

Web Conferencing as an Enabler for Knowledge Management System

Danielle Gordillo

California State University, East Bay
Hayward, CA 94542

Danielle.gordillo@csueastbay.edu

Svetlana Yankina

California State University, East Bay
Hayward, CA 94542

svetlana.yankina@csueastbay.edu

Hongwei Du

California State University, East Bay
Hayward, CA 94542

hongwei.du@csueastbay.edu

ABSTRACT

So much can be said about Knowledge Management and the many ways it can impact companies. This paper will focus specifically on Knowledge sharing, and how web conferencing technology has become a significant player in this field of knowledge management. Developing real-time communication technologies elevated web conferencing on the new level. Now web conferencing not only saves money by reducing the travel expenses, but also adds value to the company by enabling effective Knowledge Management. Web conferencing become a valuable tool in creating, transferring, and storing knowledge extracted from human mind. Companies have a choice of different solutions for web conferencing from free downloads to elaborated packages from major players such as Microsoft, Oracle, and IBM. Furthermore, several web conferencing solutions are analyzed in the paper as well as steps a company could take to find the best solution for their organization.

INTRODUCTION

Web conferencing supports a technological approach to Knowledge management versus a document-centered one. Web conferencing allows the creation of new and transfer of existing knowledge by sharing documents, applications, and peoples' experience and expertise. Helen J. Mitchell believes that "Without technology, organizations would find it difficult to access the vast amount of information that is available in the external environment. They would not be able to link people ... for the sharing of knowledge and it is through sharing of ideas that new innovations emerge"(Mitchell, 2003)

The main problem with document-centered approach was that knowledge often remained static. It was difficult to retrieve knowledge from the pile of documents and reuse it. Although

human knowledge is the big part of the company's knowledge asset, only technological approach more or less fully utilizes the ideas, personal knowledge, and experience of the people inside and outside the company. Technological approach includes using different enablers such as web conferencing. Web conferencing brings together people; it creates an environment for idea generation and knowledge transferring.

KNOWLEDGE MANAGEMENT

Knowledge Management is a broad area of study and expertise that has made a significant impact on today's corporations. With the use of knowledge management technologies, many companies are able to harness and exploit the vast resources and knowledge they possess. Data, information and knowledge is abundant and many companies do not have the resources or the technology to manage all of it. In companies that rely less on commodities or tangible goods and more on service or intellect, knowledge management can increase one's competitive advantage over others. By managing knowledge, information can be accessed and utilized more efficiently and effectively.

Knowledge Sharing

Knowledge sharing is a very prevalent focus of KM that is impacting most, if not all, organizations of today, especially those that are considered global. "Today's enterprise comprises people, knowledge, experience, technical expertise and a wide variety of best practices, which are typically dispersed, often globally, across the business" (Persson, 2007). With employees and resources spread across the map, finding easy and cost effective ways to communicate and share knowledge has become more and more necessary. This is often referred to as collaboration. Exchanging information is important because companies do not want to spend the time and resources that would be needed to continually "reinvent the wheel" so to speak. "The vital component in knowledge management is that resources are shared" (Platt, 1997). Even more vital is the timeliness of sharing the resources. For example, having crucial stock information a minute after the exchange closes is completely useless. Relaying information or sharing knowledge must happen quickly in order for it to remain actionable. "Competing in the global knowledge economy means that your organization must learn and innovate as fast as change in the marketplace" (Murray, 2007). Companies can benefit from real-time collaboration because it can foster innovation and improve the timeliness of decision-making. When different departments, branches or organizations are able to share information and collaborate on complex problems or initiatives, a company can compete in the fast-paced economy of today.

Communication amongst employees and departments enables the free flow of data and information and therefore the increased efficiency and effectiveness of an organization. "Captured knowledge frequently is just a shadow of the original experience. Without the rich cultural and conversational context of human communication, documents lose the subtle nuances that engage both heart and mind" (Barth, 2004). However, with a dispersed organization, alternatives to face-to-face communication must be explored because it is often not financially feasible to afford the travel required to bring clients or colleagues together. Through the decades, companies with multiple locations could share information via technology, including

phone, facsimile, scanners, email, and the Internet. Much of these technologies were designed to replace the need for traveling to various locations or relying on snail mail to share information. “Collaboration tools are central to effective IT support for knowledge and information management”(Harris-Jones, 2006).

There is the well known saying, “time is money” which most companies find appropriate for their corporate initiatives. Because of this, increasing the speed and accessibility of communication technologies is more and more important for companies. At one time email allowed for faster communication and collaboration than snail mail. But in our current economy, even email can be considered too antiquated and slow. What if the recipient is not at their computer to receive it? This paved the way for the development of portable devices that allow people to receive email on the go. Similarly, conference calls and phone meetings worked well for allowing people to meet without having to physically be in the same room. But how do you know everyone is looking at the same document during the meeting, or has access to the slide show prepared for visuals.

One solution that has made its way to the forefront of collaboration technologies is videoconferencing and web conferencing. “Improved technology that streamlines workflow, facilitates knowledge management and allows corporations to do more in less time and at a lower cost has transformed e-meetings into one of the best choices for many kinds of group communication, according to users” (Rosencrance, 2005).

WEB CONFERENCING FOR KNOWLEDGE MANAGEMENT

What is Web Conferencing

Lucy Roberts in the article “How Web Conferencing Works – Exposing the Realities of Virtual Collaboration” wrote, “Is web conferencing an activity, a type of software, or a set of features? In the simplest terms, the answer is “yes” to all three questions -- it can be all of these things in one form or another” (Lucy Roberts, 2004). Web conferencing would be any type of conferencing such as ad-hoc, two-person, or multiple-person provided through the web. It can use any type of software from free simple one to sophisticated products offered by major players in IT area.

Today’s companies in order to be successful should care about creating an effective Knowledge Management System. People carry knowledge, skills, and expertise. People come and go, and it is very important to maximize the knowledge inflow and minimize outflow. One way to achieve this objective knowledge sharing should be a part of the corporate culture. Web conferencing is a powerful tool, which helps to bring people together and create an environment predisposing for effective knowledge sharing. “It is, rather, the interaction between technology, techniques, and people that allow an organization to manage its knowledge effectively. By creating a nurturing and ‘learning-by-doing’ kind of environment, an organization can sustain its competitive advantages” (Bhatt, 2001)

Web Conferencing Now and Before

The true web conferencing technology developed in 1990’s. However, even before the time the Wide World Web itself was developed there were early attempts to develop technology

enabling collaboration and knowledge sharing. Starting with PLATO technology came to early Lotus Notes and true web conferences.

PLATO continued to introduce conferencing system to business until the late 1980's. At this point using mainframes became no longer feasible because corporations were able to buy microcomputers, which were able to perform needed tasks.

The next important period in the history of web conferencing was related with Ray Ozzie and Tim Halvorsen designing Lotus Notes. The first appearance Lotus Notes made in 1989 and since became popular. The appearance of Lotus Notes was especially important for Knowledge Management Systems. As Lucy Roberts wrote, "Lotus Notes was the first commercially released product that really took off to offer user-created data-bases, document sharing, and remote location communication under one umbrella"(Roberts, 2004)

As Internet's technology increased power, web-based chats and instant messaging software added to conferencing systems in mid 1990's. For example, Microsoft offered a free download of NetMeeting, which was quite popular for web communication. However, only in late 1990's the true web conferencing features became available to users. At this time conferencing became a true collaborative tool, allowing knowledge sharing.

Finally, the modern period of web conferencing development is related with adding new features and solving performance issues. There were some problems with using VoIP for voice communications. Now, when the number of users relying on dial-up connection decreased this is not an issue any more. The modern web conferencing package is contains VoIP as a necessary component together with application / document sharing, PowerPoint presentations, and other features.

Web Conferencing Features

Modern web conferencing ready packages and services include many features including easy-to-use interactive, audio integration, conference management, integration and deployment, implementation and architectures tools. The presence of these features makes the web conferencing different from system conferencing. Different providers can offer some variations from the standard set. Among others interactive features provide the most enabling functions for Knowledge Management Systems. For effective collaboration and communication through the web conferencing, many corporations actively use such features of the web conferencing as white boards, application sharing, slide shows, annotation, full-screen view, web video, recording/playback, discussion, rolling/voting, and easy-to-use interface ("Conferencing features", 2008).

Mentioned above features of web conference create an atmosphere close to face-to-face meetings or in-class training sessions. For example, video integration can create a "presence" effect by virtually placing user in the conference or classroom. User can see manager, instructor, or teammates. White board allows explaining ideas by drawing a model on "fly". For Knowledge Management instant document, file, or application sharing saves a lot of time. Several users at ones can use shared instances, making notes, corrections, and generating ideas. Recording feature helps in gathering corporate knowledge. All ideas, note, and suggestions are recorded and can be used in the future with the help of playback option.

Some of the web conferencing features are summarized in the appendix Table 1 ("Web Conferencing Features", 2008).

Advantages and Disadvantages of Using Web Conferencing

Web Conferencing features are relatively easy to obtain. The cost of services and ready packages varies from free downloads to more expensive ones developed by such IT giant as IBM, Microsoft, Oracle etc. Company can chose the most suitable solution, which would be beneficial while relatively inexpensive.

Even early web conference solutions greatly reduced traveling costs for the users and allowed to provide training for many users at ones. Developing the web conferencing technology made it a powerful enabler for every Knowledge Management component.

For communication web conferencing allow users to meet each other where the face-to-face contact is impossible or hard to implement. For example, when salesperson communicate with client who is situated on opposite cost, or when there is a need to communicate with an expert who leaves in different country, web conferencing can help by bringing people together without costly flights and delays. Also communication through the web could be friendlier because unless video component is present, participants do not see faces of each other. On the other hand late fact could be considered as a disadvantage because there is no direct human contact.

For collaboration different web conferencing features allows users to work on the same documents, programs, or simply ideas at the same time. Users can share their knowledge on the subject easily. For example, when the team works on creating new requirements for the business project, the electronic brainstorming could be very useful. Participants of web conference can share screens and pass control to each other. Questions could be addressed in real-time. If in face-to-face meeting only one person at a time can speak, web conference allows simultaneous input. While good for brainstorming, simultaneous access can be disruptive, so web conferencing still require a good planning.

For storage and retrieval of knowledge web conferencing could be a big help. With the possibility to record and later playback session, ideas shared on meeting or in classroom are saved and could be retrieved easily. Thus knowledge extracted during conference could be better utilized.

Craig Ortiz (2006), the Program Manager, in the article “Comparisons of Technology” gives points on following advantages/disadvantages of using web conferences.

Web Conferencing Advantages:

- Available to anyone with a computer and Internet access
- Participants may attend a meeting from their normal work stations without travel
- Lowest cost delivery

Disadvantages:

- Low resolution - low quality
- Participants may not have high quality Internet Access
- Meeting quality is based on the quality of attendee's Internet Access and computer capabilities
- Creates no sense of impact or community among participants (2006, Web Conferencing section).

The very important issue raised by Mr. Ortiz is the quality, which is related with necessity to have high speed Internet, certain computer configuration, and proper gadgets such as microphone or web camera. Any company considering the use of web conferencing as enabling

technology for the Knowledge Management System has to consider individual situation where it can benefit from advantages and reduce effect of disadvantages. Only in this case conference will not be a failure.

From IBM Lotus Notes to Lotus Sametime Connect

Released in 1976 PLATO Group Notes inspired a lot of developers by adding valuable features to already existed conferencing tool. It allowed user to create private notes, set access to them, make comments, and provide connection to other PLATO parts.

In 1984 the first version of the Lotus Notes was released. Slow Internet and imperfect operation systems were a big problem for the new product thus making the product not very useful for enhancing communication and collaboration unless it develop something special.

In 1989 Lotus Notes release 1.0 saw users. Among several features the first release included “Group Mail, Group Discussion, and Group Phone Book which were very useful for organizing communication and collaboration inside the user corporation. Every next release of the Lotus Notes brought additional value for the customers. For example, release 4.0 not only had new interface and was targeted for the big companies, but also included integration with emerging web technology.

At this point in 1995 IBM purchased Lotus Notes. Facing emerging competition Lotus Notes benefited from solid financial and technological ground IBM provided. It took as average two year to develop a new version before deal with IBM. Now enhancements and fixes had to fit a rapidly developed market.

Starting from 1996, “Domino” was added to the name Lotus. This modification of the product included HTTP server and was already inseparable from the web.

Since then several other lines of Lotus software developed based on Notes and Domino. The true web conferencing product from IBM called Lotus Sametime Connect. According to IBM sources, “Lotus Sametime is IBM’s market-leading platform for real-time collaboration. People use it every day to share information, make faster decisions, and work together in real time”(Bergland, 2003). The collective of authors from IBM highlighted three basic concepts of the Lotus Sametime:

- Presence/Awareness (seeing in advance whether a person(s) or application(s) is available to collaborate, share information, and/or take an action)
- Conversation (text-based or audio/video)
- Web conferences (application sharing and team whiteboarding)

All three concepts are very important for Knowledge Management System inside the corporation. The first concept is especially important for real-time collaboration. Lotus Sametime allow awareness about user status, whether he/she is ready to communicate. Audio and Video options add face-to-face sense to web communication. During the online meeting session users can exchange documents, files, and applications. As stated in IBM documentation, “Sametime allows any user to share any application from his or her desktop, such as word processors, spreadsheets, and project management software. If necessary, a user can also share their entire desktop, enabling a remote participant to control their machine”(Bergland, 2003).

Very important fact is that Lotus Sametime support variety of tools for application development such as Java, C++, COM, and HTML. Thus users using different tools can integrate their work.

The most recent versions of the IBM Lotus Sametime were released in 2007. There are several distinct features, which makes IBM Lotus Sametime 7.5 or 8.0 a good choice for the users such as improved user interface, security enhancements, Eclipse based architecture, and support of different platforms.

Where as different web conferencing ready to use packages and service providers can perform similar functions in organizing instant messages exchange, sharing, and other forms of communication and collaboration for knowledge management system, some of them have security issues unresolved. The new Lotus Sametime version addresses security issues.

Also this version was completely rebuilt using Eclipse. “A key benefit of this choice of platform is that it can integrate seamlessly with other application components namely other plug-ins... The overarching goal of the Lotus Sametime Connect architecture is to provide three benefits: extensibility, integration, and reuse”(Kehn & Ott, 2006). Because Eclipse is an open-source development framework, it became easy to develop various add-ins for the Lotus Sametime in order to customize the product for particular company needs.

According to IBM source the next advantage of using Sametime Connect is its ability to work under different operation systems, Windows, Mac, and Linux (IBM Lotus Sametime 7.5, 2007). Long time users complained that one of the major disadvantages of using web conferencing is its limitation to Windows platform. For example construction companies, where engineers and architects work with graphical software on Mac machines could not take advantages of the web conferencing for transferring and sharing knowledge.

Finally, it is claimed in the article “IBM Lotus Sametime 7.5” that “now get Skype-like VoIP (Voice over IP) facilities. So, add a headset and all you have to do is click on a button to talk directly to your IM 'buddies', either one-to-one or as part of a conference call”(IBM Lotus Sametime 7.5, 2007).

IBM Lotus Sametime 8.0 presented as Entry, Advanced, and “Unified Telephony” software. Each of the package address different needs of the different companies. For example entry package includes instant messaging, IM, and other common features. Advanced package add to standard set “ground-breaking functionality for realtime community collaboration, such as persistent group chat, a suite of broadcast tools, instant desktop sharing and geographic location services” (“IBM Lotus Sametime 8.0”, 2007). The last package provides special support for telephone communications.

To better evaluate a set of features offered by IBM Lotus Sametime it is useful to compare the product with the closest competitor, the Microsoft Live Communications Server/Office Communications Server (OCS). E. Brent Kelly in the article “Unified Communications: Sametime vs. OCS” published in Business Communications Review on July 2007 wrote, “While Microsoft's approach to unified communications could be described as person-centric, IBM Lotus seems to be approaching UC from more of a systems and platform standpoint”. Where as Sametime support multiple platforms, OCS works only on Windows. Microsoft also tends to develop own software to perform different functions such as audio support, where as IBM rely on third party software and leave room for customization.

Future of the Web Conferencing

The future of the web conferencing goes hand by hand with the development of other web technologies. As the speed and reliability of Internet increases, more and more perspectives open for web conferencing. Web conferencing of the future would focus on unification, integration, and customization while making products user-friendlier. As variety of new web conferencing products enter the market, intensive competition accelerate development of the new features. According to the short extract from the Wainhouse Research Report, the interest in the web conferencing as an enabler for Knowledge Management increases. "Organizations are reporting 30-50% increases in the use of collaboration and conferencing services, new customers are signing on at a rapid pace and changes in the equipment and networks are driving new features and services" ("Join 30+ Service Providers", 2006). Tom Eid believe that "Through 2011, the Web conferencing and team collaboration software markets will grow at a rate of 23% and 15.9%, respectively"(Eid, 2007). At the same time companies will have more choice as new player enter the market.

Individual companies developing web conferencing software talks about their future. Thus IBM plan for 2008 includes focusing on real-time collaboration techniques, which are powerful tools for the Knowledge Management System. Lotus Sametime will help to get information, to share ideas and knowledge. IBM is going to improve a quality of the streamline discussions. IBM lists some of the features that are currently under development: persistent chat, broadcast communication tools, desktop sharing capabilities, and location services ("IBM Lotus Sametime 8.0", 2007)

Also several general trends could be observed in the web conferencing area. One of the major trends is using of VoIP technology. Dial-up connections cause a lot of complains about quality of audio part of the web conferencing until recently. However, this technology is currently seen as easy and relatively inexpensive way to provide service. Currently companies use Virtual Private Networking to connect people who work remotely. However, in the future VoIP and softphones will grow in popularity.

The next trend is the adaptation of the existed and new products to Mac and Unix platforms. Enterprises using a lot of graphical software will specially benefit from bringing web conferencing to Mac. Other enterprises, which prefer to work on Linux system, will more actively join the web conferencing world. Yet big corporation might want from future web conferencing product the independence of platform, so people could communicate and share knowledge, working from the different systems - Mac, Windows, Linux, etc. - without the need to spent a decent amount of capital on software for each of them.

Finally, the rapid development of wireless network and mobile telephony will generate some new features to develop. For example, person in the future might be able to participate in the conference from any place at any time as long as he/she has a cell phone. The increased interest of AT&T, Verizon, and other phone service providers in web conferencing could also indicate the developing trend.

CONCLUSION

Web conferencing started to help companies to save cost of traveling and training. However, now many enterprises welcome web conferencing for different reason. Using this

technology enables companies to stay on competitive edge because it became a valuable tool enabling effective Knowledge Management. Multiple features of the modern web conferencing products enhance communication and collaboration. Web conferencing make knowledge creating, retrieval, and storage much easier.

Knowledge Management in its entirety involves much more than the collaboration of information or knowledge sharing. A complete Knowledge Management undertaking is far beyond the scope of this paper. Web conferencing, though just a minor technology in Knowledge Management, helps to bridge the global gap many organizations face in today's economy. Without the ability to have real time meetings with people situated around the world, companies would suffer greatly. However, is web conferencing enough? No, it is simply a piece of the Knowledge Management pie. Employing an integrated Document Management, Enterprise Relationship Management, Case Management, Records Management and Employee Management System under one overall KM umbrella is the forward movement some companies have taken.

Depending on companies' priorities, core functions and business requirements, the cost, time and effort involved with Knowledge Management may not be feasible. However, most will not dispute that there is a wealth of benefits gained from employing any Knowledge Management based system, such as web conferencing. An organization should start by taking inventory of its' business needs, visions and goals and determine if some aspect of Knowledge Management could help realize any of them.

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