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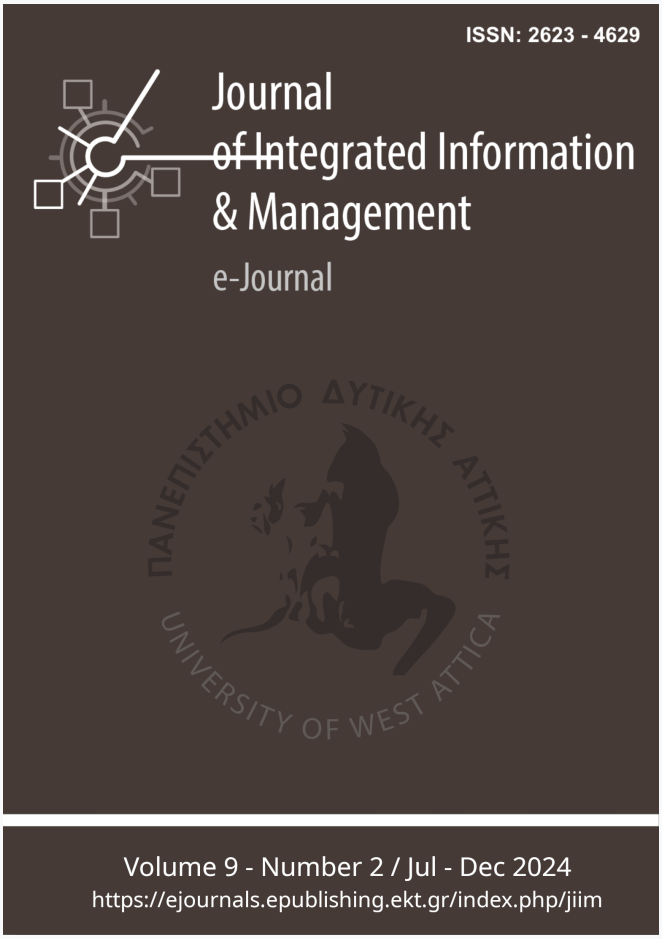

Phygital Heritage Experiences in Refugee Attica

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Phygital Heritage Experiences in Refugee Attica

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Abstract:

The Greco-Turkish war's aftermath led to a significant refugee crisis in 1922, with over 1.5 million fleeing Asia Minor for safety in Greece. The Digistoryteller project aims to document and share narratives of these refugees' struggles to establish homes in Attica, using digital storytelling and crowdsourcing features. This project, through its database and mobile apps, allows for city exploration and contributions from experts and the public. A key focus of the project is the concept of "phygitality," which combines physical and digital experiences. Phygitality encompasses various combinations, including augmented reality, 3D printing, and holograms. In cultural heritage, phygitality offers new ways to engage with historical sites and enhance cultural experiences. Different phygital products developed within the framework of the project will be presented. In the case of Vyronas, a municipality in Attica founded as the first urban refugee settlement, the project introduces phygital objects like paper reconstructions of historical buildings. These objects, like the Old Town Hall, provide educational and touristic value by allowing users to assemble them and access augmented reality information about the building's history. Initial user testing has shown promising results, with plans to integrate these objects into educational programs and museum shops. The municipality of Vyronas intends to produce these objects for both educational and touristic purposes.

Index Terms — This is where the keywords should be placed (up to six terms). **Cultural Heritage, Phygitality, Augmented Reality**

I. The Digistoryteller project

The Greco-Turkish war in Asia Minor came to an end in 1922. Following the conclusion of that conflict, a massive refugee crisis forced over 1.500.000 people to flee their homes in Asia Minor and Thrace and seek safety in Greece. A large number of these individuals settled in the prefecture of Attica. Over 100 years later, the goal of the Digistoryteller project (https://digistoryteller.eu), which is devoted to the refugee crisis, is to share narratives about the difficulties and attempts of refugees to establish homes in the Attica region. The project created a rich database and mobile apps to support city exploration with the use of digital storytelling and crowdsourcing features which allow contributions from experts and the public.

More specifically, the Digistoryteller includes a repository of information related to the arrival, settlement, and gradual integration of Asia Minor refugees in Attica. The reference period is from 1914 to 1949, with a focus on the period 1922-1928. Despite the various commemorations of the Asia Minor Catastrophe, primarily by Asia Minor organizations, the emphasis usually lies on the catastrophe itself and the development of municipalities with predominantly refugee populations, a phenomenon occurring from 1934 onwards. Research into the initial phases of these people's settlement, their continuous relocations until finding suitable living and working conditions, their entrepreneurial activities, the lack of access to basic goods, and the support networks and social organizations they created, has only recently begun. Many aspects regarding urban planning, its political ramifications, relations with the indigenous population, and the process of economic integration are illuminated through archival research and the development of new inquiries.

The guiding function is developed on two levels:

In guided tours using documents collected, selected, and entered by the project's research team, forming a route within each municipality, supplementing historical information for each point of interest with multimedia material (photos, music, recorded testimonials, video interviews, and recipes).

In the participatory crowdsourcing system, where the public (residents, inhabitants, visitors) can upload their own documents and information from their family archives or even simple testimonials from grandparents, grandmothers, or parents, allowing previously unknown material to emerge.

In addition, a large part of the project focused on the creation of relevant phygital products which would be used to provide reconstructions of monuments and elements of cultural heritage involving users in unique ways and allowing them to explore the past. Such products included (indicatively):

a) A coloring book and an adjoint series of 6 coloring cards, based on authentic photos which were provided by the Asia Minor Society of Egaleo “Nees Kydonies” (Figure 1);

the original photos are accessible through the AR application, which works both on the black-and-white and colored-in pictures.

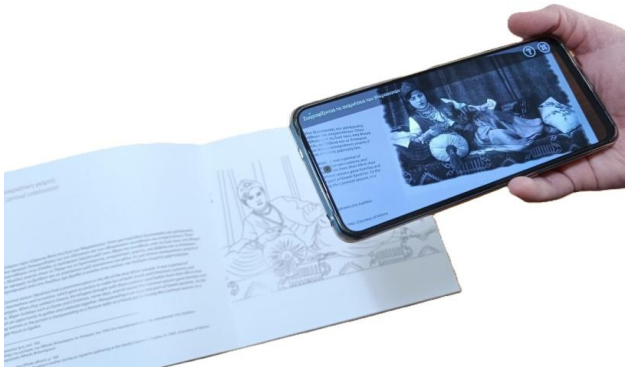

Fig. 1. The coloring book with the painting card series and the AR application.

b) A narrative card game which comes together with an original audiobook, titled A Day in Kastraki: Stories from the Refugee Settlement of Drapetsona, 1922-1960. The game is based on the power of narration and storytelling, and can be played either in conjunction with the story of the audiobook or autonomously. The AR application accompanying the game activates the camera of the mobile device and scans each of the cards to provide access to a different excerpt of the audiobook each time, allowing for various playful and educational applications.

c) An activity book for use by children aged 9-14, based on the approach of "mind maps", to help children approach aspects of Asia Minor memory and cultural heritage as shaped through the refugee experience. The organization of the content and the structure of the book invite each reader to complement it with their own multimedia material (photos, audio recordings, videos), mapping their family and local history in their own way. To facilitate the recording and organization of user-generated multimedia material, the accompanying application has been designed, which activates the recording applications of the mobile device on which the application is installed and allows for the management of files in accordance with the organization of the book's sections-collections (Figure 2).

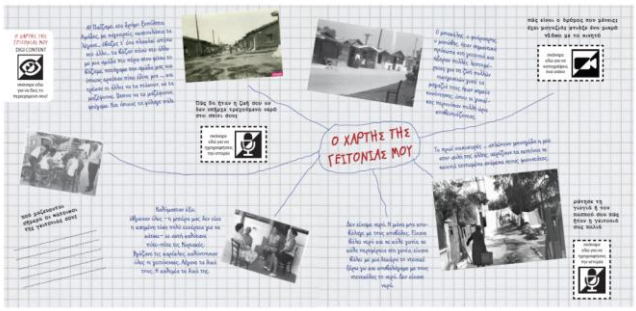

Fig. 2. The activity book with the augmented mind map.

II. PHYGITALITY

The term phygitality was introduced to describe new forms of hybrid experiences which combine physical aspects of the experience with augmented reality, 3D printing, holograms, etc. This is an umbrella term which generically describes any such combinations without being defined in concrete ways. Thus, phygitality refers to an ecosystem of various combinations of physical and digital experiences [1]. A recent literature review revealed four main dimensions of phygitality: phygital objects and applications, phygital spaces, phygital user journey (user decisions making is assisted through the coexistence of the physical and virtual), phygital experience (the resulted enhanced cultural experience) [2].

Literature review also identifies five main areas that phygitality emerges: 1. Marketing, 2. Education, 3. Social issues and Politics, 4. Technical and Legal issues, and 5. Cultural Heritage, Tourism and Urban Development [3]. Regarding cultural heritage, there are already research efforts that wish to introduce phygitality in the domain of heritage and first attempts provided positive results [4]. Although many efforts focus on new forms of cultural tourism [5, 6], others focus more on the cultural experience as such [7]. For example, phygitality was considered as a new way to experience one of Portugal most known cultural sites, Quinta da Regaleira [8]. In addition, museum visitors that received phygital experiences in the form of Mixed Reality showed higher perceptions of authenticity and reported higher quality of the cultural experience [9]. Finally, phygitality was used to promote a cultural site and enhance heritage communication [10, 11].

The current work uses phygital objects and phygital experiences to engage users in cultural experiences. As mentioned in the previous section, in the context of Digistoryteller, different phygital products were developed and tested with visitors and policy makers. In the following section, we will focus on the phygital 3D papercraft of the old Town Hall of Vyronas, which represents an effort to implement the concept of phygital and game-based storytelling experiences for a built landmark, rather than for aspects of intangible refugee heritage.

III. THE CASE OF THE OLD TOWN HALL OF VYRONAS

A. *Focusing on the physical aspect of "phygital"*

During the last decades, there has been a notable expansion of the use of immersive digital technologies, such as Virtual and Augmented Reality, in order to make learning about cultural assets more attractive and accessible to wider audiences. The combination with game-based approaches, such as Serious Games, has proved very effective in various areas of education related to cultural heritage. However, most examples of such experimentation focus on digitized assets within a Virtual Reality environment, maintaining that in this way the contact with the assets appears to be more direct and realistic [12].

Our approach came from a different point of departure: that playful experience of built cultural assets and landmarks can be served by focusing on the physicality of the educational object. Tangible interactions with educational games, especially with games incorporating

analysis and documentation, are essential for turning cultural assets, including historical buildings, into educational resources for expanding the learning skills and perspectives, with a special focus on school-age audiences [13]. In this, we have drawn from the experience from previous work of the project's partners with paper reconstructions of archaeological and architectural monuments, which have proven very popular with Museum visitors in all major archaeological Museums in Greece.

Moreover, the cross-curricular value of papercraft projects in educational contexts is significant: for one, they are a playful way of understanding how geometric shapes can be handled to form 3D structures, thus familiarizing users with basic engineering and spatial relationship understandings. At the same time, papercrafts entail building from templates, concentration and fine motor skills, which obliges users to actively engage with the papercraft subject and can thus build positive associations with it, sparking curiosity for further exploration. Digitally enhanced storytelling can therefore serve as an essential part of an extended and enriched experience with the cultural asset addressed. Based on this premise, we decided to test this approach for at least one historical building related to the refugee experience in Attica.

B. Focusing on the Old Town Hall of Vyronas

The choice of the specific historical building was due to a number of reasons:

a) Vyronas is one of the most known refugee neighborhoods in Attica, and its old Town Hall is an emblematic landmark related to the refugee settlement: originally it was the Red Cross Polyclinic (1924) and for many decades to follow the Town Hall of Vyronas (until 1996). It has since served as municipal cultural center for almost 20 years, and it is now going to host the newly established and soon-to-be-implemented History Museum of the Municipality of Vyronas. Additionally, the Municipality was looking for creative synergies with Digistoryteller, in order to promote its own activities promoting local history and refugee heritage among its citizens. All these factors made the old Town Hall building a suitable choice within the context of Digistoryteller.

b) Contrary to other historical buildings with similar advantages, in the case of the old Town Hall of Vyronas we had access to the building's detailed architectural plans, due to the recent museography and restoration blueprints for the transformation of the building into a city-museum. This part is essential for the 3D papercraft to be closer to a paper reconstruction, however simplified.

c) The plans of the Municipality to turn the building into a History Museum permitted us to conceptualize the product as part of the Municipality's awareness and expectation raising campaign. Also, we could draw from the narrative developed for the forthcoming Museum's exhibition, in order to build our content and storytelling around it. This ensured more focused testing sessions for our product with residents and Municipality employees.

C. The phygital products for the new History Museum

The principal product is the 3D papercraft, which consists of color printed pre-cut pieces on 3 A4 sheets, plus a color base on an extra sheet. By assembling the pieces, the user can build the paper reconstruction of the old Town Hall and soon-to-be History Museum (Figure 3). The key points of the building's history are presented on the information sheet included in the packaging. Through the AR application, the user who has assembled the model can be guided through a more detailed version of the building's history, including some accounts and anecdotes about the centrality of this landmark for the everyday life of Vyronas residents through the decades. The user also gains access to the VR video about the forthcoming Museum and its first exhibition.

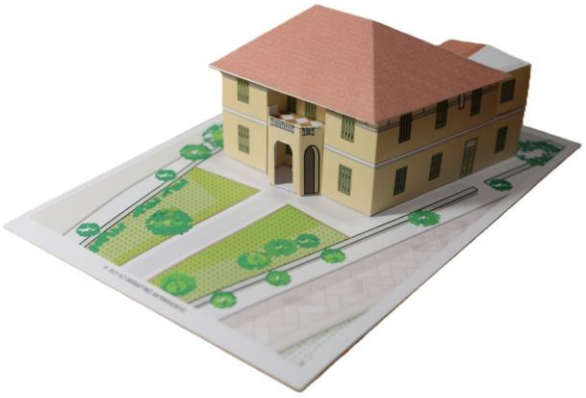

Fig. 3. Paper reconstruction of the Old Town Hall of Vyronas.

The application is available for free installation on a phone or tablet from the Google Play Store. A QR code on the cover (packaging) of the paper construction leads directly to the application, for easier installation. The application activates the camera of the portable device and scans the object. Each side of the building opens different text bubbles, through which the history of the building unfolds in brief. Reading the back side of the building opens the VR video created by the Municipality of Vyronas for the planned Museum, guiding the user to see the next page of the building's history.

Together with the reconstruction of the historical buildings, Vyronas' visitors will be also able to use an 8-fold informational brochure for the Vyronas Municipality History Museum, double-sided (Figure 4). The interior includes a map of the wider area of the Museum (Old Town Hall) in Vyronas. Through the same AR application (but by choosing a different menu), additional visual and auditory content is projected onto the map, for points of interest near the Museum building - the Old Town Hall, which are related to the establishment and inauguration of the refugee settlement in 1924. By selecting a POI, the user can see a brief description, listen to a more detailed audio description, and view additional multimedia material (photos and videos) about the landmark.

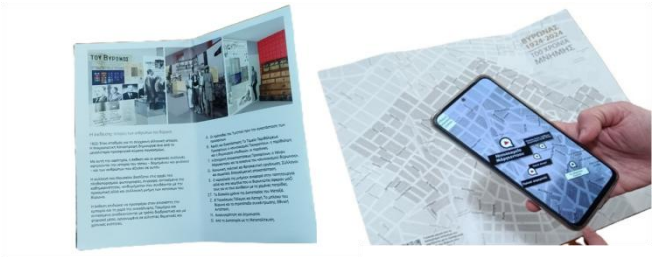

Fig. 4. Augmented brochure for with map of the wider area of the Old Town Hall.

IV. PERSPECTIVES AND CONCLUSIONS

The phygital objects of the Old Town Hall were presented to the Mayor of Vyronas, to municipal employees and locals in December 2023, and were given to them for user testing. Initial user testing revealed the educational potential of the 3D papercraft, as well as the commercial potential of both products, which have been picked up as saleables at the new Museum's shop. In fact, the Municipality already expressed its intention to proceed with the production of the item for use in the educational programs of the Museum, after the start of its operation, while it is also considering the possibility of production for use in the educational programs of its schools already before the opening of the Museum.

Specifically with regard to the 3D papercraft of the old Town Hall, it is noteworthy that it is addressed to younger audiences, who have no recollection of the Museum premises used as Town Hall. Therefore, it was considered a playful and creative means to familiarize younger audiences with the historicity of a building which they are only going to know as Museum, already remodelled inside and rebranded as a landmark. In this sense, the old Town Hall of Vyronas has provided a meaningful testbed for the use of digitally enhanced paper reconstructions as tools in a game-based approach to cultural and local heritage education, especially when it comes to raising awareness and re-inventing the relevance of historical buildings.

V. ACKNOWLEDGEMENTS

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