

Foreword

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According to the International Council of Museums (ICOM, <https://icom.museum/en/>) current definition, “A museum is a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and enjoyment.” As we move into the third decade of the 21st century, cultural heritage institutions throughout the world are using innovative digital solutions to enhance their work in all areas and also in how they communicate and exhibit heritage. This journal Special Issue presents articles that show examples and case studies demonstrating how invention and innovation can successfully take place when Museums and Digital Media converge. Our purpose within this Special Issue therefore is to present and contribute to a body of research that critically explores the relationship between digital media innovation and changes in

museums and heritage. Our motivation arises from a completed European project CINE (<https://cine.interreg-npa.eu/>) which brought together a range of stakeholder types from Museums, Heritage, and Digital Media to transform people’s experiences of outdoor heritage sites through technology, building on the idea of “museums without walls”. New digital interfaces such as augmented reality, virtual world technology, and easy to use apps were discussed and created – to bring the past alive; allowing visualisation of the effects of the changing environment on heritage sites, and helping us to imagine possible futures. We developed content management toolkits which will demonstrate how curators, archivists, historians, individuals and communities can come together to make innovative heritage projects to create unique on-site and off-site customer experiences in specific locations. Articles in this Special Issue discuss these types of projects.

In the past, technology was viewed by some in the

museum world as the enemy of culture. The growth of digital technology, particularly in the field of entertainment, was direct competition for the hearts and minds of museum visitors. There was fear that the “wow” factor of these technologies would replace the substance of museum’s work in areas such as research and conservation. However, slowly museum professionals have come to realise that technology is a tool which can be effectively used to enhance many areas of museum work. Technology can help bring visitors closer than ever to a museum, and closer to the history a museum is trying to convey. By applying technology intelligently, museums can increase focus and interest in their collections. Successful digital practices include using digital tools for creating digital content, making the collections accessible online and increasing the overall attractiveness of museums. Technologies such as augmented reality (AR) and virtual reality (VR) for instance are being used to make history feel more present both inside and outside the

museum space.

The Covid-19 crisis has provided the impetus for many cultural heritage institutions to utilise digital technology in more creative and engaging ways. Audio guides, augmented reality experiences, 360 tours, 3D photogrammetry and virtual workshops are just some of the ways in which digital technology has amplified the work of museums in this period of global pandemic. During the period of lockdown many museums increased their online activities by adding features of their collections online and developed new online exhibitions and tours. However, digital technologies are not a replacement for the experience of visiting a museum, seeing artefacts in reality and interacting with museum staff and other visitors. There is a need to find a balance between the human factor and further uptake of technological developments. The technology is not a goal itself, but it is a way to make visitors understand and learn more about their heritage.

Digital technologies provide huge opportunities for improving public access to different forms of cultural assets. One of the main benefits of the digital revolution is that cultural heritage becomes more accessible to people notwithstanding their location or their financial resources. Digital technology can also revolutionise the way we travel and enjoy our cultural heritage. It can provide quality information

about heritage sites and enhance visitors' experience. In addition, harnessing innovation and digital solutions contributes to a more sustainable and responsible tourism sector.

THE ARTICLES IN THIS ISSUE

In the article 'Virtual Community Heritage – An Immersive Approach to Community Heritage' the authors provide an overview of digital heritage and the 'potential for small heritage organisations to work with emerging immersive technologies to engage communities and visitors'. As a result, and proof of said potential, 'the development of St Catherine's VR: a virtual reconstruction of a church and its graveyard from the 15th century'. The article showcases the 'design of a community co-produced virtual heritage experience, the use and utility of digital technology and how it is received within a museum context'.

Museums are embracing technological innovations and adapting to the challenges of the digital era. They have proven to be some of the most exciting testing grounds for augmented reality. In the article 'Museums, Artefacts and Cultural Heritage Sites', the authors discuss the 'relationships between museums, artefacts and original sites and how recent improvements in hardware, software and platforms and related technologies such as AR can help to bridge the gaps between both indoor and outdoor exhibi-

tions'. Two case studies, 'the Viking Ship Museum in Oslo, and the Calmecac Museum in Mexico City, are presented with some user evaluations around the technical challenges and viability of these types of approaches which explore a range of indoor and outdoor tracking technologies, related hardware platforms and user experiences'.

Museums are pushing the envelope with AR and showcasing the technology's potential through creative implementation. They are using AR in a myriad of ways from wayfinding to bringing objects to life to developing entirely new, digital artworks. Further in the article, 'Remediation of Historical Photographs in Mobile Augmented Reality' the authors 'document a design experiment with the modelling and animation of a 3D representation from a historical photograph, showcasing how the animation of human characters in a sitsim AR app may be applied to convey cultural heritage in an engaging way'.

There has also been a considerable increase in the use of VR in museum environments creating new dynamics in storytelling and content creation. VR has been used for reconstructing historical environments, for interpretation and experience enhancement both in the museums (on-site) and outside of the museums (off-site), for increased visitor engagement and education and for creating interactive, engaging, and immersive experiences in museum environments. In

the article ‘The Acropolis on the Immersive Web’, the authors discuss ‘the application of VR and AR to digital cultural heritage and explore how they enable the reimagining of the relationship between museums as institutions housing cultural artefacts and the original sites where the artefacts were found, displaying the Acropolis in Athens as a case study and explaining how new hardware and software at a reasonable cost are making cultural heritage much more accessible nowadays’.

In the article ‘The Use of Digital Solutions in Museums Today and in the Future’, the authors consider ‘the digital through the lens of the areas of collection care, research, dissemination of content, innovation, and business development, focussing on smaller museums and heritage organisations and how they can better utilise digital media and digital solutions’.

All these applications create new avenues for experimentation with museums around the world incorporating such technologies to democratize and open up their collections and allow multiple interpretations. Improved accessibility and inclusion are some of the most important benefits of using emerging digital technologies in museums. In embracing digital technology however, it is important that the actual end user needs of museums and their associated audiences, are considered so that they can not only have the most innovative experiences, but the

most meaningful, engaging, and memorable museum experiences. We are witnessing the beginning of a golden age of virtual media, making good on the initial promise of digital, and offering imaginative and unprecedented access to cultural heritage. Despite the physical isolation forced on us during the COVID-19 pandemic, digital media have offered a bridge to cultural experiences throughout the world.

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