VIRTUAL COLLABORATION IN THE WORKPLACE

Dr. Jason C.H. Chen, Gonzaga University, chen@jepson.gonzaga.edu
Laura Volk, Northwest Farm Credit Services, llv827@hotmail.com
Dr. Binshan Lin, Louisiana State University in Shreveport, blin@pilot.lus.edu

ABSTRACT

Virtual Collaboration is becoming extremely important for business success in the market. Companies that do not explore these options are putting themselves at a disadvantage to their competitors. Collaboration is not only a new idea but also new technology that improves the way a company communicates with its customers, partners, and employees that work at home or in satellite locations around the world. This article focuses on three possible ways that virtual collaboration can benefit a company: virtual teams, which can be sales or product-develop oriented, virtual meetings - between clients or among employees, and virtual learning - via online training courses or new employee training. The purpose of virtual collaboration, its various uses, and the technology offered by software companies and providers are addressed.

Keywords: Virtual Collaboration, Information Technology, Internet, Communication

INTRODUCTION

In today’s economy, companies are faced with a seemingly paradoxical challenge: to cut costs while at the same time “expanding” their resources to compete in a global market. The accessibility of a world marketplace was created by technological advances and spawned by the Internet revolution. In order to stay competitive, a business is forced to adopt and adapt to this fast-paced technological age.

These new technologies have started to change the way business is conducted, and, as companies try to work to achieve simultaneous reduction and expansion, the workplace as we know it is conforming to the newest technology as well. Company organizational structures have changed, primarily flattening out into a horizontal-like structure where employees are less centralized and further spread out over the country, or even the world. Due to limited resources, companies are allowing employees to work out of smaller satellite locations - and even from their own homes - conducting business in a way known as “virtual collaboration.” Now a company can have national and global “home offices” without the cost of renting office space by having its employees work at home, or simply save money in travel-related expenses by virtually bringing employees together for meetings. This virtual form of meeting and working together may never completely, (nor shall we want it to), do away with face-to-face collaboration, but, if effective, it can drastically reduce costs and lead to increased profits and growth of a company.

This paper is organized in the following manner: First, a definition of virtual collaboration is described. Next, we present what technology is available and needed, the concerns companies may have with their “virtual” employees, and the types of security issues that need to be addressed. Finally, the financial benefits and the future of virtual collaboration in various business spheres is discussed.
VIRTUAL COLLABORATION METHODS

“Virtual collaboration” involves the process of *collaborating*, defined by *Websters Collegiate Dictionary* as “working jointly together on an intellectual endeavor.” Collaboration can be seen between team members working towards a mutual goal, participants of work-place meetings and in classroom or teaching environment. Virtual collaboration refers to the use of digital technologies that enable organizations or individuals to collaboratively plan, design, develop, manage, and research products, services, and innovative IT and E-Commerce applications [8]. In other words, the collaboration is not face-to-face. Adding the virtual component to collaboration, which brings to the table its own challenges, substantially increases the required collaboration efforts needed by the participants.

Virtual collaboration is used in organizations within virtual teams, specifically in product development arena or in geographically dispersed companies. Virtual learning or distance learning, performed online through the Internet, is becoming more popular as many companies require education for job advancement and opportunity. Employees are seeking out alternatives to bricks and mortar (traditional) educational facilities to save them time in today’s environment. Additionally, the added accessibility of the Internet allows rural workers who have access to a computer and a phone line to earn their degree online. Virtual meetings, using web-conferencing or similar technology, allow for real-time interactive meetings to be held at a moment’s notice. These uses of virtual collaboration tools and technologies are just a few of the potential and current uses, and, coupled with consistently improving technology, it is easy to see the future potential in today’s environment. Details of three means of performing virtual collaboration are explained in the following sections.

Virtual Teams

*Organizational Behavior*, an academic textbook by Hellriegal et al. [4] is dedicated to the study of human behavior, attitudes and performance within an organization. It discusses the use of teams as an important part of tomorrow’s leading companies. Teams can be functional or cross-functional, problem-solving or self directed, in addition to being a virtual team.

The book defines a virtual team as “a group of individuals who collaborate through various information technologies on one or more projects while being at two or more locations” [4]. With virtual teams, clear, concise and mutually agreed upon goals are especially important. The ability to communicate effectively is the glue that holds the team together. Without clear and continuous communication and following their agreed-upon guidelines, the team falls apart, and the goal may never be reached.

Whether working in virtual teams, or working alone and reporting to a supervisor, virtual employees’ duties are somewhat paradoxical, requiring that they be simultaneously self-reliant and autonomous while collaboratively working with others. This simulates work performed in an office - from “desk work” to group meetings—except that it is in a setting that can be anywhere in the world. In the case of an at-home employee using virtual communication there is no manager present to supervise that the employee is indeed present and working. The assessment is a difficult task in the virtual organization; however it is critical to keep company competitive...
in the marketplace. Therefore, as the employee is completing assignments, and having virtual meetings with a supervisor or a team assures the company that their employee is being productive -without the extra costs of office space and overhead.

**Virtual Learning - Distance Education**

In today’s economic environment where the unemployment rate is extremely high, workers are being forced to seek more education. For many this involves going back to school to earn their degree, taking technical or other classes that will help them in their current position, or taking classes relevant to the career or position they are trying to achieve. Traditionally it has been difficult, if not impossible, for non-conforming students (i.e. those returning to school from the workplace) to obtain higher education. This is primarily due to scheduling issues, where classes interrupt scheduled work or personal/family activities, or issues related to the unavailability of schooling options due strictly to geographic location.

The availability to learn online through distance learning services is now making it possible for this group and others to return to school to earn their degree or merely take a class or two to advance their skills. In addition, companies are also relying on the web to deliver their own employee training, communications and new product seminars.

**Virtual Meetings**

One method of conducting virtually held meetings is through data or web-conferencing. “Data conferencing allows meeting participants to simultaneously share information and programs on their PCs via application sharing, chat, whiteboarding and file transfer” [5]. Companies can use this tool for online meetings conducted using PowerPoint. Web Conferencing Central, a company dedicated to providing low cost solutions for online meetings, has developed a method allowing for control of the presentation by the presenter while meeting guests are viewing your slides online, real-time. They also provide solutions for desktop and application sharing, co-browsing, and sales presentations.

To share the applications on your computer with another participant you will need your desktop PC and a web browser. Use of free-hand pen tools, text and other tools allow the presenter to better share the contents of their desktop. This allows participants to work together in real time, without the expense and hassles of traveling in a way that is easier and more efficient than by fax, phone, or email.

Co-Browsing allows employees to link browsers with customers. This assists employees in explaining how to use the company website, in working through a difficult program or in viewing what the customer sees. Text highlighting abilities allow an employee to bring a specific portion of a website to a customer’s attention. Employees can also assist customers in filling out on-line forms. Co-Browsing is a positive customer service tool that helps customers find what they are looking for, and, as a result, increases customer satisfaction and creates and/or sustains brand loyalty.
SOFTWARE SOLUTIONS

There are many types of software and hardware that enable virtual communication. According to the authors of *Organizational Behavior*, there are three primary types of technologies that need to be considered when purchasing software: 1) desktop videoconferencing systems (DVCSs), 2) collaborative software systems, and 3) Internet/intranet systems [4].

Collaboration is possible via email and telephone, however technology such as DVCSs allow for a more complex level of communication mimicking some aspects of face-to-face meetings. At the time of the book’s copyright in 2001, as many as sixteen team members could be connected at the same time. A team member participating in the meeting is able to see and hear as many as fifteen other members in the meeting. This is accomplished through the use of a small camera mounted to the top of each user’s monitor along with an ear piece/microphone combination or a speakerphone.

The second category of software, collaborative software systems, also known as group support systems, requires teams to work both interactively and independently. Lotus Notes is an example of this type of software, designed for asynchronous teamwork. This software combines team and project scheduling, e-mail and document and data sharing [4].

The third major category, intranets and internets, can also be used by teams to post information, as well as visual aids and audio streams to be viewed and heard by others in the team [4].

Yet, companies that are interested in establishing a virtual collaboration network should not depend on the Internet alone. Reed Hornberger, Vice President of Horizontal Solutions, Sun Microsystems [7] emphasizes the importance for companies to invest in virtual collaboration now - and that a company should not rely solely on the Internet: “low-powered collaboration tools typically used today, such as email and sharing of design files, provide only a basic exchange of information.” He indicates that these Internet tools should be used in conjunction with Product Lifecycle Management technologies to “increase the variety and frequency of information exchanged throughout the design team to enable creative decision making.”

CONCERNS

Human Issues

Although the choice of which software is right for a company, this decision isn’t the most difficult task when it comes to virtual collaboration. Actually embarking into un-chartered territory and putting the system into practice within a team or home environment is the greatest challenge. The Management Roundtable offering cross-functional team training, studies this phenomenon. “While very few people have a problem with the concept of collaboration, it is very difficult to create a process for it.” They found that it was very difficult for people to collaborate even when they were co-located.

This difficulty of collaboration was in part due to the fact that competition among members was more prevalent than collaboration as team members competed to see who had the best ideas. Adding to this problem of competition was differences in the backgrounds of the team members. It is very conceivable that a team could consist of international team members who have
different working standards, cultural expectations and values, not to mention different languages [3].

Security Issues

In addition to the potential communication barriers and human issues of virtual team members, there is the issue of security involved within the virtual exchange of information. Security issues can be divided into two general parts: traditional security methods and the integration of collaborative systems into the existing Internet security infrastructures. The traditional security methods include authentication, authorization, and communication security [1].

Successful, traditional meetings assure the participants (either by meeting face-to-face, or speaking on the phone) that they are meeting with the correct party, and confidential information is not being given to a stranger. Yet, the comfort of knowing the person is who they say they are cannot be taken for granted in the virtual world. Therefore, knowing that the information communicated is given to the appropriate person is a necessary requirement of online meetings. Such authentication is important in building trust, virtually. Authentication can typically be accomplished through user name and password. “Since the information is sent without encryption from the client to the server, the communication channel must be protected” [1].

Authorization gives permission to users to open and use application resources. As many “doors” as it opens, it can also close and protect. Authorization can impose a structure on virtual interactions. Communication security relating to the “exchange of control and application data among collaborative clients and servers” is the real security issue. Although there are securities in place on the Internet protecting things such as credit card numbers and bank statements, the more complex virtual collaboration data is harder to secure. The possibility of an intercepted message can lead to unwanted access to the system and the data exchanged by the client and server.

A solution to this security concern is to integrate current Internet security methods with security methods for collaborative environments. When considering the security model used by web browsers for executable objects, it may be necessary to overcome certain restrictions of specific types of objects using appropriate mechanisms.

These mechanisms are based on a capabilities model in which principals (digitally signed Java applets) can get access to certain targets (protected system resources). Before letting the user execute a potentially dangerous application, the browser should display a window detailing the information about the privilege allowing the user to make an informed decision [1].

With the solution to the security issues seemingly on the technological horizon, the acceptance and success of virtual collaboration does not hinge upon security concerns. To create a successful program, first and foremost, is imperative that collaborative processes within organizations are well structured and effective before implementing Internet-based collaboration tools into the enterprise [3].

The success of virtual business depends on many factors, but most involve the following three issues: people, culture, and technology. People and cultural issues include: storming and
forming of teams; the occasional need for face-to-face meetings; the need to “think regional;” the need for establishment of practice communities to mirror competency groups after; education in techniques; rewarding of collaborative behavior; and the capture of lessons learned [9].

Technological concerns consist of high-bandwidth networks; a full range of integrated collaborative tools including document sharing, instant messaging, remote presentation and E-conferencing; competency networks that articulate the knowledge within the business and where it can be found.

SUCCESS AND FUTURE TRENDS

If a company can overcome these obstacles, and create a successful virtual collaboration system, their business can expect improvements in productivity and communication and lower costs in travel. Companies such as Eastman Kodak, Compaq, and Intel said that they have been successful using global virtual teams across national boundaries. These companies use virtual teams for purposes of bringing products quickly to market (independent of space and time), formulating sales strategies, and product development among other projects [4].

The article “Huge Productivity Boost Reported with Collaboration” outlines the financial benefits for companies that link their processes with third-party partners and suppliers. These include a “75% greater profitability than companies that haven’t integrated with partners.” This effect on the bottom-line is only one of many positive results. Of companies “that have created links with partners and suppliers, 17% say they’ve sped up processes, and 16% say they’ve improved customer satisfaction,”[6].

Future Trends of Doing Business: C-Commerce

In the business-to-business (B2B) sphere, online collaboration is growing rapidly. In a paper published by A Caucus Consortium in 2000 [2], they discuss what they term as the “C-Commerce Phenomenon.” This phenomenon is the use of online collaboration across the supply chain allowing businesses “to exchange intellectual capital, facilitate problem trouble-shooting and resolution, enable new ideas to cross corporate boundaries, provide rich feedback on goods, services and customer satisfaction, and foster a much closer bond between business partners” [2]. Numerous studies [8] suggest that collaboration, in specific, future C-Commerce is a set of relationships with significant improvements in organizations’ performance. Major benefits cited are cost reduction, increased revenue, and improved customer retention.

Workplace Trends

Online collaboration is not only growing in the B2B area, but also in the business- to-employee sphere. Research by the Gartner Group indicates that by now 80% of companies will have some form of virtual collaboration taking place in their company, and as many as 50% of workers will be engaged telecommuting or other nomadic work. Table 1 illustrates desired organizational attributes in previous eras and in the era to come [2]. It shows that we are just at the beginning stages of virtual collaboration.
Table 1: Workplace Trends in Different Eras

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Industrial (Place-Centric)</td>
<td>Industrial/“Informated” (Place-Centric)</td>
<td>“Informated” (Network-Centric)</td>
<td>Virtual Enterprise (Network-Centric)</td>
</tr>
<tr>
<td></td>
<td>Hierarchical</td>
<td>Process-oriented</td>
<td>Team-based</td>
<td>Knowledge-based</td>
</tr>
<tr>
<td></td>
<td>Task-oriented</td>
<td>Flatter organization</td>
<td>Broadly distributed</td>
<td>Contingent workforce</td>
</tr>
<tr>
<td></td>
<td>Specialized</td>
<td>Early distributed work</td>
<td>Empowered employees</td>
<td>Role-based</td>
</tr>
<tr>
<td></td>
<td>Centralized control</td>
<td>Decentralized control</td>
<td>Federized</td>
<td>Alliances, Agile</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Knowledge Workplace</td>
</tr>
</tbody>
</table>

CONCLUSION

As we enter into the post September 11th era, conducting business virtually may become a means of security for important financial centers. Some companies have been forced to communicate virtually, according to Weiler [9], as the destruction of the World Trade center has aided the push towards virtual collaboration. The companies whose offices resided in the towers are re-thinking the idea of locating employees in a single, highly visible location. They are now conducting business from satellite locations and homes scattered across Manhattan [9]. This very idea of “downsizing” might change the business landscape of tomorrow, as large corporations work virtually from a scattering of “nests” instead of occupying large and expensive skyscrapers in metropolitan areas. At the very least, virtual collaboration is proving to be an effective way to conduct business more efficiently, economically, and with the ability to instantly reach all corners of the world.

REFERENCES