INDICATION OF MAJOR POINTS OF EXTENSION:

The article presented at the 2019 Metroarchaeo conference focused on the use of integrated surveying techniques -laser scanner, aerial and terrestrial photogrammetry, GNSS alongside total station and traditional topographic surveying- for the restitution, study and documentation of complex assets of architectural heritage. While the conference paper dealt more with the description of surveying procedures, in application to the emblematic case study of the Calci Charterhouse, the present contribution develops in detail the phase of processing, that follows survey data acquisition.

The elaboration of data acquired from survey is here widely discussed and commented on (in the conference paper, this topic was only mentioned in the final part -Section IV- as a possible extension of the study), in the overall perspective of obtaining semantically rich 3D model.

Herein, reference is made to the techniques of recognition -segmentation and classification- of elements on the original raw point cloud acquired from photogrammetry or laser scanning, and on the manual mapping of NURBS elements on it. For this shape recognition process, reference to architectural treatises and vocabularies of classical architecture is a key step.

The paper thus deals with a procedure to import the created building components in a H-BIM environment, in order to correlate geometry with semantics. With such approach, in fact, the geometric model can be enriched with semantic information related to historical knowledge, documentary sources and restoration activities, to support conservation and management plans over built heritage.