

# Content Management Systems and Digital Preservation for Digital Era

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**ABSTRACT:** Information and documentation services available on the Internet through web servers are growing in an exponential manner. In recent times, software has been seen as an increasingly mainstream part of the market. The field of content management system has seen particularly strong growth in software solutions, perhaps in direct response to the very high prices that commercial content management system have historically demanded. The increasing complexity of services and systems supporting has made it necessary to formulate a theoretical and practical corpus capable of combining classical information management techniques within organizations with the particular features of the digital environment. Preservation means all the activities involved such as storage techniques policies staffing level, and methods involved in preserving library and archive materials and the information contained therein. Preservation today is educating librarians and other staffs in the best ways to handle materials as well as the conditions in which particular materials will decay the least. So the digital preservation is the method of keeping digital material alive so that they remain usable as technological advances render original hardware and software specification obsolete.

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## 1. Introduction

Digital preservation aims to ensure that digital media and information systems are still interpretable into indefinite future. Each necessary component of this must be migrated, preserved or emulated. Typically lower levels of systems are emulated, bit-streams are preserved and operating systems are emulated as a virtual machine. Only where the meaning and content of digital media and information systems are well understood is migration possible, as is the case for office documents. However, at least one organization, the wider net project, has created an offline digital library, the reproducing materials on a 4 TB hard drive.

## 2. Preserving Digital Information

The Challenges of long-time preservation of digital information have been recognized by the archival community for years. In

December 1994 the Research Libraries Group (RLG) and Commission on Preservation and Access (CAP) formed a task force on Archiving of Digital Information with the main purpose of investigating what needed to be done to ensure long-time preservation and continued access to the digital records.

### **3. Challenges of Digital Preservation**

Society's heritage has been presented on many different materials, including stone, vellum, and bamboo, silk and paper. Now a large quantity of information exists in digital forms, including emails, blogs, social networking websites, national elections websites, web photo albums and sites which change their content over time. With digital media it is easier to create content and keep it up-to-date, but at the same time there are many challenges in the preservation of this content, both technical and economic. Digital content can also present challenges to preservation because of its complex and dynamic nature. In many cases of emergent technological advances there are substantial difficulties in maintaining the authenticity, fixity and integrity of objects over time deriving from the fundamental issue of experience with that particular digital storage medium and while particular technologies may prove to be more robust in terms of storage capacity, there are issues in securing a framework of measures to ensure that the object remains fixed while in stewardship.

### **4. Digital Preservation Best Practices**

Although preservation strategies vary for different types of materials and between institutions, adhering to nationally and internationally recognized standards and practices is a crucial part of digital preservation activities. Best or recommended practices define strategies and procedures that may help organizations to implement existing standards or provide guidance in areas where no formal standards have been developed. Best practices in digital preservation continue to evolve and may encompass processes that are performed on content prior to or at the point of ingest into a digital repository as well as processes performed on preserved files post-ingest over time. Best practices may also apply to the process of digitizing analog material and may include the creation of specialized metadata in addition to standard descriptive metadata.

- Audio Preservation
- Moving Image Preservation
- Video game Preservation
- Email Preservation

#### **4.1 Audio Preservation**

Various best practices and guidelines for digital audio preservation have been developed, including The Audio Engineering Society (AES) also issues a variety of standards and guidelines relating to the creation of archival audio content and technical metadata.

#### **4.2 Moving Image Preservation**

The term moving image includes analog film and video and their born-digital forms: digital video, digital motion picture materials, and digital cinema. As analog videotape and film become obsolete, digitization has become a key preservation strategy, although many archives do continue to perform photochemical preservation of film stock.

#### **4.3 Video Game Preservation**

Developed tools and methodologies to keep digital software objects available in their original context. Digital software objects as video games might get lost because of digital obsolescence and non availability of required legacy hardware or operating system software: such software is referred to as abandon ware.

#### **4.4 Email Preservation**

Email poses special challenges for preservation email client software varies widely: there is no common structure for email messages: email often communicates sensitive information: individual email accounts may contain business and personal message intermingled: and email may include attached documents in a variety of file formats. Email messages can also carry viruses

or have spam content. While email transmission is standardized, there is no formal standard for the long-time preservation of email messages.

#### **Preservation Responsibilities:**

- Availability
- Identity
- Fixity
- Viability
- Renderability
- Authenticity
- Understandability

#### **Digital Preservation Library software:**

1. Dspace
2. Greenstone
3. Eprints
4. Ganesha Digital Library
5. Fedora Commons (Flexible Extensible Digital Object Repository Architecture)
6. Islandora
7. SimpleDL
8. Logos Bible Software

### **5. Content Management Systems and Digital Preservation**

The function of Content Management Systems is to store and organize files, and provide version-controlled access to their data. CMS features vary widely. Simple systems showcase a handful of features, while other releases, notably offer more complex and powerful functions. Most CMSs include Web-based publishing, format management indexing, search, and retrieval. The CMS increases the version number when new updates are added to an already existing file. A CMS may serve as a containing documents, movies, pictures, phone numbers and scientific data. CMSs can be used for storing, controlling, revising, semantically enriching and publishing documentation. Content management application (CMA) is the front-end user interface that allows a user, even with limited expertise, to add, modify and remove content from a Web site without the intervention of a Webmaster. Content delivery application (CDA) compiles that information and updates the Web site. A content management system (Web Content Management System) is a bundled or stand-alone application to create, deploy, manage and store content on Web pages. Web content includes text and embedded graphics, photos, video, audio, and code that displays content or interacts with the user.

#### **5.1 Type of Content Management Systems**

There are three major types of WCMS: offline processing, online processing, and hybrid systems. These terms describe the deployment pattern for the WCMS in terms of when presentation templates are applied to render web pages from structured content.

#### **5.2 Offline Processing**

These systems sometimes referred to as “static site generators” pre-process all content, applying templates before publication to generate web pages. Since pre-processing systems do not require a server to apply the templates at request time, they may also

exist purely as design-time tools.

### **5.3 Online Processing**

Most open source WCMSs have the capability to support add-ons, which provide extended capabilities including forums, blog, wiki, web stores, photo galleries, contact management, etc. These are often called modules, nodes, widgets, add-ons, or extensions.

## **6. Hybrid Systems**

Some systems combine the offline and online approaches. Some systems write out executable code rather than just static so that the CMS itself does not need to be deployed on every web server. Other hybrids operate in either an online or offline mode.

### **List of Content Management Software Top Ten:**

1. Word press
2. Drupal
3. Joomla
4. Expression Engine
5. Text Pattern
6. Radiant CMS
7. Cushy CMS
8. Silver Stripe
9. Alfresco
10. TYPO light

## **6.1 Advantages**

### **6.1.1 Low cost**

Some content management systems are free, Others may be affordable based on size subscriptions Although subscriptions can be expensive, overall the cost of not having to hire full-time developers can lower the total costs. Plus software can be bought based on need for many CMSs.

### **6.1.2 Easy Customization**

A universal layout is created, making pages have a similar theme and design without much code. Many CMS tools use a drag and drop AJAX system for their design modes. It makes it easy for beginner users to create custom front-ends.

### **6.1.3 Easy to use**

CMSs are designed with non-technical people in mind. Simplicity in design of the admin UI allows website content managers and other users to update content without much training in coding or technical aspects of system maintenance. Workflow management

CMSs provide the facility to control how content is published, when it is published, and who publishes it. Some WCMSs allow administrators to set up rules for Workflow management, guiding content managers through a series of steps required for each of their tasks.

### **6.1.4 Good for Search Engine Optimization**

CMS websites are also good for search engine optimization (SEO). Freshness of content is one factor that helps, as it is believed that some search engines give preference to website with new and updated content than websites with stale and outdated content. Usage of social media plugins help in weaving a community around your blog. RSS feeds which are automatically generated by blogs or CMS websites can increase the number of subscribers and readers to your site. Url rewriting can be implemented easily which produces clean URLs without parameters which further help in see. There are plugins available that

specifically help with website SEO.

## **6.2 Disadvantages**

### **6.2.1 Cost of Implementations**

Larger scale implementations may require training, planning, and certifications. Certain CMSs may require hardware installations. Commitment to the software is required on bigger investments. Commitment to training, developing, and upkeep are all costs that will be incurred for enterprise systems.

### **6.2.2 Cost of Maintenance**

Maintaining CMSs may require license updates, upgrades, and hardware maintenance.

### **6.2.3 Latency Issues**

Larger CMSs can experience latency if hardware infrastructure is not up to date, if databases are not being utilized correctly, and if files that have to be reloaded every time data is updated grow large. Issues may also impair caching files.

### **6.2.4 Tool Mixing**

Because the URLs of many CMSs are dynamically generated with internal parameters and reference information, they are often not stable enough for static pages and other web tools, particularly search engines, to rely on them.

### **6.2.5 Security**

CMS's are often forgotten about when hardware, software, and operating systems are patched for security threats. Due to lack of patching by the user, a hacker can use unpatched CMS software to exploit vulnerabilities to enter an otherwise secure environment. CMS's should be part of an overall, holistic security patch management program to maintain the highest possible security standards.

## **7. Conclusion**

Content management and digital preservation has many facets including enterprise content management, WCM, content syndication and digital or media asset management. ECM is a vision, a strategy, or even a new industry, but it is not a closed system solution or a distinct product. A CCM system is concerned with the content within documents. It can locate and link content at any level of organization, and it is used to build publications out of reusable fragments of content. Whereas ECM and WCM systems frequently manage unstructured content (word processor and other desktop publishing files, rendered PDF and HTML, etc.), a CCM system manages structured content (usually XML), from which such documents are rendered and typically delivered to ECM and WCM systems. It also summarizes, their technical architecture based on the triad made up of web server, programming language interpreter and database manager.

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