

Enterprise 2.0: Harnessing Online Tools for the Healthcare Organization

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Storing information and content, communicating with colleagues, and managing projects are vital to any organization. The tools necessary for coordinating these tasks are often created by an organization's information technology group, are proprietary, and are customized to the organization's processes to the business. These tools, often software that a company or institution uses to create support functionality for the organization or enterprise, are referred to as Enterprise Software.

The Internet has the potential to change the way organizations use enterprise software for their IP and

communications. Using the Internet, organizations can configure tools that are easy to use, easily customizable, and easily accessible for staff. Not only are these tools customizable, but because of the relatively easy nature of adding new functionality, they are also highly adaptable to change as the enterprise grows. In addition, the Web 2.0 movement has created social networking and community collaboration tools that, like enterprise software, can be used within an organization, but unlike traditional enterprise software, offer greater opportunity for staff to collaborate and report on projects and share information intuitively.

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In a recent Alliance luncheon event, Andrew McAfee discussed “Enterprise 2.0” (the combination of enterprise software with Web 2.0 tools), and opened the discussion to attendees about its potential use in the healthcare enterprise. Andrew McAfee is an associate professor in the Technology and Operations Management Unit at Harvard Business School. Mr. McAfee explores the use and impact of Web 2.0 technologies in the work environment — how they drive transparency, data portability and interchange, and massive information management efficiencies — all changes that could benefit healthcare with reduced costs and improved outcomes. He also researches on the structure of information technology (IT) on U.S. industries and the nature of competition within them. Mr. McAfee was the first Harvard Business School professor to develop a blog, on which he discusses IT and its impact on business.

Based on this talk, IC Sciences Alliance reviewed the options to see what products are available to patients and physicians, their impact on the industry of healthcare, and ways that industry can support these initiatives.

Is the Internet the Answer?

When the Internet became widely adopted in the mid-1990s, it launched a revolutionary method of information sharing throughout the world. With easy access to information, the Internet became a repository of encyclopedic knowledge and an enabler of transactions open to anyone with a PC and dial-up or broadband access. Search capabilities unlocked tremendous potential from this vast amount of information online, but otherwise the Internet provided primarily static information. The information could be dynamic; however, centralized

content management was kept under tight control. Communication tools such as bulletin boards and discussion groups allowed users to participate in online conversations. Although internal office email had been around before the launch of the Internet, the Internet made it possible to communicate easily beyond the boundaries of the office walls. Using the simple mail transfer protocol (SMTP) system, communications and documents could be quickly sent to the next office or around the world.

In 2005, Tim O’Reilly coined a new type of Internet — Web 2.0. Behind Web 2.0 was the ability for users to create and interact with rich content rather than just view static pages online. Web 2.0 encouraged greater information sharing and collaboration through tools such as Wikis, blogs, tagging, really simple syndication (RSS), and social networking tools (e.g., Facebook or MySpace).

In 2006, Harvard Business School professor Andrew McAfee coined the term “Enterprise 2.0.” Enterprise 2.0 represents an innovative way of incorporating aspects of Web 2.0 into the enterprise, or business, setting. Enterprise 2.0 harnesses and encourages collective intelligence within the business environment.

To define Enterprise 2.0, one needs to understand the concepts and tools that are part of Web 2.0. Web 2.0 has revolutionized the way the Internet works. No longer is the Internet a repository of static pages; it has become a platform for “collective intelligence” and community sharing. O’Reilly defines it thus: “Web 2.0 is the business revolution in the computer industry caused by the move to the Internet as platform, and an attempt to understand the rules for success on that new platform. Chief among those rules is this: Build applications that

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harness network effects to get better the more people use them.”

Web 2.0 features applications such as word processing and spreadsheets that are accessed via browser on the web rather than via traditional software on the desktop. Web 2.0 also features web-based communities and technologies such as blogs and wikis that allow internet users to publish their own content. Through Web 2.0, users share music, videos, photos, which they can discuss or rate. In Web 2.0, structure is developed by users as content is produced through folksonomies, which is the collaborative tagging of materials to create an index or categorization structure. Updated information is disseminated through RSS, which alerts users to new content on a specific page or site.

Enterprise 2.0 captures the applications found in Web 2.0 and combines them with enterprise software intelligence and use. Andrew McAfee, in his Harvard Business School blog, defines Enterprise 2.0 as “the use of emergent social software platforms within companies, or between companies and their partners or customers.” In short, Enterprise 2.0 is the use of the emerging social software behind the company firewall.

McAfee details the components of Enterprise 2.0 in the acronym SLATES:

- Search. Search makes any site useful by allowing users to find specific information or information related to their task or operation.
- Links. Links provide the structure, and those pages most often linked become the most popular pages.

- Authoring. Blogs and wikis allow groups to collectively write about, report on, and discuss relevant information.

- Tags. Tagging (folksonomy) also helps create structure, which develops over time. Folksonomy is tagging done by “folks.” Tagging is the process of selecting terms in the content to make information more easily searchable. Where taxonomy tagging is a pre-conceived categorization developed by experts, folksonomy categorization is less structured. Tagging is put in place after content has been created. Folksonomies represent categorization that people actually use. Tagging can create “tag clouds,” or grouped key terms, that make searching easier for the user. In tag clouds, the terms searched more often are displayed most prominently in larger fonts or bold.

- Extensions. Extensions use tags to create recommendations for the user, linking these tags to similar tags used by other people. Eventually extensions match preferences to create “liked” recommendations. An example of extensions is Amazon.com’s use of “If you like this selection, then you will also like this other selection.”

- Signals. Signals are alerts such as RSS that can signal users when information has changed or been added. RSS creates aggregators of information within the site to alert user of changes to content.

In addition to being web based, Enterprise 2.0 can be proprietary systems that companies have built that are never part of the internet. For example, Microsoft’s internal intranet is vast and proprietary and has not been open to the Internet.

Staff acceptance is the first most important aspect of adoption.

For many years now, many companies have used the same or similar enterprise formats in the workplace. Companies purchase software for project management, knowledge management, file sharing and version management, and intranets. Interoffice communications have primarily relied on email to distribute memorandums or to send files to colleagues. Few programs exist that provide companies a framework to capture important industry or institutional knowledge whereby the information is readily accessible and does not disappear when individuals leave the institution.

Types of tools that can become part of an Enterprise 2.0 solution for an organization include:

- RSS. An RSS is a web feed that publishes updates such as news, blog entries, or wiki entries and pushes it to a subscribed user. RSS can aggregate content from multiple sources, for example, many blogs, and deliver it to one location for easy viewing and access.
- Corporate or department blogs. Blogs, or web logs, allow the users to share information in narrative form on a web page. A blog also encourages the sharing of ideas and messaging by allowing users to post comments.
- Corporate wikis. Wikis allow users, either open or selected users, to contribute or modify content. Wikis involve users in the collaboration and creation of content and its ongoing editing.

Enterprise 2.0 tools have the potential to revolutionize the way an organization operates in regard to its knowledge management and communications. Enterprise 2.0 tools can benefit an organization in other ways by:

- Building strong knowledge base of institutional information
- Creating more links between employees and knowledge sharing
- Improving connection and engagement among employees
- Creating collaborative environment that's more linear than hierarchical
- Encouraging cross pollination of ideas and information
- Engaging and appealing to a younger generation of workers

Enterprise 2.0 Encounters Healthcare

In the healthcare arena, hospitals and physician practices have many of the same needs and issues as other organizations. Some healthcare organizations have started incorporating elements of Enterprise 2.0 into their workflow. Starting slow and small is key to successful implementation. And some of the elements of Enterprise 2.0 are being used in healthcare organizations, hospitals, and practices to address the specific needs of the clinicians, staff, and patients as well.

Online communities for patients and physicians. Online communities can be useful to both physicians and patients by linking the group. Hospitals and practices can use the tools to share information within the organization about JCAHO information, HIPAA, or procedures. Physicians can use the tools to communicate information to patients.

Two early adopters of Enterprise 2.0, before the term was even coined, were Dan Hoch, MD and John Lester at Massachusetts General Hospital. In 1993, John

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Lester created BrainTalk Communities (<http://brain.hastypastry.net/forums/>). According to the website, BrainTalk is the largest community of neurology patients on the Internet. BrainTalk offers more than 250 discussion forums covering general topics (for example, general neurology and rare disorders, complex issues / multiple disorders, and nutrition) and condition specific topics (such as aneurysm, mental retardation and related cognitive disabilities, and spinal disorders). Physicians have also participated in BrainTalk to help guide patients through their chronic condition.

Wikis. The wiki, or user-generated encyclopedia, is making inroads in hospitals and companies, with these organizations using wikis increasingly more to share information at the organization level. Wikipedia, the original public wiki, may have received criticism for the credibility of its content in the beginning; however, it has since become a respect-

ed and trusted online reference source. Within the healthcare setting, wikis that encourage collaboration around medical information are beginning to appear. NeuroWiki (<http://neurowiki.com/>) and AskDrWiki (<http://askdrwiki.com/>) are two examples of wikis in the healthcare sector. NeuroWiki is a site designed for medical students, residents, nurses, and specialists to share neuroscience information on a web-based framework written for students and clinicians. Established in 2007 by Kenny Civello, MD and other fellows at the Cleveland Clinic, AskDrWiki is a collaborative content site for physicians to share information about what physicians learned when working with patients and journal articles. The site, focusing originally on cardiology, now covers 14 medical specialties, seven surgical specialties, topics on medical school subjects, images, and tutorials. AskDrWiki only allows authorized contributors to participate, and all postings are moderated.

Managing the implementation of Enterprise 2.0 tools and functionality appropriately is the key to adoption by the organization's members. Some tips to consider include:

- Start slow and small. Start with a soft launch that involves a select group from the organization as a beta test.
- Consider the type of Wiki. Should it be several small ones for each department or one large one for the entire organization?
- Avoid establishing rigid guidelines. Allow members of the organization to define the use and limitations of the tools themselves.
- Use the tools. To encourage use, managers can begin by using the wiki for announcement, agendas items for meetings, and encourage staff to respond only through the wiki.

The use of Enterprise 2.0 tools can allow organizations to retain institutional knowledge, share and collaborate on important documentation, and exchange ideas.

File sharing. Through products such as Microsoft Office Live, Microsoft SharePoint, and Google Docs, organizations can share documentation and collaborate on its creation. For example, one hospital uses Microsoft SharePoint for document storage and project collaboration as well as sharing information with patients.

File sharing tools allow a user to create documentation and store it in a secure place on the Internet. Other users can be given permission to view and edit the document. File sharing allows a history of the document to be tracked, showing all versions, areas for comments for multiple users to share feedback, and activity records to be stored to follow group users and activities. An important aspect of file sharing through Enterprise 2.0 tools is the strong security measures in place. HIPAA has strict requirements regarding security, and many Enterprise 2.0 systems online and otherwise available have developed rigid security measures that protect the privacy of documentation, especially as it may be used for patients.

Challenges

Challenges beset any new technology that is introduced, whether in mainstream use or in particular sectors of businesses. Enterprise 2.0 is no exception. Adopting the technology and adapting businesses and employees to use the new technology is fraught with hurdles.

Implementation. One of the challenges of adopting Enterprise 2.0 in the healthcare setting mirror those confronted when implementing any new technology. Staff acceptance is the first most important aspect of adoption. In the daily routine, any hospital, clinic, or practice staff must coordinate daily tasks in addition to learning programming or software. Starting slowly with one or two tools and with just a few select members

of the organization is one way to test the new technology and work to smoothly implement it into the organization. With the successful implementation and a slower start, the selected members can serve as both champion and mentor for the newer technology.

Management and the free-form platform. Another challenge specific to Enterprise 2.0 is the free-form structure of the online platforms. Because Web 2.0, and therefore Enterprise 2.0, is based on collective intelligence and taxonomies, free-form structure develops instead of a structure being imposed. The technologies may be implemented as planned, but the outcomes may be unintended. Management may feel a loss of control because rigid structures are not established; in fact, rigid structuring of the platform goes against the philosophy of Enterprise 2.0. Management should be aware of this potential outcome and be prepared for potential negativity, whether in blog format or in a wiki. Management should also develop processes to contend with users that disagree or dissent within the platform. Institutional leaders play a delicate role in exerting unwanted (and unintended) leverage over the content.

Privacy Issues. Title II of The Health Insurance Portability and Accountability Act, otherwise known as HIPAA, requires national standards for e-health transactions and apply to the use of electronic data interchange. Privacy extends to use of patient information, and a concern with Enterprise 2.0, especially for those tools that are established using the Internet. With Enterprise 2.0, there is a wariness of vulnerability because some of the tools that a hospital could set up will be accessed over the Internet. Establishing secure measures to access the information is key to HIPAA compliance and patient comfort. Some of the

current Enterprise 2.0 tools already have security measures in place. For instance, Microsoft's Office Live allows users to create document storage workspaces that, unless invited, only the person (or organization) establishing the document storage system has access.

Moving Forward

Because of time constraints in busy hospital and practices, it can be increasingly difficult to share knowledge and connect with colleagues toward an improved care process. As more organizations and clinicians buy into the use of Enterprise 2.0, the quality of care may improve. The use of Enterprise 2.0 tools can allow organizations to retain institutional knowledge, share and collaborate on important documentation, and exchange ideas. Enterprise 2.0 may also find a role

in engaging patients and drawing them into a partnership through which they can become a more active participant in a shared decision making process.

Enterprise 2.0 is still in its infancy, and there are still issues to resolve and adoption to be encouraged before Enterprise 2.0 becomes a reality in healthcare organizations. Nonetheless, the tools available are a start to transitioning the healthcare environment from the traditional enterprise software workplace into a workplace that uses new tools to encourage collaboration, document sharing, and information transparency. Furthermore, the benefits to healthcare organizations, improved colleague collaboration, shared knowledge, and greater patient satisfaction, can far outweigh the costs of such a transition.