

NMC Horizon Project

2008 Short List

Time-to-Adoption Horizon: One Year or Less

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Time-to-Adoption: One Year or Less

Webware

Your web browser is now a portal to an array of free tools for tasks like writing, calculating, presenting, and telling stories with digital media. For productivity, webware suites like Zoho Office and Google Docs offer most everything that off-the-shelf packages provide, including word processing, spreadsheets, presentation tools, and more, without the need to buy or install any software. Documents and other content created with these tools are easily sharable—not only distribution of the finished work, but also for collaboration during creation. Rather than mailing around multiple copies of a static, local file, colleagues are working on a single copy that all can see and edit, and these files are available from any location where there is a web browser. Many web-based productivity applications can also import from and export to standard desktop file formats.

For creative expression, digital storytelling, and other purposes, there are webware applications that can handle photo and video manipulation (see www.splashup.com for photos and www.jumpcut.com for videos, to name just two examples); capture a sketch with audio narration (www.sketchcast.com); or create presentations and slideshows (www.slideshare.net; www.slide.com). A key feature of webware applications is that they can be small and easy to develop, making it possible to design custom applications for particular uses.

Relevance for Teaching, Learning & Creative Expression

- Groups can collaborate on projects online, anywhere there is Internet access.
- Faculty can evaluate student work and add detailed comments online.
- Students can incorporate multimedia cheaply and easily and publish it for others to view.

Examples

- Wharton College uses a custom webware app to help students sign up for courses using their unique auction system: blogs.zdnet.com/Stewart/?p=19
- Michigan State University offers a set of webware apps that allow faculty to build interactive language learning resources on the fly: clear.msu.edu/teaching/online/ria/index.php
- Arizona State University offers Google applications, including mail, calendaring, and chat to its 65,000 students: www.asu.edu/emailsignup/

For Further Reading

50 Web 2.0 Ways to Tell a Story

(Alan Levine, 2007)

This wiki describes nearly 50 web applications for presentation and digital storytelling.
cogdogroo.wikispaces.com/50+ways

Educational Uses of Google Docs & Spreadsheets

(Steve Gilbert, Cynthia Russell, *TLT-SWG*, March 8, 2007)

This resource page by The Teaching, Learning and Technology Group features materials about the educational use of Google Docs & Spreadsheets.
www.tltgroup.org/FridayLive/20070309GoogleDocsEdUsesResources.htm

What's Driving Adoption of Rich Internet Applications?

(Ryan Stewart, *The Universal Desktop*, November 19, 2007)

This blog post examines possible reasons why webware apps are growing in popularity and use.
<http://blogs.zdnet.com/Stewart/?p=634>

Time-to-Adoption: One Year or Less

Online Collaborative Workspaces

An online collaborative workspace serves as a hub where a group of people can work or socialize. Unlike productivity applications, which enable a user to perform a specific task or create a particular product, collaborative workspaces are “places” where groups of people gather resources or information related to their personal or professional lives. These workspaces include do-it-yourself social networks like Ning (www.ning.com); sharable personalized start pages that are “pagecast” from services like Netvibes (www.netvibes.com) or Pageflakes (www.pageflakes.com); and third-party social networks like Facebook (www.facebook.com). These spaces make it easy for people to collect a set of tools to keep in touch, share interests and ideas, and keep tabs on each other.

The tools, or widgets, can pull information from a variety of sources, including Flickr, Twitter, MySpace or Facebook, news and weather feeds, del.icio.us, blog feeds and more. The API (application programming interface) for such spaces enables the development of third-party widgets—often designed by people in the user community—that allow almost infinite extensibility and customization based on a group’s needs or interests. For example, a page could include a calendar widget populated with data from the group’s online calendaring system, or a whiteboard widget where visitors can type messages for one another.

Relevance for Teaching, Learning & Creative Expression

- Groups can set up a single location to get information related to their topic or course.
- Online workspaces facilitate serendipitous connections between people with like interests.
- Students can create a “portfolio” page that automatically updates as new work is blogged, podcast, or posted to photo or video sharing sites.

Examples

- Collected psychology resources on Pageflakes: www.pageflakes.com/sheryl.adam/14404094
- ScoPE is a community of practicing educators hosted by Simon Fraser University: www.pageflakes.com/sylvia/5736552/
- The National Forum on Canadian History is a one-day event with its own pagecast, including documents, photos and videos: www.pageflakes.com/cnhs/14568889

For Further Reading

Nine Ways to Build Your Own Social Network

(Mark Hendrickson, *TechCrunch*, July 24, 2007)

This blog post describes nine tools that can be used to build collaborative workspaces.

www.techcrunch.com/2007/07/24/9-ways-to-build-your-own-social-network

Pageflakes, Netvibes Take on Social Networks: What Chance Do They Have?

(Richard MacManus, *Read/Write Web*, July 22, 2007)

This blog post discusses the emergence of services like Pageflakes and Netvibes and compares them to large social networking sites like Facebook.

www.readwriteweb.com/archives/pageflakes_netvibes_take_on_social_networks.php

Using Pageflakes as a Student Portal

(Will Richardson, *weblogg-ed*, November 21, 2007)

This blog post describes how to set up a Pageflakes portal for educational purposes.

weblogg-ed.com/2006/using-pageflakes-as-student-portal/

Time-to-Adoption: One Year or Less

Simple Video Capture and Sharing

Video is well established as a popular means of communication. Short clips are easy to capture, edit, and share, thanks to devices like digital cameras and phones and web-based editing and sharing applications. In January 2007 alone, 7.2 billion videos were viewed online by nearly 123 million Americans—70 percent of the total U.S. Internet audience (ComScore, May 2007, www.comscore.com/press/release.asp?press=1264). Video is as easy to post to the Internet as text; authors no longer need to create three different formats of their video—sharing sites like YouTube, Google Video, Viddler, or Blip.tv accept a variety of formats, and handle the conversion and distribution once the video is uploaded. FixMyMovie (www.fixmymovie.com) enhances the quality of digital video online, and communities such as Cruxy (cruxy.com/) offer outlets for distribution.

It is easy to find short clips on all kinds of topics, from educational materials to personal stories to amateur music and cinema. Universities are turning to services like YouTube and iTunes U to host their video content—from small segments on specific topics to full lectures—online, often offering them to the public free of charge. Hosting services even provide institutional “channels” where content can be collected and branded with the institution’s look.

Relevance for Teaching, Learning & Creative Expression

- Faculty can produce short clips to explain specific topics, or record whole lectures.
- Students can easily work in multimedia and produce video papers and projects.
- Amateur cinematographers and musicians can use hosting sites to reach a broader audience.

Examples

- MIT Tech TV makes it easy for the MIT community to find and share video related to science, technology, or the community: techtv.mit.edu/
- Princeton University archives events and lectures: www.princeton.edu/WebMedia/lectures/
- The University of New South Wales offers free videos of many of its courses on its own YouTube channel: au.youtube.com/user/unsu
- In a new media studies class at Pitzer College, students investigate what can be learned from YouTube: www.youtube.com/group/learningfromyoutube

For Further Reading

On YouTube, No Enrollment Caps

(Andy Guess, *Inside Higher Ed*, October 4, 2007)

This article describes the University of California, Berkeley’s course offerings on YouTube and compares them to content available on iTunes U and on Berkeley’s internal video portal.

insidehighered.com/news/2007/10/04/youtube

Video Toolbox 150+ Online Video Tools and Resources

(Mashable Team, *Mashable*, June 27, 2007)

This is a comprehensive, annotated list of online video creation, editing, and sharing tools.

mashable.com/2007/06/27/video-toolbox/

Virginia Tech Launches First Major University YouTube Contest

(Mark Owczarski, *Virginia Tech News*, February 28, 2007)

This news announcement describes a competition for YouTube videos hosted by Virginia Tech.

www.vtnews.vt.edu/story.php?relyear=2007&itemno=109

Time-to-Adoption: One Year or Less

Community Tagging

Tagging, the practice of attaching a descriptive word or phrase to a piece of online content for the purpose of linking it to other related content, has become a mainstream activity in the past year. Tagging is now being used in very creative and functional ways by people in all kinds of communities, scholarly and otherwise. Nearly every website designed for sharing media—whether audio, video, images or other media—includes a field for the author to tag the media at the time of upload. Most all of these sites also allow viewers to add their own tags. Social bookmarking sites allow users to tag—and in some cases, highlight and annotate—web pages for easy retrieval later. The power of community tagging is that large collections can be built with only minimal effort from any given member of the community.

Classes can use tags to accumulate and label shared resources; collaborators on research papers can tag and annotate online source material to review; interest groups can tag relevant material all over the Internet and easily find it again. Tagging extends the presence of an event beyond the dates and location where it takes place: photos, blog posts, videos, podcasts, and online materials used in or referred to by presentations at conferences can all be linked via a shared tag. Taken together, all those little pieces draw a vivid picture of the community and activities at that moment in time; and tagging is the powerful means to make those pieces discoverable, wherever they are on the Internet.

Relevance for Teaching, Learning & Creative Expression

- Researchers and students can classify resources as they are found and return to them later.
- Groups can collectively build and share a detailed resource list and embed dynamic content into other web sites.
- Scholars can share notes that can then be discovered by other researchers at any time.

Examples

- LibraryThing's Tagmash lets readers search for books by using combinations of tags to include or exclude: www.librarything.com/thingology/2007/07/tagmash-book-tagging-grows-up.php
- Harvard's EdTags is an annotated collection of resources tagged for educational use and vetted by the educational community: edtags.org/about.php
- A Trinity College course used Del.icio.us to create a reading list—and encouraged students to add to it: del.icio.us/smartmobs
- The NSW Learnscope 07 Conference has resources tagged on Technorati, Flickr, Slideshare, Del.icio.us, and other sites: nswlearnscope.com (the tag is nswlearnscope07)

For Further Reading

Social Bookmarking in Plain English

(Lee LeFever, *Common Craft*, August 7, 2007)

This brief (3.5-minute) video explains social bookmarking, using Del.icio.us as an example, in an engaging format.

www.commoncraft.com/bookmarking-plain-english

The Tagging Toolbox: 30+ Tagging Tools

(Stan Schroeder, *Mashable*, July 13, 2007)

This is an annotated list of tools used for tagging and finding content of all kinds, both online and on an individual computer.

mashable.com/2007/07/13/tagging-tools/

Time-to-Adoption: Two to Three Years

Mobile

The *2007 Horizon Report* featured mobile devices, describing them as tiny tools for everything from voice conversations to video capture. In recent months, we have seen even more to indicate that mobile is increasingly about networking on the go. Better displays and new interfaces make it easier to interact with an ever-expanding variety of content—not just content formatted specially for mobiles, but nearly any content available on the Internet. Mobiles now keep us in touch in almost all the ways that laptops used to: with email, web browsing, document editing, and photo and video sharing, all available anywhere without the need to find a hotspot or a power outlet.

Newer, longer-lasting batteries keep our mobiles alive for longer trips between charges. Even the days of downloading and syncing updates from a computer are coming to an end: new push technology allows manufacturers to send updates directly to our devices. As more features are embedded in the software, the physical device will become more flexible simply by receiving the latest software updates. Open APIs encourage the creation of custom widgets that will offer even more services; combined with webware applications that already exist, the capabilities of mobiles will soon rival those of a computer with a web browser. Smaller and less expensive than a laptop, the mobile may well be the next portable computer.

Relevance for Teaching, Learning & Creative Expression

- Access to materials is increased: students carry mobiles when they would not carry laptops.
- Mobile phones that can display any web content provide access to a wider array of resources.
- The combination of social networking and mobility lets students and colleagues use online collaboration tools and social networking sites from anywhere they happen to be.

Examples

- gOffice is a word processor for the iPhone: www.goffice.com
- Pocket Virtual Worlds creates a 3-D walkthrough of real world sites on a mobile device: www.worldsinmotion.biz/2007/07/pocket_virtual_worlds_creating.php
- SoonR lets you access everything on your PC from your mobile phone: www.soonr.com

For Further Reading

Invention of the Year: The iPhone

(Lev Grossman, *TIME*, 2007)

This article cites five reasons why the iPhone is “still the invention of the year” for 2007.
www.time.com/time/specials/2007/article/0,28804,1677329_1678542_1677891,00.html

Mobile Productivity Toolbox: 45+ Mobile Productivity Tools

(Johnsua Ho, *Mashable*, August 21, 2007)

This is an annotated list of mobile tools for phones and WAP enabled web sites, grouped by what the tool is designed to do.

<http://mashable.com/2007/08/21/mobile-productivity-toolbox/>

So Much More than Phone Calls

(Chris Betcha, *Betchablog*, October 10, 2007)

An Australian educator shares the tools he uses on a broadband-enabled cell phone.

betch.edublogs.org/2007/10/10/so-much-more-than-phone-calls/

Time-to-Adoption: Two to Three Years

Geotagging

An interesting convergence of technologies is bringing maps and data together in ways that are transforming our understanding of history, geography, societal and political change, and more. Geotagging technologies include geocoding, the practice of adding geographical metadata (latitude, longitude, altitude, and/or placenames) to images, websites, or other media; geographic information systems (GIS), which store and analyze vast amounts of geographically-referenced information; and geolocation, the real-world location of a device connected to the Internet. Combinations of these technologies let us plot data against the landscape of the real world to visualize phenomena and datasets in ways that make spatial and temporal relationships transparent and obvious. More and more, geo-information is becoming a characteristic embedded in everything around us.

Geotagging is being used to annotate maps with notes about individual experiences and memories of a place. "Hyperlocal" information—minute details about a specific location in the form of everyday photographs, blog entries, and video clips—offers opportunities for research that were previously only available by actually living in the location in question. In the near future, digital photographs will automatically include geographic/locative information as they now include a time and date stamp; when uploaded to services like Flickr, the photos will "know" where they were taken. Geolocation is about revealing the real-world location of data, in space and in time; and its implications for research are profound.

Relevance for Teaching, Learning & Creative Expression

- Create interactive maps that use photographs and data tagged by others to draw a detailed picture of a place or event.
- Connect online content with real-world locations—and access the content using a mobile device for just-in-time delivery of information.
- Collect and mine geotagged information for research purposes.

Examples

- Researchers at the Pompeu Fabra University in Barcelona are mining the spatial-temporal data provided by geotagged Flickr photos of urban locations: www.girardin.org/fabien/tracing/
- The Center for Locative Media is geotagging three markers along the Mississippi Blues Trail in multiple media: www.locative-media.org/projects/C93/
- MIT's Wiki City Rome project maps events and movement through the city in a 24-hour festival period using cell phone and other data: senseable.mit.edu/wikicity/rome/

For Further Reading

The Rise of Hyperlocal Information

(Alex Iskold, *Read/Write Web*, November 21, 2007)

This blog entry discusses the concept of hyperlocal information and suggests possible applications for research and commerce.

www.readwriteweb.com/archives/the_rise_of_hyperlocal_information.php

Semapedia Adopts QR Code

(Leonard Low, *Mobile Learning*, December 8, 2006)

This blog post describes Semapedia, a way to create digitally-readable tags that can be stuck to real-world objects and read by a mobile device to bring up online content related to the location.

mlearning.edublogs.org/2006/12/08/semapedia-adopts-qr-code/

Time-to-Adoption: Two to Three Years

Socially-Centered Virtual Worlds

The intersection of virtual worlds and social networking is an increasingly interesting space. Social networking sites on the flat web have become very popular because of the ways they connect people with others who share their interests (whether professional or social), and we are beginning to see similar kinds of activities taking place in virtual worlds. As the platforms continue to develop, we can expect to see many more. The tools that sites like MySpace and Facebook offer—widgets that let you see multimedia updates from your friends, pull in their blog feeds, or create a public dialog that persists over time—will find their way into virtual worlds in the next few years. These tools will create a kind of “3D Facebook” that will combine the connective power of social networking with the engagement of a virtual world.

Increasing integration between virtual worlds, the flat web, and desktop applications contributes to this trend. Sun Microsystems’ MPK20 is a virtual workplace that brings social networking, document editing, web browsing, and other software functions into a 3D meeting space. Looking ahead, the next generation of virtual worlds will provide tools that tell people what their friends are doing, allow conversations to persist over time, and make it easy to author and pull in little widgets that connect people to their peers and friends as well as to documents and information elsewhere online.

Relevance for Teaching, Learning & Creative Expression

- Online conferences and symposia could pull in resources from around the Internet, as well as creating session archives that persist over time.
- Students in hybrid distance learning courses—part virtual world, part flat web—could meet in a virtual space and collaborate on documents right then and there.
- Links between traditional, 2D documents like PDF files and exhibits set up in 3D spaces could allow learners to move back and forth between them seamlessly.

Examples

- Skoolaborate is a global project that uses a mix of technologies (blogs, LMS, wikis and virtual worlds) for collaborative learning: www.skoolaborate.com
- Victoria University’s Melbourne 2051 project combines traditional writing with digital storytelling in the form of a virtual world setting built by students: www.melbourne2051.com
- Qwaq builds virtual workspaces for businesses: www.qwaq.com

For Further Reading

MPK20: Sun’s Virtual Workplace

(Sun Microsystems Website, 2007)

This page describes Sun’s virtual workplace, MPK20, how it came about, and how it is used within the company.

research.sun.com/projects/mc/mpk20.html

Studio Wikitecture: Opening Architecture

(Ryan Schultz, Studio Wikitecture, 2007)

This is the blog for the Second Life group Studio Wikitecture, an urban planning and architecture interest group that is collectively building a 3D wiki in Second Life. Of particular interest is the October 31, 2007 post on the kick-off of Wikitecture 3.0.

studiowikitecture.wordpress.com/

Time-to-Adoption: Two to Three Years

Scholarly Mashups

A *mashup* is a unified combination of pieces of information from various sources. *Scholarly* mashups are mashups created for educational purposes. Scholarly mashups represent the intersection of multidisciplinary research and Web 2.0 tools. With easy-to-use tools for data visualization, mapmaking, and digital media creation, research from different disciplines can be juxtaposed in new ways to bring new insights to light. Scholars can participate at all levels, from sharing the results of original research to mining others' data to experimenting with new tools to mix and display data in different ways.

Tools like Google's Mashup Editor (code.google.com/gme/) make it relatively easy to create applications that grab online data, organize it, and display it the way the author wants. For example, the U.S. Environmental Protection Agency (EPA) has created a Google Earth mashup that generates maps of the U.S. displaying air quality based on the amount and kind of pollutants emitted by businesses (www.epa.gov/air/emissions/where.htm). Applications can also be smaller and web-based; a mashup created by László Kozma combines data from Wikipedia and Google Maps to identify the location of authors posting updates to Wikipedia almost in real-time (www.lkozma.net/wpv/).

Not all mashups are about data visualization. Mashups can also be creative products of other kinds—unrelated film and music clips assembled into a parody of a well-known production, for instance. These creative pieces, also known as remixes, are a new form of creative and personal expression.

Relevance for Teaching, Learning & Creative Expression

- Remixes are an emerging art form and also can be an effective presentation tool.
- Research can be displayed on interactive graphs, charts, or maps that make the concepts clear.
- Web-based tools for manipulating data are easy to use, usually free, and widely available.

Examples

- Swivel lets you upload and generate graphs from your own data: www.swivel.com
- Mashup Feed collects links to mashups and to APIs for creating them: www.mashupfeed.com
- TutorLinker is a mashup that locates tutors in your area and plots them on a map: www.tutorlinker.com

For Further Reading

ABS to Open up Data for Online Mapping

(Angus Kidman, *ZDNet Australia*, October 16, 2007)

The Australian Bureau of Statistics plans to release its data for use in online mashups in 2008. www.zdnet.com.au/news/software/soa/ABS-to-open-up-data-for-online-mapping/0,130061733,339282984,00.htm

The Mash-up Future of the Web

(Bill Thompson, *BBC News*, February 19, 2007)

This article discusses the effect mashups may have on the Internet in coming years. news.bbc.co.uk/2/hi/technology/6375525.stm

Mishmash of Mashups

(Wayne Hodgins, *Off Course—On Target*, July 25, 2007)

This blog post explains what mashups are (and aren't) and suggests why they are useful for education. waynehodgins.typepad.com/ontarget/2007/07/mishmash-of-mas.html

Time-to-Adoption: Four to Five Years

Collective Intelligence

Collective intelligence is a term for the kinds of knowledge and understanding that emerge from large groups of individuals. It can be explicit, in the form of knowledge gathered and recorded by many people (for example, the Wikipedia—en.wikipedia.org—is the result of collective intelligence); but perhaps more interesting, and more powerful, is the tacit intelligence that results from the data generated by the activities of many people over time. Discovering and harnessing the intelligence in such data allows us to do things like make accurate predictions about preferences and behaviors, understand and map relationships, and gauge the relative significance of ideas and events.

Examples of uses for this type of intelligence already exist in industry. Google's PageRank system, which assigns value to a web page based on the number of other pages that link to it, uses collective intelligence to determine which web pages are most likely to be relevant in a list of search results. Amazon.com also takes advantage of collective intelligence to recommend purchases that you might like based on your previous purchases and those of your friends—and even based on what other people have also bought, whether you know them or not. LinkedIn makes very accurate recommendations of people you might know, or want to know, based on your extended connections.

The applications of collective intelligence to education are not fully understood. Certainly it is easy to envision ways to apply collective intelligence-based recommendation systems: if you found topic X interesting, you might also like to learn about topic Y; now that you understand concept Q, you might be ready to tackle concept Z. Other applications are likely to be uncovered as we continue to find ways to tap into the collective intelligence embedded in the data on the Internet.

Relevance for Teaching, Learning & Creative Expression

- Natural applications exist for research in datasets generated by lots of human activity.
- Games that capture data (eg, tagging or word association) can give insight to language study.
- Social encyclopedias like Cellphedia (www.cellphedia.com) give students a chance to ask questions or to be the experts with the answers.

Examples

- Google Image Labeler and the ESP Game tag photos by matching keywords typed by thousands of players: images.google.com/imagelabeler/, www.espgame.org
- ReCaptcha provides anti-spam tools that simultaneously digitize scanned text: recaptcha.net

For Further Reading

10 Semantic Apps to Watch

(Richard MacManus, *Read/Write Web*, November 29, 2007)

This blog post describes ten “semantic apps,” or applications that take advantage of the kinds of data provided by collective intelligence, that are currently in development.

www.readwriteweb.com/archives/10_semantic_apps_to_watch.php

Panel on Collective Intelligence

(Moderated by David Thorburn, *MIT World*, October 7, 2007)

This panel discussion, featuring Thomas W. Malone, Alex Pentland, and Karim R. Lakhani, discusses the question of whether a group of people working with smart machines can achieve a greater degree of intelligence than humans or machines alone. Presented as a two-hour video.

mitworld.mit.edu/video/494/

Time-to-Adoption: Four to Five Years

Social Operating Systems

The continuing growth of social networking systems indicates that they supply a popular need; currently, Facebook alone has 55 million active users (www.facebook.com/press/info.php?factsheet). As anyone knows who has signed up for one of these sites—or received an invitation from a friend who has done so—the key to social networking is to declare your relationships to people that you know, and then share information with them by means of little applications or widgets. These relationships, both personal and professional, make up a network known as the social graph.

A downside of current social networking systems is that they don't recognize the social graph—every time you join a new social networking site, you have to recreate your relationships—and you can generally only declare a relationship with someone else if they are registered on the same site. Over the next few years, social networking systems will become social *operating* systems, which will allow connections to be more fluid and dynamic; a key characteristic of social operating systems will be that they know about the social graph and can tap into it to find out who you already know. Your relationships will be carried with you into any new online social system you join—2D or 3D. Social operating systems will include a user-centered set of tools that allow people to own and manage their own social ties and personal information while allowing automated discovery of relationships by web applications.

Relevance for Teaching, Learning & Creative Expression

- Your personal and professional connections would move with you throughout your career, no matter what social networking platforms you use now or in the future.
- It becomes easier to create custom widgets that know who people are—there is no need to develop profile and contacts functionality; simply tap into the social graph.

Examples

- Google's OpenSocial APIs let widgets share data: code.google.com/apis/opensocial/
- The German company Aka'Aki alerts you to people you might want to meet while you are, say, at the grocery store: www.crunchbase.com/company/akaaki

For Further Reading

Giant Global Graph

(Tim Berners-Lee, *Dig (timbl's blog)*, November 21, 2007)

This blog post discusses the social graph (or the giant global graph) in terms of its relationship to the Internet as a whole and to the Semantic Web.

dig.csail.mit.edu/breadcrumbs/node/215

The Social Network Operating System

(Tim O'Reilly, *O'Reilly Radar*, October 12, 2007)

This blog post describes the benefits of the social graph.

radar.oreilly.com/archives/2007/10/social_network_operating_system.html

Thoughts on the Social Graph

(Brad Fitzpatrick and David Recordon, August 17, 2007)

This article discusses the need for a social graph that exists outside of systems like Facebook, so that applications can take advantage of the fact that you already know who your contacts are.

bradfitz.com/social-graph-problem/

Time-to-Adoption: Four to Five Years

Open Education Resources

Open education resources are freely available educational materials, usually packaged as entire courses, that can be used for self-study or by faculty who want to integrate them into their courses. Schools like MIT, Stanford, Carnegie Mellon, UC Berkeley, and many others have been offering open-access courses online for some time. Computer science classes have incorporated open education resources for years—not only for course materials, but also for group software projects that give students the opportunity to work on real products. We are now starting to see services that are built around the educational materials themselves—services for review and recommendation, for creating and uploading, for tracking progress, and for communicating with other learners and teachers.

We are also seeing groups of institutions working together to provide access to open education courses, like the Open Education Consortium (www.ocwconsortium.org). The OEC, now two years old, provides a portal to high-quality content from over 100 institutions, all organized into complete courses and all available online. Of course, not all open education resources must be complete courses. Services like PocketKnowledge (pocketknowledge.tc.columbia.edu/home.php/about) from Columbia Teachers College and Scribd (www.scribd.com) invite contributions on a smaller scale from the TC community or from the world in general, respectively.

Related to this is the concept of open courseware and open source software: OKI, Dspace, Pachyderm, Fedora, and Edna are just a few projects working in this model. Increasing support for academic developers is making it possible for educational open source software to be created; the Fluid Project (fluidproject.org/), for instance, aims to collect a library of user interface elements that can be incorporated into educational open source software.

Relevance for Teaching, Learning & Creative Expression

- Self-study and lifelong learning becomes much more accessible.
- Open education ties into the idea of new scholarship—creating a peer-reviewed course could count toward tenure qualifications.

Examples

- OER Recommender links to open education resources related to web pages as you browse them: www.oerrecommender.org
- Rice University's Connexions lets faculty create and share educational resources: cnx.rice.edu
- Carnegie Mellon's Open Learning Initiative offers free online college-level courses in ten different disciplines; the system tracks student progress and can be used by faculty to create their own courses, or for self-study: www.cmu.edu/oli/

For Further Reading

About OER Commons (Website)

OER Commons is a comprehensive learning network of free course materials (K-12 and college).
www.oercommons.org/about

Video, Education, and Open Content: Notes Toward a New Research and Action Agenda

(Peter B. Kaufman, First Monday, March 16, 2007)

This paper discusses the intersection of moving images, education, and open content, and suggests areas for research.

www.firstmonday.org/issues/issue12_4/kaufman/index.html

Time-to-Adoption: Four to Five Years

Alternative Interaction Devices

Nintendo rocked the console-gaming world with the release of the Wii and its “wand” controller. Apple’s iPhone, with its all-touchscreen controls, did the same for the world of mobile phones. These and other alternatives to the keyboard, the mouse, and traditional controllers are just beginning to suggest new ways to interact with computers and other devices—ways that are based on movements that are more closely associated with the task at hand, easier to do in a hurry, or more natural. Some have experimented with connecting the Wii with a personal computer to use as a gaming interface (see www.youtube.com/watch?v=jkX1oQsvNe0).

Perceptive Pixel’s multi-touch system (www.perceptivepixel.com) reacts to multiple areas of contact (i.e. all the fingers on both hands, or several people’s hands at one time), allowing a more natural, gestural movement than single-touch interfaces. Technology like this, combined with more affordable large screens and video hardware capable of large-scale, multiscreen projection, will lead to new interfaces and displays that take advantage of the increased size and resolution. The result, still several years away, will be interaction devices that are as big a leap over the mouse as the mouse was over typing at the command line.

Relevance for Teaching, Learning & Creative Expression

- Applications for education are still on the far horizon, but it is clear that natural interfaces will enable users to interact with computers more quickly and comfortably than is currently possible.
- Large-scale multi-touch input devices could allow groups to work together without having to “pass the mouse.”

Examples

- Purdue University’s Envision Center researches scientific visualization and human computer interaction: www.envision.purdue.edu/
- Microsoft’s Surface is a tabletop, touch-sensitive computer: www.surface.com
- Apple’s iPhone features a small multi-touch interface: www.apple.com/iphone

For Further Reading

Microsoft Surface: Behind-the-Scenes First Look (with Video)

(Glenn Derene, *Popular Mechanics*, July 2007)

This article (and video) describe the Microsoft Surface, scheduled to appear in hospitality and entertainment venues in spring 2008.

www.popularmechanics.com/technology/industry/4217348.html

Multi-Touch Interaction Roundup

(Chris O’Shea, *Pixelsumo*, February, 2006)

This article describes a variety of multi-touch interaction interfaces.

www.pixelsumo.com/post/multi-touch-interaction

Wii Controllers

(Nintendo Website, retrieved November 30, 2007)

This page describes the Nintendo Wii’s unique motion-sensing controller.

wii.nintendo.com/controller.jsp