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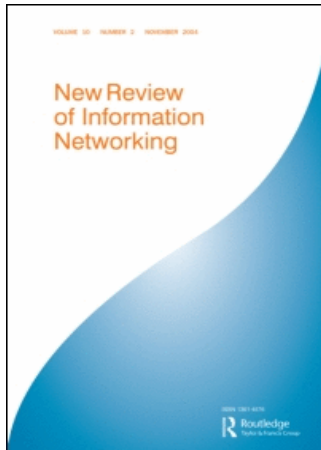
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INVOLVING THE USER THROUGH LIBRARY 2.0

Kevin Curran, Michelle Murray, David Stephen Norrby and Martin Christian

Libraries, as we know them today, can be defined by the term Library 1.0. This defines the way resources are kept on shelves or at a computer behind a login. These resources can be taken from a shelf, checked out by the library staff, taken home for a certain length of time and absorbed, and then returned to the library for someone else to avail of. Library 1.0 is a one-directional service that takes people to the information they require. Library 2.0 – or L2 as it is now more commonly addressed as – aims to take the information to the people by bringing the library service to the Internet and getting the users more involved by encouraging feedback participation. This paper presents an overview of Library 2.0 and introduces web 2.0 concepts.

Introduction

Libraries have been around for centuries and are considered places in which books, journals, CDs, etc are kept for reference or for borrowing by the public. The term L2 was believed to be first made by Micheal Casey in his blog 'LibraryCrunch'. Chad and Miller (2005) describe Library 2.0 (L2) as a concept, very different from the service we know today, that operates according to the expectations of today's users. They state that with this concept, the library will make information available wherever and whenever the user requires it. One point to note here is that this concept is not about replacing the 1.0 technology already in use, but rather about adding additional functionality.

Libraries were never the primary source of knowledge, but have always played a major role, where people of all ages, gender and religion could go and engage with the various forms of resources. This is proven by the fact that 96% (Chad and Miller, 2005) of people have been to a library at some point in their lives, and 89% of the UK population trust libraries. L2 allows this to remain, but it has new aims, which, it is hoped, will improve services. One of these aims is to encourage feedback and participation from the community. This can be done via blogs. A blog is similar to an on-line diary, which usually contains entries of what is happening in a person's life, as well as topics of interest to them (Miller 2006a). L2 aims to be easy to use, attractive to new users, and constantly re-evaluated and updated. L2 is built upon the principles of and is a direct result of the term Web 2.0. Web 2.0 offers a means by which data and services, previously locked into individual websites for reading, can be liberated and then reused, in ways sometimes referred to as 'mashing up'. Importantly, it also introduces the notion of a 'platform', meaning that others can build applications on pre-existing foundations, and, thus, benefit from economic scale without reinvention. Next,

we discuss some Web 2.0 concepts in more detail before delving into Library 2.0 in more depth in section 4.

Web 2.0

Most internet users will have come across the terms 'blog,' 'wiki,' 'podcast,' 'RSS Feed,' and 'CSS and XHTML validated'. These terms are associated with the umbrella term of Web 2.0, although the actual definition of this term is still hotly debated. Web 2.0 was first used by O'Reilly Media as the name of a series of web-development conferences,¹ that started in 2004. Wikipedia also defines the expression as referring to any of the following:

- The transition of websites from isolated information silos to sources of content and functionality, thus becoming a computer platform serving web applications to end users.
- A social phenomenon referring to an approach to creating and distributing Web content itself, characterised by open communication, decentralisation of authority, freedom to share and re-use and 'the market as a conversation'.
- A more organised and categorised content, with far more developed deep linking web architecture.
- A shift in economic value of the web, possibly surpassing that of the dot com boom of the late 1990s.
- A marketing term to differentiate new web businesses from those of the dot com boom, which, due to the bust, now seems discredited.
- The resurgence of excitement around the possibilities of innovative web applications and services that gained a lot of momentum around mid 2005.

Sub-categories of what Web 2.0 encapsulates include usability, economy, participation, convergence, design, standardisation and remixability. These categories are further broken down into sub-categories, such as blogs, audio, video, RSS, open APIs, wikis, social software and focus on simplicity. This paper presents an overview of Web 2.0 including definitions, technologies involved and sites currently advocated as examples of Web 2.0. O'Reilly defines Web 2.0 as 'the network as platform, spanning all connected devices; Web 2.0 applications are those that make the most of the intrinsic advantages of that platform: delivering software as a continually-updated service that gets better the more people use it, consuming and remixing data from multiple sources, including individual users, while providing their own data and services in a form that allows remixing by others, creating network effects through an 'architecture of participation', and going beyond the page metaphor of Web 1.0 to deliver rich user experiences.'² O'Reilly also posted the following figure to serve as a further explanation.³

Figure 1 is a diagram created at the Web 2.0 conference which describes the concept of Web 2.0 as not having a hard boundary, but rather, a gravitational core. The web is the platform for this concept, while the user gets to control his/her own data.

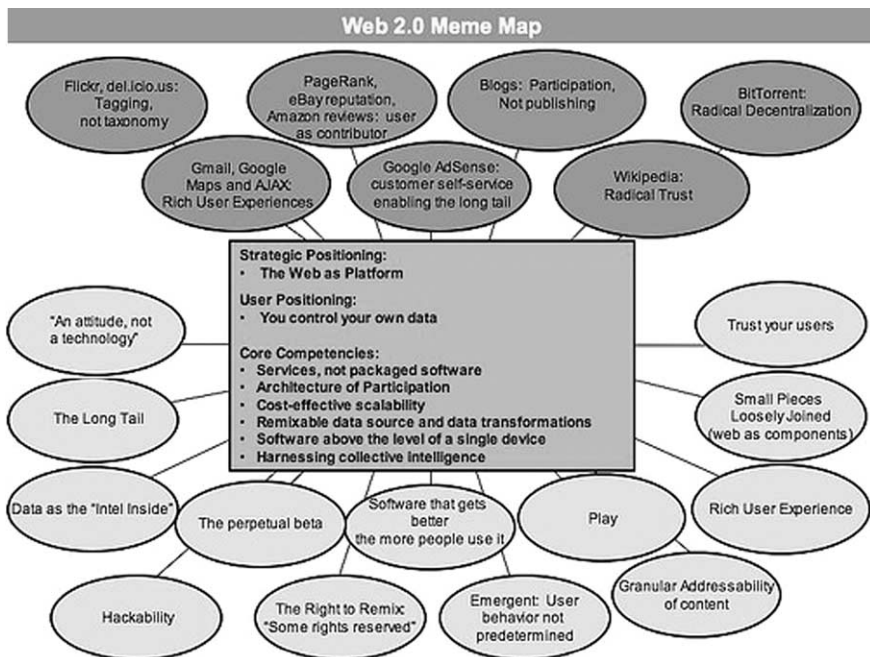


FIGURE 1
Web 2.0 Meme map

Figure 2 points out the evolution of services, such as 'DoubleClick' and 'Britannica Online' into the Web 2.0 generation, where the popularity of their Web 2.0 counterparts, 'Google AdSense' and 'Wikipedia', respectively, has greatly increased.

Web 1.0		Web 2.0
DoubleClick	-->	Google AdSense
Ofoto	-->	Flickr
Akamai	-->	BitTorrent
mp3.com	-->	Napster
Britannica Online	-->	Wikipedia
personal websites	-->	blogging
evite	-->	upcoming.org and EVDB
domain name speculation	-->	search engine optimization
page views	-->	cost per click
screen scraping	-->	web services
publishing	-->	participation
content management systems	-->	wikis
directories (taxonomy)	-->	tagging ("folksonomy")
stickiness	-->	syndication

FIGURE 2
What is Web 2.0?

TABLE 1
Difference between Web 1.0 and Web 2.0

	Web 1.0	Web 2.0
Mode of usage	Read	Write and contribute
Unit of content	Page	Record
State	Static	Dynamic
How content is viewed	Web browser	Browser, RSS readers, mobile devices, etc.
Creation of content	By website authors	By everyone

A more general comparison between Web 2.0 and Web 1.0 is shown in Table 1.

There are those (Shaw 2005) who debate the validity of the term Web 2.0, claiming that Web 2.0 does not exist and that the term is merely a marketing slogan that is used to convince investors and the media that the companies are 'creating something fundamentally new, rather than continuing to develop and use well-established technologies.' Whatever the actual definition, the most widely accepted idea of what makes a website Web 2.0 is the following set of criteria:

1. User-generated content, as opposed to content posted solely by the site author(s). One example of this would be the recently developed www.newsvine.com, which allows users to post their own news articles and maintain their own news columns.
2. Treats users as if they are co-developers of the site. The more people that use the service, the better it becomes. User contribution, by means of reviews, comments, etc. is encouraged.
3. Highly customisable content and interface. For example, allowing users to put their own news feeds on their homepage, as in www.netvibes.com (Figure 3), rather than serving content that the user has little to no control over, as in the home page of MSN, BBC or NBC.
4. The core application of the website runs through the browser and web server, rather than on a desktop platform.
5. The incorporation of popular internet trends, such as 'blogging', 'tagging', 'podcasting', 'wikis', the sharing of media and content, and the use of web standards, such as validated XHTML and Cascading Style Sheets (CSS).
6. Integration of emerging web technologies, such as Asynchronous JavaScript and XML (AJAX), Really Simple Syndication (RSS) and Application Programming Interfaces (APIs).

Frequently, one can recognise a Web 2.0 site based on the following minor characteristics:

1. Clean interface with an extensive use of colour gradients, large fonts and CSS design.
2. Contains a development wiki.

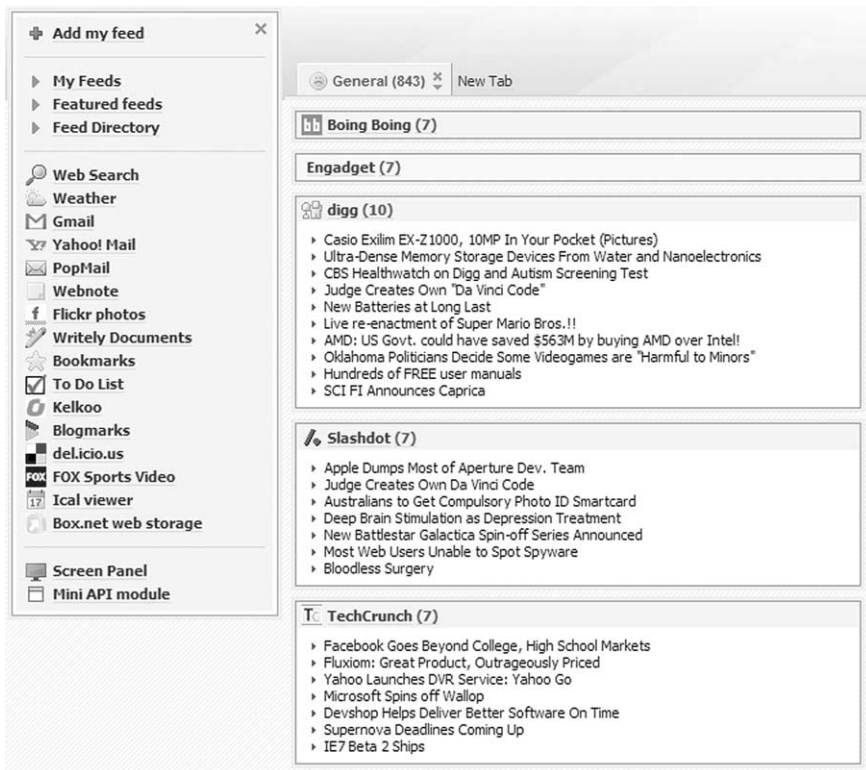


FIGURE 3

Netvibes.com customisable homepage

3. Separate RSS feeds for every part of the site.
4. Links to a 'meet the team' personal blog maintained by the site authors.
5. The company's name sounds like a character from Star Wars and/or at least one vowel appears to be missing. For example: Renkoo, Gabbr, Meebo, Congoo, Flickr, Frappr, Tagyu, Goowy and Squidoo.
6. Box of 'tags' with varying font sizes.

The use of Hyper-linking on Web pages underpins the 2.0 Web. The high level of connectivity between content on the web has encouraged sustained growth, as more and more users add new content. Users can then link to newly discovered sites in a way similar to dendrites forming relationships in the human brain. The success of Google is a result of 2.0 technologies. Google have created a business from linking users of one site to the information or service provided by another. Google has none of the trappings of software provider's products. These trappings are the purchase cost of the software, limited applications to a particular platform and the product life span where

the next generation would involve the consumer having to purchase an upgrade or a whole new software package. There are no direct costs to the users of Google; all the business costs are met by advertising and the placing of sponsored links in prominent positions. Continuous upgrades are of very little significance to the end user, as they have no direct input either with time or resources. The key to Google's success is the use of PageRank, which used web link structure as opposed to the page content to rank search results. This open source operating systems would have been impossible to run with Web 1.0 technologies, supporting the argument that Web 2.0 is a platform where the user has control of the information provided (McCormack 2002). While it is clear that Web 2.0 has no clear and concise definition, one could argue that the term is useful in that it allows non-technical users to define the complicated set of concepts and technologies that are constantly being developed for use in new websites, and it allows companies to promote their websites to the masses without having to explain the sophisticated array of technologies used to create the application.

Web 2.0 Trends

A 'blog', short for 'web log', is a web-based publication comprising individual articles that are posted periodically and are usually displayed in reverse chronological order. Blogs are often used to create online journals and others may focus on one particular subject, such as technology or politics. Content submission to blogs is usually done on the web server, rather than uploading manually, with templates automatically styling the newly-created content to fit appropriately on the blog home page. Most blog software allows readers to submit comments on each piece of content, and it is customary, especially on professional blogs, to provide links to similar articles on different blogs. Blogs have become extremely popular over the past few years. One popular blog search engine, technorati.com, is 'currently tracking 36.7 million sites and 2.3 billion links' and, with free blog hosting sites, such as www.livejournal.com and www.blogger.com allowing users to create a blog within minutes, that number is steadily increasing. Examples of popular blogs are [engadget](http://engadget.com),⁴ [boingboing](http://boingboing.com)⁵ and [techcrunch](http://techcrunch.com).⁶

Syndication

The use of RSS and/or Atom Feeds allow users to view new site updates without having to visit the actual website, such as by using a news reader (e.g. Microsoft Outlook), downloading onto a mobile device, or integrating the syndication feed into a desktop program (e.g. Google Desktop).

Podcasts

Podcasting is the use of syndication, RSS or Atom, for the distribution of multimedia files, such as audio recordings over the internet for playback on mobile devices and personal computers. Usually the podcast is from a show, such as a weekly radio programme.

Tagging

A tag is a word attached to a piece of content that acts as a category. Multiple tags can be assigned to the content, which allows the content to be sorted according to category, in the same way that similar files can be located within one directory. The difference, however, is that sorting by tags is dynamic. A piece of content's tags can be easily added, edited or removed with no hindrance to the sorting process, as the sorting is done using software on the web server. Tags are often used in Web 2.0 applications. For example, on www.flickr.com, users can assign their own tags to the photographs they have uploaded so that other users can see them when they are viewing photographs with similar tags. This method of open categorisation on the internet is known as 'Folksonomy'.

Mashups

A 'mashup' is a product which incorporates multiple technologies and information from different sources into one application by making use of APIs. One example would be the correlation of information with Google Maps, e.g. placing houses for sale and rent on the Google Maps interface, as used in www.ononemap.com.

Folksonomies

'Folksonomy' is a combination of the words 'Folk' and 'taxonomy', literally meaning 'people's classification management'. Folksonomies allow internet users to categorise web pages, photographs and links. This labeling process is called 'tagging', and the result is an improved quality of search results.

Web 2.0 is more interactive than its predecessor. Web pages are now described as 'User dependant web portals'. These portals require user input and feed back for success. eBay is an online business that depends on transactions conducted by its members to sustain growth. In a way similar to the Web, eBay is a supplier of content that supports user activities with continued market domination almost guaranteed due to its sheer scale of operation. The major high street retailers are now flexing their collective business muscle on the Web. Tesco.com provides all the facilities of their physical store online, enabling the customer to shop from home using JavaScript and secure internet connections to

facilitate transactions. Other business can now compete with the big retail companies even if they are based solely online. RyanAir provides agent-free bookings, removing the middle man, and more importantly for the consumer, agent fees from air travel. Web 2.0 applications have helped RyanAir grow as a company at a time when the aviation industry is in recession (MacManus 2005).

Many of the people involved in the development of Web 1.0 are, today, involved in the Web 2.0 industry, this bank of knowledge can only help guarantee the success of Web 2.0 applications. Many Web 1.0 companies, which were involved in the original dot com era, had moved on to join larger companies, and this suggests that there is plenty of web experience in the mix. These people will have the knowledge of what does and does not work. But more importantly, why something does or does not work. Today's websites are now dynamic rather than being static, websites have become platforms for web applications for end users. With the use of development systems, such as AJAX, there are now many web-based applications which imitate standard computer applications, for example, word processing, spreadsheets and slide show presentations. These are applications that the general public is familiar with, making it easier for an end-user to operate these applications. These new web applications are often much more complicated to design and build, creating employment opportunities for IT professionals. The way in which communities interact socially has changed with Web 2.0 innovations. People no longer depend on written letters in the post or telephone calls to communicate. Web 2.0 has helped to create online social networks for public use; some provide social software which members can use to connect with each other. Microsoft's MSN and Bebo.com are two of these online communities. The benefits of Web 2.0 include the fact that it holds collective intelligence. This makes the work on it collaborative. Also, because everything is updated instantly using RSS feeds, there is instant gratification. Users have a sense of ownership over the web because it holds their work. This makes them much more passionate about using the web and updating it regularly, meaning everyone who reads the information on the web gets up-to-date information all the time. The early web was primarily for the reading of information by users, today, on the web, the user can still just read, but they also now can contribute to a website. Today's online tasks are more than surfing for information, they now include shopping, down and uploading, blogging and sharing files with web users, both known and unknown to the user. There is no argument against the fact that there have been major developments in the way today's web is run or in the applications and expectations end-users now have of the web. Even when all the previously discussed developments are considered, there remains no direct evidence that Web 2.0 exists as an actual methodology or technology. It seems to be a phrase used to describe recent innovations in the natural development cycle, although some older technologies have been included under the Web 2.0 banner (MacManus 2005).

Library 2.0

Talis is a UK based library automation service and Chad and Miller (2005) discuss the issue of the importance of libraries in the community and how L2 would be beneficial. Talis are taking a leadership role in L2, however they argue that for L2 to work, it must not be a Talis only creation. L2 requires all relevant companies coming together and creating an application that can work for everybody. Table 2 shows the principles of Web 2.0 from which L2 was directly developed. All these principles are needed to form an effective and efficient L2 and leads to:

$$\text{Browser} + \text{Web 2.0 Applications} + \text{Connectivity} = \text{Full-featured OPAC}$$

The word 'browser' here refers to a web browser, which is an application that is used to access the World Wide Web (WWW). This together with Web 2.0

TABLE 2
Principles of Web 2.0

Principle	Explanation
Freeing of data	This allows the application to be uncovered and manipulated in different ways
Building of virtual applications	This enables data and functionality to be taken from various different sources. Web 2.0 permits users to use a mash-up of different applications available on the web to create new applications
Participative	Users actively participate on-line by blogging or sharing files. This feedback is then given back to the application and makes it available to all users to view and comment on
Works for the user	Web 2.0 locates and assembles content that meets the needs of the user
Modular	Applications are modular with developers and users able to pick and choose in order to build the application that they need
Sharing	Web 2.0 is about sharing code, concept and ideas, with money still being made
Communication and facilitating community	Web 2.0 could not facilitate the back-and-forth of true communication, but it did so to a degree through the use of blogs and similar applications
Remix	Rather than having to go from one area of the Web to another and having to navigate through numerous annoying advertisements, the user can choose what they require and incorporate it into something new
Smart	In Web 2.0 applications will use knowledge for the user, know where the user has been and know what the user is doing. This will then enable the application to deliver a service that will meet the user's needs
Long tail	This phrase describes certain business and economic models, such as Amazon. The term long tail is also generally used in statistics often applied in relation to wealth distributions or vocabulary use

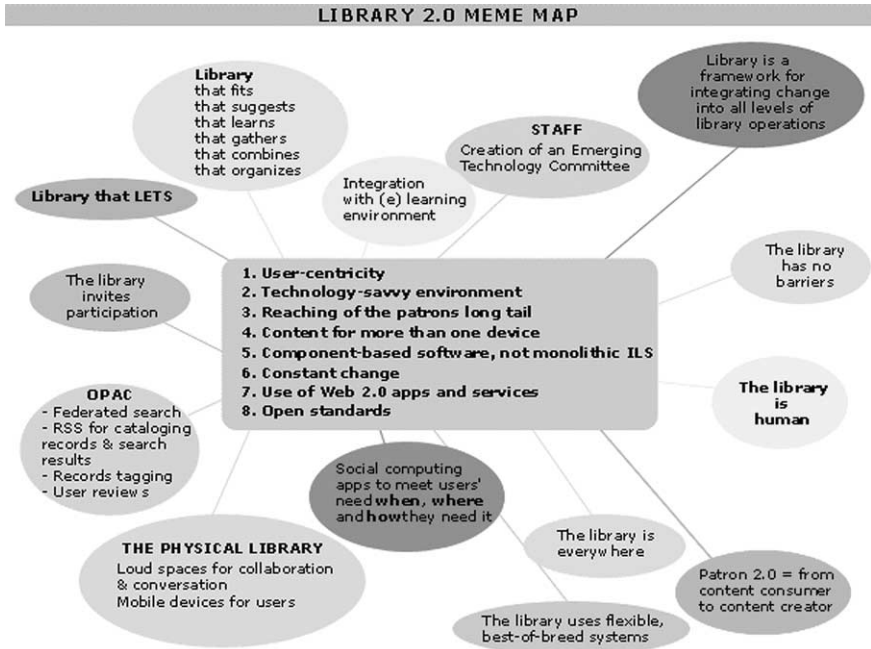


FIGURE 4
L2 Meme map (Biancu 2006)

applications and connectivity will lead to a full featured Online Public Access Catalogue (OPAC). An OPAC is a computerised online catalogue, used to hold the details of the resources held in a library. This database has replaced the card catalogue in libraries, and allows library staff and the public to access it through the Internet at anytime and from anywhere. OPACs form part of an integrated library system, which is a group of library systems working together to achieve the goal of library service delivery.

Figure 4 shows a L2 Meme map (Biancu 2006), which reveals all the principles and important parts of L2 that need to be in place for it to be as efficient and as effective as possible.

Adopting the Web 2.0 principles will allow libraries to better serve their customers as well as allowing for the opportunity to gain more customers. Using this service, users would be able to (Miller 2006b):

- view online
- borrow locally
- request from afar
- buy or sell as appropriate to their needs and circumstance.

L2 is all about change and, ultimately, the survival of the library. When looking back to the first libraries, and comparing them with the library of today,

there have been many changes, albeit, gradual ones. These changes have been carried out to keep up with the changing needs and expectations of the world. As we are becoming more and more reliant on technology and the Internet, L2 is just another method of keeping libraries attractive to the community. In order for libraries to survive, they must be able to keep up with the way Internet-based services, such as Google, provide access to information at a click of a button from anywhere at any time at the point of need. This would mean that users do not have to go physically to a library in order to gain the information that they require. This would then minimise the problem of limited opening hours (Chad and Miller 2005). For L2 to work effectively and efficiently, the entire community needs to have:

- a willingness to change
- a willingness to try new things
- a willingness to constantly re-evaluate service offerings, and
- a willingness to look outside our own world for solutions

Libraries Implementing L2

Public librarians have been the most influential movers of L2, therefore for it to work effectively and efficiently, L2 should be determined and formed by librarians and library users. The Ann Arbor District Library in the USA is currently using the L2 functionality. Figure 5 shows the 'Catalog' page of the Ann Arbor District Library.

The section on the left of Figure 5 shows an enlarged caption of the options the user has on this page. One can see that three of the options are blogs. This demonstrates that blogs are an important part of L2. They enable the user to give their view of the service being provided, thereby encouraging feedback. Promoters behind L2 wish to develop it in such a way that library users

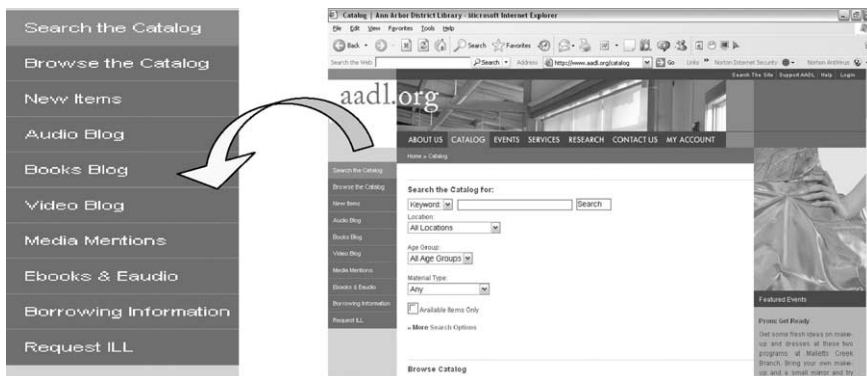


FIGURE 5

Ann Arbor District Library screenshot

can access it from sites such as Amazon and Yahoo. However, it is possible that a highly successful organisation that makes its money from selling books would not want to see an advertised library service that allows users to borrow books for free.

Conclusion

Making use of Web 2.0 is about making sure that, as a side effect to what the user is actually doing, libraries actually add value. In short, making use of Web 2.0 principals is making use of the long tail. In the Web 2.0 world, applications are run online, with no installation, updates are constant and continuous, and access is instant from any computer with a browser. The major difference between Library 1.0 and L2 is that Library 1.0 only allows for a one-way flow of information, while L2 is a read-write library, that gives library users the power to decide the service that they want. L2 reinforces the role libraries play in the community by building on today's best and continually improving the service. L2 can be summarised as user-driven and aiming to save every library user time in retrieving the information they want.

Notes

1. <http://www.web2con.com/>
2. http://radar.oreilly.com/archives/2005/10/web_20_compact_definition.html
3. <http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html>
4. www.engadget.com
5. www.boingboing.net
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