Role of the Digital Preservation in the Current Technology

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ABSTRACT: *Creating efficient plans for assuring the long-term preservation of digital resources is a component of digital preservation. It employs strategies and tools that guarantee the durability of digital data. Its primary goal is to guarantee the ongoing availability and value of digital resources. This essay gives a succinct overview of digital preservation. The ideas and observations related to the contents of digital preservation are presented in this work. It talks about an overview of technical methods and tactics for digital preservation as well as difficulties with information resource centers (IRC). The major goals, procedure, and technical challenges associated with the preservation of digital resources are also covered in this study. The report concludes by highlighting the digital preservation projects' procedural ladder. The article provides a quick overview of storage management as it relates to digital preservation repositories since the limited lifespan of storage media is one of the most significant threats to digital preservation. The essay also discusses microfilming and digitalization as a hybrid preservation technique.*

KEYWORDS: *Digital Archiving, Digital Preservation, Digital Resources, Data Preservation, Preservation.*

1. INTRODUCTION

Information technology has made document preservation easier in the electronic era, or "digital preservation." The main sources of important information are texts or papers. The structure and administration of information have undergone dramatic changes thanks to the information and communication technology (ICT) system. With the ability to digitally preserve non-digital materials, information technology now offers the preservation profession a unique opportunity. Document digital preservation is now well understood [1]. Digital resources come in a broad variety of forms, including texts, databases, still and moving pictures, music, graphics, software, and web pages. They typically vanish quickly and need intentional creation, upkeep, and control to be kept. Many of these resources are important and have long-lasting worth, thus they need to be safeguarded and conserved for both present and future generations. The technique of keeping digital assets accessible throughout time is known as digital preservation. It has evolved into a crucial component of the modern environment [2]. Any content that has been processed by a computer is referred to as "digital material," which includes both materials that have been digitally altered and those that were "born digital." In this context, the phrase "long term" should be understood to refer to time periods of decades or even centuries, long enough to consider the effects of developing technology.

1.1 Digital Preservation:

In order to ensure that digital resources may be accessed indefinitely, a number of steps must be done and handled as part of digital preservation. As long as is required may refer to a lengthy

period of time indefinitely or a small period of time for a particular, time-limited business necessity. "Digital preservation" is defined by the American Library Association (ALA) (2007) as "combining policies, methods, and activities that assure access to digital information across time." Digital reserve is described as "the process of keeping, in a state appropriate for use, items created in digital forms" by the Encyclopedia of Information Technology [3]. Computer hardware, software, and storage medium obsolescence exacerbates issues with physical preservation. Preservation describes the technique of digitizing items that were previously created in non-digital mediums as print, film, etc. in order to avoid irreparable loss due to degradation of the physical medium."

1.2 Principles of Digital Preservation:

- *Longevity:* Due to the fragility of digital works, information kept in digital format does not last forever. Hardware, software, and data formats are being adopted again, and this suggests that what is now readable and interpretable will continue to be useful for a very long time. Selection: This selection procedure involves many steps. There are several ways to go with various alternatives at each level. Either it is a choice of media and formats, a choice of tools and technology, or a choice of materials for digital preservation. Every decision is crucial to the preservation plan's success [4].

- *Quality:* Digital material must be of high quality at three levels. First, while preparing the workflow definition; second, when choosing and managing digital captures; and 3rd, when delivering or accessing to assess download time and user pleasant formats. The key to guaranteeing electronic document quality is uniformity.

- *Integrity:* Even if we throw away the original storage media, software, and hardware on which the digital material was generated, maintained, and accessed, integrity is still necessary to safeguard access to that content. Creating methods for detecting changes to digital material from its original format is another aspect of maintaining its digital integrity.

- *Access:* Another important element to take into account when allocating costly resources for internet access is access to digital material. Any library's policy is to make its digital assets accessible [5].

With the development of electronic storage medium, the sector of information storage underwent a revolution. Information is produced and utilized in the digital world today. Digital data, however, is very brittle and prone to loss. When a computer fails, for example, digital data may be lost. The management of digital material for future access and usage is known as digital preservation (DP). Information may easily be generated, modified, and saved thanks to digital technology [6]. Electronic records, emails, blogs, social networking sites, national election websites, web photo albums, educational materials, cultural artifacts, online publications, digital audio resources, e-journals, e-records, project documents, technical reports, scientific data, and dissertations are all targets of preservation efforts. A variety of factors must be considered when choosing whether materials should be maintained via archival evaluation, including their long-term relevance.

2. DISCUSSION

The term "digital preservation" makes reference to both the management and preservation of legacy paperwork and artifacts paper materials, pictures, photographs, or physical objects that have been converted into images using scanners, image sensors, or other imaging techniques, in addition to the retention of materials that have been created in electronic information from the start and have never occurred in print or input signal form (also known as "borndigital"). There are a variety of controlled techniques known as digital preservation that are used to offer continued access to all sorts of documents in electronic information for as long as needed and to protect them against media failure, physical loss, and obsolescence (Cornell University Library, 2005). Digital preservation is described as "long-term, mistake storage of digital data, with means for retrieval and interpretation, for all the time span that the information is required for" (Wikipedia, 2006). "Retrieval" refers to obtaining necessary media content from the long-term, error-free digital storage without corrupting the errorfree saved digital files, and "explanation" refers to interpreting the recovered digital files, which may be texts, charts, or images [7].

More and more conventional libraries are being transformed, at least in part, to digital libraries. Traditional libraries are feeling increased pressure from the accessibility of web-based electronic information product lines, so they are assigning bigger quantities of their government budget allotment for either having purchased or accessing web-based online or full-text search services, CD ROM products, internet resources, multi-media product lines, and so on [8]. The availability of digital information goods and services has led to significant changes in conventional behaviors and policies, which have moved away from purchasing and storing information services and toward accessing them. Libraries are working hard to start digital library initiatives in their individual institutions in order to create their own digital collections, in addition to collecting and purchasing access to digital collections. Libraries are collecting more materials that are "born digital" or transferring their current print collections into digital forms [9]. One of the most important challenges for libraries is the preservation and archiving of digital information, whether it was obtained via a subscription, was bought on digital media, or was converted internally. Additionally, the academic community expects libraries to retain any items that were formerly online, at the very least in an offline digital version like a CD-ROM. Although using a digital collection is more convenient, accessible, and useful than using a paper-based or microform collection, long-term preservation of digital material is hampered by short media life, outdated gear and software, poor read times of older media, and inactive Web sites [10].

2.1 Challenges for Preserving Digital Contents:

Although digital technology has a number of benefits over its print equivalent, it is always evolving, along with other related Internet and online technologies [11]. The definition of new standards and protocols for file formats, compression methods, hardware parts, network interfaces, storage media and devices, etc. happens often. The ongoing danger of "techno obsolescence" and changing standards exists for digital material [12]. Physical media like magnetic and optical discs are always being redesigned to hold more and more data. Backward compatibility for items, including software, hardware, and related standards and protocols that were previously in use, is an ongoing concern. Due to significant disparities between digital and paper-based content, preserving access to digital resources over time may be difficult [13].

2.2 Strategies For Digital Preservation:

It is difficult to preserve digital information because data based on outdated technology quickly becomes unavailable as newer digital technologies quickly replace older ones. Regarding the difficulty of DP, see Figure 1. Technology preservation, technology emulation, information transfer, and encapsulation are methods for keeping digital information safe.

- *Technology preservation:* Data redundancy is one strategy for preserving digital information. We ensure that crucial files have several copies. Before the older media become so unusable that the data cannot be accessible, we replicate the digital data onto the more recent media. This copying or refreshing guards against data loss due to computer failure.

- *Technology emulation:* Emulation is the process of utilizing a program to replicate outdated or original hardware or software. For this, regular emulator updates are needed.

- *Information Migration:* This entails the routine transfer of digital items across generations of hardware and software. It involves moving data to more modern settings. Backward-compatible software applications may make this tactic easier to implement.

- *Encapsulation:* This approach entails include the specifics of how to understand the digital object in the information that is being contained. It improves the data interoperability across computer programs.
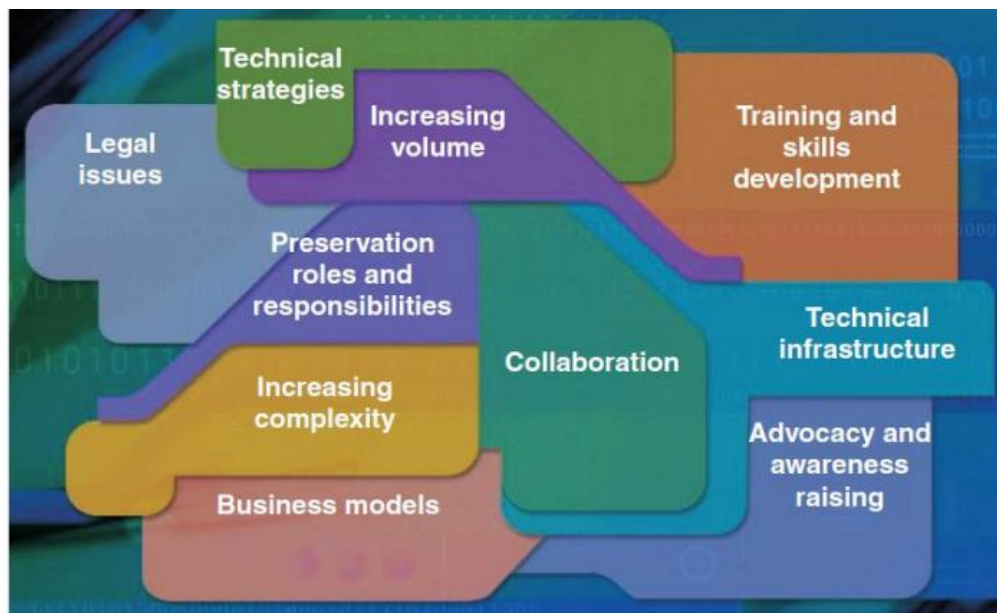
Figure 1 : Illustrate the difficult shape of the digital preservation [14]**.**

3. CONCLUSION

Libraries and information resource centers have exciting new prospects thanks to recent developments in ICT and the promise they have for building a worldwide knowledge base. Both

archive organizations and libraries must overcome the great problem of digital preservation. Committing to digital preservation entails taking on a systematized project that calls for the existence of a comprehensive set of the principles, policies, and strategies that govern the actions taken to ensure the stabilization and protection of intellectual property on a physical and technological level. Long-term access, authenticity, and integrity of digital items are all guaranteed through digital preservation. It involves technological considerations, social and cultural considerations, legal considerations, and considerations of obligations and incentives. Standards and practices from both domestically and outside must be followed by preservation initiatives. It is intended that libraries would make a commitment to archiving their digital content and that digital preservation will guarantee that library resources will continue to be available to future generations. No method of digital preservation can be guaranteed to succeed since the future is so unpredictable.

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