WE WENT DIGITAL. AND NOW WHAT?

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Abstract

The application of the new technologies in the field of culture meets a great popularity during the last decades. Along to them, guidelines and prototypes have been developed in order to support and control them. The result is the Digital Culture. The question is "And now What?"

Focus of the paper is to explore certain aspects of this newly created field, the Digital Culture and address questions regarding the "Curation" of this material. Issues such as the management, access, use, and particularly the preservation of the digitized cultural objects and data will be addressed in order to realize the problems that have been arisen after the digitization. The tools under examination are the Cultural Databases. The approach will be from the point of view of the user, meaning the curator of that material. As case studies will be used certain cultural databases that are developed using international prototypes and they are related to different categories of cultural material: a) archaeological excavation data and b) museum objects.

INTRODUCTION

The gradually increased application of new technologies in the field of culture with a particular emphasis to Information Technologies (IT), resulted to significant changes in the cultural heritage and nearly to the creation of a new image of it. The sectors that received the greatest impact by those new technologies are the recording, management, and presentation of this material. Information systems, databases, digital libraries, geographical information systems, 2D and 3D digitization, and internet are some of the most widespread applications in the field of culture.

Worth of note is that all this penetration of informatics in the management and dissemination of cultural material had a result not predictable in advance. The focus point has been transferred now from the object as an entity of identity features and data, to the information around it and the metadata [1]. Consequently a new situation appears as for the supervision, diffusion, and presentation of cultural heritage. Cultural organizations face similar challenges as they try to take advantage of information technologies in this emerging cultural economy. Although the conversion of all sorts of contents into bits and bytes opens up quite new opportunities for interoperability and information exchange between the various cultural and technological sectors, it also causes challenging problems and difficulties that are not only technological but also organizational and political.

The completion of a great quantity of digitized cultural material led to the "We went digital". The question raised is "And Now What? What's next and what do we do with all that digital culture?"

DIGITAL CULTURE

The well-known term "Cultural Heritage" refers to aspects of our past that we want to keep, appreciate and pass on to future generations. It includes a great variety of categories of physical artifacts and intangible attributes of a group or society, such as objects (intact or fragmentary), monuments, sites, as well as books, manuscripts,

music and various others. The digitization of the cultural heritage met a great popularity in United States and Europe since the last decades of the past century.

In Greece, an information system for the National Monuments record together with an integrated Museum Information System, for implementation at national level, was the goal of the ‘ Polemon’ project from late 1994 to 1997 [2]. ‘Polemon’ was applied through the Ministry of Culture, to state museums and archaeological ephorates. Private museums, collections and various organizations owing or managing cultural material, were not included in that effort. Therefore through the Information Society, a few years ago begun the digitization of a considerable number of the latter aiming to the preservation of the cultural heritage, the easy access to it and its presentation and dissemination through the internet and the electronic publications [3]. Museums, libraries, archives, collections and various cultural organizations participate to this effort.

Although a significant number of those projects is not completed yet, meaning that it is not fully known or published the produced digital material and the form and type of it, it is clear that the categories are diverse. Objects, 2D photographs, texts, books, videos, music, and films are some of the most characteristic types of cultural material that are meant to be digitized and stored in various media such as CR-roms, DVD-roms, databases, etc. Worth of note is that over 200 web-pages or portals are expected to come out after the completion of this effort. All will contain cultural material open to the public. The Digital Culture is a reality and present. General public, professionals, scholars, students, and scientists are expected to benefit of it. Furthermore, the cultural organizations will supposedly use the Digital Culture also for educational purposes and collaborations in a national and international level.

CULTURAL DATABASES

Digital Culture demands Digital Archives and the introduction of informatics in the museums’ world led to the development of cultural databases. Three principal elements, each with its individual characteristics, consist the environment of those systems: the “owner” of the information/material, the digitized cultural material, and the end-users of the system. The demands and needs of each of them are different.

Moreover, each category of cultural material has its own and particular needs. The combination of all the above should be taken under consideration for the designing and the development of an archiving and recording system. Numerous examples of cultural databases have been developed internationally. Major European and American museums created their own systems for archiving, recording and documenting their collections since ‘80s and ‘90s and many smaller museums followed them.

Nowadays, it can be said that the use of a database in a museum is a common practice. The first problem though that has been arisen out of it is that of compatibility. It became clear already in early stages that the need for “communication” and data exchange of the created systems was large. Therefore were developed standards, models, and prototypes accepted by international organizations such as International Organization for Standardization (ISO). The designing of the under development systems should follow the guidelines provided by those standards. Furthermore, following the guidelines of a model it the can be assured at least an adequate documentation of a collection. Among the most re-known standards is CIDOC CRM [4], International Guidelines for Museum Object Information: The CIDOC Information Categories [5], SPECTRUM : The UK Museum Documentation Standard [6], Canadian Heritage Information Network (CHIN) [7].

THE DEVELOPED SYSTEMS

The systems chosen as cases studies for the developed problematic in this paper, regard different types of cultural material: a) archaeological excavation data and b) museum objects. The second group should actually be divided into two sub-categories: b1) archaeological objects and b2) religious objects. It should be noted that the archaeological objects (b1) are in reality part of the first group (a), meaning that a major part of the archaeological excavation data are now exhibited in museum galleries.

The study and the comparison of those cultural databases lead to various issues. Questions such as “how different are the needs of the users of each database”, “how similar or dissimilar is the structure of the databases?”, or “to what extend the

prototypes were applied for the development of the databases" are some of those needed to be answered.

To begin with, it should be clarified that apart for the material itself, the end-users of the two systems vary. The database with the material coming out an excavation is a system that applies to specialists, meaning archaeologists or scholars and specialized personnel of museums, collections and archaeological ephorates. The end-users of this system have as major part of their job to deal with this excavation material. They have to record them, document them, describe their condition and decoration, and they should photograph and/or make drawings of them. Moreover, since this material or at least a significant part of it, is on display in museum galleries, it should be approached also as museum objects (fig. 1). Those objects, however, had a context, meaning that they were unearthed in an archaeological site during an excavation. This context such as the place they were found (e.g. trench, grave etc) should be also recorded (fig. 2).

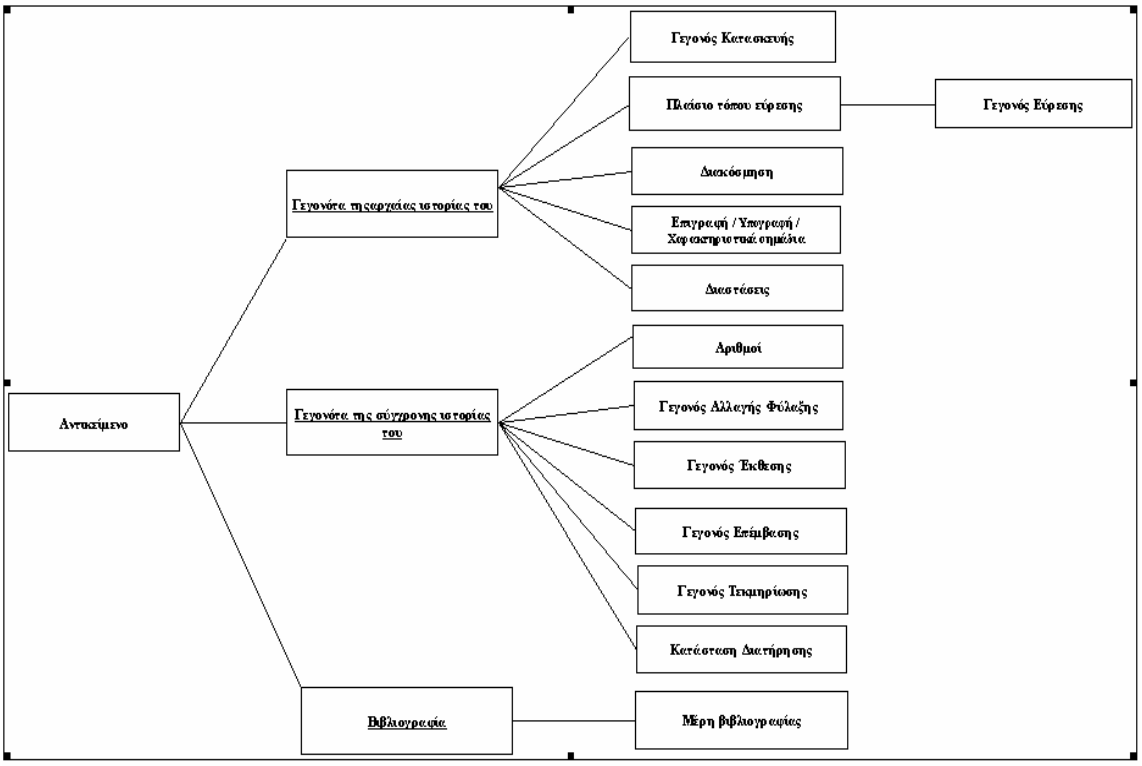

Fig.1 : Plan of the excavation material documentation system

The second system deals with purely museum objects that have two major characteristics: a) they are objects related to Orthodox Christian religion and b) they are in their majority heirlooms. The end-users of this database are the museum staff

and the general public. It should be clarified though, that in this case the museum staff is not permanent and they are not by profession and education museum curators. For the design and development of the system the scholarly needs were also taken under consideration, although they were not among the requirements of the museum itself (fig. 3).

Both systems had as goal the development of updated dynamic catalogues for excavation and museum objects satisfying at the same time the demands of the cultural data (first level information) and metadata (second level information). Photographs, drawings, texts, audios and videos were the types of information that were integrated into the databases.

The formation of the archaeological record was of the interest of the archaeologists before the emergence of the cultural databases [8]. The model for the life cycle of objects appeared in the early ‘70s and envisioned the following behaviours: procurement, manufacture, use, maintenance, and discard. To those recently have been added recently distribution, prime use and reuse, recycling, and reclamation. That way an eight-stage cycle of the object has been created that corresponds more or less to the information that should be intergraded in a cultural database for objects.

The organization and the division of the type of the information in both developed systems were based in three general entities: a) Data regarding the recording and description of the objects (identity, type, description, date), b) documentation of the life cycle of the object (manufacture, use, finding, relationships), c) management (acquisition, move, transfer, place, collection). The complete documentation of both categories of objects demanded all the above information.

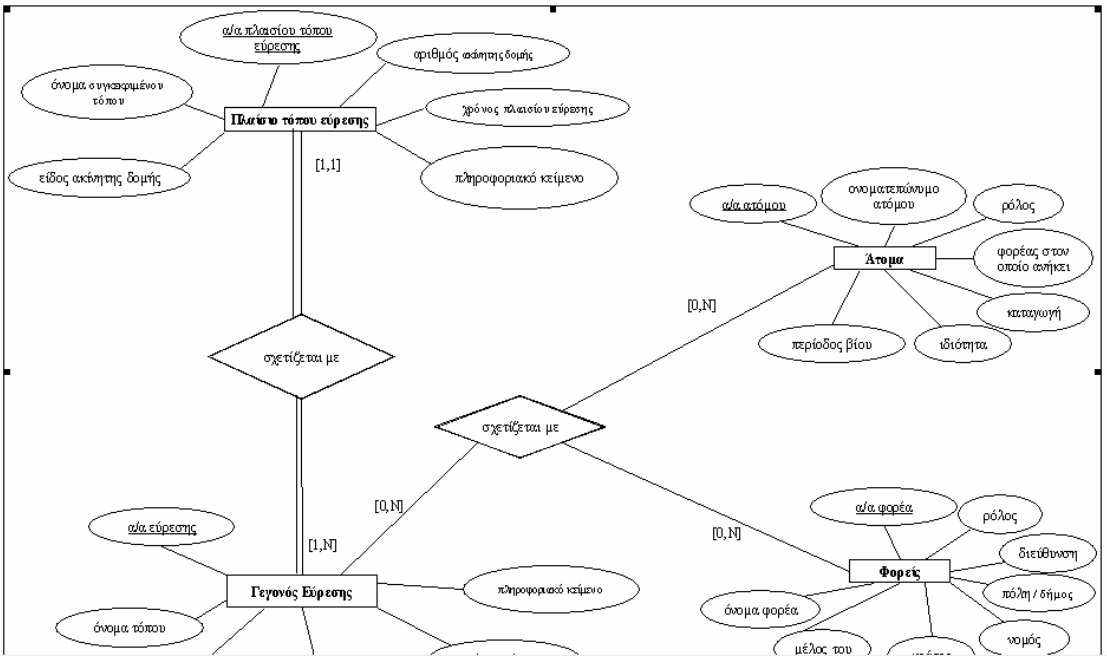

Fig.2: Design of the finding place documentation

The designing and the development of the systems were based in international standards. More specifically, after a detailed study of the existing standards in comparison with the demands of the certain categories of material, they were followed the guidelines of the CIDOC CRM (ISO 21127). Furthermore CIDOC appears to be the most popular model used nowadays for the documentation of cultural information.

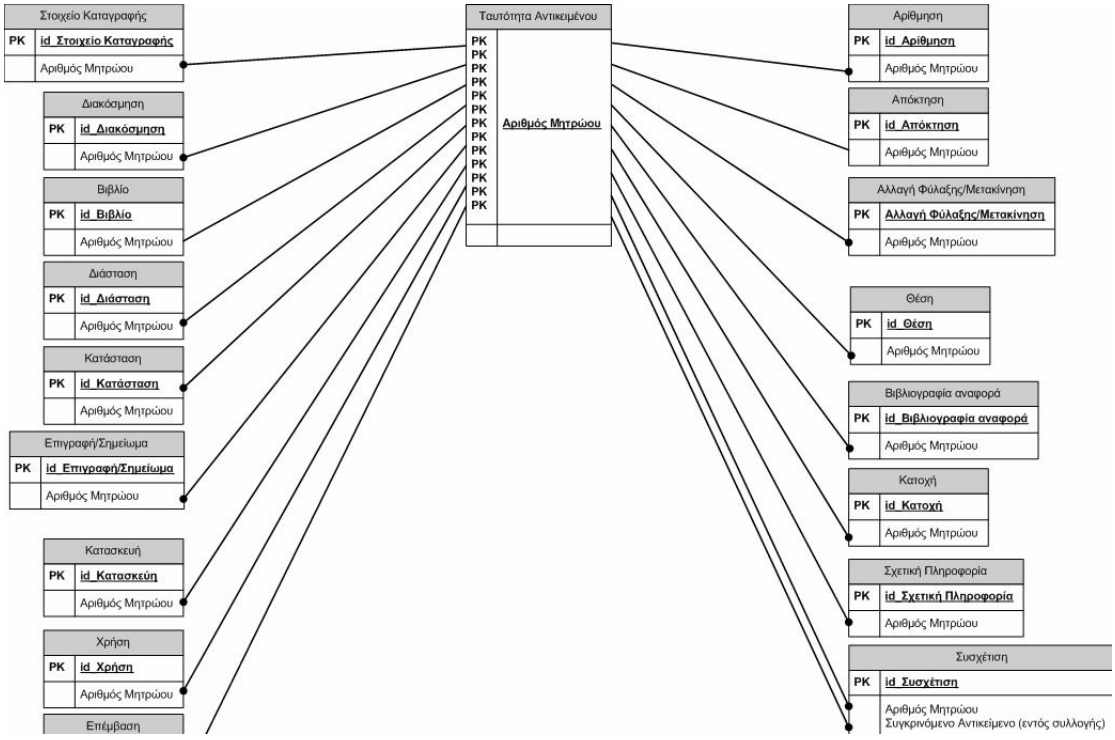

Fig.3: Information categories of the museum objects

The excavation material was a group of three dimensional objects found in an archaeological site (fig. 4). The emphasis here was needed to be given to the description of the life cycle of the objects and particular in the manufacture, use, and the conditions they were unearthed. The categories of information for the recording and documentation of this group were in their greatest extent covered by the standards provided by CIDOC.

The second system regards the religious objects and heirlooms on display in a church museum. In that case, apart from the three dimensional objects there were also books to be documented in the same database. Furthermore it was required to be added an extra group of information for the recording of the displayed objects. The need was a particular emphasis in the identity of the objects and information such as the exhibition labels, exhibition texts and the gallery they were exhibited, was asked to be included in the identity (figs. 5-6). Other type of information though regarding the metadata was considered overwhelming and it was asked to be removed in order to avoid a "complicated" database with fields that would never had content.

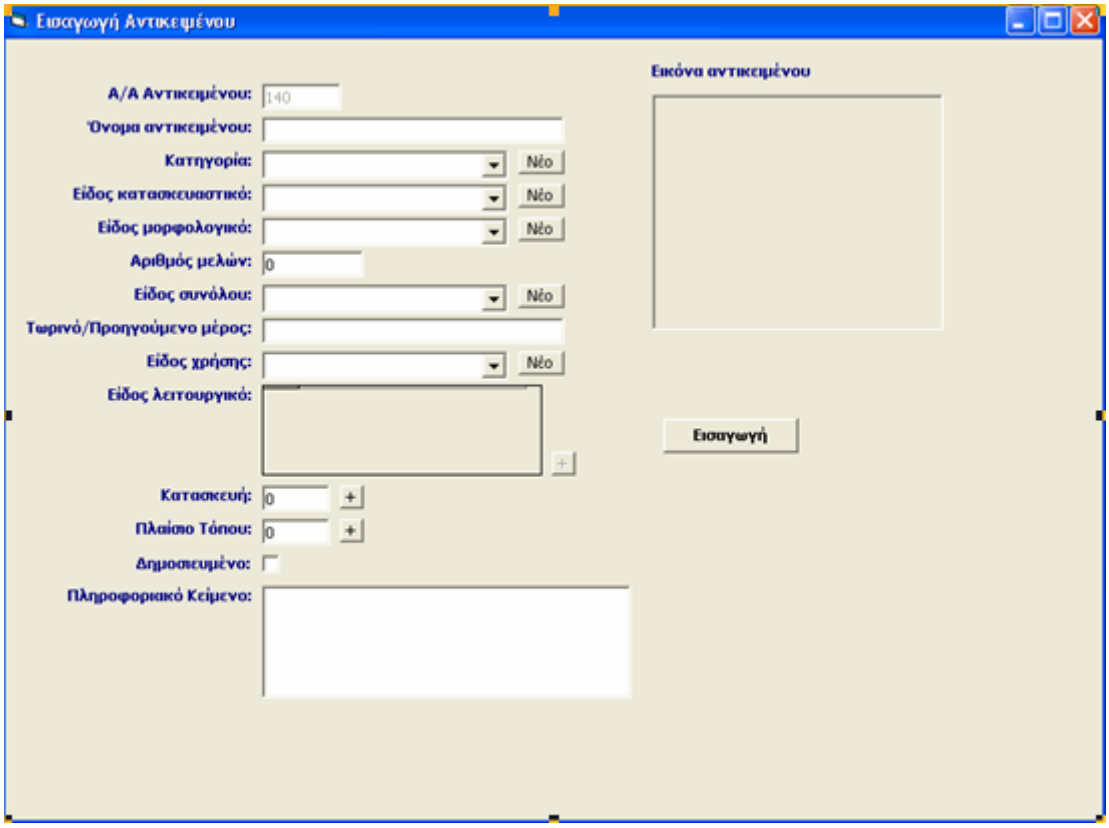

Fig.4: Interface of the archaeological material database

ISSUES AND QUESTIONS

The completion of the two cultural databases led to a comparison of them through which a number of issues and questions were raised. The major of them regard: a) management, b) access, c) use, and d) maintenance of the Digital Culture. Despite the attempt to analyze each of them separately it becomes obvious that they are interrelated and the inclusion or omission of things and aspects of one might have impact to the other(s).

An important issue nowadays regarding the management of the Digital Culture is the unification of the various cultural databases for reasons that are obvious. Therefore the use of international standards in the development of those systems is a necessity. It might be even better to follow the guidelines of the most popular standards in order to eliminate possible problems during the unification of the various systems. The latter is not of minor importance since one of the major issues regarding the management of cultural databases is interoperability. The creation of cultural

information systems though by different developers without any use of standards in their designing is not an unusual phaenomenon. It raises, however, issues regarding compatibility and communication since those systems vary often to a great extent and definitely homogeneity is not their attribute. The first questions here are: "Can those systems be connected to each other?", "Is it possible to extract the data and metadata from one database to another?", "If not, is there any solution or suggestion?"

Α/Α	Αριθμός Μητρώου	Όνομα Αντικειμένου			
1	ΑΜΦ13	Φελόνιο			
2	ΑΜΦ15	Επιτραχήλιο			
3	ΑΜΦ17	Επιτραχήλιο			
4	ΑΜΦ11	Φελόνιο			
5	ΑΜΦ1	Αρχιερατικός Σάκκος			
6	ΑΜΦ10	Φελόνιο			
7	ΑΜΦ12	Φελόνιο			
8	ΑΜΦ14	Αρχιερατικός Μανδύας			
9	ΑΜΦ16	Επιτραχήλιο			
10	ΑΜΦ18	Επιτραχήλιο			
11	ΑΜΦ19	Επιτραχήλιο			
12	ΑΜΦ2	Αρχιερατικός Σάκκος			
13	ΑΜΦ20	Επιτραχήλιο			
14	ΑΜΦ21	Επιτραχήλιο			
15	ΑΜΦ22	Επίτραχήλιο			
16	ΑΜΦ23	Ωμοφόριο			
17	ΑΜΦ24	Επιμάνικο			

Fig.5: Objects list of the religious objects database

Of importance is, however, to realize that the application of a model and the extent of this application depends on a series of questions. The most characteristics are: "Does the model satisfy all the documentation needs and demands of the particular cultural material?", "Is the model compatible and open?" or "How close to the guidelines of the standards should remain the development of the system?".

To answer those questions is a research topic by itself, but some indications might be given by the experienced offered through the certain databases used here as case studies. In those systems the material itself led often to the addition or the deletion respectively, of certain fields of information. Moreover, new entities had to be created in some cases in order to include new groups of metadata that were in demand by the

curators of the certain material. It should be noted that in both cases the priority was to satisfy the needs and demands of the end-users and to approach the whole system from the museological and archaeological point of view following at the same time the methodology and the structure of the used model.

Among the major issues in developing systems without the use of international standards are the repetitiveness of the same work wasting valuable resources, and the resulting difficulty in the management, use, access, and maintenance of them. Through the application of standardized guidelines the information could be transferred easier to another platform. There are a number of reasons for the latter. Some of them could be an update of the system, the need to transfer the data to another system or simply the communication and compatibility of the database with other databases. Knowing the amount of the created digital culture in Greece for example, during the last decades, the issue of a National Portal presenting this material is raised self understandably. In an "internet world" that provides a universal access to everyone and everything, the need to share and present the cultural heritage is obvious and demands collaboration.

In a first level this collaboration should be between the representatives of the cultural sector and those of the informatics. A common language of communication and an effort to understand each other are the basic tools to build the mechanism that will overcome the issues regarding the sufficiency of the developed systems and the friendliness of them. The curators of the cultural material are usually the end-users of those systems and here comes once more the issue of their management. A perfect from a technological point of view, database does not also mean a friendly to access, use and manage from the side of the cultural end-user.

The developed systems attempted to satisfy all the different needs of the end-users either scholars or general public. In the first case there was the need to go in depth for the documentation of the objects since the further goal was the study and the publication of the objects. In the second case there was the demand for many free text fields in order to apply to the general public, creating that way sometimes problems to the search capabilities. In both cases primary requirement for the end user was to use the database without any prior knowledge of its technology. Therefore it is critical to

be noted by the cultural organizations if and to what extent the various cultural databases satisfy their needs and demands, and provide user friendly environments, in order to help the technological sector to create systems that will be attractive to the non-experts and the public.

Ταυτότητα Αντικειμένου:

Αριθμός Μητρώου:	ΑΜΦ13
Φορέας - Τμήμα:	Ιερά Μητρόπολη Αλεξανδρουπόλεως, Τραϊανουπόλεως και Σαμοθράκης - Εκκλησιαστικό Μουσείο
Όνομα Αντικειμένου:	Φελόνιο
Είδος Αντικειμένου:	Ιερατικό Άμφιο
Χρονολογία Κατασκευής:	19ος αιώνας μ.Χ.
Σύνολο:	-
Μέρη:	-
Κατάσταση:	Καλή
Περιγραφή:	Κωδωνόσχημο κομμάτι υφάσματος με επιρραμμένες ταινίες.
Αριθμός Κειμένου:	-
Λεζάντα/Τίτλος:	Ιερατική στολή: στιχάριο, επιτραχήλιο, φελόνιο. 19ος αι.
Απεικόνιση:	Αρχιερατικόν - Φωτογραφία

Fig.6: Interface of the religious objects database

The plethora of the digitized material led to another issue that should be confronted. This is the selection of the material that should be digitized. Here it should be applied also standards set up by the curators as well as by the representatives of the technology. Through a real and close collaboration should be classified the criteria to choose from an enormous amount of available cultural material what to turn to a digital form (and format). This is actually going to be a prioritization that will contribute also in the solutions of problems regarding the storage. Questions such as *for whom* and *why this material* should be among the first to be addressed in order to define the criteria for the selection.

Another topic arisen from the digital culture and asks for further research and clarification is that of the copyrights. The access to everyone worldwide through the internet in combination to the massive amount of the available material raises issues

for the use, storing, and access of those cultural data and metadata. It is especially from the side of the representatives of the field of culture that there is a concern, transformed occasionally to fear, for the control of their material after it is presented through the internet. This is the reason that very often they do not provide access to their data or they do it for a limited time and the result of it is that a significant amount of the digital culture is in reality lost. Therefore it is of importance to solve problems regarding the ownership, use, and access in order to succeed the knowledge distribution without lacks and interruptions.

The long term maintenance of the digital culture is also of concern. It is well know the rapid change in the field of technology and that the life cycle of the computing systems becomes less and less. The technologies succeed each other and the preservation of the digital culture demands to follow them. Solutions to that direction would contribute significantly to a number of problems.

Of great importance for the cultural organizations is the friendly interface in order the end-users of the developed systems to be able to use them without a particular technological knowledge or any other difficulty. The success of every information system depends almost totally from the satisfaction of its end-users. It is not unusual however, to find cultural databases with interfaces that are not at all user friendly either because the information is spread too long or because there are difficulties in the management and the presentation of the data and the metadata.

The principal demands of the end-users of the cultural information systems could be summarized as follows: **immediate access** to any collection, **user friendly interface**, **easy access** to a simply written information without any prior knowledge of technology or terminology, **interaction**, **full documentation presented in an attractive way**, possibility to make **comments** and to **study** topics, sources and services provided by the cultural foundations.

CONCLUSION

The digitization of cultural heritage was the first step in the formation of the information society. That was a long process with various stages and it resulted to the

creation of the digital culture. This paper based on certain cultural databases, sets and deals with issues that have been raised after the digitization of the cultural objects and collections. Cultural standards, interoperability, and compatibility are some of the first things that should be study for the creation of a national network regarding the cultural heritage. To those should be added the collaboration between of the representatives of technology and culture, the formation of user friendly systems, and the issue of the maintenance of the digital culture. The confrontation of those subjects may lead to solutions and finally to an accessible worldwide cultural heritage.

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