The Participatory Web and the Socially Resilient Enterprise

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ABSTRACT

"Web 2.0" technologies, including blogs, wikis, social tagging, feeds, widgets, and social networking sites are in use in a large number of enterprises, but their problems and benefits are just starting to be systematically explored. At IBM, we have researched the design and use of several social software applications inside the enterprise, including "participatory" web 2.0 technologies such as blogs and wikis, social tagging, and social networking sites. This research indicates that employees can use these technologies to build their personal reputations, advertise their projects, maintain informal social relationships across time zones and geographies, and share information across organizational boundaries. These effects collectively enable a "socially resilient" enterprise, which can respond in an agile manner to a variety of organizational and business changes.

Author Keywords

Social network, blog, wiki, social tagging, web 2.0, reputation, socially resilient, participatory web.

ACM Classification Keywords

H5.4. Information interfaces and presentation (e.g., HCI): Hypertext/Hypermedia.

INTRODUCTION

Blogs, wikis, social tagging, and social networking web sites have had considerable success on the Internet, creating a social and participatory web experience. While these technologies have already been deployed within many companies, their long-term effects are not well understood.

This paper first describes how participatory web technologies are being used on the public Internet and then contrasts this with typical use today inside enterprises drawing on lessons learned from deployments at IBM. We look at some of the key concerns that arise in enterprise deployments of participatory web technologies, and detail some of the hidden benefits of this kind of social software. We argue that these benefits collectively enable the enterprise to be socially resilient, repairing and rebounding quickly from both internal and external changes and challenges.

WEB 2.0 TECHNOLOGIES IN THE ENTERPRISE

Web 2.0 can refer to a wide range of technologies, including feeds, widgets, etc. We focus on the use and benefits of web technologies that invite participation through user-generated content: blogs, wikis, social tagging, and social networking web sites.

Blogs

On the public Internet, blogs serve a variety of purposes. Herring et al.'s (2003) analysis of 203 Internet blogs found that 70% were personal journals. An ethnographic study by Nardi et al. (2004) found that bloggers' primary motivation was a desire to connect with their audience, and thereby insert them into a new social space.

Blogs have a number of benefits when used within the enterprise Blogs don't require formal approvals and can be published easily and immediately. They are used for internal news, but also to promote projects, gain visibility of the author's ideas with executives outside of the employee's management chain, and to gain support or resources. Because of the implied attribution of authorship, employees feel that blogs protect their ideas and thus can be used to build their reputation widely.

As of September 2008, IBM's internal blogging system, BlogCentral, had over 58,400 registered users and 14,000 blogs with over 124,000 entries, of which about 1,800 are active blogs (10 entries or more). Huh et al. (2007) analyzed IBM blogs, finding that bloggers not only communicate ideas, but also solicit ideas or help from a community, share personal stories and tacit knowledge, and aggregate externally gathered information. Ives and Watlington (2005) report that field technicians have created blogs at IBM to communicate problem-solving experiences

back to their team members while traveling. Thus, in the enterprise, blogs facilitate communication, information sharing, and knowledge accretion across distributed teams and communities.

Wikis

On the Internet, wikis are used to collaboratively create reference works (e.g., Wikipedia), musical scores (e.g., International Music Score Library Project), travel guides (e.g., Wikitravel), and other web material. Most studies have focused on Wikipedia, by far the largest wiki. Bryant, Forte, and Bruckman (2005), for example, report how users of Wikipedia move from being peripheral to full participants. Initially readers identify problems and mistakes and start fixing them, and then some become a "caretaker" for related articles and eventually, participants may identify with the community as a whole and become a creator of articles. Surprisingly, increasing the author base appears to improve content quality (Arazy, Morgan, & Patternson, 2006).

Wiki use within the enterprise follows a different pattern. Based on a survey of 168 corporate wiki users, Majchrzak, Wagner, and Yates (2006) found that enterprise wikis are used facilitate work processes, collaborative work, and knowledge reuse.

IBM has a wiki hosting service called Wiki Central that has had more than 28 million page views in 2007 from 250,000 registered users. In 2008, IBM asked wiki owners to submit a description of how they are using WikiCentral and what its impact has been. Using these data, we identified at least four common categories of use: team communication (e.g., publishing bulletins about team activities); quick collaboration (e.g., information sharing to do joint work); contribution and volunteerism (e.g., building content where community involvement is required); and learning support (e.g., educational materials that can be updated by multiple instructors and students). Usage varies by organization, with some having individual contributors that moderate their own wikis, others using wikis as team resources, and others adopting wikis as the primary communication vehicle for the organization's processes and plans. These findings indicate that wikis are primarily used as collaboration spaces for teams, but that they are also being used to support small ad-hoc groups and large communities and collectives.

Social Tagging

Social tagging systems on the Web (e.g., Del.icio.us, Flickr, and Technorati) are used for more purposes than labeling and search. Brooks and Montanez (2006) found that tags in Techorati, for example, were used as a means to categorize blogs and organize personal reading and browsing. Ames and Naaman (2007) found diverse motivations for tagging in Flickr, including organizing photo collections, aiding in searches, expressing opinions, making photos findable by particular people or groups, gaining attention and building reputation.

Within the enterprise, the reasons for deploying social tagging have not been adequately studied. Millen, Feinberg, and Kerr (2005) report some data about Dogear, an enterprise social bookmarking service widely deployed at IBM. Although only 30% of users created tags, 54% used these tags, thus improving employees' ability to find information, a challenging problem (Feldman and Sherman, 2003). The authors speculated that the business context shared by employees and the frequent desire for teams and communities to share resources drove users toward similar tags. but also improved awareness of the resources available. Thus, social tagging changed the way the organization used internal resources.

Social Networking Web Sites

The motivations for using the largest Internet social networking web sites (Facebok, Myspace) are well studied e.g. see Lampe, Ellison, and Steinfield (2006). However, there is little research on the benefits of deploying asocial networking web sites within the enterprise. Beehive is an opt-in enterprise social networking web site at IBM with over 41,000 registered users to date (Geyer et.al. 2008). The system allows users to connect to others by creating profiles, posting status messages, adding friends, sharing photos and lists, and proposing and attending virtual events. Beehive adds an informal interpersonal aspect to work interactions, aiding the ability to maintain social networks in a globally distributed organization. The Beehive team found that status messages and profiles were used primarily for work-related purposes while shared content, such as photos and lists, where used primarily for personal reasons. These results suggest that enterprise social networking is used by employees to maintain relationships that have both interpersonal and business aspects.

DEPLOYMENT ISSUES FOR WEB 2.0 TECHNOLOGIES IN THE ENTERPRISE

Despite the popularity of social software in the enterprise, these technologies have faced significant challenges.

Inappropriate personal expression

One worry is that employees will use blogs, social networking tools, and other web 2.0 technologies for personal expression that is inappropriate for the workplace either according to stated policy or to unstated norms as about, for example, religious content or risqué photographs.

While concerns about content or deviant behavior are not new (Bruckman 1994), web 2.0 technologies make publishing easier, more immediate and more likely to reach a wider audience, both inside and outside the company, including customers. A recent survey of 308 companies with 1000 or more employees found that 13 percent of these companies said that they had disciplined an employee for violations in the last year; and 4 percent reported firing

someone over the use of social networking sites (Forrester Consulting, 2008).

Unproductive socializing
Another concern is that employees will use Web 2.0 technologies for socializing instead of working. Some companies have banned access to external social networking web sites from their intranet. In an informal poll by CIO magazine (2008), 31 of 311 CIOs considered social networking sites the top consumer technology threat to their organization.

This fear could be justifiable, but enterprises also must consider the potential benefits of social networking. Some research indicates that the productivity of professional employees is strongly correlated with the size and structure of their social networks (Aral, Brynjolfsson & Van Alstyne, 2007). Research is needed to determine if there is any productivity benefit from using an internal company social networking web site.

Low quality content
Another concern is that Web 2.0 tools will be misused or have limited benefits. Blogs can be published by anyone, including those with less expertise on given subject. Blogs can be poorly written or infrequently updated. Wikis may transform a task adequately doable by one person into a drawn-out collaborative task.

THE SOCIALLY RESILIENT ENTERPRISE
To appreciate the impact of web 2.0 technologies on the enterprise, we need to look beyond immediate concerns to the broader benefits. We suggest that a participatory web can lead to a *socially resilient enterprise*, in which social relationships within the organization can be leveraged to improve recovery from missteps in strategy, planning, or execution as well as the organization's response to external factors such as political or economic upheavals. A socially resilient enterprise will better adapt to a broad range of changes and challenges in the organization and business, such as outsourcing, mergers and acquisitions, reorganizations, employee turnover, etc.

Social software can improve the social resilience of an organization in several ways. First, it can increase the degree of internal trust (deGeus, 1977). This can make it easier to accomplish coordinated change in the absence of detailed central planning. Second, it can increase the chances that people can find relevant organizational resources to deal with various internal (funding, information, tools, contacts) or external (customers, suppliers, business models) issues. Third, by tracking and recording various interactions allows the possibility of *analyzing* interactions over time to improve their effectiveness and efficiency. As we discuss below, social software can also support social resilience by spreading reputations, improving valuable connections in the organization's social network, enhancing cross-organization

communication, and making it easier to create shared work products.

Spreading Reputations
The studies of Beehive and BlogCentral showed that employees are using enterprise social networking and blogging, among other things, to build their reputations, in other words, to improve the regard of managers, funders, peers, and others. Are such reputations enduring and do they help make the organization resilient? There are reasons to think so. First, blogs and internal social networking sites provide informal communication channels across organizational boundaries and document diverse viewpoints. Second, the posts and comments are associated with individuals rather than organizations. Third, postings are persistent thus contributing to organizational memory of reputation-building artifacts. Finally, postings are immediate and published widely, providing an agile method of communication that can spread quickly through a distributed network or community.

Building and fostering weak ties
The Beehive study showed that individuals could build social networks that combined work and personal content. But are these kinds of social connections valuable? Granovettter (1973) proposes that "weak ties," (i.e., distant and infrequent relationships), are particularly valuable because they provide access to information that otherwise would be lost across disconnected groups. Beehive usage patterns indicate that employees use the system both to build stronger bonds with the weak ties in their social network and to contacting employees that hey don't already know (DiMicco et.al. 2008), thus potentially creating a new weak tie. Hansen (1999) studied 120 product development teams across 41 divisions of an electronics company and found that weak interunit ties helped teams search for people with specific knowledge in other units. However, this speeded product development only if the knowledge transferred was of low complexity. Thus, weak ties may not always help.

Cross-organization Communication
The studies of enterprise blogs show that blogs are not simply newsletters or journals; they solicit feedback and facilitate communication about work products. There is some evidence that this communication is not just within projects and groups. Kolari et al. (2007) did an analysis of 48500 blog posts from IBM's Blog Central and showed that blog conversations were spread out across the enterprise. We would expect that many kinds of cross-organizational communication would contribute to social resilience.

Sharing work products
Wikis reduce the level of knowledge and effort required for distributed teams with intermittent participation to work together. They can capture collective knowledge that is not dependent on any one individual. We would expect this

ability to easily create, share, and communicate would also contribute to social resilience.

CONCLUSION

The social dynamics of web 2.0 technologies in the enterprise are just beginning to be understood. The research reviewed here suggests they are used largely in work-related ways for communication, collaboration, and social connection. Employees use blogging to propagate personal reputation, wikis as quick collaboration spaces for teams and ad-hoc groups to share work products and information, social tagging to improve the discoverability of resources within teams and communities, and social networking sites to locate expertise and share knowledge. Collectively these effects could improve the resilience of the enterprise to disruptive changes by enabling employees to communicate and collaborate despite flux in leadership, organizational structure, and work processes.

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