

## WEB 2.0 ENVIRONMENT AND ITS IMPACT ON LIBRARIES AND INFORMATION SERVICES

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### ABSTRACT

The web was widely embraced by academia and librarians recognized a great information delivery system. The term Web 2.0 indicates the development of online services that encourage collaboration, communication and information sharing. It also represents a shift from the passive experience or read only web pages to the participatory experience or read write web pages. Web 2.0 services as forums, wikis, RSS, blogs, podcasting, video sharing, social networking, instant messaging, tagging and social bookmarking, etc. are increasingly embedded in many areas of life. Similarly, it is also used in all over the world to promote information services by librarians. This paper describes background, concepts, features, three icebergs (threats) and key applications of Web 2.0 services in libraries. Finally, it also highlights the impact of Web 2.0 on libraries and information services.

**Keywords:** Information delivery system, Web 2.0, Online services, Communication and information sharing, Libraries, and Information Services.

## INTRODUCTION

The World Wide Web has undergone another radical transformation over the past years. Due to the integration of social web, web application and technology, a new web environment (Web 2.0) came into existence.

Social Web + Web Application + Technology = Web 2.0

As the latest technology tool, search was exhilarating, informative-and dramatically changed the way people looked for information. Just ask librarians! A record 6 billion searches were conducted on search engines in January 2006. In Web 2.0, the web becomes the center of a new digital lifestyle that changes our culture and touches every aspect of our lives. The web moves from simply being sites and search engines to a shared network space that drives work, research, education, entertainment and social activities-essentially everything people do. You and your mobile and non-mobile devices-PDA, MP3, laptop, cell phone, camera, PC, TV, etc. are always online, connected to one another and to the Web. The first traces of Web 2.0 are already appearing. Consider the roaring success of sites that embody Web 2.0 principles of simplicity, rich interactivity, user participation, collective intelligence, self-service, novel and remixed content- Flickr, MySpace, Facebook, del.icio.us, YouTube, Library Thing-to name a few. The potential effects of Web 2.0 have not gone unnoticed in the library community (Storey, 2006).

## CONCEPT AND DEFINITION OF WEB 2.0

The term Web 2.0 was officially coined in 2004 by Dale Dougherty during a team discussion on a potential future conference about the Web (O' Reilly, 2005a, in Anderson, 2007). It has brought a dramatic change in the use of Internet and offers us several tools and services that allow easy interaction and participation to all users. Thus, O' Reilly (2005) observes that the change in the web environment has evolved personal web-pages into blogs, encyclopedia into wikipedia, text-based tutorials into streaming media applications, taxonomies into folksonomies, and question-answer/e-mail customer support into instant messaging services. The implications of this revolution in the web are enormous. Web technologies let users work in the Internet cloud as they work on their own desktops and get the advantage of a collaborative culture in creating the value. Software engineers have used this Web 2.0 ecosystem for their value multiplications (Serrano and Torres, 2010).

Web 2.0 concepts have led to the development of web culture communities and hosted services. Similarly, Web 2.0 not only means new technologies, it also brings a fundamental change in how libraries operate. It offers diverse ways to add value to library services and also represents a shift from the passive experience of static "read only" web pages to the participatory experience of dynamic and interactive web pages.

Web 2.0 Technologies are technologies that transform the Web into a platform spanning all connected devices. They enable the creation of web-

services and applications, constructed from lightweight models, and can be used intuitively.

The principles of Web 2.0 are also applicable to libraries and this new scenario is playing a proactive role in changing the behaviour of 'providers' and 'users' of information. Librarians and information professionals need to consider the new mindset of users and transform their library and information services accordingly. With the advent of the 'Web 2.0 age' users can do a lot for libraries such as creating additional information and content and generating knowledge. Thus, the benefits of Web 2.0 environment can be considered reciprocal. These two examples show this cultural change:

1. Library of Congress offers opportunity to users to tag digitized photos through Flickr (Library of Congress).
2. The scientists have suggested to 'wikify' if the researchers discover inaccuracies in the database, they should be allowed to append corrections (Miranda, Gualtieri and Coccia, 2009).

## FEATURES OF WEB 2.0

Andrew McAfee (2006) used the acronym SLATES to represent the Web 2.0 features/techniques:

- **Search:** the ease of finding information through keyword search that makes the platform valuable.
- **Links:** guides to important pieces of information. The best pages are the most frequently linked to.

- **Authoring:** the ability to create constantly updating content over a platform that is shifted from being the creation of a few to being the constantly updated, interlinked work. In wikis, the content is iterative in the sense that the people undo and redo each other's work. In blogs, content and comments of individuals are posted and accumulated over time.
- **Tags:** categorization of content by creating tags that are simple, one-word descriptions to facilitate searching and avoid rigid, pre-made categories.
- **Extensions:** automation of some of the work and pattern matching by using algorithms e.g. amazon.com recommendations.
- **Signals:** in RSS, users are notified about any change in the content through e-mails.

### LEAD THE LIBRARY BOAT INTO THE WEB 2.0 ENVIRONMENT

According to Anderson (2006), librarians work hard, with the best intentions, to serve our users well in a world that has changed dramatically in the last decade. If the profession is a boat, then librarians are all rowing pretty heroically. But enough attention would be paid to avoid the potential disasters that lie in our current path. In particular, there are three "icebergs" which pose significant threats to our future success. All are remnants of a bygone information age, practices and attitudes that no longer make sense but which we librarians have difficulty letting go. The library users have no such qualms, of course, as the emergence of Web 2.0 demonstrates.

- **"Just in case" Print Collection:** Building a comprehensive collection of materials that anticipates the user's every need has always been

problematic, but it was an approach that made sense when information was available only in print formats. In the University of Nevada library, 55 percent drop in circulation rates over the past 12 years was observed, making it harder to justify the continued buildup of a large “just in case” print collection. As a Web 2.0 reality continues to emerge, libraries users expect access to everything-digital collections of journals, books, blogs, podcasts, etc. Librarians think users can't have everything? Think again. This may be great opportunity for librarians.

- **Reliance on user education:** Libraries are poorly equipped and insufficiently staffed for teaching. Ask yourself what your user-to-librarian ratio is (e.g. at the University of Nevada it's about 680 to 1) and then ask yourself how you're going to train all those users. We need to focus our efforts on eliminating the barriers that exist between users and the information they need. If our services can't be used without training, then it's the services that need to be fixed-not our users. One-button commands, such as Flickr's “Blog This,” and easy-to-use programs like Google Page Creator, offer promising models for this kind of user-centric service.
- **The “come to us” model of library services:** There was a time when libraries exercised something close to monopoly power in the information marketplace. During the print era, if you wanted access to pricey indexes or a collection of scholarly journals, you had no choice but to make a trip to the library. It worked moderately well for those privileged with access to

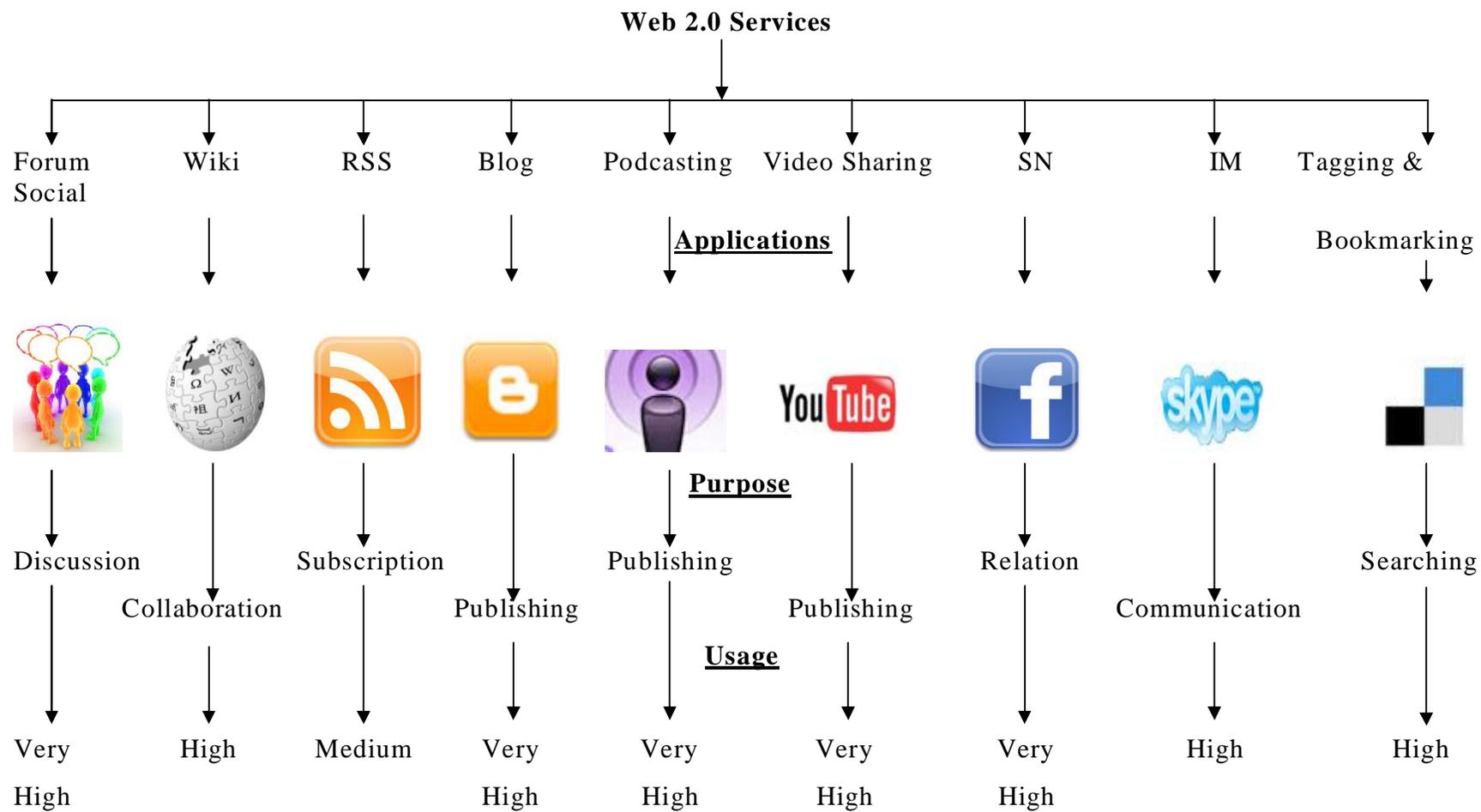
a good library. In the post-print era, we have to be a bit more humble and find new ways to bring our services to users. At a minimum, this means placing library services and content in the user's preferred environment (e.g. the Web); even better, it means integrating our services into their daily patterns of work, study and play. No profession can survive if it throws its core principles and values overboard in response to every shift in the zeitgeist. However, it can be equally disastrous when a profession fails to acknowledge and adapt to radical, fundamental change. We need to shift direction, and we can't wait for the big ship of our profession to change course first. It's going to have to happen one library-one little boat-at a time.

### **KEY WEB 2.0 SERVICES/APPLICATIONS IN LIBRARIES**

Web 2.0 technologies, tools, and applications define how librarians share their perspectives, opinions, thoughts and experiences to become more and more popular. Figure 1 shows the Web 2.0 services as described below.

#### **Forums**

A forum is an online community discussion group, usually centered around one topic or theme, where people can post messages or comment on other messages (A Social Media Glossary, 2008). Forum provides a meeting point for collaboration. Instead of linking to another piece of information, they are the



**Figure 1**  
**Web 2.0 Services and Applications**

starting point of a discussion or communal task. Forum is the easiest way to start working actively in Web 2.0 because there is a need to click a reply button and express the thought. Forum can be used in the following way.

- Act as an electronic medium for quick exchange of informal information and experiences related to new initiatives, plans, projects, information sources and services, forthcoming events and international developments.
- Purpose of forum is not only delivery of data in response to query but also supports communication among a large number of people belonging to different parts of the world within a short duration.
- Find new peer workers and enable posting problems (does anybody know?) and seek solutions.

<b>Examples</b>
<b>LIS-Forum:</b> <a href="http://ncsi.iisc.ernet.in/mailman/listinfo/lis-forum">ncsi.iisc.ernet.in/mailman/listinfo/lis-forum</a>
<b>Corporate Librarians:</b> <a href="http://finance.groups.yahoo.com/group/corporatelibrns/">http://finance.groups.yahoo.com/group/corporatelibrns/</a>
<b>Others:</b> <a href="http://sourceforge.net">http://sourceforge.net</a> ; <a href="http://www.phpbb.com">www.phpbb.com</a>

## Wikis

Wiki is a webpage or set of webpages that can be easily edited by anyone who is allowed to access (E Bersbach, Glaser and Heigl, 2006). Since 2001, Wikipedia has rapidly grown as a largest reference website on the Internet. Wikipedia's popular success has meant that the concept of the wiki, as a collaborative tool that facilitates the production of a group work, is widely understood. Wiki pages have an edit button displayed on the screen and the user can click on this to access an easy-to-use online editing tool to change or even delete the contents of the page in question. Simple, hypertext-style linking

between pages is used to create a navigable set of pages. Wiki can be employed as following:

- Wikis can also be used by the users to share information and enhance the content, and a record of these transactions is archived for future reference.
- Reference resources on wiki can be built and wikis can be used for creating subject guides, subject gateways, etc.
- Use as a presentation tool (as e-portfolios); as a group research project for a specific idea; manage school and classroom documents; use as a collaborative handout for users; writing: student created books and journaling.
- Create and maintain a user FAQ; for example in a classroom discussion and debate area; a place to aggregate web resources; supporting committees, working parties and university projects etc.

**Examples**

**LIS Wiki:** [http://liswiki.org/wiki/Main\\_Pag0065](http://liswiki.org/wiki/Main_Pag0065);

**Library Wikis:** <http://librarywikis.pbwiki.com/>

**Princeton Public Book Lovers Wiki:**

<http://booklovers.pbwiki.com/5%20Star%20Revie>

**Others:** <http://wiki.oss-watch.ac.uk/>; [http://wiki.cetis.ac.uk/CETIS\\_Wiki](http://wiki.cetis.ac.uk/CETIS_Wiki);

[http://en.wikipedia.org/wiki/Main\\_Page](http://en.wikipedia.org/wiki/Main_Page); [www.mediawiki.org](http://www.mediawiki.org); [www.wikia.org](http://www.wikia.org)

[http://www.ch.ic.ac.uk/wiki/index.php/Main\\_Page](http://www.ch.ic.ac.uk/wiki/index.php/Main_Page); <http://www.wikihow.com>;

**Software:** <http://meta.wikimedia.org/wiki/MediaWiki>; <http://www.twiki.org/>;

<http://www.socialtext.com/products/overview>;

<http://uniwakka.sourceforge.net/HomePage>

**Online notes:** <http://www.wikiineducation.com/display/ikiw/Home>

## RSS

After the advent of desktop publishing in the 80s and the web pages in the 90s, it is considered as the most important Internet technology of the 2000s. RSS is a family of formats which allow users to find out about updates to the content of RSS-enabled websites, blogs or podcasts without actually having to go and visit the site. Technically, RSS is an XML-based data format for websites to exchange files that contain publishing information and summaries of the site's contents. Indeed, in its earliest incarnation, RSS was understood to stand for Rich Site Summary (Doctorow, Dornfest, F. Johnson, J. Scott and Powers, 2002). There are a number of RSS formats such as RSS 0.91, RSS 0.92, RSS 1.0, RSS 2.0 (RSS 2.0 at Harvard Law). It is worth noting that RSS 2.0 is not simply a later version of RSS 1.0, but is a different format. As it has become more widely used for blog content syndication, in later versions RSS became known as Really Simple Syndication (RSS Advisory Board service). It has become commonly used for dissemination of information in the scientific setting too (Obst, 2009). RSS can be deployed as the following way.

- RSS announce the availability of new books and other resources in a given subject area as well as the availability of new research and learning opportunities.
- Librarians can subscribe to RSS from the sources for compiling their customized alerts.
- RSS promote events organized for library users and integrate library services through RSS feeds.

- Enhance Library Instruction for different Web 2.0, Library 2.0, Blogs, Wikis, RSS, Tagging, Podcasting, IM programs/courses by integrating appropriate resources.

**Examples****Library of Congress:** [www.loc.gov](http://www.loc.gov)**University of N. Carolina – Greensboro Online Resources with RSS Feeds:**<http://library.uncg.edu/dbs/vdbsrssl-index.asp>**Hennepin County Library:** <http://www.hclib.org/pub/search/RSS.cfm>**Others:** [www.google.com/reader](http://www.google.com/reader), [www.bloglines.com](http://www.bloglines.com)**Blogs**

The term web-log, or blog, was coined by Jorn Barger in 1997 and refers to a simple webpage consisting of brief paragraphs of opinion, information, personal diary entries, or links, called posts, arranged chronologically with the most recent first, in the style of an online journal (Doctorow, Dornfest, F. Johnson, J. Scott and Powers, 2002). Most blogs also allow visitors to add a comment below a blog entry. Blog entries, also known as blog posts, consist of a title, body, permalink (permanent link), postdate, comments, category or tag, trackback (the ability to notify another blog that you added a post to your blog that is related to a post or comment on its blog), or pingback (the ability to request notification when somebody links to one of your posts). Most blogs are primarily textual, but some focus on photographs (photoblog or photolog), videos (videoblog or vlog), or audio (podcast), mobile devices such as pocket PC, mobile phone, or PDA (mblog) and real-time blogging (liveblogging). A blog can be private (internal to an organization) or public (open to anyone) (Understanding Web 2.0). Blogs have several unique characteristics that together distinguish

them from other forms of electronic communications such as email, instant messaging, short message service, and multimedia message service (Robert and Shel, 2006). Blogs can be used as following:

- Blogs serve as a platform where the users can file their concerns, queries and suggestions regarding the services and activities of the library.
- Blogs can also be used for the collection development where the users request the resources, for marketing of library and information services, and for posting minutes of the meetings for necessary actions and discussions.

Examples
<p><b>Latvian Librarian Blogs:</b> <a href="http://bibliotekari.blogspot.com/">http://bibliotekari.blogspot.com/</a>;</p> <p><b>Library of Congress:</b> <a href="http://www.loc.gov">www.loc.gov</a></p> <p><b>University College, Dublin. Science Libraries:</b> <a href="http://ucdscience.blogspot.com/">http://ucdscience.blogspot.com/</a></p> <p><b>Well-known blogs:</b> <a href="http://radar.oreilly.com/">http://radar.oreilly.com/</a>; <a href="http://www.techcrunch.com/">http://www.techcrunch.com/</a>;</p> <p><a href="http://www.instapundit.com/">http://www.instapundit.com/</a>; <a href="http://blogs.warwick.ac.uk/">http://blogs.warwick.ac.uk/</a>;</p> <p><a href="http://jiscdigitisation.typepad.com/jisc_digitisation_program/">http://jiscdigitisation.typepad.com/jisc_digitisation_program/</a></p> <p><b>Software for creating blogs:</b> <a href="http://wordpress.org/">http://wordpress.org/</a>; <a href="http://radio.userland.com/">http://radio.userland.com/</a>;</p> <p><a href="http://www.sixapart.com/typepad/">http://www.sixapart.com/typepad/</a>; <a href="http://www.blogger.com/start">http://www.blogger.com/start</a>; <a href="http://www.bblog.com">www.bblog.com</a></p> <p><b>Blog search services:</b> <a href="http://technorati.com/">http://technorati.com/</a>; <a href="http://www.gnosh.org/">http://www.gnosh.org/</a>;</p> <p><a href="http://blogsearch.google.com/">http://blogsearch.google.com/</a>; <a href="http://www.weblogs.com/about.html">http://www.weblogs.com/about.html</a></p>

## Podcasts

Podcasts are audio recordings, usually in MP3 format, of talks, interviews and lectures, which can be played either on a desktop computer or on a wide range of handheld MP3 devices. Originally called audio blogs they have their roots in efforts to add audio streams to early blogs (Felix and Stolarz, 2006). A podcast is made by creating an MP3 format audio file (using a voice recorder or similar device), uploading the file to a host server, and then making the world

aware of its existence through the use of RSS (Patterson, 2006). Apple introduced the commercially successful iPod MP3 player and its associated iTunes software. The process is known as podcasting (Hammersley, 2004). Podcast can be installed in the following way.

- Podcasts promote recordings about the library's services and programs as well as highlight about new resources.
- Podcasts enable librarians to share information with anyone at any time.
- Podcasting can be a publishing tool for users and librarians' oral presentations.

Examples
<p><b>Library of Congress:</b> <a href="http://www.loc.gov">www.loc.gov</a> <b>Worthington Libraries:</b> <a href="http://www.worthingtonlibraries.org/programs2go/">http://www.worthingtonlibraries.org/programs2go/</a>; <b>Denver Library:</b> <a href="http://podcast.denverlibrary.org/">http://podcast.denverlibrary.org/</a>; <b>Others:</b> <a href="http://www.apple.com/itunes">www.apple.com/itunes</a>; <a href="http://www.youtube.com">www.youtube.com</a>; <a href="http://www.audblog.com/">http://www.audblog.com/</a> <a href="http://www.apple.com/itunes/store/podcasts.html">http://www.apple.com/itunes/store/podcasts.html</a>; <a href="http://btpodshow.com/">http://btpodshow.com/</a>; <a href="http://odeo.com/">http://odeo.com/</a>; <a href="http://www.ourmedia.org/">http://www.ourmedia.org/</a>; <a href="http://connect.educause.edu/">http://connect.educause.edu/</a>; <a href="http://www.impala.ac.uk/">http://www.impala.ac.uk/</a>; <a href="http://juicereceiver.sourceforge.net/index.php">http://juicereceiver.sourceforge.net/index.php</a>; <a href="http://www.law.dept.shef.ac.uk/podcasts/">http://www.law.dept.shef.ac.uk/podcasts/</a></p>

### Video sharing

Video and photo sharing are important aspects of Web 2.0, especially at popular sites like YouTube ([youtube.com](http://youtube.com)) and Flickr ([flickr.com](http://flickr.com)). Almost everyone with Internet access is familiar with YouTube; it has become quite a sensation around the world as it creates temporary fame around the most popular videos. Some people load their own videos to share, but plenty of people watch videos without ever loading one to the website or even creating an account. Video sharing can be used in the following way.

- Libraries are using sites like YouTube to promote their services, record events and programs, educate patrons and staff and much more.

**Examples****Colorado Library Videos Online:**

<http://www.cde.state.co.us/cdelib/technology/libyoutube.htm>

**Multnomah County Library:** <http://www.youtube.com/watch?v=QP7uexIzotQ>

**New York Public Library:** <http://www.nypl.org/live>

**Video sharing sites:** <http://vimeo.com/>; <http://www.ustream.tv/>

**Others:** [www.youtube.com](http://www.youtube.com), [www.flicker.com](http://www.flicker.com)

**Social Networks**

Social networks offer a way to understand the complex dynamics of communities (Hillary, 1955), and how people exchange support, by shifting away from a socio-graphic structure towards a structure of interpersonal relationships (Wellman and Gulia, 1999). Social networks help us understand how individuals share information, experiences, and support and how they accomplish their tasks (Nardi, Whittaker and Schwarz, 2000). The social networks view of exclusively linking people needs to be extended to include information, resources, and artifacts.

A social network can be formalized into a net structure comprising nodes and edges. Nodes represent individuals or organizations. Edges connecting nodes are called ties, which represent the relationships between the individuals and organizations. Myspace and Facebook are two popular social networking sites launched during 2003 and 2004 respectively. Myspace and Facebook allow

organizations and librarians to create their own profiles and pages. Social Networks can be used in the following way:

- Libraries can create professional and social networking sites that facilitate meeting people, finding like minds, sharing content - uses ideas from harnessing the power of the crowd, network effect and individual production/user generated content.
- Social networking could enable librarians and patrons not only to interact, but to share and change resources dynamically in an electronic medium.
- For building network among the interested group in discussing the common interest. User content can be added to the library catalogue, including users' book reviews or other comments.

#### Examples

**Bryant University Library:** <http://www.facebook.com/pages/Smithfield-RI/Bryant-University-Library/#/pages/Smithfield-RI/Bryant-UniversityLibrary/42442031994?ref=ts>

**Brooklyn College Library:** [www.myspace.com/brooklyncollegelibrary](http://www.myspace.com/brooklyncollegelibrary)

**The University of North Carolina, University Libraries:**

<http://library.uncg.edu/info/depts/reference/instruction/collaborate/ning.aspx>

**Others:** [www.ning.com](http://www.ning.com)

#### Instant Messaging (IM)

IM is a form of real time communication between two or more people based on typed text, images etc. IM has become increasingly popular due to its quick response time, its ease of use, and possibility of multitasking. It is estimated that there are several millions of IM users, using for various purposes such as: simple requests and responses, scheduling face to face meetings, or

just to check the availability of colleagues and friends. IM can be applied in the following way.

- IM is a form of instant clarifications for the questions from users and vice versa.
- IM is also a form of online discussions/meetings/chatting and a way for providing virtual reference services to the users.

#### Examples

**Saint Joseph Public Library:** <http://www.libraryforlife.org/asksjcpl/asksjcpl.html>

**Washington Centreville Public Library:** <http://www.wclibrary.info/ask/im.asp>

**Durham University Library:** <http://www.dur.ac.uk/library/contacts/im/>

**Others:** [www.skype.com](http://www.skype.com); [www.aim.com](http://www.aim.com); <https://www.meebo.com/>; [www.msn.com](http://www.msn.com)  
[www.yahoo.com](http://www.yahoo.com); [www.google.com](http://www.google.com)

#### Tagging and Social Bookmarking

A tag is a keyword that is added to a digital object (e.g. a website, picture, video, etc.) to describe it, but not as part of a formal classification system. Users tag documents, choosing and adding uncontrolled keywords that allow them better to identify the documents from their own point of view. One of the first large-scale applications of tagging was seen with the introduction of Joshua Schacter's del.icio.us website, which launched the 'social bookmarking' phenomenon. The concept of tagging has been widened far beyond website bookmarking, and services like Flickr (Photos), YouTube (video) and Audio (podcasts) allow a variety of digital artifacts to be socially tagged. Tagging and Social Bookmarking can be applied in the following way.

- Tagging can be applied to the library management system for editing the subject headings from the user point of view and thereby enhancing the indexing and relevancy of the searches.
- Tagging would greatly facilitate the lateral searching.

**Examples**

**Library Thing:** [www.librarything.com](http://www.librarything.com); **University of Pennsylvania:** <http://tags.library.upenn.edu/>; **Library of Congress:** [www.loc.gov](http://www.loc.gov)  
**Others:** <http://www.connotea.org/>; <http://www.citeulike.org/>; <http://del.icio.us/>;  
<http://www.librarything.com/>; <http://www.sitebar.org/>; <http://www.digg.com/>;  
<http://www.furl.net/index.jsp>; <http://www.stumbleupon.com/>;  
<http://www.blinklist.com/>; <http://www.rawsugar.com/>;  
<http://del.icio.us/elearningfocus/web2.0>; <http://www.fotki.com/>;  
<http://www.flickr.com/>; <http://www.ourpictures.com/>; <http://www.snapfish.com/>

**IMPACT OF WEB 2.0**

The Web 2.0 technology allows libraries to help and to serve their users more efficiently and to reach a new audience. While the impact and advantages are touted by proponents of Web 2.0, there are also those who feel that this technology will do more harm than good. Librarians and information professionals may start to feel uneasy about their own inability to keep up with the rapid changes in technology and they may start to feel that they are losing control of the environment in which they are training and supporting users. Similarly, Web 2.0 is a powerful resource that will allow our users to receive information from many sources, to be actively involved in creating content and generating knowledge, and to communicate with each other and spread ideas. These advantages bring with them certain risks, such as low quality of information, loss of data, security and legal issues. The table 2 shows the

following positive and negative impact of Web 2.0 on librarians and information professionals as well as on users (Miranda, Gualtieri and Coccia, 2009).

**Table 2**  
**Impact of Web 2.0**

<b>On</b>	<b>Positive Impact</b>	<b>Negative Impact</b>
Librarians and Information Professionals	<ul style="list-style-type: none"> <li>• Collaboration - Customization</li> <li>• Communication - Knowledge</li> <li>• Sharing - Updating</li> <li>• Flexible tools - Speed</li> <li>• Reduction of costs – Training</li> <li>• Facilitates experimentation</li> </ul>	<ul style="list-style-type: none"> <li>• Too many different tools</li> <li>• Doubts over the reliability of tools</li> <li>• Difficulties in standardization</li> <li>• Low level of security and privacy</li> <li>• Low level of cataloguing information</li> <li>• Doubts over the longevity of tools</li> <li>• Confidentiality concerns</li> <li>• Ownership of data issues</li> </ul>
Users	<ul style="list-style-type: none"> <li>• Requires little technical expertise</li> <li>• Reduction of costs</li> <li>• Flexibility</li> <li>• User involvement</li> <li>• Time saving</li> <li>• Reduces information overload</li> </ul>	<ul style="list-style-type: none"> <li>• Rumours</li> <li>• Security and legal issues</li> <li>• Dependence</li> <li>• Second-hand information</li> </ul>

## CONCLUSION

Libraries have skilled staff with professional expertise that can be leveraged to raise the challenge of Web 2.0, not only in collection and preservation, but also in user centered services. They are also the guardians of a long tradition of a public service ethic which will increasingly need to deal with the privacy and legal issues raised by Web 2.0. Library staff should encourage in thinking and acting pro-actively about how they can bring this to bear on the development of new library and information service-based technologies.

The web simply is not a destination anymore, with more terminals where users have the opportunity to interact in countless ways with media and other users in a far more interactive manner than earlier. And if “Web 1.0” was about finding information, Web 2.0 is more about finding communities of people-and their information finding. Web 2.0 describes a range of increasingly popular web services that offer users dynamic interactive models of communication combined with the ability to create and share content. This collaborative environment has sparked new levels of interest and discussion around the future of the Web.

Crawford (2006) said:

“I’ve always believed that good public (and academic) libraries should pay special attention to the records and ideas of their own communities. Using “Web 2.0” tools to make that operation more powerful are in the long tradition of library creativity and change.”

Services under the Web 2.0 umbrella will increasingly impact on what the librarians do in the online environment. But the challenge not only lies in learning how Web 2.0 services work as part of professional development but also in determining and implementing the most appropriate Web 2.0 tools that will provide useful Library 2.0 patron centered services.

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