Dedicated AR Application

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Project Acronym	HISTORIC
Project ID Number	10049024
Project Title	Heritage for Innovative and Sustainable TOurist Regions in Italy and Croatia
Priority Axis	Environment and cultural heritage
Specific objective	3.1
Work Package Number	4
Work Package Title	Exploitation of new business models led by technological enablers
Activity Number	4.1
Activity Title	Development of Augmented Reality of touristic products and social route tracking – Dedicated AR applications
Partner in Charge	PP2 University of Padua
Partners involved	/
Status	Final
Distribution	Public

Summary

Abstract

The main objective of activity 4.1 is the implementation to acquire analytical tools to better understand the needs of tourist. Dedicated AR applications could enrich the tourist offer creating a recognizable tourist attraction that would attract guests out of main season; it also promotes a multilevel and multistakeholder governance in local action groups.
The activities clustered within WP4 are based on a recent common methodological approach relying on best knowledge available and collective wants and needs emerging from the cooperative and adaptive decision making system adopted by the project.

Dedicated AR application

Advances in technology have direct impacts on tourism. Recently, developments in information and communication technologies (ICTs) have been transforming tourism in many ways, with impacts on areas ranging from consumer demand to site management. For example, many tourists have adopted the Internet as a tool for seeking travel information and countless tourism and this sector is constantly redefining itself and requires continual reorientation in marketing and management. Virtual Reality (VR) applications may have significant impacts on tourism and VR offers different opportunities: planning and management (enrich the tourist offer creating a recognizable tourist attraction that would attract guests out of main season); marketing (multilevel and multistakeholder governance in local action groups); accessibility (create a new system of cultural fruition, consisting of a physical-relief with 3D printed braille description that blind people can touch during their "exploration").

University of Padua, using the city gate of Altino as pilot test has developed two type of applications:
Augmented Reality: to improve the interaction between the final user and the 2D - 3D information, an Augmented Reality application was realized with Unity 2019.4. This app allows to frame with a device the edited planimetry and to extrude the virtual model. In terms of tourism-specific functionality, the applications offer interface elements for keyword search and browse through available information. Exploration of the immediate visible surroundings of the user is probably the most obvious advantage that AR mobile applications could provide to tourists. In terms of this functionality, the AR-view in the examined applications enables the tourist to either display different virtual layers of spatially relevant information, or display one specific virtual layer of spatially relevant information. The former approach enables the user to explore available content for an unfamiliar environment without having specific background knowledge of the most relevant/interesting content. All the application provide an interactive display with "clickable" annotations that expand to deliver more information about the selected object.
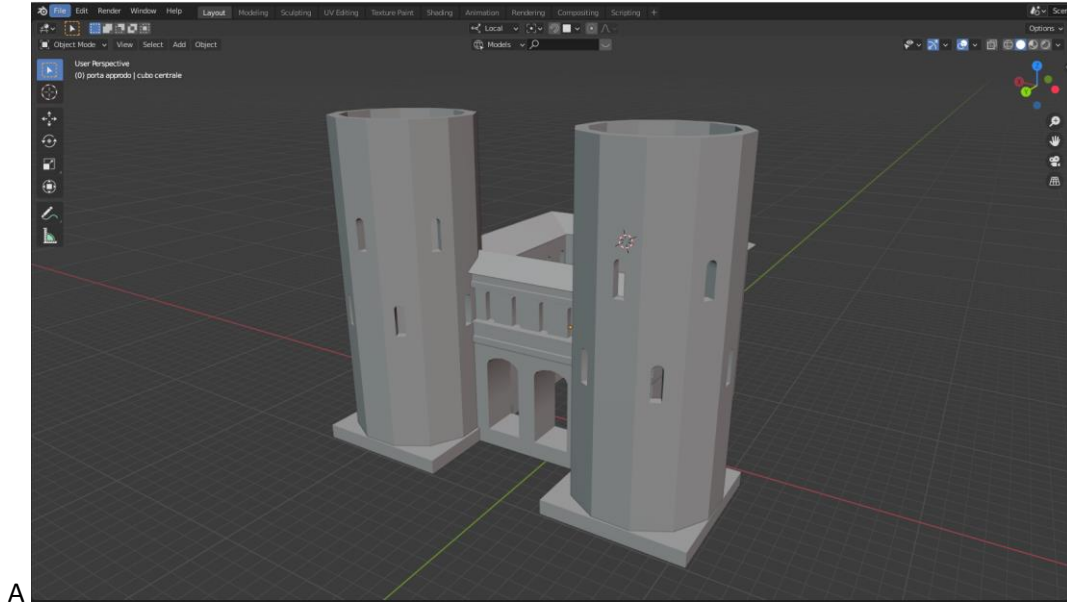
A

B

Figure 1: Figure a shows the 3D model of the city gate of Altino. The modeling of the city gate was carried out in Blender 2.83, an open source software. The geometry of the elevation has been represented applying the principle of Level Of Details. To improve the interaction between the final user and the 2D - 3D information, an Augmented Reality application (Figure b) was realized with Unity 2019.4. This app allows to frame with a device the edited planimetry and to extrude the virtual model.

Virtual holograms: museum visitors will be able to navigate in the virtual 3D space with intuitive, natural user interfaces, while the display system provides true 3D, hologram-like visualization of the 3D objects floating in the air in front of or behind the screen, without the necessity of viewers wearing glasses.
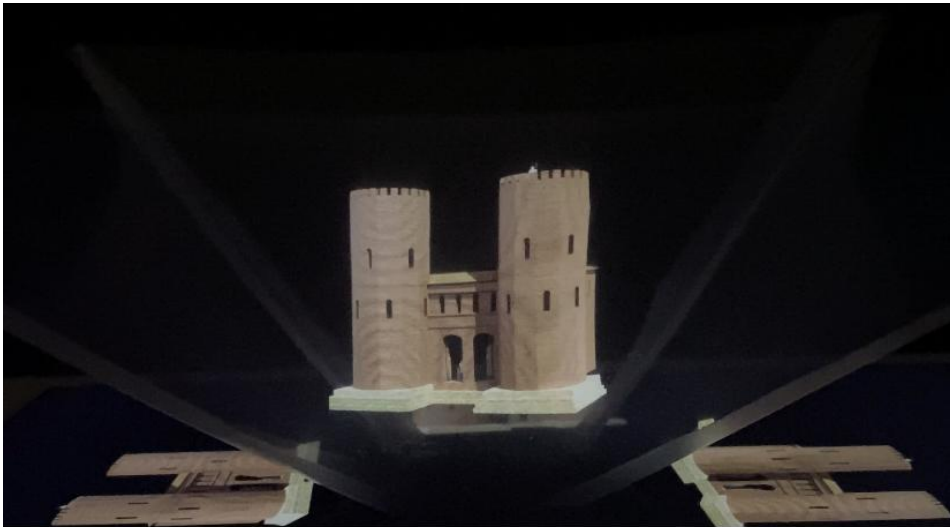

Figure 2: a 3D experience has been tested with holograms, with both image and video.