Chapter 3.16
Videoconferencing as an E–Collaboration Tool

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INTRODUCTION

Videoconferencing (VC) is primarily a synchronous, long distance, e-collaboration tool. Although it offers interpersonal features with some degree of media richness and social presence, it is not a perfect substitute for face-to-face communication. VC can add value in business situations where telephone, text chat, or audio conferencing do not provide adequate secondary communication channels such as nonverbal cues (tone of voice, inflection) and interactions (body language). VC also adds value where it is impossible or undesirable to conduct a personal meeting. Currently there exists an opportunity for organizations and individuals to derive enormous benefit from this medium when used appropriately with necessary tactics and skills, especially when multiple parties are involved in e-collaboration.

VC is a real-time e-collaboration technology phenomenon which enables individuals at different locations to communicate with each other via video monitors and speakers. The participants sit in front of cameras and interact, viewing and hearing each other as if they are in the same room (Barlow, Peter, & Barlow, 2002). VC can be used independently or as an extension to face-to-face meetings with some participants talking in person and others via technology.

To conduct a VC, at least two endpoints and a transmission system are necessary. Endpoints are locations from which video is broadcast or received. Typical endpoints can be a computer-based desktop unit with appropriate software, Webcam, speakers, and perhaps an overhead projector; a conference room unit which is a device that integrates audio/video reception/broadcast for a meeting room setting; or a class room unit that projects the conference to a screen. All endpoints are reliant upon a coder-decoder (codec) to transform video and audio streams into packets

that can be transmitted over a network and then returned to viewable and displayable form.

Endpoints are connected to standard networks such those used for telephones, cable television, or the Internet. In order to communicate successfully it is important that the linking network(s) have adequate bandwidth. Typically, dial-up connections will not work. DSL or Cable connections would be better. INTERNET2, the new higher bandwidth version of the Internet, is expected to be much better. Additional technologies that make more effective use of bandwidth can also be used, such as signal compression and conversion.

BACKGROUND

In spite of its current popularity, VC is not new. At best, it is a new version of an old technology. VC traces its origins to 1956 when the first public videoconference was held between AT&T headquarters and their Bell Laboratory in New York City. A few years later at the 1964 World's Fair, Bell Laboratories introduced the Picturephone to the world and offered its VC-like service to businesses in several metropolitan areas (Webster, 1998). As a result, journalists, media philosophers, and marketing teams predicted visual phones in every home in America by the 1970s. In spite of its valuable ability to interconnect with other video phones the technology did not catch on as expected. Instead, high costs, application difficulties, and limited deployment prevented the Picturephone from being a commercial success. The idea was ahead if its time, but the technology was not ready for true e-collaboration (Hansell, 1989).

In the late 1970s this began to change. Improvements in technology once again renewed interest in VC. This time, a codec was developed that enabled a video signal to be digitized and compressed by a factor of 15:1. This allowed transmissions to occur at a much faster rate. In 1982, the availability of newer technologies allowed researchers to develop a codec capable of achieving a compression ratio of 60:1. A few years

later, several codec producers improved on this and deployed a compression scheme which allowed video to pass over a single telephone line. While lower in quality, these advances lowered the costs of VC and enabled more usage of the technology (Hansell, 1989). In the past two decades, a steady progression of technical advances has improved VC. Many of the changes involve moving the technology to Internet-based systems.

Phoenix Research projected that within five years, the global percentage of VC users would rise from seven percent to 26% (Bland, 2004). A variety of reasons contribute to this increase. Recent terror attacks and health scares have decreased the desire of people to travel. Additionally, increases in fuel costs have made VC a more cost-effective option.

USING VC APPROPRIATELY

In order to ensure the appropriate hardware and software system is selected for VC use, the user must determine if internal and/or external conferencing will be conducted. Using VC for internal purposes generally means lower image quality is more acceptable whereas external usage generally demands a high quality connection, since the transmission may represent the company's image and potential to the outside world (Bland, 2004). The type of network used plays a major role in video performance quality since it carries data between interacting video systems. Critical factors regarding video quality are picture size and the ability to access the connection consistently (What is Videoconferencing, 2005). Optimal VC quality can only be achieved with a broadband connection and with top quality equipment at both users' ends (Barlow et al., 2002).

Cost considerations must include both startup and usage. For instance, using an ISDN connection (ISDN, 2005) may have a low initial cost, but the ongoing expenses would be much more

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