

Virtual Environment Scan

Submitted November 2, 2007
Revised February 12, 2008
by DLIST

1. Topic: Browsers and Virtual Collaboration Tools and Environments; AKA "Web 2.0 Tools" and Virtual Reality

Trends:

By far the most provocative environmental trend on the technological horizon today is the ongoing development of web-based social and productivity programs such as blogs, wikis, productivity applications like Google Apps, as well as entire virtual environments like D2L, (Desire 2 Learn), and, (arguably), Second Life, collectively referred to as "Web 2.0". These applications or components for the most part do away with the paradigm of having separate programs to perform the varying functions involved in creating digital documents, while simultaneously incorporating the "virtual" and social nature of the web. Instead of installing a suite of individual programs on your computer, (Word, PowerPoint, Publisher, Excel and Access), the browser itself becomes the primary computing vehicle, accessing the necessary tools or components from a remote server on the Internet, thus providing opportunity for interactive collaboration and feedback, as well as research, reference and education. Some of the collaborative productivity tools that are being talked about right now are [Google Apps](#), [Think Free](#), [Zoho](#), and [37Signals](#).

A hard and fast definition of exactly what "Web 2.0" actually is does not exist, however the most telling of all descriptions is this anonymous quote: "It's an attitude, not a technology". That said, several key aspects of the idea behind exactly what "Web 2.0" is have been identified; First, *services* are offered, not packaged software, and these services are open to user-definition and manipulation – they are "hackable". This "hackability" in turn fosters an architecture of participation; the participation fostered in this model has the effect of making the services offered exist in a constant state of emergence, "perpetual beta", where user behavior is not predetermined. Second, an air of decentralization is achieved through reliance on the community for support and contribution. Above all, this participatory model's goal, while often unstated, is to harness the collective intelligence of users, using the Web as a platform not only for the traditional markets like industry and education, but also to constantly improve the Web Tools themselves; this idea has been labeled "perpetual beta". The nature of Web 2.0 is often referred to as its "meme", and is well represented in [Tim O'Reilly's Web 2.0 Meme Map](#).

Another representation of the idea of library-as-intersection, while not entirely covered by the umbrella of the term "Web 2.0", is the growing use by academic institutions of the "Multiple User Virtual Environment", or MUVE. While more aligned with online gaming than Web 2.0 per-se, the game Second Life provides a venue for students from widely separated geographic regions to attend lectures, communicate and do research, in short collaborate, in a virtual environment that is currently experiencing exponential growth and popularity. This growth is not only in numbers of participants, but also in the number of academic institutions using the platform; as of October 27th, according to the University of Chicago's student newspaper *The Maroon* (see "**Second Life Phenomena Extends**

into Academia", (17), below), there are over 10.3 million users in the Second Life "world", along with more than 80 academic institutions. **NOTE:** (Some estimates and research point to a much lower number of Second Life users, and in fact a study released in January 2007 by Second Life reported the current actual population of unique users to be 1,974,607, (See References 15 and 16, below) – though population figures may vary by source, what is undeniable is the discussion generated by Second Life regarding the academic uses of virtual spaces.)

Second Life has opened the eyes to many in academia to the powers of virtual realities. Unlike its predecessors of online gaming environments (e.g. EverQuest and World of Warcraft), Second Life offers its community the freedom to set their own goals and define their own interactions. Given the media blitz surrounding it, Second Life received much attention from corporations and, to a lesser extent, academic institutions—yet the adage of "if you build it, they will come" has not rung true. But maybe this is because the "it" that's being built is not yet well focused.

From the perspective of the University of Arizona Libraries, recreating our online presence via a virtual brick and mortar installation inside Second Life (or to be more precise, inside the University of Arizona's recently acquired land via the New Media Consortium) is not advisable. Not only do we not have the staffing resources to pull something like that off, but as other companies are finding out, recreating their offices in this virtual environment is less productive than figuring out how to use this medium to better facilitate communication, creativity, and outreach. (See "**Companies Shifting Virtual World Strategies**", (18), below).

It would behoove the Library to keep an eye on Second Life and other such mediums—for this will not be the virtual world's ultimate, or even penultimate incarnation—but at this time, there is not an urgent need to devote staff resources to actually creating content. There is a steering committee on campus that is directing the building of the University of Arizona's presence in Second Life. The wiki associated with this group is here: <http://uasl.wikispaces.com/>.

Another, perhaps more sobering example of games used as educational tools is **Arden**, a virtual reality-based game created by Edward Castronova, a professor at Indiana University. Castronova found that even with the financial backing of a \$250,000 MacArthur Foundation grant, his game, developed to teach students about Shakespeare's world, just wasn't any fun. His conclusion was that games have to start out as just that - games - for them to be fun and attract users. Castronova is a telecommunications professor at IU, and he created the virtual world of Arden in order to study economic theories; by manipulating the rules of the game, he hoped to gain insight into how money works in the real world. Unfortunately, Arden doesn't have the mass appeal necessary to attract users, and so Castronova has abandoned development of the game. He chalks up his failure to two primary shortcomings:

1. Even though his \$250,000 grant was huge for the field of humanities, it was a pittance compared with other virtual world development costs. For instance, it is estimated that development of World of War, an immensely popular virtual reality game, has cost upwards of \$75 million.
2. He also attributes "biting of more than [he] could chew", by combining research and education into his project.

Castronova says that he will continue to pursue virtual reality as a venue to provide the social sciences with a controlled environment much as the laboratory functions in the natural sciences. This is perhaps an avenue of thought that could be explored by the Library, in conjunction with the obvious

time and space advantages offered by the virtual reality environment.

Summary Analysis

The library has the opportunity of playing a central role in both the evolution and deployment of Web 2.0 services by assuming an intermediary position at the intersection of the social and academic avenues. Libraries provide a space, both virtual and physical, where the social, conversational and chatting side of Web 2.0, (eg. Instant messaging, Facebook, Blogs and Wikis), can merge with academia in the form of collaboration and learning, annotating and teaching. It would benefit the Library to monitor web-based collaborative developments, and position itself to not only take a leading role in developing our own tools but, conversely to become a defining contributor in the development of Web 2.0 in general. Serendipitously, by definition actively engaging in the Web 2.0 process contributes toward both of these recommendations.

IN the discussion of Professor Castronova's MUVE **Arden**, Castronova says that he will continue to pursue virtual reality as a venue to provide the social sciences with a controlled environment much as the laboratory functions in the natural sciences. This is perhaps an avenue of thought that could be explored by the Library, in conjunction with the obvious time and space advantages offered by the virtual reality environment.

Data and Sources:

BACKGROUND INFORMATION ON "WEB 2.0"

1. <http://www.oreilly.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html>

What Is Web 2.0: Design Patterns and Business Models for the Next Generation of Software

Seminal discussion of differences between "Web 1" and "Web 2".

2. <http://www.ariadne.ac.uk/issue45/miller/>

A good break down/summary of what exactly "Web 2.0" is – "...it's an attitude, not a technology..."*unknown*.

3. http://youtube.com/watch?v=NLIGopyXT_g

"The Machine is Us/ing Us" An excellent video introduction to Web 2.0 with analysis, conclusions, and speculation on the future. By Michael Welch, Asst. Professor of Cultural Anthropology, Kansas State University.

4. <http://www.freepatentsonline.com/20040133639.html>

Original patent reference from 2004 – interesting as a timeline marking the rapid growth of browser collaboration.

5. <http://www.slideshare.net/kepitcher/blogs-wikis-and-podcasts-web-20-tools-you-can-use/>

"Blogs, Wikis and Podcasts: Web 2.0 Tools You Can Use" by Kate Pitcher, SUNY.

An online presentation from the October 2006 from the Western New York Library Association's Web 2.0 Conference. Excellent graphical representations of the library as intermediary between the social and academic poles of the web.

6. <http://www.loc.gov/blog/?p=233>

"My Friend Flickr: A Match Made in Photo Heaven" Library of Congress Blog on LoC partnership with Flickr.

WEB 2.0 TOOLS YOU CAN USE

6. <https://www.google.com/a/>

Google Apps – “You can select any combination of our available tools and services and customize them with your school's logo, color scheme and content. Manage your users through a web-based control panel, or use the APIs to integrate Google Apps into your existing systems.”

7. <http://www.thinkfree.com/common/main.tfo>

ThinkFree – Billed as “A free online alternative to Microsoft Office”, offers 1GB storage space for free.

8. <http://www.zoho.com/>

Zoho - Probably offers the most online tools in sheer numbers; offerings include word processor, spread sheet, presentation (eg. PowerPoint), web conferencing, note taker, database, organizer/calendar, project management, Etc. Also offers website monitoring tool, polls, iPhone access to documents and still more...

9. <http://www.37signals.com/>

37Signals – Also offers full range of online productivity tools.

10. <http://www.horde.org/groupware/>

Horde Groupware – Yet another suite of productivity tools designed to function through the browser. Horde Groupware is a free, enterprise ready, browser based collaboration suite. Users can manage and share calendars, contacts, tasks and notes with the standards compliant components from the Horde Project.

11. <http://www.phpgroupware.org/>

phpGroupWare is a fully featured, Open Source, web based messaging, collaboration and enterprise management platform offering contacts management, E-mail, shared calendar, web content and document management and sharing, project management and issues/bug tracking.

INFORMATION ON DESIRE2LEARN (D2L)

12. <http://www.uwgb.edu/library/instruction/courseguides.html>

From the Cofrin Library at the U of Wisconsin, Green Bay; a list of items that can be included on Course Pages there through D2L. Among others: Research Assistance, E-Reserve selections, catalog search box, Etc...

13. <http://www.desire2learn.com/LearningEnvironment/>

Desire 2 Learn – Offers a collaborative e-learning environment that is not solely geared toward academia, but also toward government and corporate markets using the same tools.

14. <http://wally.rit.edu/desire2learn/>

Desire2Learn Integration Documentation – An excellent collections of handouts, presentations and PDF's relating to Rochester Institute of Technology Library's adoption of D2L.

SECOND LIFE AND MUVE INFORMATION

15. <http://blog.secondlife.com/2007/02/09/state-of-%20the-virtual-world-%e2%80%93-key-metrics-january-2007/>

“**State of the Virtual World – Key Metrics, January 2007**” Population study published by Second Life, February 2007.

16. <http://valleywag.com/tech/overcounts/second-lifes-absentee-population-236318.php>

"Second Life's Absentee Population" by Clay Shirky, Valleywag Blog – "Now that Linden is publishing actual user numbers, we can see that the Residents figure, as expected, is a big overcount over actual people (about 50% inflation, in fact, accounting for over a million ersatz users)."

17. http://maroon.uchicago.edu/online_edition/news/2007/10/26/second-life-phenomenon-extends-into-academia/

"Second Life Phenomena Extends into Academia" - Chicago University, *The Maroon*, 27 Oct 2007

18. <http://secondlife.reuters.com/stories/2007/10/11/companies-shifting-virtual-world-strategies/>

"Companies shifting virtual world strategies." 11 Oct 2007. "The buzz around virtual worlds now is shifting from simply building a virtual headquarters to how companies can help employees work together or with customers more effectively."

19. <http://uanews.org/node/16857> Article from **UA News**, 07 Nov 2007.

"UA Builds a Campus in Cyberspace" "The virtual UA sits on Arizona Island, joining more than 400 other higher education institutions that have opened Second Life accounts."

20. <http://www.technologyreview.com/Infotech/19817/page1/?a=f> MIT, *Technology Review*, 05 Dec 2007.

"Virtual Labor Lost; The failure of a highly anticipated game shows the academic limits of virtual worlds"

21. <http://swi.indiana.edu/arden/index.shtml> **Arden; The World of William Shakespeare**

2. Topic: Mobile Technology

Trends (and then some...):

In today's computing world, things that may seem novel and "cutting edge" to some, may already be embraced and used regularly by a significant portion of another demographic group. Mobile technology is one of the areas in which younger demographic groups tend to be early adopters. As mobile devices like cell phones, MP3 players, PDA's, cell phones, and now the iPhone continue to gain market share among these younger demographic groups, university libraries might be considered prime areas for development and deployment of mobile content. This development is not without its costs and burdens, however. Regular HTML web pages are unfriendly to most mobile media, which have very small screens, little or no scrolling capability, small amounts of memory, and may be unable to process scripting languages.

Mobile users right now are generally able to transmit and receive messages up to about 160 characters; this is termed "Short Messaging Service" or SMS. Libraries in general are slowly adopting the SMS/Mobile model, despite the rapid adoption of SMS among mobile technology users in general. As of November 2007 Ebsco has announced "EBSCOhost Mobile as a "coming feature" intended to provide an interface for wireless access. Innovative offers catalog services for mobile devices through its product AirPAC. The library is currently surveying the product

Mobile personal technology provides an additional, sometimes overlooked advantage to the library: Students who use their own technology devices to find the information they are searching for are not using shared resources, thus freeing these computers for more in-depth research and other types of student use.

Our Library's users are decidedly the demographic most likely to use mobile technology daily.

However, no real study has been performed to determine whether or not our users desire hand-held access; this is something that certainly should be addressed with the continuing growth of mobile technology devices and users.

Currently Innovative's AirPAC is being surveyed as means of addressing this shortfall. AirPAC uses XML to determine what type of device is requesting information, desktop PC, PDA, mobile phone, Etc. Requests are then routed to AirPAC or Web OPAC accordingly. AirPAC users can search the library catalog or view patron information, just as with Web OPAC.

For purely economic reasons, with restructuring and journal deselection fresh in our minds, it seems difficult to rationalize the purchase of AirPAC right now. Aside from purely financial concerns, however, there are several pragmatic reasons to forego adopting AirPAC right away. Among those are the fact that the rest of the Library's website is not mobile-compatible, suggesting that the entire web site might be overhauled, with AirPAC implemented as a part of that project.

Additionally, the University's wireless infrastructure is not currently designed to fully support mobile devices. Users would need to use their cell provider for any connection to AirPAC; this would prove to be a large limiting factor on the number of users of the AirPAC system.

Summary Analysis

At this point in time, mobile access for library materials does not seem feasible; however it is an important factor to bear in mind, and will undoubtedly be visited again in the very near future.

Data and Sources:

1. <http://www.infotoday.com/cilmag/mar02/embrey.htm>
"Today's PDA's can put OPAC in the Palm of Your Hand" – Informative article on PDA access to online library catalogs.
2. <http://www.librarytechnology.org/ltg-displaytext.pl?RC=11902>
"SMS Offers Libraries New Talk Tool" - As new tools for communication come into vogue, it's important for libraries to adapt. In order to stay current, libraries have integrated—and continue to integrate—a wide range of communication options in to their modern reference services, i.e., the telephone call, e-mail, instant messaging (IM), and Web page co-browsing. Now enter SMS.
3. <http://www.educause.edu/ir/library/pdf/ers0502/cs/ecs0502.pdf>
"Using Mobile Technology to Enhance Students' Educational Experiences"
Educause Center for Applied Research
4. <http://circulating.wordpress.com/category/technology/mobile-technology/>
"Circulating; Checking out and checking in" a librarian's blog with occasional entries under the heading "Mobile Technology".
5. <http://web.simmons.edu/~fox/pda/>
"PDA's, Handhelds and Mobile Technologies in Libraries; How the academic library is using handheld mobile technologies" A comprehensive listing of articles and presentations on the subject of mobile technology in the academic library.

3. Topic: Federated Search

Trends:

From Wikipedia: "Federated search is the simultaneous search of multiple online databases and is an emerging feature of automated, web-based library systems. It is also often referred to as a portal, as

opposed to simply a web-based search engine.” That Wikipedia has an entry for Federated Search at all is indicative of the level of need for this type of search. Technically however, the above definition applies more correctly to the term “metasearch”, which is a true cross-database search, involving unique, individual databases, while a “federated search” is usually a search performed on a single repository of multiple sources of data. Federated searches may run under Z39.50, a client server protocol for searching and retrieving information from remote databases, originally developed in the 1970’s. Or they may use proprietary API’s or even screen scrape to obtain data.

There are pitfalls to this search technique, given its speed requirements and the number and separation of databases being searched, resulting in poor relevancy ranking, “deduplicating”, (reducing the number of identical “hits” in a given search), and other issues related to merging results. That said, library clients sincerely desire federated searching, but on their own terms:

- Clients want to click a maximum of 3 times before accessing the relevant information.
- Clients want no “dead ends”; Once they identify needed materials, they want an immediate link to A.) Electronic full text, B.) Shelving location, (if paper), and/or C.) a seamless transition to a form where they can request the material they need.
- They require a single search box, and in the studies specifically referred to a Google-like interface, which is very simple and easy to use.
- They want access to a one-stop searching point for access to a hybrid library’s diverse electronic collections and catalogues.
- Process is more important than quality. The easier and faster they can access info, the better, often regardless of the quality of the info.
- Due to limited resources, libraries often do not catalogue content required by clients, e.g. chapters within books.
- Clients want to have the option to search all e-resources simultaneously or selectively.
- They don’t want to retrieve duplicate results.
- To summarize - users want to access library e-resources through an interface similar to Google. (see “**Federated Search Engines and Link Resolvers: Offering clients an alternative route to information resources**”, (3), below).

Currently, the Library’s federated search is Serials Solutions’ Central Search, one of the industry leaders in providing federated/metasearch capabilities, released in 2005. Interestingly, Google Scholar itself can be added to the list of Central Search databases, and our Library does indeed include it, along with Google Images and over 200 other databases, (here is [a list of databases](#) included in UA Library’s Central Search, see reference 5 below).

Considering library clients’ desire for a federated search “like Google”, it is fortuitous that Google Scholar was released in 2004. In the ensuing years, incorporation of Google Scholar by libraries has been slow but measurable, despite some noticeable problems with the quality of search results.

One of the main reasons for Google Scholar’s attractiveness as a federated search solution is its attractive price – free. For this reason alone, the Library should pay attention to Google Scholar in the future. Given that it is a ready-made interface that caters to library clients’ desires, any future improvements in search results, (which are likely given Google’s track record), would only serve to add to the attractiveness of Google Scholar as our federated search of choice; a close eye should be kept on Google Scholar in the future.

Summary Analysis

At this point in time, since the Library already has a federated search solution in place, attention should be paid to exploiting the features of Central Search to better offer the simple search interface web users want. This includes implementing Central Search on other pages throughout the library, (eg. Course Pages and Subject Guides). There is an interface already in place that produces the HTML code that will place a Central Search box in any library web page. By making Central Search more available, usage can be studied, questions asked, and the service can be more easily tailored to better suit the Library's needs.

Data and Sources:

1. <http://www.libraryjournal.com/article/CA6413442.html>
"(Meta)search Like Google: The time has come for libraries, too, to negotiate for full text" "Some librarians are concerned that metasearch is dumbed down and less powerful than native searching. However, it seems perfectly reasonable that many users want to learn and use only one search interface and to search multiple vendor-supplied databases at once. Is it possible to provide this service without any dumbing down? What future direction should metasearch take in libraries?"
2. <http://fedsearch.blogspot.com/> **"Federated Search Engines and Link Resolvers; Progress Reports of Members of the Workgroup for Federated Searching at the Academic Information Service, University of Pretoria"**
"Only librarians like to search; everyone else likes to find." Roy Tennant, Sr. Program Officer, OCLC Programs and Research.
3. <https://www.up.ac.za/dspace/bitstream/2263/3598/6/Report.pdf>
"Federated Search Engines and Link Resolvers: Offering clients an alternative route to information resources" Report on an evaluation of federated search engines and link resolvers conducted at the University of Pretoria, South Africa.
4. <http://library.cern.ch/HEPLW/12/papers/1/> **"Google Scholar Versus Metasearch Systems"** "Metasearch systems are based on just-in-time processing, whereas Google Scholar, like other federated searching systems, is based on just-in-case processing. This underlying technology accords Google Scholar a unique position among other scholarly resources. However, a year after its beta release, Google Scholar is still facing a number of challenges that cause librarians to question its value for scholarly research. Nevertheless, it has become popular among researchers, and the library community is looking for ways to provide patrons with guidelines for the most beneficial manner of using this new resource."
5. <http://intranet.library.arizona.edu/teams/dlist/CsearchDB.html>
List of databases included in Central Search at UA Library – Currently there are 219 out of a total of 469 available from Central Search.
6. <http://www.lib.utexas.edu/indexes/titles.html?id=161> **Google Scholar FAQ, University of Texas Libraries**

4. Topic: Summary Document; 2007 Horizon Report

The New Media Consortium and the EDUCAUSE Learning Initiative have collaborated to publish their annual **Horizon Report** for 2007, available here:

<http://intranet.library.arizona.edu/teams/dlist/documents/2007HorizonReport.pdf>

Discussion of Web 2.0/User-created Content, social networking, mobile phones, virtual worlds and MUVE environments is included in this fairly comprehensive study of upcoming trends and emerging technologies that are likely to have a large effect on teaching, learning, and creative expression within higher education. The report includes many links to supporting literature; here are a few examples:

Selected Links from the Report:

1. **Digital Game-Based Learning:**

<http://www.educause.edu/apps/er/erm06/erm0620.asp>

2. **Games in Education Video:**

<http://video.google.com/videoplay?docid=6117726917684965691&q=games+in+education>

3. **New Scholarship and Emerging Forms of Publication:**

<http://del.icio.us/tag/hz07+scholarship>

4. **Twenty Ideas for Using Mobile Phones in Teaching & Learning:**

<http://teaching.mrbelshaw.co.uk/index.php/2006/09/21/20-ideas-getting-students-to-use-their-mobile-phones-as-learning-tools/>

Or:

<http://snipurl.com/1vf0q>