

POINT+CAD



Documentation is the most important task during archeological excavations. To improve the documentation archeologist use SFM and LiDAR technologies to capture the excavation. Unfortunately these large point clouds are only used for presentation. This is due to the fact that accessing and manipulating point clouds are a challenging process. The goal is to create an easy to use software for point cloud annotation on excavation sites.

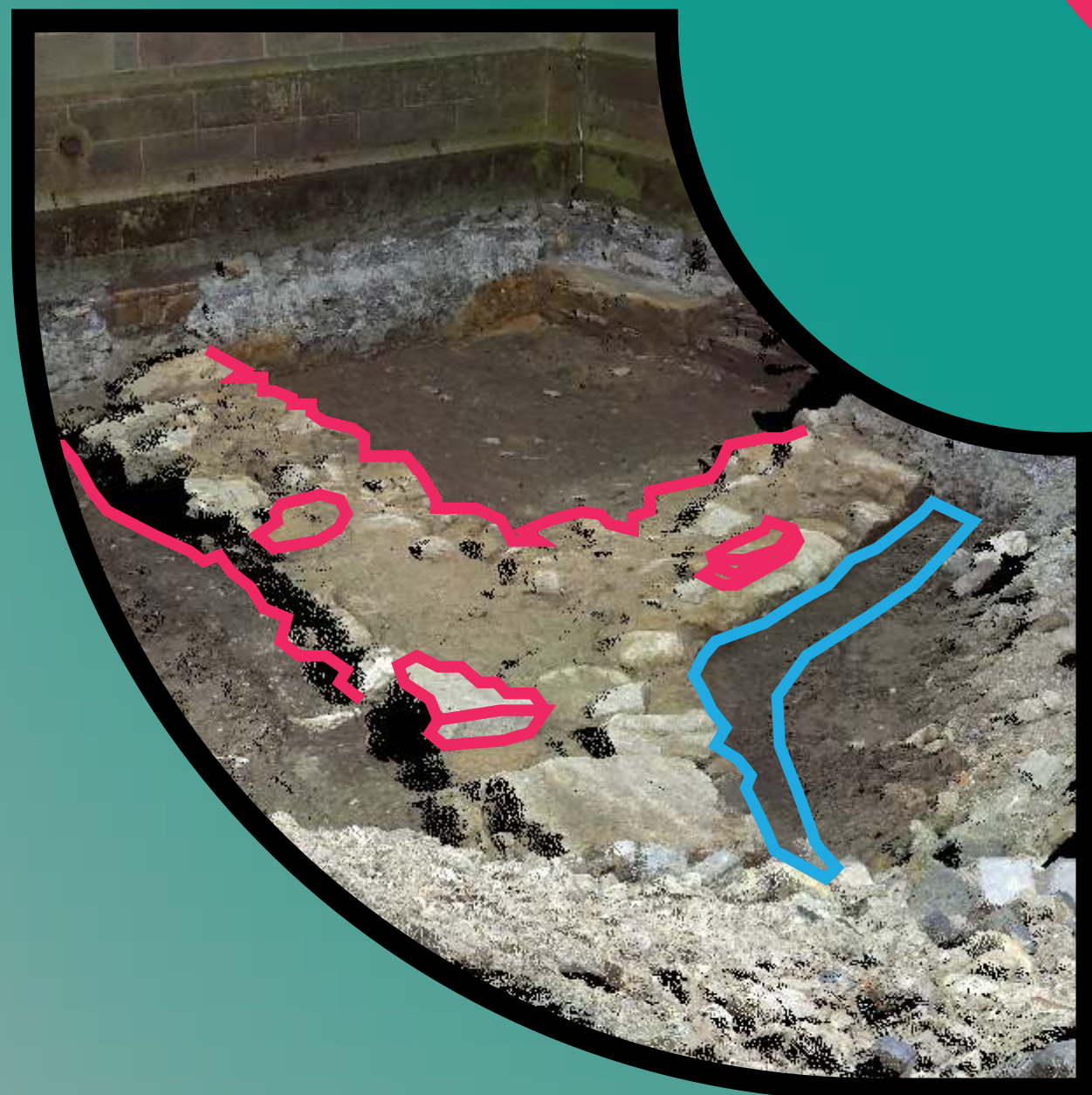


The data acquisition process is accelerated with the help of measurement systems. These systems are capable of capturing very dense point clouds that improve conventional hand drawings. PointoCAD provides support for binary (LAS, LAZ) and ASCII file formats for point clouds.

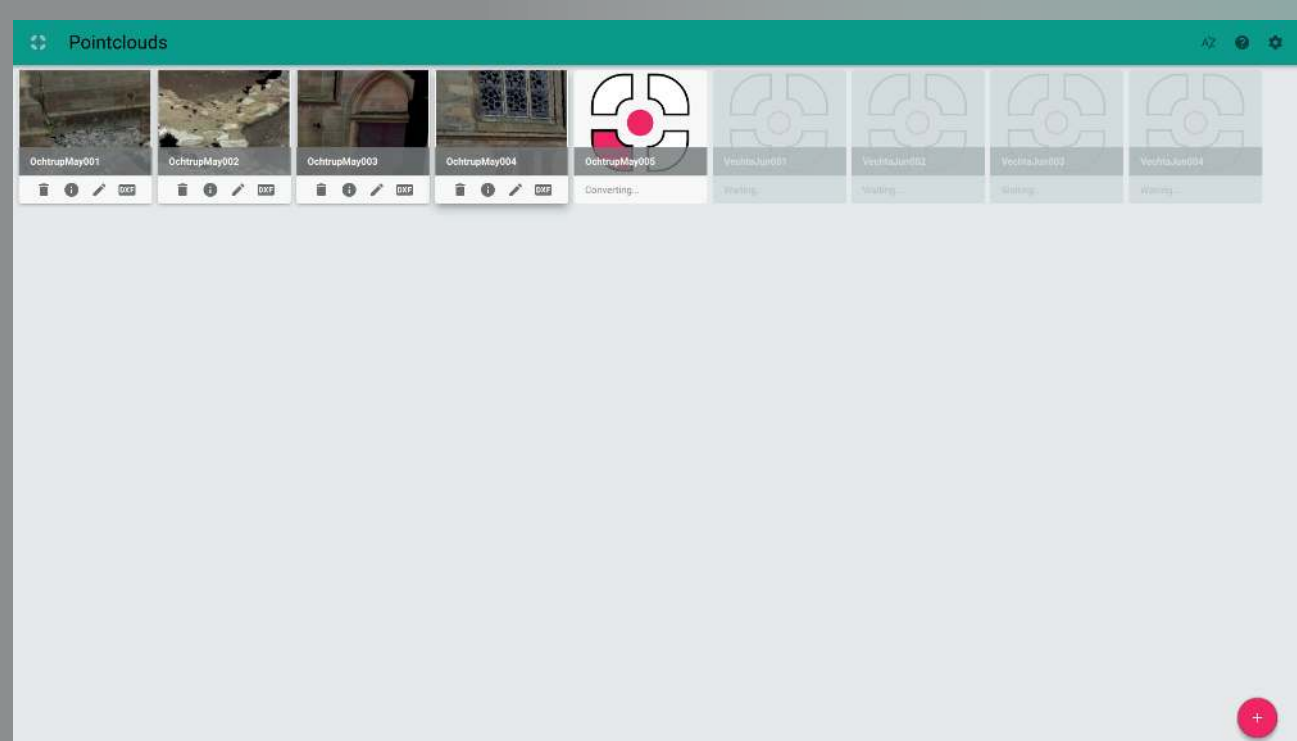


PointoCAD consists of fast 3D visualisation based on memory efficient octree data structures. They enable the use of automatic or manual point density adjustment to permit 30 fps visualisation on any platform. Additionally, utilising octree decreases the data loading time.

PointoCAD has a set of tools for drawing 3D polygons, 3D polylines, precise 3D measurements and point cloud annotations. Accessing these tools is as simple as interacting with the floating action button. Customisation of line color and thickness leads to better representation.

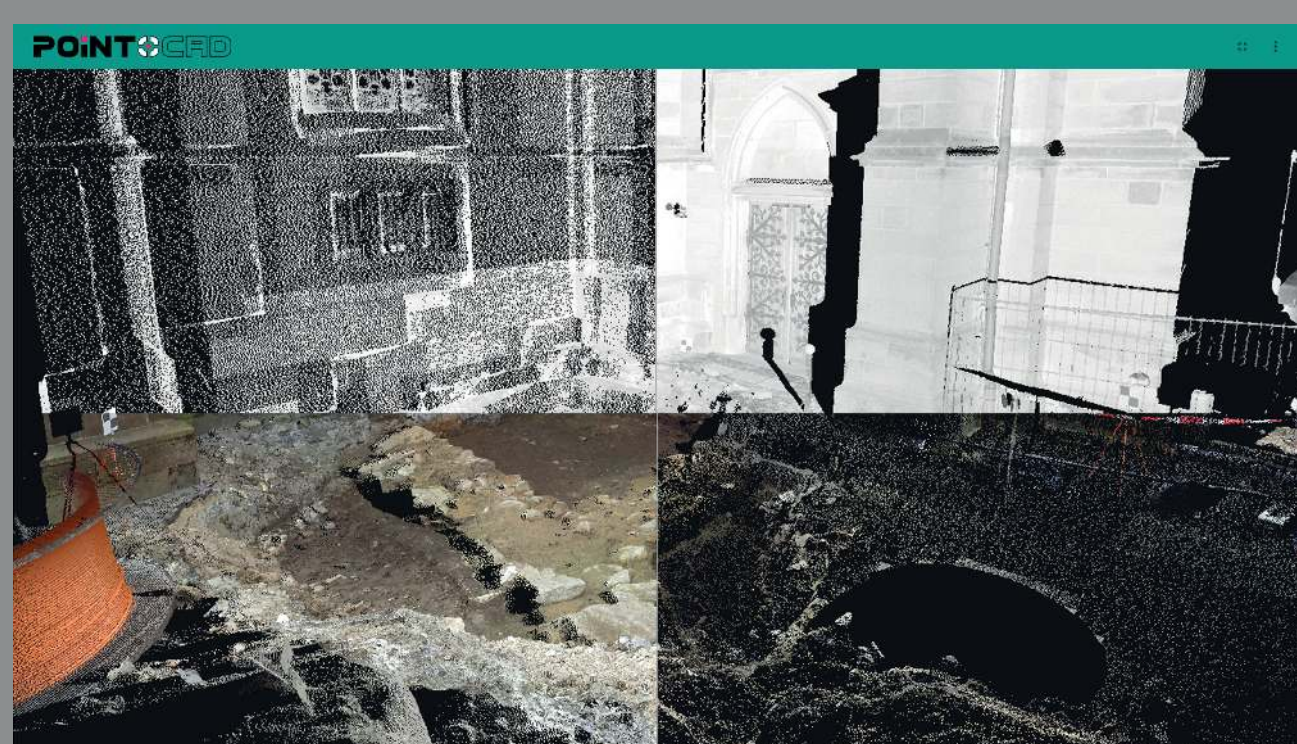
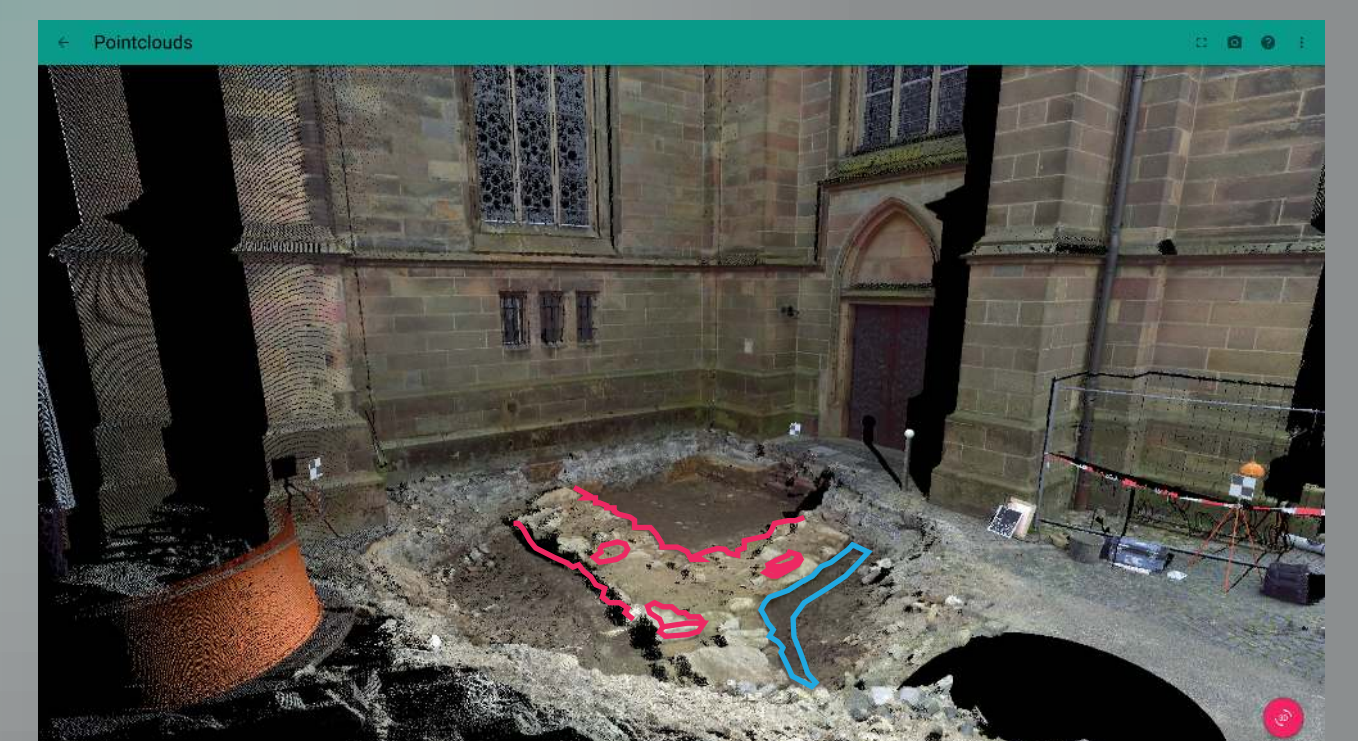


Hassle free internal data management system for added information. PointoCAD facilitates the generation of digital drawings directly on the excavation site similar to the conventional hand drawings. Implementation is based on CASTLE3D software presented at 2013 and 2015 CIPA. ^[1,3]



Fresh user interface based on google material design guidelines. Major desktop operating systems (MacOS, Windows, Linux) are supported. GUI design is compatible with touch screen.

Easy to use tools assist archeologist to annotate 3D point clouds. PointoCAD visualisation method utilises OpenGL frustum culling to accelerate the visualisation of large point clouds.



Clutter free visualisation of point clouds with the presentation mode. Support for multimodality 3D visualisation. One click image generation from point clouds for publication purposes.

Data exchanging is crucial. PointoCAD is equipped with one click export functionality to produce DXF files for data sharing that permits for data transfer to virtually any CAD system.



(1) H. Houshiar, D. Borrmann, J. Elseberg, A. Nüchter, F. Näth, and S. Winkler. CASTLE3D - A computer aided system for labelling archaeological excavations in 3D. ISPRS Annals of Photogrammetry, Remote Sensing and Spatial Information Sciences, II-5/W3:111 – 118, 2015.

(2) D. Borrmann, H. Houshiar, J. Elseberg, A. Nüchter, F. Näth, and S. Winkler. Das Framework CASTLE3D zur fortlaufenden semantischen 3D-Kartierung von archäologischen Ausgrabungsstätten. Allgemeine Vermessungs-Nachrichten (AVN), Wichmann Verlag, 2015.

(3) D. Borrmann, H. Houshiar, J. Elseberg, A. Nüchter, F. Näth, and S. Winkler. Fortlaufende semantische 3D-Kartierung von archäologischen Ausgrabungsstätten. In Photogrammetrie - Laserscanning - Optische 3D-Messtechnik, Beiträge der Oldenburger 3D-Tage 2014. Wichmann Verlag, February 2014.

(4) H. Houshiar, J. Elseberg, D. Borrmann, A. Nüchter, S. Winkler, and F. Näth. On-site semantic mapping of archaeological excavation areas. ISPRS Annals of Photogrammetry, Remote Sensing and Spatial Information Sciences, II-5/W1:163 – 168, 2013.