3D4Delphi: Modeling of archaeological uncertainty by combining modern 3D surveying methods for the scientific documentation and promotion of cultural heritage
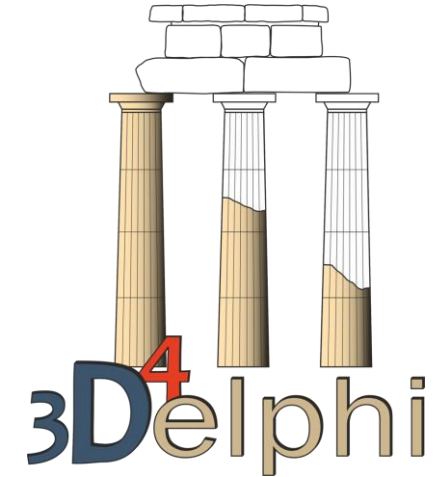
Application to the archaeological site of Delphi.

Objectives

The objective of 3D4Delphi is the development of new innovative methods of documentation, analysis and promotion of cultural heritage monuments combining, for the first time, modern techniques of 3D surveying and the mathematical modeling of archaeological uncertainty, by incorporating it in the three-dimensional reconstruction of archaeological monuments. A combination of various non-invasive 3D imaging techniques and methods will be applied, through terrestrial and aerial (from drone or UAV) photographs, laser scanners or optical scanners, with different operating principles, ranges and accuracy, the results of which will be a subject of combined processing with the aim of making the best possible use of them for the scientific documentation of cultural heritage.

The analysis of the resulting 3D data will be based for the first time on the development of mathematical modeling algorithms of archaeological uncertainty. In this way, multiple versions of 3D reconstructions based on historical data will be offered, as well as excavation findings, which will provide a completely new range of uses for archaeological 3D models, broadening the horizons of archaeological study, such as investigating archaeological hypotheses, comparing uncertainties between different models and the identification of cases where further archaeological research may be required.

The results and the new methods of 3D documentation will provide the basis for the development of Augmented Reality (AR) applications, implemented with modern software development tools. Visitors will have the opportunity to browse the archaeological site while receiving, on a mobile phone or on a specialized AR display, 3D information in relation to the archaeological monuments as they may have existed in the past,

including elements of archaeological uncertainty, combined with real-world exhibits, so that they can acquire the sense of "cultural experience" and broaden their knowledge.

Partners
Hellenic Mediterranean University
Creative Thinking Development – Cre.Thi.Dev
Ministry of Cultures and Sports – Fokida Ephorate of Antiquities
Technical University of Crete
JGC Geoinformatic Systems S.A.

Links
http://www.3d4delphi.gr