

DIGITAL PRESERVATION STRATEGIES

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ABSTRACT

Digital Preservation has been recognized as one of the greatest challenges in our digital information society. It is the current trend in all modern libraries and recognized as a vital part of managing information in digital format. This paper discusses digital preservation, its need and importance, objectives and principles of digital preservation as well as digital preservation strategies.

Key Words: Preservation, Digital Preservation, Principles of Digital Preservation, Digital Preservation strategies

INTRODUCTION

In the electronic age, Information and communication technology (ICT) has facilitated preservation of the documents, i.e. digital preservation. Texts and documents are the primary sources of information. The ICT system has brought revolutionary changes in the organization and management of information. At present, the information technology brings the opportunity to the field of preservation with the digital preservation facility for the non digital documents. Digital materials include texts, databases, still and moving images, audio, graphics, software, and web pages, which needs to be retained. Many of these resources have lasting value and significance, and therefore should be protected and preserved for current and future generations.⁵

Digital preservation is not a new concern, it began when the first computer was introduced. A number of National Library, National Archives, Data Archives and other cultural institutions in developed countries had established digital preservation programs in the late 1980s. Such programs reflected the prevailing technology and digital content of that time. Each generation of technology brings changes

in potential capabilities to create and preserve digital content.

Although technology is the key element in digital preservation, we believe it isn't the greatest inhibitor - the lack of organizational will and way is, despite the increasing evidence documenting the fragility and uniqueness of digital content; cultural repositories have been slow to respond to the need to safeguard digital heritage materials.¹

PRESERVATION

Preservation is the branch of library and information science which is concerned with restoring or maintaining access to documents and records through the study, diagnosis, treatment and prevention of decay and damage. The basic concept of preservation knows how to be characterized as communication with the future. It is well known that in the future new technology will be used which will be more cost effective and more sophisticated than modern technology.

DIGITAL PRESERVATION

Digital preservation includes series of actions which need to be taken and managed to make sure that there is continued access to digital materials as long as it is required. As long as means long term i.e. the indefinite future or short-term i.e. for a specific time period. According to ALA² 'Digital preservation combines policies, strategies and actions that ensure access to digital content over time.' The Encyclopedia of Information Technology defines the term digital preservation as "The process of maintaining, in a condition suitable for use, materials produced in digital formats. Problems of physical preservation are compounded by the obsolescence of computer equipment, software and storage media. Also refers to the practice of digitizing materials originally produced in non digital formats like print, film, etc. to prevent permanent loss due to deterioration of the physical medium."⁴

NEED AND IMPORTANCE OF DIGITAL PRESERVATION

According to Beagrie Digital preservation refers to the series of managed activities necessary to ensure continued access to digital material for as long as necessary. The challenge for digital preservation is not only the volume of data. The hardware and software which is used to store and access digital information are constantly upgraded and superseded. The speed of changes in technology means that the timeframe during which preservation action must be taken is very much shorter than for paper. Institutional repositories as a means to manage and preserve effectively in institution knowledge base and intellectual assets results in the contents of institutional repositories expanding beyond e-print to include research data, e-learning materials and other forms of intellectual outputs, which are generally not published and preserved elsewhere.³

The importance of digital preservation comes from the factors associated with the nature of Library Materials. The growth of digital resources in different libraries summons a new era in their development. Historically, libraries have always been concerned with the management and preservation of documents, today they must be increasingly concerned with preservation of 'bits'. The conservation of the physical book and journal issue

has its own problems, but national libraries and university libraries have copies of books which are centuries old and which, in many cases, have been preserved in original condition.

TYPES OF DOCUMENTS FOR DIGITAL PRESERVATION

Digital preservation is concerned with two types of documents namely born digital documents and digitally created documents. Born digital documents refers to those materials that were initially created using some form of digital technology. They are often called as Electronic Records. Digitally created documents refers to those materials which have been transformed from analog to digital form through some reproductive means such as rekeying the information or scanning the document or objects etc.

OBJECTIVES OF DIGITAL PRESERVATION

- To preserve and provide continued access to digital material
- To ensure that preserved digital materials are authentic;
- To preserve damage and deterioration of the physical media by ensuring an environmental control;
- To repair damage, if it's possible and
- To change the format of digital materials to preserve their intellectual content, if it's necessary.⁹

PRINCIPLES OF DIGITAL PRESERVATION

The basic principles of preservation that are being used for preservation of analogue media are also applicable to preservation in the digital world:

Longevity: Information stored in digital format do not live forever due to the fragility of digital works. There are replication adoptions and redundancy of hardware, software and data formats which implies

that what is readable and interpretable today will be usable long into the future.

Selection: Selection is multistage process. Each stage has different ways to go ahead with different options. Either it is a selection of materials for digital preservation or selection of tools and technology or selection of media and formats. Each selection plays a very important role in the success of preservation plan.

Quality: The quality of digital content is required in three stages. First, during the preparation of the specification for workflow; second, when selecting and handling digital capturing; and third, during the delivery or access time to evaluate download time and user friendly formats. Consistency is the key to ensuring the quality of digital files.

Integrity: Integrity is very much required to protect the access of digital content even when we discard the original storage medium, software and hardware on which the digital content was created, maintained and accessed. Preserving the digital integrity of digital content involves developing techniques for verifying its alteration from original format.

Access: Access to digital content is also the major factor of consideration when we are putting valuable resources for online access. It is policy matter of any library to give access to its digital contents.⁷

PRESERVATION STRATEGIES

Digital preservation includes choosing and implementing an evolving range of strategies to achieve the accessibility, addressing the preservation needs of the different layers of digital objects.⁶

The strategies include:

- Placing the material in the safe place
- Selecting what material should be preserved
- Controlling material, with the help of structured metadata and other documentation to facilitate access and to support all preservation process
- Protecting the integrity as well as identity of data

- Choosing the required means of providing access in the face of technological change
- Managing preservation programs to achieve their goals in cost-effective, timely, proactive and accountable ways.

ADDITIONAL PRESERVATION STRATEGIES ARE :

Refreshing: Refreshing is the transfer of data between two types of the same storage medium so that there are no alteration of data. For example, transferring census data from old CD with the new one.¹⁰

Migration: Migration is the transferring of data to newer system environments. It includes conversion of resources from one file format to another. e.g. conversion of Ms Word to PDF or Open Document, from one operating system to another e.g., Windows to Linux or from one programming language to another e.g. C to C++ or Java.

Emulation: Emulation is replicating the functionality of an obsolete system. For e.g. de emulating an Atari 2600 on a Windows system or emulating WordPerfect 1.0 on a Macintosh. Emulators can be built for applications, operating systems, or hardware platforms.⁸

CONCLUSION

Recent trends in information and communication technology (ICT) and the emerging potentials with which to construct a global knowledge base offer exciting opportunities for libraries and information resource centre. We can now make information easily available to communities worldwide via the Internet. We, however face the challenge of preserving digital information with its paradox of short media life, obsolete hardware and software, slow read times of old media, and defunct Web sites. Despite the wealth of accumulated, technology - generated information, we currently lack proven methods for preserving this information or for using optimal technology tools to access it and determine its authenticity. Failure to address these digital preservation problems is analogous to squandering

potential professional, personal, and economic gains, contributing to cultural and intellectual poverty, and resulting in exorbitant costs for recovery. We are compelled to meet the research challenge to resolve the conflict between the creation and the use to facilitate digital information preservation.

REFERENCES

1. Akter, Tahmina. (2013) Digital Preservation of Library Materials. *International Research: Journal of Library & Information Science* .3(1)
2. ALA. (2007). Definitions of digital preservation. Chicago: American Library Association. Retrieved from: <http://www.ala.org/ala/mgrps/divs/alcts/sources/preserv/defdigpres0408.pdf>
3. Beagrie, Neil. (2006). Digital curation of Science, Digital Libraries and Individuals. *International Journal of digital curation*. Vol. 1
4. Edward M. Corrado, (2009). Digital Preservation: The Next Library Frontier Presented at: IGeLU, Helsinki, Finland.
5. Velmurugan C. (2013) Digital Preservation : Issues and Challenges on Libraries and Information Resource Centres in India. *e-Library Science Research Journal*. 1(8)
6. Available <http://www.fedora.info/presentations/DLF-Nov2003.ppt> (Retrieved on 14.03.2016)
7. Available <http://www.inflibnet.ac.in/caliber2009/CaliberPDF/11pdf> (Retrieved on 07.04.2016)
8. Available www.ncaonline.org.uk (Retrieved on 11.04.2016)
9. Available <http://www.oclc.org/digitalpreservation/> (Retrieved on 07.04.2016)
10. Available <http://www.researchinformation.info/risprimg03data.html> (Retrieved on 14.03.2016.)

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