CERIS: Civil Engineering Research and Innovation for Sustainability

Digital heritage of architectural heritage: Guidelines for documentation through the Heritage-BIM library consisting of generic heritage objects. The Serlianos clauses of Lisbon conventual architecture as case study

Summary

The cultural heritage record has a fundamental role in preserving the memory and identity of a nation. In the digital age, it is important to reflect on the applicability of guidelines for the digital model standardization of architectural heritage - a model with all the existing information (graphic and non-graphic) about a certain element. In this way, such scannings could be developed, used and shared as digital heritage, in an expeditious, universal and scientifically based method, regardless of possible physical, monetary or technological limitations.

The present thesis is built on the premise that the conception of a architectural heritage digital model involves the use AEC industry tools (Architecture, Engineering and Construction), such as BIM (Building Information Modeling) technology, with a focus on creating a H-BIM (Heritage Building Information Modeling) library made up of generic composite objects. Generic because they have the geometric detail that allows them to be representative of the typological universe to which the object belongs and, composite, because it is constituted by two or more patrimonial objects, being the necessary set for the global reading of the final object (eg arcade as a set of arches supported by columns). This approach considers that the final geometric detail of the model may be, subsequently, optimized by automating the scan-to-BIM process, thus bringing the final digital model closer to the digital twin of the real element.

In this sense, the present work, with the perspective of contributing to the universalization of the architectural heritage digital models conception, is intended to reflect on the possibility of establishing guidelines for the standardization of H-BIM libraries. Considering this goal, it is proposed a methodology for the development of digital models consisting of generic objects. As a case study, the cloisters of Lisbon's conventual architecture, an architectural heritage with its own typological characteristics that had and continues to have a strong impact on the city's image. The focus is on Lisbon's Serlianos conventual cloisters, a particular space for this type of construction.

Keywords

Digital heritage, architectural heritage, heritage-BIM library, generic patrimonial objects, serlianos conventual clauses of Lisbon.

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