Digital tools and methods for documentation

Headline Intro: max. 48 Z+L

Traditional pen-and-paper techniques and methods of documentation, such as drawing and photography, excavation diaries and find registers are being replaced by digital equivalents. This transition is by no means straight forward as new technologies continue to challenge traditional working habits and research processes. To accommodate the need for flexible new tools, the customizable database client iDAi.field 2 has been designed as a powerful digital tool for documenting and publishing excavations. Learn more about the latest documentation technologies, such as 3D scanning/LiDAR, Structure from Motion and much more, on these pages.

Digital documentation technologies

Beyond replacing traditional pen-and-paper tools with software and digital devices, modern technological developments have also produced entirely new tools that have had profound impacts on the practice of archaeological surveying and recording. Since the 1990s, laser scanning devices (both terrestrial and aerial, in the form of LiDAR) have allowed archaeologists to capture artefacts, monuments and sites in full 3D and with unprecedented detail. More recently, these powerful but expensive, hardware-based technologies have been complemented by much cheaper and more efficient software-based approaches. Most importantly, full 3D reconstruction from series of overlapping images has become a routine tool, thanks to innovations in the areas of Structure from Motion and Multi-View Stereo.

* Archaeocopter: UAV-based Structure from Motion

[www.archaeocopter.de](http://www.archaeocopter.de/)

* ArcLand (LiDAR, Remote Sensing)

<http://arcland.eu/>

* iDAI.field 2: Replacing pen and paper with digital clients

<https://github.com/dainst/idai-field>

* Survey2GIS: Automated survey data processing for GIS  
  https://www.survey-tools.org/

Visualization and modelling

With the availability of new, ever more cost-efficient digital data capturing tools, ever more powerful means of visualizing and modelling rich datasets are being devised. Desktop-based 3D reconstruction and VR modelling solutions are increasingly accompanied or even substituted by online systems that allow seamless data visualization and publication on the Internet.

* Hamadab 3D  
  [www.hamadab3d.com](http://www.hamadab3d.com/)
* 3D models in iDAI.objects  
  arachne.dainst.org/search?q=3d

Recording systems of field projects

Recording data on site is still at the heart of archaeological fieldwork. Excavations, large-area surveys, monument surveys and related activities require means to capture data digitally that are as fast and flexible as the traditional notebook but result in borne-digital data without the need for a separate digitization workflow. The DAI’s primary client for field data recording is iDAI.field2, an open source approach to customizable database design, deployment and maintenance, including reliable ad hoc data synchronization and backup methods. Our client is designed to provide a basic workflow and data structure that matches the essential characteristics of most archaeological field workers. But it is also highly customizable to cater for the individual settings and objects of interest encountered in the vast variety of working environments and research projects. Modern technologies such as NoSQL backend and JSON-based data structures make iDAI.field2 a flexible, open source tool for free use on all major operating systems.

* IDAI.field2  
  <https://github.com/dainst/idai-field>

The world in 3D

* MayaArch3D - A web-based 3D GIS for archaeological research  
  <http://www.mayaarch3d.org/language/en/sample-page/>
* Karakorum, The reconstruction of the ‘Great Hall’  
  <https://youtu.be/ZXA8V04CaBs>
* Die Nekropole von Dra' Abu el-Naga/Theben  
  https://www.youtube.com/watch?v=14GdA3fEdcQ
* Uruk, Anu-Zikkurat  
  <https://arachne.dainst.org/3d?id=72>
* Uruk, Pantoffelsarkophag  
  <https://arachne.dainst.org/3d?id=73>
* Uruk, Kinderskelett  
  <https://arachne.dainst.org/3d?id=71>