

The Role of Digital Libraries and Information Centers in E-Learning

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Received 12 February 2011

Revised 14 March 2011

Accepted 25 May 2011

Abstract: *Human kind always wants to learn the new methods of the production of knowledge and communicate with other people. Language and oral communication are considered as the first way for the exchange of ideas then writing helps to keep views and information. Therefore printing press as a new industry causes dissemination of information and beliefs, finally information and communication technology named forth revolution for printing and production of information and learning with no time and place limitations. Libraries and information centers play important role in learning and try to know changes and adapt themselves to the new conditions. So, nature, structure and function of libraries and information centers change to new terms like electronic skywriting in order to reproduce and get access to information because internet is considered as a powerful tool. This paper tries to explain the role of Libraries and information centers according to information technology (IT) and e-learning.*

Keywords: *Libraries and information centers, information technology, e-learning*

Introduction

Electronic communication network and new information technology, after the innovation of language and communication, and the emergence of writing and the phenomenon of printing industry , is considered to be the forth revolution in producing and offering knowledge.

In the present condition , this phenomenon named electronic skywriting, has changed the nature, structure, and the function of libraries and information centers so that exchanging, maintaining, distributing, publishing and accessing to the integrated information are occurring quickly by a powerful software called Internet without time and space limitation and easily . They are provided for everyone world wide with different cultures and view points.

Many believe that in parallel with changes which are made by modern technologies in data environment, referral of users to libraries is reduced(Fattahi,2003,p16) and users such as students, researchers and scientists could accomplish their own researches directly and without any need to librarians due to spreading of new information technologies, service automation and information searching and remote accessing to them.(Schwartz, 2009:135) and achieve their required information through internet, anywhere and anytime.

Therefore the role of librarians as a mediator between consumer society and information has faded. But researches indicate that according to soaring amount of information and dispersion of producing it in different places and need of assessment, selection and accessing to information in every point of the world instead of Property of them and presentation of various Information services to consumer society with considering information requirements and the type of their requests through librarians and Information scientists, not only the relation between librarians and consumer society has not faded but also the domain of their responsibilities and activities has become much heavier than before. (Weng,1997,p433). Furthermore, as a part of global network, they play a significant role to form scientific relations among researchers and scientists (Al-Zahreni,2000,p189).

Librarians and Information scientists always try to keep up with constant and continuous changes that are taken place in societies. They may identify new changes sooner than others to achieve their final aim, which is meeting the information need of consumer society that includes persons who attend libraries or persons who

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have never seen the librarian appearance but have remote access to information, by means of offering better services and appropriate information.

Current paper describes modern and digital libraries at first and then argues about some major services of modern libraries for human societies.

Definition of Digital Library

Following the development of information and communication technologies, many terms ,such as library without wall, virtual library, electronic library, bionic library and digital accomplished library. "Digital Library" has been the most accepted phrase in writings and works of scientists and researchers , books, seminars and professional conferences since 1990.

During the recent years, significant changes have occurred in accessibility to information by creation of digital library (Fox, 2006,p100) and it is expected that this phenomenon should provide the possibility for all citizens to access and use the science produced by different people in all over the world with different cultures and languages according to their science requirements (Baker, 2006,p40).

There are various descriptions of digital library by people and organizations. Schwartz believed that there are 64 formal and informal descriptions of digital libraries in different contexts (Schwartz,2009,P385).

The Association of Research Libraries (ARL) confirms the key elements of a digital library in a general description as following:

1. A digital library does not possess an **independent existence** and is usually dependent to a specific organization.
2. A digital library requires **new technologies** to connect more resources.
3. One of the obvious targets of digital library is to give informative services to end users.
4. Being connected to other digital libraries around the world is among total targets of digital library; on the other word, different digital libraries with various structures, different super-computer figures and their technologies are able to be connected to other digital libraries to exchange information through some protocols and standards.
5. The collection of digital library is not limited only to documents (such as books and journals). Moreover, it includes all Information materials which can not be published and distributed (Waters,1998,p1).
6. **Flexibility: Compatibility** of digital libraries with modern technologies is one of the most important qualifications of them. For example users are able to create their own private digital library by submitting some information about their favorites, total target, priorities of method, output representation style and even background color of pages.
- 7 Digital libraries are able to make accessibility to information much easier than web pages.
- 8 Digital libraries beside organizing information and ultra-medias, present information semantics and additional information about other users who refer to digital libraries and also their targets (Frais,2006,p344).

We point to one of the most referred and comprehensive viewpoints of digital library that is expressed by Digital Library Federation, according to numerous and different descriptions of digital library by computer and information experts: "Digital libraries are the organizations in them the provision of resources, expert staff, the process to select Information resources, reorganization, assistance for logical access to information, interpretation, distribution, saving integration of information and guarantee to support and maintain a collection of digital works during a long time are paid enough attention to make digital information resources more accessible for the society or some specialized groups with high speed and economical"(Singh,2005,p2).

This description contains various aspects of a digital library as an organization. Some elements such as expert staff, selection of resources, reorganization, economical features and users as the most important factor are emphasized. In fact, users are the main element of information centers because the existence and prosperity of libraries depend on independency of users and their reference to resources. Digital libraries and Information centers have always made effort to adapt themselves with continuous development and changes of societies. They may recognize new changes sooner to reach their target to provide continuous, economical and easy access to information and science.

Relationship Marketing as the Main Parameter of E-Learning in Digital Libraries:

Customer is always right

Relationship marketing includes recognition, creation, safekeeping and development of relations with users (customers) and sometimes breaking off the relations according to further advantages in such a manner that the

purposes of two bodies are provided. This situation will be established by mutual agreement, trade and responsibility. The value of information depends on its being used. So, assuring customers to enjoy the best and suitable services is the first important matter to establish relation with users (customers) in a digital library. As the basic principle, libraries should recognize their users (or their potential users). This recognition is possible by collecting sociologic details of users such as age, religion, gender, characteristics, favorites, proficiency, education, etc (Henderson,2005,p343).

Librarians and Information scientists in addition to recognition of new information technologies and keeping up with it, have put studies about exact identification of consumer society and information needs and type of their requirements especially in educational environments in their priority, for usability of library and adapting its services to needs of consumers.

Some of study fields are shown below:

-Experimental researches about cooperation between consumer society and library,
-usability, accessibility and library suitability,
-support for learning, teaching and researching through bringing close together the virtual educational environments and digital libraries,
-cooperation between mankind and computer,
-behavioral assessment of different users groups on a knowledge level basis, age periods and particular needs (Sherri,2003,p183)

Followings are some required facilities and capabilities of digital libraries in viewpoint of users:

1. Offering music and images beside essays and books
2. The possibility to read books on monitors
3. The possibility to view various books with related subjects
4. The possibility to prepare personal profiles for all users to make them able to review a history of saved essays and books, musics and images
5. A full-time e-librarian or assistant to help users : ask a librariran key in Homepage of digital library.
6. The possibility to review all printed or viewed subjects
7. Providing a list of related subjects to searched topics of users
8. Current awareness services to users about their required subjects
9. Continuous chat possibility
10. Possibility to published books by users through digital library
11. The possibility to discuss or contact with authors about their essays and books
12. Possibility to establish relation and cooperate with other users
13. Search engine to suggest related topics
14. Possibility to represent book covers with all details
15. Classification of books based on their subjects
16. Possibility to represent a list of most important resources of digital library
17. Possibility to represent a list of the most citation resources
18. Easy-to-learn (user-based structure)
19. Possibility to feedback of other users (Tipton,2008,p403)

Relationship Marketing is a new and active mechanism that is located on top point of the activities of modern librarians. This mechanism gathers all information about users to define the kind of data which should be delivered or revealed to each person at any proper time and place and also with the best means. The most important methods to develop relations in digital libraries are:

A:Selective Dissemination of Information (Personalization):

Selective dissemination of information is one of the best services of digital libraries to inform e-users from modern data which is related to their proficiency and working field.

Personalization is titled to methods that provide the possibility in a digital library for any person or a group of people to order their required Information and services based on their similar and special needs. To establish intimate relations with customers is the main factor in personalization environment which leads to best recognition of requirements of each user and at last results removes them automatically and based on science.

The key factors of a “user model” personalized environment include a data structure according to favorites, total targets and behavior of user to specify the best resource and the best representation style for each user. In user model process, hidden and invisible information of each user will be changed into clear and visible information. In other words, user model is a collection of structured information to reveal and represent one or some of the following items:

1. Presenting the information about science, total targets, method priorities, duties and abilities of one or more kind of users
2. Recognition of general qualifications of users to form specific subgroups (stereotypes)
3. Classification of each user in one or some subgroups
4. Registration of the behavior of users

“Stereotypes” is referred to a group of users who have similar general behaviors. Of course user model can be created in two methods:

1) By “user-guide approach” that models are created directly through the information that each user submits. In other word, users submit some information about their favorites, priorities, total targets and behaviors when encountering personalization system of digital library. This method includes all priorities and expectations of users from background color as much as order and arrangement of details and information contents. All submitted information will be saved in user model of each user to be represented in outputs. The hypermedia database which is created based on this method is technically named: “Adaptable (changeable, flexible or compatible)”. (In other description, the system at first receives the information of each user by them and then changes the information to user models adapted to requirements of each user).

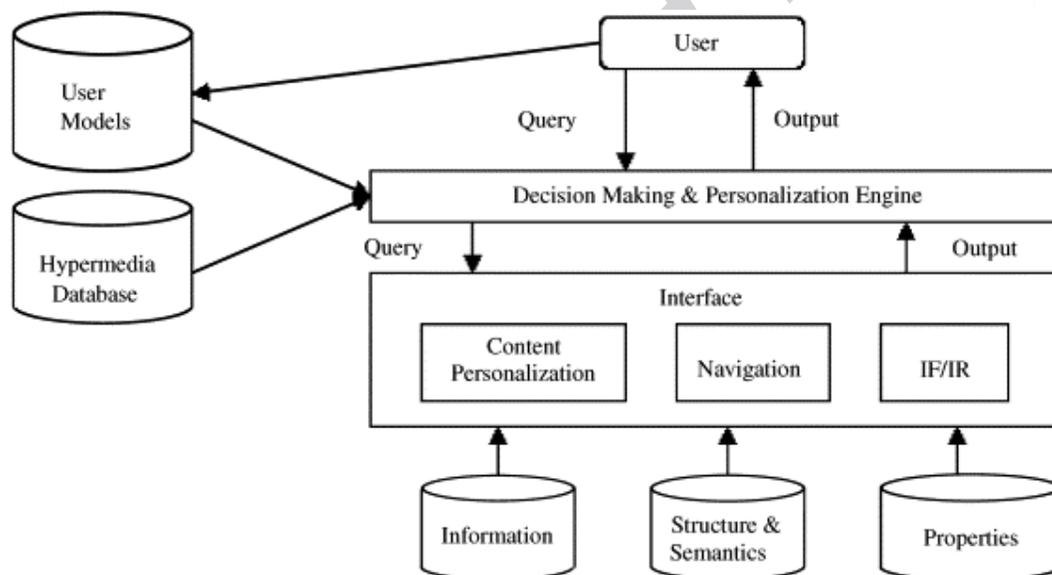


Figure1: The architecture of an adaptable digital library

In this method, outputs are not represented directly by interfaces to reply the request of users, but the content and representation style of outputs will be adapted through decision making and personalization engine to represent demand of users at last. So the user model will be created exactly according to the information that users submit.

Limitation of this method:

- 1-1) The description of personalization is not understandable by all users.
- 1-2) Users usually do not reveal any feedback to the system, even if this feedback is required to enjoy better services.
- 1-3) Not all of users are completely know their real needs, so they will be unable to submit their information correctly.

1-4) Even if users know their needs correctly, the among of information of digital library which should be represented according to priorities of users, is not identified.

2) By **“automatic approach”** during which the process of user model is invisible and priorities, favorites, total targets and behaviors of users will be recognized by means of machine learning techniques and while users encounter the system (personalization).

User model in automatic approach environment will be created with no direct interference of users. By comparison with user-guide approach during which users submit their information directly, automatic approach tries machine learning techniques and creates favorite models for users through the information that users submit when they encounter the system. For example, when a user browses a webpage for three minutes, it means that the page is attractive for him or her and the user enjoys the background color and contents. The hypermedia database which is created according to automatic approach is technically named adaptive”. (in other words, it adapts user model for each user with the characteristics of him or her that are achieved by automatic approach when the user encounters the system).

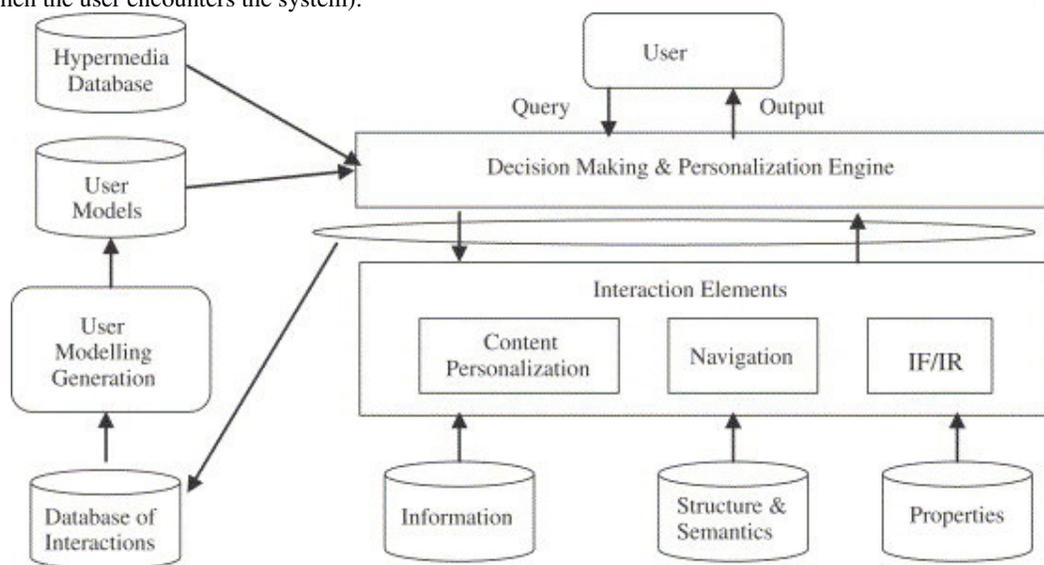


Figure 2: The architecture of "adaptable or changeable" digital library

The main difference with user-guide approach is that user model in automatic approach includes general part of user model, database and reaction among a group of users and library beside personal information of users. Although automatic approach has not such limitations as previous method, but it has some problems as followings:

1. The system has no information about users when they start to work to recognize the necessary standards for personalization.
2. Machine learning technique may face millions of users at a time who intend refer to digital library.
3. User technology should be capable to accept too many user models which increase rapidly and also be ready to accept changes in priorities, total targets, etc of each user in his or her user model.
4. This description that opinion of users such as priorities, favorites, total targets will be distinguished automatically (for example when a user browses a Homepage more than three minutes, it will be identified that background color is attractive for him or her and user is enjoying the contents) can not be really true and be mentioned as the base of all priorities of users. In other word, this conclusion can not be generalized to all priorities of users. In this regard and to remove the problems of two previous methods, an intermediate method is initiated to create user model which is called "Hybrid User Model" in which users enter the system by "user-guide approach" and some other information about them such as data detection and filtration will be achieved automatically by machine learning technique when users encounter the system (Frias, 2006:234-248)

B: Current Awareness Service:

Current awareness service is one of the valuable services which saves users' time. Librarians have known this

service since some decades ago and have suitable experience about it.

In current situations, in which people, for many reasons, are not able to refer to libraries physically, it is better to reveal information resources in their working places directly through video-conference, email, etc to benefit them by new added subjects and by useful materials even if they are not included in collection of library.

Conclusion

Traditional libraries in the past years were trying to prepare resources considering their budget which were important and required for the society. Users had to refer to libraries to use their resources and they should be a member to enjoy all services. It is obvious that no library alone was able to gather all resources for its users. In current situations, libraries and information centers share their information through internet and provide the possibility to access all informative networks, systems and resources from any point in the world instead of possessing them.

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