3D Excavation Geodata and GIS

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There is no archaeology of large urban and underground infrastructures without 3D fieldwork geodata.

This round table dealt with 3D excavation geodata and its computational use. Meaning the creation of 3D geodata in the field, as well as the scientific analysis of such data. The use of geographic information systems (GIS) with 3D capabilities was a central aspect of this round table.

3D fieldwork records, geodata and GIS seem to be a harmonic trio, but there are some practical problems. "Traditional" digital fieldwork records are created with total station and CAD software—and CAD offers real advantages for 3D data. On the other hand CAD is not good in dealing with attributes. The attribute problems may be solved by using geodata and GIS, but 3D GIS is expensive and so far FOSS GIS does not offer adequate 3D features. For the collection of 3D field data FOSS tools like "Survey2GIS" or "TachyGIS" can be used. But are there alternatives? And how can this 3D data be adequately displayed in GIS?

Alternative 3D measurement methods such as laser scans or SfM allow fast workflows and gather large amounts of 3D data. But are they well adapted to archaeology? How might we adequately exploit the potential of this 3D data now and how can we analyze it in a scientific way? Which geodata structures and types are best suited? How can we provide permanent access to it over years and years?

We discussed archaeology-driven software requirements for the development of adequate 3D GIS tools. We discussed brand new archaeological analysis methods for dealing with 3D geodata. It was a practice-oriented exchange of experience on 3D documentation of archaeological excavations—both the methods and consequences.

Survey2GIS. online: https://www.survey-tools.org

TachyGIS, online:

http://www.landesarchaeologen.de/fileadmin/Dokumente/Dokumente_Kommissionen/Dokumente_Archaeologie-Informationssysteme/Dokumente_DGD-WS/V_Goeldner1_TachyGIS_Artikel.pdf]

- archaeological excavations (rescue excavations, …)
- 3D measurement and documentation
- survey and analysis
- geodata types and structures
- strategies for sustainable preservation of archaeological geodata (content and function)
- paradigm shift from CAD to GIS

- practice-oriented exchange of experience

- FOSS

- Survey2GIS (that supports transformation from offline total station data to geodata)

- TachyGIS (that shall be able to input 3D measurements online from total station to GIS and to provide an adequate 3D monitor).