An e-book as an Interactive Digital Heritage Experience

Abstract

The potential to add digital content to text on a 'piece of paper' creates opportunities for visualisation and enrichment of written content, storytelling and the composition of interactive narratives which draw on a holistic approach to documentation of a cultural heritage monument or site. Data from this memory of the past can generate diverse forms of multimedia such as: 3D models, images, video, audio and text. Transparent complex data can be filtered, assembled and presented in a form visible to human eye, through an installation adapted and made functional for almost any group of users, becoming a personalized educational environment. These technologies are here incorporated in an interactive e-book, in the context of a unique monument, the Panagia of Asinou church in Nicosia (Cyprus)

Video Presentation of the installation: https://www.youtube.com/watch?v=Q5w2B1HoqxY

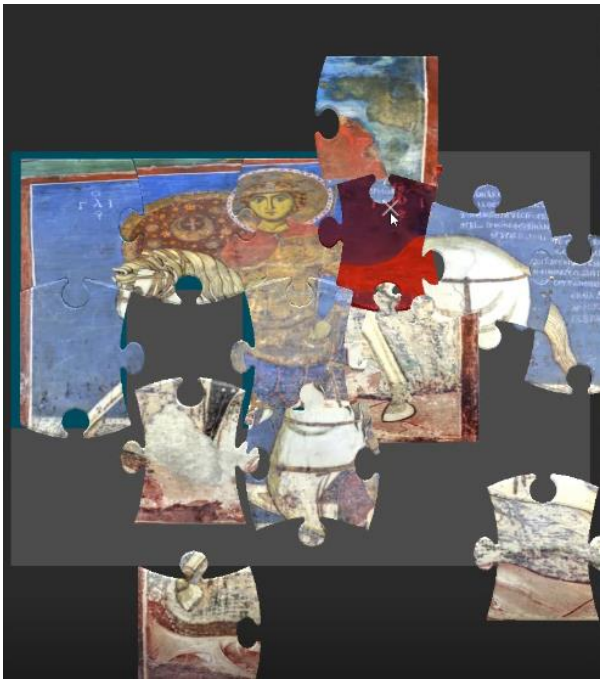
Keywords: interactive technology, interactive books, motion sensor, touch, projection, immersive experience, education.

Concept & Content Development

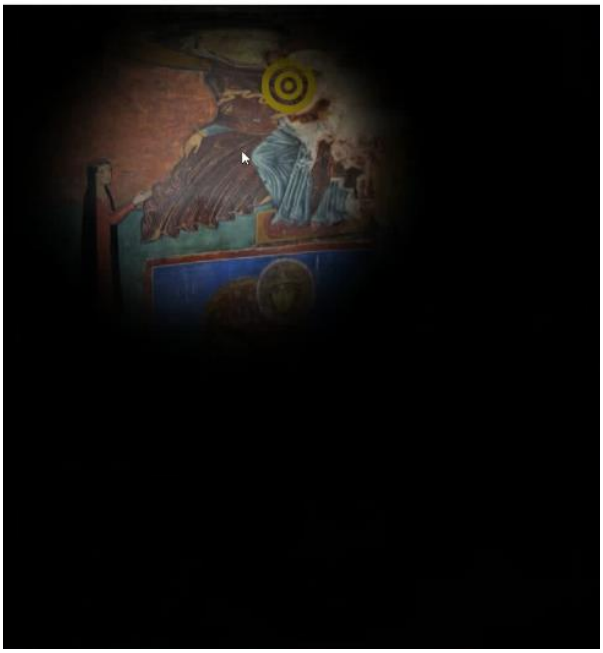
A book is a perfect vehicle for building story, environment and character. Since ancient times people have commonly referred to books in order to gain knowledge, find or seek entertainment. In this case we researched the Panagia of Asinou church which is included in UNESCO's World Heritage List (WHL). The religious atmosphere, together with the history of books and libraries of the Orthodox Church provides a motivation to use this form of communication along with technology to provide an immersive interactive experience. Analogue and digital content create a new engagement with the monument, which is not experienced by visiting the church itself.

The creation of an immersive installation requires extensive content creation, through techniques as 3D modelling, video/image editing, visual design and software development.

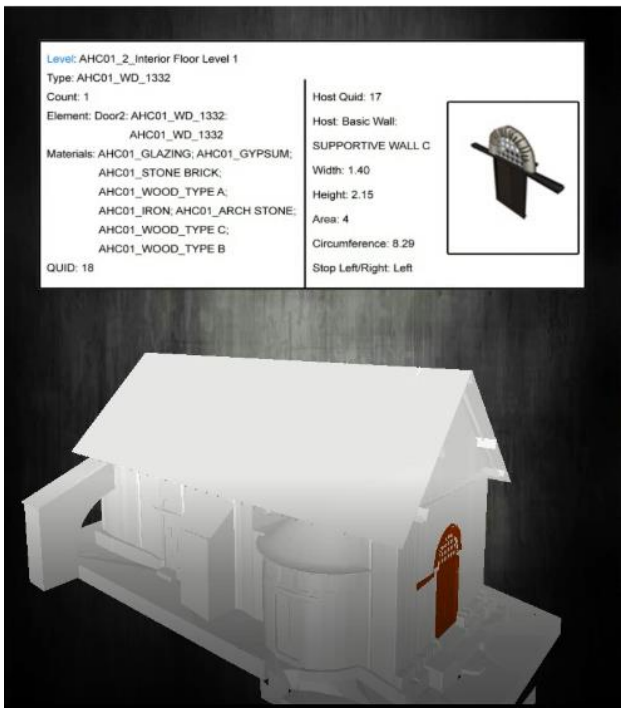
On the left side of each page of the e-book there is written text, describing the history of the church. On the right side of the page is the digital content. Users can interact on the first page with a puzzle which pictures St. George in high detail. As a 'reward', when the users complete the puzzle a short description appears.



The second page consists of an educational game, a variation on "treasure hunting". The concept here is to use your finger as a flashlight and try to find the hotspots on the image. When the users find the hotspot in a specific area, that area scales into a full-size image with a short description below.

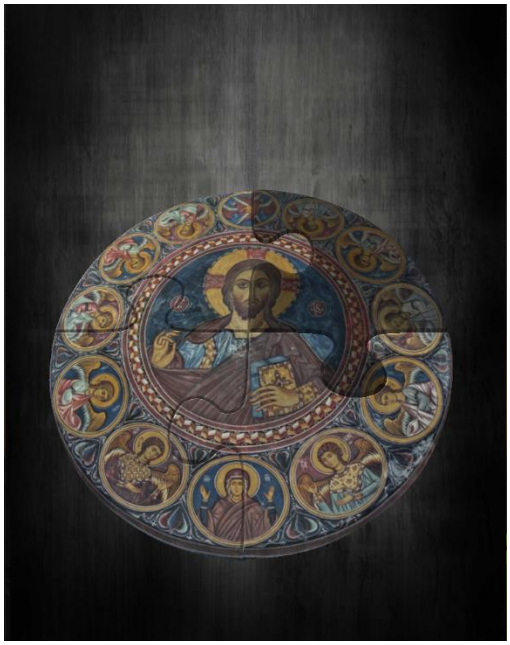


Moving on to the third page, users can find a 3D model of the church. The 3D model has been developed according to H-BIM (Historic Building Information Modelling) procedure which gives the ability to select specific information -(width ,weight, material etc) - about each part of the church separately.



In the fourth page users there is also a puzzle, with the difference that this puzzle is an icon of the church and at the completion of the puzzle a 3D model appears which users can interact with (scale, rotate).

The final page contains the puzzle of the church's dome with an amazing high-quality 3D model.



This is a video showing the content of the book: https://www.youtube.com/watch?v=MJeZzr5_i34

Technical

Installation requires good working equipment, the knowledge to set it up onsite and advance programming skills.

A customised structure is required involving: the projector being be placed on top of the book, a tripod for the tracking device, placed opposite the book, speakers for the audio files, the actual book and an elegant surface or structure to accompany the book and act as a base. The projector needs darkness in order to get a sharp, bright output and the rest of the equipment needs to be kept safe from theft, natural phenomena, humidity, animals etc., depending on whether it's an outdoor or indoor installation.

Gesture User Interface

The most critical part of this project is the interactivity; if the gesture user interface is not working flawlessly, the experience will not be optimally functional. Interaction can be achieved by various methods depending on the equipment. software and know-how available. So far, the use of Microsoft Kinect motion sensor and electromagnetic Touch Foil has been tested. The Touch Foil prototype was found to have significantly greater potential fir control, accuracy and scaling.

The overall goal is simplicity combined with flexibility to provide an interesting installation that is easy to interact with. Since the page of the book acts as a screen, the gestures should be equivalent to those widely used in all the other touch interfaces used by people in everyday life (tap, drag, slide, hold, swipe and rotate).

Conclusion

The 'digital invasion' has flooded our lives: work, home, community, everywhere. Its task is to make our lives easier and faster, but it also cuts off many people from the physical world and activities. Conversely, the feeling of reading a physical book is different and can feel more 'lifelike' than scrolling the pages of a tablet or a mouse to read the news. The use of digital advances in combination with physical elements not only retains the nostalgia but can creates a new milieu where the digital and physical meet in balance.

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