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## Digital Preservation : Some Aspects in Digital Information Era

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### Abstract

*There has been a sea change in the process of preservation of materials for posterity .In this digital era the concept of digital preservation has also come into the scene which became a challenging task for the professionals in the field of Library and Information activities. For the same certain basic aspects involved are required to be addressed. The present paper aims to highlight these aspects.*

**Keywords:** Digital Preservation, Digital Library

### 0. Introduction

Preservation is an important function of any library, archive, information organization, etc., to use the preserved materials for the present and future generations. Various means and processes have been adopting since the existence of such organizations to preserve the materials. Traditionally speaking, preservation of materials has been done in response to the threat of destruction of the materials for future use. The ultimate purpose of preservation is to ensure protection of information of enduring value for access by present and future generations<sup>1</sup>.The digital revolution of the new millennium has drastically reshaped all the concepts of preservation of traditional documents. With the application of new IT and its products and services it has become easy to create and sort information to preserve in digital format. In the words of Conway “Today our capacity to record information has increased exponentially overtime while the longevity of the media to store information has decreased equivalently”<sup>2</sup>.Issues concerning digital preservation has become a major challenging task for the library and information professionals engaged in this digital era.

### 1. Digital Preservation

The Arts and Humanities Data Service (AHDS) describe digital preservation as “the preservation of digital materials and the preservation of paper based materials and other artifacts through their digitization<sup>3</sup>. Thus not only the materials in digital formats but also other printed and paper based materials are also required to be covered considered in the process of digitalization by the library, archive and other information organizations.

### 2. Affecting Factors

There are many factors which affect the process of digital preservation. Some such major factors include the following<sup>4</sup>:

- ✍ Type of Material
- ✍ Type of File Format
- ✍ Type of Media
- ✍ Type of Platform/Operating System.

### 3. Principles of Preservation

Some important and basic principles, which are based on current standards and best practices for digital preservation, are as follows<sup>5</sup>:

- ✍ Retain an analog version of digitally reformatted items until the life-cycle management of digital data passes all tests of smooth access for as long as or longer than, the analog version. The analog version may be the original item, paper facsimile, video cassettes or microfilm copy and may be restricted for use after the digital reproduction is available.
- ✍ Ensure the appropriate handling and treatment of originals, disbanding, housing and other related matters.
- ✍ Minimize handling of originals in the digital reformatting work to assure the best digital capture of an undamaged original, as well as the longevity of the original item, especially if it is to serve as the analog version.
- ✍ Ensure that the digital master file will allow a broad range of future use, including planned phases of delivery, by employing appropriate standards and best practices for wide access.
- ✍ Capture the highest quality digital image technically possible and economically feasible for large scale production, while optimizing the potential for longevity.
- ✍ Archive a digital master file that is free of or minimizes, artifacts introduced by the reformatting process, whenever possible.
- ✍ Ensure the completeness of all materials being digitally reformatted to the same standard.
- ✍ Optimize digital images of paper-based text materials for use in creating a new paper facsimile, when appropriate.
- ✍ Employ economical, automated methods to create machine readable text with minimal encoding to provide access with searchable text.
- ✍ Employ standards and best practices for structural, administrative and descriptive metadata that will optimize interoperability with national and international digital library.
- ✍ Check document digital master file contents with checking tools and use them to ensure the data integrity of master files through back up and migration.

These principles are found to be implemented in the typical library. However, the state of development in the area of digital preservation still remains largely experimental. Only a few particular library, archive and institutions have established digital preservation programs.

### 4. Issues<sup>6</sup>

The goal of digital preservation is to maintain the ability to display, retrieve, and use digital collections in the face of rapidly changing technological and organizational infrastructures and elements. Issues to be addressed in digital preservation include:

- ✍ Retaining the physical reliability of the image files, accompanying metadata, scripts, and programs (e.g. make sure that the storage medium is reliable with back-ups, maintain the necessary hardware and software infrastructure to store and provide access to the collection)
- ✍ Ensuring continued usability of the digital image collection (e.g. maintain an up-to-date user interface enable users to retrieve and manipulate information to meet their information needs).
- ✍ Maintaining collection security (e.g. implement strategies to control unauthorized attention to the collection, develop and maintain a rights management program for fee-based services).
- ✍ Also there are other technical, social, and legal issues as mentioned below<sup>7</sup>:

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- ✗ The rapidly increasing number of digital objects and proliferation of document standards and formats.
  - ✗ The increasing complexity of digital objects and their increasing software dependence.
  - ✗ The lack of planning to incorporate preservation needs in systems and lack of availability of off the- shelf products supporting preservation needs.
  - ✗ The lack of consideration of long term- access requirements when creating digital products.
  - ✗ The absence of widely accepted standards, which will assure seamless access.
  - ✗ Copyright/ intellectual property rights that may interfere with the ability to preserve digital objects through systematic copying.
  - ✗ Unstable storage media whose life span is limited and its data recovery are uncertain.
  - ✗ A Lack of technical expertise in preservation standards and techniques.
  - ✗ An emphasis on the creation and /or acquisition of digital material in an era of Diminishing resources, rather than ongoing preservation and access to existing electronic holdings.

## 5. Strategies and Methods

There are various strategies and methods which can be adopted in the process of digital preservation .Some of such important strategies and methods include <sup>8, 9</sup>: Intellectual Preservation; Technological Preservation; Emulation; Data Migration; Refreshing; Data Archaeology; Output to Analogue Media.

**Intellectual Preservation** : It includes printing of digital material on paper and recording it on microfilm.

**Technology Preservation** : This strategy aims at preserving the software and hardware environment that was used to access the resources when it was created. This approach may be the best solution for some digital objects in the short term but not in the longer term.

**Emulation**: It refers to creating new software that mimics the operations of older hardware or software in order to produce its performance .Thus , not only are physical presence and content preserved, but also digital objects could display original features(e.g. layout) and functionality available with the older software.

**Data Migration** : It involves change in the configuration of the underlying data, without change in the intellectual content. The purpose of migration in to preserve the integrity of digital objects and to retain the ability for clients to retrieve, display and otherwise use them in the face of constantly changing technology<sup>10</sup>.

**Refreshing** : This important method of digital preservation to achieve longevity involves periodically moving one from one physical storage medium to another storage medium in order to avoid physical decay or obsolescence.

**Data Archaeology** : Here data would be reflected regularly but no migration would be performed and no programmes would be preserved to emulate at a latest stage. It involves recovery of data by using better techniques available in future.

**Output to Analog Media** : It provides a preservation copy in an analog format. It is fact that microfilm cannot capture all of the features of original object that satisfy the access needs of the majority of the users.

All these strategies and methods have their own merits and demerits. To carry out digital preservation work in the true sense, libraries must retain the ability to display, retrieve, manipulate and use the digital information in the face of constantly changing technology<sup>11</sup>.

## 6. Conclusion

Digital preservation of materials is an essential and challenging task of the library and information Professionals of this digital era. It has become a global issue today which calls for a global solution. The need for Digitalization has been instrumental to ensure the durability, usability, intellectual integrity of the data/information contained in the materials to be preserved for the present generation and generations to come. As an extension of their role and activities, libraries, archives, information organizations, etc., mostly of national importance should give concerted efforts for this challenging issue. Digital preservation is the best and the latest means, so far in existence, to preserve the world memory for the generations to come.

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