The following paper is an extended version of the conference paper “Geomatics for Cultural Heritage conservation: Integrated survey and 3D modeling”, presented during the 2019 IMEKO TC4 MetroArchaeo conference.

The paper presented at the conference deals with the issue of extracting geometric and qualitative information from the analysis of archive photogrammetry and laser scanning surveys. Discussion includes two case studies: the surveys of Pisa urban walls, in particular of *Porta San Zeno*, and of *Fortezza Vecchia* in Livorno.

This paper elaborates on the methodology used for integration of a metric 3-D model with information present in archive surveys of lost architectural volumes.

The methodology implies the availability of historical plans representing the survey object at scales consistent with UAV surveys and featuring shared elements. The methodology used to frame these plans in the reference system of the UAV survey for an open source GIS environment is also described, as well as the accuracy checks.

Finally, the procedure followed for the virtual reconstruction of the *Fortezza* in BIM environment, granting fruition of the model derived by integration of historic and current data, is described.

These techniques apply to a wide discipline range and, to date, are still consolidating in the research field. The offer purposely makes use of widely used, professional commercial software, in order to provide solutions to these problems also to professionals with limited experience in the specific fields of surveying and 3DVirtual.