

**2000-2002**  
**USE OF INTERNET VIDEO CONFERENCING**  
**FOR ENHANCING PERFORMANCE**

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## **Abstract**

The purpose of this qualitative study was to determine 2000-2002 use of Internet video conferencing for enhancing performance. Results revealed multiple common and innovative uses of, benefits and value-adding dimensions of, requirements and costs of, and major changes in Internet video conferencing.

## **Introduction**

In fall 2000, four of the researchers of the present study teamed to investigate use of Internet video conferencing (IVC) for teacher staff development. Over a five-month period, this interdisciplinary team collaborated with faculty from two other universities to design an IVC, which was conducted in February 2001. Conference participant profile information and conference evaluation/feedback data obtained through use of two conference website-based data collection tools were compiled, analyzed, and reported to the funding agency and participants who had requested summary evaluation feedback. Since then, the researchers have continued to produce, participate in, and study IVC and related technologies.

## **Purpose of Study**

Prior to and in the aftermath of the September 11, 2001, terrorist attacks the researchers have carefully monitored the maturation of these conferencing technologies and their potential for enabling and enhancing performance, particularly in a global market place affected by heightened concern for travel and personal safety. While IVC literature continues to emerge, limited research-based literature is available about *how* such technologies have and are enhancing performance. The purpose of this study was to determine 2000-2002 use of Internet video conferencing for enhancing performance.

## **Review of Literature**

The bulk of the germane or related literature found for review included (a) action research oriented articles and informational articles in trade journal and trade dailies, (b) vendor and academic web sites on which technology tools, services, products, and events were posted, (c) papers or abstracts posted in e-zines, and (d) vendor specific literature acquired in conjunction with evaluation of IVC products and/or services.

Highlights of the reviewed literature included (a) illustrative examples of industries and organizations using IVC technologies, (b) descriptive IVC vendor resource information and testimonials, (c) IVC event information and related resources, (d) abbreviated examples or excerpts of archived IVCs, and (e) shift/trend information in IVC use.

For several years web-conferencing has afforded in-person meetings without the expense of long-distance travel (Grimes, 2001); however, some industries have only vaguely understood or valued its enormous potential (Weiner, 2000). From the comfort of their own desks, IVC users can “. . . converse, chat online, share applications, annotate

documents, and in some cases see each other through Web-based video cameras” (Grimes, 2001, p. 30). Some organizations such as healthcare providers have opted to use interactive voice data video for streamlining professional conferences, conducting Internet-based education and training, and providing medical consultations (Townsend, 2001).

According to Cohn (2002, May), telecommunication carrier Sprint saw as much as a 200% increase in video conferencing among its users immediately following the September 11 attacks, and Kinko’s, a Sprint customer, had heavy demand from people wanting to book video-conferencing rooms. In particular, Citigroup Inc. depended upon IVC as a means for staying connected with business partners and customers when domestic air transportation systems shut down immediately following the September 11, 2001, terrorist attacks (Bills, 2001). Clark (2001) reported that the shares of one IVC company rose 47% on the Nasdaq Stock Market within one week of the 9-11 attacks.

Results of a study conducted by Wainhouse Research concerning collaboration technology use *before* and *after* 9/11 showed that collaboration technology tool use *is up* and business travel *is down*. “Specifically, Webconferencing increased 61.5 %, video-conferencing increased 24.5 %, and voice conferencing increased 11.7%” (“Two, Four, Six, Eight, Let’s All Collaborate,” 2002, p. 16).

Regardless of the impetus for radical changes in business environments and practices, radical changes can, and often do, affect user receptivity to and perception of an innovation and its utility, *and*, subsequently, accelerate the maturation of that innovation and its influence on performance.

### **Research Questions**

In pursuit of fulfilling the purpose of this investigation about *how* such technologies have and are enhancing performance, four research questions were formulated. These included:

1. What are the common and innovative uses of IVC?
2. What are the benefits and/or value-adding dimensions of IVC?
3. What are the requirements and costs of IVC?
4. How have these characteristics of IVC changed in the 2000-2002 timeframe?

### **Methodology**

The present study employed a qualitative design with the researchers collecting data on three variables (tied to answering Research Questions 1-3) over a two-year timeframe in a naturalistic setting and the major shifts or changes in those variables (tied to answering Research Question 4) within the selected two-year timeframe. The variables included:

(a) common and innovative uses, (b) benefits and/or value-adding dimensions, (c) requirements and costs. These were studied as the researchers performed their respective jobs as university human resource development (HRD) faculty or as digital media consultants.

For the purpose of continually expanding their individual and collaborative knowledge bases and improving their IVC-related processes and practices, the researchers maintained digital journals in which they systematically recorded and catalogued data. These data included observations and reflections about IVCs they produced and processes employed in IVCs in which they served as participants. Notations were also logged about insights garnered from related literature with particular emphasis on the use of IVC technologies in corporate environments. Their shared 2000/2001 conference design/production experience served as the baseline for comparing/contrasting subsequent experience with and exposure to IVC. A fifth researcher, an HRD administrator, was enlisted to assist in identification and verification of fiscal implications associated with IVC use.

Data were analyzed, synthesized, and evaluated at multiple intervals during the 2000-2002 timeframe via planned meetings, email communications, luncheon discussions, and work-related conversations.

## Results

The first three parts of this section highlight the frequently cited and recurring IVC characteristics compiled and analyzed in response to Research Questions 1-3. Information reported in the fourth part of the results section highlight conclusions emanating from findings associated with Research Questions 1-3 and additional data compiled and analyzed in response to Research Question 4, which pertained to how IVC characteristics changed in the 2000-2002 timeframe.

### *Common and Innovative Uses of IVC*

The researchers found that IVC use is tempered by: (a) the need to communicate and collaboratively conduct business from a distance, (b) the conference participants, (c) participants' level of IVC experience and expertise, (d) availability of enabling technologies, (e) availability of technical support, (f) organizational culture and climate, and (g) industry and/or organizational communication policies, processes, practices, and protocol.

Examples of *common IVC uses* included desktop videoconferencing for

- \* meetings;
- \* application sharing and voice over IP;
- \* training;
- \* development such as coaching;
- \* counseling;

- \* collaborative teaming for product/service development such as team editing/feedback sessions in real time, allowing phone communication among team members; and
- \* employee assistance and technical support.

Ben Franklin's adage rings true in that "necessity is (often can be, or was) the mother of invention," such as in IVC training and development simulations, which allow for low-risk practice in near-authentic virtual environments. Additional **innovative IVC uses** were virtual reality and holographic video conferencing.

### ***Benefits and Value-Adding Dimensions of IVC***

As with any innovation or new tool, user comfort and friendliness precedes IVC's value becoming obvious to users and organizations. Frequently cited and recurring potential benefits and/or value-adding dimensions of IVC represented (a) time savings and (b) accessibility improvements.

***Time savings.*** Based on the assumption that participants prepare in advance, properly staged and facilitated IVCs can enable highly structured/focused engagement or collaboration and can minimize tangential deviations from the targeted agenda. IVCs can also accommodate a "do you see what I see" forum for discussions, brainstorming, problem solving and decision-making.

***Accessibility improvements.*** These improvements ranged from expanding connectivity distance, increasing collaborative opportunities; expanding access for oftentimes-underserved audiences; accommodating timely information dissemination and just-in-time, on-demand, or at-your-desk training; enabling observation from a distance; and allowing interaction with and coaching from experts at a distance.

For small businesses the IVC potential benefits have been big--virtual meetings can (a) bridge distances, (b) make meetings less impersonal by adding video, and (c) cost less than business travel and absences from the office. Multiple vendors reported conferencing capability that automates IVC processes such as registration, scheduling, archiving of conference costs, and quick-turnaround troubleshooting.

### ***Requirements and Costs of IVC***

Based upon the nature, purpose, scope of the IVC, routine ***resource requirements*** included: (a) a PC; (b) network bandwidth (such as a high-speed Internet connection, the more available bandwidth the less special equipment needed to handle video and audio); and (c) video conference system software and a camera that sits on a desktop.

When costing out or gauging return of investment associated with IVC, extensive cost-related planning must occur for (a) collection of appropriate cost data, (b) isolation of IVC participation effects on performance (including improved productivity, cost savings, or better quality and intangible benefits such as improved teamwork), and (c) conversion

of data to monetary value (Phillips, 1997). Video conferencing can be costly and isn't for everyone. From a cost perspective, not all offices need or are ready for the video in IVCs because video commonly represents a bandwidth-hogging solution. However, for organizational cultures that emphasize face-to-face interactions, the Internet offers improved, diverse options for participants at a distance.

### ***How IVC Has Changed***

In the 2000-2002 timeframe, numerous changes have occurred in IVC characteristics.

Major changes are as follows:

- \* H.323 VC level of maturity has risen;
- \* IVC use has increased;
- \* interoperability problems have become virtually nonexistent between most systems;
- \* IP-based conferencing has been adopted by many in lieu of travel;
- \* IVC has become a useful tool for special needs audiences such as the deaf and hard of hearing;
- \* providers and users such as the University of Tennessee have begun exploration of PC-based realtime captioning to point-to-point and multipoint video conferencing;
- \* providers and users have started documenting and benchmarking best practices;
- \* with increased use, IVC has become more integrated within routine business processes, thus resulting in IVC use shifting from event-oriented use to ongoing process-oriented use;
- \* the video component of IVC has expanded to include images that are not necessarily created with a camera;
- \* bandwidth has become more available;
- \* the cost of IVC technology has dropped; and
- \* IVC quality and effectiveness have increased.

### **Discussion**

As IVC technologies become easier and cheaper to use, innovative uses *will* become more common and inherent among organizational and industry cultures. As recently noted in the e-zine *Collaborate* (2002, October), WR Grace & Company credits its ability to meet virtually with employees and customers to having already established a corporate culture that supports remote collaboration in response to contemporary market demands. Grace cites use of collaborative technologies for helping (a) reduce travel expenses; (b) maximize use of in-demand human resources; (c) involve key stakeholders in decision-making; and (d) empower employees to make better, faster decisions (Collaborate, 2002, October). Deliberate cultural shifts supportive of remote collaboration will require vigilant change management.

McLagan (2002, November) suggested five generic lessons for success with change. These lessons entail: (a) being sure the change will add value, (b) matching the change

process to the challenge, (c) providing management support, (d) preparing the system for change, and (e) helping people align.

And, finally, IVC-related performance enhancements to be derived through training and development will mandate carefully designed and employed strategies for transfer so that it is not left to chance.

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