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# Digital Rendezvous: Social Software in Higher Education

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In May 2006, Mike Gotta said, “Historically, socializing at work was akin to wasting time from a management perspective. Intuitively, however, most people recognize that informal interaction (whether done face-to-face or digitally) can be a valuable, if not essential, activity within an enterprise in terms of building relationships, professional associations, and community among employees, customers, partners, and suppliers” (Gotta, 2006, p. 7). He went on to say that enterprises are gaining a better understanding of the value of social interaction through their experiments with technologies that are socially oriented. Taken together, these technologies form a gentle bond under the heading of “social software.”

This research bulletin explores the genesis of some of the current social software products, helps define common characteristics, describes how the software is being used in higher education, and examines the implications for activities in colleges and universities.

## Highlights of Social Software

On August 7, 2006, Wikipedia, itself a prime example of social software (see below under “Blogs and Wikis”), defined the genre thus: “Social software enables people to rendezvous, connect, or collaborate through computer-mediated communication and to form online communities” ([http://en.wikipedia.org/wiki/Social\\_software](http://en.wikipedia.org/wiki/Social_software)). The origins of social software are firmly based in the information technologies of the past few decades. While Gotta (2006, p. 25) suggests that “social concepts related to group communication, information sharing, and collaboration actually date back many decades,” it is appropriate to recognize that e-mail provided the first online tool that enabled simple communication between groups of people. The original e-mail systems facilitated interaction among people within an organization (for example, IBM’s PROFS system) or on a single network (such as CompuServe or Delphi).

The rapid rise in use of Internet standards for exchanging e-mail in the mid-1990s showed that the market for global communication tools is much greater than any single proprietary system can accommodate. It also demonstrated the power and success of simple technology protocols that originate from a community of technologists and users rather than from any of the dominant commercial or corporate interests in the marketplace. This is a story that plays out repeatedly in the evolution of social software, where reach and openness of software have proven time and again to be more important than specific features to market success.

The explosion in the use of Internet e-mail showed for the first time that the pervasive, overwhelming use of the Internet would be a platform for communication and the building of communities—demonstrated by the growth in popular mailing lists on a huge variety of subjects. Although invaluable as well for the networked use of scientific computing resources, the Internet was used by far greater numbers of people as a vehicle for communication.

E-mail is still the most widely used collaboration tool in the world. It's commonly used for such diverse tasks as file sharing, scheduling meetings, and collaborative document editing and revision, even though it is hardly optimized for such uses. E-mail is widely perceived as being reliable and easy to use, notwithstanding the increasingly intrusive and destructive power of spam and security breaches.

The rise of the World Wide Web in the early- to mid-1990s not only served to make the Internet usable for millions of people around the globe, but also provided the ability for huge numbers of them to post their own information on the Web and have it be accessible to any Internet user. The relatively simple Hypertext Markup Language (HTML) used to author Web pages provided the basis for an explosion of the Web content that continues unabated.

## Students and Faculty Living Online

Substantial evidence confirms that younger people are living their lives online. A recent Pew Internet & American Life Project data memo showed 82 percent of undergraduate-age Americans (ages 18 to 24) are online, and that percentage rises to 87 percent when looking at teens ages 12 to 17 (Fox & Madden, 2005).

Perhaps even more remarkable is the fact that a separate Pew study found that 33 percent of teens share their own creative work online (Lenhart & Madden, 2005). The coming generation of college students is clearly one that is comfortable communicating online.

While there's much discussion about faculty training and comfort level with technology, there is reason to expect that younger faculty and graduate students are every bit as hooked on the use of technology as the students. The Pew data memo showed that even more people age 25 to 29 (85 percent) and 30 to 34 (83 percent) are online than the 18- to 24-year-olds. It seems logical to expect that coming generations of new faculty will be acculturated to use of online resources as a matter of course, and the problems of educating faculty to these new forms of communication are transitory.

## Powering Distance and Blended Learning

Increased interaction between students and faculty is a frequently expressed goal for higher education. Collaborative student work is as often cited as improving the quality of learning and as a way to prepare students for real-life problem solving. These desires for interaction are supplemented by the growing pattern of involving undergraduate students in research efforts (Dunne & Rawlins, 2000).

Numerous forces stand in the way of increased interaction: college students tend to be older than in previous generations, most are employed at least part time, and many attend part time. These demographics all tend to decrease the amount of time students have for on-campus, face-to-face learning and collaboration with instructors or other students. Increased enrollment in distance-learning and executive programs can be a positive development for the institution, but these programs allow students and instructors only limited time for interaction.

## Interinstitutional Research—and Telling Our Stories

Collaboration among researchers is not a new story in higher education. What is perhaps new is the amount of collaboration happening across institutions, both nationally and internationally. There is a burgeoning demand for software to support the collaboration processes in these distributed research communities.

Telling the story of all that is happening within a modern university is a difficult mission. There are many compelling tales to tell—significant advances in biological research, successes of students in national and international competitions, examples of colleges contributing to the lives of their communities, events open to the public, and so forth. Our institutions have built media relations departments charged with getting out the word about the wonderful work occurring on campus, with varying and unpredictable results when relying on the attention of media outlets. New Web technologies not only allow for faculty, researchers, and clinicians to connect directly with interested publics all over the world but also to tell the individual stories in a highly personal way that can be far more compelling and interactive than a newspaper or television news account. There are indications that institutions are starting to realize this potential: recently, Mark Emmert, president of the University of Washington, blogged his trips to China and Australia (<http://depts.washington.edu/presblog/china/>).

## Harnessing Collective Intelligence

The idea that knowledge can emerge from the collective activities of individuals is not new. The use of citation indexes in many disciplines is an excellent example of this type of “collective intelligence” familiar to academics. What is new, however, is being able to harness the activities of millions of people using online software as a way of generating intelligence. Perhaps the best early example of this at work is Amazon’s display of “Customers who bought this also bought....” By displaying the aggregate data of what other shoppers interested in the same item you’re looking at also bought, the software can lead you to make new discoveries and connections.

A more recent example of using collective intelligence is the Digg Web site (<http://www.digg.com>), where people submit news stories of interest (primarily on technology topics) and readers can vote (or “digg”) the stories they think are of the most interest. Then the stories with the most votes are featured most prominently on the site. The inference here is that the aggregate group of Digg readers decides what the most important news stories are instead of that function being performed by professional editors.

A central concept used by much social software is “tagging.” People using the software can apply searchable keywords, or tags, to items. The popular photo-sharing site Flickr, for example, allows people to tag their online photos for later searching by anyone, not just the individual who posted the photo. The social bookmark site del.icio.us allows people to save bookmarks to Web pages and then tag them for searching. Blog posts can be tagged and then searched through blog search engines such as Technorati.

## Low Barriers to Entry

Millions of people have Web pages on popular social sites such as MySpace and Facebook, which provide free accounts for people to store profiles describing themselves, their interests, and their activities. These popular sites also provide ways of interacting with other users of the site, expressing networks of friends and relationships.

These social networking sites are extremely popular among young people. Recent market research reports that MySpace has become the most visited Internet site among U.S. users (Tancer, 2006), ahead of Google, Yahoo, and Microsoft. Fred Stutzman, a doctoral student at the University of North Carolina, studied the adoption of Facebook by incoming UNC freshmen in the fall of 2005 and found “on the first day of classes, 85 percent of freshmen had a Facebook account. Over the course of the semester, that number grew until over 94 percent of freshmen had a Facebook account” (Stutzman, 2006).

## Blogs and Wikis

Blogs (short for Web logs) and wikis are other specific types of social software that make it easy to publish on the Web. Blogs provide software for writing Web content that is displayed in reverse chronological order. Blog use has exploded in the past few years, emerging into a vital venue for conversation and discourse in its own right. In August 2006, David Sifry reported that Technorati (a blog tracking and search service) was then tracking more than 50 million Weblogs, and that that number was doubling every 5–7 months (Sifry, 2006). A new Pew study of bloggers reports that “Eight percent of internet users, or about 12 million American adults, keep a blog. Thirty-nine percent of internet users, or about 57 million American adults, read blogs—a significant increase since the fall of 2005.” It goes on to say that “The blogging population is young, evenly split between women and men, and racially diverse” (Lenhart & Fox, 2006, pp. i–ii).

Wikis (derived from the Hawaiian word for “easy”) provide software for group editing of documents. Any authorized wiki user can revise pages within the wiki, and the revisions of a page are tracked, making it possible to roll back those changes. The most visible Wiki is undoubtedly the Wikipedia, a very popular and ambitious effort to write and maintain an online encyclopedia that is entirely authored and edited by volunteers on the Internet. While the Wikipedia has both vociferous proponents and detractors, it demonstrates the fact that wiki software can scale to support thousands of editors and millions of readers.

The use of wikis to support countless smaller-scale projects in many settings is popular and growing quickly. With wikis multiple people can easily add pages to a project Web site and make edits to pages.

## Open Interfaces

Most social software allows programmers to take advantage of its features through the use of an application programming interface. This opening up of programmatic access to online applications is a significant change in the landscape of online services, and it has

led to an explosion of new software that builds on and integrates multiple services in recombinant ways. These so-called mashups range from the trivial to highly useful examples for performing specific functions.

The most significant programmatic interface exposed by the types of social software under consideration here is the use of the Really Simple Syndication (RSS) standards for publishing content written in blogs and other Web publishing software. RSS allows readers to aggregate content from multiple sources into an individualized, tailored view of the Web world through aggregator software such as Bloglines or NetNewsWire. The ability for the reader to see a customized view of just the content feeds they choose to see offers people a way of taming the ever-expanding world of the Web.

The rise of open interfaces presents some significant challenges for Web publishers. While opening up content presents the attractive prospect of increased visibility and use, it also involves conceding control of the contexts in which that content is viewed. If people are reading your content in aggregators and accessing your applications via mashups, you can no longer depend on people seeing the fancy graphics of your Web design or seeing the content in a sidebar. This may call for significant rethinking of our institutional Web presences in the future.

### Continuous Releases and Lightweight Programming Styles

When software was distributed as a packaged good stocked on shelves, new versions appeared infrequently and with much fanfare, and the quality and timing of software releases were carefully controlled. Now that software is primarily an online service, new features can be released frequently, bugs can be fixed in real time, and software can evolve continuously.

This style of software development, emphasizing rapid releases, iterative development, and hard decisions about including fewer features and options, is very different from the process-intensive, committee-driven ways in which software is typically implemented in higher education institutions. As our institutions become populated with students and faculty used to seeing this kind of rapid development in the world around them, we will need to be prepared to adapt our own IT practices to meet their expectations.

### Rich User Experiences

Meaningful interactions between people can only take place online if there is software that facilitates easy and engaging ways for communication to occur. Recent advances in the use of Web technology enable more engaging and richly interactive applications that make the experiences available within the Web browser far more natural and responsive. Until recently, highly interactive user interfaces within Web applications were only available with the use of additional proprietary software, such as Macromedia's Flash or Microsoft's ActiveX controls. Now the emergence of new standards-based techniques loosely grouped under the label AJAX (an acronym for Asynchronous Javascript and XML) are enabling Web applications that look and feel more like regular desktop software.

AJAX is being used to build applications that fill many of the needs that used to only be satisfied by large (and expensive) desktop applications, including word processors, spreadsheets, graphics programs, and more. In addition to a core feature set, most of these new online programs also allow groups of people to interact in creating and editing content together. It is possible that by concentrating on implementing only the most frequently used features in these programs (how many of us are completely confused and bewildered by the seemingly endless features in current versions of Word and Excel?), and by focusing on the ability to easily share documents, these online applications might in many cases supplant dedicated applications installed on desktop computers. This may turn out to be especially useful in educational and research environments, where collaboration is often a key requirement of project work—for participants in courses, across interinstitutional research projects, or in administrative processes.

Millions of gamers around the world can attest to the power of immersive three-dimensional experiences in computer games. The 3D worlds are even more engaging when people can interact with others within the environment. The success of online immersive games such as the *World of Warcraft*, which currently claims more than six million users worldwide, growing at a rate of half a million players in a quarter (Cheung, 2006), suggests that these immersive social environments are more than just a flash in the pan of computer applications.

The use of 3D virtual worlds extends beyond gaming. *Second Life* is a social immersive environment that attempts to create a version of the Metaverse envisioned in Neal Stephenson's 1993 science fiction novel *Snow Crash*. *Second Life*, which is owned by Linden Lab, is a virtual space where people can interact, often in novel forms. All of the objects in *Second Life* are built by the "residents" of the environment. Perhaps contrary to expectations, usage of *Second Life* is gender neutral, and the average user age is 36. At a presentation at the O'Reilly Emerging Technology Conference in March 2006, Cory Ondrejka, CTO of Linden Lab, noted that virtual worlds like *Second Life* seem to make it easy to embody good learning practices. Ondrejka said that there were, at that time, 17 universities teaching courses within *Second Life*.

Croquet is a project that is building an immersive environment specifically designed to be "deeply collaborative." Unlike *Second Life*, Croquet is open source and is not meant to be a profit-making venture. Instead, it is the effort of faculty within research universities, including Duke, MIT, and the Universities of Minnesota and Wisconsin, along with some luminary computer scientists in private industry. Like *Second Life*, Croquet enables people using the environment to interact with each other and the environment itself. While the Croquet effort is at an early stage (version 1.0 of the Croquet Software Developer's Kit was released in April 2006), it has the potential to be a significant effort in pointing toward the future of social software, and it certainly has grand ambitions, calling itself "an operating system for the post-browser Internet" ([http://www.opencroquet.org/about\\_croquet/index.html](http://www.opencroquet.org/about_croquet/index.html)).

## What It Means to Higher Education

It is almost a truism that research, particularly “big science” research, has become collaborative in nature and that those collaborations are increasingly interinstitutional and international in nature. The Human Genome Project ([http://www.ornl.gov/sci/techresources/Human\\_Genome/home.shtml](http://www.ornl.gov/sci/techresources/Human_Genome/home.shtml)) is often cited as the canonical example of this trend, but it is easy to find examples in knowledge domains as widely varied as oceanography (NEPTUNE, <http://www.neptune.washington.edu/>), astronomy (Sloan Digital Sky Survey, <http://www.sdss.org/>), and medicine (Rosetta@home, <http://boinc.bakerlab.org/rosetta/>). Similarly, the vision of students and faculty communicating beyond the bounds of distance and time is widely perceived to hold transformative potential for teaching and learning activities.

So what is there about the new type of software loosely labeled “social software” that builds on the technology history of the Internet to achieve something new? Will it help our institutions achieve goals?

Blogs, wikis, and other social software tools all have their own characteristics, but they share a common theme: they help people connect with each other over the Web. While this has been true throughout the history of the Internet, as discussed above, the new tools have some distinguishing traits that collectively allow a new level of interactivity. Where previous Web tools allowed individuals to easily publish information online, these new social software tools encourage conversations between individuals about the ideas expressed in Web pages.

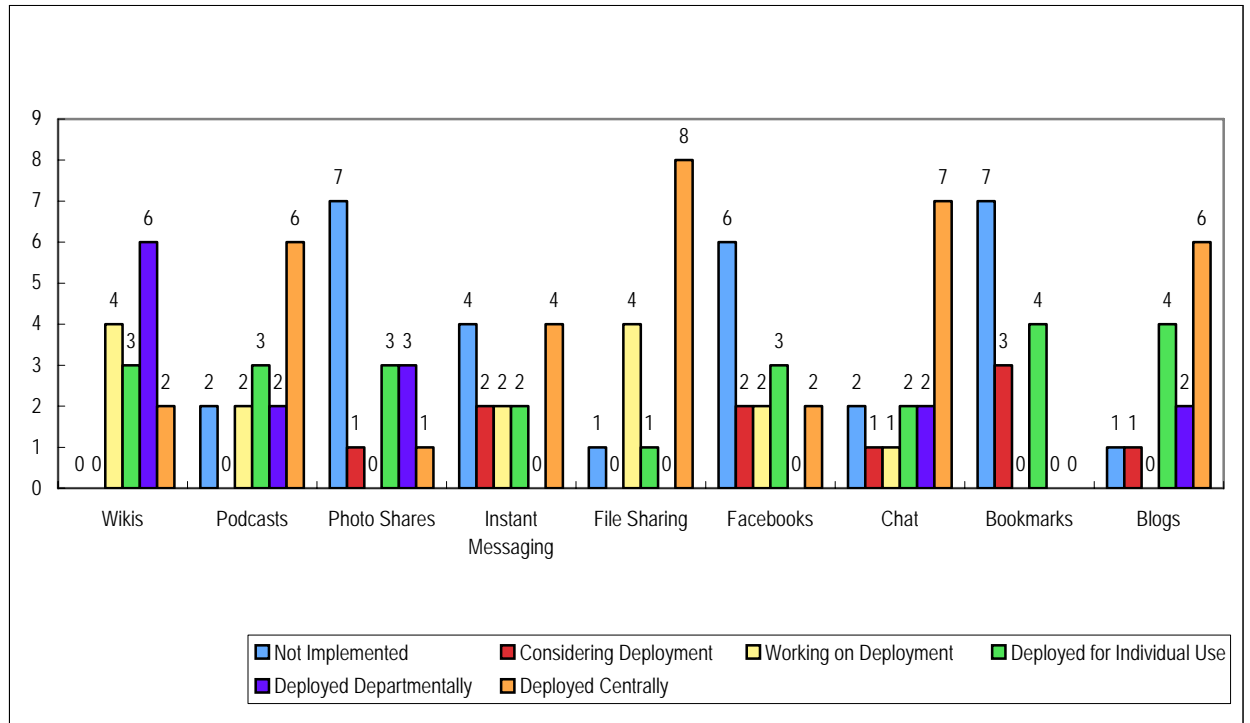
The hope for this new generation of tools, which are sometimes grouped together as Web 2.0, is that they will provide important ways for people to discover each other, make connections, and foster conversations that will grow over time. As publisher Tim O’Reilly (2005) has put it, “the Web of connections grows organically as an output of the collective activity of all Web users.”

### Appropriate Roles for Higher Education

What should the role of an institution be in deploying, recommending, or supporting social technologies, and what policy issues should concern institutions? In the spring of 2006, we surveyed the membership of the Common Solutions Group (CSG) about their current status in deploying various types of social software. CSG is a group of primarily research universities that discuss and work on common issues in information technology (membership can be found at <http://www.stonesoup.org/members.html>). Fifteen of the 26 member institutions responded to the survey.

For a variety of common social networking tools we asked members whether they were currently deploying tools centrally, working on it, thinking about it, if departments were deploying the tools locally, or if they offered people ways to deploy the tools individually, based on the home-improvement do-it-yourself (DIY) model. The types of software the survey asked about included blogs, wikis, instant messaging, online chat, social profiles (facebook), shared bookmark repositories, photo sharing, and podcasts. The results are illustrated in Figure 1.

**Figure 1. Social Software Deployed in CSG Institutions (N = 15)**



One result that stands out is that only one type of social software, institutional file sharing, has been deployed centrally at a majority of responding institutions—and that majority is barely over 50 percent. This is clearly a different response than we would have seen if we had asked about other services such as e-mail or Web publishing.

There are three possible interpretations for this lack of widespread deployment of social software: institutions don't think social software is important (not borne out by the discussion of this topic at the Spring 2006 CSG workshop on the topic); it's too early in the lifespan of these technologies to clearly understand how best to deploy them on a large scale in our institutions; or institutions feel that their constituents can best get these services from other providers, whether that's at a local level within the institution or from a provider external to the institution.

The latter interpretation may be the case, for example, in the small deployment of instant messaging (IM) in CSG schools. Dominant commercial players in the instant messaging space (AOL, Yahoo, Microsoft, Google) have cornered a lion's share of the market use. In social software applications, the presence of the collective mass of people in any one service makes that service all the more valuable. This may argue that there is no need for institutions to offer these services.

One CSG member commented that his institution continues to debate how much effort to apply to delivering services themselves versus pointing people to external providers. Another member noted that nearly half of the entering freshman had blogs from their

high schools and when given an option for an institutional blog site, they preferred to use their existing blogs.

It is interesting to speculate that there might be advantages to be gained, however, from deploying some types of social software across higher education in general, in specific sectors of higher education such as CSG schools, or to the National Institute for Technology and Liberal Education (NITLE) members. One CSG member noted that they expect faculty use of social software to increase as social features are embedded in software used by research labs for collaboration.

Another factor that may weigh on decisions of local deployment of social software relates to the control an institution may wish to exert over business practices and data. Should we be concerned if instructors are conducting courses on commercial external services that the institution has no visibility into or control over? Does it matter if staff members are using external services to conduct virtual meetings or manage projects without any official sanction? At what point do official concerns of data stewardship and legal compliance trump the convenience and responsiveness of widely available (and frequently free) services?

In the CSG survey we asked members what their major concerns are about the use of social software at their institutions. The most frequently cited concern was privacy (all but one institution cited it as a concern), with inappropriate use following closely behind. Spam, support costs, and intellectual property issues were also mentioned by CSG members as concerns.

## Key Questions to Ask

- What types of social applications are most important for our institution?
- Should the focus of social software be for institutional communication, research, administration, or all of these functions?
- Will these applications be used only by faculty, students, and staff, or will the ability to host users from the larger community, including other higher education institutions, be needed?
- What is the interaction between this social software and other institutional systems, including identity management, authentication and authorization, data warehouses, and course management systems?
- How will the data from the social software applications be saved and backed up? How long will it be retained?
- Are these applications mission critical for the institution, requiring 24-hour monitoring and reliability (with its attendant costs), or is it adequate to have best-effort reliability?
- How will the institution measure the value of any investment in deploying social software?

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