

Collaboration within the Telepresence Experience

January 2010



Study sponsored by:



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Introduction

In the past three years, the telepresence concept has burst upon the corporate communications world, achieving acceptance in large and small enterprise, government agencies, and many educational institutions. Telepresence suites, which provide extremely high quality audio and video and life sized images of remote participants, have demonstrated how productive the videoconferencing experience can be when technology elements come together to create the illusion of an in-person meeting. Many enterprises see telepresence suites as a way to speed decision making, reduce travel expenses, cut carbon footprint, and improve team bonding all at the same time.

Meeting face-to-face is very powerful. A person's physical presence can make all the difference to any meeting. Inevitably there is an exchange of energies and dynamics inspiring the participants to work together, influence each other and put plans into action. These are the intangibles that can be the difference between a successful or ineffective experience. But in today's global economy, with far-flung partners and colleagues, meeting face-to-face is often not a practical alternative. Hence, learning how best to emulate human interaction using remote communications technology is increasingly key for the modern business world. Non-verbal communications such as facial expressions and posture as well as vocal tone are important contributors to the meaning of words and to a fuller understanding of how any message is being received. And to be most effective, technology-assisted communications should use technology that emulates natural or familiar operations and is practically invisible so that participants focus on the meeting rather than the technology. In addition to giving meeting participants the benefits of a face-to-face experience, TP solutions can provide further value with advanced collaboration tools - the focus of this white paper.

In collaborative interactions, the participants might propose an idea, a design, or a shared goal. Discussions and documents will need to be shared and viewed by everyone involved. This is where a technology that allows real collaboration, such as immersive telepresence, becomes key to the success of a project. Hence, at the same time immersive telepresence is going mainstream, more and more customers are now paying closer attention to the collaborative tools that solutions providers can support and to the ways that collaboration can be used to augment the in-room illusion provided by the audio-video system.

Electronic collaboration tools have been around for nearly two decades, but as system and network technology have advanced, the levels of "connectiveness" have improved dramatically and the range of applications has exploded. Immersive meeting tools are taking the next step by enhancing the in-room illusion created by audio-video systems with immersive collaboration solutions.

Legacy Collaboration Solutions

Collaboration solutions address four types of meeting situations depending on whether participants are meeting at the same time or in the same place:

	Participants in Same Place	Participants in Different Place
Collaborate at same time	Meet in same physical room Whiteboard	Videoconference / telepresence Audio/web conference Electronic white boards Electronic easels IM / Chat
Collaborate at different time	Team meeting room in virtual space Hard copy bulletin board	Team meeting room in virtual space Email, fax, FedEx, and postal mail

With asynchronous communications, the sender and receiver of the information are involved at different times. Non-real time communications, such as email and others, have an important place in business. However, savvy business leaders have come to realize that real-time communications can speed decision making or reduce latency in the work flow and have begun to emphasize “same-time” communications more and more. Real-time collaboration tools, the subject of this white paper, are available in a wide variety of audio-video-web formats to meet a wide variety of user needs.

One of the most popular forms of collaboration today is web conferencing, used to conduct meetings, training sessions, briefings, and sales presentations over both the corporate network and the public Internet. A web conference can be carried out live or on-demand (playback of a recorded session) using web-based applications. The audience can see the presenter’s material and hear his voice, and in many cases ask questions via voice or chat back. A webinar can include polling and question & answer sessions to allow full participation between the audience and the presenter and is generally tied in to audio via voice-over IP or a standard PSTN audio bridge.

Videoconferencing has come a long way as a collaboration tool. Early systems relied on low resolution still images of documents, but all this changed in 2003 when the ITU ratified H.239 which provides a standardized method for additional media channels during a video call. A traditional video conference has an audio channel, a video channel and an optional a data channel. H.239 defines rules and messages for establishing an additional video/graphics channel, often to transmit PC graphics, presentations, or video from a separate document camera, while still transmitting the video of the presenter on the main video channel. For presentations in multipoint conferencing, H.239 defines procedures to guarantee that only one endpoint in the conference sends the additional video channel which is then distributed to all conference participants.

Collaboration Tool	Advantage	Disadvantage
Email and Fax	<ul style="list-style-type: none"> • Low cost • Convenient • Recipient can have a copy of the original document 	<ul style="list-style-type: none"> • No interactivity • Reaction times can delay decisions
Audio conference	<ul style="list-style-type: none"> • Low cost • Can be used with large audiences • Requires only a telephone 	<ul style="list-style-type: none"> • Cannot see reaction of participants • Cannot tell who is speaking in a multi-speaker session
Web conference	<ul style="list-style-type: none"> • Requires only a computer and internet connection, no special equipment • Handles almost all types of computer documents • Audio-graphics easily recorded for playback • Useful with large audiences as well as for smaller meetings and presentations 	<ul style="list-style-type: none"> • Requires internet connection and computer • Visual cues from audience missing • No standards between vendors (one web conferencing solution may not interoperate with another) • Generally cannot tell who is speaking in a multi-speaker session
Video conference / telepresence	<ul style="list-style-type: none"> • Provides important audio and video feedback • Establishes connectivity between participants since human beings are inherently visual beings 	<ul style="list-style-type: none"> • Requires good setup to provide high quality video and sound • Generally requires specialized equipment
Face-to-face meetings	<ul style="list-style-type: none"> • Natural environment familiar to all • Highest possible interactivity and connectivity • Easy to share paperwork 	<ul style="list-style-type: none"> • Inconvenient to schedule • Requires travel costs • Inefficient use of time

Taking Collaboration to the Next Level

New technologies and solutions for collaboration are helping users make virtual meetings more natural and productive. Today's technological tools can help employees, managers, and senior executives find common ground and improve productivity in both highly structured meetings as well as in casual exchanges of ideas, information, and data. The shift from videoconferencing to telepresence is but one example of this trend towards enhanced business communications. Videoconferencing systems that deliver a telepresence experience create an intimacy and face-to-face experience based on spatial audio, life sized images, and high definition video. New collaboration solutions complement telepresence video by bringing to the meeting the capability to interact around documents and objects. The combination has the potential to make meetings in virtual space as effective as meeting in physical space, but without the lost time, energy, and costs associated with business travel. Next-generation immersive collaboration tools fall into two categories.

Content Interaction Solutions:

These collaborative tools provide a highly interactive platform for sharing, annotating, and manipulating PC-based data and documents. Probably the most innovative example to be introduced in the past two years is the “surface computing platform”, a multi-touch, multi-person computer system that responds to natural hand gestures, thereby helping people interact with digital content in a simple and intuitive way. Surface computing offers a unique gathering place where multiple users can collaboratively and simultaneously interact with both data and each other. When two surface computing platforms are linked via a telepresence or videoconferencing session, the solution becomes a way to collaborate or communicate without using a keyboard and mouse. In a business environment, such advanced tools can provide a more efficient and interesting way to deliver information and services to partners, customers, and fellow colleagues. Multi-touch tables are used in education as well as business and retail environments.

A similar if not more traditional approach can be taken with “easel computing.” In this case, an electronic tablet or whiteboard enables users to use the familiar “pen or pencil” paradigm while creating, editing, and sharing documents that are computer-based. Documents can be viewed in the easel, modified, highlighted and saved as a standard computer file for printing, emailing, etc. The easel allows users to focus on brainstorming while automatically capturing data, notes, and annotations for distribution.

Content Sharing Solutions:

These solutions are geared towards sharing materials prepared before the meeting initiation. For example, PowerPoint presentations and Excel spreadsheets are commonly used during meetings to clarify or add impact to the speaker’s message. In most meetings, the collaborative session involves interactive video and discussions about the content, but the content itself is often static in nature. Many videoconferencing and telepresence systems today allow a PC or Macintosh computer to simply plug in to the conferencing system, much like plugging a laptop into a conference room projector. No special software is required and the content material is simply displayed at the local site and in all remote rooms on the call.

The solution most popular today for such collaborative sessions is the dual channel capability standardized by the H.239 recommendation. Most vendors have enabled H.239 on their videoconferencing systems, and the new generation of products supports takes advantage of higher performance networks, silicon, and software to deliver much higher resolutions and faster frame rates than ever before. H.239 now supports WXGA (1280 x 800 pixels) at update rates approaching those of full motion video. Such performance means that screens refresh fast. In fact, with some systems, the data channel can actually carry a second channel of video, enabling the sharing of DVDs and motion video clips.

The data channel can also be used to interface to an external high resolution document camera. This is useful when the subject to be discussed is a physical object and the collaborative session is focused on its design, features, competitive aspects, or other attributes that have to be seen to be understood. Document cameras are also valuable for sharing documents that did not originate on the conferencing user’s computer such as showing an advertisement from a magazine, a newspaper article, or architectural blueprint.

Next Generation Collaboration Solution	Benefit
Surface computing table	<ul style="list-style-type: none"> • Intuitive multi-touch interface is high tech, appealing to all users • Works with documents, photographs, and other materials • Closely simulates in-room experience and paper sharing when used with telepresence system
Electronic easel / whiteboard	<ul style="list-style-type: none"> • Similar to well-known, static whiteboard, but with remote connectivity • Uses familiar hand-held pen interface and flip chart paradigm • Provides in-room and remote room document editing, mark up and interaction • Supports single and multiple display systems
Document camera	<ul style="list-style-type: none"> • Supports high resolution and magnification of images and documents • Enables physical objects to be brought into collaboration session
Videoconferencing dual video channel	<ul style="list-style-type: none"> • Simple video interface is fool proof • Enables PC documents to be shared natively within a videoconferencing session • H.239 standard supported by all vendors • New equipment supports ultra high resolution H.239 channel for sharing of graphics, images, etc. • New equipment supports full motion video on H.239 channel, enabling sharing of DVDs, movie clips, etc.

Collaboration Solutions from Teliris

Teliris, the sponsor of this white paper, is one of the pioneers in the telepresence space. The company focuses not only on the audio-video technologies to enable a meeting in virtual space to emulate a face-to-face meeting, but also on the collaboration tools that complement the telepresence experience and make electronic meetings doubly productive. The Teliris approach is based on a dedication to bringing collaboration and visual communications into the 21st century and making the telepresence experience a true substitute for travel and face-to-face meetings. Hence the company's product line consists of audio-video-centric telepresence systems as well as collaborative tools to enhance the telepresence environment.

Teliris' Telepresence Solutions

Teliris telepresence suites have been in operation for more than a decade. The company recently introduced its 6th generation technology based on a client-server architecture, robust video protocols, an advanced telepresence logic engine, and low-cost, general-purpose hardware that can deliver the telepresence effect on non-QoS networks.

Teliris VirtualLive™ Telepresence

Teliris VirtualLive™ Telepresence is an immersive, advanced telepresence solution that can accommodate up to 28 participants with three to eight screens per room. The system is built on Teliris' core 6G platform – a standards-based, client-server software approach to telepresence. It fits into existing conference rooms, complementing company culture, color and décor and can be customized to achieve the same look and feel across all rooms, including the same lighting, tables, chairs, walls and finishes with second row available. It also offers the following:

- Broadcast-quality video at up to HD1080p30 or HD720p60
- 65-inch displays with ultra-thin bezels, which eliminates gaps between images, using up to eight displays
- Teliris' patented Advanced Virtual Vectoring technology that ensures accurate eye-lines for single and multiple location meetings
- Wide-band, high quality, integrated audio conferencing
- Interoperation with standards-based videoconferencing and telepresence systems
- Compatibility with all Teliris telepresence environments and collaboration options
- Encryption and privacy options for security

Teliris Express

Built on Teliris' core 6G platform – a standards-based, client-server software approach to telepresence that fits into existing conference room. The Teliris Express portfolio includes:

- Teliris Express1 Telepresence™ (1 screen / 2 participants)
- Teliris Express2 Telepresence™ (2 screens / 4 participants)
- Teliris Express3 Telepresence™ (3 screens / 6 participants)
- Broadcast quality video at up to HD1080p30 or HD720p60
- Unique 65-inch HD telepresence display – up to three screens
- Optional 2, 4 or 6 person Teliris table with second row available

Teliris Express includes patented Virtual Vectoring technology to ensure accurate eye-lines for single and multiple location meetings. The product line relies on cutting-edge POD microphones with advanced audio processing systems and interoperates with standards-based video systems through the Teliris Telepresence Gateway.

Personal Telepresence

The personal conferencing system is built on Teliris' core 6G platform, enabling broadcast quality 720p60 video. The product is based on a unique 40-inch HD telepresence display with integrated, advanced audio processing system and microphone. A 22-inch screen version, the Nano, is also available. All personal systems are based on the Teliris core 6G platform.

Teliris Custom Telepresence

This custom approach allows telepresence features and capabilities to be integrated into new environments, such as research and development labs, conference halls or large meeting rooms, factory floors, and oil exploration platforms, among others. Teliris Custom Telepresence allows for nearly unlimited applications of telepresence.

Teliris' Collaboration Solutions

Teliris offers the widest array of telepresence collaboration solutions in the industry. These provide customers with a range of price, performance, and functionality options. According to Teliris, the key to providing effective communications is to think about how meetings in-person work. The physical space in which they take place is part of the experience and the interaction. In general, groups of people gathered in the same space use more than just the desk in front of them to express their ideas and opinions. They might want to walk about, use an easel or the walls, or even show a presentation from their laptops. In short, a meeting is more than just watching and listening to talking heads. With Teliris' easy-to-use and high-interactivity solutions, meeting participants feel as if they are indeed meeting in the same room.

Teliris InterACT TouchTable

The Teliris InterACT TouchTable is the only commercially available multi-touch computing environment for telepresence. The TouchTable allows users to share content naturally over distance. The multi-touch virtual table understands participant gestures and supports a wide variety of content including video, text, photos and audio files, without using a keyboard or mouse.

Teliris InterACT Easel

Teliris InterACT Easel is the first interactive flip chart and white board for telepresence that enables users to create, share and edit ideas in real-time as if in the same room. Utilizing a multiscreen projected display system, computer files, scanned or video images, and handwritten notes or sketches are projected on the wall as flip chart sheets. Content can be edited in real time on an easy-to-use tablet and is stored for future recall or distributed automatically by email.

Teliris InterACT Blu-Ray/DVD

Teliris InterACT Blu-Ray/DVD is a system that can be integrated into any Teliris Telepresence environment for immediate content sharing. The solution plays back high-definition video across all Teliris Telepresence meeting locations.

Teliris InterACT Presentation™

Teliris InterACT Presentation™ features 65" high definition screens and allows PC or Mac output to be displayed locally and at remote sites. Teliris offers basic presentation capabilities at 10 frames per second and a motion presentation option at 60 frames per second. No specific user software is required, participants simply connect a laptop via VGA cable and begin their presentation. Similar to connecting to a projector, documents do not leave the user's computer.

Teliris InterACT DocCam

Teliris InterACT DocCam is a high-resolution, high-magnification imaging camera for telepresence. The DocCam allows users to view objects in precise detail and to share images. The solution is mounted on the ceiling for optimal perspective. Once digitized, physical documents can be fully manipulated in the digital domain in conjunction with the full suite of Teliris Immersive Collaboration solutions.

Summary / Conclusion

With their sophisticated audio and video technologies, telepresence suits have become accepted for their ability to provide the illusion of a face-to-face meeting, enabling customers to reduce travel costs and boost business efficiency at the same time. New tools and systems are now available to boost the telepresence benefit significantly. These solutions can take a telepresence meeting to another level, from a simple exchange of ideas, to a true collaboration session, where multiple people can work as a productive, creative team towards a common goal.

About Wainhouse Research

Wainhouse Research (www.wainhouse.com) is an independent market research firm that focuses on critical issues in rich media communications and conferencing. The company conducts multi-client and custom research studies, consults with end users on key implementation issues, publishes white papers and market statistics, and delivers public and private seminars. WR hosts the PLATINUM (www.wrplatinum.com) content website and publishes numerous market studies as well as a free newsletter, The Wainhouse Research Bulletin.

About the Author(s)

Andrew W. Davis is a researcher, analyst, and opinion leader in the field of collaboration and conferencing. He is a co-founder of Wainhouse Research. Prior to Wainhouse Research, he held senior marketing positions with several large and small high-technology companies. Andrew has published over 250 trade journal articles and opinion columns on multimedia communications, videoconferencing, and corporate strategies as well as numerous market research reports and is the principal editor of the conferencing industry's leading newsletter, The Wainhouse Research Bulletin. A well-known industry guest speaker, Mr. Davis holds B.S. and M.S. degrees in engineering from Cornell University and a Masters of Business Administration from Harvard University and can be reached at andrewwd@wainhouse.com.

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About Teliris

Teliris (www.teliris.com) is a privately held company focused completely and exclusively on telepresence products and managed services. The company has the industry's broadest range of telepresence video systems and collaboration solutions. In business for over a decade, Teliris recently introduced their sixth generation (6G) technology promising new levels of price/performance and significant improvements in the user experience using ordinary, low-cost IP networks.