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THREE-DIMENSIONAL DATA AND THE RECORDING OF MATERIAL STRUCTURE

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Abstract. The “description” of a material structure requires a high degree of objectivity to serve the scientific interests of certain disciplines (archeological documentation, conservation and restoration, safeguarding of cultural assets and heritage). Geometric data and photographic documentation of surfaces are thus the best instruments for efficacious, clear and objective recording of architectural objects and other anthropic manifestations. In particular, the completeness and diachrony of photographic documentation has always proven essential in recording the material structure of historical buildings.

The aim of our contribution is to show the results of several projects carried out with the aid of survey methodologies that utilize digital photographic images to generate RGB (ZScan) point clouds of architectural monuments (urban standing buildings, monuments in archaeological areas, etc.) and art objects.

These technologies allow us to capture data using digital photogrammetric techniques; although not based on laser scanners, they can nonetheless create dense 3D point clouds, simply by using images that have been obtained via digital camera. The results are comparable to those achieved with laser scanner technology, although the procedures are simpler, faster and cheaper.

We intend to try to adapt these technologies to the requirements and needs of scientific research and the conservation of cultural heritage. Furthermore, we will present protocols and procedures for data recording, processing and transfer in the cultural heritage field, especially with regard to historical buildings. Cooperation among experts from different disciplines (archaeology, engineering and photogrammetry) will allow us to develop technologies and proposals for a widely adoptable workflow in the application of such technologies, in order to build an integrated system that can be used throughout the scientific community.

Toward this end, open formats and integration will be taken into account as far as data processing and transfer are concerned.

[Conference Paper](#) (PDF, 2048 KB)

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