



OPEN ACCESS TO DIGITIZED CULTURAL HERITAGE: A MODEL PROPOSAL FOR TURKEY*

DİJİTALLEŞTİRİLEN KÜLTÜREL MİRASA AÇIK ERİŞİM: TÜRKİYE İÇİN
BİR MODEL ÖNERİSİ

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Abstract

Cultural values, which are homogenized by the effect of globalization, have endangered nations with the risk of losing their local cultures. Sensibility of conservation and acknowledging cultural properties with the society they belonged to, has increased the efforts to protect cultural heritage products with a sustainable understanding and make them massively accessible. Unhindered access to cultural heritage products can be provided by cultural memory institutions, such as libraries, archives and museums, which open up their digital doors and increase their visibility on the web. The aim of this study is to propose a model that will lead to open access to digitized cultural heritage - in the case of Turkey. The model, which is expected to guide the legal, technical, administrative and financial processes of open access to cultural heritage, is thought to contribute to the discovery of cultural heritage products at universal level, the development of creativity in the individual and social context and the adoption of standard approaches in cultural heritage management.

Öz

Küreselleşmenin etkisiyle homojenleşen kültürel değerler, ulusları yerel kültürlerini kaybetme riskiyle karşı karşıya bırakmıştır. Kültür varlıklarının korunmasına ve ait olduğu toplumla birlikte tanınmasına ilişkin duyarlılık, kültürel miras ürünlerini sürdürülebilir bir anlayışla koruma ve kitlesel düzeyde erişilebilir kılma çabalarını artırmıştır. Kültürel miras ürünlerine engelsiz erişim kütüphane, arşiv ve müze gibi kültürel bellek kurumlarının dijital kapılarını aralamaları ve web üzerindeki görünürlüklerini artırmalarıyla sağlanabilir. Bu çalışmanın amacı- Türkiye örneğinde- dijitalleştirilen kültürel mirasa açık erişim sağlanmasına öncülük edecek bir model önermektir. Kültürel mirasa açık erişimin yasal, teknik, idari ve mali süreçlerine rehberlik etmesi beklenen modelin, kültürel miras ürünlerinin evrensel düzeyde keşfedilmesine, bireysel ve toplumsal bağlamda yaratıcılığın gelişmesine ve kültürel miras yönetiminde standart yaklaşımların benimsenmesine de katkı sağlayacağı düşünülmektedir.

Introduction

B.C. In the 3500s years, people who are in the dilemma of "saving" or "losing" the information have felt the need to save the information stored in the biological storage space (cortex) in different media over time. "Writing" is the first product that emerged as a result of the transformation of the act to the fulfillment of this requirement. The writing has resulted in the birth of written / recorded information (document) by recording the oral culture that has been spread by word of mouth. The rapid increase in recorded information has led to the emergence of cultural memory institutions, such as libraries, archives and museums, which organize and gather

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information to ensure that they are accessed when necessary. One of the primary functions of these institutions, as old as the writing of the past, is to protect cultural heritage and make it accessible. Libraries, archives and museums fulfill the requirements of the public openness principle, which is one of the basic service features, by realizing the physical access to the cultural heritage products in their collections in an unobstructed manner within the scope of public domain.

Unfortunately digitized cultural heritage products in Turkey can be accessed by providing certain conditions (fee, membership, etc.). This situation, which does not coincide with one of the ultimate goals of digitization, increasing access, is often excused by protecting and securing information against situations such as commercializing and copying cultural heritage products (Schaefer 15). The effort to provide the cultural heritage protection function of the institutions with the limitations of the access dimension leads to the deprivation at the individual and social level of many gains that open access offers.

The societies that are unable to access their own culture, are no different than individuals of no memory, have no clue of their past and condemned to external teachings of cognitive development. The unobstructed access to cultural heritage is provided by the implementation of open access practices in cultural memory institutions. The realization of cultural heritage access in accordance with standards and in a functional form requires the models with guide qualities for cultural memory institutions. In this study a conceptual model was developed for providing open access to digital cultural heritage in Turkey. It is expected that the study will contribute to the literature on open access to cultural heritage.

Open Access to Cultural Heritage Products

In cultural memory institutions there are two different views on the management of cultural heritage products. While one of these views suggests limited access to digital cultural heritage and justifies this limitation around information security and copyright oriented issues, the other one suggesting heritage products must be opened to public in its entirety argues that cultural heritage should also be considered as public property and used as much as possible (Schaefer 15).

Access to copyright-related issues through various laws and agreements and the possibilities offered by digital technologies have led to widespread open access practices in cultural memory institutions in recent years. For example, the

Rijksmuseum, which adopts the "open strategy" in Amsterdam, has opened 125,000 art pieces for online use. In addition to viewing museum resources, users can download copyright-free works on their computers and use them as they wish (Pachali). Another example is the Walters Art Museum in Baltimore, USA. The museum offers open access to 2642 works of art through its own site. These works released under Creative Commons can be saved and used by users. The "collection of eastern manuscripts" in the museum includes a large number of works belonging to Ottoman, Safavid and Babur periods (Öztürk). Similarly, The Metropolitan Museum of Art offers open access to its collection. The Google Cultural Institution, which allows users to post artwork that is open to the public in their own gallery, is another example of this context. These developments, which have come to the forefront in recent years, draw attention to the necessity of open access for people to gain free and unlimited access to the culture they create through the internet. The cultural memory institutions that offer their collections openly and can be regarded as pioneering in this regard are reflected in Table 1:

Table 1. Cultural memory institutions that offer their collections openly

Institution / Collection	Type of Open Content	Amount	License
Rijksmuseum	High Resolution Artwork Images	208,000	Public Domain (CC-0)
Los Angeles County Museum of Art	High Resolution Artwork Images	20,000	Public Domain
Getty Research Institute	High Resolution Artwork Images, Books	99,000	Public Domain
The British Library	High Resolution Artwork Images, book descriptions, photography and manuscripts	1,000,000	Public Domain
Wellcome Library	High Resolution Artwork Images	100,000	Public Domain (CC-BY)
National Gallery of Art, Washington DC	High Resolution Artwork Images	45,000	Public Domain
National Gallery of Denmark	High Resolution Artwork Images	25,000	Public Domain (CC-0)
Yale University Art Gallery	High Resolution Artwork Images	250,000	Public Domain
Internet Archive	Images, Text and Book OCRs	8.000.000	Public Domain
Early English Books Online Text Creation Partnership EEBO-TCP	Literary Adaptations of Early English Books	25,000	Public Domain

(Source: Terras 13)

It appears that cultural memory institutions have opened their digital collections under Creative Commons Zero (CC-0) Public Domain or Creative Commons BY (CC-BY) licenses. Cultural memory institutions open up digital materials with high image quality. While this creates an opportunity to be visible and discoverable on the corporate level in the web environment, it leads to many benefits that open access at the individual and community level can provide.

Access to Digitized Cultural Heritage in Turkey

Some studies in the field of national literature (Ataman; Atılgan and Keten; Yılmaz) emphasize that today's cultural heritage products are accessible to everyone who wants through Digitization. On the other hand, most cultural memory institutions in Turkey provide access to their collections with constraints and conditions such as completing a membership stage requiring intensive effort and paying the usage fee determined.

Research by Öztemiz has conducted a survey on the current state of Digitization and open access practices in public memory cultural institutions in Turkey. According to the results of the research, studies carried out for the purpose of preservation and accessibility of cultural heritage products in Turkey for a long time are completed with the process of converting the materials into digital formats and the process is realized in a structure far away from the standards. Institutions think that they have the right to control over materials at the end of the digitization process with their limited budgets and intense work, and therefore they prefer restrictive means of access. Also, since the sustainability of Digitization practices is a costly process, institutions are hesitant to open their collections with "public domain signs".

Almost all of the cultural memory institutions in Turkey have copyright regulation in accordance with Law No. 5846 on Intellectual and Artistic Works. The law is incomplete and inadequate when evaluated in terms of digital cultural heritage products. From this, it is understood that the present situation concerning copyright regulation is an obstacle to open access to cultural heritage.

Cultural memory institutions in Turkey do not have legislation that will lead the functioning of the open access period and that open access consciousness is not sufficiently developed and that the process of obtaining information about open access takes place through individual activities such as personal reading and research. However, they are willing to implement open access practices because of their contributions, such as creating institutional advantages, enhancing inter-institutional collaboration, being an innovative approach, and creating opportunities to capture international development (Öztemiz 63).

General Structure of The Model

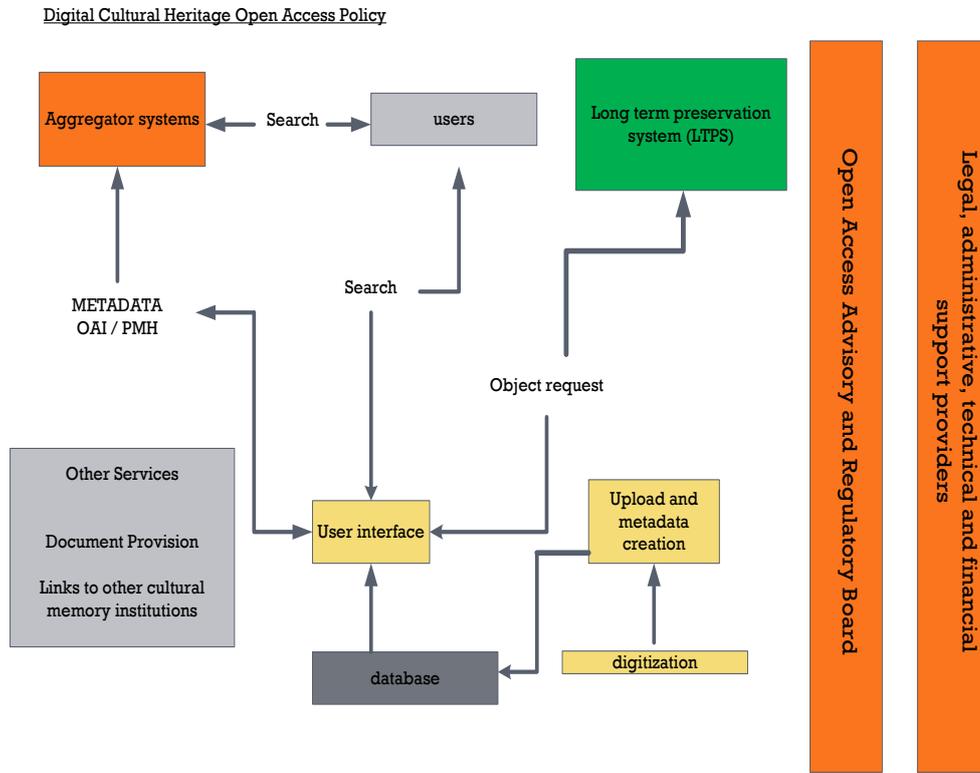
First of all, the legal, strategic, technical and administrative structures of the model have been determined in the design process. In this context, while the legal dimension of the model constitutes the regulations regarding the copyright status of the policies and materials that cultural memory institutions will pursue in the process of providing open access to cultural heritage, the strategic dimension forms the purpose, scope and function of development. While the necessary technical conditions for the model are the technical infrastructure and the need for sensory software in this direction, the administrative conditions are the fulfilment of the proposed policies in accordance with the determined policy, the fulfilment of the financial and technical requirements, and the control and sustainability of the

applications. In order to realize the above mentioned administrative processes and human resources planning it is necessary to establish a body (Digitization and Open Access Advisory and Organizing Committee) responsible for Digitization and open access in cultural memory institutions. This body has undertaken a number of initiatives to provide legal, financial and technical resources in the process of providing open access to cultural heritage. Institutional examples (such as the Rijksmuseum, Amsterdam Museum) are generally supported by the ministries of education, culture and science in each country. Scope of this support covers all legal, financial and technical terms in the process of providing open access to digitized cultural heritage. Therefore, support is expected from Prime Ministry of Turkey for open access applications, so that the Ministry of Culture and Tourism and its affiliated institutions/organizations underline that Digitization and preservation of cultural heritage products are the most important responsibilities.

Institutional open access system software should include ontological structure for the use of computers to read cultural heritage concepts and relations between them. The ontology should enable semantic mediation between cultural heritage products with different formats and features. It should also provide an ontological approach to the semantic interoperability of the metadata, and exchange information between different materials covered by cultural memory institutions. CIDOC-CRM (CIDOC Conceptual Reference Model) is among the standards that can be used in this context.

Conceptual Model for Open Access to Digitized Cultural Heritage

Figure 1: Conceptual Model for Open Access to Digitized Cultural Heritage



The Conceptual Model has several components. All of them serve for the goal of providing open access to digital cultural heritage in cultural memory institutions.

Open Access Policy

Cultural memory institutions accept the following principles when offering open access to cultural heritage products in their collections:

1. Open access requires access to the cultural heritage products free of charge through the public internet without financial, legal and technical barriers. The open-access cultural heritage products offered may be read, downloaded, copied, distributed, printed, searched or linked to these works, scanned for indexing, transferred as a data record, or used for any legal purposes. A digital copy of cultural heritage products and its digital subscription must be stored in at least one online archive to allow open access, unrestricted distribution, interoperability and long-range archiving.

2. Cultural heritage products digitized in cultural memory institutions must be stored in environments such as the institutional open access system and portal, until specified duration by Digitization and Open Access Advisory and Regulatory Board. This applies to all digital materials in collections of cultural memory institutions that do not have copyright issues.

3. The metadata of all materials in collections of cultural memory institutions should be stored in media such as the institutional open access system or portal.

4. The organization itself is responsible for the storage of digital material in its collections and the process of determining the access conditions for these publications (direct open access, requesting permission from copyright holders for restricted access materials, etc.). It is imperative that digitized cultural heritage products are opened as soon as possible during storage or later.

5. Cultural memory institutions encourage open access to other institutions that have cultural heritage products in their collections.

6. Access to cultural heritage products must not be restricted by copyright restrictions. In this policy, digitized cultural heritage products and their digital records are accessed and re-opened with open license agreements as in international cases. Works considered to be objected by the copyright holder are determined by the cultural memory institutions and are subject to permission from the copyright holder for the open access of these works. If permission is granted, the appropriate one from the open license agreements will be preferred in order to regulate the status of the work rights.

The prohibition of commercial use of the work, modification with the permission of the copyright holder, low resolution of the work, high resolution by an amount of fee and the access restrictions such as geographical area are contrary to the open access logic and cannot be acceptable. If a copyright holder does not allow open access to works, only archival metadata access will be granted, subject to corporate policies.

Open access is provided by specifying the special cases of "orphan works" that are unspecified by the author/creator (explanation that the copyright holder is not known). If the author / creator emerges within 5 years of publishing the work, the access process is redefined in line with existing copyright applications.

7. Cultural memory institutions are responsible for the establishment and management of the digitized cultural heritage open access system (digital archive, website, portal, etc.). The determination of legal, financial, technical and administrative regulations and their requirements will be carried out by the Digitization and Open Access Advisory and Regulatory Board to be established in cultural memory institutions. The Board acts as a bridge between the cultural memory institution it represents and the top authorities it depends on. In this context, it makes requests to meet the requirements exceeding institutional resources and reports periodically about its functioning. This situation, which enhances supervision in cultural memory institutions, also contributes to the increase of the discipline of the personnel and the decrease of the error rate.

Stakeholders

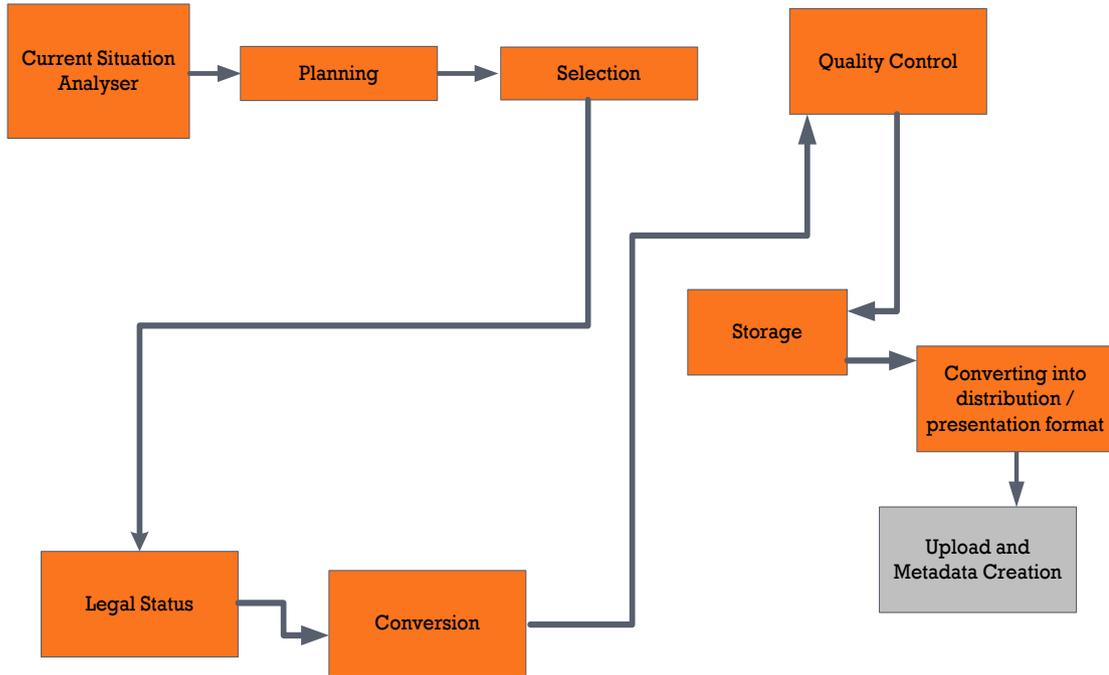
Public memory cultural institutions, which form the backbone of the stakeholders, represent libraries, archives and museums that are expected to have open access to digitized cultural heritage products. The main task among these stakeholders is to support the dissemination of cultural heritage open access practices by facilitating open access to the materials in their collections and encouraging other institutions to open access practices, as noted in the policy. With the in-service training activities organized by the public cultural memory institutions, they can contribute to the development of awareness and awareness of open access to cultural heritage, and the development of practical competencies.

The other stakeholder is end users who include the group for which the system is expected to benefit from the services provided. Legal, administrative, technical and financial support providers include top institutions/authorities who will support the implementation of the system's services. The Ministry of Culture and Tourism, The Turkish Language Institute, General Directorate of State Archives and The Prime Ministry should be considered within this context.

Digitization

Digitization covers processes concerning transformation of cultural heritage products into digital formats. The functioning of the digitization process is reflected in Figure 2 using the IFLA digitization principles.

Figure 2: Digitizing Process in Conceptual Model for Open Access to Digitized Cultural Heritage



(Resource: IFLA)

At the stage of analyses of current station, actions are taken to assess the existing conditions, such as the identification of the human resources, software, hardware, network, financial resources and other requirements needed for the detection, digitization and open access processes of cultural heritage products in the corporate collection. When performing the current situation analysis, it is also possible to detect already digitized works. This situation will prevent the duplication of the digitization process, which requires labor and cost intensive.

Planning should be directed to more than one factor in order to realize functioning with fewer mistakes and be able to successfully complete the open access. At this stage, how the environmental factors such as the hardware and software tools to be used and the characteristics of the personnel performing the screening process will be determined in all the processes for which the materials are open access. In the planning phase, types of tools and standards to be used in all the processes from digitizing to open access of materials should be determined (Chapman 36-39).

Selection is the process of identifying cultural heritage products that cultural memory institutions digitize. Before the selection process, it is necessary to decide why the materials are to be digitized. In this context, it should be sought to answer

the question "is the digitization of materials done in order to meet a requirement or is the material just available to be digitized?" (IFLA 11). Copyright status of the material and access request for digital format is high, digital format is suitable for institutional purposes (Conway 21; IFLA 15; Moving Theory into Practice).

A selection policy is crucial for the success of the process regarding the identification of materials to be digitized and open access (Nash, Sterkenburg and Wentzell 10). Legal Status is the other main process. Cultural heritage products in Turkey are protected under the Law on Intellectual and Artistic Works No. 5846. All rights relating to the digitization and access of the materials in accordance with the legislation belong to the owner. Non-copyrighted works in the public domain are digitized and released to open access by institutions in which they are located. Arrangements and restrictions on the accessibility of these works also depend on the initiative of these institutions. On the other hand, organizations that are at the forefront of accessing digital cultural heritage, such as the Rijksmuseum, the Amsterdam Museum, make licensing agreements for their collections for versions that support open access. These illustrated systems provide the visibility of digital records of digital copies and metadata of un-prohibited materials in the direction of their providers' publishing principles, while the materials they have "restricted access", they provide only the visibility of their metadata (Europeana; DPLA; Rijksmuseum; Amsterdam Museum).

All cultural heritage products that do not have copyright issues according to the proposed policy for Open Access to Digitized Cultural Heritage should be made available in the public domain, and those with copyright issues should be made available with the permission of the beneficiary and with appropriate licenses. On the other hand, concerning the works without copyright holders' permission, only metadata should be provided with open access.

Conversion step covers the process of converting materials into digital formats. The scanner and the digital camera are among the fixtures to be used in the first step of the conversion process, which is decided according to the material type. Features such as colors to be used in the scanning process, environmental conditions and monitor calibration should be determined at this stage. The scanner to be used must be compatible with the physical conditions as well as details such as the type, size, color and tone of the document. In the conversion process, slide scanners may be used for three-dimensional or hard-to-scan materials, flatbed

scanners for scanning document-based materials, and microfilm scanners for digitizing microfilm archives (Puglia, Reed and Rhodes 40-44).

The Tagged Image File Format (TIFF) standard is mostly used for master copying of materials into digital formats (Deren 50; Nash, Sterkenburg and Wentzell 10). This file type is not compressed, so it is large and is used to store materials for a longer period of time. For presentation files produced from master copy, formats with smaller dimensions are preferred (Aldemir and Oguz 287).

Materials containing text are converted to digital format and then saved as image /picture. Optical Character Recognition processing is performed to search the text contained in these materials and to improve access to these text based materials. The files containing the digital materials created at the end of the conversion process should be recorded with meaningful names reflecting their contents. This situation is thought to prevent access problems that might occur in the future (Ataman).

It is not possible to guarantee the integrity and consistency of image files without quality control (IFLA 21). The factors that need to be taken into consideration during this process should be determined in advance. Expectations from the process of converting materials to digital formats and resulting product comparisons can be a guide in this context. During quality control, the digitized material and the copies and other data produced from it should be checked separately. By a consistent approach to be improved, digital images should be audited and decided whether to be accepted for publication. Elements such as glare, linearity and color should be taken into consideration especially for the control of the resolution quality. Quality control should be done not only according to the conversion process completed material but also on the correctness of the tools used and on the characteristics of the personnel responsible for the implementation (Banach et al 9).

Storage and Distrubution

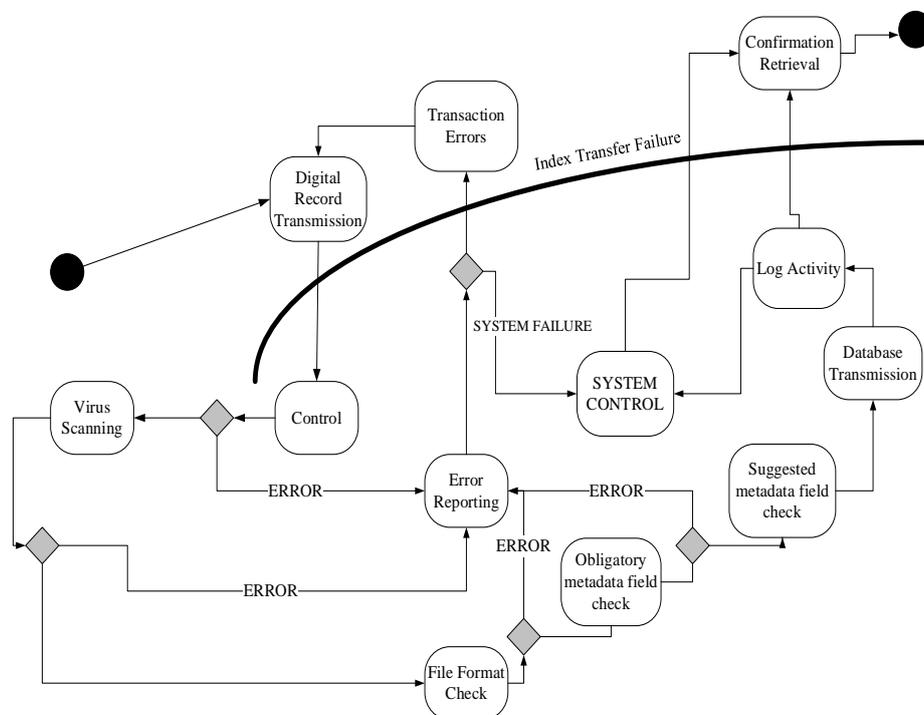
The purpose here is to secure the digital master copy. In this context, the main copy of the cultural heritage product is recorded in storage units for permanent protection. Copies that will be converted to distribution / presentation are generated from the protected digital material. It is possible that the main copy can be accessed at any time in the framework of the protection plan to be determined by

the Open Access Advisory and Regulatory Authority, if necessary, subject to such processes as migration or emulation (Özbağ 88).

Transformation into distribution / presentation includes transactions for making presentation ready format conversions of other copies obtained from the master copy of cultural heritage products. Joint Photographic Expert Group (JPEG), Portable Network Graphics (PNG), Graphics Interchange Format (GIF) and PDF formats are commonly used for presentation files generated from the master copy. Portable Document Format (PDF) format is preferred for text type materials (Aldemir and Oguz 287).

Uploading and Creating Metadata

Figure 4: Uploading Digital Record to System and Creating Metadata



(Adopted from the Finnish National Digital Library 2012)

The uploading and metadata creation process includes the process of loading the digital cultural heritage product converted to distribution / presentation form into the access system such as digital archive or portal, and the process of assigning metadata to digital materials with the metadata creation module predefined in the system. At the first step of the uploading process, the digital cultural heritage product that will be presented to open access is uploaded to the system. The next step is to check if the installation is successful. In the event of an error during the control phase, the transmission of the digital cultural heritage product is repeated by reporting the error in question. The virus scanning process

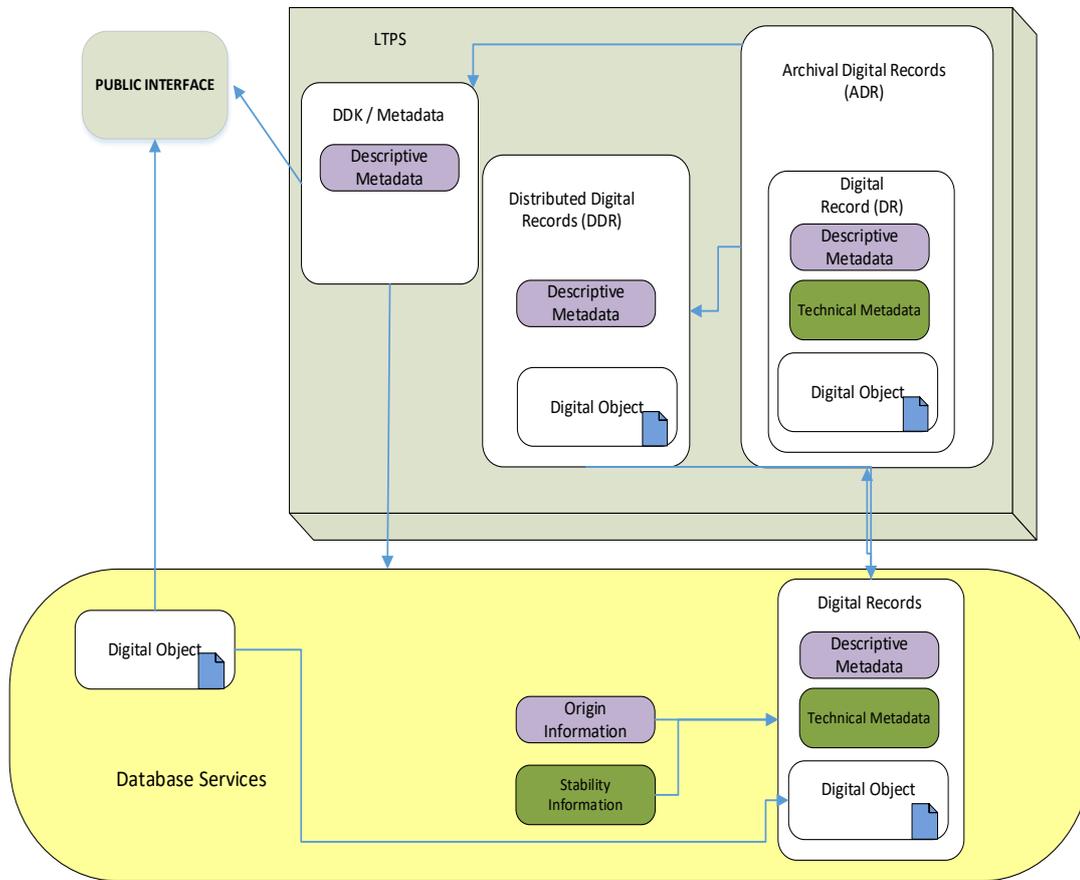
is the next step, and it is extremely important to ensure data security (The Finnish National Digital Library). After the virus check, the files uploaded to the system are formally checked.

Once the file format is checked for appropriateness, the metadata creation process for the digital product begins. The metadata (descriptive, technical, managerial) production process of the digital cultural heritage products is realized in the metadata elements predefined in the system in the framework of institution type and collection characteristics. It is suggested that the metadata standard to be adopted should be flexible, allowing for customization within the framework of institutional requirements. However, there are compulsory metadata fields that are expected to contain every material in order to allow interoperability with other systems. Metadata fields such as title, language, genre, subject field, data provider, rights, single and uniform resource identifier (URI) can be considered in this context.

In the next stage, controlled metadata (if no errors are encountered) are transferred to the digital record database of digital cultural heritage products and metadata and to the Long Term Preservation System (LTPS). Daily recording activity is created for records transferred to the database. The metadata indexed in the database is stored on a web server where data matching clients' SQL queries with "simple and advanced" search options are distributed. Transmission to the LTPS will be a solution provider for long term protection of digital data, as well as to enable users to continue to access the system in the event of a damage or problem with the database.

LTPS Services

Figure 5: LTPS



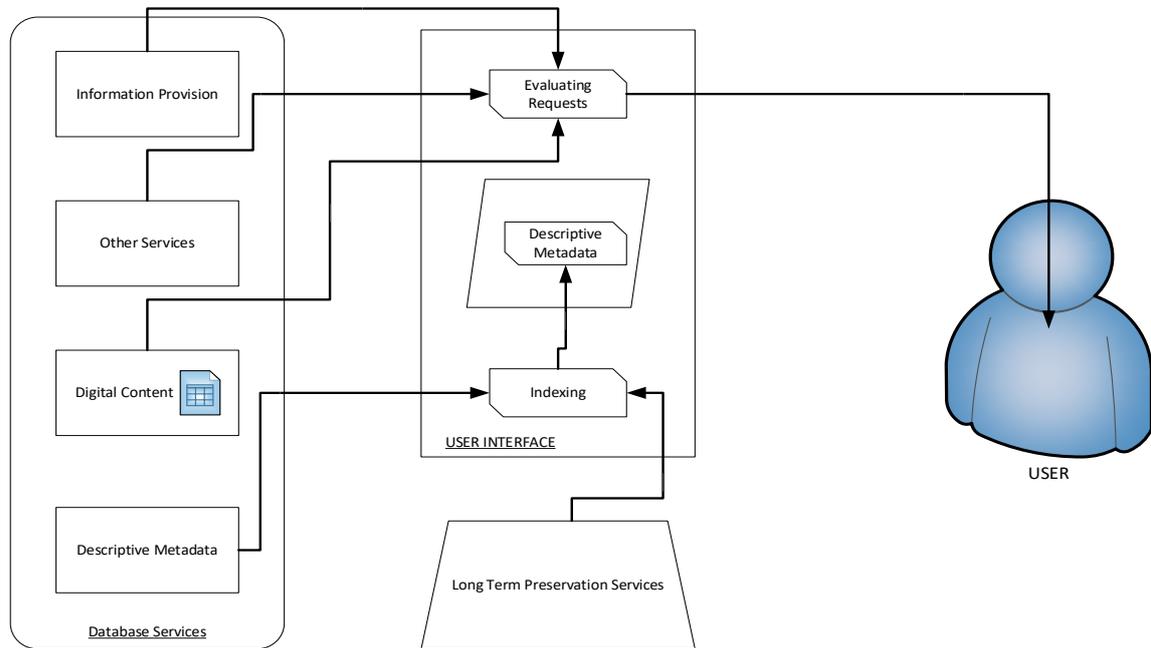
(Adopted from the Finnish National Digital Library 2012)

The Cultural Memory Institution creates Digital Records (DR) consisting of digital cultural heritage products and metadata during the transfer of digital records to LTPS. LTPS includes archival digital recording services and maintenance and access functions. If the database is damaged or data is lost, it is possible to access the information by means of digital records obtained from LTPS.

Prior to the LTPS services, cultural heritage products are protected in the form of presentation in databases and long-term protection systems, while being stored in digital format converted (TIFF) in the "Storage" environment where they are first recorded. This causes the content to be stored in different formats, which is also a measure against potential data loss. Digital cultural heritage products should be transferred to other backup environments, access to the system and updates in the system should be recorded as a solution to the problem of the degradation of the carrier environment or technology aging (Ataman).

User Interface

Figure 6: User Interface



End users are provided with access to digital content via the interface which is proposed by Conceptual Model for Open Access to Digitized Cultural Heritage. Users will have a modern and simple public interface thanks to their versatile features and they will be able to discover the system easily with guiding menus. The interface should provide services such as search, access, download, use, save and share with simple and advanced options in accordance with open access logic (Savanur and Nagaraj 3). Information searches are queries made up of one or more words entered by the user. The searches are directed to the currently indexed clustered database of interfaces. The interface service also mediates the transfer of data by the institutional authorities who enter the system with the administrator account and subsequent processes such as blending, normalizing (transforming into the formats determined by the system) and indexing of the blended information in the database. The interface also allows metadata to be transferred to national / international aggregator systems via the OAI-PMH protocol.

System Sustainability

As well as the implementation of open access to cultural heritage, the maintenance and development of systems and services created in this context is also of great importance. This process, which can be evaluated within the scope of

sustainability studies, covers the evaluation of strategic, legal and technical structuring at regular intervals, controlling the operation and if necessary eliminating the missing aspects. Relevant updates should be made considering open access materials, technical equipment, copyright regulations will change over time. A well-planned sustainability approach will also contribute to the realization of cultural memory institutions' mission to protect and transfer cultural heritage products to future generations. Strategic approaches that the Open Access Advisory and Regulatory Board, which is expected to design sustainability plans at this point, will adopt and implement are of great importance.

Cocclusion and Recommendation

Open access to cultural heritage products contributes to the formation of a cultural and historical consciousness by making the common past of the societies visible. The intellectual freedom of open access to cultural heritage leads to the development of innovation and creativity. The benefits of cultural richness, particularly in tourism, and the new business areas that will be provided by sectoral dimensions, have great importance in terms of economic development. In this respect, access to cultural heritage will also lay the groundwork for the benefit of society's past. Of course, one of the benefits of open access to society is to encourage the construction of a society that develops knowledge-based and solves problems using knowledge. Free access to information is one of the primary sources of democracy and is among the basic pillars of a society composed of knowledgeable citizens. Providing open access to cultural heritage for socially excluded groups such as senior citizens, people with disabilities etc. offers some advantages to access information. The main advantage for disabilities people is to have the right to receive cultural heritage information on an equal basis with individuals without disabilities.

It is thought that the conceptual model presented within the scope of the study will become a guide to open access to digitized cultural heritage in Turkey. The proposed model addresses the legal, strategic and technical aspects of the process of providing open access to digitized cultural heritage products. The development of open access consciousness in cultural memory institutions can play an important role in the functioning of the model. In this context, sustainable protection and access to cultural heritage products should be among the first institutional and social responsibilities for cultural memory institutions. From this,

open access should be seen as part of the public duties of cultural memory institutions, and sanctions for this should be guaranteed by legal regulations.

In Turkey, the laws on cultural heritage are based on limiting and reviews more than developing and disseminating. A new arrangement to be made in the Intellectual and Artistic Works Act should make digital presentations of writer / creator and public rights are protected simultaneously. This can provide an access to cultural heritage of large masses, as well as encouraging the creation of future cultural heritage products.

Access to cultural heritage products through institutional systems can be presented at an integrated interface that will later be developed at national level. In other words, the interface can be integrated into a new system to be developed or can be adapted to the National Library website or the Culture Portal created by the Ministry of Culture and Tourism.

The practices to be carried out on the basis of open access to digitized cultural heritage in Turkey will reach their goal as long as they are in line with acceptable standards. This necessitates the development of strong identification techniques for cultural heritage products.

The development of the cultural heritage ontology and metadata of the national level, which can be used by cultural memory institutions in this respect, is considered as a potential research topic. The period of open access to digitized cultural heritage is closely related to the successful organization and supervision of the process. For this reason, cultural memory institutions have an important responsibility to improve themselves.

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