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LASER SCANNER SURVEY TO CULTURAL HERITAGE CONSERVATION AND RESTORATION

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Abstract. The field of Cultural Heritage has inspired, in the course of last few years, an interest more and more important on behalf of scientific community that deals to survey. The idea that knowledge of a site doesn't apply only to its history but must necessarily include its characteristics of position, shape and geometry, is gathering pace.

In Geomatic science the field of cultural heritage benefits to an integrated approach of techniques and different technologies. Every cultural site in fact, is a case in itself, with its own characteristics, problems and specifness. Current techniques offer opportunity to achieve new ways of representation and visualization of cultural site, with the aim of a better metric description. This techniques are powerful tools for analysis of sites and supports to activity of reconstruction and repair.

Biggest expectations in this field is laser three-dimensional scanning technique; a system which is able to operate in a methodical way in speed of acquisition and in possibility to access data in real time. Documentation and filling of state of a monument or site is essential in case of reconstruction or conservative project.

Possibility to detect very complex geometries with great accuracy allows an in depth study of constructive techniques, making analysis of geometrical details easier which is, with traditional techniques, difficult to achieve.

Biggest problems about use of laser scanner survey are graphic outputs for restorers and architects, in fact they often don't know real potential of this techniques, methodologies and functionalities and they expect traditional outputs such as floor plans, cross sections and front elevation of cultural asset.

Present study is focused on finding a workflow to support activity of study, restoration and conservative project of cultural heritage, extracting automatically (or with a limited manual operation) graphic outputs from laser scanner survey. Some procedure was tested on two case study the Siviller Castle (XV century), situated in Villazor, a city near Cagliari (Sardinia, Italy) and the tower bell of Mores, near Sassari (Sardinia, Italy).

The cultural sites were surveyed with laser scanner Focus 3D by Faro and to process clouds point we were used the JRC 3D Reconstructor software

[Conference Paper](#) (PDF, 640 KB)

