Data acquisition, management and evaluation for stone conservation projects with digital mapping

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Abstract:

Several years of experience of heritage documentation have given a background to develop methods of digital photogrammetry and mapping. The outcome of which is the development of a mapping software over a period of 20 years.
Main features of the software are image rectification, vector based mapping, quantity survey and data analysis. In Germany it is mainly used in the field of natural stone.
Small projects can be processed as a single mapping project, whilst complex projects like a cathedral can be organised as a hierarchical project, with several mapping projects for each object part. Each mapped element can be connected with additional attributes. This allows visual analysis of mapping activities, quantities and attributes – like in a GIS for conservators.

Tools and procedures for efficient mapping are developed in close cooperation with conservators from different fields.
It is shown how large stone objects can be managed efficiently with an example project in the field of natural stone. This applies to the overall data acquisition and data evaluation for condition analysis, conservation planning, billing documentation and monitoring.

Due to the advancements in the fields 3D laser scanning and digital photogrammetry within the past 5 years the R & D project „PROQUATO" (2016 – 2018) was initiated by fokus GmbH Leipzig with the institute for photogrammetry and remote sensing of TU Dresden and Scan 3D GmbH, Berlin. Project results for efficient data processing and functions for 3D mapping will be presented.
Current developments deal with the fast import and processing of point clouds scanned by laser scanner for the use as reference for image rectification, deformation analysis and creation of section lines.