

# Chapter 19

## Interactive Virtual Participation for Opera and Theatre Using New Digitization Information Systems

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### ABSTRACT

*Society 5.0 has implemented the use of new digital technologies, overcoming traditional active learning systems with means and methodologies that extend the involvement of the digitized user. This trend has revolutionized how organizations and companies deliver their services through interconnected and interoperable platforms. The prevalence of new media has led to the adoption of applications that exploit gamification techniques and serious games to transfer reality into new virtuality. The contribution analyses procedures and methodologies that can be adapted to digitalize cultural heritage, focusing on the theatrical and musical entertainment sector (i.e., opera and theatre). During the COVID-19 pandemic, cultural organizations received significant containment measures to cancel events and openings. Therefore, investing inaccessible and reality-like digital applications through advanced participatory techniques reduced financial and target losses. In this way, the shift from the digital model to the interactive service model for sensory experiences skills the Citizen 5.0.*

### INTRODUCTION

New digital technologies in recent years have overtaken traditional methods of knowledge and sharing with innovative tools that involve a broad and heterogeneous audience. In this sense, the increasing use of digital objects such as Smartphones, fast Web Connections, Media in all forms, Virtual Reality (VR), and Augmented Reality (AR) have enabled new forms of interaction. In a society centered on human needs and behavior, users need to manage tools and information in the best possible way to increase their cultural knowledge, diversifying how they are delivered. Experiences become engaging only when service

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delivery methods are innovative and accessible. This is reflected within the Society 5.0 for economic and social spheres where digitization and technologies overcome intellectual and physical barriers in safe and efficiently controlled virtual environments. Therefore, differentiation of experiences leads to sustainable and inclusive Information and Communications Technology (ICT) solutions and virtuality complements and supports the real world.

Every year, the top strategic tech trends are identified in a report (Burke, 2020), highlighting the main strategies that companies and the 5.0 society will adopt in the following years to streamline activities with medium- and long-term benefits. Based on these strategies, it is possible to identify Artificial Intelligence as a valuable tool to improve the relationship between users, machines, and realistic artefacts or to define original and easy-to-disseminate contents. Business models and integration between heterogeneous data sources are implemented thanks to an integrated and transversal approach. Within this technological evolution, another trend is emerging to unite the technological world with Gamification and Serious Game, namely the creation of a Total Experience (TX). This is understood as the all-around involvement of the user. The interweaving of multiple experiences and relationships through a multi-experience system accelerates the growth of companies and increases trust and end-user satisfaction through scalable and customizable applications.

During the health emergency linked to the Covid-19 pandemic, this trend became increasingly solid and necessary. The web world saw strong growth in digital sharing environments that would allow people to continue with their daily activities. According to some surveys, the market for devices, software and hardware increased by 20.5% in 2020 compared to pre-pandemic years (NetConsulting cube, 2020). Consequently, each product introduced into the digital market requires adequate means for its distribution on each device and optimized management of the systems in use with continuous monitoring of the data transmitted. According to technology trends, the effects on the stability of the technological choices made are expected to take five to ten years. However, many initiatives still need adequate means for more significant deployment before settling down. For example, multi-experience is a helpful approach to define the best way a user interacts with a digital product to take metadata management into account (TechRepublic, 2020). There are many advantages to this trend, which may be confirmed in the years to come (i) scalable actions at several levels with repercussions also on business and social, economic models, (ii) simplification of the construction processes of digital applications, (iii) expansion of the target audience of end-users thanks to intelligent and interconnected systems (Gartner, 2022).

Based on these technological trends, also in Italy, the digital sector has seen a series of investments (about 50 billion euros) at a national level through the National Recovery and Resilience Plan (PNRR). Many organizations and sectors have undertaken initiatives based on Total Experience to improve services to people and support the growth of new departments to drive the development of innovative products usable with new visualization and interaction technologies.

Among the sectors that the PNRR foresees a strong development, we can find the cultural and tourism sectors strongly affected by the pandemic (Anitec-Assinform, 2021). The plan aims to implement the industry through actions and applications that act on attractiveness and social inclusion levels. To fulfil these guidelines, methods and tools of Gamification and Serious Games can be combined, bringing the public closer and making any cultural artefact accessible.

The concept of Total and Digital Experience highlighted above is a crucial element in creating game applications, allowing the correlation of pleasurable experiences with information flow to facilitate concentration, challenge, skill, control, the goal, immersion and social interaction through feedback. These

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