3D-Technology in Archaeological and Cultural Heritage Documentation, Research and Management

Chairs: Marco Block-Berlitz, Hendrik Rohland I Germany

The usage of 3D technology in archaeology to improve the work-flows of documentation, research and presentation of archaeological sites, cultural heritages sites, and objects remains an ever growing field. In this session we want to talk about practical solutions and showcase current tools in the field of 3D-reconstruction of real-world-objects, be it image- or measurement-based. We are interested in experiences and developments regarding the use of platforms like UAVs (Unmanned Aerial Vehicles) and UUVs (Unmanned Underwater Vehicles) for the collection image- and other sensor-data. Especially in the field of underwater archaeology, practical solutions for reliable georeferencing are still sought after.

A very important part of the topic are the software tools for the processing, storage, retrieval and analysis of 3D-data. The first major issue is the securing of data quality, transparency and reproducibility of research processes and results. While proprietary software packages have eased the process of 3D-model creation, they often constitute a black box. Furthermore, high license fees create an entrance barrier, reducing reproducibility of research. Therefore we are especially interested in developments and advancements of open-source software and work-flows for the creation, analysis and publishing of 3D-data.

Another question still under discussion is the development of appropriate tools and data structures to work with and store 3D-models and corresponding information. Nowadays, most of 3D-models generated of archaeological sites and cultural heritage assets have a certain showcase-character: They give a good visual impression of the object of interest, but for further analysis most studies rely on derived products such as plan drawings and ortho-photos, which are easier to annotate and analyse. We are interested in innovative ways, to leverage the potential of 3D-data for documentation, analysis and monitoring of archaeological and cultural heritage sites in the 3D-environment. Case studies might, for example, be concerned with the classification and annotation of 3D-models and linking it to data structures for the documentation of qualitative and quantitative information connected to them.

This session invites papers dealing with topics such as:

- Complete work-flows and case-studies,
- Decision/planning support processes for excavation and heritage documentation campaigns,
- Georeferencing and quality assurance,
- Processing pipelines and work-flows for 3D-reconstruction, especially FOSS-solutions,
- Monitoring: continuous excavation and site recording for documentation, for conservation and long-term studies,

- Data management solutions for recorded data, annotation and integration of 3D-data with qualitative data and long-term accessibility of 3D-data,
- Innovative applications for the analysis of 3D-data for archaeological research questions.

Contributions and perspectives are welcome, and may include the topics listed above or further improve established practices and processe

#3D-Documentation #UAV,Structure-from-Motion #Research Infrastructures