ornamental work found on this portal.

The richness of the vaults and forms of the Porta Speciosa makes it one of the most beautiful masterpieces of Hungarian medieval art. The bevelled arches and vaults



■ Company

SziMe3D AR, Hungary
(www.szime3dar.com)

■ Challenge

To digitally document details of the gothic entrance, Porta Speciosa, a UNESCO World Heritage site at Pannonhalma

■ Date/Project period

2014

■ Project Summary

Instruments

Field

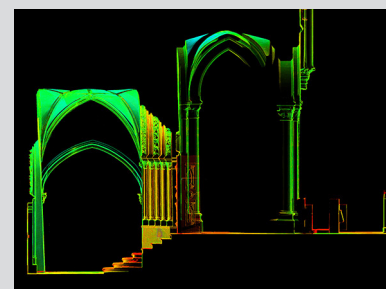
HDS7000 Laser Scanner from Leica Geosystems

Office

Leica Cyclone 8.0

■ Objective

- To create a 3D model of the gate and to build and verify hypotheses of former architectural periods
- To disseminate knowledge about the World Heritage site and provide a spectacular tool for scientific research, and also for tourist presentations and education materials
- To offer proven and tested technologies and applications to representatives of various disciplines, e.g. archaeologists, art historians, restorers.





■ Benefits

- The scanner is capable of fast, accurate and highly dense data collection and is easy to operate
- An efficient tool for accurately measuring geometrically complex objects
- It provides data for creating a textured 3D model of the surveyed object
- Enables surveying without direct contact with the artefact
- Original information may be retrieved any time from the archived point cloud

of alternating red marble and white limestone were erected on five pairs of columns on each side of the entrance, three vaults being richly decorated with ornamental leaves and three heads. The gateway, originally the main entrance to the church, was named after the elaborate portal of the church in Jerusalem, and opens from the cloisters, where the monks used to gather for prayer. Built in the thirteenth century, the portal has survived amazingly intact.

The engineers digitally preserved the current condition of Porta Speciosa and created a spectacular 3D model that could be used to reconstruct the portal authentically and to give an informative, interactive 3D presentation as well.

The HDS7000 from Leica Geosystems laser scanner did not

touch the artefact in any way, nor was the condition of the portal damaged. The scanning and data collection was followed by significant post-processing, since the bevelled, richly sculpted arches could not be easily scanned and attention to the fine, ornamental details was needed.

As a result of the digitalisation, original information can be easily retrieved at anytime and anywhere. The authentic 3D models of various architectural time periods have also helped to verify these hypotheses.

"A very important task of the SziMe3D AR project is to introduce new and proven technological solutions to researchers because these tools and applications help make the scientific research of archaeologists, monument protection experts and art historians much easier.

The new, innovative solution used in the SziMe3D AR project proved very effective to share our current knowledge of national treasures and the World Heritage sites. The spectacular interactive 3D presentations used in museums, for educational materials and for tourist attractions have certainly met viewers' ever-growing visual demands." says Porta Speciosa's Digital Documentation Project Manager András Fehér. AR SziMe3D, located in Budapest, HU, produces digitalized 3D object, surface and environment models using 3D scanning to preserve, reconstruct and present historical assets and cultural heritage.

For more information visit:
<http://szime3dar.com/en/>