

Web 2.0: Impact and challenges on digital libraries

Sanjay Kataria¹, John Paul Anbu K. ² and K. P. Singh ³

¹Learning Resource Centre

Jaypee Institute of Information Technology University

Noida, INDIA

²University of Swaziland Libraries

SWAZILAND

³All India Institute of Medical Science

Ansari Nagar, New Delhi-110029, INDIA

e-mail: skataria.jiitu@gmail.com; anbu@uniswacc.uniswa.sz;

krishan_singh11123@yahoo.com

ABSTRACT

Internet and web technologies have triggered unprecedented changes in libraries. Web 2.0 services, especially the emergence of services like Instant Messaging, Streaming media, Blogs, News feeds, Social bookmarking tools, Tagging , etc., have revolutionized the internet and online experience. These tools are used very effectively in library and Information profession to provide next generation services to library users. Though these revolutionary ideas are new to libraries, they are very important for consolidation of information as the users are now able to identify, seek, confirm and consolidate the information needs of the modern information society. Many of these services are offered widely taking specific needs of individual libraries. This paper looks at some of those services and looks beyond such opportunities to see the kind of challenges the modern libraries have.

INTRODUCTION

Rapid advancements in the field of Information and Communication Technologies, changing perception of ICT consumers, and the enduring quest of humanity to innovate new and advanced techniques have resulted in an unprecedented change throughout the world. The developments in internet technologies and the user-friendly nature of digital content have created new and exciting opportunities in the fields of publishing and information world. While these advancements have triggered a wave of change and optimism in the entire digital ecosystem, it has also spurred an enormous change in libraries and information services. While "ICT and internet technologies have changed the nature of libraries in all sectors, they have also changed the perception and expectations of the user community" (Chowdhury, 2006). As a result, the users of the libraries who were simply 'readers' of books are now transformed into 'information seekers' and this is mainly because of the way the internet and ICT tools have advanced the outlook of libraries. It is also interesting to note that the profile of libraries have also changed and is in the process of changing into 'information centers'. Ordinary users who were simply know as 'readers'

are transformed into 'information seekers' and further elevated to 'information confirmers' and finally into 'information consolidators'. As LiLi (2006) rightly observes, "in today's Information society, libraries are functioning as an Information centre, a learning center, a training centre, and a publication centre". This multi-faceted outlook of libraries has prompted to redefine its objectives in terms of its services, strategies and objectives.

The impending changes in libraries started with the advent of digital contents into the libraries and further enhanced with the incorporation of web based digital contents into its collection. While e-books are rapidly making inroads into the library collections, "electronic journals and databases have firmly established themselves as essential resources for libraries and their users" (Vasileiou 2009). Access to these electronic journals and databases necessitate web based interface and interaction. Thus the "internet with its world wide web interface has become part and parcel of normal academic life"(Schmiede, 2009). While there are changes in the entire digital ecosystem the world wide web has also gone through its metamorphosis. The second generation of web services which are referred to as web 2.0 seems to be triggering a new wave of services and technologies to the internet users. With the web 2.0 services there seems to be a remarkable increase in websites which offer social networking and online applications where, people interact, share resources, create and recreate ideas, tag and label content and rate it in some way. Another important common aspect in these applications is its emphasis on online collaboration and the sharing. These advancements did not come overnight. Many observers feel that this transformation is the result of Web 2.0 services, drawing the attention of IT professionals, businesses, and Web users.

WEB 2.0 TECHNOLOGY AND ITS FEATURES

The term Web 2.0 was coined by O'Reilly Media (an American media company) to distinguish between the old and the new generations of websites. Razmerita (2009), observes that "in the last few years we have witnessed a transformation of the web from a static web towards a 'living web' where the users bring content, collaborate and share knowledge". This transformation of web from static to dynamic is termed as Web 2.0. Most people think web 2.0 is a standard, on the contrary, as O'Reilly himself projected web 2.0 as a collection of ideas on the perceived services of the next generation of web. Minsk (2007) observes that "in recent years, new software design patterns and business models are observed on the Web which is commonly referred to as Web 2.0. These designs and patterns can be observed as a new experience for lot of users. While some call the new web 2.0 as dynamic and living some describe it as 'warm' or 'hot' web. It is 'warm' because it provides a kind of warmth to the users—a kind of 'interactivity' to the users. It is 'warm' because it provides dialogue and life. Stephen Abram in his lighthouse blog post describes Web 2.0 as a 'conversation'. The result of this interactivity is the emergence of services like Instant Messaging, Streaming media, Blogs, News feeds, Social bookmarking tools, Tagging and AJAX, which are grouped together called as Web 2.0 services. Using these tools "people do not only passively consume information; rather, they are active contributors, even customizing tools and technology for their use" (Razmerita 2009). These revolutionary ideas are new to libraries yet they are very important for consolidation of information as the users are now able to identify, seek, confirm and consolidate the kind of information which they look for. With the rapidly changing world, modern libraries have also embraced these exciting services and call them as Library 2.0 services. Casey in his LibraryCrunch post observes that libraries also follow the commercial websites by migrating from the earlier library services to the web 2.0 based services which form the basis for the Library 2.0.

WEB 2.0 AND LIBRARY 2.0

The second generation of libraries (Library 2.0) can be broadly classified as services which make use of the Web 2.0 tools and services in order to guide towards the next level of information service delivery and usage. The early adapters of digital libraries and its services provided digital contents to their users but mostly as static digital libraries. The first generation of digital library services used the technology only as an extension of its existing manual operations. The card catalogues were converted into electronic catalogues where the OPACs were nothing more than electronic catalogues. The manual circulation and readers services were made automated services. When the web based catalogues and web based digital content delivery modes were initiated, it has given room and scope for many exciting services. The exciting Web 2.0 tools such as Synchronous Communication (Instant Messaging), Content Delivery (RSS Feeds, News Feeds), Streaming Media, Collaborative Publishing Tools (Blogs, Wikis, Tagging, etc.), and Social Networks provide ample scope for exciting content delivery to library users and they are slowly becoming part of the library services. Many librarians and Integrated Library Systems (ILS) use these exciting tools to bridge the gap between the user and information.

Most of the services and tools of library 2.0 are not new to libraries. In fact, these services are extensions and developments of what the libraries have been doing for a very long time. The age old reference services are now being enhanced using the Web 2.0 tools to have instant messaging services. The SDI services are now enhanced to become News Feeds and HTML feeds. But the collective outcome of these extended services is that there will be a revolutionary change in the face of the library and its users. There will be substantial change in the collection development, content delivery, library services and many of these library activities.

IMPACT OF WEB 2.0 ON LIBRARY SERVICE

The impact of web 2.0 on library services is enormous. The new and emerging tools of web 2.0 are generating a number of enhancements in the delivery of information. Librarians and IT professionals seems to be actively engaging themselves into a healthy collaboration to advance library services to the next level.

Instant Messaging

Web 2.0 services like Instant Messaging has the capabilities of bringing the ready reference tools to the users' desktops. Messaging provides a real-time text or voice communication between individuals. A number of new and upcoming library systems incorporate this useful service into their websites to provide ready reference to questions that their users ask (example in Figure 1). Currently, most of the Integrated Library Systems come with a suit called Reference Librarian, or Reference Desk which makes use of the Instant Messaging service to provide interactive reference service to its clients. The future of these messaging services looks very optimistic with possibilities of instant access to many reference related questions that the users might have on the library's collection or on any general subject. Interestingly these Reference Desks are becoming more and more interactive with more multi-media contents and services. In future there are possibilities of Reference outsourcing where libraries can connect to specific reference outsourcing service for general references and specific in-house or third-party outsourcing for their

own reference material. The digital transcripts of these references can be used as a good tool in libraries for evaluating their users' needs and the services the libraries provide. The Library of Congress "Ask a Librarian" is one of the most quoted reference librarian service in Library Services (Figure 2). Many ILS applications like Millennium and SirsiDynix have this useful facility built right in their OPAC interface.

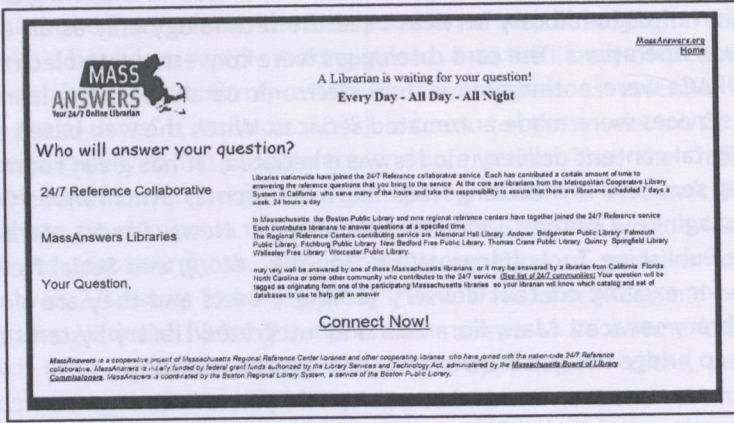


Figure 1 : Massachusetts Regional Reference Center libraries reference service

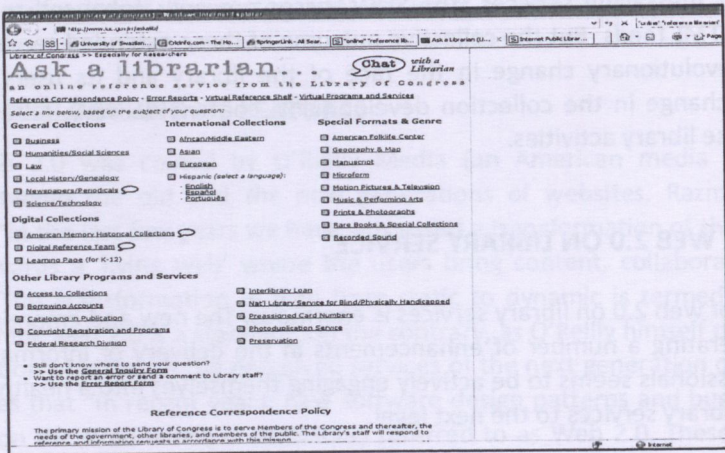


Figure 2: Library of Congress Ask a Librarian service

Streaming Media

Streaming Media is another important web 2.0 service which seems to be influencing library services. Streaming Media has a very high level of usage potential in libraries where short films, music, and different forms of streaming medias are available. These media can also be catalogued and incorporated into the existing catalogue to provide users with streaming media on demand. Streaming Media is dominating the thinking of librarians to provide multimedia experience to their patrons. More and more ILS and OPAC 2.0 services are including the Streaming media in their services (Figure 3). Currently some libraries even provide the streaming media as separate service classified according to genre and media.

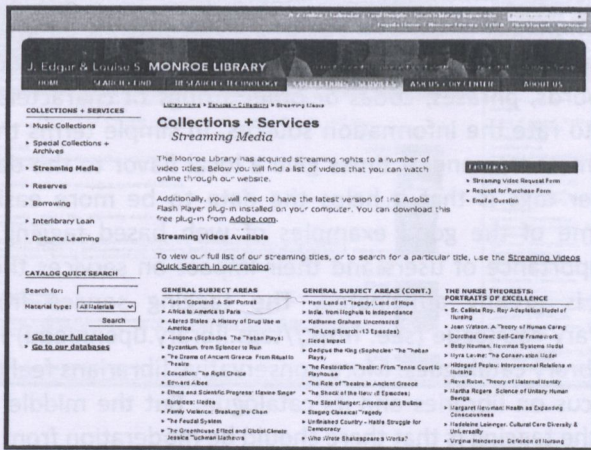


Figure 3: Edgar Louise Monroe Library offering streaming media services. http://library.loyno.edu/services_collections/streaming/

News Feeds

The advancement of web has made newsfeeds brought directly into the desktops. Gone are the days when the users have to search for current news and to pay a hefty subscription for the information. The advent of news feeds which are called as RSS (Relatively Simple Syndication) has seen that the news service can be seamlessly integrated into the user's desktop. The emerging library services seem to have captured this novel idea into the development of library services and have imbedded them in the library services. For current and updated news on any given subject the news feeds can be used. For this the libraries should provide a dedicated news feed catalogue which can provide news feeds arranged in any specific sequence as the website above provides (Figure 4). This will immensely help the users as they can choose the specific feed they want to access their needs. Another novel way of providing news feeds is to create specific news rooms where different news feeds are grouped according to subjects.

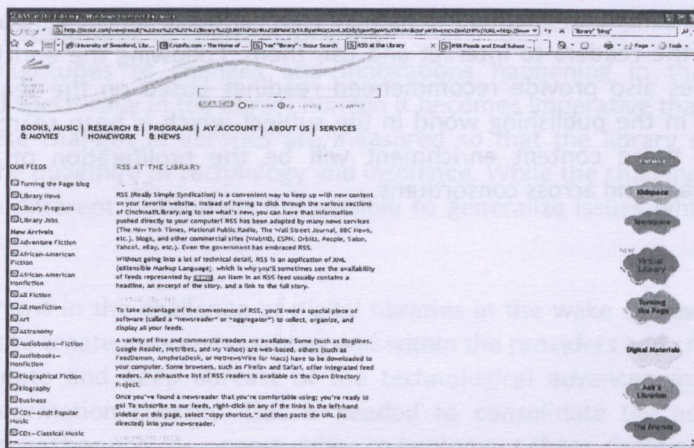


Figure 4: RSS Feed catalogue at the Public Library of Cincinnati and Hamilton county <http://www.cincinnatiandhamilton.org/feeds/>

Tagging and User Comments

Another web 2.0 service which is gaining importance in the Information world is tagging. In the beginning commercial websites made use of this service to tag and rank their products according to the user's liking. Tagging is a process by which the resources are assigned tags in the form of words, phrases, codes or other strings of characters. In libraries it can be used effectively to rate the information sources. In simple terms this allows users to add and change the metadata and at times give a local flavor to the data and metadata. The advantage of user tags is that it helps the data to be more easily searchable. Flickr, delicious are some of the good examples of web based tagging. As the Web 2.0 re-emphasizes the importance of users and their impact on services the impact of tagging in library services is greatly anticipated. The tagging service from the university of Pennsylvania library catalogue (see: <http://tags.library.upenn.edu>) illustrates how tagging is being tried in library catalogues. More conservative librarians feel that tagging has got its own negative focus on libraries and its catalogue. But the middle ground for the future development in the tagging is that there should be moderation from the librarian's point of view. The users can include tags to a record but the suggested tags are to be submitted to the librarian who can approve or disapprove. On approval, these tags can be added to the record.

Catalogue Enrichment Services

The essence of Library 2.0 lies in the "user-centered transformation of library services" which Zheng argues that "we should keep studying, and adopt ourselves to the changes of users' needs and evaluate, regulate and innovate our services in accordance with such changes" (Zheng 2009). There are a number of services which a user would like to have in a library catalogue which the static web based catalogues failed to provide. For example, before a user reads a book he would like to see the cover image of the book, or the user would like to sample the writing style of the author or to read the blurb of the book. The user might even want to know whether that book is recommended by any of his fellow readers. The modern catalogue enrichment services do this precise work thanks mainly to the innovations of web 2.0. services. These services transform the static library catalogues into dynamic and colourful catalogues where content is displayed on demand. Content enrichment services allow the catalogues to display the images of books along with table of contents and sample of chapters to name a few. All these services are available on the catalogues for the readers to interact and use them. Following the enrichment services these catalogues also provide recommended readings based on the search along with what's current in the publishing world in the subject which is being searched (Figure 5). The future of these content enrichment will be the proliferation of these services regionally, globally and across consortiums.

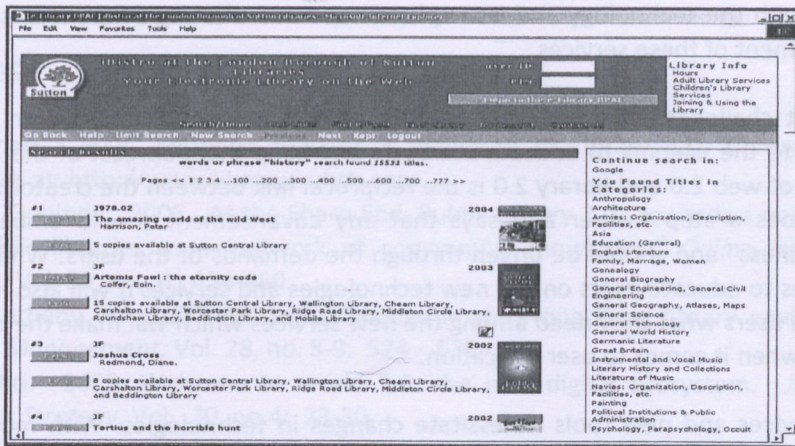


Figure 5: Symphony: SirsiDynix, Symphony library catalogue at London Borough of Sutton Library showing the Catalogue Enrichment services in its catalogue

Next Generation OPACs

The influence of web 2.0. on the next generation of OPACs are enormous. Most of the ILS vendors model their OPACs as vertical portals with multitude of services embedded into the OPACs. Though providing access to the library catalogue is the primary objective, these OPACs provide multitude of services like streaming media, news feeds, chat rooms, media rooms all embedded in a single interface and allow the users to even to personalize their OPAC structure according to their liking. Some of these OPACs even allow users to choose the different services to make their OPAC setting more meaningful. These OPACs, even while displaying the search results, provide a more sophisticated faceted search result with provisions to scale the results according to a time frame or according to genre and so on. These models are mostly based on commercial website models and bring wide variety of information sources to the user and at the same time provide ample chance of interactivity and consolidation.

Web 2.0 and Challenges to Digital Libraries

With these multitudes of changes and innovations happening in the entire digital ecosystem and specifically in the library horizon it becomes imperative that the challenges caused by these changes in libraries are measured so that the library services are not caught-up in the quagmire of technology and insolence. While the challenges are manifold and unique to different institutions it's possible to generalize issues which stand out for many libraries.

First and foremost in the challenge of digital libraries in the wake of new and upcoming technologies is to create awareness among and within the providers and creators. There is a need to update and keep abreast of the technological advancements amongst the creators of information sources. This is needed to consolidate the advancements of technology and further provide opportunities to implement them. Creating awareness has been successfully done in the past with a number of symposiums and workshops. While these concerted efforts are welcome there needs to be working models and examples of these upcoming technologies and tools which the novice can make use of. While services such as tagging, comments and catalogue enhancement services need the consent and cooperation of the users and their needs it become imperative that the providers are well

versed with the technology and its implications. Thus creating awareness is vital for the advancement of these services.

The next challenge with the advancement of technologies and provision of advanced services to the users is to educate the users and keep them abreast of the changes. The essence of web 2.0 and library 2.0 is the reciprocal link between the creator and the user. Zheng goes a step further and says that any advancement should embark on "user-centeredness" and should be driven through the demands of the users. While developing strategies to educate users on the new technologies and services it will also help to derive from the users what they need among the new services which will make the process much simpler when it comes to user education.

New services and new tools necessitate changes in technologies. With more and more services emphasizing on capturing the imagination of the users and providing grandeur and eloquent information there is no doubt that these new services warrant new equipments and upgrading the existing technologies. This is a big challenge to modern digital libraries as the technology and its services keep on evolving while the budgets for procuring such technologies are dwindling. The exponents of library advancement should keep in their mind the advancement of Technology and its services on one hand and the user needs and the availability of funds and provisions for newer technology on the other hand. Certain services cannot be provided just because the technology is available and vice-versa.

Above all any advancement necessitates a complete change and in the case of digital libraries especially with the advancement of web 2.0 services most of the traditional library services are changed into newer services. Thus there is a bigger need for having a Change management within the libraries. Change management will warrant counseling with the existing staff on the reallocated responsibilities and the users on the renewed responsibilities. Ferguson argues that "anyone attempting to change an organization needs to recognize that change is difficult, for organizations to change successfully the people who populate them must change" (Ferguson, 2007). Team Technology Inc (nd) suggests five factors that must be kept in mind while dealing with change:

- a) Different people react differently to change
- b) Everyone has fundamental needs that have to be met
- c) Change often involves a loss, and people go through the "loss curve"
- d) Expectations need to be managed realistically
- e) Fears have to be dealt with (available at <http://www.teamtechnology.co.uk/changemanagement.html>)

Karakas (2009) suggests a five point agenda which he calls as Five Cs to successfully counter the challenges of changing digital ecosystem. His five Cs are Creativity, Connectivity, Collaboration, Convergence and Community. This Five C model is one of the best exponents to withstand the challenges of web 2.0 especially in the library environment. The facets of web 2.0 clearly elaborate these five aspects as the chief ingredient of the next generation of service. If this can be achieved there is no doubt that a better service can be rendered to the library patrons. With the advent of web 2.0 services and the incorporation of these services into the library spectrum there is no doubt that exciting times are ahead of us.

REFERENCES

- Casey, Michael. 2005. Working towards a definition of Library 2.0. *Library Crunch*. Available at: <http://www.librarycrunch.com>.
- Chowdhury, Gobinda. 2006. At the Sharp End. Public Library 2.0.: towards a new mission for public libraries as a 'network of community knowledge." *Online Information Review*, Vol. 30, no. 4: 454-460.
- Ferguson, Anthony W. 2007. Managing change in the Hong Kong library environment. *Library Management*, Vol. 28, no. 8-9: 524 – 530.
- Karakas, Fahri. 2009. Welcome to world 2.0: the new digital ecosystem. *Journal of Business Strategy*, Vol. 30, no.4: 23-30.
- Li, LiLi. 2006. Leveraging quality web based library user services in the digital age. *Library Management*, Vol. 27, no. 6/7: 390-400.
- Minsk, Chong et.al. 2007. Web 2.0. concepts and technologies for dynamic B2B integration: emerging technologies & factory automation. *ETFA. IEEE Conference*: 315-321.
- Razmerita, Liana et.al. Personal knowledge management: the role of web 2.0 tools for managing knowledge at individual and organizational levels. *Online Information Review*, Vol. 33, no.6: 1021-1039.
- Schmiede, Rudi. 2009. Upgrading academic scholarship: challenges and chances of the digital age. *Library Hi Tech*, Vol. 27, no. 4: 624-633.
- Sirje, Virkus. 2008. Use of Web 2.0 technologies in LIS education: Experiences at Tallinn University. *Electronic Library and Information Systems*, Vol. 42, no.3: 262-274.
- Tim., O'Reilly. What is Web 2.0?. <http://www.oreillynet.com/lpt/a/6228> (Accessed :12 September 2010).
- Zheng, Qiaoying and Shaoping Wang. 2009. Programming Library 2.0 that users need. *The Electronic Library*, Vol. 27, no.2: 292-297.

Keywords: Digital information resources, Reference services, Reference libraries, Tabriz University's libraries.

INTRODUCTION

Libraries were always the center of storing, utilizing and distributing human-knowledge in the had of history. The very increasing volume of information, internet penetration, creating the various forms of information and the great incentive of researchers to the accessibility of the information electronic forms has made a pressing need for making change in the function and role of libraries across the world (Amirgour, 2009).

Reference services are the main core of the specialized activities related to library and information centers. In the era of information technology, providing such information in the field of library is of importance. Modern introduced reference services as a light to the darkness of the readers giving a hand to find their own future needs. To give more credence to the two factors, namely accessibility to the resources and also the unlimited scope of accessibility is of necessity.