Redesigning Library with Open Source Technologies to Meet Changing Needs of the Digital World

Dr. HD Gopal

Librarian, Selection Grade, Government Arts College, Bangalore, Karnataka, India

dhdgopal@gmail.com

ABSTRACT

The information revolution has exponentially brought modern emerging trends in the field of education as exemplified through the use of digital technologies. E-learning is achieved through digital technologies and social computing applications that promote and enhance effective pedagogy and teaching methods—enabled by rapid expansion in information communication technology (ICT). Allows academicians & students to be creative and innovative. It has emerged as a prominent technology. It helps to achieve a knowledge society.

This paper briefly describes the planning, designing, development, and guidelines for designing, characteristics, achieves, services, resources, maintenance, responsibility, role of librarian, strategies, definition, need, purpose, function, digitization in libraries, Standards, policy, Software available, LSDI, advantages, disadvantages, etc.

KEYWORDS: Digital Library, Hybrid Library, Digital Preservation, Digital Library Archives.

INTRODUCTION

Presently, there has been a paradigm shift in the concept of library and Information centers. Earlier in the traditional form of library and information services, we were concerned with documents in print format and their organization, retrieval and preservation. With the paradigm shift, now we are more or less concerned with hybrid libraries, digital libraries and virtual libraries. This is due to the introduction of ICT which has brought about changes in the process of collection development, their organization and accessibility. Formerly, there were no competitors for libraries. At present with the emergence of the web and the internet, users can access their required information globally at any point in time and space in their workplace. Therefore, the very existence of libraries is in question. To establish the importance of libraries, we have to change our traditional methods of service to modern service methods. In this changing environment, to compete with the advanced needs of users, the establishment of a digital library is an essential component. Today's world is the digital world, which is concerned with creation, sharing and using information in digital form. Information is floating in all directions and moving all around us. We have to catch the right information and make it available to the right person at the right time, which is the aim of any modern library.

A Digital Library is a collection of digital objects (text, video, audio) along with methods for access and retrieval and also for selection, organization and maintenance.

Knowledge
- ☐ Information age
- ☐ Knowledge era
- ☐ Knowledge economy
- ☐ Knowledge worker (Peter Drucker)
- ☐ Knowledge organization
- ☐ Knowledge industry
- ☐ What has really changed?

- • Information Acquisition /
- • Technology of Technologies
- • Popularize the Service

Changing Information Landscape & Five Laws of Ranganathan
- ◉ Book for use
  - ◦ OS DL tools
  - ◦ Dspace –GSDL-Eprints
  - ◦ OA
  - ◦ DL+ Creative Commons, meta DL
  - ◦ Hathi Trust

- ◉ Every reders his/her book
- ◉ Every books its reader
- • User Centered Design
- • Variety of Examples
- • MM based analysis
- ◉ Save the time of reader

Doc support beyond Personalization Stability Wisodom

- ◉ Library is growing organism

All the adds up to Digital library Redefining boundaries Perceptions

Innovation in Library Environment

- • Complex Process of introducing new ideas into use or practice.
- • Gaining further knowledge about the innovation
- • knowledge function, evaluation function and decision-making function

Library Today

Today's library includes tools with which the user can

- ➢ Gain access to the holdings of libraries worldwide through automated catalogues.
- ➢ Locate both physical and digital versions of scholarly articles and books.
- ➢ Optimize searches; simultaneously search the Internet, Commercial databases and library collections.
- ➢ Save search results and conduct additional processing to narrow or qualify results.
- ➢ From search results, click through to access the digitized content or locate additional terms of interest.
- ➢ Customize his/her information request so that the search results reflect individual needs and preferences.
- • User centered Design
- • Redefining boundaries and perceptions
- • Seamless web editing
- • Web 3.0
- • Wikis ,Blogs
- • Access anywhere/or self.

New Users, New Expectations

- • Everything Wanted free
- • User Needs
- • Users need immediate delivery of full-text beyond the library holdings.
- • Project managers refer to market reports rather than books and journals to seek more competitive projects.
- • Users expect all the library services on their desktops.

Emerging Open Technologies for Libraries

Learning Management System

Litmos, Moodle and Atutor ,MOOCS

Digital Repositories

Dspace, Contentme, digitool, Eprints, Greenstone, Ganesha

Content Management Software

Joomla, Drupal, Wordpress, Concrete5

Library Automation Software

Evergreen, Koha, NewGenLib, OpenBiblio

Operating system

Linux and Linux flavours (ubuntu, Fedora, Centos), Sun Solaris

Federated Search Engines

Carrot2, Library Find, dbwiz, Masterkey

Emerging Open Technologies for Libraries

Open URL Resolver

Cufts, Cate Link-Server Framework, CrossRef

Electronic Resource Management

Calibre, ERMes, FreERMS

Ontological Tools:

Protégé, Owl language and RDF metadata standards.

Open IoT technologies

Kaa IoT, Sitewhere, thingspeak

Progressive web apps

React, polymer template, webpack

Training

TILT, Mosst

Library Transformation

- From Register to Library Management System
- From card catalogue to OPAC
- From AARC2/ to RDA/FRBR/Z39.50
- From traditional archive methods to Digital Repository
- From board display to webpages
- From print learning resources to cloud based resources

The DSpace Repository

- Institutional Repository for MIT faculty's digital research materials
- MIT Libraries - Hewlett Packard Research Labs collaborative development project
- Open Source system
- Federated system
- Preservation archive

DIGITAL LIBRARY

A digital library is a library in which collections are stored in digital formats (as opposed to print, microform, or other media) and accessible by computers. The content may be stored locally, or accessed remotely. The first published use of the term has been traced to a 1988 report to the Corporation for National Research Initiatives. The term was first popularized by the NSF/DARPA/NASA Digital Libraries Initiative in 1994. Bush (1945) created a vision based on experience ("Digital library.")

Characteristics of Digital Libraries

The different characteristics of digital library are as follows:

Collection:

A digital collection of electronic documents or other resources presented as a purposeful assemblage, e.g., organized and presented according to library or archival principles or representing the digital holdings of an institution

Purpose of Digital Library

Purpose of a digital library is:

- ❖ Expedite the systematic development of procedures to collect, store, and organize, information in digital form.
- ❖ Promote efficient delivery of information economically to all users.
- ❖ Encourage co-operative efforts in research resource, computing, and communication networks.
- ❖ Strengthen communication and collaboration ϖ between and among educational institutions.
- ❖ Take leadership role in the generation and dissemination of knowledge.

Components of Digital Library

The components of a digital library are:

- Infrastructure, Digital Collection, Systems
- function Telecommunication facility, Human resources
- Hardware Requirements are: Computer servers, Networks, LAN/WAN,

- Converters, Scanners Internet Connectivity, Storage media,
- Multimedia Interface, UPS Software Requirements are: Liner Operating Systems, Digital Library
- Software, Greenstone, Fedora D-space, Editing Software, E-print

Information Model
- **Communities**
  ◦ Research units of the organization
- **Collections (in communities)**
  ◦ Distinct groupings of like items
- **Items (in collections)**
  ◦ Logical content objects
  ◦ **Receive persistent identifier**
- **Bitstreams (in items)**
  ◦ **Individual files**
  ◦ Receive preservation treatment

EDUCATIONAL TECHNOLOGY

Problem
- Lack of persistent repository for Learning Objects
- Needed for reuse of
- Entire courses
- Useful "learning objects

CHALLENGES

Faculty Acceptance
- Variety of content
  ◦ Preprints and publications
  ◦ Digital research material
  ◦ Educational material
- Respect for discipline differences
  ◦ Access control, review process, etc.
- Institutional support
  ◦ Broad advocacy
  ◦ Mission relevance
- Leadership.

Sustenance
- **The technology adoption lifecycle**

The sociological model (of Beal and Rogers) is relevant to OSS and its acceptance by the community

Describes the adoption or acceptance of a new product or innovation, according to the demographic and psychological characteristics of defined adopter groups:

- Innovators
- Early Adopters
- Early Majority
- Late Majority

"Laggards

CONCLUSION

There will be a continuing expansion of digital library activities. LIS and computer science professionals face challenges that will lead to improved systems. More and more libraries will have departments and programs in the digital library arena. Digital libraries will build upon work being done in the information and data management area. Digital libraries provide an effective means to distribute learning resources to students and other users. Planning a digital library requires thoughtful analysis of the organization and its users, and an acknowledgment of the cost and the need for infrastructure and ongoing maintenance (Adams, Jansen, and Smith 1999). Digital libraries present opportunities and challenges for the library and information communities and all stakeholders. It also is going to be part of day-to-day professional activity in the next couple of years. In simple words, libraries and information centers can't meet the various information needs of present-day society without library networking. One hope shortly that all the libraries in the world will be without walls and resources of all libraries will be available to the whole user community through networked digital libraries.

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