

## A virtual Lab for Hellenic cultural heritage

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*Abstract:* The rise of Information and Communication technology (ICT) changed rapidly and dramatically the way that many kinds of human activities can be presented. Particularly, a nation's cultural heritage, which reflects its history, tradition and customs, could not be unaffected. This paper describes an e-culture virtual lab which guides the visitor around the majority of cultural institutions in Greece and Cyprus, giving him the capability to view a large amount of material in the form of text and images. This virtual lab started as an early e-culture application. However, a substantial update has taken place as time went by, with the use of contemporary virtual lab techniques/principles, in order to be accessible by people with visual disabilities while new operations were added. The main purpose of this system analyzed is both to ensure the 'Equal Access for Everybody' directive according to the European Union guidelines, and to expand the visitor's horizons by conveying further knowledge regarding the Greek civilization globally.

*Key-Words:* E-Culture, cultural heritage, ICT, digitization, virtual lab

### 1 Introduction

Information and Communication Technology (ICT) and culture is the usual phrase in any discussion of policy related to digitization or new media in the field of arts and culture [1]. This has to do with the relationship between ICT and the production and consumption of art and culture. Merging the above, the term 'e-culture' is used (Figure 1). In theory, e-culture comprises all processes of expression and reflection in the digital domain. That also includes, for instance, communities that share a certain lifestyle, interests or ideas [5].

The term e-culture implied the need for a new type of policy. In fact, when it comes to cultural policy, developments surrounding ICT and digital media must be considered within a broad and integral perspective [1,8,10,17]. For this reason, the EU has already funded several projects (especially in FP6). This program states that work will focus on "intelligent systems for dynamic access to and preservation of tangible and intangible cultural and scientific resources" [13].

New museums and galleries place a high value on accessibility and also on aesthetics. They are moving away from rows and rows of objects each fronted by a label containing limited and specific information. Strange then, that when these new museums start to digitize their collections they

produce huge databases with modern agent-oriented methodologies [4,7,12,15].

Moreover, the past years have seen the exploitation of multimedia techniques and lately the introduction of virtual reality methods to create new forms of presentation for museums' exhibitions. Virtual Reality can offer a number of advantages to museums, offering a way to overcome some common problems like the lack of space or the need of the visitors to interact with the exhibits [16,18,19,20]. Furthermore, the virtual laboratory idea can be implemented in an institution environment via a simulation process, being useful and educational for the user/visitor [22].

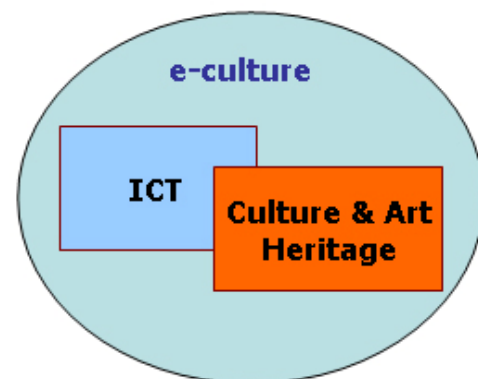


Figure 1- Merging ICT and Cultural Heritage

## 2 Abstract Level Description

The structure of the system content consists of the following steps (Figure 2):

- In the first step, a list of the existing museums and galleries categories in Greece and Cyprus appears. As a result of this categorization, the visitor can easily and quickly access the museum of his choice, without having to spend extra time for searching
- The second step includes the listing and placing of museums/galleries, according to the corresponding categories, mentioned in the previous step. The total number of museums/galleries belonging to each category is satisfactory (having a mean term of 30) so that the user-visitor has a spherical and objective informing about every category
- During the third step, a study of every institution's cultural content takes place, in order to show and present it in such a way that a user-visitor will not only obtain an integrated and representative view of a specific museum, but also he will ease his navigation, simultaneously making it more interesting
- Moving on, the cultural content which emerged from the previous step, is written and embedded into the whole system
- Finally, there is a thorough study of the system standards and outlines. The further goal is to choose the appropriate techniques and technologies which will be used, so as to constitute the final product user-friendly, and, more importantly, to live up to the needs of disabled people, especially those with visual disabilities simulating it as a virtual lab

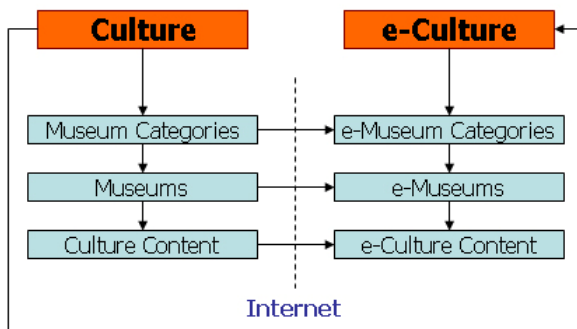


Figure 2-System Structure

## 3 System Analysis

This system's opening page starts with a graphic and art visual application with the harmonious arrangement of lines and shapes, influenced by ancient Greece, in order to introduce the visitor from the beginning to the ambience which it presents. It has a simple but functional structure so that the visitor can easily navigate throughout the various categories of museums and galleries. This page is depicted in Figure 3.

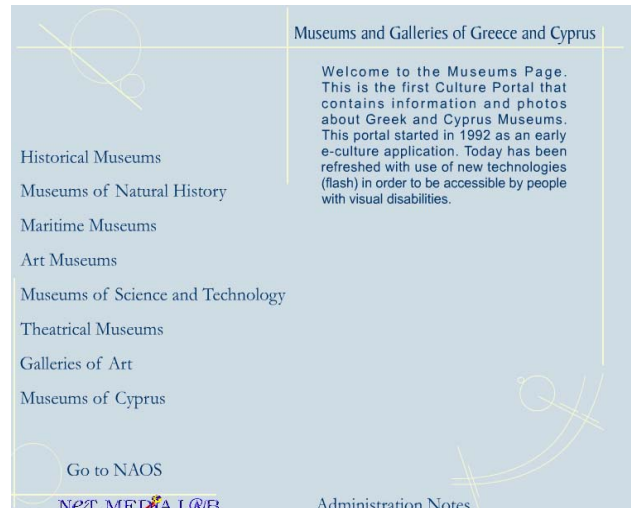


Figure 3 – Main page with graphic arts

After the search of the various museums/galleries categories in Greece and Cyprus, the following basic ones were gathered and listed:

- Historical Museums
- Museums of Natural History
- Maritime Museums
- Art Museums
- Museums of Science and Technology
- Theatrical Museums
- Galleries of Art
- Museums of Cyprus

The above categories as it was previously mentioned are representative because they reflect the Hellenic cultural activities over the centuries and their aspects such as history, tradition and customs.

At this point, the user-visitor has the option to choose one of the above categories in order to navigate through the corresponding museums/galleries. The choice of these institutions was made with the criterion to cover as much geographical space as possible in the Greek and Cypriot territories. The reason is simple: every region, although belonging in the same country, has

its own cultural roots and uniqueness. Consequently, a user-visitor can be informed about the whole of a region's culture even if this region is remote. In figure 4, part of the historical museums catalog is selectively depicted. These museums exhibit the Greek history over the centuries, from the ancient years to the 20<sup>th</sup> century. For example, for the ancient Greek civilization some of them are: the museum of Atlantis, the Hippocratic museum of Kos etc. whereas for the modern era there are: the National Historical Museum, the Museum of the Post-Independence of Athens, the Therisso Museum of El. Venizelos etc.

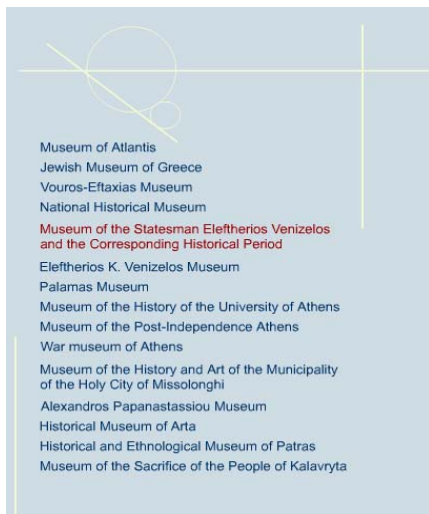


Figure 4 – List of Historical Museums

The final step of the navigation through the system is the projection and presentation of a specific institution's cultural content. This presentation consists of the following parameters which emerged after a thorough study and are depicted in Figure 5 showing their connection to the rest of the system. These are:

- Museum Address
- Museum Information
- Museum Photos
- Exhibits Images

With these elements of cultural content the following can be achieved: the user-visitor can easily and quickly find the address and other data (telephone numbers, fax numbers etc.) of the institution, brief information about the constitution itself (foundation, inauguration, founder, and exhibit pieces), a brief set of photographs showing the indoor and outdoor areas of the institution and finally representative images of exhibits of great importance.

When a user has chosen a specific category, he can proceed to the next which is the choice of appearance of the cultural content of a particular institution as it is depicted in Figures 6,7.

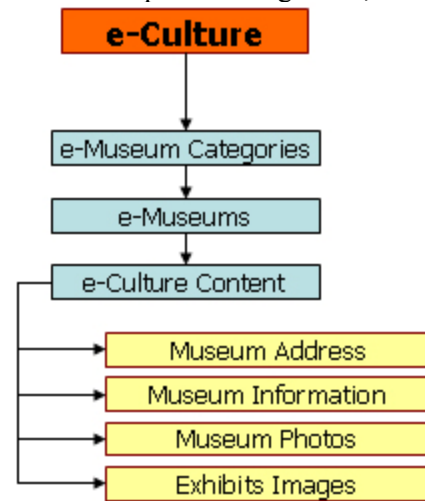


Figure 5- E-culture Content

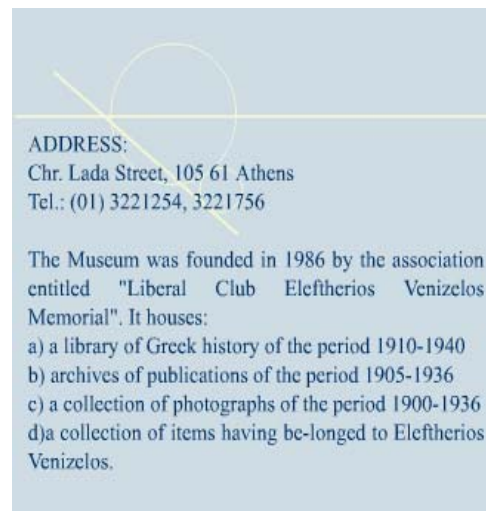


Figure 6 – Museum Address/Information

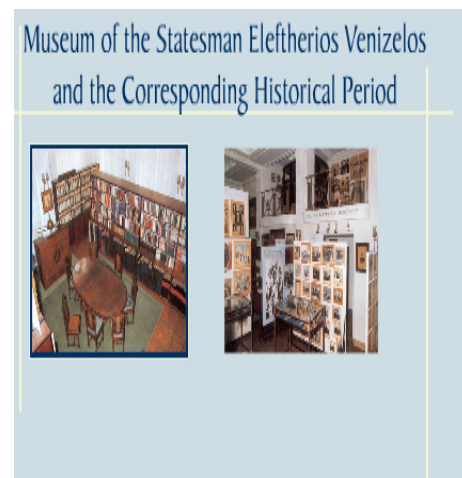


Figure 7 – Museum Photos

As it can be seen in the above figures, the parameters Museum Address and Museum Information are depicted in regular size, whereas the parameters Museum Photos and Exhibits Images are depicted in a smaller size than the regular. Over that point, the user-visitor has the following options:

- Using Flash technology in the system, a user-visitor can enlarge the parameters Museum Address και Museum Information aiming at the reading of the cultural content by individuals with visual disabilities (Figure 8)

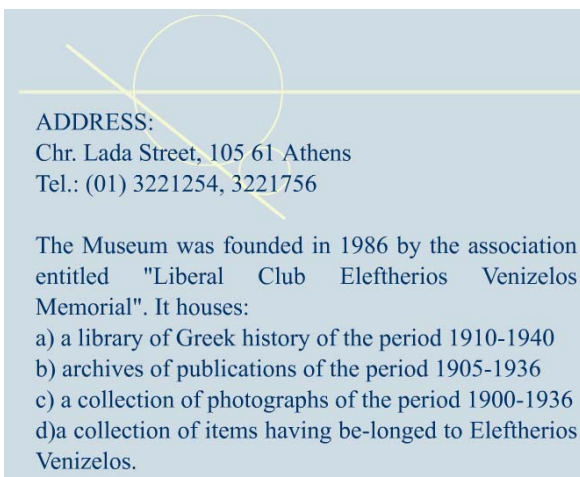


Figure 8 – Zoom of Museum Address & Information

- Choosing an image from the parameters Museum Photos and Exhibits Images, the visitor can view them in real size so as to have a clear picture of the exhibit or the institution areas (Figure 9)



Figure 9 –Real size of an exhibit-Poseidon

To sum up, it can be said that the user-visitor has an integrated point of view of a museum and its exhibits as they are presented through the system. Of course one cannot omit that the knowledge-information projected in the system is also available to people with visual disabilities, through Flash technology which is the backbone of the system as it was previously mentioned. In this way, the system follows the logic «information for all» [11].

## 4 Benefits

The benefits of an e-culture system like the one described in this paper and its importance to the information society can be focused on the following:

- The spreading of Greek civilization and generally of its cultural heritage in a universal level. Additionally, this form of cultural heritage is at the disposal of every Greek citizen, to the Greeks abroad and finally to foreign people who are eager to learn about Greek culture
- The cultural information is accessible from everyone even in remote places, at any time and with the minimum cost [9]
- Saving and creating digital cultural content can lead to the preservation of cultural information during the course of time due to the constant physical degradation of monuments, statues etc. [11]
- Easy access to cultural information from disabled people complying with the logic «equal access and knowledge for all»
- The projection of a country's cultural heritage can yield immediate results to the social sector of a country like the development of tourism, and in a wider sense the development of its economy [14,21]
- The electronic projection of a country's cultural heritage is also a tool for education, study and research from scientists and students
- Finding new information out of existing information from other resources
- Creating new arts with the help of ICT tools, like graphic design, digital photography etc. As a result, new modern artists appear and simultaneously new professions and job vacancies are created [2],[17]

## 5 Future Work

The system presented is the first creative stage of an integrated e-culture system about navigation through Greek and Cyprian museums. The system described in this paper is constructed with the HTML programming language embedding at the same time the FLASH technology in order to achieve better visualization. The aforementioned technologies are compatible with every operational system as well as every Internet Browser. A future goal of the presented system is the creation of an up-to-date integrated e-culture system using modern techniques and technologies. Great importance will be given to the promotion and presentation of cultural information, due to the fact that there are new techniques and tools in the area of informatics such as:

- 3-tier architecture system
- Database systems
- Virtual Reality
- Digital Photography
- DVB Technology
- 3D games
- Learning environments
- Agents and avatars
- Mobile access to heritage information
- Location-based services
- New displays and human interfaces
- Virtual communities

All the above play an important role towards the creation of a user friendly e-culture system, especially to children and the elderly who are not familiar with using a computer and its features [3],[6].

## 6 Conclusions

From the detailed analysis carried out throughout this paper, the numerous advantages of the system that supports e-culture services became clear. Its main advantage is none other than the fact that it offers the pioneering experience for either a simple user-visitor or a scientist-researcher to combine two completely different worlds, the physical and online worlds, simultaneously.

This new e-culture challenge will drastically change the structures and relations that existed up to nowadays. Museum staff, volunteers and a wider public will require new skills to create, manage and maintain participatory and truly interactive digital applications. Museum people will need to understand experiential learning and the techniques of information management and multimedia

creation. They will also need to draw on inputs from a wide range of disciplines, in the arts, sciences and humanities [17].

Culture is dynamic and creativity is at its core. Museums and galleries are centers for creativity. Their collections embody the accumulated cultural energy of contemporary and other times. They can be powerful catalysts for innovation. By making museums more accessible a more creative society can be built.

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