4. WEB 2.0 & LIBRARY 2.0

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4.1　Introduction

In today's world web 2.0 is used in each and every field of business and service industries. No field of development is untouched without using web 2.0. Optimal use of mobile and handheld devices have extended web 2.0 to end users very likely. Web 2.0 technologies have redefined ways to create, store and disseminate information and knowledge. Its libraries basic function to store and process and disseminate information or knowledge. This chapter discusses origin and development, characteristics, features and various categories of web 2.0. It also discusses concept of library 2.0 and its advantages, benefit, challenges and ways to optimize its usage in academic libraries.

4.2　Origin and Development of Web 2.0

The term "Web2.0" was coined by Darcy DiNucci in 1999 in her article "Fragmented Future". But until the DOT.COM failure it was not much popular. After Team O'Reilly and Dale Dougherty in 2004 during the Media Web 2.0 Conference organised in San Francisco it was came in to limelight. After 2005 it was became very popular amongst tech-Savvy fraternity. To explain the way in which a new generation of web functions likes file sharing, wikis and blogs are differed from earlier web tools. In this regard, the earlier web tools–now commonly described as Web 1.0 – were based on the restrictive one-way communication models where experts presented their material to an audience perceived to be expectantly captive. The concept of Web2.0, on the other hand, is based on thing that knowledge originates from inter actions such as meetings, conversation, dialogue and mentorship; and that even experts have something to learn from their audiences (Alsbjer, 2008). To foster richer user participation, the World Wide Web (WWW) has undergone a transition and moved from being a mere collection of websites to a fully-fledged computing platform

serving web applications to end users. This transition is what described as Web2.0 (O'Reilly, 2005; Miller, 2006). Ultimately Web 2.0 services are expected to replace desktop computing applications for many functions using newer tools such as social networking sites, wikis, pervasive communication tools, and folksonomies that emphasize online collaboration and sharing among users.

4.3 Characteristics of Web 2.0

Web 2.0 websites give users more options than merely information retrieval. By extending the capabilities of "Web 1.0," they give the customer a more user-friendly interface, software, and storage options through their browser. This type of computing is referred to as "Network as Platform." On a Web 2.0 site, users can contribute data and have some control over that data. Many of these traits are encapsulated in the idea of the web as a platform for participation. Former CEO of Flock and Web 2.0 pioneer Bart Decrem refers to Web 1.0 as the "information Web" and Web 2.0 as the "participatory Web."

According to Musser and O'Reilly (2007), Web 2.0 platforms and tools exhibit the following core characteristics:

- It gives web users additional options than just information retrieval. It allows consumers to actively interact with both the material and its authors, which is why it is also known as the read-write web.
- The backbone of citizen journalism and user-generated content, it allows users to run programmes directly from their browsers and gives them control over their own data on Web 2.0 platforms.
- Web 2.0 allows users to contribute value to the content they are accessing; they may also manipulate the data. With the help of this facility, information may be exchanged easily, creating a substantial body of knowledge known

as collective intelligence; It utilizes simple, user friendly and "lightweight" interfaces that do not require specialist knowledge to apply;

- Web 2.0 systems are greatly decentralized with no centre of control or gates as we know it under conventional media systems;
- It is user-focused and invites their participation through seamless many-to-many communication mechanisms;
- Web 2.0 is transparent and uses open technology standards that rapidly grow into open ecosystems of loosely coupled applications built on open data and reusable components;

It is emergent and doesn't rely on completely specified application architecture. Web 2.0 structures and behaviours are given time to develop. With this adaptable, flexible approach, solutions can change to meet usage and needs in the real world. It acknowledges that collaboration, rather than control, is the key to actual achievement.

Rich user experience, user engagement, dynamic content, metadata, Web standards, and scalability are some of Web 2.0's qualities, according to Best. Additional traits can also be seen as fundamental components of Web 2.0, including openness, freedom, and user participation-based collective intelligence. To prevent "free riding," several websites demand users to submit user-generated material in order to access the website.

Web 2.0 as a platform for information Dissemination tools, is characterised by the following elements,

- **The Read/Write Web:** The major character of web 2.0, which distinguishes WWW from its earlier iteration, is where the words "Read and Write Web" come from. As the capacity of Web 2.0 users to actively interact with the information, change, and add to the pages they visit is the primary distinction

between these two versions of the WWW. Websites that combine read/write capabilities to encourage interaction instead of broadcasting include blogs and social networking sites (SNS) like Facebook, Myspace, and Twitter.

- **Web as a platform:** Web 2.0 apps are able to manage the Web as a communication network because to this characteristic. This means that users can own and control the data on the Web 2.0 platform by running applications directly from their browsers or mobile devices.
- **Collective intelligence:** The potential of users to contribute to Web 2.0 content, which fosters the rapid accumulation of a solid body of knowledge. Because of these features, web 2.0 truly is a "Participatory web" or "social web."
- **The Long Tail:** The phrase "long tail" was used to describe how the Web enables small specialist groups to get services, such as the capacity to publish and distribute materials for cheap on the Web, the virtual removal of storage space limitations, and the ability to connect others with similar specialised interests.
- **Lightweight programming models:** Web 2.0 applications' user-friendly interface and data sharing concept underpin their operation. While its end customers don't need much technological expertise to use its many applications. Due to these features, web 2.0 is far superior to earlier iterations.

4.4 Features of Web 2.0 technology

According to Wikipedia key features of web 2.0

- **Folksonomy** - Folksonomy is a classification system in which end users applies public tags to online items, typically to make those items easier for themselves or others to find later. Over time, this can give rise to a

classification system based on those tags and how often they are applied or searched for, in contrast to a taxonomic classification designed by the owners of the content and specified when it is published.

- **Rich user experience** - Web 2.0 is built on Ajax (Asynchronous JavaScript + XML), HTML5 (for interactive video and audio), and other technologies, in contrast to traditional web, which can be written in HTML and CSS, CGI, and had been offered as a static page. Web 2.0 provides users with a dynamic, rich user experience. These technologies take the place of outdated SWF Flash media and enable webmasters to directly include dynamic video into HTML code. This fundamental aspect of web 2.0 provides a very user-friendly and good interface.

- **User as participator or Contributor** - Web 1.0 can be used to describe the Shannon and Weaver communication paradigm, which emphasises the Sender and Receiver. In contrast, the web 2.0 paradigm involves the end user as a participant or contributor. The clearest illustration of this is Wikipedia, the largest encyclopaedia in the world, where any ordinary person may edit and add content.

- **Software as a service (SaaS):** Web 2.0 sites created APIs to provide automated usage, such as by a Web "app" (software application) or a mashup.

- **Mass participation** - A wide range of users, as opposed to just the traditional Internet user base, differ in their concerns as a result of nearly ubiquitous web access. The conventional web merely involved the transmitter and receiver of information, similar to a conventional one. However, in web 2.0, the niche product is produced collectively by its reviewers who, indirectly, through social media, give value to the finished good or service.

4.5   Meme map of web 2.0

In an effort to simplify Web2.0, O'Reilly (2005) proposed a meme map (See Fig.1) which graphically illustrates the concept of Web2.0

Fig. 4-1 Meme Map of Web 2.0

The major Web2.0 concepts are represented by the orange rectangle portion in the centre. For instance, Web 2.0 actually serves as a platform for users to connect, gather, and share knowledge. It's a platform where people may build their own experiences utilising data from various sources.

Examples of Web2.0 tools are shown in the green oval shapes at the top.

The brown oval shapes from the middle downwards highlight the characterization of Web2.0 use.

4.6 Reasons for using web 2.0 for library

Asking why we are doing this and what we want to gain from it should always be the first steps for libraries. There are many excellent causes, but you must identify the ones that apply specifically to your library. Using these terms to frame your new endeavour gives the project emphasis, which is vital whether you're trying social media, redesigning your website, or picking new library furniture. These kinds of inquiries will eventually guide the instruments you select and the methods of use. After you have determined why you want to have a social media presence, the following step is to develop specific objectives. A basic target like "100 subscribers after a year" can be used as a goal. Although the goals you establish may change as you begin utilising the tools and interacting with customers, setting goals gives you the ability to gauge your success.

However, not everyone may be excited about anything new. This is where coming up with justifications for employing these tools will be useful. Using the justifications you selected, draught a succinct, well-thought-out proposal. Include other crucial details as well, such as who will keep an eye on and update your social media accounts. It helps to demonstrate that you have given this issue careful thought. Offering this concept as a pilot project that you might review after a year may also be helpful. This enables you to review your objectives and determine whether you are succeeding.

Social media is being used by librarians to assist them accomplish a number of goals, which can be summed up as follows:

- To solicit comments on the library and its offerings for the aim of self-evaluation, to promote discussion, and to create a chance to address patron feedback;
- Considering that the modern online library of today no longer simply relies on its physical place as an entry point, to reach library customers in their homes or "virtual spaces";To publicize events, services, news and presence;
- To encourage collaboration, for example through collection development and building repositories of collaborative content specific to certain user groups;
- To increase usage of library collections by promoting new and existing content;
- To connect with other librarians and keep abreast of industry news;
- To build a sense of community with both users and also with other institutions and industry contacts.

4.7   Library 2.0 and its origin

The term Library 2.0 was coined by Michel Casey; He used the term on his blog library crunch. The concept of Library 2.0 has been borrowed that of Web 2.0. The basic idea of library 2.0 to transform library services by making them more personalized, more interactive and more web based.

Library 2.0 fosters and encourages a culture of engagement by incorporating the opinions and ideas of library employees, technology partners, and the general public, It involves encouraging and enabling the user base of a library to participate and offer their own opinions on both the resources they have already used and those they may find useful in the future.

4.8 Moving from library 1.0 to Library 2.0

Library 1.0 is a standard library with books and other materials stored on shelves and an OPAC or catalogue cabinet housed in the digital section of the library. where people are not directly involved and can only use services offered by libraries. What the librarians meant to offer is already there. However, a paradigm change in technology development has enabled libraries to adapt and offer new services, and in a genuine sense, libraries are becoming user-centered. Users are now being included in the Library 2.0 or participatory model of libraries to bring about significant change in the working style or daily operations of the library to deliver efficient services. With the use of web 2.0 tools, collaborative knowledge is being developed to spread services and The users of today are being presented with rich bibliographic content. new ILMS facility that produces OPAC 2.0, This OPAC 2.0 offers direct user participation, user login capabilities, social bookmarking, and tagging in library bibliographic data. Such a service cannot be offered by the outdated OPAC 1.0. The new OPAC 2.0 offers the same features as other social networking sites do. Similar to this, static text-based tutorials can be used to provide online orientation. However, these tutorials are now evolving into more dynamic, multimedia-rich tutorials using animation programming. Librarians can learn how to use online video streaming services with their assistance. Within the library's network environment, the New Library 2.0 Model offers users new features like instant messaging, bookmarking, RSS feeds, blogs, wikis, tags, public and private profiles. Library 2.0 will transition the entire range of library services into this electronic medium, following Library 1.0's transition of collections and services into the online environment.
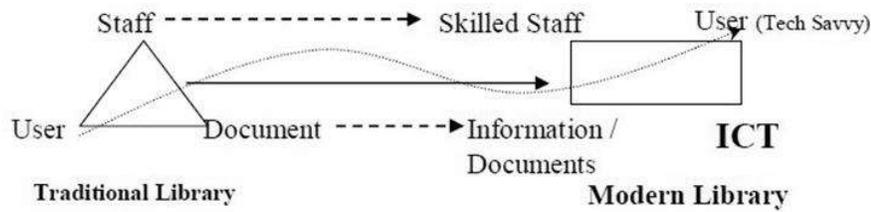
Fig. 4-2 Moving from library 1.0 to Library 2.0

Above image is showing transformation of traditional library 1.0 to Modern library 2.0. Where library staff became skilled staff and users became tech savvy. The printed stuff of books and other document became Information + Documents.

Dr. Jagdish Arora has given some examples of these transformations in his presentations during CALIBRE 2009.

Table 1 Moving from library 1.0 to Library 2.0

Library 1.0	New Library 2.0
Email reference (Digital reference service) / FAQ or Q&A pages	Chat reference or Real-time reference service using Instant messaging
Selective Dissemination of Information (SDI)	Personalization like RSS Feeds, HTML Feeds, Atom
Text-based tutorials / Physical Library Orientation	Streaming media tutorials with interactive databases, Live Webinars and online classroom facility.
Email mailing lists, webmasters, Listservs	Blogs, Wikis and RSS feeds
Catalogue of reliable subscribed print or electronic collections	Catalogue of reliable subscribed print or electronic collections as well as web pages, blogs, wikis, etc.

Library OPAC	Personalized social network interface or OPAC 2.0
Directories, Taxonomies Library classification	Folksonomy (Tagging)
Encyclopaedia (Britannica online)	Wikipedia
Content Management System	Library wikies, Discovery Services
Information as commodity	Information as conversations
Integrated Library System as core operation	User service as core operation
Address books, Contact lists	Online social networks
Authenticated and validated print and digital resources	Resources created by people through their collective intelligence on blogs and wikis
Delivery mechanism: Library's physical Collection plus Digital Collection	Delivery through Internet using wikis, blogs, podcasting, etc.
Internet	Internet
Closed stack	Open stack
Collection development	Library suggestion box

As a professional, librarians constantly embraced progress. They were the first to classify information in the early days and to provide subject portals allowing knowledge to be classified into different categories. Similar to how they were among the earliest online communities on the brand-new internet and built subject gateways for a wide range of topics. It was a static web. The majority of library websites likewise consisted mostly of static web pages that disseminated content and gathered data via email-based feedback mechanisms.

But as technology has developed, search engines have become more and more important to library end users. Therefore, rather than waiting for patrons to visit

the library and use its services, librarians and libraries should adopt a more user-friendly and online service delivery philosophy. The new web 2.0 or library 2.0 is changed into a participatory library or social library because it acknowledges that people do not seek out and use information as individuals but rather as communities.

4.9   Categories of Web 2.0 Tools used in Academic Libraries

Various web 2.0 tools can be categorized into following broader categories,

4.9.1 Text based tools

A. **Synchronous text discussion**: These types of tools are consisting of application like Twitter. Synchronous text discussion tools enable users to exchange text based comments in real time. This can be used to communicate text based short messages to larger audience in no time. Plurk, Chetze and today's meeting is also example of same.

B. **Discussion forums:** Discussion forums facilitate asynchronous text discussions between groups of users, organising contributions according to discussion threads. This can be useful for more reflective text conversations where real time interaction is not required. Forum.com, probords.com and others are example of this type of web 2.0 tools.

C. **Note taking and document creation tools:** Note taking and document creation tools enables groups of users to Collaborate or author document si real time and check real time change in log. Some examples of note taking tools are Evernote, Microsoft OneNote, Apple Notes for Mac users, Google Keep, Notion for MS Teams, Boostnote for developers, Milanote for designers and visual thinkers, Simplenote for distraction-free note taking.

4.9.2 Image based tools.

A. Image sharing tools: Image sharing web 2.0 tools are developed to facilitate asynchronous sharing of images publicaly. The end uses are using this source for sharing of images they want. Instagram, flicker, Pinterest, Pics4Learning, Open clipart are fed example of it.

B. Image creation and editing tools: Image creation and editing tools are enabling users to use web 2.0 as a service to Create, edit, and share images without help of local software like Photoshop or gimp. The Images can be shared via URL or email. Befunky, PicJuice, DrPic, Pho.to, Pixlr, Sumopaint or DevianArt are some example of it.

C. Drawing Tools: Drawing tools allows users to use Mouse pointer as a pen to create sketch or picture. This can be used majority in teaching and presenting something.

D. Mind mapping tools: Mind maps are sort of images which represents interrelated concept of a broader concept or theory in a form of visuals. Bubblus, Mindomo, Mindmup, Wisemapping, Popplet, Mind42, Mindmeister, Slatebox,Coggle, Text2Mindmap, Debategraph are online tools to create mind maps.

Mapping, Whiteboard tools and Diagramming tools are some more type of image based web 2.0 tools.

4.9.3 Audio tools:

A. Audio sharing: Audio sharing sites are web 2.0 tools use to provide services to upload and share audio files or recording. Soundcloud, Audioboom, Freesound, Chirbit, SoundBible are some online audio sharing web 2.0 tools

B. Audio creation and editing tools: This type of tools used to create or edit audio flies online with help of browsers or apps. Vocaroo, Voxopop, Soundation are some of examples of this type of tools.

4.9.4 Video tools:

A. Video sharing tools: Video sharing tools provide facility to share video content. You Tube is world biggest Video sharing platform and example of it.

B. Video creation and editing tools: Video editing tools provide facility create & edit videos. Video Toolbox, FileLab, Mozilla Popcorn Maker, Kizoa, Muvee, Screencast-o-matic, Google Hangouts on Air, Ustream, Live Stream, Veetle, Vokle, You Now are some example of it.

4.9.5 Multimedia Production tools:

A. Digital pin boards: Digital Pin boards are tools which allows uses to organised and share various types of resources. This type of tools used to collaborate and brainstorming sessions.   Pearltrees, Paddlet, Magnoto, Groupman are example of this type of pin boards.

B. Presentations tools: These types of web 2.0 tools provide services to users to structure multimodal content. Prezi is very well known tools used for presentations online. Google Slides, Haiku deck, Photo peach, Photo snack, V-casmo, Slide share and Author stream are categorized in this type.

4.9.6 Digital Storytelling tools:

A. Online book creation tools : This type of web 2.0 tools are helping end users to create digital content based on pictures and text and can be

shared on its repository or URLs. Story Jumper, Story Bird and Mix book are example of this.

B. Comic strip creation tools: A comic strip creation tool allows end users to create comic strip in ready templates with help of various background and addition of text or overlay images. Toondoo, Make beliefs Comix, Pixton and Witty Comics are some of examples of it.

C. Animated videos tools: These types of tools are used to create animated videos based on specific stories. It may be using drag & drop platform of videos, images or any avatars of animals, Birds or humans. Powtoons, Moovly, Digital Films, Dvolver are example of this type of web 2.0 tools.

4.9.7 Website creation tools

A. Personalize website creation tools: This is very common web 2.0 tools to use by variety of uses. Having personalized website is need of an hour. But creation of one needs technical knowledge about web designing. But there are some web 2.0 tools available that creates readymade website for end uses. This contains readymade template and freehosting of websites. Google Sites and openword press are biggest example of it. Wix, Tripod, Jimdo, Moonfruit, Weebly, Glogster are some more example of personalize website creation tools.

B. Wikis: Wikis are type of online directories or web pages that can be created by one single user or group of users. Wikis are collaborative in nature. Wikipedia is biggest example of this.

C. Blogs: Blogs are like digital diary of person who maintains it. It is differ from personalised website or wiki in its nature of saving various posts in chronological order. Blogpost can be tag with various keywords and sometimes can be maintained with text and multimedia. Blogger, BlogSpot or WordPress are example of it.

4.9.8 Knowledge organization and sharing tools

A. **File sharing:** File sharing tools provide online cloud space to users to share their content of various types like docs, spreadsheet, presentations, videos and lot more. These types of tools also provide facility edit or manipulate files online. Google Drive, MS onedrive, Mediafire and dropbox are some well-known example of it.

B. Social bookmarking: Social bookmarking tools provide cloud space or platform to share web links. It also provides facility to organise this links. Delicious is very famous platform. Diigo, Icyte, Memonic, Webnotes, Educlipper are some more example of it.

C. **Aggregators:** These type of web 2.0 tools allows to organise, save& share important desirable content. This type of aggregators tools uses RSS to fetch each and every information in one place. Flipboard, Feedly and Bloglines are very famous tools.

D. **Republishing:** this type of tools extend work of aggregators tools. It enables users or group of users to fetch data from web and then provide facility to comment on it or republish it on desirable place. Scoop It, Storify, Pinterest, Live Binders are such platforms that provide such services.

4.9.9 Data analysis tools:

A. **Conducting surveys:** some of web 2.0 tools are providing facility to collect data in various surveys with help of online forms. Google form is biggest type of this. Survey Monkey, Poll daddy, Survey Gizmo, Insightify, Poll Everywhere are some more platforms that provide this type of web 2.0 services.

B. Infographics: Infographics are online templates that can be used to represent numerical data and shared via platform or online URLs. Infogram, iCharts, Easelly, Piktochart are some of examples of Infographics tools.

C. Online spread sheets: Online spreadsheet tools are online spreadsheet that can be used to create, collaborate and share data and analyse them. Google Sheet is example of it. Live Documents spread-sheet, Ethercalc, Smartsheet are examples for this type of web 2.0 tools.

Other than this some more web 2.0 tools can be categorised as Timeline tools, 3D modelling tools, Assessment tools, Social networking systems, Synchronous collaboration tools. All this type of tools can be represented with help of mind map in below image.
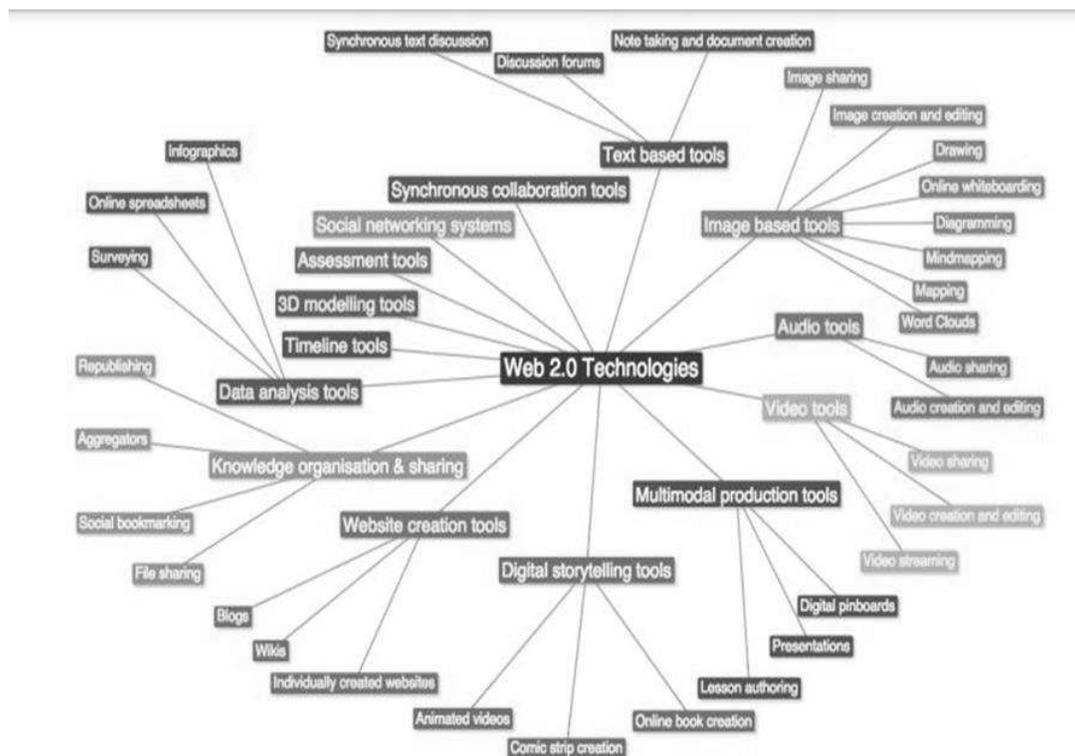

Fig. 4-3 Categories of Web 2.0 Tools used in Academic Libraries

4.10 Web 2.0 tools and how they can be used in the Library

As we have discussed earlier various times that libraries are changing it's its management and operations as per users need. Participatory library model or library 2.0 model is being design or develop as per needs of its user's feedback and demand. Web 2.0 tools can help libraries to bring this change in to reality. Web 2.0 tools can help libraries to create, collaborative and participatory environment for users. With the help of users' community and feedback receive, libraries are developing new services or service models to disseminate information and various resources. Dr. Jagdish Arora has categorised various web 2.0 tools into five categories as per librarian's point of view.

4.10.1   Synchronous Communication (Messaging)

A. **Instant Messaging (IM):** Instant Messaging is a one type of real-time, online instantaneous Communication systems between persons or group of persons. This type of services can be used in library to provide Real time Reference service just like they are using library's reference service.Libraries are already deploying IM for providing "real-time reference" services, where patrons can synchronously communicate with librarians much as they would in a face-to-face reference context. Software used in libraries for "live reference services" are usually much more robust than the simplistic IM applications. This software often allows co-browsing, file-sharing, screen-capturing, and data sharing and mining of previous transcripts. Libraries are already offering live reference service using IMs 24x7x365 in a collaborative fashion. Libraries can benefit greatly by adopting this technology as it evolves since it facilitates reference services in an online mode quite similar to traditional reference services of the physical library. Live reference

services or real time IM software BOTs are providing 24x7 in a collaborative way.

4.10.2   Content Delivery

A. **RSS Feeds:** RSS which is abbreviation of Real Simple Syndication or Rich Site Summary. RSS feeds are used to fetch data from websites or pages. Libraries can provide RSS feeds for article alerts, Journals received, Books published, or content of books, Magazines or Journals. RSS services can be provided with the help of a technology called XML, It also facilitates a Libraries' user to keep track of new updates on libraries' website.

B. **HTML Feeds:** HTML feeds are basically RSS feeds altered into HTML codes to provide interaction amongst researchers and sharing of RSS search results. The HTML codes can be put on library's website & the resulting HTML feed can be customised to compliment the page. HTML feeds permits faster access information to visiting users. The Elsevier Science has implemented HTML feeds for Scopus, its citation database.

C. **Streaming Media:** Streaming Media is online live multimedia content that is stream on particular platform Media streaming is very important tools of web 2.0 which has change world. In 21st century no one is left who has used it once. The whole concept of online learning is based on video and audio streaming service. Library instruction or orientation organised online began more interactive, media-rich facets. Previously text-based tutorials are being transformed to multimedia-based interactive tutorials. Several tutorials use Flash programming, screen-cast software, or streaming audio or video, and couple the media presentation with interactive quizzing; users respond to questions and the system responds in kind.

Besides its applications in library instruction, streaming media would also be available increasingly as digital collections of libraries. As media is created, libraries will be accountable for archiving and providing access to them. Libraries are already beginning to explore providing such through digital institutional repository applications and digital asset management soft wares.

D. Podcasting: The word "podcasting" is derived from two words, namely "broadcasting" and "iPod" (popular MP3 player from Apple Computer). Podcasting is defined as "process of capturing audio digital-media files that can be distributed over the Internet using RSS feeds for playing-back on portable media players as well as computers. Now a days technological advancement has made podcast technology out-dated. But in early days of web 2.0 podcast played important role in dissemination of information.

E. **Vodcasting:** The "VOD" in Vodcasting represented "video-on-demand". It is similar to podcasting. While podcasting is used for delivering audio files, Vodcasting is used for providing video content. Like podcast content, vodcasts content can be played either on a laptop or on personal media assistant (PMA)

F. **SMS Enquiry Service:** SMS are short Messages that have been delivered on individual mobile devices with help of mobile network. This type of services used to provide any ready information, library notices or any important information. Now a day's bulk SMS service is provided by many of private companies. This service is used to market services of library. More now smart ILMS have integration with bulk SMS service providing companies. So libraries are delivering check in and check out messages directly delivered to users personal mobile contact number.

4.10.3 Collaborative Publishing Tools

A. **Blogs:** Blog is personal website where users can enter their thoughts, Ideas, Suggestions and comments. According to Wikipedia "A blog (an abridged form of term web log) is a website, usually maintained by an individual, with regular entries of commentary, descriptions of events, or other material such as graphics or video.

B. **Wikis:** Wikies are web page or set of Web page that can be easily edited by anyone who is allowed to access. Wikipedia defines wikies as "A wiki is a collection of web pages designed to enable anyone who accesses it to contribute or modify content, using a simplified markup language. Wikis are often used to create collaborative websites and to power community websites".

4.10.4 Collaborative Service Platforms

A. **Social Networks:** A social network service is web-based online software that enables creation of virtual social networks for communities of people who share interests and activities or who are interested in exploring the interests and activities of others. This type of Social networks enables users to interact via chat, messaging, email, video, voice chat, file sharing, blogging, discussion groups, etc. Social networking services could enable librarians and patrons not only to interact, but to share and exchange resources dynamically in electronic environment. Users can create accounts with the library network service; see what other users have in common to their information needs, recommend resources to one another. Besides, libraries can also recommend resources to users through their network, based on similar profiles, demographics, previously-accessed resources, and a host of data that users provide.

B. Tagging: Tagging is very relative service to library's service. From ages librarians are mastered the skills to catagorised or give heading to various resources or generate subject headings and keywords. Tagging is same kind of service that is provided with help of Web 2.0. Tag is keyword or term or subject heading assigned to a piece of information like a picture, a geographic map, a blog entry, a video clip etc.

In Library 2.0, users could tag the library's collection and thereby participate in the cataloguing process. The best thing about tagging is that everyone is allowed to categorize the information the way they want. OPAC 2.0 is best example of library tagging. In koha ILMS OPAC enable users to log in to library OPAC and bookmark or give tag to items, like them or recommend them to other users. A new version of SOUL ILMS - SOUL 3.0 also has same features.

C. Social Bookmarking Services: Social bookmarking is a method of storing, organizing, searching and managing bookmarks of web sites using descriptive metadata. Most social bookmark services reassure users to consolidate their bookmarks with easy-going tags instead of traditional browser-based system of folders, although some services feature categories / folders or a combination of folders and tags.

Libraries can make use of social bookmarking sites using RSS feeds for subject disciplines or in areas of specialization relevant to them.

4.10.5　Hybrid Applications, Programs and Programming Tools

A. Mashups: A mashup is a web application that combines data from more than one source into a single integrated tool. Libraries are providing information consolidation services since long time. Mashups are new type

of novel service that are cubing two or more different technologies or services.

Mashup in Library 2.0 environment remembers a user when they log in. It allows the user to edit OPAC data and metadata, saves it. Library users can see what other users have similar items checked-out, borrow and lend tags, and a giant user-driven catalogue is created and mashed with the traditional catalogue tags, IM conversations with librarians also enable in OPAC 2.0 with help of mashups.

B. **Ajax:** Combination of Asynchronous JavaScript and XML technology is called Ajax. It is group of interrelated Web designing technology used to create web 2.0 interface or applications. These tools are providing specific new data or content demanded on web pages so that entire web page is not reloaded. This will boost speed of using website. This enables website or web applications lightweight interface.

C. **Application Programming Interface (API):** API is an interface that has been provided by software or operating systems. They utilize the syntax and elements of the programming language to make the API convenient to use in this particular context.

4.11 Benefits of Using Web 2.0 in Academic Library Services

Advantages and benefits for librarians and libraries when using web 2.0 technology are:

- Financially the costs of using social media are perceived to be low;
- It requires little training;
- It promotes library services and disseminates news quickly, delivering this information more directly to library users;
- It increases engagement and interactions with library users;

- It helps gather feedback to enhance user services;
- The promotion of library holdings via social media can help increase usage of content;
- It enhances communication both within the library and with other departments;
- It can be used for outreach activities through onward sharing, well beyond the institution itself, helping build connections and reputation more broadly.

How every libraries can be benefitted with various functions of library these functions are

A. **Customer Service** : The Main and most favourable use of web 2.0 tools in Academic libraries are to provide effective customer services like Ready reference service, CAS and SDI services within timely fashion which is far better than conventional library system

B. **User Engagement**: In this paradigm change users are more using google then of libraries for their information needs. Thus the engagement of user and library is now not like before. So library can reach where our users are and provide effective services.

C. **Collection development**: As discussed in above point libraries are lacking user engagement Web 2.0 tools especially OPAC 2.0 can be used extentatively to engage users with collaborative content. Social media tools are used to promote new arrival books as well as current collection and librarians can have suggestions also from users for the same using social media.

D. **Teaching and Learning**: Taylor & Francis survey shows that the use of web 2.0 as a teaching and learning tool isn't currently a high priority for librarians. But web 2.0 tools are currently used as a channel for communicating about educational resources rather than delivering them –

other tools such as Moodles were more typically used for educational purposes. Social media sites that support video and webcasting are felt to be the most effective for educational services and libraries are place for lifelong teaching and learning.

E. **Library Outreach programmes**: Librarians working in academic libraries are actively web 2.0 tools for outreach, generally focused on two key objectives: (a) promoting the work of faculty; and (b) connecting with the broader library community. In terms of promoting research output, several librarians were using social media to ensure that the work of their faculty is made available as widely as possible, both through using the library's own channels and also through research-focused services such as Mendeley.

4.12 Challenges of Using Web 2.0 for Academic Library Services

Similar to other businesses, the area of library and information science faces issues while utilising web 2.0. As a service-based organisation, libraries are reliant on funding from the government or its overseeing organisations. The direct output of an academic library cannot be calculated. As a result, libraries face a number of issues, including lack of knowledge, talent, connectivity, technological expertise, lack of technical support, and privacy concerns. The lack of an appropriate learning and training environment for the use and subsequent adoption of these technologies in libraries was the main issue cited by librarians in the research.

4.13 Ways of Optimising the Use of Web 2.0 Tools to Market Academic Library Services

When librarians decide to employ web 2.0 tools for managing libraries, they must consider how to make the best use of them. The library must create a strategic strategy to use web 2.0 in order to accomplish this goal. Additionally, the current work offers a model for web 2.0 tools that can be employed in academic libraries. The management school of thought also advocates making the best use of your resources. It is crucial for any technology or institution to have end users embrace it and use it. Librarians must use web 2.0 technologies intelligently to get the most out of them. They must choose which areas of their daily business they can employ web 2.0. Following are services or part of libraries operation were web 2.0 can be used.

A. **Promoting library news and events:** If academic libraries going to host a Book Review in, social media is the perfect place to tell students and lager audience about it. If your Web site is going to be down for repairs, let students know via your social media accounts. Social media is great for updating people on what is going on.

B. **New additions to your collection:** Web 2.0 tools are very good at promote about library's collection or services. OPAC 2.0 interface with software of library or discovery layer or Vufind interface in library's portal is good place to promote. End users might not know about additions to your collection unless you tell them. Web 2.0 can be helpful for informing patrons about new resources.

C. **Links to articles, videos, etc.:** If you come across Web content that would be relevant or helpful to your Students, post it. Not everything you post has to be directly related to your library. Do not lose sight of why

you started using this tool in the first place, but a variety of postings keep things fresh.

D. **Community information:** You can also pass along information of significance to your community via your social media channels and other web 2.0 tools. The library is the heart of a university campus. It is natural that it should be a place where people go to get information about the community.

E. **Solicit feedback:** web 2.0 is called participatory web or social web, so feel free to ask questions of your Students or followers. Questions also often get the most response. Ask interesting things that you actually want to know, such as, ―Why do you use the library? When people answer, continue the conversation with your patrons. Library's feedback mechanism also optimizes with help of online web 2.0 tools like Google forms.

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