


# Chapter 14

## Digital Technologies Towards Extended and Advanced Approaches to Heritage Knowledge and Accessibility

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### ABSTRACT

*The new directions that digital reality is currently taking include an ever-greater involvement and interaction with the human being. In the field of cultural heritage, there is a need to find new ways to visit, enjoy, understand, and preserve cultural assets, also through digital fruition. The social value of cultural heritage and citizens' participation became crucial to increase quality of life, public services, creative activities, public engagement, new understanding, and education through technology development. Digital technologies can also contribute to safeguarding endangered cultural heritage preventive interventions, as well as ensuring equal and wide access to cultural assets and heritage sites. The aim is to find positive interconnections between physical and virtual spaces by applying digital systems to find additional knowledge and supporting the access to our common heritage through new technologies. The chapter explores more in detail these topics through the description of methodological approaches, applications of Semantic Web technologies, and latest projects.*

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## INTRODUCTION

The new directions that Digital Reality is currently taking include and enhance an ever-greater involvement and interaction with the human being. The term “digital reality” is related to our ever-more digital societal context (Bowen & Giannini, 2021), where many aspects of everyday life are managed by digital media.

This is occurring in different fields of application, from health to urban planning, from domotics to smart cities, up to the fruition of Cultural Heritage. In particular, in this area, the emergency condition caused by the Covid-19 pandemic has highlighted the need to find new ways to visit, enjoy and understand cultural assets, including digital fruition (Europa Nostra, 2020). The social value of cultural heritage and citizens’ participation became more and more crucial, considering also how to increase quality of life, public services, creative activities, public engagement, new understanding and education through technology development.

These needs are very clearly understood within the Horizon Europe Strategic Plan, released in 2021, in particular in the Cluster 2 (Culture, Creativity and Inclusive Society) where the sense of belonging through a continuous engagement with society, citizens, social partners and economic sectors is very carefully stressed. *“The full potential of cultural heritage, arts and cultural and creative sectors as a driver of sustainable innovation and a European sense of belonging is realised through a continuous engagement with society, citizens and economic sectors as well as through better protection, restoration and promotion of cultural heritage”* (European Commission, Directorate-General for Research and Innovation, 2021).

The expectation of exploiting the full potential of Cultural Heritage through research and innovation is intended to support the access to our common heritage through new technologies. In this direction, high quality digitisation and curation of digital heritage assets are of key importance in order to access and manage different information and data domains.

The key target is to find positive interconnections between physical and virtual space, by applying digital systems and virtual and augmented reality technologies to find additional knowledge levels to heritage accessing and understanding, inclusive communication and interdisciplinary collaborations.

In addition to expanding this kind of “social resilience”, digital technologies can also contribute to safeguarding endangered cultural heritage from natural hazards and anthropogenic disasters by preventive interventions, as well as ensuring equal and wide access to cultural assets and heritage sites. The issue of assets at risk is indeed crucial, as well as all possible strategies for preventive documentation and the accessibility to site in critical conditions.

The UN (United Nations) 2030 Agenda for Sustainable Development (Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable) includes a focus on cities in the sustainability goals, including challenges related to inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management and efforts to protect and safeguard the world’s cultural and natural heritage. Under the same Goal, the vision includes a substantial increase of the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels.

In this framework, in which the strategic importance of heritage digitization had already been widely emphasized in the Horizon 2020 Programme, the economic, social and environmental impacts of Co-

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