

Serious Gaming for Cultural Heritage: the case study of the Domus of Abellinum

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I. INTRODUCTION

So-called serious games are those games designed to go beyond mere entertainment, and are in fact born with the aim of educating, training or raising awareness on specific issues. When applied to cultural heritage, these games become innovative tools for the enhancement and dissemination of historical, artistic and cultural heritage.

One of the main aspects of the use of serious games in the context of cultural heritage is their educational potential [1]. Indeed, these games can be used as educational tools: thanks to immersive experiences, players can better understand historical periods, events and complex cultural contexts. Moreover, serious games make cultural heritage more accessible to a wide and diverse audience, including those who may not have direct access to museums, historical sites or other cultural institutions due to space or time constraints.

Another key aspect is the virtual preservation of cultural heritage [2]. Serious games make it possible to create digital representations of historical sites, works of art and artefacts that might be at risk of deterioration or destruction, thus contributing to their preservation. In addition to this, serious games stimulate the interest and active participation of the public, transforming the learning experience into a playful and stimulating activity.

The aim of this paper is therefore to demonstrate how, starting from digital scans, it is possible to achieve the creation of 3D models to be implemented in game contexts for the development of 'serious games', considering, in particular, the case study of the Domus of Marcus Vipsanius Primigenius located in the Abellinum Archaeological Park in Atripalda, with the aim of developing a useful tool to be used both for educational purposes and for the promotion and enhancement of cultural heritage, especially of 'minor' sites, usually less known and less visited by the general public.

II. CASE STUDY

The work carried out, which led to the publication of the serious game 'Exploring Abellinum', is entirely focused on the Hellenistic-Pompeian Domus gentilizia located in the north-eastern area of the Abellinum Park, which is located in Atripalda, about three kilometres from present-day Avellino. The work, starting from this case study, has two main

objectives: Firstly, to demonstrate how techniques usually belonging to the world of engineering and architecture, such as laser scanning and 3D modelling, can also be used in different fields, such as gaming. Secondly, the desire to create a game with an educational purpose, but which could also serve as a starting point and a useful reference for the development of future works aimed at the promotion and enhancement of cultural heritage in general, and in particular of sites that are less well-known to the general public, compared to others that tend to be more famous.

III. PROPOSED WORKFLOW

The workflow adopted (Fig. 1) starts with an initial phase of data acquisition through the mapping and laser scanning of the remains of the Domus, in order to obtain a cloud of points that will be used, in a subsequent phase, to create the three-dimensional model. Having to deal with the realisation of a serious game, and thus a game with learning as its primary objective, the implementation of the necessary educational content must not be neglected, which can then be carried out, depending on the type of game to be created, in different ways. Once the 3D model has been completed and the educational content to be included in the game has been chosen, the game dynamics must first be defined, ensuring that they are sufficiently engaging for the end users, and then all the elements necessary for its complete definition must be integrated into the game world. In addition, a rewards system must also be structured to entice the player to effectively and fully complete the video game, thus attaining all of the envisaged training objectives, in order to obtain the promised rewards. Once the entire set of game elements has been defined, the scripting phase must then be taken care of, in which all the scripts necessary to actually execute the video game must be realised, and finally, a results analysis phase will follow to validate, or not, the proposed methodology and the final product obtained.

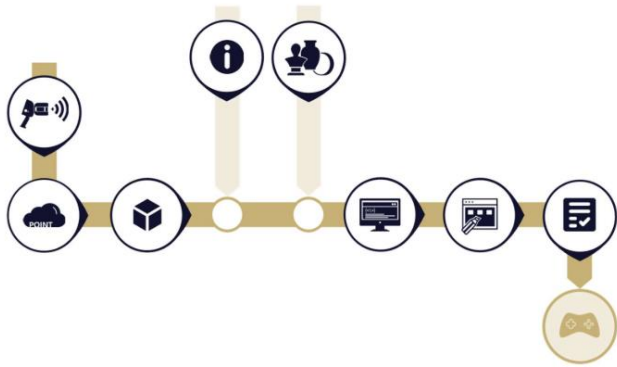


Fig. 1. Schema della metodologia proposta.

The “Exploring Abellinum” serious game, the output of the workflow described, is intended to be a new method, although still improvable in several respects, to be used for the transmission, promotion and enhancement of heritage, which is more interactive and engaging than traditional methods. Aimed at a target audience of young users, the game takes up the dynamics of the 'treasure hunt', but importing them into a historical and cultural context, such as that of the Domus, and combining the playful experience with educational material. The user, engaging in the exploration of the game map, searching for the various objects hidden there, and assimilating the information contained in the pop-up screens will eventually have to answer a series of questions to obtain the promised rewards.

IV. CONCLUSIONS

Since the proposed work centred on the creation of a serious game, we can say that, given the satisfactory results obtained, the serious game developed "Exploring Abellinum" would seem to have effectively achieved the set objectives, potentially serving not only as a medium that can be used for learning, but also as a useful tool for the promotion and enhancement of the chosen site. The results of a questionnaire submitted to users who were able to test the game, both during its development and immediately prior to its publication, demonstrate the validity of the proposed methodology as well as the goodness of the final product. Some of the answers also demonstrated how the Archaeological Park where the Domus on which the proposed serious game is entirely based was actually little known, known only to some of the testers from the neighbouring areas and who had never visited the park itself; these answers highlight how the intention to go there actually matured in each of them after having tried the game, demonstrating that the game really succeeded in pursuing the objectives that had been set: teaching something new about the Domus and promoting and enhancing the Domus itself and the Archaeological Park, spreading knowledge and attracting new visitors.

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