

Chapter 15

Towards a Smart Cultural Heritage in a Post-Pandemic Era: Enhancing Resilience Through the Implementation of Digital Technologies in Italian Heritage


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ABSTRACT

Preservation and dissemination of cultural heritage symbolizes a problem already present before the pandemic period and amplified during the COVID-19 crisis. As a result, the dematerialisation of architecture by digital technologies is the approach to connect Society 5.0 and architecture in cyberspace. The ambition of this chapter is to achieve an approach aimed to explain the impact of ICT during the pandemic and post-pandemic period, using HBIM technology, an essential tool for the approximation of Society 5.0 to the tangible smart heritage. On the other hand, the creation of a virtual tour breaks down architectural barriers (physical and spatial) allowing access to all users as a benefit of the dematerialisation of the asset. The work represents the use of technologies to create new knowledge and values, generating connections between people and tangible and non-tangible things.

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INTRODUCTION

Contemporary challenges of (post)modern societies are multiple and strongly related to the significant progress of Information and Communication Technologies (ICT), the Internet of Things (IoT), Artificial Intelligence (AI), competitiveness, productivity, connectivity, and welfare. This society is moving towards a resilient approach, especially in a post-pandemic era immersed in an environment of increasing risk and uncertainty. In consideration of these statements, it is reasonable to assume that contemporary societies require a “broad” or “general” concept of resilience that is transdisciplinary and applicable to multiple contexts.

With these assumptions, after a comprehensive analysis of the state of the art, the ambition of this paper is to clarify how in a context of crisis and instability, societies look to adapt to the actual situation by using the success of ICT during the pandemic and post-pandemic period moving towards the concept of the society 5.0, explicitly or implicitly, by the government policies and standards implemented. Technologies should be used to create new knowledge and values, generating connections between people and tangible and non-tangible things. Also, ICT become an essential tool for the approximation of the society 5.0 to the tangible Smart Heritage.

The case study under analysis is The Castle of Baia, a landmark of southern Italy where the immersion of the user in cyberspace is made possible thanks to the use of Heritage Building Information Modelling (HBIM) and the creation of Virtual Tours (VT), being fundamental components for the knowledge and dissemination of the historical heritage in a period where physical tours are impossible. With this aim, an accurate methodology was established: a main digital survey of the entire building was developed, resulting in a high-resolution three-dimensional point cloud that will become the geometrical basis for the two paths to be followed.

In the first instance, the present research aims to provide an informative and geometrical integration of the HBIM model of the Cavaliere Pavilion previously developed. The main goal is to respond to the problem of fragmentation and lack of information, improving the tools provided by HBIM technology in addition to the results of the integral survey: archiving, digitization and systematization of historical data, interoperability between disciplines in the implementation of interventions, management of costs, time and resources. This final model will be mainly oriented towards the AECO (Architectural, Engineering, Construction, and Operations) sector. Also, to this integration, a library of BIM families will be developed, to standardise the complex morphology of historical architecture and be able to support heritage conservation planning and restoration and enhancement interventions.

On the other hand, the creation of a Virtual Tour, directly linked to the model, breaks down architectural barriers (physical and spatial) allowing access to all users as a benefit of the dematerialisation of the object, which however will never replace the physical experience but will allow its optimal dissemination in the cyberspace.

The preservation and dissemination of cultural heritage represents a problem already present before the pandemic period and amplified during the COVID-19 pandemic crisis. As a result, the dematerialisation of architecture achieved by digital technologies is the resource to link society 5.0 and architecture digitally, articulated in the concept of Smart Heritage. The implementation of ICTs allows the fruition of the asset by all users, not only the technical sector, even at a distance with the possibility of creating virtual tours to make the spaces accessible for everyone, anytime, anywhere (Trillo, et al., 2021). Ethically, these virtual tours should never be considered as an alternative way to experience the architecture, but simply as promotional tools to strengthen and widen the accessibility of Cultural Heritage exploring

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