



NON DESTRUCTIVE MEASUREMENT AND RAPID PROTOTYPING IN THE SERVICE OF CULTURAL HERITAGE

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ABSTRACT

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In recent years we have witnessed the introduction of non contact measurement and testing technologies in the domain of the arts and archaeology. This application of Industrial Reverse Engineering techniques outside the Industrial fields has been further consolidated by the emergence of faster and less invasive techniques for the representation of complex free-form surfaces, typical of art sculptures and ancient findings, that where otherwise impossible to represent and reproduce because of the precious nature of the object itself, fragility, form complexity or at the best case extremely expensive in terms of time and monetary funds.

In this presentation the authors explain how Close Range Photogrammetry and Structured light 3D scanning technologies where applied for the reconstruction of the surface of ivory artifacts of very small size from the Museum of the Royal Tombs of Aiges (Vergina, Macedonia) . Moreover, in this presentation the authors demonstrate the integration of rapid prototyping technologies that allowed the materialization of the acquired 3d data. This integration resulted in faithful reproductions of the artifacts, directly from the digital model.

Furthermore, a qualitative and dimensional evaluation of both the process and materialized replicas has been performed and the initial findings indicate that the results of the application of Non Contact Testing and Measurement Technologies in the fields of art and archaeology are not only feasible but also present great benefits to the Cultural Heritage community.

This paper demonstrates how Non Contact Testing and Measurement Technologies combined with Rapid Prototyping Technologies can be applied in the Field of Archaeology by proposing and presenting new, feasible and functional ways of recording, cataloguing, conserving, restoring, reproducing and presenting archaeological artifacts, monuments and sites.