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Essay

Digitization of media in scientific libraries (on social sciences and humanities) and museums: comprehensive digital information services for the user in the future

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Abstract. Many libraries are holding unique, rare or old documents of high scientific value, and a large number of digital projects have been implemented in the last years for archival and special digital collections of the scientific community. Digitization of such old, rare or unique items gives the library an added value. Numerous benefits were associated with digitization in libraries, such as: access to library from anywhere, access 24/7, a broader access, easier information sharing, more current information, less time and labor, new forms of access and improved preservation. Besides these benefits, there are also some inconveniences related to digitization in libraries but, with or without inconveniences, the future libraries will not survive to competition in the current "digital age" without a well planning as regards the digitization management of its media. Digitization of media is suitable in libraries and archives, but also in museums, aquaria, vivaria etc. Other practical measures a scientific social sciences library has to take in order to offer comprehensive digital information services to its users in the future are associated with access to the main large platforms of bibliographic and bibliometric importance.
Key Words: digital libraries, archives, museums, aquaria, vivaria, digitization, electronic media.

Introduction. Many libraries are holding documents of high scientific value. According to Sinn [1] a large number of digital projects have been implemented in the last years for archival and special digital collections [2-19]. The amount of money and effort invested in such projects is quite impressive, and now they are providing greater opportunities and facilities for researchers to access and make use of valuable, rare, and old historical materials. This kind of action, digitization of media for research information services, is not limited to History field; there is a trend in this direction also for many fields and subfields of the social sciences and humanities. The study of Sinn (2012) surveyed research publications in the field of History (and close related fields) in order to observe how often and widely electronic collections were accessed, what kinds of electronic collections were used more extensively and for what purposes, and what the current status of electronic archival collections among other resources is in historical investigations (for more details see Sinn 2012[1]). Digitization of media is suitable in libraries and archives, but also in museums, aquaria, vivaria etc.

Digitization of media in libraries. Why? Some libraries are known for their invaluable contents: old and/or unique items. Digitization of such old or unique items gives the library an added value. Numerous benefits were associated with digitization in libraries[21], including the following:

- Access to library from anywhere: Patrons can search the library and collect desired information from their home, desktop, or office. Individuals with a computer or phone with an Internet connection can use the library from wherever. There's no need to visit physically the library in order to read a particular book or collect required information from the archive.

- Access 24/7: An electronic library has no time and space boundaries. For example, it is possible for Norwegian readers to search an electronic library of Bangladesh at 9 p.m. in Norway when it is late night in Bangladesh. Traditional libraries are only open for certain time periods and require patrons to be physically present to access materials [21].

- A broader access: The electronic library system brings a greater access to its users. It is quite possible for a diverse range of patrons to access more information and often concomitantly. In the case of the electronic library, more users than the number of copies available can access the same item.

- Easier information sharing: Through the electronic library, it has become easier to share information with other libraries, archives, museums and information centers.

- More current information: In an electronic library system, it is easier to update information without spending lot of time and labor. For example, it is difficult to update the information from traditional printed catalogue cards over the catalogue information on digital format.

- Less time and labor: The electronic library system decreases the time spent searching and retrieving information. Users can search and locate and download desired information in a shorter time frame and with less effort than through the traditional library system.
- New forms of access: An electronic library can meet simultaneous access requests for the same electronic document by easily creating multiple copies of the requested document. An electronic library can serve a much larger number of users. An electronic library can provide access to content in different and more current forms including animation, graphical, audio-video formats; support post-processing of information (e.g., conversion of a spreadsheet to a graphical form); and adapt to the special needs of physically disadvantaged users (users with disabilities).
- Improved preservation: Through metadata and information exchange protocols, electronic libraries can easily share information with other electronic libraries and provide enhanced access to readers. Since electronic documents are not prone to the same wear and tear as its physical counterparts, electronic libraries facilitate preservation of special and rare documents and artifacts by providing access to electronic versions of these entities [21].

Weak points of digitization in the library management:

- Lose of items in the library is difficult to control ("Which item exactly is missing? … How many are missing?);
- Maintaining/long term preservation of electronic library documents is not always safe;
- Low credibility (items can be falsified during or after digitization).

With or without inconveniences, the future libraries will not survive to competition in the current "digital age" without a well planning as regards the digitization management of its media.

Digitization of media in museums. Museums are important cultural heritage institutions in the world [20]. The increasing amount of content which needs storage areas, fragile objects, geographically spread museum buildings, high travel costs for the visitors, limited time for visit, and natural hazards are problems museums are facing to[22]. Museum managers wish to make the possible visitors aware of what they own. Using OAI-PMH protocol, several museums made their metadata of cultural heritage information resources harvestable by search engines [20, 23]. Virtual museums "allow the user to experience the content of the museum virtually, i.e., in a place or time physically separate from the museum…by digitizing the content of the museum." This will allow the user "to view or study any part of the museum exhibits at any time, from any place[24]. The Virtual Museum of Canada and the Online Archive of California can be given as examples of virtual museums offering hundreds of thousands of images and interactive games, and hosting virtual exhibitions [20].

Digitization poses more questions for museums than it does for libraries and archives. While libraries preserve primarily the printed and graphic materials for future generations, museums collect 2D and 3D objects with artistic, scientific, architectural and cultural value. Scientific and cultural heritage materials preserved by libraries usually have more than one copy distributed worldwide through different libraries. Yet, museums usually deal with unique objects including 3D ones (e.g. sculptures, pictures, installations, and many others). They host not only individual museum pieces but also one-off exhibitions which may never be displayed again. There are also archeological sites, buildings, crafts and customs that must be preserved as part of the cultural heritage. How could museums preserve such exhibitions, sites and artifacts? Hemminger et al [24] developed a methodology to capture "a record of an exhibit for archival purposes and for communication between curators, and for the design of virtual (never physically implemented) exhibits and pieces based on actual pieces and settings". Digitization of the exhibition is one way to do that. Even though the objects may not be preserved, a digital record of the exhibition can at least be preserved. This record may contain the digitized copies of 2D and 3D objects placed on the museum walls or floors. Digitizing 2D and 3D exhibits and distributing them over the network is a more challenging endeavor. Think of a sculpture, let's say, Michelangelo's David. Digitizing its 3D representation takes a storage space of about 500GB and needs special software to view [24]. Supposing that all the copyright and distribution issues are resolved, it is currently difficult with limited bandwidth to deposit its electronic copy and make it available over the network. Nevertheless, some encouraging digitization initiatives have been carried out. The web site of the Digital Archive Network for Anthropology and World Heritage is "dedicated to the access, presentation, and preservation of material objects that represent human cultural and biological heritage worldwide." It is a network of a distributed and inter-operable database, including not only descriptions but also 2D images of artifacts and fossils as well as 3D models thereof. "The 3D models are digital surrogates of actual specimens that can be manipulated and viewed from all angles, and are sufficiently precise to allow for a wide range of detailed measurements and analyses." Special software (Java3D) is needed to view 3D models of fossils and artifacts [26]. Museum objects have two distinct types of users: general public and the researchers. The digitization needs are quite different for the two types of users. While general public may be satisfied with an electronic replica of a certain picture or sculpture, an academic may wish to review it more closely, measure it, analyze it from different angles and so on. Lynch [25] pointed out that those who digitize the cultural heritage objects (e.g.

researchers) usually have very little contact with those who use them for educational purposes (e.g. curators, museologists etc) [20].

What are the practical measures we have to take in order to offer comprehensive digital information services to our users in the future?

A. Ensuring the access to specific scientific literature databases wideworld. In this view access to specific areas or domains from each platform should be negotiated with the producers, as follows:

i)Bibliographic databases:

1) **Science Direct.** Neccesary domains from their platform:
   · Arts and Humanities
   · Business, Management and Accounting
   · Decision Sciences
   · Economics, Econometrics and Finance
   · Psychology
   · Social Science

2) **SpringerLink.** Neccesary domains:
· Architecture, Design and Arts
· Behavioral Science
· Business and Economics
· Humanities, Social Sciences and Law

3) **Wiley Online Library**. Journals from Wiley are classified on 14 collections. We need the access especially to the following collections:
   • Business, Economics, Finance and Accounting
   • Earth and Environmental Science
   • Education
   • Humanities and Social Sciences
   • Law and Criminology
   • Psychology

4) **Proquest Academic Research Library. On a unique platform they offer access to information from over** 160 different scientific areas. Although they sell it as a whole, we are interested mainly in having access to: economics, literature, geography, psichology, law, magasines of general interest, education, religions, humanities.

5) **Cambridge Journals Online. The scientific areas we need to cover from Cambridge Online are**:

- African studies
- American studies
- Archeology and anthropology
- Architecture
- Asian Studies
- Classic studies
- Cultural studies
- Geography and atmospheric research
- Economics
- European Studies

- History
- History and Philosophy of Science
- Linquistic research
- Latin-American studies
- Law
- Critics on literature
- Mathematics
- Health policies
- Music and drama
- Philosophy
- Policies and international relationships
- Psichology and psichiatry
- Religions studies
- Sociology

ii) Bibliometric databases of general interest for the scientist:

1) **ISI Web of Knowledge** (including mainly Arts and Humanities Citation Index, Social Sciences Citation Index and Conference Proceedings Citation Index);
2) **Journal Citation Reports** (JCR : 2year - 3year impact factors, article influence scores etc) ;
3) **Scopus Elsevier** (Author Preview, Sources, Journal Metrics: SJR and SNIP).

iii) Databases specific to humanities and social sciences:

JSTOR
Online-Contents - Special Subject Collection
IBZ / IBR
CSA ILLUMINA (Exempel: Sociological abstracts)
Research portal b2i

B. **Digitization of own archive documents and other media available in the library**. If you are an old library there is no doubt you have a lot of old items of archive (most often unique), old publications such as books of journal issues or individual articles. Such items are highly suitable for digitization purposes: there is no law interdicting such projects; the copyright is library's. When a library is younger it can improve its archive and old publications collectins in time, by donations. All we need to do is to respond promptly to people willing to donate. We need human resources to collect and catalogate the items prior digitization.

C. **Ensuring the long term preservation of digitized items, using microfilms**. Computers and discs such as CD and DVD are not considered safe for long term storage. Long term preservation on microflms is the best solution although it is not very practical for search purposes.

D. **Establishing connections and collaborations with library networks, archives and museums wideworld**. This is a mandatory action as long there is no library able to cover all the fields nor everything in a specific field, so that a connection and interchange of information is quite important when a library want to completly satisfy the user. There are many specific media (products or services) which two or more libraries can put together in order to complete its range of services or improve them.

E. **If our library is good, the user must know that**. If nobody knows about our good services our work is in vain. Visibility is another key element in the libraries management. Indexing the libraries catalogue in the most important

search engines (today: Google, Altavista or Amazon [20]) or global catalogs such as WordCat or Karsluhe Virtual Catalogue (KVK) is quite important. These actions need some minimum standard requirements of quality, specified as mandatory to become a link in the chain of world digital libraries.

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