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Special Issue on:
Virtual Libraries and Research Tools & Techniques

Guest Editor :
N. ABDUL LATHEEF

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Editors' Message . . .

It gives me immense pleasure to serve as the Guest Editor of this special issue of the *International Journal of Science and Humanities* (IJSH) for the UGC Sponsored National seminar on Virtual Libraries and Research Tools & Techniques organized by the Department of Library and Information Science, Islamiah College (Autonomous), Vaniyambadi on 22nd March 2015. This special issue has brought it for the purpose instead of publication of Seminar Proceedings. The aim of this special issue is to collect recent technological developments in the field of Library and Information Science and to reach each and every Library science professionals. There were more than 30 Research Papers received from the researchers all over the country. The Subject experts reviewed all the papers and only 20 articles were recommended for publication after peer review. I deeply express my thanks to Vaniyambadi Muslim Educational Society, Vaniyambadi and the Secretary & Correspondent and the Principal of Islamiah College (Autonomous), Vaniyambadi for constant support to organize this one day National Level Seminar. I owe my heartfelt thanks to Dr. T. K. Thiruvengadamani, Deputy Librarian in-charge, University of Madras, Chennai and Dr. K. Prem Nazeer, Dr. U. Rizwan and Dr. A. Noor Mohamed who have given me this opportunity to publish the articles in the special issue of the *International Journal of Science and Humanities.*

Finally, I dedicate this work to the Almighty, who has given me the strength and power to carry out this work.

N. ABDUL LATHEEF
Organizing Secretary
UGC sponsored National Seminar on
VIRTUAL LIBRARIES AND RESEARCH TOOLS
& TECHNIQUES

Librarian
Islamiah College
Vaniyambadi

Table of Contents

International Journal of Science and Humanities
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Role of INFLIBNET in the Digital Era

R.K.S. Hemalatha[†], N. Abdul Latheef[*] and T.K.Thiruvengada Mani[‡]

[†]*University of Madras, Chennai 600 005, India*

[*]*Department of Library and Information Science*
Islamiah College, Vaniyambadi 635 752, India

[‡]*Department of Library and Information Science*
University of Madras, Chennai 600 005, India

Abstract

In this digital era, where information passes through the globe in lightning speed and with blooming communication technology, any nation is expected to provide latest information processing and retrieval tools through governmental organisations to the scholars. This paper analysis the role of INFLIBNET, a constituent of the University Grants Commission (UGC), in providing the said platform for acquiring digital Information. It explains different services provided and projects undertaken by INFLIBNET.

Keywords: INFLIBNET, SOUL, Shodhgangotri, NLIST , Digital Library Consortium, IndCat, e-PG Pathshala, VIDWAN, ICT, Digital Era.

Introduction

Information explosion has facilitated enormous growth in the Information Technology. Many tailor made Information retrieval packages have been developed depending on the Information requirements and needs of different users. Due to the escalation in the cost of Information sources especially the primary sources, namely the Journals it became practically impossible to renew subscription. Therefore the need to resource sharing became inevitable.

In order to create cooperation and coordination amongst the academic Libraries for utilizing the information available with each other, UGC decided to create a network and called it INFLIBNET. Information and Library Network (INFLIBNET) was initiated by the UGC in March 1991 with its Head Quarters at Gujarat University Campus, Ahmedabad. INFLIBNET is involved in modernizing university libraries in India and connecting them as well as information centres in the country through a nation-wide high speed data network using the state-of-art technologies for the optimum utilisation of information. INFLIBNET is set out to be a major player in promoting scholarly communication among academicians and researchers in India.

(A) Services Provided by INFLIBNET

A.1. ShodhGanga

A.2. INFONET - Digital Library E - Consortium

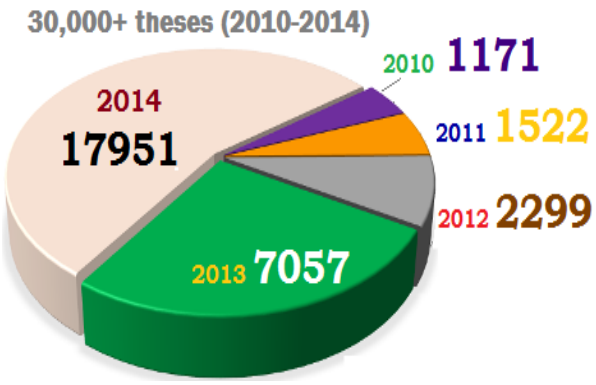
A.3. SOUL - Software for University Libraries

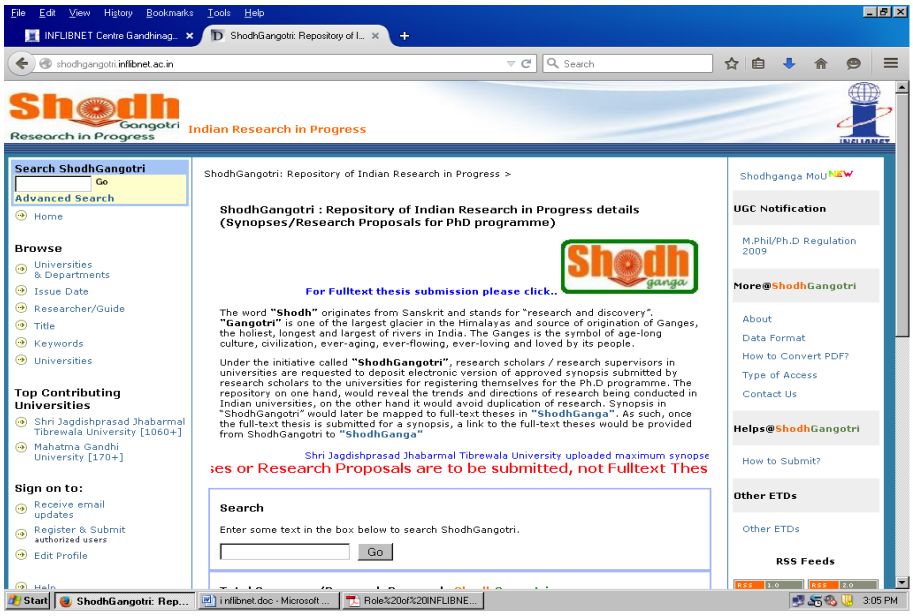
A.4. IndCat: Online Union Catalogue of Indian Universities

A.1. ShodhGanga `http://shodhganga.inflibnet.ac.in/`

Synopses 1,900 202 Under this initiative research scholars / research supervisors of the universities are requested to deposit electronic version of approved synopsis submitted to the universities while registering for the Ph.D programme. This helps to avoid duplication of research and also provides reference to the later research scholars. When theses is accepted for the award of Ph.D. degree the full text of the same is uploaded to ShodhGanga.

Database	No. of Records	No. of Universities
Theses	33,986	200
Synopses	1,900	202





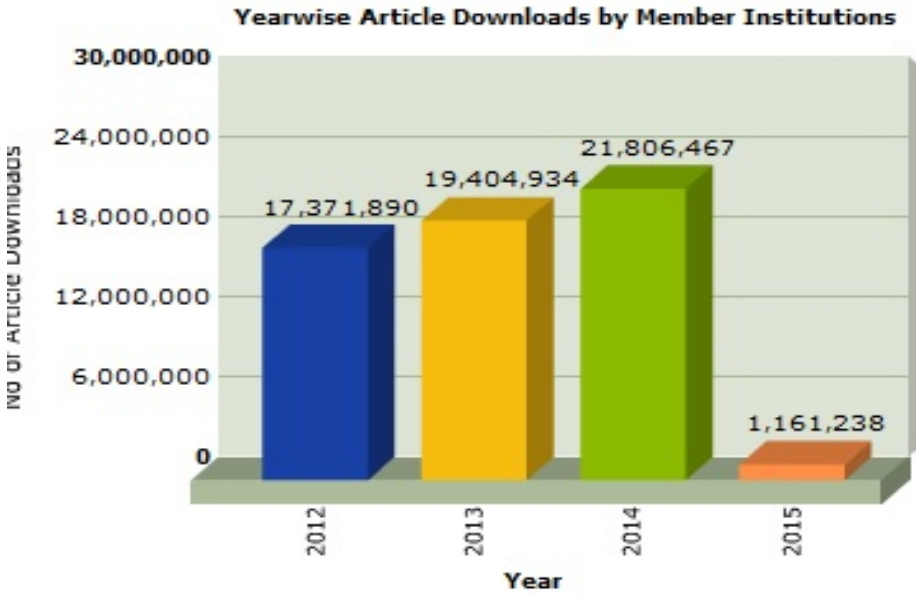
A.2. Infonet : Digital Library Consortium

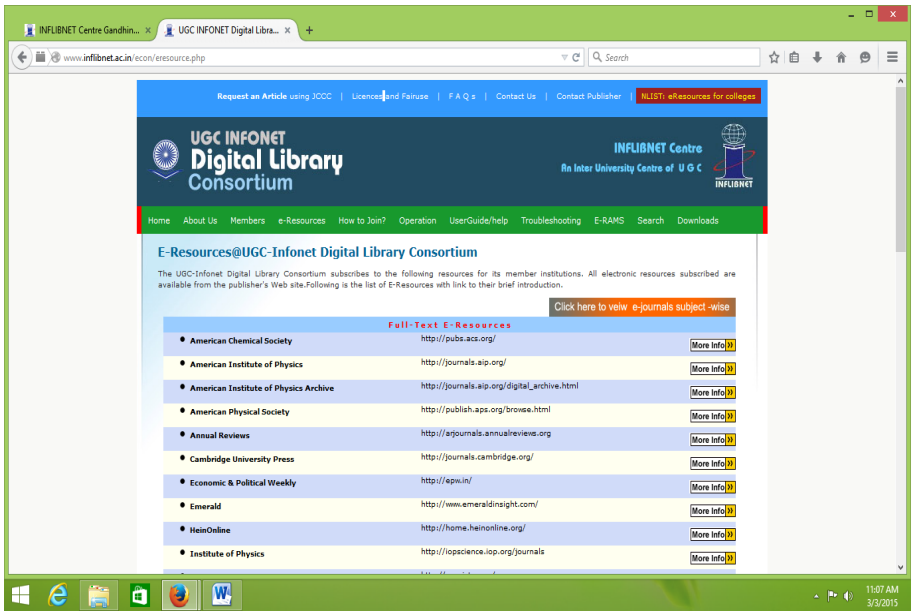
`http://www.inflibnet.ac.in/econ/`

The Consortium is very useful to the university libraries which are discontinuing subscription to scholarly journals due to paucity of funds and escalation in cost and conversion rates.

The Consortium provides current as well as archival access to more than 7500+ core and peer-reviewed journals and 10 bibliographic databases from 26 publishers and aggregators in different disciplines. Presently 422 Universities including 14 National Law schools and central universities coming under the purview of UGC, have been provided access to e-resources. These e-resources covers almost all subject disciplines including arts, humanities, social sciences, physical sciences, chemical Sciences, life sciences, computer sciences, mathematics and statistics, etc. The programme is wholly funded by the UGC and executed by the INFLIBNET. The benefit is now extended to colleges and private universities under *Associate Membership Programme* wherein they can have access to selected e-resources.

Year	No. of Full Text Downloads
2012	17,371,890
2013	19,404,934
2014	21,806,467
2015 Upto Feb	1,61,238





A.3. SOUL `http://www.inflibnet.ac.in/soul/`

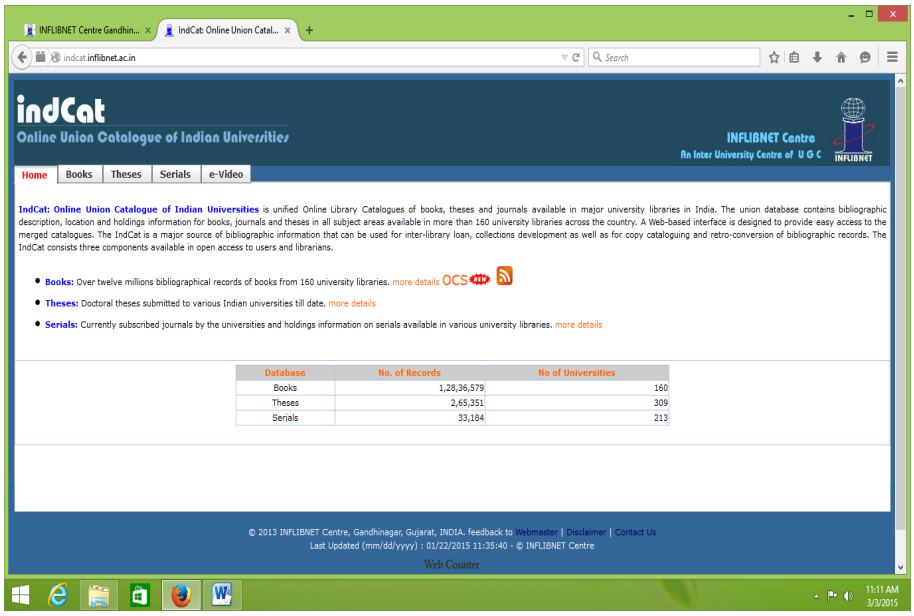
Software for University Libraries (SOUL) is a library management software designed and developed by the INFLIBNET. It is user friendly software developed to work under client-server environment. It is compatible to various bibliographic formats, networking and circulation protocols. The first version was released in 2000.The present version, SOUL 2.0 was released in January 2009, which is designed for MS-SQL and

MySQL or any other popular RDBMS. It is also compatible to MARC 21 bibliographic format, Unicode based Universal Character Sets for multilingual bibliographic records and NCIP 2.0 and SIP 2 based protocols for electronic surveillance and control.

A.4. IndCat

`http://indcat.inflibnet.ac.in/` *IndCat:* Online Union Catalogue of Indian Universities is unified Online Library Catalogues of books, theses and journals available in major university libraries in India. The union database contains bibliographic description, location and holdings information for books, journals and theses in all subject areas available in more than 160 university libraries across the country. A Web-based interface is designed to provide easy access to the merged catalogues. The IndCat is a major source of bibliographic information that can be used for inter-library loan, collections development as well as for copy cataloguing and retro-conversion of bibliographic records. The IndCat consists three components available in open access to users and librarians.

Database	No. of Records	No. of Universities
Books	1,28,36,579	160
Theses	2,65,351	309
Serials	33,184	213



(B) Projects of INFLIBNET

B.1. NLIST Programme

B.2. e-PGPathshala

B.3. Vidwan: Expert Database

B.4. Integrated e-contents Portal

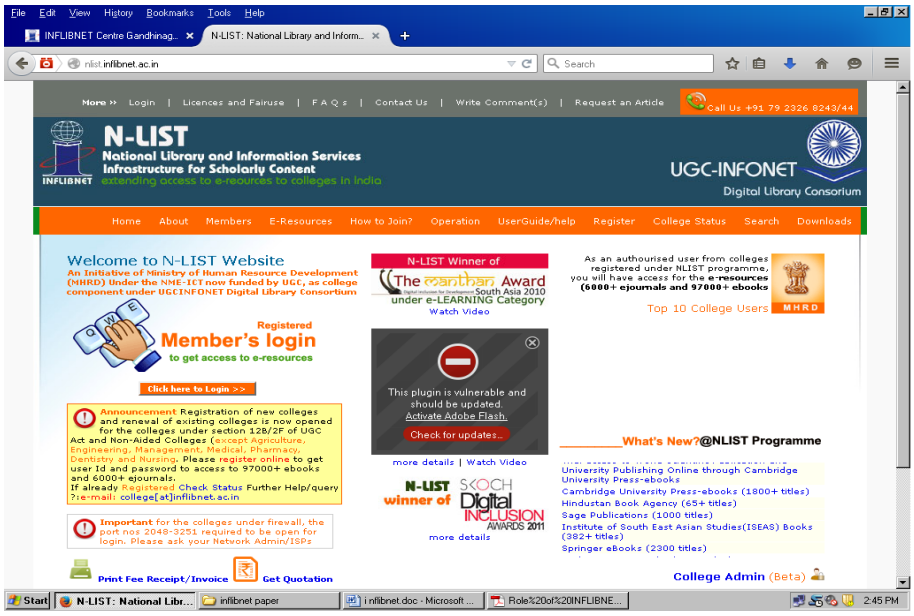
B.5. Research Project Database

B.1. National Library and Information Services Infrastructure for Scholarly Content (N-LIST)

This Project is being jointly executed by the UGC-INFONET Digital Library Consortium, INFLIBNET Centre and the INDEST-AICTE Consortium, IIT Delhi, with financial support from the Ministry of Human Resource Development under its National Mission on Education through ICT and provides the followings:

- Access to selected e-resources to Govt.-aided/non aided colleges; and
- Promote, impart training and monitor all activities involved in the process of providing effective and efficient access to e-resources to colleges.

Further details can be had from `http://nlist.inflibnet.ac.in`



B.2. e-PG Pathshala

The MHRD, under its National Mission on Education through ICT gave funds for development of e-content in 77 subjects of social sciences, arts, fine arts and humanities, natural & mathematical sciences, linguistics and languages at postgraduate level.

Further details can be had from `http://epgp.inflibnet.ac.in`

B.3. VIDWAN: An Expert Database and National Researchers Network

VIDWAN, a premier database of Indian experts in all disciplines with detailed profile of scientists, researchers and other faculty members working in leading academic institutions and other R & D organizations involved in teaching and research in India. This facilitates Ministries and Govt. Departments, policy makers and funding agencies to identify experts available in various disciplines and to establish communication directly with the experts who possess the desired expertise and engage them for appropriate missions.

The following table presents the subject wise number of experts registered in *VIDWAN* - as on March 2015

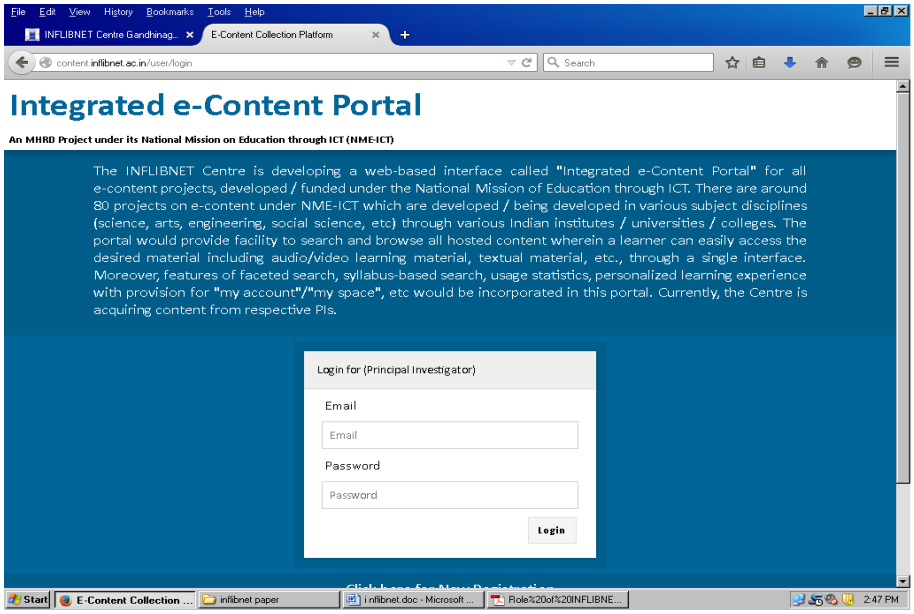
Subject	No. of Experts
Agricultural Sciences	2156
Biological Sciences	786
Chemical Sciences	1342
Physical Sciences	1826
Medical Health	2406
Engineering & Tech.	4458
Social Sciences	2323
Arts and Humanities	1034

Further details can be had from `http://vidwan.inflibnet.ac.in`

B.4. Integrated e-Content Portal

The Integrated e-Content Portal is being developed giving details of nearly 80 projects sanctioned for creating e-content in various subject disciplines including science, arts, engineering, social science, etc. The portal would facilitate search, browse and navigation through all e-content hosted on the portal. A learner would be able to access desired material including audio / video learning material, textual material, multimedia enriched materials, etc. through a single integrated interface. Once it becomes operational it would feature faceted search, syllabus-based search, usage statistics, personalized learning experience with provision for *my account* and *my space*, etc.

Further details can be had from `http://content.inflibnet.ac.in`



B.5. Research Project Database

It contains accomplish and ongoing research projects at various educational institutions in India and presently has information on more than 13,600 research projects funded by various funding agencies.

Further details can be had from:
`http://www.inflibnet.ac.in/researchproject/`

Conclusion

In this digital era, where information travels across the Universe in lightning speed with the latest electronic gadgets, it becomes very necessary to equip our scholars with the best possible information processing and retrieval systems in order to make them fore runners in acquiring knowledge and expertise in all possible fields. INFLIBNET is paving ways to attain the above targets in a very commendable manner and still continuing to provide more vital assistance to the Intellectuals and scholars thus helping the nation to be in the forefront of knowledge management. For any Nation, Knowledge is Power and therefore, INFLIBNET has to be congratulated for their endeavours in making our nation Powerful.

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Reference Management Tools for Effective Research: With special reference to MENDELEY

B. Jeyaprakash

Department of Library and Information Science,
Bharathidasan Universiy, Tiruchirappalli, India
e-mail: bjeyapragash@gmail.com

Abstract

Information explosion is a term that describes the rapidly increasing amount of published information. As the amount of available data grows, managing information becomes more difficult. So the research scholars and students are facing the problems in identifying, collecting and managing the data for their respective research. To solve the above problems this paper highlights about the reference management tools, its importance in general and also in detail about Mendeley an open source reference management tool.

Keywords: Open Source Software; Citation Manager; Reference Manager; Mendeley; Reference Management Tool.

Introduction

Reference Management software program that will simplify the process of reference management by allowing the user to collect, store, organize references, and insert citations at the appropriately place in the content of the manuscript, and generate a list of the references in an appropriately formatted bibliographic style (Agrawal A, 2009).

Free / Open Source Software (OSS)

Free software means software that respects users' freedom and community. Roughly, it means that the users have the freedom to run, copy, distribute, study, change and improve the software. Thus, free software is a matter of liberty, not price.

Open source refers to software for which the underlying code is available for the users to understand, modify or alter it in new versions. This may result into a collaborative effort put forward to build better software. OSS is available for the various

tasks in knowledge disciplines from Agricultural to Astronomy. Open source also facilitates the individuals to customize the source code according to their local needs. The OSS got the important characteristics as Free Redistribution, Source Code, Derived Works, Integrity of the Author's Source Code, No Discrimination against Persons or Groups, No Discrimination against Fields of Endeavor, Distribution of License, License Must Not Be Specific to a Product, License Must Not Restrict Other Software and License Must Be Technology-Neutral.

Need for Reference Management Tools (RMT)

The Reference Management tool is used for the following reasons

1. Organize and tag citations and documents.
2. Create instant bibliographies in standard formats.
3. Create personal citation database of articles on your topics.
4. Format papers within-text citations and bibliographies in standard formats.
5. Share your database of citations/articles with others.

Functions of Reference Management Tools

Storing and Management References

Reference Management tools help to store the references systematically. It provides keyword search facilities like author, title, publisher and name of the journals to retrieve the information. It also helps to preserve the information in the digital forms and to use in future. The following contents can be stored in the digital forms. The references can be downloaded from the internet and uploaded in the Reference management software. The following information can be stored

1. Articles from journals, magazines, and newspapers
2. Books and book sections
3. Theses and reports
4. Figures, Charts, tables and equations.

Creating Bibliographies

It is very easy to create bibliographies in the digital content of the manuscript; it will automatically create the references in the appropriate formats like MLA, APA, etc. Researcher can easily insert in-text citations into the body of the manuscript and automatically create an appropriately formatted bibliography by using a reference management software program. The useful functions of these programs for creating bibliographies include:

1. It helps to add, edit and delete the reference when writing research reports and articles,
2. It will create the reference in the specified formats and
3. It also helps to modify the format of the reference.

Searching and Retrieving of References from Online Databases

It helps to search the information from various online databases such as PubMed , Ovid , Library of Congress and also from various catalogues of universities. The users need not to visit the particular websites of the databases to access the contents by using various search options. It is easy to retrieve the specific reference from digital library without entering the bibliographic details. The advantages of automatic entering systems are given below

1. Typing errors, such as in authors' names or titles, are eliminated.
2. Correct abbreviations of journal names are entered in the digital library,
3. In addition to the essential reference information such as title, author(s) names, journal, and date of publication, extra information about a given reference is also can be downloaded into the library, such as the abstract and the URL.

Types of Reference Management Software

Commercial Software

There are number of Commercial Software developed by publishers and software companies to help the research scholars to manage the references in standard way. Most of the commercial software is introduced by the publishers since they are the major suppliers of the e-books, e-journals and online databases. In this connection the following are the major commercial reference management software

1. EndNote (by Thomson Reuters)

2. Reference Manager (by Thomson Reuters)
3. RefWorks (by ProQuest)
4. Papers (by Springer)
5. Bookends (by Sonny Software)
6. Biblioscape (by CG Information)

Free / Open Source Software

Free / Open Source software are available in internet under the General Public License to download and redistribute for the Citation Management (CM). It is very easy to use and helps to collect, store, organize the scholarly articles in a systematic manner.

SNo.	Standalone Programs	Web Application
1	Aigaion	Connotea
2	Bibus	CiteUlike
3	JabRef	JabRef
4	Jumper 2.0	I, Librarian
5	Mendeley	Mendeley
6	RefDB	RefDB
7	Refbase	Zotero

List of Free / OSS Reference Management Software

Mendeley

Mendeley is a free, award-winning, desktop and web program for managing and sharing research papers, discovering research data and collaborating online. It can run in anyoperating systems like Mac, Windows and Linux.

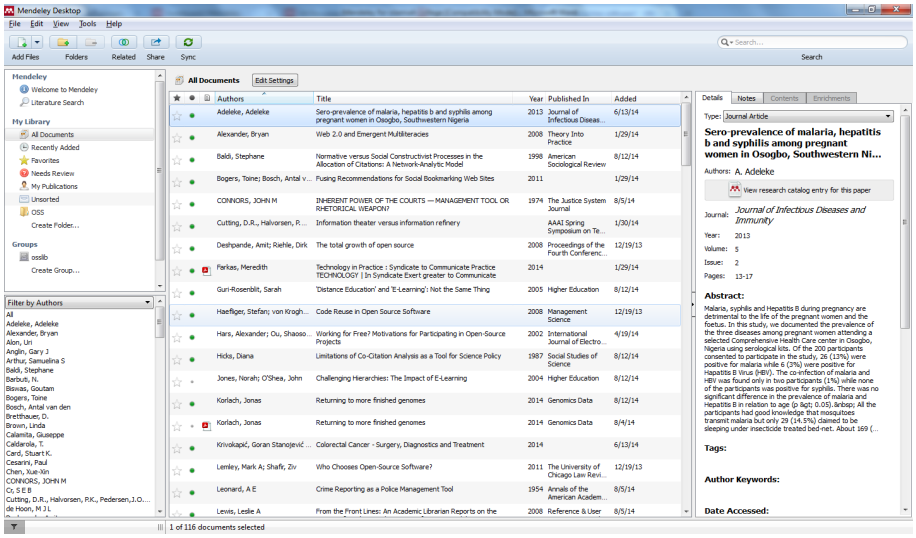
Features of Mendeley

The following are the important features of Mendeley and it can support the researchers in all the ways to do their research work in a systematic and organized way.

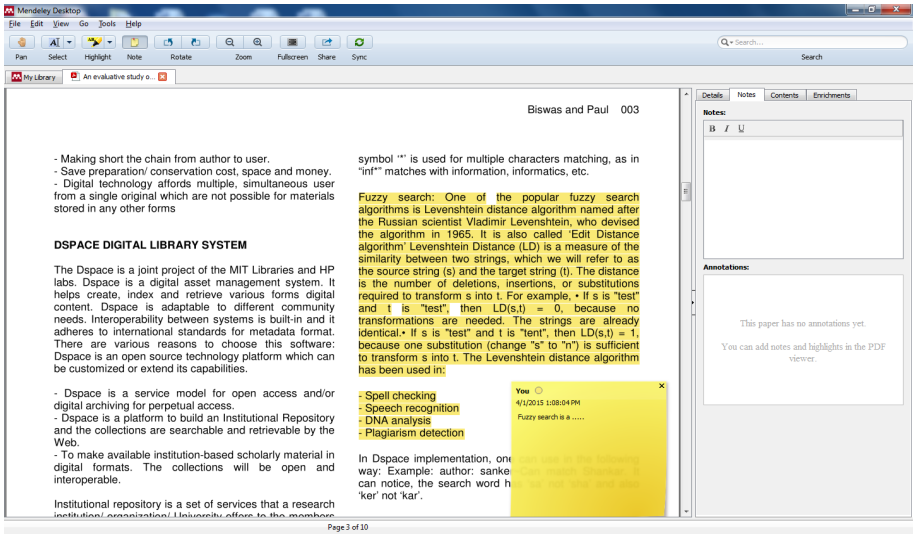
Reference Manager

The reference manager includes the features of Quick and simple installation, Word Plugins, Citation styles for more than 1000 formats, journals, quick search and select the citation styles, Create bibliographies instantly, Flexible formatting, Collaborate on

bibliographies and Share bibliographies. It also enables to generate the citations and bibliographies in Microsoft Word, OpenOffice, and LaTeX.

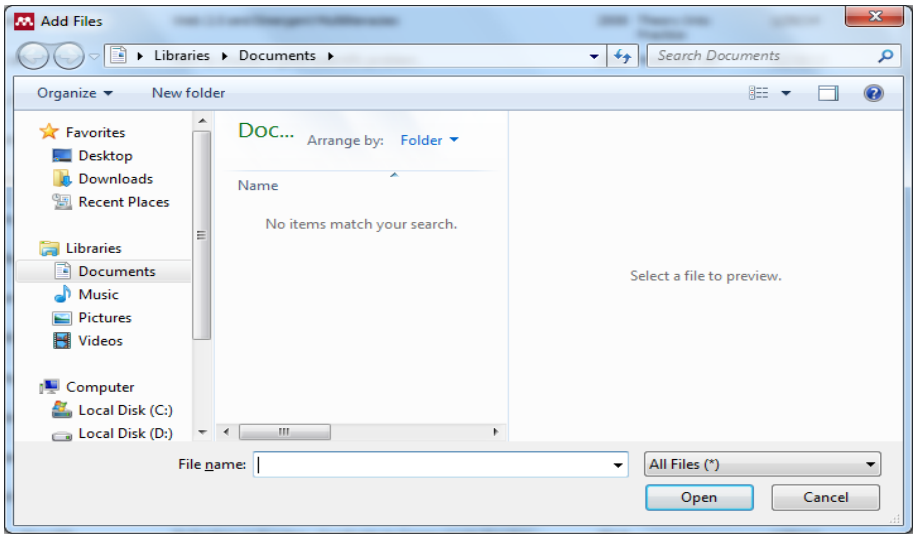


Read and Annotate



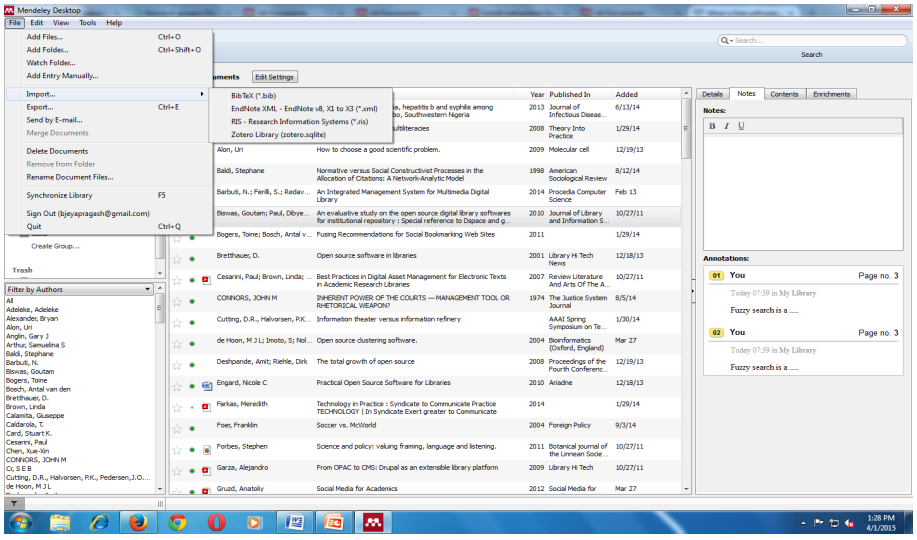
This screen shot shows that read and annotates the feature of Mendeley. It can be useful in Open PDFs and capture your thoughts through sticky notes and highlights, Save time navigating PDFs, Open multiple PDFs in separate tabs, Read, take notes and switch back to your research library instantly, Annotate and highlight even this can be shared to other interested groups.

Add and Organize



This screen shots shows that the option of Add and Organize based this feature the researcher can Import and organize PDFs from your computer, EndNote, Papers or Zotero, Identify recently added papers, add favorites in a click and store them in multiple folders, as soon as add PDF it scans and identify the author, title, journal and other information's with global research library, enables full-text search and navigates the search through Author, Title, publisher and journal.

Collaborate

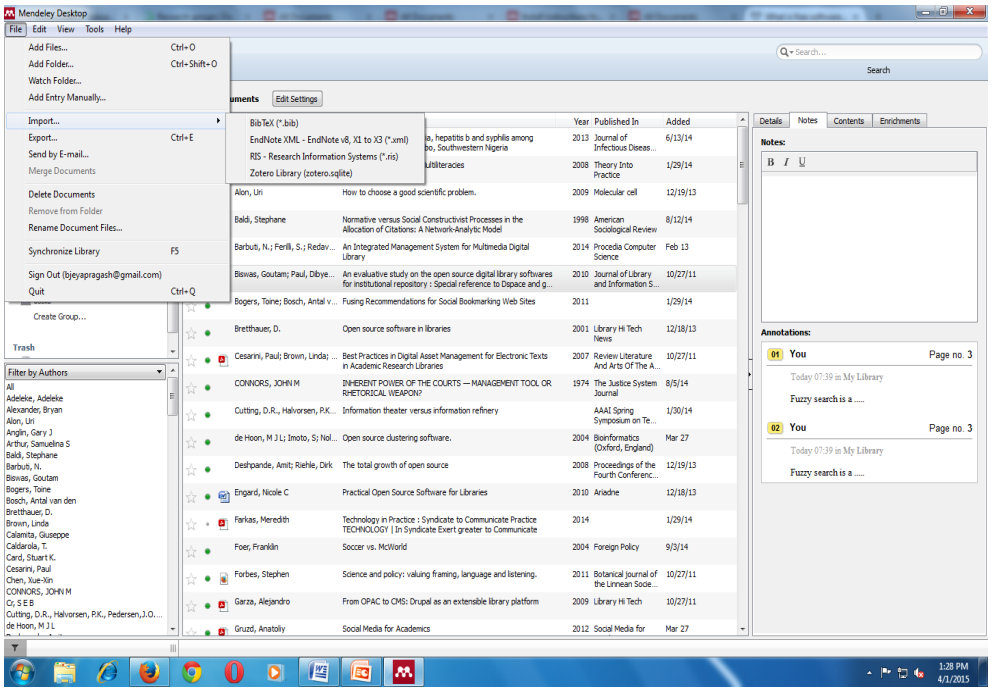


This screen shots shows that the Collaboration features of mendeley and it can

help the researchers to connect with colleagues and securely share your papers. It also enables the researchers to get newsfeeds and post ideas in real-time.

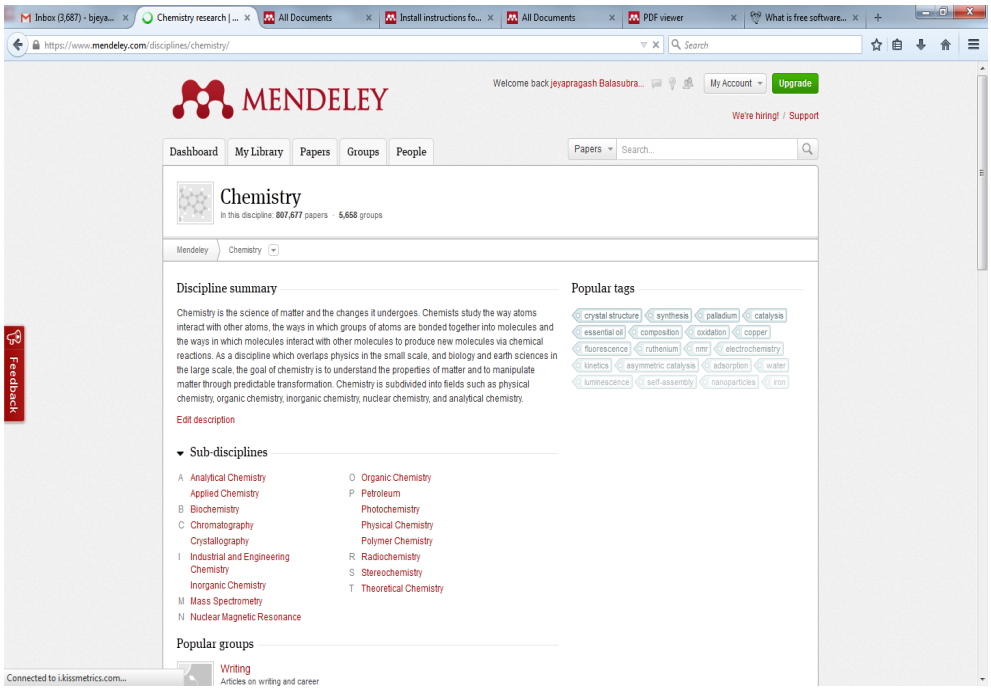
Backup, Sync and Mobile

This screen shots shows that the sync features of mendeley and it is very secure and synchronized with all the reference manager software. There won't be any risk in losing the PDFs and annotations. It got very good feature to support and syncs with verity of mobile devices. Hence it is easy to browse your collections on-line even when you are in travel or out of your working area.



Network and Discover

This screen shots shows that the option to have your own network of researcher to share your idea and to get the up to date scholarly articles. Based on these feature you can invite any individual or group to join with your team to have a collaborative research. Discover option allows us to find the relevant scholarly article on our interested area by worldwide search. This feature allows us to browse by the themes and sub themes of the research area and also it shows the related popular tags for the further sources. Through this feature a research can reach the exact article which he wants within the limited time.



Conclusion

The influence of information technology leads to information explosion and it is making the research scholars to over feed of information and which could lead into the problems of identifying, collecting and storing of scholarly communications for their research. Hence they need the Reference Management software to solve these problems and to handle the downloaded articles from internet, online databases, online e-journals & e-books etc. in an organized manner. It also can help the researchers in searching, annotating, collaborating and sharing of their scholarly communications. Reference Management software will be very much useful in giving the bibliography and references in different formats as per the requirement by the publishers and by the research institutions. Hence the reference management software helps to complete the research in organized way and even it helps other researchers to know the related literature for their future research.

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Institutional Repository System in Islamiah College

N. Abdul Latheef

Department of Library and Information Science,
Islamiah College, Vaniyambadi 635 752 India

Abstract

This article highlights the project undertaken for creation of Islamiah College Institutional Repository System by using DSpace Software. In Our college there are fifteen departments among this six research departments. The research departments are involved in the research and producing many publications, research reports apart from this other departments and their publications like books, Journal articles and conference proceedings etc., available apart from this our library has Rare Books collections, research Scholars Theses and Dissertations, Completed research reports, NPTEL Video lectures, Question Bank and other materials documenting the history of our college like MASHAL Magazine and News Letter etc., Hence the project undertaken to provide the above information through online mode. For that purpose DSpace an open source software installed in our library. It is femilier and most of the universities utilizing this software. Then collection of all the materials sorted out department wise and subject wise and Create metadata i.e. catalogue there after all the materials are scanned stored in PDF format and upload in the DSpace software. The aim of the project is to provide all the above information in electronic format for easy access to the entire college and other library users.

Keywords: Institutional Repository, D-Space.

Introduction

Libraries play a vital role in teaching and learning. Every Library should satisfy the students, research scholars and faculties requirements. The preservation of digital information can be seen as one of the greatest challenge for the library and information professions at the end of the twentieth century. It is easy to get caught up in the general enthusiasm for digital libraries but more consideration needs to be given to the problem of making this information available to future generations. Libraries have traditionally understood at least of their roles as the preservation of information for future use. Over the past few years libraries have witnessed tremendous development in the field of information and communication technology which has resulted in the

changed trends in publication of the information as well as storage of information. Many of the information sources such as books, journals, monographs etc. which are published in a printed form have been shifted to electronic version. Based on the above need this project proposal made as Islamiah College Institutional Repository System. The academicians and researchers of the Islamiah college are continuously engaged in research and are publishing their research output in the form of publication; also in our college various departments are having some valuable information sources such as conference proceedings and other materials which are not easily available. Our college Library has Rare books, NPTEL Video Courses, Research Scholars Dissertations and Theses, Question Bank, teaching and learning materials, and materials documenting the history of the institution. The project is aimed to provide access to the literature highlighting institution's scholarship to all our students, Research Scholars, faculties and all other library users.

Interdisciplinary Relevance

This project is relevant to all subject disciplines of science and Humanities. All students, research scholars and faculties of our college may utilize the IRS. Because all subjects are covered in this project.

Review of Research and Development in the Subject

Digital Repository of Raman Research Institute (`http://dpace.rri.res.in`) contains the research publications of the faculty and students and the collected papers of C.V.Raman and the historical records of the institutes such as annual reports and newspaper clippings. Kamila(2009) has highlighted the initiative taken for developing institutional repository at Burdwan University which aims to store and provide access to Ph.D theses, faculty publications, Lecture notes, dissertations, learning objectives, project reports etc.

Indian Institute of Technology, Delhi's repository (`http://` eprint.iitd.ac.in /dspace) includes research publications of the faculty, University of Hyderabad (`http:// 202.41.85.207:8080/dspace/index.jsp`), IIM, Kozhikode (`http:// Dspace.iimk.ac.in`), IISc, Bangalore (`http:// etd.ncsi.iisc.ernet.in`), NIC, New Delhi (`http:// openmed.nic.in`), IGIDR, Mumbai has developed Institutional repository namely Kautilya (`http:// oii.igidr.ac.in:8080/dspace/index.jsp`) IRs in universities generally include pre-prints of journal articles, seminar papers, technical reports, research data, theses, dissertations, work in progress, important print and image collections, teaching

and learning materials, and materials documenting the history of the institution.

Bhardwaj, R.K (2014) discussed in his paper Institutional Repository (IR) concept has given a new dimension to information management in the Internet age. The introduction of an IR can help to redefine the production, dissemination, and the use of resources. This study found that a total of 436 IR research papers published in 118 journals originated from 68 countries. These research papers contain 2,071 citations with an average of 4.8 citations per publication. Moreover, out of the total 159 institutions involved in IR research, a majority of them are located in the United States and the United Kingdom. Mainly, out of the fourteen most productive countries eight have recorded TAIs of ¿ 100, and six countries recorded TAIs of ¡100. Most published papers have a single author, i.e., 176 (40.4%), followed by two authors: 152 (34.9%). Interestingly, India, Australia, Canada, Germany, the Netherlands, Malaysia, and Italy have not published any paper with more than five authors. Purdue University has witnessed the highest (2) relative citations impact (RCI) on its publications. Elizabeth Yakel from the University of Michigan has published the most papers (7: 1.6%), which have received 34 citations. Overall, eight prolific authors have achieved a higher h-index value than the group average.

Significance of the study

At present digitalization of documents is important for every Library, because all information's will be available in online mode. Our library has more than five hundred years back books. These are Rare books collection in the Tamilnadu. This is the right time to bring in to online format so that we have scanned all the rare collections and our college Library is first to initiate to bring this project in Vellore Region. This project will be useful for our research scholars and PG Students and all the faculties. Moreover our College Library extended its facilities to Neighbouring college students/Scholars so they may also take advantage of this project.

Management of IRS

This is the important task for the librarian to manage the IRS after implement in their institution. According to Lisa Blankenship and Annettee Haines said most of the institutions use IR management system software to operate their IRs.such management system software offers a complete, integrated set of services specifically dedicated to the creation of IRs. Software management systems assist in capturing, organizing, managing, storing, and distributing digital objects. Software support may be provided by the library, the institution, a consortium, or an outside vendor. Commercial vendors of IR management systems, like Digital Commons, provide software and services for a fee. These services include faculty outreach, copyright checking, training, hosting, maintenance, and other features. Other systems, such as DSpace, EPrints, and Fedora, are free, open-source software. Among these we selected DSpace software for our IRs.

D-Space Software

The MIT Libraries and HP labs have worked together on the developed an open source system called DSpace that functions as a repository for the digital research and educational material produced by members of a research university or institution. DSpace is a ground breaking digital repository system that captures, stores, indexes, preserves and distributes digital research materials. DSpace is the program. It is the service and the access to the intellectual output of MIT community, offered by the MIT Libraries to the community and the world beyond. DSpace will be installed in Linux operating system or any Windows.

Obectives

There are many reasons to implement an institutional repository. Here are some objectives for which it is planned to have institutional repository at the Islamiah college;

1. First and foremost objective is to preserve the Rare books in the form of online readable format
2. To create awareness among our library users and neighbouring institutions
3. To provide unified access to our institution's scholarship
4. To increase the visibility and citation impact of our institutions's scholarship
5. To preserve our institution's historical records
6. To facilitate the creation of open access digital repositories in every educational institutions.
7. To provide effective and efficient access to knowledge through latest technology.
8. To develop tools, techniques and procedures for secure and convenient access to users on electronic format
9. To facilitate the creation of open access digital repositories in every educational institutions
10. To provide effective and efficient access to knowledge through latest technology

Methodology

The following procedure will be followed:

Selection of Materials

a. Faculty Publications: It is decided that to collect all the faculties publications like books, Journal articles, conference proceedings and papers presented at the difference seminars/workshops of up to date.

b. Rare Books: Our college library has morethan 300 No's of Rare books They are five hundred years back publications and that must be sorted out according to subject wise and year wise.

c. Dissertations and Theses: Research Scholars Theses and Dissertations arranged in chronological order and department wise till date and the following years softcopy of the will be received from research scholars so that we just upload in the software.

d. Completed Research reports of the various departments

e. NPTEL Video Courses: We have NPTEL Video lectures from IIT MADRAS till 2013 and it will be downloaded up-to-date. They also subjectwise sorted out and stored in an individual folder.

f. Question Bank: Previous years question papers will be sorted out according to subjectwise and yearwise till November 2014.

g. College Publications: Every year our college publishing MASHAL Magazine and News letter (Bi-Annual). Both this publications includes important statistical reports, functions and programmes conducted in various departments till Jan 2015.

Creation of Metadata and Scanning the Documents

Creation of Metada

D-Space uses a qualified Dublin core metadata standard for describing items intellectually (specifically, the libraries working group application profile) only Four fields are required: Author, Title, Subject and submission date, Video lectures, year of publication and all other fields are optional. There are additional fields for documents abstracts, keywords, technical metadata and rights metadata, among others. This metadata is displayed in the item record in D-Space, and is indexed for browsing and searching the system (within a collection, across collections, or across communities).

Scanning and Preservation of Data

After collecting all the documents and sorted out according to subject wise and year wise. All the above documents stored in the individual folder. Our Library was having

i-ball scanner which was used for scanning of documents and a separate server with 4 Terabyte Hard disk installed for storing the data. So it was decided to convert these materials into a machine readable form and henceforth the faculties and researchers ,scholars may submit their work in a machine readable form which will be easier for uploading in to the repository software that is D-Space software. Presently the data is been stored on the server and a regular backup is been taken, apart from this serious thought is been to adopt migration of data.

Creation of Communities

D-Space has to facility to create various communities, so various communities and sub-communities were created. The following method of communities and sub-communities were created for uploading the materials.

1. Faculty Publications (Main Community) Books, Journal articles & Papers presentations (sub-community)
2. Rare Books (Main Community) Author, Title & Subject (sub-Community)
3. Theses & Dissertations (Main Community) Author, Title, year of Submission & Guide (Sub-Community)
4. NPTEL video Lectures (Main Community) Title & Subjects (sub-community)
5. Question Bank (Main Community) UG, PG, Subject, Year & language (sub-Community)
6. Research Report (Main Community) Departments (sub-community)
7. College Publications: Mashal, News letter & Journal (sub-community)

The following pictures explains the steps of creating communities and sub communities.

After installation of Dspace software when we will type the IP address it will shows that Welcome to Dspace (Figure 1). Figure 2 asking the User Name and Password. Figure 3 asking that to create Top level community here we have to create top level Title of the particular work. For eg. Faculty publications.

Following information will be typed in the top level community

Name
Short Description
Introductory text (HTML)
Copyright text (plain text)
Side bar text(Html)
logo

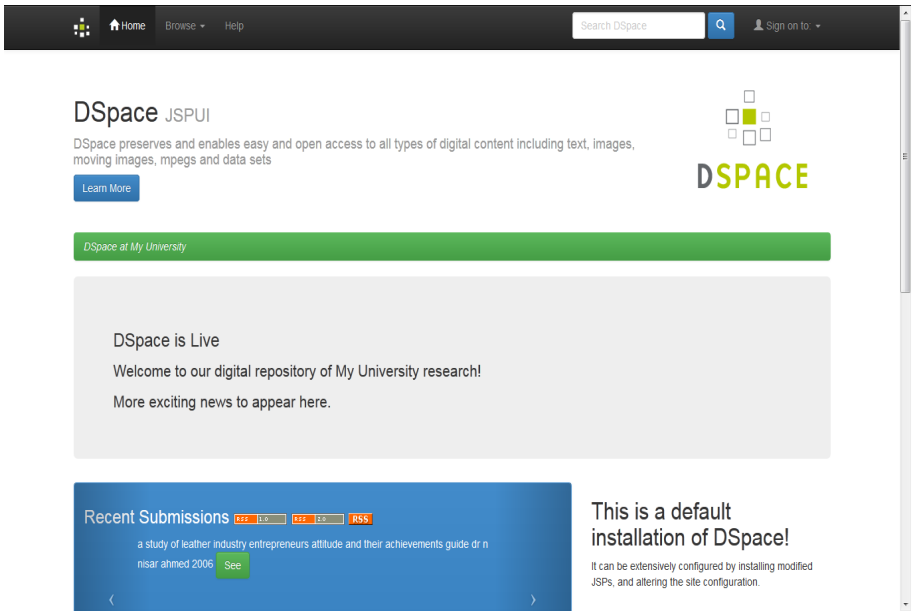

Figure 1:

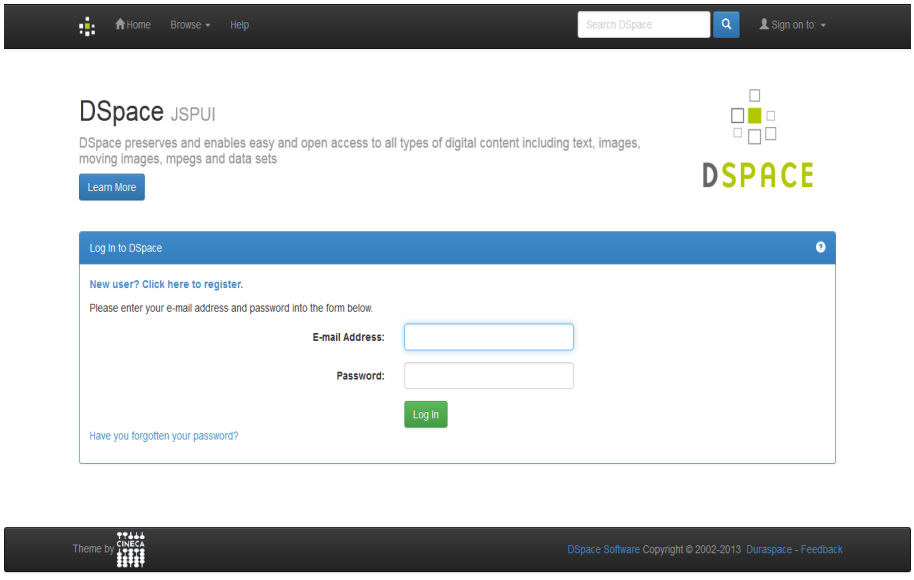

Figure 2:

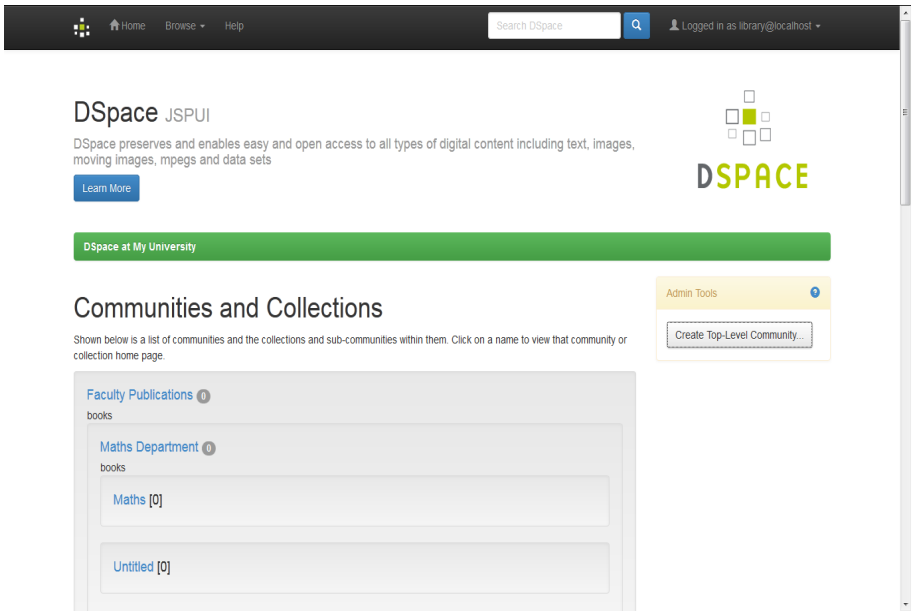

Figure 3:

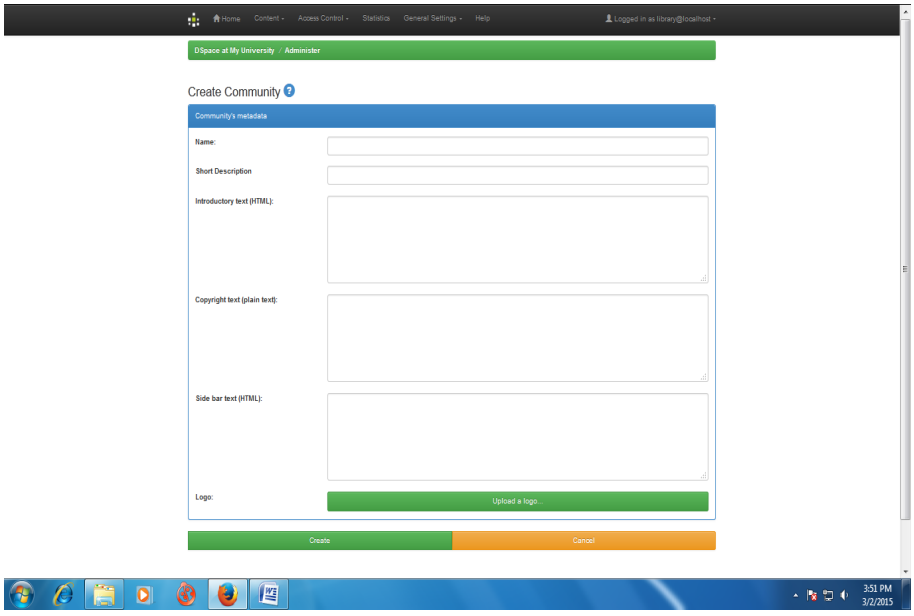

Figure 4:

Figure 4 shows sub community it will also requires the following items,

Name

Short Description

Introductory text (HTML)

Copyright text (plain text)

Side bar text(Html)

logo

Requirement of Hardware, Software and Manpower

As already our library was downloaded and installed the D-Space (open source software version 4.0). We planned to purchase the Hardware for to store large amount of data. So that we purchased 4 TB (tera byte) internal hard disk for Server and a separate computer system allotted for the same. It was decided that the work of scanning will be assigned to our library staff and a substitute(management staff). The objective behind these was that the library staff and management staff will get the hands on practical experience and also they will be able to learn the technology.

Intranet Connection to Departments

It was decided to fix the main hub for connection to all the departments of our college. So in order to they will browse the intranet and the option will be given in the D-Space software that each faculty/scholars to upload their publications from their department itself. The Librarian and the metadata editor will check the metadata and then the content is made accessible to the users. Future plan of the project is to connect through the internet for the universe.

Conclusion

Institutional Repository system was created for the face Index of Islamiah College. This is the initiative for the college library it is to be continued. Efforts are been made to add more materials and made it accessible all over the world through the internet. This work will be an awareness for the other institutions and they may also take initiate to implement in their institutions depends upon the Economical position and manpower. Digitization has opened up new audiences and services for libraries, and it needs to be integrated into the plans and policies of any institution to maximize its effectiveness. Based on this project every institution to apply the ICT appropriately in their libraries in order to provide large information to user community.

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http://www.islamiahcollege.edu.in

Cloud Computing and Its Applications in Libraries

A. Saleem[†], S. Z. Shabana Tabusum[*] and M. Sadik Batcha[‡]

[†]*Department of Library and Information Science,*
AMS Group of Educational Institutions, Chennai, India
e-mail : dr.saleem_lis@yahoo.com

[*]*Department of Library and Information Science,*
MEASI Institute of Management, Chennai, India
e-mail : Shaba_lib@yahoo.com

[‡]*Department of Library and Information Science,*
Periyar University, Salem, India
e-mail : msbau@rediffmail.com

Abstract

This paper overviews the basic concept of newly develop area known as cloud computing. The use of cloud computing in libraries and how cloud computing actually works is illustrated in this communication. Cloud computing technology came up as a boon for libraries and is offering various opportunities for libraries to connect their services with clouds. The paper presents an overview of cloud computing and its possible applications that can be clubbed with library services on the web based environment. This study may be helpful in identifying and generating cloud based services for libraries. Latest technological development has brought a dramatic change in every field, and library science is not exception to it. Information technology impacted positively on library and information system and services they provide for users. The libraries have been automated, networked and now moving towards paper less or virtual libraries. To gather challenges in the profession librarians are also applying different platforms in Library science filed for attaining economy in information handling.

Keywords: Applications of Cloud Computing, Types of Cloud Computing, Characteristics of Cloud computing, Role of Cloud computing in Libraries.

Introduction

Now a days libraries are using cloud computing technology for enhancing the services by adding more values, attracting the users and cost effectiveness. In the cloud computing environment, clouds are vast resource pools with on demand resource

allocation and a collection of networked features. The new concept of cloud and libraries has generated a new model called cloud libraries. Though the usages of cloud computing may vary with the libraries nature, services and information needs but most common usages of cloud computing with in libraries can be development of digital libraries, corporate cataloging, acquisition, storages and sharing the resources on virtual environment on the web. The latest technology trend in library science is use of cloud computing for various purposes and for achieving economy in library functions. Since cloud computing is a new and core area the professionals should be aware of it and also the application of cloud computing in library science. Today we are living in the age of information. Information technology play very vital role in library science. For collection, Storage, organization, processing, analysis of information. Library filed facing many challenges in the profession due to applications of information technology. New concepts are being added to ease the practices in the libraries is also accepting many new technologies in the profession as they suit the present information handling and they satisfy needs of the knowledge society. With the advent of Information technology, libraries have become automated which is the basic need towards advancement followed by networks and more effort are towards virtual. The emergence of e-publications, digital libraries, internet usage, web tools applications for libraries, consortium practices leads to the further developments in library profession.

Cloud Computing

Cloud computing is a way of providing various services on virtual machines allocated on top of a large physical machine pool which resides in the cloud. Cloud computing comes into focus only when we think about what IT has always wanted a way to increase capacity or add different capabilities to the current setting on the fly without investing in new infrastructure, training new Cloud computing is not a new technology that suddenly appeared on the web but it is a new form of computing. Cloud computing is a kind of computing technology which facilitates in sharing the resources and services over the internet rather than having these services and resources on local servers/ nodes or personal devices. The combination of servers, networks, connection, applications and resources is defined as 'cloud'. Cloud computing is acting as a resources pooling technology for accessing infinite computing services and resources as per demand of users and can be compare with models of pay as you use or utility model same as used for mobile services usages and electricity consumption. A definition for cloud computing can be given as an emerging computer paradigm where data and services reside in massively scalable data centers in the cloud and can be accessed from any connected devices over the internet.

The basis of cloud computing is to create a set of virtual servers on the available

vast resource pool and give it to the clients. Any web enabled device can be used to access the resources through the virtual servers. Based on the computing needs of the client, the infrastructure allotted to the client can be scaled up or down. From a business point of view, cloud computing is a method to address the Scalability and availability concerns for large scale applications which involves lesser Overhead. We have lots of compute power and storage capabilities residing in the distributed environment of the cloud. What cloud computing does is to harness the capabilities of these resources and make available these resources as a single entity which can be changed to meet the current needs of the user. Since the resource allocated to the client can be varied based on the needs of the client and can be done without any fuss, the overhead is very low. One of the key concepts of cloud computing is that processing of 1000 times The data need not be 1000 times harder. As and when the amount of data increases, the Cloud computing services can be used to manage the load effectively and make the Processing tasks easier. In the era of enterprise servers and personal computers, Hardware was the commodity as the main criteria for the processing capabilities depended on the hardware configuration of the server. But with the advent of cloud Computing, the commodity has changed to cycles and bytes - i.e. in cloud computing Services, the users are charged based on the number of cycles of execution performed Or the number of bytes transferred. The hardware or the machines on which the Applications run are hidden from the user. The amount of hardware needed for Computing is taken care of by the management and the client is charged based on how the application uses these resources.

Characteristics of Cloud Computing

- **Self Healing:** Any application or any service running in a cloud computing environment has the property of self healing. In case of failure of the application, there is always a hot backup of the application ready to take over without disruption. There are multiple copies of the same application - each copy updating itself regularly so that at times of failure there is at least one copy of the application which can take over without even the slightest change in its running state.

- **Multi-tenancy:** With cloud computing, any application supports multi-tenancy - that is multiple tenants at the same instant of time. The system allows several customers to share the infrastructure allotted to them without any of them being aware of the sharing. This is done by virtualizing the servers on the available machine pool and then allotting the servers to multiple users. This is done in such a way that the privacy of the users or the security of their data is not compromised.

- **Linearly Scalable:** Cloud computing services are linearly scalable. The system is able to break down the workloads into pieces and service it across the

infrastructure. An exact idea of linear scalability can be obtained from the fact that if one server is able to process say 1000 transactions per second, then two servers can process 2000 transactions per second.

- **Service-oriented:** Cloud computing systems are all service oriented - i.e. the systems are such that they are created out of other discrete services. Many such discrete services which are independent of each other are combined together to form this service. This allows re-use of the different services that are available and that are being created. Using the services that were just created, other such services can be created.

- **SLA Driven:** Usually businesses have agreements on the amount of services. Scalability and availability issues cause clients to break these agreements. But cloud computing services are SLA driven such that when the system experiences peaks of load, it will automatically adjust itself so as to comply with the service-level agreements. The services will create additional instances of the applications on more servers so that the load can be easily managed.

- **Virtualized:** The applications in cloud computing are fully decoupled from the underlying hardware. The cloud computing environment is a fully virtualized environment.

- **Flexible:** Another feature of the cloud computing services is that they are flexible. They can be used to serve a large variety of workload types - varying from small loads of a small consumer application to very heavy loads of a commercial application

Types of Cloud Computing

(1) Service Type of Cloud Computing

- **Software as s service (SaaS):** Software package such as CRM or CAD/CAM can be accessed under cloud computing scheme. Here a customer upon registration is allowed to use software accessible through net and use it for his or his business process. The related data and work may be stored on local machines or with the service providers. SaaS services may be available on rental basis or on per use basis.

- **Platform as a Service (PaaS):** Cloud vendors are companies that offer cloud computing services and products. One of the services that they provide is called PaaS. Under this a computing platform such as operating system is provided to a customer or end user on a monthly rental basis. Some of the major cloud computing vendor is Amazon, Microsoft, and Google etc

- **Infrastructure as a service (IaaS):** The cloud computing vendors offer infrastructure as a service. One may avail hardware services such as processors, memory, networks etc on agreed basis for specific duration and price.

(2) Deployment Type of Cloud Computing

Currently, four types of cloud deployment models have been defined in the cloud community:

- **Private Cloud:** This kind of deployment model solely developed and managed by a single organization or a third party regardless whether it is located in premise or off premise. There are several reasons behind the development of private cloud for an organization some key reasons include optimize utilization of existing in-house resources, security concerns including data privacy and trust also make private cloud an option for many firms, data transfer cost from local IT infrastructure to a Public Cloud is still rather considerable, organizations always require full control over mission- critical activities that reside behind their fire walls and for research and teaching purposes.

- **Community Cloud:** It is a joint venture of several organizations come together to build a cloud infrastructure as well as policies through which cloud services will be rendered. This type of cloud deploy model helpful in developing of economic scalability and democratic equilibrium. In the community cloud model, cloud infrastructure may be hosted by a third party vendor or within one of the organizations in the community.

- **Public Cloud:** Public cloud is meant for general public use and open to all. This kind of deployment model of cloud computing is developed by any cloud computing agency and having own policy, value, and profit, costing, and charging model. Some popular public cloud services include Amazon EC2, S3, Google App Engine and Force.com.

- **Hybrid Cloud:** This type of cloud made from more than one cloud deployment models that may be public, private, community and other models also, bound together with by standardized or proprietary technology that enables data and application portability (e.g., cloud bursting for load-balancing between clouds). The Hybrid cloud model is widely used by institutions and organizations because this model provides more facilities and flexibilities in making optimum use of their resources and accomplishing the tasks.

Applications of Cloud Computing in Libraries

Libraries are shifting their services with the attachment of cloud and networking with the facilities to access these services anywhere and anytime. In the libraries,

the following possible areas were identified where cloud computing services and applications may be applied:

- **Building Digital Library/Repositories:** In the present situation, every library needs a digital library to make their resources, information and services at an efficient level to ensure access via the network. Therefore, every library is having a digital library that developed by using any digital library software. In connection to cloud based digital library software, Duraspace is having two softwares namely Dspace and Fedora Commons but Dspace is widely used for building digital libraries/ repositories relative to Fedora Commons. Dura cloud provides complete solutions for developing digital libraries/ repositories with standard interfaces and open source codes for the both software.

- **Searching Library Data:** OCLC is one of the best example for making use of cloud computing for sharing libraries data for years together. For instance, OCLC World Cat service is one of the popular service for searching library data now is available on the cloud. OCLC is offering various services pertain to circulation, cataloguing, acquisition and other library related services on cloud platform through the web share management system. Web share management system facilitates to develop an open and collaborative platform in which each library can share their resources, services, ideas and problems with the library community on the clouds. On the other hand, the main aim of web- scale services is to provide cloud based platforms, resources and services with cost benefit and effectiveness to share the data and building the broaden collaboration in the community.

- **Website Hosting:** Website hosting is one of the earliest adoptions of cloud computing as many organizations including libraries preferred to host their websites on third party service providers rather than hosting and maintaining their own servers Google Sites serves as an example of a service for hosting websites outside of the library's servers and allowing for multiple editors to access the site from varied locations.

- **Searching Scholarly Content:** Knimbus is cloud based research platform facilitates to discover and share the scholarly content. Knimbus stands for Knowledge Cloud which is dedicated to knowledge discovery and collaborative space for researchers and scholars. Knimbus was started its journey in 2010 by the entrepreneurs Rahul Agarwalla and Tarun Arora to address challenges faced by researchers in searching across and accessing multiple information sources. Knimbus is currently used in over 600 academic institutions and R & D labs by scholars, researchers and scientists as well as over 50,000 researchers. Knimbus is a collaborative platform for researchers to discover and share knowledge with peers and facilitates to find and access millions of journal articles, patents and

ebooks, for the users tagging, sharing and discussing of these contents with their peers. At present, Knimbus proposed a free offer to get registered to empower the libraries for dynamic searching and also for single point search interface, maximizes the usage of all e-resources, customized search across selected sources reduces noise and highlights relevant content and tools to support the complete research lifecycle. Currently, Information and Library Network (INFLIBNET) Centre (http://www. inflibnet.ac.in) has been incorporated Knimbus cloud service into its UGC INFONET Digital Library Consortium in order to search and retrieve scholarly contents attached therein.

- **File Storage:** To access any files on the internet, cloud computing present number of services such as Flicker, Dropbox, Jungle Disk, Google Doc, Sky Drive and so on. These services virtually share the files on the web and provide access to anywhere and anytime without any special software and hardware. Therefore, libraries can get advantages of such cloud based services for various purposes. For instance, LOCKSS (Lots of Copies Keeps Stuff Safe), CLOCKSS (Controlled LOCKSS) and Portico tools are extensively used for digital preservation purpose by libraries and other organizations.

- **Building Community Power:** Cloud computing technology offers great opportunities for libraries to build networks among the library and information science professionals as well as other interested people including information seekers by using social networking tools. The most famous social networking services viz. Twitter and Facebook which play a key role in building community power. This cooperative effort of libraries will create time saving, efficiencies and wider recognition, cooperative intelligence for better decision- making and provides the platform for innovation and sharing the intellectual conversations, ideas and knowledge.

- **Library Automation:** For library automation purpose, Polaris provides variant cloud based services such as acquisitions, cataloguing, process system, digital contents and provision for inclusion of cutting edge technologies used in libraries and also supports various standards such as MARC21, XML, Z39.50, Unicode and so on which directly related to library and information science area. Apart from this, nowadays many of the software vendors such as Ex-Libris, OSS Labs are also offering this service on the cloud and third party services offering hosting of this service (SaaS approach) on the cloud to save libraries from investing in hardware for this purpose. Besides cost-benefit, the libraries will be free from taking maintenance viz. software updates, backup and so on.

Use Cloud Computing in Library and Information Science

Cloud computing offers many interesting possibilities for libraries that may help to reduce technology cost and increase capacity reliability, and performance for some

type of automation activities. Cloud computing has made strong inroads into other commercial sectors and is now beginning to find more application in library science. The cloud computing pushes hardware to more abstract levels. Most of us are acquainted with fast computing power being delivered from systems that we can see and touch.

Role of Cloud Computing in Libraries

Cloud computing is a completely new in technology and it is known as 3rd revolution after PC and Internet. Cloud computing is an enhancement of distributed computing, parallel computing, grid computing and distributed databases. Among these, grid and utility computing are known as predecessors of cloud computing. Cloud computing has large potential for libraries. Libraries may put more and more content into the loud. Using cloud computing user would be able to browse a physical shelf of books, CDs or DVDs or choose to take out an item or scan a bar code into his mobile device. All historical and rare documents would be scanned into a comprehensive, easily searchable database and would be accessible to any researcher. Many libraries already have online catalogues and share bibliographic data with OCLC. More frequent online catalogues are linked to consortium that share resources.

Data storage cloud be a main function of libraries, particularly those with digital collections storing large digital files can stress local server infrastructures. The files need to be backed up, maintained, and reproduced for patrons. This can strain the data integrity as well as hog bandwidth. Moving data to the cloud may be a leap of faith for some library professionals. a new technology and on the surface it is believed that library would have some control over this data or collections. However, with faster retrieval times for requests and local server space it could improve storage solutions for libraries. Cloud computing or IT infrastructure that exists remotely , often gives users increased capacity and less need for updates and maintenance , and has gained wider acceptance among librarians.

Present Situation of Indian Libraries: In India, cloud computing in libraries is in development phases. Libraries are trying to provide to users cloud based services but in real sense they are not fully successful owing to the lack of good service providers and technical skills of LIS professionals in the field of library management using advanced technology. But some services such as digital libraries, web documentation and using web2.0 technologies are running on successful modes. Some good examples of successful cloud computing libraries include Dura cloud, OCLC services and Google based cloud services. Nowadays many commercial as well as open sources venders (i.e. OSS) are clubbing the cloud computing technology into their services and products. However, cloud computing technology is not fully accepted in the Indian libraries but

they are trying to develop themselves in this area.

Advantages of Cloud Computing in Libraries

- Cost saving
- Flexibility and innovation
- User centric
- Openness
- Transparency
- interoperability
- Representation
- Availability anytime anywhere
- Connect and Converse
- Create and collaborate

Examples of Cloud Libraries

- OCLC
- Library of Congress (LC)
- Exlibris
- Polaris
- Scribd
- Discovery Service
- Google Docs / Google Scholar
- Worldcat
- Encore

Conclusion

This study provides cloud computing concepts and implications of cloud based applications in libraries in order to enhance their services in a more efficient manner. Cloud computing increases profitability by improving resource utilization. Costs are driven down by delivering appropriate resources only for the time those resources are needed. Cloud computing has enabled teams and organizations to streamline lengthy procurement processes. Cloud computing enables innovation by alleviating the need of innovators to find resources to develop, test, and make their innovations available to the user community. Innovators are free to focus on the innovation rather than the logistics of finding and managing resources that enable the innovation. No doubt, libraries are moving towards cloud computing technology in present time and taking advantages of cloud based services especially in building digital libraries, social networking and information communication with manifold flexibilities but some issues related to security, privacy, trustworthiness and legal issues were still not fully resolved. Therefore it is time for libraries think seriously before clubbing libraries services with cloud based technologies and provide reliable and rapid services to their users. Another role of LIS professionals in this virtual era is to make cloud based services as a reliable medium to disseminate library services to their target users with ease of use and trustworthiness.

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Digital Rights Management

R.Thiyagarajan

Department of Library and Information Science,
Tamilnadu Dr. Ambedkar Law University, Chennai, India

Introduction

The emergence of digital and information technology started redefining the paradigms of communication and has subjected new threats to intellectual property protection. The advent of internet and modern digital technologies have created concern for proper copy right protection on the information highway as these enable easy, fast unauthorized access and piracy activities. With the advent of personal computer, the ease of rippling media files from a CD or broadcasting radio and unauthorized sharing of copyrighted material though internet using popular file sharing tools had become a household affair increasing the concerns of copyrights holders. Even when free downloading of a file from a website amount to infringement of rights of the copyright holder, the discussions on Digital rights management and intellectual property protection have acquired a unique significance.

Digital Rights Management

Digital Rights Management a system for protecting the copyright of data circulated via the internet or other digital media by enabling secure distribution and/or disabling illegal distribution of the data. Typically Digital Rights Management is a system that is intended to protect intellectual property by either encrypting the data so that it can be accessed only by authorized users or by marking the copyright protected content with a digital watermark.

The term Digital Rights Management is usually mistaken for Technological Protection Measures (TPM) and Right Management Information. Technological protection measures put in place by a copy right owner, intends to control the digital work subject to the copyright and its infringement or circumvention can be described as electronic equivalent of breaking and entering into a locked room in order to obtain a copy of a work. On the other had Rights Management Information means a title or other information identifying the work or performance, the name of the author or performer, the name and address of the owner of the rights, terms and conditions regarding use of the rights and any matter or code that represents above stated information but does

not include any device or procedure intended to identify the user. Basically these two terms refers to the technology and information that control or restrict the use and access to digital content and thereby acting as components of the Digital Rights Management design.

International Treaties on Digital Rights Management

The approach of the world intellectual property organization (WIPO) as reflected in its WIPO Copyright Treaty (WPT), 1996 and WIPO Performers and Phonograms Treaty (WPPT), 1996 is to obligate the member states to incorporate Digital rights management provisions in their respective national copyrights laws. It obligates them to provide effective and adequate legal provisions and remedies against the circumvention of effective technological measures used by the right holders and also against unauthorized tampering of rights management information.

The Digital Rights Management Provisions under Copyright Act

Even though India is not a signatory to WIPO internet treaties (WPT & WPPT), our Indian Parliament with regard to TRIPS (a party to TRIPS from 01.01.1995) brings amendment in Copyright Act and inserted Sections 65 (A) and 65 (B) which deals with protection of technological measures and protection of rights management information which is the components of the Digital Rights Management design. Protection of Technological Measures.

According to Section 65 (A)

1. Any person who circumvents on effective technological measure applied for the purpose of protecting any of the rights conferred by this Act, with the intention of infringing such rights, shall be punishable with imprisonment which may extent to two years and shall also be liable to fine.

2. Nothing in sub section (1) shall prevent any person from,

   (a) doing anything referred to therein for a purpose not expressly prohibited by this Act: Provided that any person facilitating circumvention by another person of a technological measure for such a purpose shall maintain a complete record of such other persons including his name, address and all relevant particulars necessary to identify him and the purpose for which he has been facilitated; or

   (b) doing anything necessary to conduct encryption research using a lawfully obtained encrypted copy; or

   (c) conducting any lawful investigation; or

(d) doing anything necessary for the purpose of testing the securing of a computer system or a computer network with the authorization of its owner; or

(e) operator; or

(f) doing anything necessary to circumvent technological measures intended for identification or surveillance of a user; or

(g) taking measures necessary in the interest of national security.

Protection of Rights Management Information

According Section 65 (B), who knowingly,

(i) Removes or alters any rights management information without authority, or

(ii) distributes, imports for distribution, broadcasts or communicates to the public, without authority, copies of any work, or performance knowing that electronic rights management information has been removed or altered without authority, Shall be punishable with imprisonment which may extend to two years and shall also be liable to fine.

Provided that if the rights management information has been tempered with in any work, the owner of copyright in such work may also avail of civil remedies provided under chapter XII against the persons indulging in such acts.

Digital Rights Management - A Comparison

To recognize the significance of the minimalist approach taken by the Indian legislature with respect to Digital Rights Management, one may have to see the provisions in comparison with some other jurisdiction that have implemented the provisions of the WCT and WPPT. The Digital Rights Management provisions in the United States and the European Union may be considered for this purpose. These jurisdictions are chosen not only for their prominent role in the evolution of the WCT and the WPPT, but also for their comparatively longer experience with Digital Rights Management provisions. The Digital Rights Management provisions proposed under the WIPO internet treaties were implemented in the United States through the Digital Millennium Copyright Act, in the year 1998. One of the most important factors that distinguish the Digital Millennium Copyright Act from other Digital Rights Management legislation is that it attempts to make a distinction between protection for measuring that control access to a work and protection for measures that control use of work. Interestingly, the Digital Millennium Copyright Act access control provisions not only outlaws the actual circumvention of access control measures placed on a work, but also aims to prevent preparatory activities like manufacture and distribution of tools

that are primarily meant for facilitating circumvention of access control. On the other hand, the anti-circumvention provisions relating to protection of usage control measures prohibit only preparatory activities. The Digital Millennium Copyright Act provides civil as well as criminal remedies for violations of anti circumvention provisions.

A similar picture of Digital Rights Management laws could be seen from Europe also. The copyright law in Europe is not yet completely harmonized at the community level and there are still considerable differences in the approaches taken by different member states of the European Union with regard to copyright law. The Information Society Directive of 2001 was a major attempt aimed at copyright harmonization within the community and it had also mandated all the member states to bring Digital Rights Management regulations in the national legislation of member states. Article 6 of the Information Society Directive makes it obligatory for the member states to provide adequate legal protection against the circumvention of effective technological measures, if the person concerned is engaged in circumvention with the knowledge, or with reasonable grounds to know, that she/he is pursuing that objective. Article 7 of the Directive also outlaws tampering of rights management information and dealing in such tampered works, when the person concerned is engaged in such acts with the knowledge or reasonable grounds to know that she/he is inducing, enabling, facilitating or concealing infringement of copyright or database rights through such actions.

Unlike the new Indian Digital Rights Management provisions or the Digital Millennium Copyright Act, the Directive does not give exceptions for any specific groups. The review of implementation of the Digital Rights Management provisions prescribed under the Information Society Directive in different member states shows that member states have taken diverging approaches for implementation.

Conclusion

In India the latest amendments in copyright law are significant in terms of range as they address the challenges posed by the Internet. The 2012 Amendment harmonizes the copyright law with WCT and WPPT. The introduction of new Section 65A, which extends legal protection to the technological protection measures used by authors, is a welcome step. The provision is sure to contain, if not to put an end to, the menace of digital piracy. Since the pirate is using new technologies in the digital environment to infringe on the copyright and related rights, so in the same vein, the holders of these rights should use the very means to counter such actions of infringer. With these amendments, the Indian Copyright Law has become a forward-looking piece of legislation and the general opinion is that, barring a few aspects, the amended Act is capable of facing copyright challenges of digital technologies including those of Internet. Indeed, it seems inevitable that the digital networked environment will

eventually necessitate more radical changes to the copyright system not only to insure adequate protection to right holders, but also to protect the legitimate interests of users of protected works.

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Seeking the Required Information with the Help of Digital Resources

D. Gayathri[†] and M. Sadik Batcha[*]

[†]*Department of Library and Information Science,*
BWDA Arts and Science College, Mailam, Tindivanam 604 001, India
e-mail : gayathrimohi@gmail.com

[*]*Department of Library and Information Science,*
Periyar University, Salem, India
e-mail : msbau@rediff.com

Abstract

The information sources are entering into new digital world. All information source are becoming digital format. Textbooks, reference books can be accessed in e-book format, the journals also can be referred as e-journal. Audios-videos, and multimedia information also available in digital format. The huge collection of all the digitalized information in the world are available in world wide web. Digitalized resources can be accessed without any internet connectivity. The digitalized information can be accessed and shared easily anywhere in the world with the help of internet. Majority of information seekers prefer to digitalized information sources for getting information than the printed sources because of user friendly.

Keywords: Digital information sources, information sources, electronic information sources.

Introduction

Libraries are undergoing tremendous changes due to the revolution of digitalized information sources. Information seeking styles have changed over the past few years with the evaluation of the internet and online resources. All the publications are publishing their information source in the digital format. The users also believing in the digital sources are better than any others type of sources in other aspects that carrying, can store more, and can be shared easily via internet. Basic digital library task such as searching were comparable in ease-of-use with the same feature in a web based library. The digital information sources can be accessed with the help of the computer which have internet facility and it should be networked with the supporting devices. All the types of information in the form of texts, pictures, audios, videos are available

in digital form. All the institutional libraries can become digitalized and having more resources in digital farms. World Wide Web is the main source for having a lot of digital information. The information seekers can get all the type of digitalized information by a single click in the computer with help of internet. Selected information can be stored in the storage media like compact disc (CD) or Digital Video Disc (DVD). Information resources like books, articles, thesis, manuals, research reports also now being made available in digital format in this information era. Digital information literacy can be defined as the ability to understand and use of information in multiple formats from a wide variety of networked computer sources and it involves the skill of deciphering multimedia images sound and text.(Gilster,1997)

Obectives

The main objectives of this paper is to analyse the various digitalized resources.

Information Seeking Behaviour

Human develop the ability to seek and use information from their child hood. It is a human process which help for their personal and social development. Through these processes they can develop their interaction skill to retrieve information what they need. Wilson (2000), Information seeking is a term describing the ways individuals seek, evaluate, select, and use information. In the course of seeking new information, the individual may interact with different people, analog tools and computer based information system.

Singh (K P) and Satija (M P), information seeking behavior refers to locate scattered knowledge elements. Actively the user undergoes the information seeking process to satisfy the information needs. Academicians of all institutions use a variety of widely different approaches to fulfill their information needs. The information seeking behavior depends on a particular requirement of an individual user. Information seeking behavior includes the purpose of seeking information, using tools, information sources, approaches during the seeking information and facilities and services used in various library and information centers.

Digital Information Resources

E-Book

Access reliable, authorized, published contents on wide varieties of subject, in the form of e-books. Text books and reference books are also available in e-book

format. The comprehensive collections of e-book are offered by various publications which will be more useful to the students, academicians, researchers, scholars and the learned society. The term E-book is defined broadly to include electronic reference works, monograph and textbooks, which might be delivered via web or storage devices like CD,DVD or pen drive. Reference books like Dictionary, articles, encyclopedia, handbooks, reports, manuals, tables, and databases are also available in the digital format. The potential advantages of e-books have been described in comprehensive: portability, instant access, search-ability, annotation, linking, multimedia long-term preservation of the material, reduction of papers and physical space. Some e-books publishers of Questionnaire are net-library, and e-library etc.

E-Journal

The e-journals are published by various scientific and technical publication represents new standard in scholarly publishing, variety of subjects and ease of access. All the publication offer various disciplines that millions of article from different industries from globally renowned sources. Some of the e-journal publishers are sage journals, money publishing, IOP science journal, emerald and BMJ journal etc.

E-Zines

Now magazines are also being published in electronic format. Few examples given , Planet analog, EE Times, IEEE Spectrum. FPGA Journal ,Wired ,EDN ,Electronic Design, Electronics for you, Electro-pages etc.

Reference Sources

Some resources will be referred by the information seeker for a bit of information, like dictionaries, encyclopedia, biographies etc.

E-database

The collection of e-database covers theoretical and immediate applicable information in all the field or subjects. Immediate access to information is an urgent need for students, academician, researchers, and corporate learners. Some examples of e-databases; Science Direct, Web of science, Math Science net, Emerald, Wiley online library, Springer Link and Sage Journals

E-news paper

User’s favorite news papers are also available in digital format in the concerns web site of the publisher. So, the user can read the news paper on the date of publication. International recognized news paper are also available in their web site with original layout.

Few examples Amar Ujala, Aandhra Bhoomi, Andhrajothy, Assamiya Khabor, Business Standard, Daily Thanthi, Dainik Bhaskar, Dainik Jagran, Deccan Chronicle, Deccan Herald, Dinamalar, Divya Bhaskar, DNA (Daily News & Analysis),Economic Times, Eenadu, Financial Chronicle, Financial express, Free Press Journal, Gujarat Samachar, Hindustan Hindi,Hindustan Times,Indian Express etc.

E-Report

This is mainly for academicians, research or business practitioner. The collection of online analytical reports will enable to compare, contrast, and summarize the view of multiple analyst firms on industries, markets, and technology topics.

Advantages of CD-ROM

Basically there are two type of discs; namely Compact disc (CD) and Digital Video Disc (DVD) . All the information seekers are using these types of storage media for storing data.

1. The collected data can be stored permanently; can not be erased, scratched or mutilated
2. Having high density storage capacity, more than 2, 50,000 text Pages can be stored
3. The CDs are physically portable and it can be mailed to anywhere by post also.
4. Containing Data can easily be transferred to any others storage devices with the help of a computer.
5. Its cost is very low, so number of CD can be used for storing more information.

Advantages of Electronic Resources

- International reach
- Speed on accessing and sharing
- Unlimited capabilities
- Convenience to users in all aspects
- Search ability
- Linking

Digital Library

Digital library is a collection of digitalized information sources, the services and information objects that are available digitally. The digital age bring changes to information retrieval system, users, information, and the environment in which user interact with system(Hong(Iris)Xie,2007). The development of the internet allows millions of users to access various types and format of digital information regardless of their physical location. A digital library is an automated or electronic library, where activities like accessing ,retrieval processing, automatic indexing and textual analysis, are carried with the help of a computer(Kesava and Manjunath G Lamani ,2008) Velmurugan,C and Ramasamy.G(2014) had found that the maximum number 37.6 % of respondents were using e- journals for their study purpose. The minimum number 7.2 % of respondents were using the purpose to update their knowledge and improve their communication level by SIFT College. In accordance with RIT College, the maximum number 32.0 % of respondents were using e- journals to prepare articles and the minimum number 8.8 % of respondents were using e- journals for communication purpose.

The new digital environment not only forces people to apply more than one type of information seeking strategy, but also requires people to change from one information seeking strategy to another in the information seeking process (Hong(Iris)Xie,2007) Goals of a digital library are to improve access for the user. The digital library is the widely accepted term describing the use of digital technology to acquire, store, preserve, and provide access to information and material originally publish in the digital form or digitized from existing print, audio-visual and others forms. While seeking information, user's personal information infra structure are also developed. When users get knowledge and skills in order to adapt to different situation and solve problems.

Features and Functions of Digital Library

Digital library is not only a place for having digitalized information sources for providing the information seeker but also providing services, required hardware and software. Making more availability for latest resources to fulfills the information requirements of the users in various fields. Information can be found easily and quickly. The user can get an information what he needs by a single click on the computer. The search engine will help to search particular information from immeasurable collection of information. The index of the collection in the digital library will help to get or recognize a particular information source immediately. A digital library should be able to access all other digitized book related to the same subjects. To print the image of a book, in front cover of digital source, which can be easily identified by the users. If any latest addition added in digital source, which would be kept new arrival display rack to

become aware of the user. Digital library can be networked with any other library for sharing the sources for the benefit of the user.

Conclusion

In the present age of information technology, academic and other libraries have no option but to resort to digital resources as most of the scientific, technical and general information sources are now switching over to digital forms. All these factors make unavoidable in the present day, and all institutions libraries and public libraries need to obtain digital resources. Therefore as per the necessity of the user, every institution and organizations should take proposal in this regard otherwise library will have no role in the domain of IT and its role will be restricted to a store house of books, journal and others type of printed information sources. The digital and electronic information resources plays a vital role on providing the information quickly.

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Knowledge Sharing vs Plagiarism

S. Abdullah Shah

Department of English Islamiah College,
Vaniyambadi 635 752, India
e-mail: a4abdu21@gmail.com

Abstract

Science and technology has enabled knowledge sharing in the present generation. It has made the researchers to select the area of study very easily by browsing the history of already done works. Scholars share their findings and knowledge in the data base for the benefit of fellow researchers and the society. But the works of others have been plagiarized by the researchers knowingly or unknowingly. This paper aims to highlight the benefits of knowledge sharing and the ways through which the researchers can avoid plagiarism.

Keywords: Knowledge sharing, Plagiarism, Research Ethics.

Knowledge Sharing

The development in science and technology has made knowledge to expand more rapidly when compared to the past. Expanding of knowledge has become possible only through sharing of knowledge. The notion 'knowledge is asset of the few' is no more and knowledge has become the asset of everyman. The tendency of resistance to share knowledge prevents our growth. When the knowledge and expertise gathered from years of experience is shared among others, it will help the next generation from wasting time and resources in gaining the same. To encourage knowledge sharing, the individuals should be rewarded for their contributions. In the field of research, knowledge sharing bridges the gap among the researchers. Knowledge sharing benefits researchers, institutions, nations and society as a whole.

David J. Skyrme gives some reasons why people don't share knowledge. The first reason is that without a deep understanding the base of knowledge, it cannot be used by others. Secondly, selfishness and pride prevent people from sharing knowledge. Thirdly, the shared knowledge may be used out of context or misused by others without giving acknowledgement. Finally, the next reason is lack of time to share knowledge in the data base The 3C's of Knowledge Sharing: *Culture, Co-opetition and Commitment.*

A researcher begins his/her library search by reading summaries of the selected topic. Relevant ideas related to the topic can be taken from encyclopedias, text books

and lecture notes etc. Apart from the print materials, e-books, e-journals and data bases of universities and institutions can be browsed to search the materials related to the topic. Articles in the journals will give a clear idea how to explore a topic in depth.

Google Scholar is one of the freely accessible search engines in which the researcher can get some materials related to the topic to get the basic idea. However one should not fully rely on it because it has some limitations like inadequate citation information and incorrect field detection (Wikipedia: Google Scholar). While searching research databases, the researcher should have a clear idea of what he / she is going to search. The researcher should decide whether he / she wants a complete search or limited search in the data base.

Avoiding Plagiarism

When the researcher uses the works or ideas of others, the author should be credited with citation. Otherwise that becomes plagiarism. According to MLA Handbook for Writers of Research Papers

> Plagiarism involves two kinds of wrongs. Using another person's ideas, information, or expressions without acknowledging that person's work constitutes intellectual theft. Passing off another person's ideas, information, or expressions as your own to get a better grade or gain some other advantage constitutes fraud. Plagiarism is sometimes a moral and ethical offense rather than a legal one since some instances of plagiarism fall outside the scope of copyright infringement, a legal offense (52).

Plagiarism can be avoided by quoting, paraphrasing, and summarizing. When the researcher uses direct quotation, the text should be presented word-for-word without changing the language and structure. In paraphrasing, the researcher should put ideas of an author in his/her own words by changing the sentence structure in a shorter version of the original passage. In summarizing, the researcher should restate the main ideas in his/her words briefly. In all the above cases, the reference details should be given fully.

In the web, one can find a lot of websites giving tempting advertisements offering research papers free of cost and for payment. The researchers should not get cheated by those websites. The papers offered by those websites may not be trustworthy. On one hand, the technology has made knowledge sharing easy. But on the other hand, the same technology is used by some people to cheat people. Clabaugh and Rozycki, in the book, The Plagiarism Book, provide the list of a few tempting websites. It is given below:

www.aci-plus.com

www.a1-termpaper.com

www.cheathouse.com

www.cheater.com

www.researchpaper.com

www.schoolsucks.com

www.allpapers.com (59-60).

Moreover, they add *After all, people dishonest enough to encourage fraud can hardly be trusted to have done an honest job on the paper to begin with*(60). So, the researchers should follow the principle of honesty while conducting research. It is also the duty of the research supervisor to identify and correct the elements of plagiarism. The concept of knowledge sharing should be used by the researchers in the right sense. Finally, it is the responsibility of the researchers to follow research ethics in their work.

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E-Learning : A Review

R. Jawahar Babu[†] **and N. Abdul Latheef**[*]

Department of Library and Information Science,
Srimad Andavan Arts & Science College, Trichy, India
[†] e-mail: rtjbabu@gmail.com

Department of Library and Information Science, Islamiah College,
Vaniyambadi 635 752, India
[*] e-mail: abdul71073@gmail.com

Abstract

This paper describes about the needs, definitions of e-learning technology and explains about the origin of e-learning, and the impact of e-learning in the field of library and information science. The paper also describes about softwares which are used in e-learning and advantages and disadvantages involved in of e-learning technology.

Keywords: e-learning, ICT, e-learning softwares, TEL, CAI, CBT, VLE.

Introduction

The growth of Information and Communication Technology leads to a new method of learning called E-learning which is nothing but an electronic learning using computers. But since technology has developed we can utilize smart phones and tablets in the classroom, and distance learning to deliver the lessons. E-learning is otherwise called technology-enhanced learning (TEL), computer-based instruction (CBI), computer managed instruction, computer-based training (CBT), computer-assisted instruction or computer-aided instruction (CAI), internet-based training (IBT), flexible learning, web-based training (WBT), online education, virtual education, virtual learning environments (VLE) and digital education. E-learning refers to the acquisition of knowledge and skills with the use of electronic means for training, teaching and educating the maximum. E-learning does not require class room attendance and via the internet the learning process is carried out. Today the conventional lecture classes are being replaced by e-learning methods by using computers, tablets, . . . etc.

Origin of e-learning

The term e-learning coined between 1997 and 1999, e-learning became first attached to either a distance learning service or it was used for the first time at the CBT systems seminar. Since then the term has been used extensively to describe the use of online, personalized, interactive or virtual education. The broad interpretations of e-learning focus on new applications and developments, as well as learning theory. In usage, e-learning is an extremely significant subset of educational technology.

Need for e-learning

- To use the information resources very effective, particularly those in electronic media such as e-journals and databases which requires continuous training to the users.

- To develop the e-learning modules for both the self education and trainer assisted education.

Definitions of e-learning

- E-learning is the use of electronic educational technology in learning and teaching

- E-learning refers to using electronic applications and processes to learn and it includes Web-based learning, computer-based learning, virtual classrooms and digital collaboration. Content is delivered via the Internet, intranet/extranet, audio or video tape, satellite TV, and CD-ROM.

- E-learning is the use of technology to enable people to learn anytime and anywhere. It includes utilization of various ICT applications in instruction. It includes use of internet and intranet in teaching and learning process.

Impact of E learning in LIS

E-learning provides new learning opportunities for library and information professionals to develop their knowledge and skills in a wide range of areas such as library automation, RFID technologies, open source softwares, Institutional repository softwares,etc.

E-learning enhances to develop the new roles and responsibilities among library professionals in the field of library information science by learning about the state of the art technologies through online and through CDs, DVDs, etc.

The library professionals must develop their skills in information exchange, taking classes, sharing ideas between library professionals using virtual communication tools.

E-learning opportunities provided by Governmental Organizations:

- Gyandarshan, Gyandarshan-2, e-Gyangosh from New Delhi.
- VYAS CHANNEL from UGC-CEC is the Higher education Satelite channel. This channel provides large Number of courses through online mode.
- NPTEL (National Programme on Technology Enhanced Learning). NPTEL programme provided by the Ministry of HRD, Government of India.

There were 7 institutions in around the country and the Indian Institute of Science, Banglaore is also included in this programme. They jointly provide Engineering, Science & Humanities courses through online mode. The IIT(M), Chennai provides downloaded Video lectures to all the institutions of TamilNadu. They are also providing online certificate courses. The NPTEL establishes study centres at institutions that those interested to provide services to their respective students.

List of few E- learning softwares

- Articulate Storyline
- Adobe Captivate
- Lectora
- iSpring
- Articulate Studio ’13
- Skillsoft.com
- www.remote-learner.net
- www.cblearning .com
- ewhorizon.com
- www.50lessons.com
- www.ilxgroup.com

Advantages

- Time savvy
- Can access and learn anywhere at any time
- Learning resources can be developed by using various packages
- Easy to track learner activity
- Highly interactive by creating user group
- Widening participation in learning
- Used as tool in classroom teaching Disadvantages
- Additional equipments and qualified staff required
- Students and staff need reliable access
- Basic IT skills required
- High expenses involved
- State of the systems with high configuration required.

Conclusion

Information and communication technology (ICT) developing rapidly and creating changes in the information society. In the present ICT era, e-learning used as a tool in class room teaching, distance education and through e-learning methods an user can learn and develop their knowledge in the respective field upto maximum level. E-learning can be used as a supplement to the traditional class room learning. Library services are essential components of the quality online learning environment. Library professionals must be well aware and well trained on e-learning technology and e-learning softwares to provide efficient service to the users.

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Digital Rights Management in Plagiarism Software

S. Elumalai Ganthi and S. Murali*

Department of Library and Information Science,
Priyadarshini Engineering College, Vaniyambadi, India
* e-mail: muralimurali106@gmail.com

Abstract

This topic will make awareness among our professionals to prevent plagiarism in future and help them to detect plagiarism and reduce the impact of plagiarism on education and educational institutions. Plagiarism is defined as *any passing off of another's ideas, words, or work as one's own.* It is a form of cheating and a violation of academic integrity, and is taken seriously by reputable universities such a Most students are honest, ethical, and hard-working, but a few take shortcuts in their course work and some commit plagiarism inadvertently because they do not understand what it is. This is unfair to those who exercise due diligence to avoid plagiarizing. Ignorance is not a legitimate excuse. Students should take the responsibility to become familiar with the specifics of plagiarism. When in doubt, check with your instructor and ask for clarification.

Keywords: Plagiarism, Types, Tools, Librarian.

Introduction

According to Oxford English Volume XI in Second Edition said that *Plagiarism is the wrongful appropriation or purloining and publication as one's own, of the ideas, or the expression of the ideas (literary, artistic, musical, mechanical etc) of another.* Plagiarism is quickly becoming part of our educational culture. More and more students are turning to the internet for quick *shortcuts* around the rewarding but time-consuming work of writing research papers and the expansion on Internet is very fast and drastic development in the publishing area so, the rate of plagiarism is increasing very fast and quickly.

Definition

According to the Merriam-Webster Online Dictionary, to *plagiarise* means

- To steal and pass off (the ideas or words of another) as one's own

- To use (another's production) without crediting the source
- To commit literary theft
- To present as new and original an idea or product derived from an existing source.

Types of Plagiarism

- Complete Plagiarism-A piece of work copied entirely from one or more sources
- Copy and Paste-Available information off internet or electronic journals
- Word Switch-If you copy a sentence or paragraph into your assignment and change a few words it will still be considered to be plagiarism
- Self-plagiarism-Self-plagiarism is when you re-use your own previously written work or data in a new assignment and do not reference it appropriately.

Plagiarism Detection Tools

The act of taking someone else's ideas and passing them off as your own defines the concept of *plagiarism.* As it is shown by the growing educational concerns, plagiarism has now become an integral part of our digital lives as technology, with the billions of information it gives us access to, led to the exacerbation of this phenomenon.

Anti-Plagiarism

Anti-Plagiarism is a software designed to effectively detect and thereby prevent plagiarism. It is a versatile tool to deal with World Wide Web copy-pasting information from the assignment of authorship. The goal of this program is to help reduce the impact of plagiarism on education and educational institutions. At present, it distributes free software to detect plagiarism. Checking documents in a format `*.rtf, *.doc, *.docx, *.pdf`.

Dupli Checker

DupliChecker is a tool 100% free to use. Just copy-paste, or upload your essay, thesis, website content or articles, and click `search`, and you'll get the analysis reports within seconds.

PaperRater

Rater offers three tools: Grammar Checking, Plagiarism Detection and Writing Suggestions. It is a free resource that is developed and maintained by linguistics

professionals and graduate students. It is absolutely free to use and it allows you to check for plagiarized parts in your students' essays.

Plagiarisma.net

Plagiarisma has a search box as well as a software download available for Windows. Users can also search for entire URLs and files in HTML, DOC, DOCX, RTF, TXT, ODT and PDF formats.

PlagiarismChecker

PlagiarismChecker.com makes it simple for educators to check whether a student's paper has been copied from the Internet. Users can also use the *Author* option to check if others have plagiarized their work online. It is very easy to use as it does not require any download or installation.

Plagium

Plagium is a free plagiarism detection tool. It's very easy to use. All you have to do is paste in the original portion of text (max 250 characters) and hit "search. It is available in six languages and an Alert feature is also available.

PlagTracker

Plagtracker is another online plagiarism detection service that checks whether similar text content appears elsewhere on the web. It starts scanning all internet pages and more than 20 million academic works for any plagiarized copy. After scanning, you will receive a report with details about your work.

Viper

Viper is a fast plagiarism detection tools with the ability to scan your document through more than 10 billion resources, such as academic essays and other online sources, offering side-by-side comparisons for plagiarism. It's free and you can download it very easily. Just keep in mind that it requires a download. Just note that Viper is available to Microsoft Windows users only.

SeeSources

SeeSources is an online, automatic and free plagiarism checker. Choose MS Word in the formats (.doc/ .docx) or HTML in the formats (`.htm`) or text (`.txt`) or text document (max. 300kB, 1000 words). With *Start Analysis* the source search begins. You will be updated about the progress continuously, search takes about 1 minute per document.

PlagiarismDetector

Plagiarism Detector is a software especially designed keeping the growing content requirement over the internet in mind. Equally useful for teachers, students and website owners. It scans the documents and detects plagiarism and provides an instant report. Your content should not be in a specific format. You simply need to copy/paste your content in the provided window and press search button. This is it!

Avoiding Plagiarism

- One way to avoid plagiarism is reading something and putting it into your own words
- Another way is to credit the author of what you read and not taking credit for it
- Using quotations is another way of avoiding plagiarism
- At the beginning of the first sentence in which you quote, paraphrase, or summarize, make it clear that what comes next is someone else's idea If you are worried about being accused of plagiarism, your best defense is to
- Do your own work o Keep careful track of your sources and notes
- Understand everything you have written
- Finally, acknowledge those who contribute to your work
- describe all sources of information
- give acknowledgments
- provide footnotes
- use quotation marks wherever required
- paraphrase the original, attributed work
- for extensive quotations, obtain permission from the publisher of the original work
- avoid self-plagiarism by taking permission from the publisher of the previous article authored by you
- obtain permission for use of published drawings or other illustrations

Punushments

Plagiarism may result in serious sanctions, including

- public disclosure,
- loss of research funding,
- loss of professional stature and
- termination of employment
- legal action against the individual's committing plagiarism

Institutional Responses to Plagiarism

◇ There are three pillars in institutional responses to plagiarize the research publications

◇ Deterrence

◇ Deterrence from Plagiarism is to be nurtured by promotion of faculty and institutional

◇ academic integrity by sensitization, training and value inculcation

◇ Detection

◇ It constitutes neither effective prevention nor correction; but an intermediate step between the two

◇ Commercial software's to detect Plagiarism as a simple recipe

◇ These software's are no panacea for breakdown of academic integrity

◇ It is only one of the range of measures required in an effective policy package

◇ Dealing

◇ Multipronged approach-Prevention, Deterrence, Detection and Response with equal attention

◇ Introduction to Ideas of Originality at the Undergraduate level

◇ Citation styles and Plagiarism practices at P.G level

◇ Factors in UG and PG syllabus and Evaluation system

- ◇ Institutional Mechanisms at the M.Phil /PhD level- Exposure, Deterrence, Detection and Response
- ◇ Plagiarism in Research Papers by Faculty

How to Avoid Plagiarism

- Directly quoting another person's actual words (oral or written)
- Using another person's ideas, opinions or theories
- Paraphrasing the words, ideas, opinions or theories (oral or written)
- Borrowing facts, statistics or illustrative material
- Offering materials of others in the form of projects or collections without
- acknowledgements

Role of Plagiarism Checker

- To filter the duplicate content
- To receive a fairer of your document
- To do effective research
- Saves instructor time
- Useful for Intellectual property issues
- Allow students to check their own work
- To avoid the plagiarism habit

Free Online Plagiarism checker

- Plagiarism Detect
- The Plagiarism Checker
- Plagium
- Duplic Checker

- Plagiarism Checker
- Article Checker
- eTBlast- Virginia Tech
- Chimpsky- University of Waterloo
- CopyTracker and Viper -privately developed
- eTBlast and Chimpsky are more credible but had limitations
- Based on the above free online plagiarism software's to help teachers, writers and
- editors do their work more efficiently and if we have a collection of documents that you
- think might contain plagiarized content, you can check them quickly with mentioned below
- free software.

Commercial Software

- iParadigm- customised packages for different applications
- Turnitin- Academic institutions
- iThenticate- Publishers
- WriteCheck- Students
- Checkforplagiarism.net
- Copyscape
- Plagiarism Detecter
- Plagiarism Scanner
- Safe Assign
- Scanmyessay
- Urkund
- Copyscape
- Ephorus

Role of Librarian in the context of plagiarism

Teach citation skills

- Librarians can help teachers, professors and educate students to the proper use of the Internet.
- Librarians may be assigned the work to check proper references and match with full text in case of suspicious text.
- Librarians should work with the academic institution to curb plagiarism by incorporating instructions about it into library orientation programs.
- Librarians should also be knowledgeable about reference sources as well as familiarize themselves with standard citation and pass on this knowledge to the academics as well as the students who come to the library to do their research.
- Make available citation manuals and teaching materials in library and disseminate these largely to the library users.

Conclusion

The plagiarism seems to be a problem that academics recognize and wish to do something about and one that lends itself to a range of solutions. So, in this connection free online tools are becoming available to help identify plagiarism. Librarians explain the research process, demonstrate how and when to cite sources and we offer a detailed explanation of what constitutes plagiarism. Librarians must take initiative if we want students to view the library as a viable, user-friendly, authentic alternative to the Internet. The Web is like an arms race – a constantly escalating contest of technology." If librarians let down their guard, in the end, students will be the losers of this race.

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The Formation of Digital Libraries and Digitalization of Library Resources

P. Sree Ranjini and V. Santhaseelan

Department of Library and Information Science,
Annamalai University, Annamalai Nagar 608 002, India

Abstract

This paper discusses the new activities, methods and technology used in digitization and formation of digital libraries. It set out some key points involved and the detailed plans required in the process, offers pieces of advice and guidance for the practicing Librarians and Information scientists. Digital Libraries are being created today for diverse communities and in different fields e.g. education, science, culture, development, health, governance and so on. With the availability of several free digital Library software packages at the recent time, the creation and sharing of information through the digital library collections has become an attractive and feasible proposition for library and information professionals around the world. The paper ends with a call to integrate digitization into the plans and policies of any institution to maximize its effectiveness.

Keywords: Digital Library, Digitization.

Introduction

Digital Libraries are being created today for diverse communities and in different fields e.g. education, science, culture, development, health, governance and so on. With the availability of several free digital Library software packages at the recent time, the creation and sharing of information through the digital library collections has become an attractive and feasible proposition for library and information professionals around the world.

Library automation has helped to provide easy access to collections through the use of computerized library catalogue such as On-line Public Access Catalog (OPAC). Digital libraries differ significantly from the traditional libraries because they allow users to gain an on-line access to and work with the electronic versions of full text documents and their associated images. Many digital libraries also provide an access to other multi-media content like audio and video.

A digital library is a collection of digital documents or objects

This definition is the dominant perception of many people of today. Nevertheless, Smith defined a digital library as an organized and focused collection of digital objects, including text, images, video and audio, with the methods of access and retrieval and for the selection, creation, organization, maintenance and sharing of collection.

Though the focus of this definition is on the document collection, it stresses the fact that the digital libraries are much more than a random assembly of digital objects. They retain the several qualities of traditional libraries such as a defined community of users, focused collections, long-term availability, the possibility of selecting, organizing, preserving and sharing resources. The digital libraries are sometimes perceived as institutions, though this is not as dominant as the previous definition. The following definition given by the Digital Library Federation (DLF) brings out the essence of this perception.

Digital Libraries are organization that provide the resources, including the specialized staff to select, structure, offer intellectual access to interpret, distribute, preserve the integrity of and ensure the persistence over time of collections of digital works so that they are readily and economically available for use by a defined community or set of communities.

The point in this definition is on the digital library as a dynamic, growing organism. As digital libraries evolve and become the predominant mode of access to knowledge and learning, institutionalization of digital libraries appears to be on the increase.

Benefits of Digital Linraries

Digital libraries bring significant benefits to the users through the following features:

Improved access

Digital libraries are typically accessed through the Internet and Compact Disc-Read Only Memory (CD-ROM). They can be accessed virtually from anywhere and at anytime. They are not tied to the physical location and operating hours of traditional library.

Wider access

A digital library can meet simultaneous access requests for a document by easily creating multiple instances or copies of the requested document. It can also meet the

requirements of a larger population of users easily.

Improved information sharing

Through the appropriate metadata and information exchange protocols, the digital libraries can easily share information with other similar digital libraries and provide enhanced access to users.

Improved preservation

Since the electronic documents are not prone to physical wear and tear, their exact copies can easily be made, the digital libraries facilitate preservation of special and rare documents and artifacts by providing access to digital versions of these entities.

Functional Components of Digital Libraries

Most digital libraries share common functional components. These include:

Selection and acquisition

The typical processes covered in this component include the selection of documents to be added, the subscription of database and the digitization or conversion of documents to an appropriate digital form.

Organization

The key process involved in this component is the assignment of the metadata (bibliographic information) to each document being added to the collection.

Indexing and storage

This component carries out the indexing and storage of documents and metadata for efficient search and retrieval.

Search and Retrieval

This is the digital library interface used by the end users to browse, search, retrieve and view the contents of the digital library. It is typically presented to the users as Hyper-Text Mark-up Language (HTML) page. These mentioned components are the important characteristic of digital library, which differ it from others collections of online information.

Digitization

Witten and David defined Digitization as the process of taking traditional library materials that are in form of books and papers and converting them to the electronic form where they can be stored and manipulated by a computer. Ding, Choo Ming has elaborated the works of Getz, Line and Mckinley on the advantages of digitization. They maintained that:

- Digitization means no new buildings are required; information sharing can be enhanced and redundancy of collections reduced.
- Digitization leads to the development of Internet in digitalized based libraries. As Internet is now the preferred form of publication and dissemination.
- Digital materials can be sorted, transmitted and retrieved easily and quickly.
- Access to electronic information is cheaper than its print counterpart when all the files are stored in an electronic warehouse with compatible facilities and equipment.
- Digital texts can be linked, thus made interactive; besides, it enhances the retrieval of more information. In the light of the following advantages, it is natural today to find more information being digitized and uploaded into the Internet or Compact-Disc Read Only Memory (CD-ROM) in order to be made correspondingly accessible globally.

Need for Digitization

There are three main needs for digitization; two or all the three of them may apply to your digital library project.

- To preserve the Documents: That is to allow people to read older or unique documents without damage to the originals.
- To make the documents more accessible: This is to serve the existing users better; e.g. to allow the users to search the full text of the documents or to serve more users than envisaged in remote locations, example, more than one person at a time.
- To reuse the documents. It means to convert documents into different formats; for example to use images in a slideshow and to adopt the content for a different purpose. Digitizing documents can take a lot of time, effort and money. Smith, narrated the following reasons that should be considered before going into digitization.

Planning

Planning mainly involves identifying various tasks related to creating a digital library collection, developing strategies for handling these tasks, identifying required resources and formulating a time line for accomplishing these tasks. If there is a need to have a large digital project, you may consider conducting a feasibility study to assess the viability of the project before detailed planning. The outcome of the feasibility study could be a formal proposal for obtaining management approval or grant for the project.

- The first step in planning a digital library collection development project is to specify the need for creating the digital library collection, its purpose and target user community. You should indicate if management, the users or others have expressed this need and defined what this need is. The purpose could be improving preservation of some rare or delicate materials, improving access to and the visibility of certain material or facilitating re-use of documents. It is important to identify the target user community for a digital library collection and their profile

- There is a need to define the source material that constitutes the digital library collections and the key attributes of this source material. Examples of source material include project reports, staff publications, working papers, theses, dissertation, audio and video lectures, songs and musical scores etc. There is also the need to specify what portion of the material is to be digitized and if all the material or only a sub-set will be covered in the digital collection. Remember to assess copyright restrictions.

- Define the key features of the digital library collection you plan to build. Identify the nature of the collection e.g. static or dynamic. Indicate the type of usages you would allow the users to adhere to and the kind of service delivery they should expect from you e.g. CDROM or on-line or both. Define metadata, search and retrieval requirements.

- The important task in creating a digital library collection is the conversion of the source materials available in hardcopy into a digital format. There should be a clear cut statement about the related requirements and their processes, namely:

    i. How to convert the source material into required digital format.

    ii. What are the digitization requirements?

    iii. The workflow involved in digitizing the source material.

- Identify the resources and money required for creating and maintaining digital collections. There is a need to identify:

i. What type of information technology (IT) infrastructure is required for establishing and maintaining the digital collections?
ii. What are the personnel requirements and
iii. What are the financial requirements involve for setting up and maintaining the collection.

Implementation

Planning is followed by implementation. That is getting down to the actual steps required to set up the collection. This means that there must be a need to obtain the management approval for the plan and the required resources before proceeding with the implementation. There is a need to identify and designate a project manager to lead the implementation of the digital project. For large digital library projects, it is essential to have a full time project manager for the project period.

The Implementation of a digital library project involves the following activities.

i. Establish the project team
ii. Set up the Information Technology (IT) infrastructure
iii. Procure and install digital library software
iv. Finalize policies and specifications
v. Complete arrangement of workflow for digitization
vi. Set up the digital library collection site in case of Internet distribution
vii. Obtain copyright permissions and viii. Release the digital library collection for use.

Promotion and Provision of Services

The digital library collection created should be visible, and it should provide an easy access for users. One-way of achieving this is to include links to the collection site in the appropriate pages of the library website and other related on-line services in the organization. In addition to, or in the absence of remote on-line access to the digital collection, there is the need to explore other modes of providing access to the digital collection. These may include:

- Setting up local public access computers on the library Local Area Network.
- Provision of e-mail based services and
- CD-ROM based distribution of the collection.

Different Stages in Digitizing Documents

Cornell University Library/Research Departments, provides six stages in digitizing documents for a digital library: Registering, Scanning, Optical Character Recognition, Proofreading and formatting and producing the Final Version.

Registering

Before scanning large number of documents, there is the need to first register them and use a filing system to keep their track. If not, you risk misplacing hard copies, losing files, skipping steps in the process or duplicating work, perhaps without realizing it. There is also the risk of losing electronic versions of files because they have been misnamed or saved in the wrong subdirectory. Moreover, a good filing system is vital, so everyone in the digitizing team knows what he is supposed to do, and he can fill in for another person in case of absence.

Scanning Documents

It is necessary to clean and dust off the documents to be scanned; make sure that all the pages are present and in the right order. If the document is in poor condition, try to find a fresh copy. If it is a sheet fed scanner, cut the document open to get individual sheets to feed through the scanner. If necessary, you can rebind the documents later. If you do not want to damage the documents, you can photocopy each page and feed in the photocopy through the scanner, though this uses a lot of paper and reduces the quality of the scan. To scan a document on a flatbed scanner, place it face down on the scanner platen or put the pages into the sheet feeder. Then, in the software, choose a setting, resolution and color and scan each page of the document at the settings you have chosen.

Optical Character Recognition (OCR)

Optical Character Recognition (OCR) software converts a scanned image into a text file that a word processor can read. To do this, it must first recognize where the text is on the page. The software breaks the text blocks down into lines or into an individual character. It tries to match the image of each letter against patterns it recognizes as an a, b, etc. There is a problem to encounter with languages that use Latin scripts with accented characters. As a solution, you should use the OCR software that is specific for language.

Proof Reading

This is the act of making corrections to the document text and layout. This is done in two ways:

a Comparing the scanned text on the screen with the hardcopy and entering the corrections directly into the computer. The word processor's spellchecker will help in spelling errors quickly.

b Printing out the scanned text and comparing it with the original copy. Mark any corrections on the printout, and then enter them into the computer. This is a slower method, but may be the best option if there are no enough computers for each proofreader.

Reformatting

The Optical Character Recognition (OCR) software may produce a document that consists of straight text, no columns, no headers and footers. There is the need to reinsert these by hand or correct where they appear on the page. There may be also need to change the typeface, heading styles and so on, to make the document more attractive and readable. Alternatively, you may be able to adjust the settings of your OCR program to preserve the layout of the page.

Final Version

For many documents, there is a need to add some information to the text so that readers can identify it easily. As for a book you must make sure that the book title, the author or the editor, the publisher and the publication date are all included. As for chapter in a book, you should include the title and the author of that chapter and the original page numbers in the printed version of the book. As for the journal articles you should include the journal title, the date, the volume and the issue number, the article title and the authors and the page numbers in the original printed journal. In other words there is the need to add Metadata to describe each document.

Technology Infrastructure and Personnel

Several resources are required for the creation of digital library collections, their maintenance and provision of services. The two major resources needed are technology infrastructure and personnel.

Infrastructure

Access to a digital library collection can be provided on-line or off-line. The On-line access today typically means that the client uses a web browser on a desktop computer or laptop and access the collection by connecting to the digital library website over the Internet. The On-line access requires a connection to the Internet or to an internal network (Intranet). In Off-line access, the digital library is not accessible over a network. One way of providing an Off-line access to a digital library collection is to receive and respond to the user queries over e-mail. Another way is to distribute the digital library collection on a CD-ROM. A digital library project would typically require the following equipment: Server computer, Desktop computers, Digitization equipment, Network connectivity and other equipment. Another aspect is the software to be used in digital library. The Digital library software works with the web server in providing various digital library functionalities including creation, organization, maintenance, indexing, search and retrieval. In choosing the software, some features should be taken into consideration. These include: Support for different document types, Support for customized metadata, Collection administration, Support for standards like Dublin core metadata standard, Search and retrieval and Multi-lingual support. Several free digital library software packages are now available which could facilitate the easy creation and sharing of information through digital library collections. Examples of open source free digital library software include: Greenstone Digital Library software by New Zealand Digital Library; Academic Research in the Netherlands On-line (ARND); Tilburg University, The Netherlands; CDSware ; CERN Document server software, Geneva, Switzerland; D-space; MIT Libraries, Cambridge, MA USA. etc.

Personnel

Personnel are most important digital library's resource, not only during its initial creation and set up, but also for its operation, maintenance and provision of services. Since the access to the digital library is easy, compared to a physical library, more users are likely to access it. If the digital library does not meet the expectations of the users in terms of currency and quality of content, they will lose confidence, and it is likely for them not to visit the digital library again. It is therefore important to assign the personnel with the right skills and attitude to handle the various tasks associated with the digital library project. Broadly speaking, the personnel will be required for the following tasks:

i. Project management.

ii. Selection and preparation of source material

iii. Digitization and conversion

iv. Cataloguing and metadata assignment

v. Quality assessment

vi. System administration and maintenance of digital library server and website.

vii. System analysis/programming for digital library application/interface development

viii. Promotion and provisions of services. Moreover, the rapid changes in the digital library technologies require constant re-training and re-positioning of staff for an effective practice in technological application.

Greenstone Digital Library Software

Greenstone is a freely available suite of software for building and distributing digital library collections. It provides a new way of organizing information and publishing it on the Internet or on the CD-ROM. The Greenstone is open source software, issued under the terms of the GNU General Public License. The aim of the software is to empower the users, particularly in the Universities, Libraries and other public service institutions, to build digital libraries. The software has the following features such as multi-platform availability for windows, Linux, access and distributed through the Internet, Intranet and CD-ROM, powerful indexing from full-text and creation of indexes for various metadata, powerful search and browse, support different file formats (`html, pdf, doc rtf, ppt` etc), extensibility by allowing customization and configuration. Greenstone also allows the building of non-textual multimedia such as audio, video and pictures accompanied by textual description to allow for searching and browsing.

Conclusion

Digitization has opened up new audiences and services for libraries, and it needs to be integrated into the plans and policies of any institution to maximize its effectiveness. Digitization is a complex process with many crucial dependencies between different stages over time. Utilizing a holistic life-cycle approach for digitization initiatives will help develop sustainable and successful project. It is hoped that the approach of the issues outlined, the software mentioned in this paper and the references to more detailed source and past project will contribute to the future success of initiating digitization of library resources.

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http://www.islamiahcollege.edu.in

Digital Rights Management : An Overview

B. Srilakshmi[†], K. Sridhar[*] and R. Saravana Subbu Selvan[‡]

[†]*Department of Library and Information Science, SSS Jain College, Chennai, India*

[*]*Department of Library and Information Science, DRBCCC Hindu College, Chennai, India*

[‡]*Department of Library and Information Science, Bharathiar University, Coimbatore, India*

Abstract

This paper explains the role of DRM in libraries and also their techniques are discussed along with DRM concerns of the librarians. Since digital content can be perfectly replicated and distributed infinitely, publishers and other content originators are employing DRM and persistent protection to prevent the abuse of their intellectual property. However, locking the content and controlling operations on the content have presented interesting challenges in supporting fair use in the digital world.

Keywords: Digital Right Management, Ebook, Copyright, DRM Technique.

Introduction

With the advent of Information Technology, managing Intellectual Property Rights especially copyrights in content industries has become very difficult, and thus Digital Rights Management (DRM) is being applied in the publishing and information industries. Copyright is the foundation of the publishing industry as well as all content industries, and DRM can supplement copyright protection as well as support mutually agreed licensing arrangements. Digital Rights Management is important to creators and publishers of electronic media since it helps ensure profits for their products. By controlling the trade, protection, monitoring, and tracking of digital media, DRM helps publishers limit the illegal circulation of copyrighted works. DRM ensures that their digital content is only used by those who have paid for it and have thus gained the right. DRM represents a concept for managing and controlling the access and utilization of digital assets.

What is DRM ?

Digital rights management (DRM) is a system used by producers, publishers, and vendors to embed technological controls on what users can do with electronic files - ebooks, movies on DVDs, and other media. DRM is a collective name for technologies or a range of techniques that prevent one from using a copyrighted digital work beyond the degree to which the copyright owner (or a publisher who may not actually hold a copyright) wishes to allow one to use it. The DRM system makes use of the technology and tools to create an end-to-end secured packaging and distribution system for protected contents. The system generally includes the following steps:

- Watermarks and identifiers are used to identify the content uniquely. This identification can also be used for downstream tracing of the content to ensure an authorized use of the content.
- To ensure that only consumers with appropriate keys can access the content and to ensure that the content is unchanged throughout the process.
- To manage the encryption and decryption of the content by authorized entities in the content value chain
- It contains usage rules to decide what conditions must be met for access and how the consumer can use the resource.

DRM Techniques

DRM systems typically include the following techniques:

- Encryption
- Public / private keys
- Digital certificates
- Watermarking
- Access control
- Secure communications protocols
- Fingerprinting
- Rights specification language
- Trust infrastructure
- Hashing

Benefits of DRM

- Protection of Digital Content
- Secure eBooks distribution
- Content authenticity
- Transaction non-repudiation
- Market participant identification

Protection of Digital Content

By scrambling, or encrypting, content, DRM enables authors and publishers to send digital content across an unsecured network, like the Internet, so that the content can be read only by the intended recipients - ebook consumers. DRM uses a computer program called a cryptographic algorithm to encrypt ebook content. The cryptographic algorithm needs a secret key, a particular phrase or string of numbers, to encrypt the content. Only the holder(s) of this key can later unlock the content and read it. Since all key holders can readily access the encrypted content, it is quite important to properly manage keys, and much of DRM is concerned with this.

Secure EBook Distribution

Once eBooks content is protected via DRM encryption, the proper key is needed to decrypt the content and render it readable. Without the key, the file is unintelligible. Anyone can have access to the encrypted content, but it will be of no use without the decryption key. Long keys are better than short keys, just like a combination lock using three numbers, say ”36-27-12,” is better than one that unlocks anytime ”12” is selected on the dial. Today, 128-bit keys are in common use.

Content Authenticity

It is not very easy to modify the content of a physical book and pass it off to unsuspecting consumers as an original. In contrast, tainted eBooks content could be made to blend seamlessly with the original bits. To protect content authenticity, the content provider creates a message digest when the original, authentic eBooks content is published. This *official* message digest is then stored in a safe place, but made available to consumers who want to verify the authenticity of acquired eBooks content.

Transaction Non-repudiation

In both physical and electronic markets, it is important for participants to be able to prove that any given transaction actually took place. In practice, two mathematically related keys are used, one private and one public. The private key is owned by a transaction participant and kept secret. A participant ”signs” the transaction when he encrypts (a piece of) it with his private key. Anyone interested in verifying the authenticity of the transaction can obtain the participant's public key and attempt to decrypt the signature. If the decryption operation is successful, market participants trust that the private key holder participated in the original transaction.

Participant Identification

In the physical world, it is fairly easy to determine who the participants in a transaction are. On the Internet, of course, it is not so simple. Without much difficulty, anyone can create a web site that appears to be entirely legitimate. Most are; some are not. DRM provides the ability to identify market participants using digital certificates. A digital certificate functions much the same way as a birth certificate or a social security number. A digital certificate is created using a cryptographic technique that binds a person's identity with his or her public cryptographic key. A digital certificate is created by combining an individual's public key, other identity information and one or more digital signatures.

DRM Technology in Libraries

The DRM technology focuses on making it impossible to steal content. Libraries have adopted to deliver the documents in the softcopy rather than the physical copy. On this system of delivery, users receive a copy of a required article which is being requested by him from the source, but this system is objectionable by the publisher of the document because when a user receives a document he is free to share it with others without any limitation. To avoid these types of misuses, libraries should have to follow the DRM technologies with the following techniques:

- Many commercially licensed resources are bundled with digital rights licenses or watermarks that may be imperceptible to the libraries as well as to the end users.
- Libraries may license resources, such as images and videos, which may require a DRM system to protect the files from copying or misuse
- Digital signature or the hand-written signatures are used to regulate the access to digital content, and

- E-books in the library use DRM technology to limit copying, printing, and sharing of e-books. E-books are usually limited to a certain number of reading devices and some e-publishers prevent any copying or printing. Some commentators believe that DRM makes e-book publishing complex.

Concerns of Librarians over DRM Technologies

Eliminating the *First sale* doctrine by limiting the secondary transfer of works to others. First sale has been governing the balance of rights between consumers and sellers of information products. It is first sale that allows people to share a favorite book or CD with a friend and that creates secondary markets for works. It is first sale that allows libraries to loan lawfully acquired works to the public.

Enforcing a *Pay-per-use* model of information dissemination that, if it becomes the dominant or even sole mode of access, will be contrary to the public purposes of copyright law. It should not be the business of government to favor or enforce any particular business model in the information marketplace, particularly one that raises major issues of equity and potentially severe economic consequences for public institutions.

Enforcing time limits or other limitations of use that prevent preservation and archiving. Many market models of DRM distribution systems envision content that essentially disappears after a specific period of time or number of uses. DRM technologies can also prevent copying content into new formats. Such controls will prevent libraries, historical archives, museums, research institutions, and other cultural institutions from preserving and providing long-term access to the knowledge products of our society. From the days of the Great Library of Alexandria, society has turned to such institutions to preserve its cultural heritage and provide access to it. There is no evidence that alternative organizations currently exist or will form to play that role in the digital pay-per-use world.

Eliminating *fair use* and other exceptions in Copyright Law that underpin education, criticism, and scholarship. DRM technology can prevent normal uses of works protected by copyright law, such as printing or excising portions for quotation. For libraries and schools to serve their educational, research, and information roles, the public must be able to use works in the full range of ways envisioned by the Copyright Act in its limitations and exceptions.

Conclusion

Digital rights management system is a means of delivering content. However, DRM is frequently seen only as a technical protection measure, i.e., technical means of enabling right holders to deliver digital content in a controlled way, preventing users

from having access to the content unless they meet the requirements of the right holder, be it financial or otherwise, and preventing users from using the accessed content in ways other than the right holder has given permission for. Libraries are already involved in the clearance and management of rights. A property managed introduction of DRM systems in its widest sense, could assist libraries in managing their services.

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Tool for Web enabled Service and Library Portal

R. Saravana Subbu Selvan[†], K. Sridhar[*] and B. Srilakshmi[‡]

[†]*Department of Library and Information Science, Bharathiar University, Coimbatore, India*

[*]*Department of Library and Information Science, DRBCCC Hindu College, Chennai, India*

[‡]*Department of Library and Information Science, SSS Jain College, Chennai, India*

Abstract

In the modern digital information environment, a well-defined mechanism is needed to organize, store, and access information. A library portal is highly beneficial for this as well as for web-enabled information services. Most of the libraries are adding e-resources to their collection. The utility of these e-resources will be limited in the absence of a functional website that facilitates the users to exploit these to the maximum extent. Web portals are the tools that enhance access to the e-resources by providing visibility to these. This paper highlights the role of a library portal for various user services. An attempt has been made to explain the portal of Technical Information Resource Centre of Naval Physical and Oceanographic Laboratory of Define Research and Development Organization and the services provided through this portal.

Keywords: Digital library, library portal, knowledge management, Library Systems, E-resources.

Introduction

A library portal serves as an integrated interface to a wide variety of digital resources and web-based library services. Web portals are also important tools for users to access and utilize library and information services over a network. An informative home page provides the users helpful information about the library, its collection, and services. In addition, library portals also host links to important internet resources useful for the parent organization.

The dynamic linking capability of the web has provided users unrestricted access to information and to librarians an effective method to organize the contents. It has thus become mandatory for libraries to develop their portals to provide users access to their resources.

Library Portal

A portal is a single-user interface for accessing wide variety of electronic resources, both within and outside the library. The importance of any web portal lies in the currency of information provided its ability to locate information of high relevance, and provision of a powerful search engine with instant access to full text. The portal technology has enabled librarians to shift to a more proactive, user-centered, and service-oriented model of library. Web page of a library is not only excellent medium for publicizing the library activities, but also a mechanism for accessing its resources and services.

Users need a ready database of documents (or catalogue) that they can access remotely; so that search and retrieval time is reduced The library portal should provide details mainly in three areas, viz., about library, its collection, and services. The users need a platform to communicate with the librarians to suggest or reserve a document from their workplace rather than coming to the library. Library portals are the websites which solve this problem by providing access to all relevant e-resources at one point.

Designing a Good Web Page and Website Positioning

Good web pages incorporate basic principles of good design, organization, and writing. Website positioning, searching, and also the provision of help features are the three factors to be considered for good designing. Library website positioning ensures direct and obvious links from the institution's main homepage to the library homepage. Subsequently, the library home page immediate links users to relevant and subject-specific contents. The library homepage also limits the number of mouse clicks a user needs to get to full-text access. Depending on the size of organization and structure of library, three or four clicks are ideal between the institution's homepage and full text access.

Library Website Searching and Help Features

Library website searching allows searches on metadata or keywords associated with the journals. It offers options for restricting a search, and specially includes drop-down menus. It also offers comprehensive searchable lists of online resources and providers an A-Z and subject-area list. Library website help features include a list of library staff with their telephone numbers and e-mail addresses; provides well-structured frequently asked questions and step-by-step guides as part of website; incorporates subject specific help features; and provides appropriate guides for all levels of users.

Portal Contents

A library portal can be made up of three types of contents, information about the library-staff directory, floor plan, library rules, etc.; electronic versions of the traditional library services: Alert services, electronic SDI, virtual reference service, online document delivery service, request for purchases, etc.; and access to library content: Online catalogue, full-text e-journals, e-books and other e-documents, institutional repositories, free accessible internet resources, etc.

Web-enabled Library Services

With the explosive growth of web today, libraries in their old concepts are no more in existence. These have to adopt new technologies and should provide web-enabled services. Following are a series of services that libraries can provide using their portal:

- Connection to the users with the best materials and services
- Convenient, fast and personalized services accessible to all
- Traditional OPAC service to be convert to web OPAC
- Access to full-text resources from remote places
- Access to subject gateways of different topics relevant to the parent organization
- Facility to users to suggest reserve the documents from their desktop
- Posting of overdue details
- Provision of alert services like new additions, conference, etc.
- Digital reference service by means of ’virtual reference desk’ or *ask a librarian*
- Online inter-library loan service
- Electronic SDI services
- Web-based user education/virtual library tours
- Integrated push-based services.

To meet the changing needs and expectations of users, libraries can improve the efficiency and effectiveness of their services and propagate their services and facilities to the users.

TIRC Portal of NPOL

Technical Information Resource Centre (TIRC) portal of NPOL is a hyperlink-based portal application. TIRC is a special library that is providing information service to scientists, technical officers, and staff of the Laboratory as per their information needs. The portal provides full-text databases, online journals, e-books, web OPAC, and knowledge repository of the NPOL.

Home Page of TIRC Portal

Library users can access all resources from their work place using desktops. Links have also been provided to intranet and e-mail and digital library facility of NPOL. Comprises a main menu linked to the following services.

- Digital library
- e-journals
- Databases
- Knowledge acquisition and management
- Course materials on Continuing Education Programmed (CEPs)
- Conference alerts
- Photo gallery
- Sea Tech-A technical in-house journal of NPOL
- NPOL and you NPOL is subscribing to many online journals.

Portal has provision for accessing these by the link *e-journal.* Details on international as well as national conferences have also been provided on the subjects of interest to NPOL staff.

Conclusion

In this dot corn era, to fulfill the ever increasing requirements of users in a most efficient manner, there is a need for every library to provide its services and collection through an easy interface by developing a library portal. In the case of DRDO laboratories the library to be connected over a network likes DRONA (DRDO's Rapid Online Network Access) so that each laboratory has access to entire DRDO's library resources. Through this effort, libraries will be able to save manpower, money and materials. Besides, resource sharing can be done without any time delay.

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Beyond the Paper Paradigm: Impact of Cloud Computing in Digital Libraries

Muthalagi[†] and A. Sirajdeen[*]

[†]*Sri Lakshmi College of Arts and Science, Kallakurichi, Tamil Nadu, India*

[*]*Department of Computer Science, Sri Lakshmi College of Arts and Science, Kallakurichi, Tamil Nadu, India*

Abstract

Cloud computing is a new technology model for IT services which many businesses and organizations are adopting. It allows them to avoid locally hosting multiple servers and equipment and constantly dealing with hardware failure, software installs, upgrades and compatibility issues. For many organism nations, cloud computing can simplify processes and save time and money. This article defines cloud computing and shows how it is different from other types of computing. It also discusses how cloud computing solutions could be beneficial to libraries in three basic areas, technology, data and community.

Keywords: Cloud Computing.

Introduction

Cloud computing can transform the way systems are built and services delivered, providing libraries with an opportunity to extend their impact Cloud computing has become a major topic of discussion and debate for any business or organization which relies on technology. Anyone connected to the Internet is probably using some type of cloud computing on a regular basis. Whether they are using Google's Gmail, organizing photos on Flicker or searching the Web with Bing they are engaged in cloud computing. As Geoffrey Moore points out, the interesting thing about cloud computing is it did not start as a technology for the business enterprise, but was driven by the public with services like Face book and Flicker Over the last few years businesses have started to see the value of cloud computing causing it to become a major technology solution for businesses and organizations around the world. Looking across the information and broader technology landscape, it is not difficult to find success stories of switching to cloud computing, disaster stories, and a great deal of debate about what cloud computing is, or isn't. The purpose of this article is to look specifically at how cloud computing can be employed by libraries and what needs to be considered before moving into a cloud computing solution.

How is Cloud Computing Different ?

For much of the past 25 years, software development and system engineering has centered primarily on the personal computer. The PC era was characterized by monolithic, proprietary operating systems and programs that had long development times and release cycles. In that environment, the design of software was isolated and all attention focused on a single application. With cloud computing, hardware and functionality traditionally installed and run in a local environment is now performed on the network, in the Internet cloud. In essence, the Internet cloud becomes the development platform and the operating system to which programmers write reusable, constantly updated software components that are delivered over the network and that can be embedded or loosely coupled with other Web applications. Libraries have been using some cloud computing services for over a decade. Online databases are accessed as cloud applications. Large union catalogs can also be defined as cloud applications. However, a look outside libraries is warranted to better understand the value proposition of cloud computing.

What can Cloud Computing Solutions do for Libraries ?

So turning to cloud computing and libraries, are their real problems that can be solved? The answer is yes. The library community can apply the concept of cloud computing to amplify the power of cooperation and to build a significant, unified presence on the Web. This approach to computing can help libraries save time and money while simplifying work flows. A brief list of potential areas of improvement could include:

1. Most library computer systems are built on pre-Web technology.
2. Systems distributed across the Net using pre-Web technology are harder and more costly to integrate.
3. Libraries store and maintain much of the same data hundreds and thousands of times.
4. With library data scatter across distributed systems the library's Web presence is weakened.
5. With libraries running independent systems collaboration between libraries is made difficult and expensive.
6. Information seekers work in common Web environments and distributed systems make it difficult to get the library into their work flow.
7. Many systems are only used to 10% of their capacity.

Combining systems into a cloud environment reduces the carbon footprints, making libraries greener.

These improvements can be grouped into three basic areas: technology, data and community. Each offers some general and some unique opportunities for libraries. Looking first at the technology that most current library systems employ several benefits of cloud computing solutions surface.

Technology Improvements

Cloud computing solutions at their essence are built on current technology and should be architected to allow for technology shifts. Looking at the explosion of mobile devices one sees how businesses and organizations operating in a cloud environment are able to adapt and deliver their services to the new devices much more quickly and less expensively. The mainstay of libraries is the library management system (LMS, also known as the integrated library system or ILS). Library management systems were developed before the Internet and Web existed and are generally closed proprietary systems. It has been difficult and costly for these closed systems to take advantage of new technologies as they emerge. It is also challenging to integrate to external systems and libraries must rely on their vendors to do any such integration.

Over time libraries have needed to add more systems to manage their changing collections which moved from strictly physical collection management to a combination of physical, licensed and digital collections. Since each of the se systems has stood alone integrating them has been difficult and at times not possible. What can change in a cloud environment for managing core library services? First would be the possibility of open service oriented architecture. Many cloud solutions offer this type of openness with published application program interfaces (APIs) that any programmer can take advantage of. This means if a new service or technology emerges libraries will not always be dependent on a vendor or other third party to start taking advantage of these services and technologies. Existing library systems have used APIs to connect to external services but they have remained closed proprietary systems making it hard to integrate them into external services. As Andrew Pace stated it, "... demands fall short by merely asking that local systems avail themselves of other Web services rather than establishing themselves as services in their own right."When library systems are deployed as open cloud solutions then the library community itself can step up to create extensions to their core services and more importantly share them throughout the community using cloud solutions. This makes it possible to integrate two services once and re-use it across the community. Secondly libraries can get out of the business of technology and focus on collection building, patron services and innovation. Servers can be decommissioned and no longer require replacement every five years (or less). Staff no longer has to maintain the complex software stack necessary to run local systems and

worry about compatibility of the stack during upgrades. Instead technical skills can be re-deployed for extending cloud services into their environment and their environment into other cloud services.

Data Efficiencies

When data is stored in the cloud it offers several advantages. Common data can now be easily shared among services and users. The need for local storage, maintenance and backups is removed. Agreements can be forged to share data that normally would be considered private to a single business or organization. And finally libraries can achieve Web scale when they massively aggregate data and users, something a cloud environment makes possible. Like the advantages of technology deployed and accessed as cloud solutions, data storage in the cloud brings many benefits for libraries. The easy one to recognize is the same data being stored hundreds and thousands of times across libraries. Consider how many copies of the cataloging data there are for a serial publication such as the Economist. And if a change is needed to the cataloging data to keep it current each library must perform that change. When this data is maintained in the cloud, maintenance and backup of this data is now done once and if a change is needed, once one library performs the change all share it. Another great benefit of data stored in the cloud i s the opportunity for collaboration and cooperative intelligence. Libraries can agree to share pools of data for cooperative collection building, cooperative preservation or digitization, cooperative sharing of materials, etc. And with massively aggregated data new services can be created such as recommender services based on a broad base of usage data.

As stated above when library data is widely distributed across systems it makes library Web presence weak. When search engines such as Google, Yahoo and Bing can harvest from large data stores it opens the opportunity for the collective to work on search engine optimization, or the improvement of library collections appearing more relevant to search engines thus displayed higher in search results. This is a complex and ever changing task that would be prohibitive for individual libraries to accomplish. Further, aggregated data can attract a much larger aggregation of users who interact with the data, add to it and re-use it. The result is every user adds benefit for every other user

Community Power

Libraries have a somewhat unique opportunity with cloud computing, to create an online information community network. Such a community is really two communities, the internal community of libraries collaborating within a single institution and across institutions and the external community of libraries and information seekers. The

value to libraries is the ”network effect” that coming together in the cloud provides. The cooperative efforts of libraries will create scale savings and efficiencies, bring wider recognition for libraries, and provide cooperative intelligence for better decision-making, and provide the platform on which libraries can innovate. Looking externally the first community cloud computing offers is taking advantage of social media. Businesses and organizations can both build social communities around their services and participate in existing social communities such as Face book or Twitter.

The internal community formed through the cloud offers new possibilities and efficiencies for current work flows. Starting with a single organization the simple task of collaboratively working on documents and maintaining version control either requires extensive manual processes between colleagues or a locally installed system to assist in collaboration and version control. Many librarians have discovered the power of services like Google Docs to reduce the effort of working jointly. Services like these allow them to easily share ongoing work whenever they want and wherever they are. The potential for collaboration between libraries is truly revolutionary in a cloud environment. When data and functions are shared in the cloud libraries can make joint decisions on collection development, preservation, digitization, in real time. As demonstrated by OCLC’s Question Point virtual reference service and it’s 24/7 cooperative single libraries ability to assist patron’s is expanded beyond the constraint of its own walls and hours of operation to become a true cloud service (last year Question Point logged its five millionth answer to a reference question)

Beyond Library Discovery Services

It is here that libraries can look to gain new efficiencies both internally and among the entire library community. When library software suppliers create the user personas that will use their software the focus is generally on external personas but there are also many internal personas that need to take advantage of new technologies and Web capabilities. One such example has been given with reference librarians now able to both better assist their patrons online but also to build a large network of librarians globally who can answer specific questions and be available 24/7. What other personas in the library can benefit from cloud solutions?

- Acquisitions librarians managing increasingly diverse collections
- Cataloging librarians seeking to describe an ever increasing body of information and information sources the library is managing
- Serials librarians working to maintain control and access to collections spidery across the Web

- Electronic resource librarians managing burgeoning collections, and ever-changing lists of vendors The dramatic change in library collections often burns the lines between traditional job roles in libraries. An acquisitions librarian probably also needs to manage licenses for electronic materials as well as manage purchasing for multiple formats, often for the same item. They need to access information from suppliers, reviewers, local constituency and other staff in a unified manner. This begs for an open system deployed where it can easily be accessed by external systems and pull in data and services in from those same systems.

Cloud computing solutions can create the new workflows needed by librarians because it offers the opportunity for a cooperative platform for libraries to build on. There are four key principles of a cooperative platform:

- Openness, meaning that services and data are made available to support greater interoperability, not only within and between cloud services, but also with library-developed and third-party applications;
- Extensibility, meaning that the platform can easily accommodate the addition of new services and applications, developed either by the service provider or by members of the community;
- Data richness, meaning that a library can interact with and expose a wide variety of information about purchased, licensed, and digital content through this platform; and
- Collaboration, meaning that libraries can harness the collective power of the community of libraries to innovate and share solutions. And it is precisely this that the business world and social media have demonstrated can be done with cloud computing solutions. Through cooperative and community building libraries can have the same possibilities.

Caveat Emptor

However, if libraries are to consider moving more of their services into the cloud there are certain questions that must be addressed. Foremost is whether this service will make the library more efficient and help it offer better service to its constituency. It goes without saying that adopting technology for technologies sake is not a good management decision. Once it is determined a cloud solution does accomplish this for the library then considerations to look at are:

Does the service have built-in scalability, reliability and security?

- Is it multi-tenancy ?

- Who owns the data stored in the system and what rights does the library have to extract their data for other uses or even to leave the service entirely?
- Is it an open system so that external data and services can be economically integrated into this service and its services can be economically integrated to external services? In discussions of cloud computing security and privacy are raised as serious concerns throughout the literature and especially by librarians. When considering a cloud application two aspects of security and especially privacy must be examined, technical and legal. Does the provider demonstrate the necessary technical expertise and explanation of their environment to insure there will be no unauthorized access to a library's data stored in the cloud? And have they considered the legal requirements of the government bodies the library is answerable to? This means it is also important to know exactly where the data is going to be stored since different countries have much different privacy requirements and standards. And since many cloud solutions are actually running on another suppliers cloud infrastructure due diligence is required. First to be certain where data is stored and secondly what the service level agreements for access to the data and preservation of the data are for the actual infrastructure supplier. Regardless, one important take-away remains-data privacy and security are not mutually exclusive to cloud based solutions.

Multi-tenancy is critical for scalability of any cloud service. *Multi-tenancy refers to a principle in software architecture where a single instance of the software runs on a server, serving multiple client organizations (tenants). Multi-tenancy is contrasted with a multi-instance architecture where separate software instances (or hardware systems) are set up for different organizations. With a multi-tenant architecture, a software application is designed to virtually partition its data and configuration thus each client organization works with a customized virtual application instance.* This is the architecture that makes cloud solutions highly scalable thus must be considered when adopting a cloud service.

Data ownership cannot be over stressed. The library must know it has complete access to all their data while using the service so they can take it and re-use it as necessary, whether in another service or simply for reporting purposes. Just as important they must be certain they can extract all of their data at any point in the future should they decide to leave the service. It is also important to know what provisions are in place for data access should the supplier go out of business.

Finally a library must know that the service is truly an open, service oriented architecture which can truly change the future of libraries. This allows libraries to shift the use of internal technical expertise from maintaining software and servers towards innovative uses of cloud services in their local environment.

Conclusion Libraries have the opportunity to improve their services and relevance in today's information society. Cloud computing is one avenue for this move into the future. It can bring several benefits for libraries and give them a different future. The cooperative effect of libraries using the same, shared hardware, services and data-rather than hosting hardware and software on behalf of individual libraries-can result in lowering the total costs of managing library collections and enhancing the both library user's experience and library staff work flows.

While local library systems served an important purpose earlier in library automation they now represent a tremendous duplication of effort. Each library builds and maintains a database, buys equipment and installs and updates the software. In fact, some libraries can get stuck in perpetual upgrade mode, which involves lots of testing and retesting and time-consuming customization.

With cloud computing, all of this is taken care of transparently for the library and user. Among the benefits of a cloud computing approach:

- Take advantage of current and rapidly emerging tech neology to fully participate in the Web's information landscape
- Increased visibility and accessibility of collections.
- Reduced duplication of effort from networked technical services and collection management.
- Streamlined workflows, optimized to fully benefit from network participation oCooperative intelligence and improved service levels enabled by the large-scale aggregation of usage data.
- Make libraries greener by sharing computing power thus reducing carbon footprints The vision is to use cloud computing to deliver library resources, services and expertise at the point of need, within user workflows and in a manner that users want and understand. It should free libraries from managing technology so they can focus on collection building, improved services and innovation. The cloud computing model will encourage libraries and their users to participate in a network and community of libraries by enabling them to reuse information and socialize around information. It can also create a powerful, unified presence for libraries on the Web and give users a local, group and global reach.

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Changing Role of Librarians in Digital Library Era and Need of Professional skills, Efficiency and Competency

Meenu Kumari

Department of Library and Information Science,
T. R. College of Education, Sonipat, India
e-mail : meenumalik111@yahoo.com

Abstract

The emergence of a vast storehouse of information on the Internet poses a different kind of conundrum Librarians, the traditional gatekeepers of knowledge are in danger of being bypassed, their skills are ignored, their advice unsought. Search engines send user straight to the information they require - or so users may think - without any need for an intermediary to classify, catalogue, cross-reference, advice on sources.

Keywords: Digital Library.

Introduction

The location and provision of information services has dramatically changed over the last ten years. There is no need to leave the home or office to locate and access information now readily available on-line via digital gateways furnished by a wide variety of information providers (e.g. libraries, electronic, publisher, businesses, organisations, individuals). Information is electronically accessible from a wide variety of globally distributed information repositories.

Information is no longer simply text and pictures. It is electronically in a wide variety of formats, many of which are large, complex (i.e. video & audio) and often integrated (i.e. multimedia).

Traditional Library

Libraries are where the access points such as, library catalogues as well as library collections are print based and their management is by and large manual.

Traditional libraries are brick-and-mortar buildings containing a mixture of print and online resources. Usually, customers are required to physically visit the library to

receive services and use resources. Use of print materials and interaction with staff is limited to the library's hours of operation. In addition to offering users a variety of print resources, many traditional libraries allow customers access to e-books, tablets, online library catalogs, and electronic databases.

Automated Library

A library where access points and house keeping operations are computerized is called an automated library. The graphic records are still print-on-paper publication.

Automated Library System

Software of the automated library system operates using modules such as: acquisitions, cataloging, circulation and serials.

Electronic Library - Digital Library

The access point as well as the graphic records are in electronic/digital form when these electronic/digital libraries are connected via various networks, particularly the INTERNET, this is called virtual library.

Digital library is not only digitization of physical resources, but also thoughtful organization of electronic collection for better access. Such organization provides coherence to a massive amount of shared knowledge base. While the method of access provides convenient information retrieval for a wide range of global user. Essentially a digital library deals with organization and access of a large information repository. In all probability, digital libraries are likely to augment traditional libraries, such as an on-line card catalogue augments, rather than strictly replacing, a book collection. The reason for this could be than the digital medium tends to be better for searching, and the physical medium better for reading. Lets us know about digital library and the skills required to build up digital collection

Definition

According to Wiederhold *A digital library is popularly viewed as an electronic version of a library where storage is in digital form, allowing direct communication to obtain material and copying it from a master version.*

Digital Library is a combined technology and information resources to allow remote

access, breaking down the physical barrier between resources.

Winensky viewed that *the digital library will be a collection of distributed information services, producers will make it available, and consumers will find it through the automated agents*.

Digital Library is a *Collection of digital object (text, video, audio) alongwith method for access and retrieval, [as far as users are concerned] and also for selection, organization, and maintenance (from the point of view of librarian).* Ian Whitten.

The digital library is not merely equivalent to a digitized collection with information management tools. It is also a series of activities that brings together collections, services and people in support of the full life cycle of creation, dissemination, use and presentation of date, information and knowledge.

Advantage of Digital Library

Digital library has certain characteristics, which make them different from traditional library. It has expansive and accurate system of searching with large volumes of text, image and audio-video resources. Digital libraries do not need physical space to build collection and it can be accessed from anywhere, any time. Different people can access same source at the same time. The advantages of digital libraries are mentioned herein below:

- Preserve the valuable documents, rare and special collections of libraries, archives and museums.
- Provide faster access to the holding of libraries world wide through automated catalogues.
- Help to locate both physical and digitized versions of scholarly articles and books through single interface.
- Search optimization, simultaneous searches of the Internet make possible, preparing commercial databases and library collections.
- Offering online learning environment.
- Making short the chain from author to user.
- Save preparation/ conservation cost, space and money.
- Digital technology affords multiple, simultaneous user from a single original which are not possible for materials stored in any other forms

Disadvantage of Digital Library

New technology has brought many advantages but simultaneously it also has certain disadvantage

- Costly affair
- Technology obsolescence (Hardware & Software)
- Storage media relate
- Dominance of data creators and publishers
- Trained manpower
- User education and training
- Security against hacking & sabotage

Types of Resources

The resources provided by the digital libraries can be classified into in-house resources and external resources. In-house resources are those resources that are stored in the web server locally and made accessible through the network. E-books, course notes, and application notes etc. are examples of the in-house resources.

The external resources are those materials that are not stored in the web server. External resources includes online journals, online detabases, online e-books etc. External resources are provided by different publishers - ASME, ACM, IEEE, Oxford University Press Journal (OUP) and many more are there. The publisher provides access to their full text materials by two methods:

(i) Username and password

(ii) Internet Protocol (IP) address based Access Control Method

Changing Role of Library Professional in Digital Age

The ready availability of information on the Internet, and its widespread use, really presents Librarians with an opportunity, not a threat. Technology Savvy users realize they need help, which Librarians can provide. Librarians now face difficulties and complicity challenges due to new trends in information access.

In the present technological/Internet era the professionals have to change themselves as the information profession is being changed. Now information specialists have to work as e-information resources in which various professional groups are expected to map strategies that leads to produce, manage, maintain and service the information. Information professional has to work as:

Librarian: In addition to being library manager, they also act as collection development, technical processors and so on, taking care of information quality.

Information Manager: To meet information need of the user they should know how to manage and deliver appropriate information services.

Information Adviser / Instructor: Ensure that user/staff know how to access relevant sources of information (literacy).

System & Networking: For delivery of information to their users in an appropriate manner develop and design appropriate systems.

Skills, knowledge, competencies required for LIS Professionals

The basic goal of library and information profession has always been to provide access to information to those who need it. The activities realizing this goal have evolved and transformed over the years. This includes - Available technology, and need of an evolving information society. Information activities have been guided by the developments in the field of storages, presentation and archiving of knowledge, collection development and organization of knowledge, information explosion and computers in information retrieval. Librarian and information professional involved in information gathering, storage, retrieval and dissemination on one hand and on the other hand the computer specialists who supports the library and informational professionals in this endeavor. For successful implementation of Digital Library, it is essential that LIS professionals are well trained and possess requisite knowledge and skills in this respect.

(I) - Knowledge & Skills

Librarians need to know understand

- Knowledge resources (books, journals, i.e. resources, Internet)
- Teleological facilities and resources (computer, online catalogues, websites, LANs file servers etc.)

- Financial resources (Budget) Human resources (Skills for manpower training)

(II) - Competencies that required to possess in LIS professional

- Acceptance of change.
- Knowledge of user interaction with knowledge resources.
- Provide quality service.
- Be adoptive, flexible and resistant.
- Be resourceful
- Posses excellent communication skills, constantly update personal knowledge base by keeping in touch with the latest development
- Create awareness among the users, make them accept the changes
- Be an information management strategist, etc.

(III)- Technical Knowledge required

- Operating systems - Windows, UNIX, LINUX.
- World processing, Graphics, Spread sheet & Presentations.
- Database Management Systems including the skills in Bibliographic Database Management Systems.
- General purpose programming, Networking
- Web page Development and Content Management
- Information Retrieval software for online, CD-ROM and Internet.
- Library software packages, acquaintances with Digital Library Tools.

Conclusion

The world of information is undergoing rapid change. An information age at a great turning point in the history of civilization. The day has arrived when it is most important to learn to access, analyze apply and evaluate such information. As traditional custodians of information, librarians need to be aware of the implications of these

changes and develop technological and managerial skills, which will enable them to make effective use of information and to meet their organizations changing information need.

Development of information technology is playing a crucial role in restructuring of the libraries. Shift from human dependent operations to machine dependency, mechanization (data processing) to knowledge processing, stand alone system to network computing, local LAN to wireless access protocol systems. Document centered information to user (Access) centered information; print media to electronic (Access) media, data capture methods, human to machine oriented. Library automating (in-house) to web-enabled services (WAN Access), Online information retrieval to CD-ROM Databases to Internet. These prolonged shift in application of innovative IT to library and information profession can be attributed to the changes emanated in the last 2 decades.

The role of librarian has changed in the digital library era. It is, therefore pertinent on the part of the librarian to acquire new skills required for developing and managing the digital libraries. The library and information professionals are required to acquire such knowledge and skills as the library is one of the highly IT influenced service profession. The empowerment of library and information professionals with IT skills is aimed at providing services that are expected of from the clientele in the new environment.

Digital age has brought a tremendous change in the way information is stored and accessed. This has brought about a change in the concept of librarian, their collection and services. Many new terms viz. Digital Librarian, Libraries without walls, virtual libraries, are emerging to describe the libraries of digital age.

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http://www.islamiahcollege.edu.in

Proficiency and Pattern of Research Work

S. Z. Shabana Tabusum[†], A. Saleem[*] and M. Sadik Batcha[‡]

[†]*Department of Library and Information Science,*
MEASI Institute of Management, Chennai, India
e-mail : Shaba_lib@yahoo.com

[*]*Department of Library and Information Science,*
AMS Group of Educational Institutions, Chennai, India
e-mail : dr.saleem_lis@yahoo.com

[‡]*Department of Library and Information Science,*
Periyar University, Salem, India
e-mail : msbau@rediffmail.com

Abstract

A Research Design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy procedure. Research Design is needed because it facilitates the smooth sailing of the various research operations. Tools for data collection method, to give the result and testing hypothesis, my paper deals with the steps involve in Research Design, Need of Research Design, and Characteristic of Research Design, Features of Research Design, and the tools and techniques of data collection method. Report writing is a presentation of facts and findings. After collecting and analyzing the data, the researcher has to accomplish the task drawing Interference followed by report writing. This has do very carefully, otherwise misleading conclusion may be drown and the whole purpose of doing research may be violated. In this paper I had clearly sketch the outline of report writing from title to end page and also our sample of title page.

Keywords: Research Design, Tools and Techniques, Tools Data Collection. Report Writing.

Introduction

Research design essentially refers to the plan or strategy of shaping the research, *design deals primarily with aim, purposes, intentions and plans within the practical constraints of location, time, money and availability of staff.* Data Collection: Collection of data constitutes the first step in a statistical investigation. Utmost care

must be exercised in collecting data as because they form the foundation of statistical method. If data are faulty, the conclusion drawn can never be reliable. A report writing is a presentation of facts and finding, usually as a basis for recommendations, written for a specific readership, and probably intended to be kept as a record. When some people write a report that they do, write But the really successful writers only spend part of that time doing this, and then only towards the end, before that they are planning their report - thinking about this purpose, and who is going to reedit; deciding what to put in it, and fitting it into shape and even when they are finally writing it, they will probably spend just as much as time thinking above how best to present their ideas, as actually putting them onto them onto paper.

What is Research Work ?

The goal of research is to improve the level of living in society. The word research carries an atmosphere of respect. As every object has got its own pros and cons, so does research. But the advantages of research have out numbered the disadvantages of research and it has a place of its own in the field of study. In an academic environment, research activity is fivefold i.e. Master Dissertation; MPhil Dissertation; PhD Thesis; DLitt Thesis; and Assigned Research Project. A Masters dissertation in general does not contribute to the original knowledge that is novel and unique, and takes a forward step in a particular branch of human knowledge.

It is a research work that makes one experienced with a series of high level education, intellectual and ethical issues, whereby the person doing the work demonstrates his/her mastery of the skills of data collection, handling, analysis, synthesis, evaluation, argumentation to a specific topic to arrive at some conclusion, that is in turn recorded with the honesty of writing, which enlarges or modifies the earlier concept on the topicIn Master of Philosophy, stress is much given to the subject of research rather than on theoretical research methodologies and the researcher has the full freedom to choose his/her topic of interest. Though at Master of Philosophy, the research demands authoritativeness, it is also not able to contribute to the original knowledge base.

The Master Dissertation and M.Phil. Dissertation does not belong to pure research work. Besides the above points, it can also be justified from another point of view. In both cases, the examiner of the research work gives a percentage or score during evaluation processes to the students based upon their level of doing pure research in future. But in case of original research work, only two options are left in the hands of the examiners, either he / she have to accept or reject the work, there are no steps in between the two i.e the evaluation of the research work should lead to either 100% or null. Doctor of Philosophy involves pure individual research where the researcher is assumed to be

the world expert on his / her particular topic. So offering PhD assumes precondition that the researcher promotes the subject into a new dimension by promoting its greater understanding, producing significant new information or by way of formulating new theories. Doctor of Literature is just like the Doctor of Philosophy but with more commitment to the areas of research with in depth study. The research projects are different from that of academic research degree in regards to different scale of time, resources and extent, pioneering qualities and rigor. Research project actually involves a group work on a pre-assigned topic by the funding agency; it has wide scope in regards to the greater resource availability.

Research - Definition

Research is composed of two words ”re” and ”search”, which means to search again or it is a careful investigation to understand or re-examine the facts or to search for new facts or to modify older ones in any branch of knowledge. The term research is also used to describe an entire collection of information about a particular subject, but it is in general used by the students of higher schools. Research in common parlance refers to search for knowledge; one can also define research as a scientific and systematic search for pertinent information on as specific topic. Some people consider research as a movement, a movement from the unknown to known. It is actually a voyage of discovery. Thus research is an endeavor to discover, develop and verify knowledge. P. M. Cook attributes the research taking the clue from each initial alphabets of the word RESEARCH.

R =Rational way of thinking;

E = Expert and exhaustive treatment;

S = Search for solution;

E = Exactness;

A = Analysis;

R = Relationship of facts;

C = Critical observation, Careful recording; Constructive attributes, and Condensed generalization;

H= Honesty and hard working.

The Webster International Dictionary defines research as *a careful critical enquiry or examination in seeking facts for principles, diligent investigation in order to ascertain something*. The Advanced Learner’s Dictionary of Current English lays down the

meaning of research as *a careful investigation or inquiry specially through search for new facts in any branch of knowledge*. J. W. Best opined that research is not only specifically problem solving but is also closely associated with verification of truth underlying the observed data. Thus research is an intellectual act that begins with the asking of questions and progress through the critical examination of evidence that is both relevant and reliable to the reevaluation of the truth that is generalization and universal.

Need of Research Work

The need of research is felt due to the following:

- To discover the truth, which is hidden and which has not been discovered as yet;
- To discover the solution of a problem;
- To expand the scope of theoretical knowledge;
- To discover the new application for old knowledge;
- To understand, analyze and explore the phenomena;
- To know the cause effect relationship;
- To improve the level of living in society;
- For professional and intellectual development of the researcher by gaining knowledge;
- To obtain prestige and respect by a person or by the institution;
- To obtain a research degree;

As a means of livelihood by way of obtaining the source of finance.

Characteristic of Research Work

Some of the characteristics of research are:

- Research originates with a question or problem;
- Research requires a clear articulation of a goal;
- Research is guided by the specific research problem, question, or hypothesis or critical assumption;

- Research follows a specific plan of procedure;
- Research requires the collection and interpretation of data in attempting to resolve the problem that initiated the research;
- Research is, by its nature, cyclical; or more exactly, helical.

Mere information gathering, transportation of facts from one location to another, looking through for information does not lead to research. It is not a catchword used to get attention.

Research Design

Research design essentially refers to the plan or strategy of shaping the research, or as Hakim (1987) puts it *design deals primarily with aim, purposes, intentions and plans within the practical constraints of location, time, money and availability of staff.*

According to Scltiz, Jahoda, Deutsch, and Cook *a research design is an arrangement of the essential condition for collection and analysis of data in a form that aims to combine relevance to research purpose with economy in the procedure.*

Such man has pointed out that *a research design is not a highly specific plan to be followed without deviation, but rather a series of guide posts to keep one handed in the right direction.* Decision regarding what, where, when, how much by what means concerning an enquiry or a research study constitute a research design. So a research design or a plan is a tentative outline of the proposed research work. The plan is not a very specific one. It is simply a set of guideline to keep the scholar on the right track.

Need of Research Design

The need of research design are:

- It may result in the desired type of study with useful conclusion;
- It reduces inaccuracy;
- Helps to get optimum efficiency and reliability;
- Minimize wastage of time;
- Minimize uncertainty confusion and practical haphazard associated with any research problem;
- It is a guide post for giving research a right direction.

Characteristic of Research Resign

Some of the characteristics of research design are:

- Regularity: State character or fact of being regular.
- Verifiability: To ascertain text, the truth or accuracy of anything opens for verification.
- Universality: A state or quality of being universal or general.
- Predictability: To predict or tell before with moderate accuracy.
- Objectivity: Not subjective or unbiased.
- Systematization: In a coherent or orderly manner.

Components of Research Resign

A practical research design has the following steps, however these are not independent but rather they are interdependent and overlapping in a sense:

- Title of the Study: The title or name o topic of research should be brief. In order to sharpen the focus if necessary a subtitle may be added to the main title.
- Stating Problem: Stating the problem which surrounds the specific problem will provide a focus on the chosen topic for research.
- Review of Literature: A review of the literature should be made. Area and Scope of Study: The area and scope of the study should be stated.
- Objectives of the Study: The objective of the study should be clearly mentioned. Formulation of Hypothesis: Though it is not mandatory a few hypothesis should be taken.
- Definition of Concept and Terminology: The concept and terminologies likely to be used in the research should be clearly defined.
- Methodology: There are several methods of investigation and collection of materials. A researcher is free to adopt one or several method.
- Determining Tools of Data Collection: Determining tools of data collection and formulation of schedules or questionnaire.

- Sampling Design: A complete coverage of the unit of the universe selected for research is not possible. So, sampling design deals with the method of selecting items to be observed for the given study. Sampling design means determining the research participants.

- Limitation: Limitation in terms of gap in the data, sample should ascertain. Interpretation of Results: The processed and organized data are interpreted for drawing inferences.

Limitations of Research Design

The following are some of the limitations of research design:

- Non availability of sufficient data;

- Non availability of resources like money, manpower, etc.;

- Inadequate time in the formulation of research design;

- Poor skill and ability of the research scholar;

- Unforeseen development during the course of design, which are uncontrollable as well.

The research design is a tentative statement, so the design is subject to change in the light of the material available or experience gathered while pursuing the actual work.

Tools for Data Collection

The data collection begins after a research problem has been defined and research design plan or chalked out. After deciding about the data collection the researcher must keep in mind the two types of data collection: Primary Data Collection, and Secondary data collection

(a) Primary data are those which has collected fresh and first time, and thus happen to be the original character.

(b) Secondary data or those which has already been collected by someone else and which have been passed away through the statistical process.

Methods of Data Collection

Primary Source of Data Collection:

1. Observation Method,
2. Interview Method,
3. Questionnaire Method

1. Observation Method. The observation method is most common method specially in studies relating to behavioral sciences. In a way we all observe things around us, but this sort of observation is not a scientific observation. Observation become a scientific tool and the method of data collection for the research when it serves formulated research purpose, is systematically planned and recorded and its subjected to check and controls on validity and reliability under the observation method the information is sought by way of investigator's own direct observation without asking from the respondent. This method is particularly suitable in studies which deal with subject (i.e. respondents) who are not capable of giving verbal reports of their feelings for one reason or the other. Observation method has various limitations, firstly it is an expensive method, secondly the information provided by this method is very limited, Thirdly sometime unfrozen factor's may interfere with the observation task.

2. Interview Method. This method involves presentation of oral verbal and reply in terms of oral verbal response. It can be used through personal Interview and if possible through telephonic Interviews.

Personal Interview. It requires a person known as the Interviewer asking question generally in a face-to-face contact to the other person. This sort of Interview may be in the form of direct person investigation or it may be indirect oral investigation. In the case of direct personal investigation the Interviewer has to collect the information personally from the sources concerned. He has to be on the spot and meet the people from whom data have to be collected. This method is particularly used for intensive investigation.

3. Questionnaire Method. This method of data collection is quite popular, particularly in care of big enquiries, it is adopted by Private, Individuals. Research Workers, Private and Public Organizations, and even by Government. In this method questionnaire is sent usually by post to person concerned with a request to answer the question and return the questionnaire. It contains number of questions printed or typed in a definite order on a form or set of forms. The questionnaire is mailed to respondent who are expected to read and understood the question and write down the reply in the space, meant for the purpose in the questionnaire itself the respondent has to answer the question on its own.

Secondary Data Collection

Secondary data means the data which is already available, They refer to the data which have been already collected and analyzed by others. When the researcher utilize secondary data then he has to look into various sources from where he has obtain this. In some case he is certainly not confronted with the problems that are usually associated with the collection of original data secondary date may be either be published data or unpublished data.

Usually published data are available in

- ✓ Various publication of the central, state or local Government
- ✓ Various publications of foreign governments/of International bodies organizations.
- ✓ Technical and trade Journals
- ✓ Books Magazines and newspaper
- ✓ Report prepare by research scholars Universities, economists etc., in different fields.

Researcher must be very careful in using secondary data. He must make a minute scrutiny because it is just possible that the Secondary data may be unsuitable or may be inadequate in the context of the problem, which the researcher wants to study.

Tools and Techniques of Data Collection. The primary data or information can be collected by the following means:

- Observing Behaviors of Participants: This method specifies the conditions and methods at making observation. In this method, the information is sought by way of investigator's own direct observation without asking from the respondent. The main advantage of this method is that subjective bias is eliminated, if observations are done accurately. It is the most commonly used method especially in studies relating to behavioral science.

- Questionnaire Method: Under this method, a list of questions pertaining to the survey (known as questionnaire) is prepared and sent to the various informants by post. The questionnaire contains questions and provides space for answer. A request is made to the informants through a covering letter to fill up the questionnaire and sent it back within a specified time. The respondents have to answer the questions on their own. The questionnaire can be delivered directly hand by hand, through surface post or as an electronic questionnaire. In preparing a research questionnaire general question, question wording to collect personal information, use of unfamiliar terms and jargon, etc. should be avoided.

- Interview Method: This involves listening to or integrating informants. The interview method of collecting data involves presentation of oral-verbal stimuli and reply in terms of oral - verbal responses. So, under this method of collecting data, there is a face to face contact with the persons from whom the information is to be collected. The interviewer asks them question pertaining to the survey and collects the desired information. This method can be used through personal interview, telephone interview, Chat, Audio Conferencing, Video Conferencing, etc. The interview can be structured, semi structured or open interview.

- Schedules Method: In this method of data collection, the ennumerator or interviewers who are specially appointed for the purpose along with schedules, go to the respondents, put to them the questions from the Performa in the order the questionnaire are listed and record the replies in the space meant for the same in the Performa. In certain situation, schedules may be handed over to respondents and ennumerators may help them in recording their answer to various questions in the said schedules. Ennumerator explains the aims and objectives of the investigation and also removes the difficulties which respondents may feel in relation to understanding the implication of a particular question or a definition or concept of difficult term. This method has the advantage over the questionnaire method in the sense that the respondents have no scope to misunderstand any question and thereby putting irrelevant answer.

- Information from Correspondents: In most of the studies the investigator finds it impracticable to collect first hand information on all related issues and as such he/she makes use of the data collected by others. The secondary data can be collected by way of examining historical and other records, literature and proverbs. If data available in secondary sources are reliable, suitable and adequate then only the secondary data should be collected. These correspondents collect and transmit information to the central office where the data are processed. The special advantage of this method is that it is cheap and appropriate for extensive investigation. However, it may not always ensure accurate results because of the personal prejudice and bias of the correspondents. Newspaper agencies generally adopt this method. Besides the above methods, nowadays many big companies also follow some other method for primary data collection like warranty card, Distributor or Store Audit, Consumer Panels, Projective Techniques, Depth Interview, Content analysis, etc.

Advantages and Disadvantages for Data Collection

Methods	Advantages	Disadvantages
Questionnaire	1. Provides answers to a variety of questions 2. Call be answered anonymously 3. Allows time before responding 4. Can be administered to many people, at distant sites, simultaneously 5. Imposes uniformity by asking all respondents the same thing	1. Are not as flexible as interviews 2. People can often express themselves better orally than in writing 3. Getting people to complete questionnaire can be difficult 4. Good questions take time to develop and test
Interview	1. Can be used for non-native speakers or those who might have difficulty with the wording of written questions 2. Permits flexibility and allows the interviewer to pursue unanticipated lines of inquiry 3. Appropriate to get in-depth information for sensitive topics	1. It is time consuming 2. Sometimes the interviewer can unduly influence the responses of the interviewee 3. Limits sample size
Observations	1 Can be valuable if self-report measures may not be accurate 2 Can be seen as a report of what actually took place presented by a neutral outsider(s)	1 Presence of observers may alter what takes place 2 Time to develop the instrument and train observers 3 Time to conduct sufficient number of observations 4 There are usually scheduling problems 5 Limits sample size
Records	1 Often viewed as objective and therefore credible 2 Set down events at the time of occurrence, rather than in retrospect 3 Can be unobtrusive 4 Can have a low impact on staff time and resources if records are already kept for purposes other than the evaluation	1 May give incomplete data examining them and extracting relevant information can be time consuming 2 There may be ethical or legal constraints in examining certain records 3 If records are kept only for the purpose of evaluation, may be seen by staff as burdensome

Methods	Advantages	Disadvantages
Meetings	1 Good for formative evaluation 2 Can be low cost 3 Permit flexibility	1 Possible bias if participants feel unable to be candid

Evaluation of Research Report

In case of any research work, evaluation is a process of determining the worth or significance or value of the work in regards to the objectives, the efficacy of design, resource use and the sustainability of results. It should also enable the incorporation of lessons learned, credible and useful thought to help the funding agencies to make correct judgment. Evaluation leads to decision-making process and probable implementation of the research result. The supervisor(s) are not normally involved in the approval process of a thesis. The role of research evaluator includes the following:

- *Social Engineer:* The evaluator is a social engineer, and is neutral;
- *Controller:* They attempt to hold the implementing agencies responsible for their decision and actions.
- *Advisor:* He / She is the advisor to the researcher;
- *Mediator:* The research evaluator is the mediator between the research findings and its applicability, between the researcher and the implementer.
- *Facilitator:* By way of supporting the results.

The evaluator in general judges the value of the thesis in regard to the following:

- *Inputs:* Human, physical and financial resource that are used to undertake the research;
- *Outcome:* Consequence / results of an intervention;
- *Output:* Results for implementation;
- *Performance:* Whether the results are justified in comparison to different performance indicator;

Before the oral interview, the researcher should read the thesis fully; anticipate the question that may be asked. Once the thesis is approved by the examiners, a copy of the thesis is usually sent to the university / college library. In case of thesis, it is good to see that only two options are left in the hands of the examiners, either he / she have to accept it or otherwise reject it. The degree is only offered to the candidate, who have

critically investigated and evaluated an approved topic by using the research methods appropriate to the chosen field, and makes an independent and original contribution to the existing knowledge base and has presented and defended the research work in the oral and verbal examination to the satisfaction of the examiner(s).

Significance of Report Writing

Research report is considered as a major component of the research study for which the research task remains Incomplete till the report has been presented or written. As a matter of fact even the most hypothesis, highly well designed and conducted research study, and the most striking generalizations and findings are of title values unless they are effectively communicated to others. The purpose of research it not well served unless the findings are made known to others. Research results must invariably enter the general store of knowledge.

Materials and Structure

Most writer Imagine that their report will be the major event in the reader's day, when, in reality the poor fellow is awash with reading matter, drawing in facts, figures and opinions. What he wants to easily digested is the information and then only enough to help him reach a decision so the content of our report and its structure, must be very carefully planned.

Selection of Material

These are two golden rules to follow when deciding what to put into a report are:

- Simplify and the ruthless about it , Reject the irrelevant, agonize over the doubt, and make sure you have got the essential.
- Justify your conclusion with facts, and state their resources. Build the facts into a logical and consistent case, so as to lead the reader to the same conclusion as your own.

Planning the Structure

The facts themselves should therefore be a set of directions, which will lead and guide your reader along a route has to be planned before you write your report, perhaps as follows.

Turn a large sheet of paper sideways, and work across it. Work horizontally, so that you can see the whole plan of your report at one time. First divide it into major sections every subject can be broken down in this way, and the headings will probably become the headings in your report. Make a list under each heading of all the points you would

like to mention note the information that you will need to support them. Now mark the most important points, the essential steps in your reasoning. Next mark the lease important ones, points your reader would find irrelevant, these you will probably reject. The points that remain - the unmarked ones, are the doubt files, some you may want to use as examples, or to include in the appendices. But some of these also you may reject.

Lastly arrange the points in a final, logical sequence, so as to meet your objective. Some people write them out on scraps of paper as this stage, and shift them around until they get the order right. A plan like this will show you what information you will need for the body of the report, and what should go in the appendices, once written, you draw out your conclusions. And lastly you add your title page, summary, contents list, and Introduction. These eight terms make up the conventional structure of a report dealt with in more detail below.

Different Steps in Report Writing

The usual steps involved in writing report are:

- Logical analysis of subject matter.
- Preparation of the final Outline
- Preparation of the rough draft
- Rewriting and polishing of the rough draft.
- Preparation of the final bibliography.

Conclusion

In this paper I had clearly sketch the Research Design its need and characters and also methods utilize for data collection. I had chosen two major steps for data collection which are Primary Data Collection and Secondary Data Collection, and also difference between the techniques utilized for the Data Collection methods. It is become customary to conclude the research report with a very brief summary. Resting in brief the research problem, the methodology, the major findings and the major conclusion drawn from the research results. Even though I want to tell that in spite of all that has been stated above, one should always keep in view the fact report-writing is an art which is learnt by practice and experience, rather than by mere doctrinarians. In this paper I have clearly mention the report writing from Preliminary page to the End page. There are several Research design and the researcher must decide in advance of collection and analysis to which design would prove to be more appropriate for his research project.

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Role of Virtual Learning and their Issues

M. Jayaprakash, P. Thangavel, T. Prakash and B. Santhi

Department of Library and Information Science,
Periyar Universiy, Salem, India
e-mail : sharavi1978@gmail.com

Abstract

A virtual learning environment (VLE) is a system designed to support teaching and learning in an educational setting, as distinct from a Managed Learning Environment, (MLE) where the focus is on management. A VLE will normally work over the Internet and provide a collection of tools such as those for assessment (particularly of types that can be marked automatically, such as multiple choice), communication, uploading of content, return of students' work, peer assessment, administration of student groups, collecting and organizing student grades, questionnaires, tracking tools, etc. New features in these systems include wikis, blogs, RSS and 3D virtual learning spaces.

Keywords: Virtual Learning.

Introduction

For a better understanding of this paper, it is necessary to define what a library is. At the elementary stage library is referred to as:

(i) a collection of literacy documents or record kept for reference or borrowing

(ii) a depository house built to contain books and other materials for reading and studying.

Types of Library

There are different types of libraries, viz:

(a) Academic library

(b) Public Libraries,

(c) Special library

(d) Virtual Library, all of which contribute to education and educational development in various different ways.

(a) Academic Libraries

They comprise of school libraries at the primary and secondary levels, College libraries, and University libraries whose prime objective is to meet the academic needs of the particular institution for which it is created to serve. The purpose of a University Library differs, in varying degree, from that of a school or college library in that the former adheres extensive and particular emphasis to research projects apart from the curricular needs of the institution.

(b) Public Library

This on the other hand is most often called *Peoples' University*, in a democratic society operated for the people by the people that conserves and organizes human knowledge in order to place if freely in the service of the community without any distinction of occupation, creed, class, religion, or ethnicity.

(a) It facilitates informal self-education of all people in the community;

(b) Enriches and further develops the subject on which individuals are undertaking formal education;

(c) Meets the informational needs of all;

(d) Creates and further develops civic sense and habits of the citizens;

(e) Supports educational, civic, and cultural activities of groups and organizations;

(c) Special Library

A special library, which is concerned with literature of particular subject or group of subjects, in an institution which is created to serve the needs of some working organization, either a company, a research association or a government department. It is often established to save time which the staff, either executive or research, would otherwise employ searching for information.

Eight relevant principles of fair information practice to provide a framework for evaluating campus values and creating policy with respect to privacy and access to information in a networked environment:

- Notification
- Minimization
- Secondary Use
- Nondisclosure and Consent
- Need to Know

- Data Accuracy, Inspection, and Review
- Information Security, Integrity, and Accountability
- Education

Notification

The notification principle provides that students be informed of what information is being collected; who is collecting the information and from whom it is being collected; why the information is being collected (i.e., the intended use); what steps are being taken to protect the confidentiality, integrity, and quality of the information; the consequences of withholding information or of providing false or incomplete information; and the right to inspect information and obtain appropriate remedy.

Minimization

The principle of minimization relates to what kind and how much information is collected from students, with an emphasis on gathering the minimum amount of relevant personal student information needed to accomplish a legitimate, identified purpose. Associated with this principle is the responsibility to delete information when it is no longer needed. The challenge is to identify those elements that are truly the *minimum* needed, avoiding collection for collection's sake or for *potential future use.*

Secondary use

The premise of this principle is that when personal information is gathered from a student, it should be used only for the purpose for which it was collected (even within the same institution or office) or for a use compatible with that purpose, unless the individual has given additional consent. Thus the principle of secondary use goes hand in hand with the principles of notification, minimization, and nondisclosure and consent (discussed below). Application of this principle means that an institution must articulate, when gathering personal data, precisely the purpose for which it is being gathered. FERPA allows for, and most reasonable individuals would agree to, routine secondary uses that are compatible with the purposes for which the information was collected. But if the use of personally identifiable student data is for non-routine purposes, the secondary use principle requires that the student be so informed and that consent be obtained.

Nondisclosure and Consent

The term *nondisclosure* means not distributing personally identifiable information about students to parties external to the academic institution. (Note that the release of information about students to parties internal to the academic institution is addressed

under the secondary use principle above and the need-to-know principle below.) Policy issues related to the principle of nondisclosure and consent revolve around consent strategies and data sensitivity, the nondisclosure of information created by use of information resources (such as library circulation records), and flexibility of inter-institutional information systems.

Need to Know

This principle is based on the premise that an individual within the virtual learning environment seeking access to personally identifiable student information is granted such access if and only if s/he has a need to know the information as part of an official and legitimate educational interest and in conformity with disclosure agreements. Under this principle, access to student information is based on normal job duties and the purpose and scope of the proposed use of the information.

Data Accuracy, Inspection, and Review

The premise of this principle is that information about students collected and maintained by a college or university must be accurate, and that students have the right to examine information about themselves and to request changes they feel should be made to their education records. The institution's responsibility with respect to this fair information principle is to define an effective request process and to make known to students the types of data that are being collected and maintained and the various offices responsible for the records to facilitate their request for review of their data. Methods for properly authenticating the identity of the student making the request to inspect data should be in place prior to information release.

Information Security, Integrity, and Accountability

The principle of information security, integrity, and accountability is composed of three related elements. Security, in terms of information technology, is the protection of user files and system resources from loss, damage, inappropriate access, and unauthorized disclosure or use of sensitive or private information. Integrity is reasonable assurance that data, once entered, will not be subject to unauthorized modification by intentional or unintentional means, and that data will remain unaltered during transmission between sending and receiving systems. Accountability in this context is the ability to explain security-related events and to link them to the originator.

The Educational Problems

All the current enthusiasm for distributed learning is largely based around the flexibility and power that the WWW and its associated technologies offer, and the fact that, possibly for the first time in the history of the use of communications and information technology in learning, these technologies are increasingly *ubiquitous.*

Some of the most serious errors have been errors of educational and course design and have included:

- Failure to engage the learner
- Mistaking *interactivity* for engagement
- Focusing on content rather than outcomes
- Mirroring traditional didactic approaches on the technology

All the above are really all part of the same problem: namely, the adoption of view of learning as an information delivery process coupled with the practice of procedures In addition there are the problems caused by:

Failure to recognize the social nature of learning

Here the problem is still linked to the didactic approach in that the learner is seen as operating individually *for themselves.* This can, in the context of VLEs, lead to a genuine sense of isolation, and in ignoring the social aspects of learning lead to less effective learning.

Seeing discourse as the prime collaborative form.

There is a wealth of published material on the undoubted value of computer based discussion as a vehicle for learning. However, the author would argue that many VLEs place an over-emphasis on ”discourse” at the expense of learners working together to produce some artifact. Also the question as to whether the same tools should be used for peer support and guidance as for discourse, or whether different solutions are required for best results, as yet remains unanswered.

Effective Learning

We will now turn our discussion to the question: *what are the conditions required for effective learning ?*

It is worthwhile to dwell on what is being developed in the individual learner. The process is concerned not just with the acquisition of subject specific knowledge and skills, but with the development of more general, or strategic, approaches and skills. The author has argued previously that this development must also take place in the context of the acquisition of discipline or professional culture if both sets of knowledge and skills are to be of value to the individual in, and applied by them to, new scenarios and fields of study and employment.

This argument is founded on a view of learning as an active process which must recognize, and take into consideration that:

- Learning is a social process and development is linked to the specific culture in which learning activities are shared.

- Learning activities need to be *authentic* - normal to the culture in question and involve its tools and artifacts
- Learning is situated in the dual contexts of culture and learning environment and that learning involves the interaction of learners and experts within them
- Enculturation involves the development by the learner of the use of culture-specific meaning-making, or semiotic, tools
- Individual and social learning have a complex and necessary interdependence
- Expertise involves perceiving the relationship between specific and general knowledge and skills
- The need for both learning activity and assessment to be clearly related to syllabus and to reward understanding
- The need to match assessment, content and resources to the learner's current level

Conclusion

The most effective mechanism for dealing with the privacy issues raised in the virtual learning environment will be a task force or committee made up of those who are closely involved. The results of the task force efforts must be widely disseminated and ultimately absorbed into the institutional culture so that the privacy issues of everyone - on the physical campus or virtual campus - are met equally.

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An Overview of Virtual Library

C. P. Paul Rajayia[†], M. Kumar[*] and C. Muthusamy[‡]

[†]*Department of Library and Information Science,*
Don Bosco College, Yelagri Hills, Vellore, India

[*]*Department of Library and Information Science,*
Loyola Institute of Technology, Chennai, India

[‡]*Department of Library and Information Science,*
Mohamed Sathak College of Arts and Science, Chennai 600 119, India

Abstract

A digital library is perceived differently by various people depending on the individual's personal and professional background. This is because of there is no agreement so far, on what constitutes a digital library. Most of the Libraries today, offer a wide range of on-line services to their users. And now, the internet and web technologies are not the new things to any academician hence, it is the time for the libraries to be a virtual and develop its on-line presence, in order to facilitate further and enrich the educational processes to their users. In this direction, Virtual Libraries provide a new way of serving the new generation users. Virtual libraries are the new vision of libraries of the future. This paper provides an overview of a Virtual Library System and more it portraits purpose, features, functions, design and development of a Virtual Library and Virtual Library Environment. This includes various perspectives and definitions of the term given by various researchers.

Keywords: Virtual Library, E-Learning, Cloud Computing.

Introduction

Virtual Library is another kind of Digital Library which provides portal to information that is available electronically elsewhere. This is referred so to emphasize that the Library does not itself hold content. Librarians have used this term for a decade or more to denote a Library that provides access to distributed information in electronic format through pointers provided locally.

A Virtual Library has been defined by Gapen (1993) as, *the concept of remote access to the contents and services of libraries and other information resources, combining an on-site collection of current and heavily used materials in both print and electronic*

form, with an electronic network which provides access to, and delivery from, external worldwide library and commercial information and knowledge sources. The speedy and wide access to current information contents makes virtual libraries a global symbol of the information access paradigm.

The Virtual Library has changed the traditional focus of librarians on the selection, cataloguing and management of information resources such as books and periodicals. The virtual library is putting emphasis on access without the need to allow for the time required by these technical processes. Virtual Libraries have induced librarians, scholars, publishers and document delivery vendors to develop new partnerships that are working for the good of scholarly communication in both developed and developing countries.

Purpose of Virtual Library

The purpose of a Virtual Library is to underpin learning and acquisition of knowledge, to provide more solid basis for education and to enhance quality of life by drawing on digitally available (preferably on-line) books, materials and journals via Some Cloud based tools. A Virtual Library provides remote (on-line or CD-ROM-based) access to a variety of national and international content such as project works, learning materials, books, journals, magazines, newspapers and etc., the services traditionally offered by libraries and other information sources.

Features of a Virtual Library

1. It provides speedy and wide access to updated information in a global manner.
2. It has changed the traditional library system of cataloguing only book materials.
3. Cataloguing of Non Book Materials includes not only databases but also websites.
4. Greater emphasis is on access and not on collection.
5. It results in a creation of digital divide because only developed countries with strong funds for automation and fulfilling infrastructural requirements for Virtual Library can afford to support Virtual Library services.
6. The old project works, learning materials, books, journals, magazines, old newspapers could be given / issued easily.
7. Time saving
8. All the books in the library can be converted into e-books, it might reduce the stocks.

Functions of a Virtual Library

The function of a Virtual Library is to ensure the systematic development of the means to collect, store, and organize information and knowledge in digital form and to provide easy and affordable access to it around the clock from various locations. In general, a Virtual Library should: 1. The old project works, learning materials, books, journals, magazines, old newspapers could be given / issued easily. 2. Provide access to distance education materials. 3. Contribute to the efficient delivery of information to students, researchers and teachers of all universities and other educational institutions. 4. Strengthen communication and collaboration between and among the research, library and educational communities, nationally, regionally and internationally. 5. Offer lifelong learning opportunities.

Cloud Computing

Cloud Computing is a completely new IT technology and it is known as the third revolution after PC and Internet in IT. To be more specific, Cloud Computing is the improvement of Distributed Computing, Parallel Computing, Grid Computing and Distributed Databases. And the basic principle of Cloud Computing is making tasks distributed in large numbers of distributed computers but not in local computers or remote servers. In other words, by collecting large quantities of information and resources stored in personal computers, mobile phones and other equipment, Cloud Computing is capable of integrating them and putting them on the public cloud for serving users.

Services of Cloud Computing

1. Software as a Service (SaaS)
2. Platform as a Service (PaaS)
3. Infrastructure as a Service (IaaS)

Software as a Service. In the SaaS model, cloud providers install and operate application software in the cloud and cloud users access the software from cloud clients. Cloud users do not manage the cloud infrastructure and platform where the application runs. This eliminates the need to install and run the application on the cloud user's own computers, which simplifies maintenance and support. Cloud applications are different from other applications in their scalability-which can be achieved by cloning tasks onto multiple virtual machines at run-time to meet changing work demand. Load balancers distribute the work over the set of virtual machines. This process is transparent to the cloud user, who sees only a single access point. To accommodate a large number of cloud users, cloud applications can be multitenant, that is, any machine serves more

than one cloud user organization.

Platform as a Service. In the PaaS models, cloud providers deliver a computing platform, typically including operating system, programming language execution environment, database, and web server. Application developers can develop and run their software solutions on a cloud platform without the cost and complexity of buying and managing the underlying hardware and software layers. With some PaaS offers like Microsoft Azure and Google App Engine, the underlying computer and storage resources scale automatically to match application demand so that the cloud user does not have to allocate resources manually. The latter has also been proposed by an architecture aiming to facilitate real-time in cloud environments. Even more specific application types can be provided via PaaS.

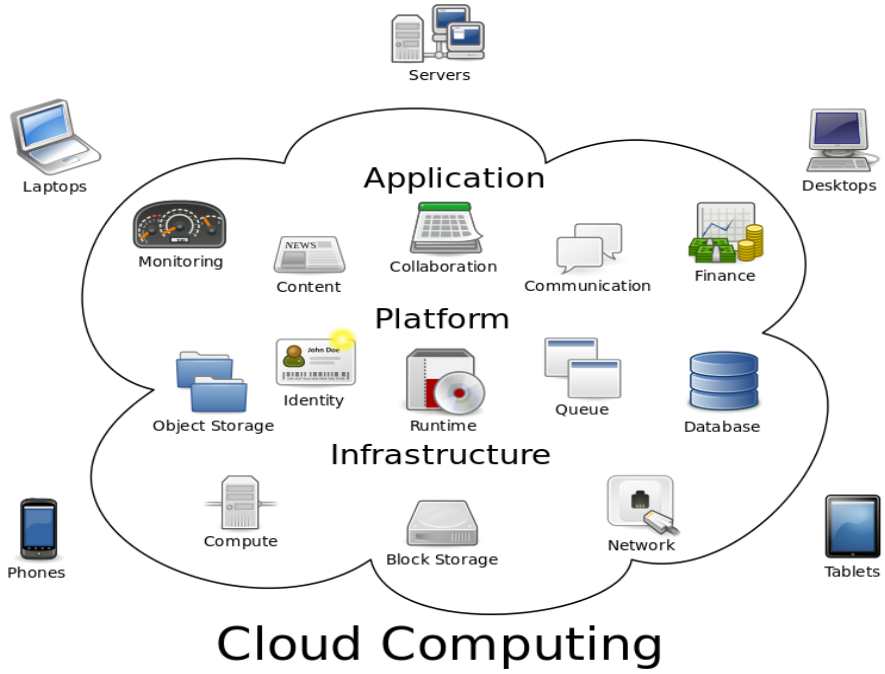

Figure 1: Cloud Computing

Infrastructure as a Service. In the most basic cloud-service model & according to the IETF (Internet Engineering Task Force), providers of IaaS offer computers - physical or (more often) virtual machines - and other resources. (A hypervisor, such as Xen, Oracle Virtual Box, KVM, VMware ESX/ESXi, or Hyper-V runs the virtual machines as guests. Pools of hypervisors within the cloud operational support-system can support large numbers of virtual machines and the ability to scale services up and down according to customers' varying requirements.) IaaS clouds often offer additional

resources such as a virtual-machine disk image library, raw block storage, and file or object storage, firewalls, load balancers, IP addresses, virtual local area networks (VLANs), and software bundles. IaaS-cloud providers supply these resources on-demand from their large pools installed in data centers. For wide-area connectivity, customers can use either the Internet or carrier clouds (dedicated virtual private networks). To deploy their applications, cloud users install operating-system images and their application software on the cloud infrastructure. In this model, the cloud user patches and maintains the operating systems and the application software. Cloud providers typically bill IaaS services on a utility computing basis: cost reflects the amount of resources allocated and consumed.

Cloud Architecture

Cloud architecture, the systems architecture of the software systems involved in the delivery of cloud computing, typically involves multiple cloud components communicating with each other over a loose coupling mechanism such as a messaging queue. Elastic provision implies intelligence in the use of tight or loose coupling as applied to mechanisms such as these and others.

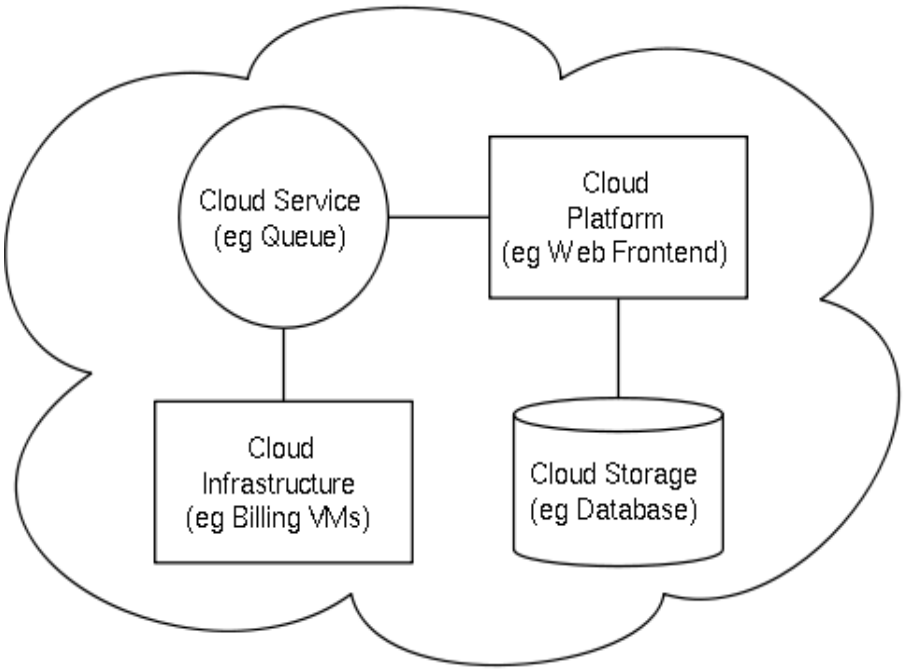

Figure 2: Architecture of Cloud Computing

Cloud Computing in Library

Digital library is a development-oriented hardware and software integration platform, through to technical and the product integration, each kind of carrier digitization, carries on the effective deposit and the organization, provides the network the effective service. After Digital library technology popularization, provided the high grade information service but simultaneously also to expose all sorts of questions unceasingly, because the zones of different the current economic condition limit presented the development not balanced phenomenon, the regional resources shared with difficulty, form each one information isolated island or the resources are redundant, create the resources the waste, satisfied the aggregate demand with difficulty, the cloud computing possibly provides a good plan day by day for this kind of phenomenon.

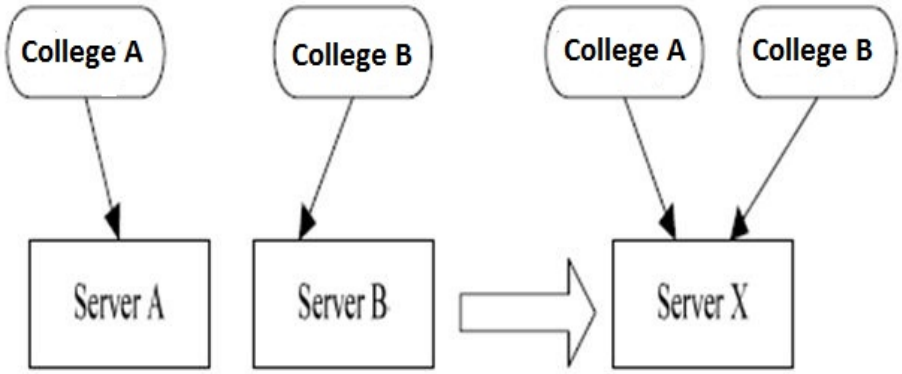

Figure 3: Server Sharing Plan

Every cloud computation's server may be the computation server, saves the server or the wide band resources and so on, in figure 3 every cloud represents any College Digital Library database resources, every two clouds or more clouds may compose a bigger cloud, may divide the cloud or the composition cloud by the different regions either the different rank university. Software as a Service (SaaS), through the browser to the form of services provided to the applications, to users and suppliers to reduce costs. (PaaS) Platform as a service, defined by the form of services provided to the developers application development and deployment platform, so that they can use this platform to develop, deploy and manage SaaS applications. This platform typically includes a database, middleware and development tools, all are in the form of services through the Internet. Infrastructure as a Service (IaaS), defined by the form of services to provide servers, storage and networking hardware. SDK Software Development Kit refers to supporting development of a certain type of software, documentation, samples, and a collection of tools. In general, SDK that the development of applications under the Windows platform.

In Figure 3 cloud superintendent should is composed by college representative, government representative and service provider representative , its responsibility should be the management daily operation, provides the high grade service and the high security, the formulation agreement, the coordinated all quarters' benefit and carries on sanction on the illegal user and the contrary operation.

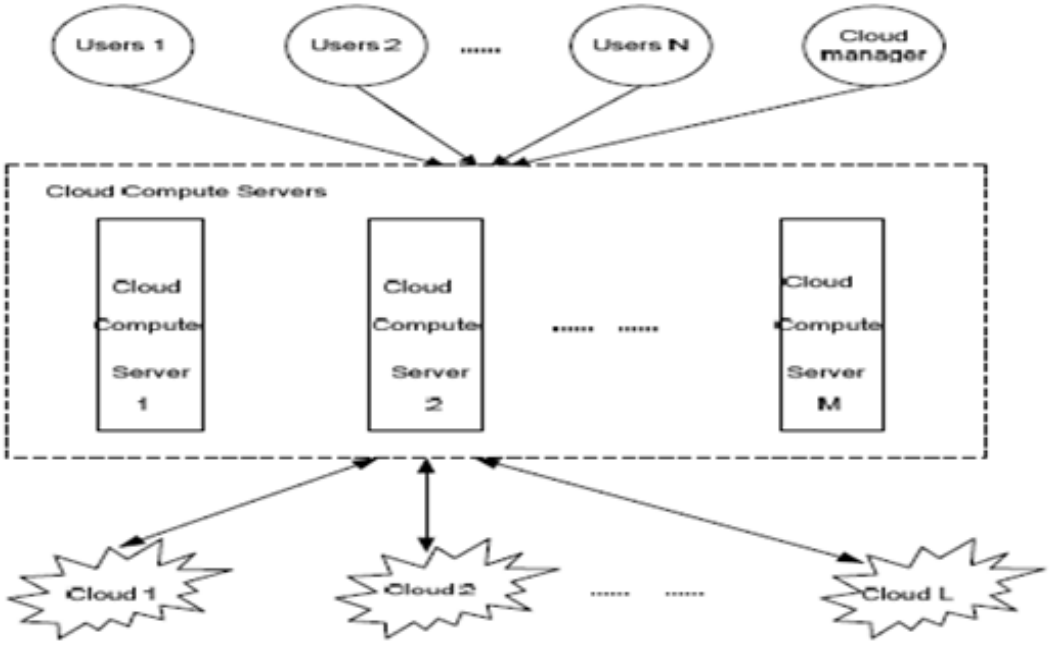

Figure 4: Implementation of Cloud Computing

Advantages of Virtual Libraries

1. Virtual libraries provide immediate access to a range of resources not available in physical collections. Virtual libraries allow unprecedented access to information and ideas. "A paradigm shift takes place from libraries as collectors of items to libraries as facilitators of access to all kinds of information, provided by anybody, located anywhere in the world, accessible at any time".

2. Physical libraries operate with designated hours, virtual libraries are available anytime and anywhere where there is an Internet connection.

3. Virtual libraries offer opportunities for learning that are not possible in their physical counterparts. Virtual libraries complement other virtual learning environments, such as those provided in distance education and courses offered

online, and like virtual learning environments, providing flexibility of time and place.

4. Virtual libraries often contain more up-to-date information than physical collections. Their sources can be searched more efficiently than those in physical libraries, and the information they contain can be updated more frequently.

5. Well-designed virtual library collections are organized and managed to increase productivity and efficiency of the user.

6. Virtual libraries empower the user and promote informal learning.

7. Virtual libraries can be customized for particular schools, grades, and subjects.

8. This variety of formats in presentation and navigation is quite different from that of a physical library. Thus, virtual libraries support specific communities of interest, thereby, creating global communities of learners.

9. Virtual libraries break down the physical barriers between users and information sources. Through the use of audio and video, virtual libraries can also make resources available to users that are visually and hearing impaired, and they make these resources available in their homes. Virtual libraries of the future may integrate voice, video, and text for users involved in distance education in remote locations.

Conclusion

Virtual libraries are facing big challenges in their efforts to build a foundation for sustainable, ongoing effort. To develop a successful Virtual Library System several components such as, library-based, open and cooperatively developed content and software within a centralized, focused, cooperative organizational efforts are necessary. Virtual Library has to support the users' community, by providing accurate, reliable, and affordable access to all the desired scholarly and educational electronic / internet resources. Several Virtual Libraries have claimed the vital new areas in scholarly and educational information service by way of technological provisions. Virtual Libraries are the new vision of the Libraries of future. The development of Virtual Library will take place when libraries transform themselves into three dimensional electronic information centers. It will be possible when data storage, data representation and image processing technologies mature to cope with the great amounts of graphically represented data held by the Virtual Libraries.

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Web Oriented Mining Techniques in Virtual Learning

M. Jayaprakash, V. Ashok Kumar and B. Santhi

Department of Library and Information Science,
Periyar Universiy, Salem, India
e-mail : sharavi1978@gmail.com

Abstract

The design and implementation of web-based education systems have grown. In this web based approach neither Students nor Teachers are bound to a specific location and that this form of computer-based Education is virtually independent of any specific hardware platforms. A very capable area to attain this objective is the use of data mining. Researchers have begun to examine various data mining methods to help teachers improve e-learning systems or often called virtual learning systems. These methods allow them to discover new knowledge based on student's usage data. The same idea has already been successfully applied in e-commerce systems and is now very fashionable, which run on the internet. Virtual learning technologies allow us to share and manipulate information in nearly real time. This reality is determining the next generation of distance education tools. Data Mining can be used to extract knowledge from virtual learning systems through the analysis of the information available in the form of data generated by the users. In this case, the main objective becomes finding the patterns of system usage by teachers and students and, discovering learning behavior patterns. An e-learning model for the personalization of courses, based both on the student's needs and capabilities and on the teacher's profile, personalized learning paths in the courses were modeled using graph theory.

Keywords: Virtual learning environment, Web-mining method, E-Learning, Human-machine Interaction, Machine Learning.

Introduction

The popularity of the World Wide Web continues to increase. There is a growing need to develop tools and techniques. That will help improve overall usefulness. In the sense the design and implementation of web-based education systems have grown. So we have to develop a methodology for assessing institutional requirements for networked learning and for selecting and implementing appropriate solutions. To create staff development and training programs to support the management and use of virtual and networked learning. This reality is determining the next generation

of distance education tools. We can apply various data mining methods to our virtual learning environment. Like as web mining; Web mining is an emerging methodology in education research, assisting instructors and developers in improving learning environments.

Classification Problem in Virtual Learning

Classification based on their learning performance Fuzzy theory was used to measure and transform the interaction between the student and the intelligent tutoring system. These fuzzy relations represent the estimation made by human tutors of the degree of association between an observed response and a student characteristic. Fuzzy rules-based method for eliciting and integrating system management knowledge was proposed and served as the basis for the design of an intelligent management system for monitoring educational Web servers. Fuzzy mining and learning algorithm integrates an association rule mining algorithm, called Apriori algorithm for Association Rules was applied to capture relationships among URL references based on the navigational patterns.

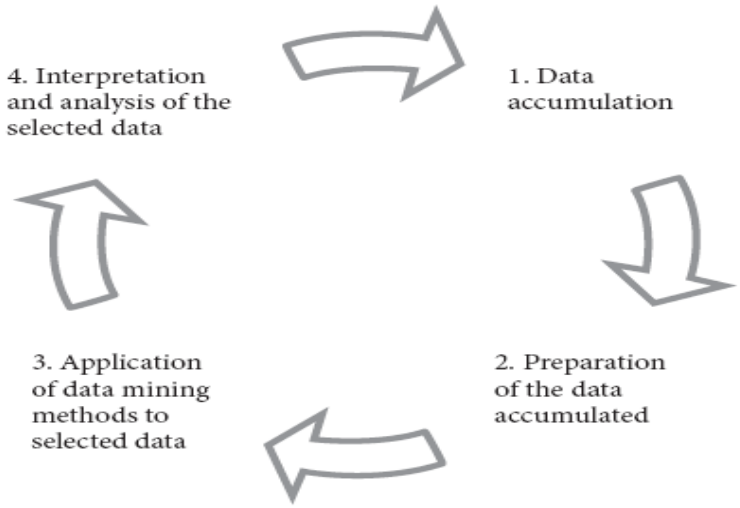

Figure 1: Mining application methods in virtual learning

Graphs and Trees

In virtual learning technique the personalization of course is based on the student's needs and capabilities and on the teacher's profile. Prediction is repeatedly motivating problem in virtual learning, although it can easily overlap with classification and

regression problems. The forecasting of students' behavior and performance when using e-learning systems bears the potential of facilitating the improvement of virtual courses as well as learning environments in general. Some of experiments were conducted in order to predict the student's performance in virtual learning or e-learning courses. Artificial Neural Networks were used to prediction of the students' final marks.

Statistical Methods

Basic statistical methods are applied to the discovery and extraction of knowledge from an virtual learning database to support the analysis of student learning processes, as well as the evaluation of the effectiveness and usability of web-based courses. The learning processes were extracted from navigation and request behavior.

Data Accumulation

It is not purposive to work directly on the ORACLE database because of data safety and server loading problems. While working with the database containing millions of records, even an incautious SQL query can seriously refuse speed server activities. Therefore, after evaluating possible risks, all data necessary for this research were transferred to other database in the local server for further processing. This process was completed by using a special code created using the PHP programming language. The code performs necessary calculations and transfers the existing data so that later on we could use data mining methods. The prepared data are sent to the other MySQL database and are saved for the next data analysis.

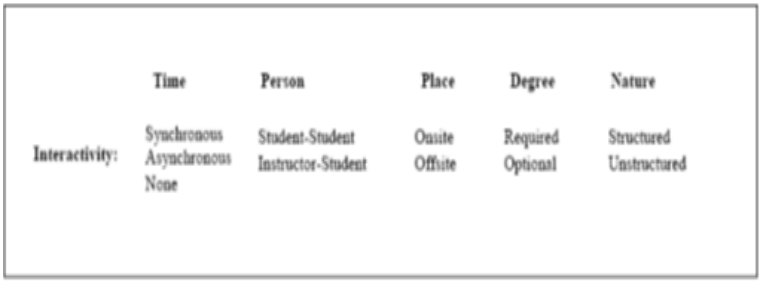

Figure 2: Interactivity of mining in Virtual Learning

The design of a learning resource and the progress through it is in learning environments guided by a tutor. A learning resource user may rather freely decide how to use the learning resource. On the other hand, the learning resource user has few if any possibilities in getting a support for acquiring knowledge related to his individual objectives and needs if available learning resources do not cover them. Virtual learning

environments usually offer a collaboration tool that can be used for creation of a group of individuals performing the same learning task. The collaboration of the group members in the task resolution enhances the learning process effectiveness, speeds up the capturing of knowledge by individuals and supports natural evolvement of a new knowledge as a result of synergic interaction of the group members. This new knowledge is usually not captured in the learning environment.

Design of a Learning Resource

Until the beginning of the web, most virtual courses were highly impersonal, asynchronous, and non-interactive. Students were limited in their choice of courses by their physical location and the time it would take to send and receive materials and assignments to and from the receiving institute. As media have improved, it has become possible to develop and deliver greater interactivity at a distance. The learning in essence has become far less removed in person and time than with traditional forms of virtual education such as correspondence courses or instructional radio. No longer is the instructional package limited to that which can be mailed, or delivered via television or radio. There are now a great variety of alternatives in how courses can be developed and delivered.

The web technology has increased technical integration. At the lowest degree of integration, different pieces of software can be placed on the same Web page. Since virtual learning environments are a new generation of computer-based educational systems, it is worth looking at whether computer-based learning is more effective than learning in a traditional classroom.

Conclusion

Data mining has proven a potentially useful tool to provide good support for tutors in virtual learning communities. The professional study of the learners' interaction with Internet-based educational materials makes possible identifying the real actual usage modes, from which well-established conclusions can be made concerning both the efficiency of these materials and the concrete obstacles of efficiency. The notion of a learning activity in virtual learning environments refers to something richer than in individual course ware, closer to the notion of project. The difference between other constructivist environments and what virtual environments potentially offer can be described as making students not only active, but also actors that is members and contributors of the social and information space. Virtual learning provides a very desirable capability, integrated data collection and management. A high degree of expertise and user interaction is still needed. We think that the final deployment to support tutors in a Virtual learning environment could be a relatively easy task.

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Initiatives and Roles of Information Library Network (INFLIBNET) in the Digital Era

B. Jayaprakash and R. Umaiyorubagam

Department of Library and Information Science,
Bharathidasan Universiy, Tiruchirappalli, India

Abstract

Information Technology plays the important role in shaping the education and Research. INFLIBNET in collaboration with Government of India and University Grants Commission it connects all the higher education institutions for the better access of information resources. This paper describes the role of INFLIBNET in Digital era in highlighting of its initiatives as Shodhganga, UGC-INFONET, NLIST, e-PG Pathshala, Vidwan Research Projects database, SOUL, INDCat and INFOPORT.

Keywords: INFLIBNET, Digital Era, Digital Initiatives, Role of INFLIBNET.

Introduction

Information and Library Network (INFLIBNET) Centre is an autonomous Inter-University Centre of the University Grants Commission (UGC) of India. It is a major National Programme initiated by the UGC in March 1991 with its Head Quarters at Gujarat University Campus, Ahmedabad. Initially started as a project under the IUCAA, it became an independent Inter-University Centre in June 1996. INFLIBNET is involved in modernizing university libraries in India and connecting them as well as information centres in the country through a nation-wide high speed data network using the state-of-art technologies for the optimum utilisation of information. INFLIBNET is set out to be a major player in promoting scholarly communication among academicians and researchers in India.

Role of INFLIBNET

The following are the important role of INFLIBNET

- To promote and establish communication facilities to improve capability in information transfer and access in Libraries.
- To avoid duplication of efforts by different institutions.

- To facilitate academic communication amongst scientist, engineers, social scientists, academics, faculties, researchers and students.
- To undertake system design and studies in the field of communications, computer networking, information handling and data management.
- To establish appropriate control and monitoring system for the communication network.
- To collaborate with institutions, libraries, information centres for the information sharing.
- To promote R & D and develop necessary facilities for the libraries.
- To generate revenue by providing consultancies and information services.

Initiatives of INFLIBNET

INFLIBNET has initiated many innovative progrmmes and facilities for the development of Libraries to meet the recent requirements by the Library and Information professionals. The following are the important initiatives for the LIS professionals

- Shodhganga
- UGC-INFONET
- NLIST
- Pathshala
- Vidwan: expert database
- Research project database
- SOUL
- INDCat
- INFOPORT

Shodhganga [http://shodhganga.inflibnet.ac.in]

The Shodhganga@INFLIBNET is set-up using an open source digital repository software called DSpace. Shodhganga provides a platform for research scholars to deposit their Ph.D. theses and make it available to the entire scholarly community in open access. The repository has the ability to capture, index, store, disseminate and preserve ETDs (Electronic Theses and Dissertations) submitted by the researchers. Shodhganga replicates academic structure of each University in terms of Departments/ Centres/ Colleges each University has to facilitate ease of navigation. This structure facilitates research scholars from universities to deposit their theses in the respective Department / Centre / College.

Figure 1: Shodhganga Homepage

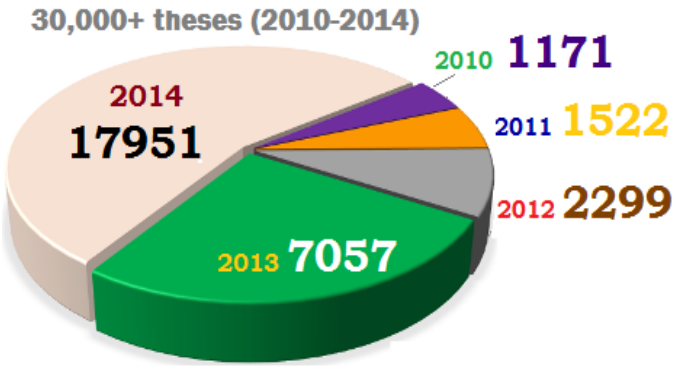

Figure 2: Year wise Collection

This initiative currently provides 33000 plus theses from 202 Universities in different disciplines for full-text access. Based on this, research scholars can have the access of full-text theses in public domain to cross check their research existence. This will avoid the duplication of research work and to initiate the new thinking among the scholars.

UGC INFONET [http://www.inflibnet.ac.in/econ]

The UGC-Infonet Digital Library Consortium covers almost all subject disciplines including arts, humanities, social sciences, physical sciences, chemical Sciences, life sciences, computer sciences, mathematics and statistics, etc. UGC INFONET currently connects 422 Universities for the access of e-journals more than 15000 and also the important bibliographic and full-text databases. This initiative has improved the electronic resources access in all the universities and created more demand among the users. These also increased the level of research activities in universities and also satisfy the research scholar's demands in terms of availability of resources.

Figure 3: UGC INFONET Homepage

NLIST [http://nlist.inflibnet.ac.in]

National Library and Information Services Infrastructure for Scholarly Content (N-LIST), being jointly executed by the UGC-INFONET Digital Library Consortium, INFLIBNET Centre and the INDEST-AICTE Consortium, IIT Delhi provides for i) cross-subscription to e-resources subscribed by the two Consortia, i.e. subscription to

INDEST-AICTE resources for universities and UGCINFONET resources for technical institutions; and ii) access to selected e-resources to colleges.

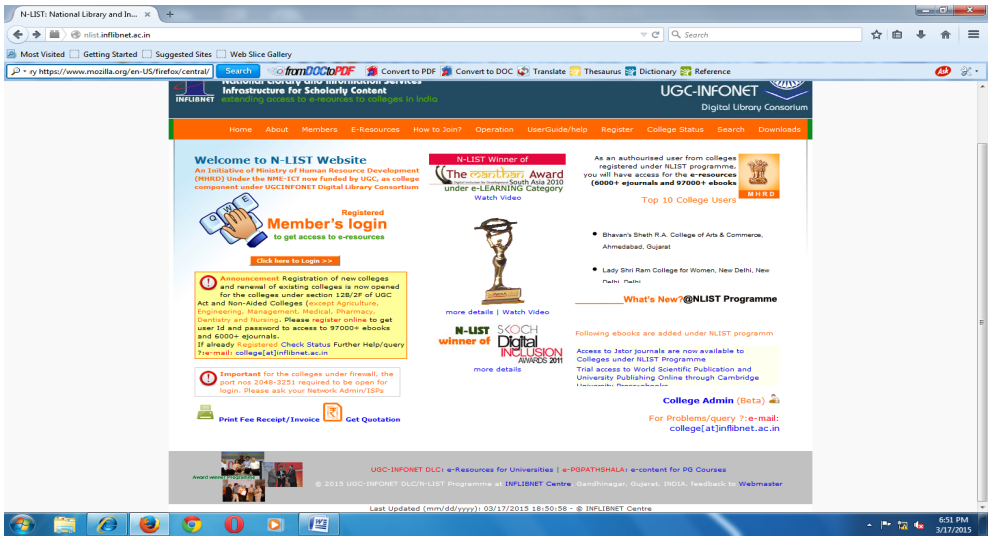

Figure 4: NLIST Homepage

Based on these initiatives the college libraries are eligible to get the access of ebooks and ejournals. To subscribe the NLIST for the colleges they have to meet the certain eligibility conditions as 2f/12b status etc. Then to have an access for the collections the college has to become the member by paying Rs. 5000/- as a yearly subscription. NLIST provides more than 1 lakh ebooks and 4500 ejournals to the subscribed colleges and they can have the access by the login and password. The great advantage of this programme is that the faculty and research scholars can have access from their home itself.

e-PG Pathshala[http://epgp.inflibnet.ac.in / about.php]

The MHRD, under its National Mission on Education through ICT (NME-ICT), has assigned work to the UGC for development of e-content in 71 subjects at postgraduate level. The content and its quality is the key component of education system. High quality, curriculum-based, interactive content in different subjects across all disciplines of social sciences, arts, fine arts & humanities, natural & mathematical sciences, linguistics and languages is being develope under this initiative named e-PG Pathshala.

Based on these Initiatives University and College teachers can participate for the

development of e-content for the lecture notes and course materials for the easy access by the student community.

Figure 5: e -PG Pathshala Homepage

VIDWAN: Expert Database [vidwan.inflibnet.ac.in]

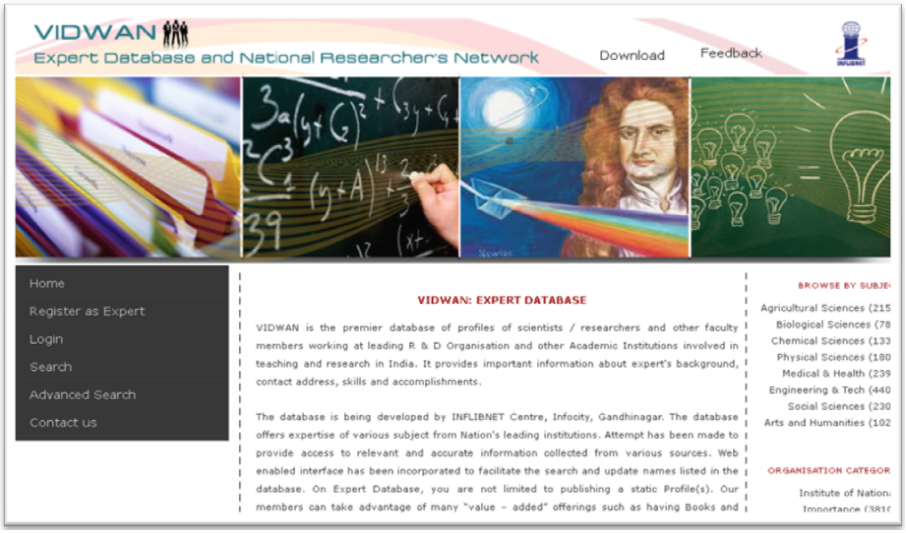

Figure 6: VIDWAN Homepage

VIDWAN is the premier database of profiles of scientists / researchers and other faculty members working at leading R & D Organisation and other Academic

Institutions involved in teaching and research in India. It provides important information about expert's background, contact address, skills and accomplishments. The Expert should have a post-graduate / Doctorate degree in their respective subject with 15 years of professional experience; Associate Professor / Professor / Senior Scientist or equivalent position in teaching, research; National/international awardees and citation laureates. The databases can be searched on parameters such as name, designation, institution, specialization, state, etc.

Based on these initiatives the national level experts can be found in a specific subject and also to have an idea about the experts in a particular field. This will enable the librarian to find the expert on a particular field and to explore further for the academic purpose.

Research Project Database

`[www.inflibnet.ac.in/researchproject/]`

Research Project Database is details of the accomplished and ongoing funded projects, carried out by various faculty members, working at various universities in India. Currently, it contains more than 13600 research project's information funded by various funding agencies viz. UGC, ICAR, ICMR, DST and DBT etc. Based on these initiatives we can get the entire research database on a single entry point. These can be used by the library professionals to get the Research information for their user community and also can be used to avoid the duplication of research.

Figure 7: Research Projects Homepage

SOUL [http://www.inflibnet.ac.in/soul/]

Software for University Libraries (SOUL) is an state-of-the-art integrated library management software designed and developed by the INFLIBNET Centre based on requirements of college and university libraries. The software is compliant to international standards for bibliographic formats, networking and circulation protocols. The latest version of the software i.e. SOUL 2.0 was released in January 2009. The database for new version of SOUL is designed for latest versions of MS-SQL and MySQL (or any other popular RDBMS). SOUL 2.0 is compliant to international standards such as MARC 21 bibliographic format, Unicode based Universal Character Sets for multilingual bibliographic records and NCIP 2.0 and SIP 2 based protocols for electronic surveillance and control.

This initiative is very much useful for the libraries to go for the complete library automation. Based on the automation the library can achieve the single database base for the entire collection. The library automation can be useful for the ICT based library services.

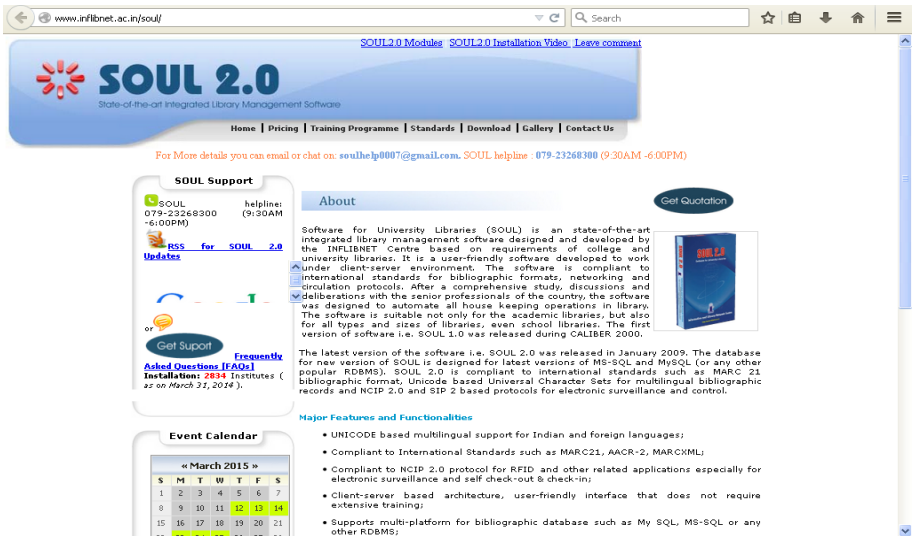

Figure 8: SOUL Homepage

IndCat [indcat.inflibnet.ac.in]

Online Union Catalogue of Indian Universities is unified Online Library Catalogues of books, theses and journals available in major university libraries in India. The union database contains bibliographic description, location and holdings information for books, journals and theses in all subject areas available in more than 160

university libraries across the country. A Web-based interface is designed to provide easy access to the merged catalogues. The IndCat is a major source of bibliographic information that can be used for inter-library loan, collections development as well as for copy cataloguing and retro-conversion of bibliographic records of books, serials and theses.

This will be useful to find the books on a single search and to know the location of availability for the Inter Library Loan facilities and also for the referral services.

Figure 9: IndCat Homepage

INFOPORT

[http://infoport.inflibnet.ac.in/about.aspx]

The INFLIBNET Centre promotes open access to Indian scholarly content through the InfoPort: A Subject Gateway for Indian Electronic-Resources. The gateway open-ups the Indian scholarly content scattered over the Internet through an integrated interface that support search, browse and multiple listing. The InfoPort covers Internet resources includes Electronic books, electronic journals and reference sources including dictionaries, directories, maps etc,Institutional repositories, resource gateway, etc, Wikis, blogs, etc,Teaching and learning website, Lecture Notes, Magazines,Portals,Audio, video and other multimedia learning resources,Libraries, archives and museums,News and media services including newspapers, online news services, Websites listing current events and activities, Websites of Major Research projects, especially those supported by national funding bodies such as UGC, DST,

DBT, AICTE, MHRD, DOT, etc.,Teaching and learning projects website, especially those receiving Government funding,Universities, colleges, Research and Development Labs, institutions and e-learning websites, Indian publishers and subscription agents; and Listservs and discussion groups, especially those having online archives. These can be accessed based on the Dewey Decimal Classification system.

Figure 10: INFOPORT Homepage

This initiatives will be very much useful for the LIS professionals to identify the resources on a particular subject and also to enalbe the user community to direct the right resources on time.

Conclusion

Information Technology plays the important role in development of all Information sectors and based on the growth of Information Technology, In India INFLIBNET centre plays the vital role in developing the Higher Education. INFLIBNET centre in collaboration with UGC and Government of India it provides the special attention towards the Higher Educational Institutions for the development of education and research. This paper describes the initiatives of INFLIBNET and its role in digital era. Library and Information Professionals should aware of the INFLIBNET initiatives and services to support the higher education. Apart from this all the libraries are not self sufficient so libraries can utilize the INFLIBNET services for the betterment of Library collections and services.

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Cloud Computing in Library Automation

A. Viswanathan and A. A. Khadar Maideen

Department of Computer Science,
Islamiah College, Vaniyambbadi 635 752, India

Abstract

Cloud computing is a new technology model for IT services which many businesses and organizations are adopting. It allows them to avoid locally hosting multiple servers and equipment and constantly dealing with hardware failure, software installs, upgrades and compatibility issues. For many organizations, cloud computing can simplify processes and save time and money. This article defines cloud computing and shows how it is different from other types of computing. It also discusses how cloud computing solutions could be beneficial to libraries in three basic areas: technology, data and community.

Keywords: Cloud Computing, Library Automation.

Introduction

Cloud computing can transform the way systems are built and services delivered, providing libraries with an opportunity to extend their impact.

Cloud computing has become a major topic of discussion and debate for any business or organization which relies on technology. Anyone connected to the Internet is probably using some type of cloud computing on a regular basis. Whether they are using Google's Gmail, organizing photos on Flickr or searching the Web with Bing they are engaged in cloud computing. As Geoffrey Moore points out, the interesting thing about cloud computing is it did not start as a technology for the business enterprise, but was driven by the public with services like Facebook and Flickr.

Over the last few years businesses have started to see the value of cloud computing causing it to become a major technology solution for businesses and organizations around the world. Looking across the information and broader technology landscape, it is not difficult to find success stories of switching to cloud computing, disaster stories, and a great deal of debate about what cloud computing is, or isn't. The purpose of this article is to look specifically at how cloud computing can be employed by libraries and what needs to be considered before moving into a cloud computing solution.

What is Cloud Computing ?

First there must be a definition of cloud computing for this discussion. The Gartner Group defines cloud computing as ”a style of computing in which massively scalable and elastic IT-enabled capabilities are delivered as a service to external customers using Internet technologies.” In various presentations KPMG breaks this into essentially four different types of cloud computing: infrastructure, platform, applications and services. To put this in more concrete terms, examples of each can be:

Type	**What it is**	**Examples**
Infrastructure	Buying space / time on external servers	Amazon A3 Bungee
Platform	An existing software platform to build your own applications on	Facebook
Applications	Software applications accessed with a Web browser	Google Docs Salesforce.com
Services	Ready to use services accessed with a Web browser	ADP

What can Cloud Computing Solutions do for Libraries ?

So turning to cloud computing and libraries, are their real problems that can be solved? The answer is yes. The library community can apply the concept of cloud computing to amplify the power of cooperation and to build a significant, unified presence on the Web. This approach to computing can help libraries save time and money while simplifying workflows.

A brief list of potential areas of improvement could include:

1. Most library computer systems are built on pre-Web technology
2. Systems distributed across the Net using pre-Web technology are harder and more costly to integrate
3. Libraries store and maintain much of the same data hundreds and thousands of times
4. With library data scatter across distributed systems the library’s Web presence is weakened
5. With libraries running independent systems collaboration between libraries is made difficult and expensive

6. Information seekers work in common Web environments and distributed systems make it difficult to get the library into their workflow

7. Many systems are only used to 10% of their capacity. Combining systems into a cloud environment reduces the carbon footprints, making libraries greener.

These improvements can be grouped into three basic areas: technology, data and community. Each offers some general and some unique opportunities for libraries. Looking first at the technology that most current library systems employ several benefits of cloud computing solutions surface.

Data Efficiencies

When data is stored in the cloud it offers several advantages. Common data can now be easily shared among services and users. The need for local storage, maintenance and backups is removed. Agreements can be forged to share data that normally would be considered private to a single business or organization. And finally libraries can achieve Web scale when they massively aggregate data and users, something a cloud environment makes possible.

Like the advantages of technology deployed and accessed as cloud solutions, data storage in the cloud brings many benefits for libraries. The easy one to recognize is the same data being stored hundreds and thousands of times across libraries. Consider how many copies of the cataloging data there are for a serial publication such as the Economist. And if a change is needed to the cataloging data to keep it current each library must perform that change. When this data is maintained in the cloud, maintenance and backup of this data is now done once and if a change is needed, once one library performs the change all share it.

Another great benefit of data stored in the cloud is the opportunity for collaboration and cooperative intelligence. Libraries can agree to share pools of data for cooperative collection building, cooperative preservation or digitization, cooperative sharing of materials, etc. And with massively aggregated data new services can be created such as recommender services based on a broad base of usage data.

As stated above when library data is widely distributed across systems it makes library Web presence weak. When search engines such as Google, Yahoo and Bing can harvest from large data stores it opens the opportunity for the collective to work on search engine optimization, or the improvement of library collections appearing more relevant to search engines thus displayed higher in search results. This is a complex and ever changing task that would be prohibitive for individual libraries to accomplish.

Further, aggregated data can attract a much larger aggregation of users who interact with the data, add to it and re-use it. The result is every user adds benefit for every other user.

Cloud Computing

Common data can easily be shared among services and users when it is stored in a cloud. The need for local storage, backups is removed. The data that is considered to be private to a single business or organization can now be making agreements. Another benefit of storing data in the cloud is that it provides collaboration and cooperative intelligence. With cloud computing an online information community network can be developed for libraries. The two communities are: the internal community of libraries which collaborating within a single institution and external community collabrate across institutions. The cooperative efforts of libraries will bring wider recognition for libraries and provide the platform where the libraries can innovate.

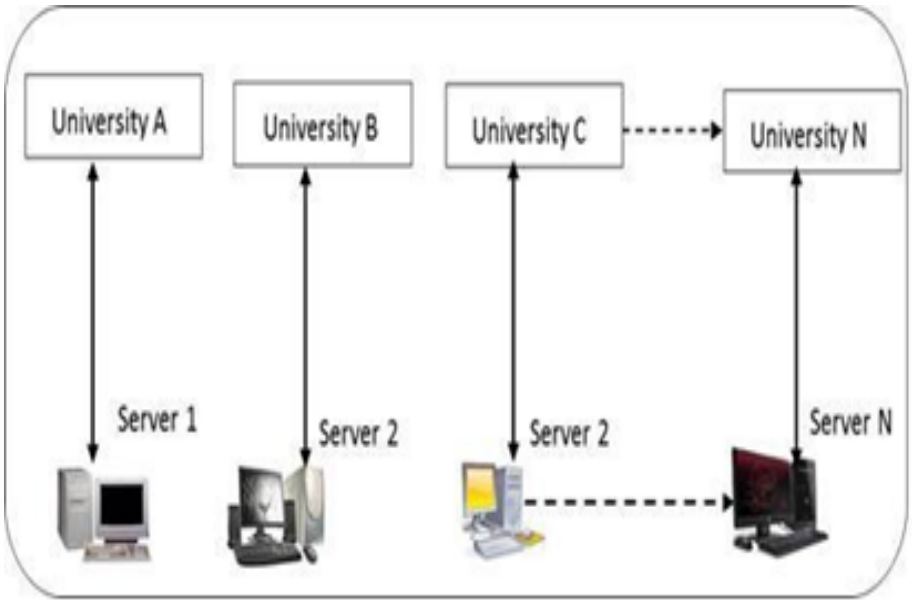

Figure 1: Schematic diagram of universities running e-library services with huge servers, and licensed software packages

Cloud Computing in Library Automation

In recent years it has become increasingly more common to hear about the virtues and benefits of the so-called *cloud* for the use of corporate software. Although the use of the cloud in the business environment has already transformed the concept of data storage and resource management, its use in the field of libraries and information

centers is somewhat less widespread. In order to understand how the cloud can be used in this professional environment, it is necessary to first become familiar with the cloud's features and its potential applications in the library and information center industry. Cloud Computing, also known as *cloud*, is a highly scalable platform promising quick access to hardware and software over the Internet, in addition to easy management and access by non-expert users. There are various types of *clouds*.

1. Cloud Computing may be public, in the event that the owner is a provider maintaining the cloud for the entities which own the data: In this case, entities pay for the use and enjoyment of the resource on the Internet.

2. It may also be private in the event that the platform is maintained by the institution itself within its facilities. However, the term Cloud Computing is most commonly associated with the public cloud.

Cloud Computing relies on technologies such as virtualization, programming techniques such as multi-tenancy and/or scalability, load balancing and optimal performance, to ensure that resources are offered quickly and easily. Furthermore, in the case of public clouds, these techniques generate economies of scale arising from the efficient use of hardware and human resources. These economies of scale, in turn, have an effect on the price the customer pays,which is of great interest to any institution in current times. Cloud Computing can be divided into three layers depending on what is being offered by the various companies that offer services of this type. From innermost to outermost, the layers are as follows:

1. IaaS or Infrastructure as a service.

2. PaaS or platform as a service.

3. SaaS or software as a service.

Advantages of Cloud Computing

1. Cost reduction:Ability to increase or decrease the consumption of hardware or software resources immediately and in some cases automatically.

2. Scalability: *Pay as you go* allowing a more efficient control of expenditures.

3. Lower investment, reduced risk. Immediate access to the improvements in the resource proposed (hardware and software) and debugging.

4. Support included. Enjoyment of the most advanced security procedures, availability and performance of providers with experience and knowledge in this type of service.

5. Greater security and accessibility

Access to resources from any geographical point and the ability to test and evaluate resources at no cost.

Disadvantages of Cloud Computing

The drawbacks are actually the same as those encountered by institutions that have information hosted outside of the entity. Whereas, in the case of hard-copy document files and at the enterprise level, this fear disappeared years ago given the benefits of cost reduction in infrastructure management and security, in the case of digital data there is still a huge fear of putting our information in the hands of third parties. This fear arises due to issues such as confidentiality, theft, loss etc. Yet people are increasingly more likely to do so now that the use of web 2.0 and social networks has become so widespread . There is nothing more sensitive than banking or personal data, yet this data is stored in servers over which we have no domain or ownership.

An institution might take the decision to progressively move towards Cloud Computing by uploading applications which are not very sensitive such as: messaging, the booking of rooms, meeting management, the liquidation of costs, and holiday management. Following this learning process, more valuable information involving the corpus of the institution, i.e *Busines intelillence* might be uploaded to the cloud. In the case of libraries and information centers, this information would include management funds and network transactions.

Automation and Cloud Computing

In the field of library automation there are several commercial suppliers already offering various adaptations of their products which make the use of the cloud possible to a lesser or greater extent. The problem is that many of these solutions are not really systems designed by and for cloud computing but rather adjustments of and patches for their commercial developments thatenable them to continue selling their traditional products while claiming to offer reductions in cost and more modern management. The report drawn up by Breeding, Marshall ”Automation Marketplace 2012: Agents of Change” in April 2012, is an in-depth study on the status of the different versions of commercial software, i.e. owner ,open source etc. .and among those products, it highlights those that already offer the ”open cloud” service. This article does not aim to compare these products, but rather to focus on what items should be studied for the purpose of deciding whether to use an open source application and determining how to purchase or contract this type of solutions.

Figure 2: Schematic Diagram of Universities Adopting Cloud Computing

1. The first and foremost priority is an in-depth study of all applications currently being used in the institution. It is necessary to know which type of data is being considered and which kind of applications are already available in the institution as well as the applications which are least user data sensitive. It should be clear that it is important to start off with those applications that affect our users and their personal data the least and especially, the indiscriminate use of such information.

2. Even when purchasing so called ”classic” software caution is required about the type of contract being entered into, and in the case of cloud computing even more caution is needed It is important to have a clear understanding of the risks entailed and to enter into a contract in which these risks are fully covered.

3. The possibility of backing out of the services should be ensured. Libraries need to be able to retrieve their information and contract a new”cloud computing” as necessary.

4. The Internet provider must be very reliable because if libraries do not have access, all their work could be lost. Clearly, a portion of the amount saved on cloud computing should be spent on fiber optic solutions, the improvement of bandwidth, server security, the expansion of backup services etc. If solutions for these services are not found in advance the transfer to cloud- computing services could be suicidal for both employees and users.

5. Before deciding on a payment method, each institution has to undertake an in-

depth analysis to determine which is most suitable. There are different payment methods for the use of cloud computing services , and the one to be used will depend on the services to be contracted by the institution. Most common are the following two payment methods:

(a) *Pay-as-you-go* is the standard payment method for Cloud Computing . hardware and software services. In this case you only pay for what you use, CPU usage, megas used, the use of a SW, etc. , or for potential use, e.g. in the case of payments made by users accessing the hardware and software platform.

(b) *Subscription* or payment for potential use of software or hardware, is another payment method, i.e. the payment of a fixed price over a certain period of time (month, quarter or year). You can use service as often as you want without limitations. There are different possibilities:

User : The amount payable depends on the number of users who use the tool, and user names are not typically intransferable.

Functionality : Payment for the use of one feature in particular.

Flat Rate : Payment of a fixed amount and no limitation on the number of users or use of resources.

6. The cost of increasing scalable storage options should be known in advance. Many providers offer very competitive prices at first, but then successively increase their rates to a much higher amount. A provider which at first seems less economical future might actually turn out to be cheaper if the initial cost is compensated in the future. As previously discussed, if the pay as you go method is chosen. it is better to choose a provider whose future rate increases are lower than to choose one whose original rate is very low.

Conclusion

This study provides cloud computing concepts and implications of cloud based applications in libraries in order to enhance their services in a more efficient manner. No doubt, libraries are moving towards cloud computing technology in present time and taking advantages of cloud based services especially in building digital libraries, social networking and information communication with manifold flexibilities but some issues related to security, privacy, trustworthiness and legal issues were still not fully resolved. Therefore it is time for libraries think seriously before clubbing libraries services with cloud based technologies and provide reliable and rapid services to their users. Another role of LIS professionals in this virtual era is to make cloud based services as a reliable

medium to disseminate library services to their target users with ease of use and trust worthiness.

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