An E-Culture Environment for Common Citizens and Visually Impaired Individuals

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Abstract. The integration of modern Information and Communication Technologies (ICTs) within the cultural domain creates what is commonly known as e-culture. The need to create an e-culture environment arose from the undeniable fact that the cultural heritage of a nation defines a nation and therefore should be disseminated to all, regardless of their location and their disability. This article discusses an e-culture portal, which presents to any interested users, information regarding a significant number of Greek and Cypriot museums and galleries as well as their exhibits. The e-culture environment offers user friendly navigation techniques and contemporary multimedia tools and services for the better presentation of the e-material to the users-visitors, paying particular attention to common citizens and especially to visually impaired individuals, in order to offer them equal access to cultural heritage information. This environment is an inter-disciplinary application, combining the ICTs, cultural and e-inclusion domains (electronic support for disabled people).

Keywords: e-culture, cultural heritage, ICT, digitization.

1 Introduction

The digitization of arts and culture has to do with the relationship between ICTs and the production and consumption of art and culture. By merging the above, the term e-culture arises. 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 [1], [2].

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 [3], [4], [5]. For this reason, the EU has already funded several projects. This program states that work will focus on "intelligent systems for dynamic access to and preservation of tangible and intangible cultural and scientific resources" [6].

New museums and galleries place a high value on accessibility and also on aesthetics issues. 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 [7], [8], [9], [10].

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 [11], [12], [13], [14].

2   Abstract Level Description

The structure of the system content consists of the following five steps (Fig. 1):

- 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 access the museum of his choice.
- The second step includes the listing and placing of museums/galleries, according to the corresponding categories. 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 institutions' 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 goal is to choose the appropriate techniques and technologies which will be used, so as to constitute the final product user-centered, user-friendly, and more importantly, to live up to the needs of disabled people and especially to those with visual disabilities in accord with the information and knowledge society strategies.
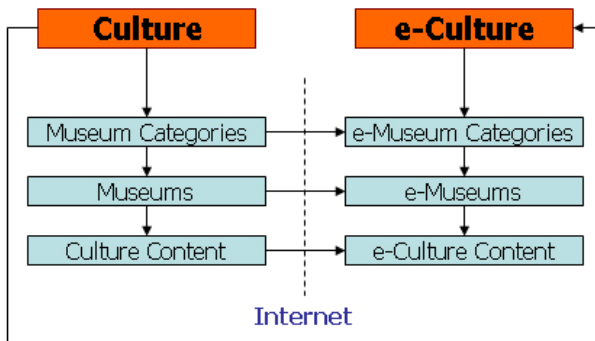

Fig. 1. System Structure

3   System Analysis

This portal's opening page (Fig. 2) 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 its ambience. It has a simple but functional structure so that the visitor can easily navigate throughout the various categories of museums and galleries.
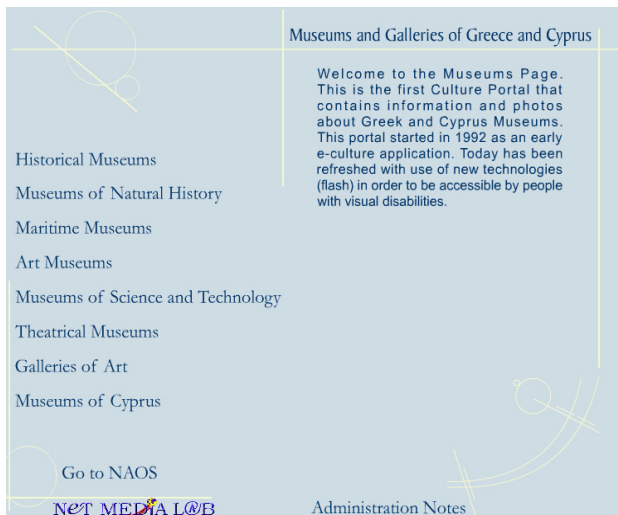

Fig. 2. Main page with graphic arts

After the search of the various museums/galleries categories in Greece and Cyprus, the following basic list was made:

- 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 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 because every region has its own cultural roots and uniqueness and consequently, a user-visitor can be informed about the whole of a region's culture even if this region is remote.

In Fig. 3, part of the historical museums catalog is depicted. These museums exhibit the Greek history over the centuries, from the ancient years to the 20th 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 Therissos Museum etc.
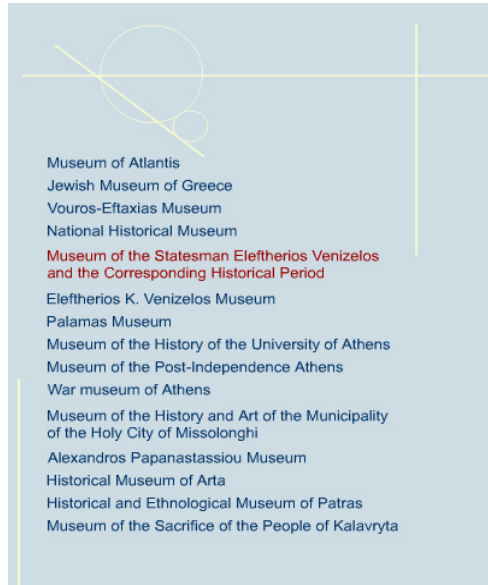

Museum of Atlantis
Jewish Museum of Greece
Vouros-Eftaxias Museum
National Historical Museum
Museum of the Statesman Eleftherios Venizelos
and the Corresponding Historical Period
Eleftherios K. Venizelos Museum
Palamas Museum
Museum of the History of the University of Athens
Museum of the Post-Independence Athens
War museum of Athens
Museum of the History and Art of the Municipality
of the Holy City of Missolonghi
Alexandros Papanastassiou Museum
Historical Museum of Arta
Historical and Ethnological Museum of Patras
Museum of the Sacrifice of the People of Kalavryta

Fig. 3. List of Historical Museums

The final step of the navigation through the portal is the projection and presentation of a specific institutions' cultural content. This presentation consists of the following parameters, which emerged after a thorough study showing their connection to the rest of the system (Fig. 4). 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 institution 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 the most important exhibits.

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 (Fig. 5).

With the use of Flash technology within the system, a user-visitor can enlarge the parameters Museum Address and Museum Information aiming at the cultural content to be legible for individuals with visual disabilities (Fig. 6).
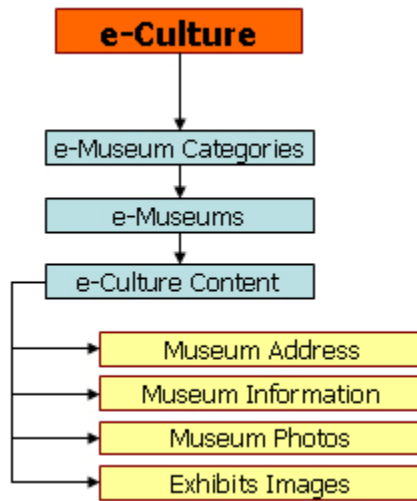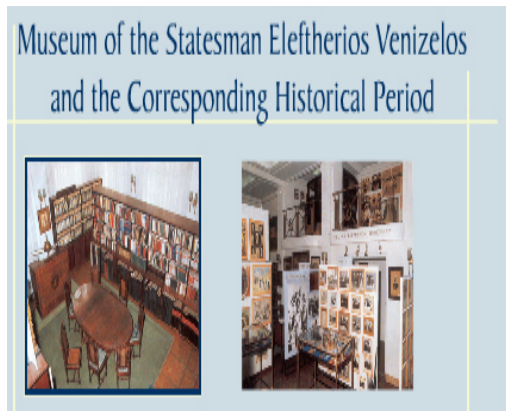
Fig. 4. E-culture content

Fig. 5. Museum Photos

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.

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 within the system. Of course, one cannot omit the fact that the knowledge-information presented within the environment is also available to people with visual disabilities, through the use of Flash technology, which is the backbone of the system, as it was previously mentioned. In this way, the system follows the «Information for All» logic and scheme as well as knowledge society strategies for user-centered systems [15].
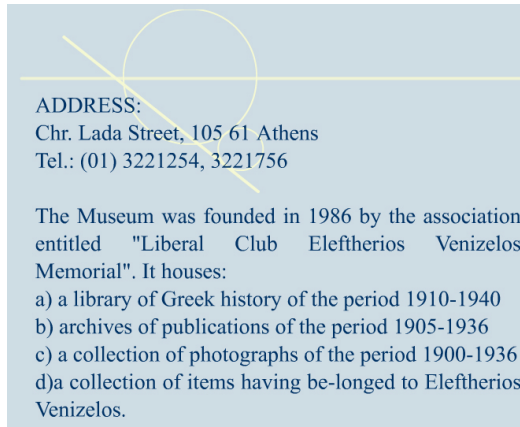
ADDRESS:
Chr. Lada Street, 105 61 Athens
Tel.: (01) 3221254, 3221756

The Museum was founded in 1986 by the association
entitled "Liberal Club Eleftherios Venizelos
Memorial". It houses:
a) a library of Greek history of the period 1910-1940
b) archives of publications of the period 1905-1936
c) a collection of photographs of the period 1900-1936
d)a collection of items having be-longed to Eleftherios
Venizelos.

Fig. 6. Zoom of Museum Address & Information

4   Benefits

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

- The diffusion of Greek civilization and generally of the Greek cultural heritage in
  a universal level. Additionally, this form of cultural heritage is at the disposal of
  every Greek citizen, that is, to the Greeks abroad and finally to foreign people
  who are eager to learn about Greek culture
- The cultural information is accessible from anyone, anywhere (even in remote
  places), at any time and with minimum cost [16]
- Saving and creating digital cultural content can lead to the preservation of cul-
  tural information during the course of time due to the constant physical degrada-
  tion of monuments, statues etc. [15]
- Easy access to cultural information for disabled people complying with the user-
  centered strategy and the «equal access and knowledge for all» logic
- 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 [17], [18]
- The electronic projection of a country's cultural heritage is also a tool for educa-
  tion, 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 photog-
  raphy etc. As a result, new modern artists appear and simultaneously new profes-
  sions and job vacancies are created [5],[19]

5   Future Work

The system presented is the first creative stage of an integrated e-culture system for
navigation through Greek and Cypriot museums. The environment described in this

article was created 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 environment 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 the use of a computer and its features [20].

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 experimental 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 [5].

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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