

CULTURGAME

The Italian research project on applied games for cultural heritage and scientific dissemination

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Cultural Videogame National Program: Culturgame.it

Culturgame.it is a research project funded by the Italian Ministry of Education, University and Research. It explores the potential of videogames for enhancing the relationship of museums with their audience, both onsite and remotely.

Reference scenario

The pervasiveness of digital technologies has profoundly changed our daily lives and strongly impacted interpersonal relationships. For example in 2022 social media have reached 4.62 billion users and 5,31 billion people use mobile phones (Digital 2022). The success of videogames must be added to the reach of this enormous global phenomenon. In 2021 almost 3 billion people in the world played videogames (Newzoo 2021).

This success is having positive consequences for the promotion of cultural heritage and for the dissemination of knowledge. Applied videogames are used by several museums and cultural institutions to reach a wider audience, crossing geographic access barriers (e.g. Solima 2018, 2020).

They also significantly contribute to the purposes of museums in the ICOM definition.

Three sites, five (video)games, eight partners

The Culturgame project aims at producing videogames for three Italian museums, contributing to the dissemination of three different areas of knowledge: the first is dedicated to the dissemination of the historical-archaeological heritage, the second is aimed at facing the challenges of scientific dissemination, and the third is aimed at discovering the ecology of aquatic environments. For each of the three museums, the project aims at assessing both remote and onsite use of videogames.

Therefore, for each museum, technological partners will design and produce either two games, or one game with two modes (~~remote-online~~/onsite).



Fig. 1. Culturgame logo and declination logos for the three themes of the project

The Culturgame project involves eight partners among universities, museums and private companies.

The Project Leader is the company ETT spa, an Italy-based international company specializing in technology and new media for heritage. For the Culturgame project, ETT is producing two onsite games, which combine physical and digital interfaces (*phygital*).

One game is designed in collaboration with the Anton Dohrn Zoology Station, a marine biology public research institution. The demonstration site will be the Dohrn Darwin Museum in Naples. It is a card game with augmented reality. The storyline focuses on the importance of sounds in marine ecosystems and on the harmful impact of manmade noises.

The second game is being produced in collaboration with the Design department of the University of Sassari and will be deployed in the Museum of the **local** University. This game aims at transforming the floor into a game board: a camera recognizes the position of pieces on the board and provides a digital feedback to the player. The topic of this game is the morphology of phytoplankton and its crucial role in marine ecosystems.

The company Bax Energy, a major software development company with an expanding international market, is designing and producing a videogame for remote use with the Anton Dohrn Zoology Station. Players will have the opportunity to take a virtual tour of the Dohrn Darwin Museum while impersonating a renowned nineteenth century scientist (either Anton Dohrn or Charles Darwin): structured as an escape-room, the game requires them to solve enigmas and engage with the principles of the scientific method.

The company Red Raion, which specializes in the creation of CGI, Virtual Reality (VR), and Augmented Reality (AR), is designing and producing a videogame for remote use for the Museum of the

University of Sassari. It is a graphic adventure, taking place in a marine biology laboratory. Players go on missions, either inside the laboratory or on expeditions around the world to collect samples. They acquire collectibles and gain access to new adventures, while being stimulated to learn about phytoplankton.

The National Archaeological Museum of Naples (MANN), one of the main cultural institutions of Italy, is the third demonstration site of the project. Together with the company Protom s.r.l., specialized in innovative projects in advanced engineering and digital transformation, they are designing an engaging mobile game on the crucial role of water in everyday life throughout history. Players have to solve a series of mini-games concerning specific artefacts of the museum collections. Completing the games, they acquire water points and gain access to higher levels until they collect enough water to create an oasis. This game is accessible both on site and remotely, and certain features are only accessible when the player logs in inside the museum premises.

In the design of the different games, an attempt was made to identify areas of mutual intersection, so that players can also have a single, overall game experience, involving all three demonstrating subjects.

The University of Milan Bicocca is the partner responsible for designing and performing data collection and data analysis to assess the effectiveness of the games.

Game design for research purposes

One of the major challenges when dealing with applied games for cultural and scientific heritage is finding a consistent methodology for measuring their impact (Koutsabasis et al. 2021, Tsita & Sartzemi, 2019).

The novelty of the Culturgame project resides in the fact that these five very different games are designed coherently with their assessment strategy. After the release of the alpha version of the games, the first campaign of data collection and analysis will be crucial in defining the adjustments needed for the second and final beta version of the videogames. Finally, a second campaign of data collection and analysis will determine the impact of videogames on different targets and their effectiveness in terms of engagement and enjoyment.

Funding and partners

The project is conducted by the following partners: ETT SpA (Lead Partner), University of Sassari, Milano Bicocca University, Anton Dohrn Zoological Station, National Archaeological Museum of Naples, Bax Energy, Red Raion, Protom. The project receives a substantial contribution by the Italian Ministry of Education and Research under the Programma Operativo Nazionale (PON) Ricerca e Innovazione (National Operational Plan on Research and Innovation).

Author Contributions

Please list the contributions of the project participants here, according to the CRediT system. See specific descriptions of the role here: (<http://credit.niso.org/>). **Please omit non-applicable roles.**

Funding acquisition: Ludovico Solima, Antonio Novellino

Conceptualization: Ludovico Solima

Writing – original draft: Maria Emanuela Oddo

Writing – review & editing: Ludovico Solima, Maria Emanuela Oddo

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