A STUDY ON COMPARATIVE SURVEY ON TRADITIONAL LIBRARY AND WELL EQUIPPED DIGITAL LIBRARY

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Abstract— Technology is changing very rapidly hence it is very important for the librarians to keep on converting the existing digitized documents to the latest available formats. Though the print media is a stable media digital media is also supposed to be a parallel stable media and hence it is imperative to use this media for the long term preservation. With the advent of the Internet, individual's expectations for access to information have in- creased considerably. Though digital documents are created either born digital or from analog media to digital media by digitization, it is as well required to manage these documents in a proper way, such as it should have proper Information Retrieval Systems or Digital Library Software.

Index Terms— Digital Library, Evaluation, Content, Open Source Software

INTRODUCTION

Information technology has played an important role in library and information science. Due to the developments in information technology, now, it is possible for libraries to provide several new services to the library users along with traditional services. Libraries are now able to provide information in print form as well as in digital form.

During 1980s libraries started automating their bibliographic databases and during 1990s digital library projects were initiated. As on today, lot of developments has taken place in digitizing print media. At national and international level several big funding projects have been initiated to digitize valuable material available within the libraries for the preservation as well as for providing wider access to the collections through latest technologies.

Digital libraries have been making their roots in the library profession as a separate discipline and many conferences, workshops and seminars are taking place in the area of digital libraries. These conferences are covering different topics under digital libraries such as collection development and organization, user studies, digital library architecture, usability studies, search and retrieval, digital library software or providing value added services to end users.

Digital libraries are becoming popular and are becoming one of the important activity of any organization. The rapid growth in computing networks; databases and public awareness have contributed to a hot topic of today such as digital libraries, digital archives, institutional repositories or digital repositories.

While using the technology, it has also placed couple of challenges in front of the librarians such as which hardware/software to be used for organizing scanned digital collections or born digital collections, how to maintain these collections over a long term, what are the other aspects which needs to be considered before bringing digital collections on the Internet/Intranet of Library Web Sites.

The open source model on the other hand is a collaborative programming infrastructure that co-opts copyright law by freely releasing source code to the general public for any use, modifications, and redistribution without licensing restrictions. The source code refers to instructions written by humans in a computer programming language to be compiled into a binary format that can run on a computer, carrying out the tasks outlined in the source code.

According to Raymond, the definition of Open Source Software (OSS) is Software that is freely redistributable and can readily be evolved and modified to fit changing needs. In the open source movement, openness implies on ability to access and change the source code, at any time, to support a desired capability.

OSS is a term to describe the tradition of open standards, shared source code and collaborative development. OSS programs are available for any user for use. OSS are becoming increasingly popular software development method. It is both a philosophy and a process. As a philosophy it describes the intended use of software and methods for its distribution. In case of proprietary software the software is not free nor is the source code of the software available to the end user.

STATE OF OSS IN LIBRARIES

Daniel Chudnov has done a lot to raise the awareness of OSS in libraries. The OSS4lib site http:/www.oss4.lib.org lists all library related OSS applications including applications for document delivery, Z39.50 clients and servers, systems to manage collections, MARC record readers and writers, integrated library system, digital library software etc.

The OSS4lib site states that its mission is to "cultivate the collaborative power of open source software engineering to build better and free systems for use in libraries." The site maintains listing of OSS designed for libraries and tracks news about project updates and related topics. The open source movement and libraries have a common attribute such as free and open access to ideas and information. Libraries have highly specialized software needs because the library community have developed its own complex standards and protocols to facilitate things like inter library loan, metadata sharing and federated searching. Until recently libraries relied on the commercial solutions for all their requirements due to unavail- ability of skilled IT staff as well as unavailability of user friendly open source solutions.

Today there are more than dozen software available on Internet under Open Source cense terms and conditions for building digital libraries. The main purpose behind using Open Source Software is no cost is involved in using the software. With the use of Open Source Software libraries can manage to make their contents available on web without investing any money. There are many such open source based digital library efforts, projects and implementations, from all over the world.

Hence to know the current trend and to understand how future digital libraries would be, it is necessary to understand how these Open Source Digital Library Software function (OSSDL), what features are supported by each software, what are their future plans, whether software satisfy minimum requirements of the users, whether software satisfy minimum functions of a digital library, whether software satisfy minimum standard support, what are the unique features of each software, how is the installation of each software etc. Each software will support specific activities in specific contexts and hence they need to be evaluated to determine how useful, usable and effective they are as compared to others. Many such questions need to be answered. To understand these questions and to get answers, it is necessary to evaluate them on the defined evaluation criteria. The present chapter hence deals with the basics of Evaluation as it is the basic purpose of the present study and lists detailed list of evaluation criteria which are defined for evaluating each software covering broad and narrow aspect of all the functions that are generally carried out by the digital library software.

WHAT IS EVALUATION?

Evaluation is defined as "the systematic process of determining the merit, value and worth of something". It is a general term that includes various aspects of performance measurement and assessment. Activities include laboratory experiments, regional, national and international surveys or quasi-experiments, time series analysis, online monitoring of user-system interactions, observation of use, and other forms of data collection. Evaluation has many connotations ranging from highly focused and well-defined product testing to the highest form of cognitive reflection. A system is evaluated to ascertain the level of its performance or its value. Evaluation is executed according to a specific procedure. Evaluation study is an objective study based upon observations not opinion. ISO 14598 distinguishes four activities during the process of evaluation: analysis, specification, design and execution.

Digital libraries similarly can be judged by their effectiveness how well does a system or any of its parts perform the roles or tasks for which it was designed? and efficiency at what cost? Evaluation can be performed at different levels, involving different objectives and related criteria.

TYPES OF EVALUATION

There are different types of evaluation depending on the object to be evaluated. Four types of evaluation are important with respect to Digital Libraries:

FORMATIVE EVALUATION

Formative evaluation is a method of judging the worth of a program while the program activities are forming or happening. Formative evaluation begins at the initial stages of a development project to establish baselines on current operations, set goals, and determine desired outcomes.

SUMMATIVE EVALUATION

Summative evaluation is a method of judging the worth of a program at the end of the program activities. The focus here is on the outcome. It helps to determine if the intended
Goals of the program were met or not.

ITERATIVE EVALUATION

Iterative evaluation takes place throughout a project, beginning in the earliest design and development stages. Interim stages of design are assessed in comparison to design goals and desired outcomes, and the results inform the next stages of design. Iterative approaches encourage designers to set measurable goals at the beginning of a project and provide opportunities to re-assess goals throughout the development process.

COMPARATIVE EVALUATION

Comparative evaluation requires standardized measures that can be compared across systems. Communities can identify and validate measures. If such measures are implemented in a consistent manner, they enable comparisons between systems. Test beds are another way to compare measures and to compare performance of different functions and algorithms.

ANALYTICAL EVALUATION

Analytical evaluation makes the analyst think deeply about the design and about users, which can yield insights and long-term learning that inform future design decisions.

COGNITIVE WALK-THROUGH

Cognitive walk-through is a review technique, in which evaluators play a role of the user and "walk through" the interface in an attempt to complete certain information seeking tasks. Evaluators attempt to simulate the cognitive activities of the user and predict how he or she will react to different interfaces. The cognitive walk-through method proved to be very valuable for identifying ways to reduce clutter, reduce the number of links and make links more visible, and reduce the amount of text on the web site. It also identified problems with terminology and questioned whether certain color schemes might present difficulties for color-blind people.

HEURISTIC EVALUATION

Heuristic evaluation is another usability inspection method that evaluates the design of a user interface based on established usability principles. HE is a checklist-based approach to assessing the usability of an interactive system. In the original version of this technique, the analyst or team of analysts works through every page or screen of a system, asking team questions about that system. Digital library research, planning or deployment of digital libraries all can benefit from evaluation whether formative, summative, iterative or comparative. There are couple of studies which have been carried out so far in Heuristic evaluation area where user interface of digital libraries is studied by couple of users and have arised to different conclusions such as how the user interface should be of a particular digital library.

EVALUATION OF DIGITAL LIBRARIES (DL)

Digital libraries "give us opportunities we never had with traditional libraries or even with the web". With the growing importance of the provision of online services and resources, there is a need to establish methodologies by which it is possible to evaluate and measure the performance of digital libraries, the information they contain, and the services they deliver against set of standards.

These broad criteria defined here are defined on the basis of different functions carried out in digital libraries as mentioned in the following figure. There are several activities which are carried out in digital libraries. These activities are more or less same as in traditional library activities. In traditional library, we select material, acquire it, organize it, catalogue it and then make available to users through OPAC along with preservation aspect. Similarly in digital environment, digital objects are selected first then they are accessioned, catalogued and made available to the users by different value added web services. On the basis of this workflow, evaluation criteria are grouped under broad and narrow subject categories.
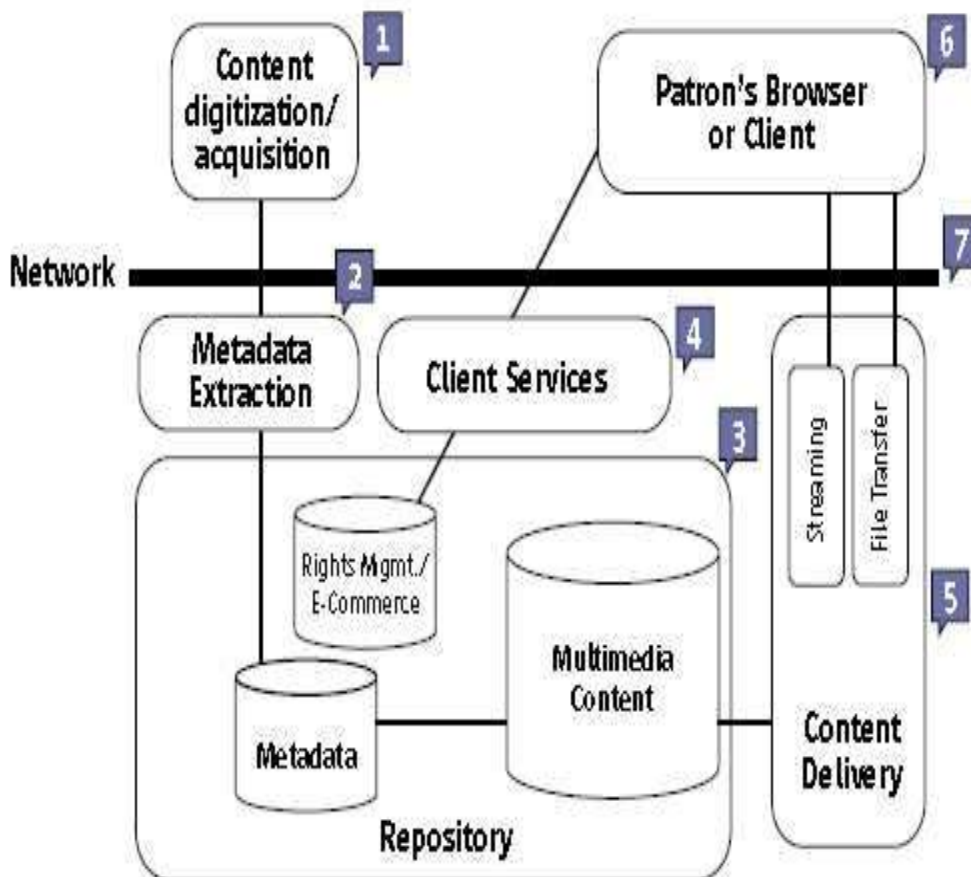

Figure 1: Digital Library Components

EVALUATION CRITERIA
CONTENT ACQUISITION

Digital libraries offer new opportunities to provide access to diverse resources beyond those which are held in traditional library environment. Content acquisition is an important part of any digital library. Like traditional libraries, while building digital libraries, only those contents are acquired in any digital library which is pertinent to the individual libraries information needs. Not all digital documents are added in any digital collection. Content is thus most important aspect of any digital library and quality of content is a primary factor that sets any digital library apart from the majority of the material available freely on the web.

Maintaining

DL is more difficult than just building collections hence site must be "weeded" out regularly as material added in the digital libraries will lose value over time and documents must be needed to be withdrawn or discarded regularly. DL software tools must support as much of the time-stamping as possible and alert staff and users when information in the digital library should be updated or removed

METADATA SUBMISSION AND SUPPORT

The key purpose of metadata is to facilitate and improve the retrieval of information. Metadata plays an important role in any digital library software. In digital libraries, to support navigation and management of different types of digital objects additional categories of metadata have emerged. Different subject domains will have different metadata schemas. Dublin Core is becoming a defacto standard for metadata entry in any digital library software. The digital library software should have capabilities to support different metadata schemas for adding variety of digital documents.

INFORMATION SEARCH & RETRIEVAL

Information search and retrieval is an important part in any digital library software. Search enables quick retrieval of information. Search services help users to select relevant information from digital library. Digital library's search service provides fast access to exact information which user is looking for. The success of a search service in any digital library relies on the implementation of a powerful retrieval engine and a flexible user interface as well as a good metadata support. The search interface allows users to do "across database"

searching without having to modify a query. Search service also covers searching beyond text to multiple media formats, including images, sound and video. The retrieval formats should be flexible and should provide users to manipulate the search process and results by reviewing search history, adjusting search strategies, editing and sorting search results and choosing preferable delivery formats.

CONCLUSION

With the present state-of-the-knowledge, no evaluation study can cover all aspects involved in digital library software. Thus, there is no complete "evaluation of open source digital library software". There would be only an evaluation of some of the elements in their construct. An attempt has been made to prepare an exhaustive list of evaluation criteria while evaluating open source digital library software, though it cannot be claimed that this list is a complete list and without any flaws and covering all aspects of digital libraries from all angles. All the selected candidate software has been evaluated on the basis of the above defined evaluation criteria

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