

FIG
2018
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3D Modeling of Ancient City of Kilistra's Buildings with Terrestrial Laser Scanning

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INTRODUCTION

- This paper presents the use of terrestrial laser scanning in order to effectively produce, prior to intervention, accurate and high-resolution 3D models of a three main ancient buildings with engravings in the city of Kilistra dating back to the Hellenistic and Roman period.

- The Cross Church, Ceramic Workshop and Başpınar Cistern in Kilistra have been scanned by a Terrestrial Laser Scanner and 3D modelings have been made of the scanned data. This process will be a first step in the operations of cultural heritage restoration in this region and the processed data with this technique can be used to systematically improve archaeological understanding of such complex structures.

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Başpınar Cistern



Ceramic Workshop



The Cross Church

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METHODOLOGY

- The approach used to obtain a high-resolution 3D model of the sites with terrestrial laser scanning can be summarised in the following steps :
- Data Acquisition with the long-range, phase-based scanner FARO Focus3D X 330.

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- Point Cloud Processing with FARO Scene software and JRC 3D Reconstructor.
- Meshing and 3D Modelling which involved data triangulation to derive a 3D triangular mesh.
- Data Storage in digital form at maximum resolution without losing texture information.

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A 3D model of Başpınar Cistern generated with Faro Scene.

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CONCLUSION

- The 3D models can be scaled and rotated in order to define the best point of view. One of the advantages of having such a high-resolution 3D model of an object is the ability to visualize, plot, study and extract easily 2D and 3D information from various points of view and at different scales.

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- Another advantage of the 3D modelling of Kilistra's ancient buildings is that it makes the geometrical calculations easier like area & volume calculations, arcs calculating and generating a full constructional plot of the site or produce maps and cross-sections.

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- Finally, preservation of historical and cultural heritage is one of the important issues that should concern us to save the history of our kind. Many of our historical and cultural heritage are faced with the danger of disappearance due to natural factors and carelessness. 3D modelling with TLS presents a simple, economic and practical way to achieve this goal by digitally archiving these types of sites.