

## Heritage 3D Digitalization Combining High Definition Photogrammetry with Metrologic Grade Laser Scans

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**Abstract :** 3D digitalization of heritage objects is widely used nowadays. However, the most advanced 3D scanners in the market that capture topology and texture at the same time, and are specifically made for this purpose, don't deliver the accuracy that is needed for scientific research. In the last three years, we have developed a method that combines the use of Metrologic grade laser scans, that allows us to work with a high accuracy topology up to 15 times more precise and combine this mesh with a texture obtained from high definition photogrammetry with up to 100 times more pixel concentrations. The result is an accurate digitalization that promotes heritage preservation, scientific study, high detail reproduction, and digital restoration, among others. In Chile, we have already performed 478 digitalizations of high-value heritage pieces and compared the results with up to five different digitalization methods; the results obtained show a considerable better dimensional accuracy and texture resolution. We know the importance of high precision and resolution for academics and museology; that's why our proposal is to set a worldwide standard using this open source methodology.

**Keywords :** 3D digitalization, digital heritage, heritage preservation, digital restauration, heritage reproduction

**Conference Title :** ICDH 2019 : International Conference on Digital Heritage

**Conference Location :** London, United Kingdom

**Conference Dates :** November 18-19, 2019