

MAXIMIZING THE VALUE OF TELEPRESENCE
INTEROPERABILITY IS KEY TO SUCCESS

A Frost & Sullivan White Paper

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EXECUTIVE SUMMARY

It is widely accepted that telepresence can change the way people experience meetings—and thereby change the way people work. But in the gloom of the global recession, companies are asking themselves how they can get even more value out of their communications assets. To that end, interoperability is key.

Certainly, isolated telepresence rooms that can ‘talk’ effectively to each other, but not to other videoconferencing or telepresence systems, are creating cost savings and improving productivity. But as corporate executives ask what more can be done, the answer is connectivity—making it possible for telepresence rooms to connect to other video conferencing systems, so that more employees can participate in more meetings, without incurring the high costs of travel.

Critical to success is standards-based integration with non-telepresence systems that can deliver the best audio and video for each endpoint, rather than that dictated by the lowest-common-denominator device. This is a consideration that many companies—and even some telepresence vendors—often forget, but it is key to leveraging the full value of a telepresence solution.

There is much value to be gained from connecting executive teams via dedicated telepresence rooms, rather than flying them to and from meetings. But not everyone in any given group will have ready access to telepresence suites all the time; those employees, partners and customers still need to participate in virtual meetings. Allowing them to do so while also supporting a telepresence experience for those who can access one is critical to driving usage and delivering maximum return on investment. It also leverages the remarkable telepresence experience to increase the use of video conferencing throughout the organization, which in turn delivers benefits to the bottom line.

To achieve these ends, companies should ensure their chosen telepresence vendor can support standards-based integration and interoperability. They should also consider deploying services to ensure a high-quality experience for end users and IT managers alike. To succeed in the enterprise, telepresence must work every time, for everyone. Performance and management must be simple and seamless, with close attention paid to bandwidth needs and availability, as well as security and identity management.

Telepresence is intended to deliver a uniquely immersive environment, in which participants feel as though they are all in one room together rather than spread across the country, or the world. To achieve that level of excellence, a telepresence solution must comprise architectural and design details that enable immersion; top-quality audio and video technology; and one-touch operation that works every time. But for telepresence to take the place of high-level, strategic meetings among the most senior employees—saving them time and their companies money, and speeding the decision making process—it must

integrate with other video conferencing systems, so everyone can participate. The result can literally change the way people work, allowing companies to support a virtual workplace that leverages the best people and the most profitable customers, regardless of where they're located and without incurring additional costs.

KEY COMPONENTS FOR A SUCCESSFUL IMPLEMENTATION

Telepresence can deliver a remarkable communications and collaboration experience, but to do so, companies must plan for and invest in certain key components for success. Those include video and audio technology; room design and architecture; implementation benchmarking and services; integration and interoperability capabilities; and ongoing services. Taken as a whole, the telepresence market comprises several sectors, including implementation and testing, services and network management, and design.

As companies evaluate and deploy a telepresence solution, they should pay particular attention to interoperability. For maximum value, the telepresence technology must integrate with other video conferencing systems, inside and outside their own organization, and regardless of the vendor providing the given solution.

This is critical. Although many companies initially think of and use telepresence as a substitute for the corporate jet—that is, to enable meetings among far-flung high-level executives—the technology is even more valuable when it can also link to other video conferencing solutions, and thereby ensure all necessary participants can attend a given meeting. That enables executives who may not be near a telepresence room to still participate in virtual meetings. It also ensures they can interact with their employees face-to-face, even if those employees don't have access to telepresence systems. For an increasingly distributed workforce that's being asked to do more with less, such virtual meetings can mean the difference between success and failure.

Interoperable Technology Solution

For most organizations, telepresence is just a part of a larger visual communications strategy, one that includes a variety of endpoints—including PC-based video, room-based systems, executive desktops, and even integration with unified communications applications, such as Microsoft Office Communications Server or IBM Lotus Sametime. As a result, companies should deploy telepresence that will work as part of their existing visual communications applications, services and infrastructures. (Please see Figure 1: The Telepresence Infrastructure.)

To support a variety of endpoints, some vendors require that customers add gateways to their solution; of course, that will likely raise both the cost and the complexity of the deployment, and may impact the quality of the overall experience. More advanced, standards-based solutions allow companies to deploy a streamlined infrastructure while

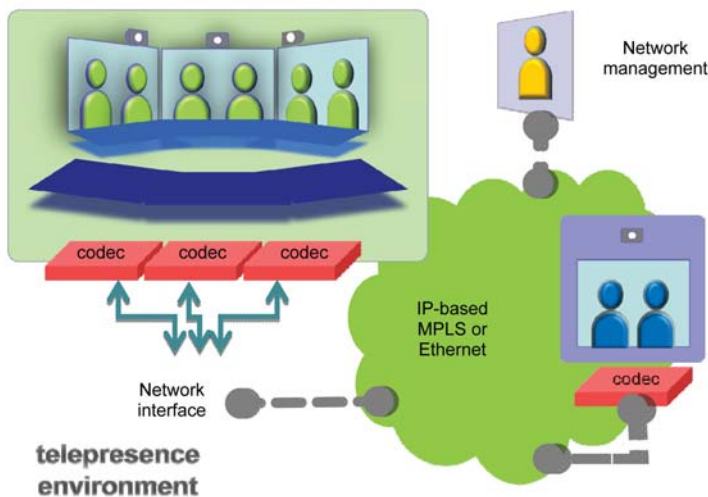
supporting a variety of technologies and quality levels.

Telepresence solutions should also support other content sharing, such as video streaming, PowerPoint presentations, and Web site navigation. Standards-based solutions that support H.239 content sharing capabilities will allow this, as do multipoint solutions.

A video conferencing platform that supports telepresence must include management and performance applications that ensure the system will work for every user, every time, and which make it easy for IT to administer the system.

Finally, while all forms of visual communications rely on the network, telepresence especially requires a network that can support high-end bandwidth requirements, as well as security and performance needs. Generally, telepresence demands a minimum bandwidth of 4 Mbps, but 14 Mbps or more is typically needed for large, theatre-like installations.

Figure 1 – The Telepresence Infrastructure



Source: Frost & Sullivan

Connecting Users Across the Organization

Most companies that deploy telepresence already have other video conferencing systems in place, be they high-definition or standard-definition, room-based or executive desktop solutions. These organizations will want to ensure their telepresence systems can integrate with their existing infrastructure, to derive maximum value from both new and old investments.

It's important to consider that while a telepresence system can offer significant benefits over other video conferencing solutions, not all employees (or other companies with which one may want to communicate) will have access to such technology. Yet those same employees may need to participate in video meetings that include participants on a telepresence system. Furthermore, executives who would normally have access to a telepresence room may not be near that room for a given meeting. An executive could be in Italy, for example, while the rest of his team—and the telepresence rooms—are in France and Los Angeles. All participants need to attend the meeting, including the executive in Italy—so he will need to connect into the session via room-based or even desktop video conference. The telepresence system must support that level of connectivity.

To deliver a level of interoperability and integration that will ensure all employees can participate in meetings, companies should deploy standards-compliant technology, including H.323, H.264, H.239 and SIP as appropriate. Planning for a telepresence implementation should also include any gateways necessary to allow the system to communicate with other video conferencing solutions. A multi-point control unit may be required to support meetings among multiple locations.

Finally, integrated solutions should ensure that each participant has the highest quality experience possible on his or her endpoint device, rather than delivering the lowest-common denominator quality to all videoconferencing sites. That will enable high-definition video conferencing for those participants who have it, regardless of what other systems are in the mix. So, for example, participants attending in a telepresence room will enjoy the fully immersive experience, even if other participants are dialing in on an executive desktop system or even a lower quality web camera.

Supporting Intercompany Communications

Most companies start using telepresence internally, with their own executive teams and employees. But it doesn't take long for people to want to extend the benefits of telepresence to the meetings they have with partners, suppliers and even customers. Not all telepresence solutions support such intercompany communications, however, and many have strict limitations with regards to the ability or ease with which they allow for meetings outside the firewall—even going so far as to require that users outsource their network. In such scenarios, both organizations must buy telepresence services from the same vendor and network provider in order to communicate.

At Frost & Sullivan we believe that because employees must be able to interact with people outside the organization, firewall traversal is necessary to ensure users can meet with suppliers, customers and each other whenever they need to, and regardless of what technology or service the outside participants are using. This should be possible over a mix of networks, while maintaining all necessary features and functionality and regardless of the

technology deployed at each meeting site. Since open communications inevitably come with a security risk, any telepresence implementation must also support corporate security policies and requirements.

Ease of Use

Although employees today expect all forms of communications to be relatively easy to use, this is especially true for telepresence. That requires all the “technology”—screens, cameras, microphones and of course the underlying network, gateways and MCUs—be virtually invisible to the end user. And that requires that the system be as easy to use as a TV remote (in fact, given the number of buttons on today’s TV remotes, maybe even easier).

Ease of use is partly the result of intuitive technology that is designed to work every time, as soon as a participant launches the meeting. But it’s also the result of well managed products and services that ensure meeting participants and the IT staff who support them get the kind of performance they expect from a high-end visual communications solution. The best telepresence solutions rely on a single application to manage all elements of the solution, rather than separate applications for each component.

Services are Key

Managed services are increasingly attractive to companies deploying new communications and collaboration technologies, but when it comes to telepresence, they are effectively required to support a successful implementation. This is especially true for global organizations, which rely on a vast web of differently arrayed networks and bandwidth capabilities.

Services, which may be provided by the equipment vendor or a chosen partner, should start with a pre-implementation evaluation of any rooms intended to support the telepresence system, with the goal of establishing suitability and mapping out all architectural and design elements.

During deployment, the service provider will assess and install all necessary equipment; once deployment is complete, providers monitor the network for maximum performance. Services vary from customer to customer and vendor to vendor, but a typical services agreement should include 24x7 telephone technical support, next-day on-site support, and software updates and upgrades. Agreements can include on-site parts replacement, scheduling and reservation capabilities, network set-up and ongoing management, call reporting and capacity planning, and any necessary maintenance.

Return on Investment

Generally speaking, the value of video conferencing can be measured in three areas:

- *Travel cost savings.* Cost savings deliver the clearest ROI for video conferencing and are typically measured as the money saved on the transportation, hotel, food and incidental costs associated with having employees attend in-person meetings. In tough economic times, they alone can be used to justify new technology deployments, especially as companies mandate less travel. Although a telepresence system may cost more than other video conferencing solutions, travel costs add up quickly; a strategically placed implementation can pay for itself in a year or less. (Telepresence rooms typically also achieve high utilization rates, because they're always-on and easy to use; this impacts positively on ROI, allowing payback to be achieved more quickly.)
- *Productivity benefits.* Although it can be difficult to measure the incremental productivity gains derived from certain forms of communications, replacing an in-person meeting with a video conference can save hours or even days in travel time. This is especially true for telepresence, which is often used most by high-level managers and executives for strategic meetings. Those participants have higher than normal salaries, which means their decisions are more critical, and their time is more valuable—the more of it they have in the office, the better it is for them, and the company.
- *Green gains.* Telepresence can play a significant role in helping companies reduce their carbon footprints. Not having to fly an executive team across the country, or the globe, can help shrink a company's carbon footprint. But companies should also look for telepresence technology that is itself green, just as they do with datacenters and other IT infrastructure. Some vendors are better than others at designing low-energy systems that will help companies cut their own emissions—and lower costs in the process.

Leveraging Value: A New Way of Working

Telepresence can deliver significant value to an organization, but companies must plan and track the technology to achieve the most benefit. Any telepresence deployment should start with a clear and hard-eyed look at the company's meeting behavior and future needs, including how many people—and from what areas of the organization—regularly attend in-person meetings; where those participants are located and how much travel they currently undertake; how many of them are based outside the company (and its corporate firewall); and whether meetings would benefit from a shorter time cycle, to speed decision making and/or business processes.

A telepresence implementation requires careful planning around facilities, network and infrastructure, as well as support for integration with existing and future video conferencing systems; interoperability with external solutions, to ensure partners and customers can attend telepresence meetings; security and performance management tools; and proper bandwidth and other support services.

But more important than the technical changes required by telepresence are the business ones it delivers. To begin with, of course, is the fact that employees at all levels of the organization can participate in meetings regardless

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of where they're located, without the expense and productivity drain of travel. Because telepresence delivers remarkable quality and prevents meeting fatigue, the technology can be relied upon even for extensive, strategic, and high-level meetings that simply could not be replaced by any other form of virtual communications.

And when telepresence can interoperate with other forms of video conferencing, those same executives can meet with each other regardless of where they are in relation to the telepresence room; and with lower-level employees without giving up the quality of an immersive virtual meeting experience. That enables more collaboration and support for bottom-up ideas, and it ensures that even in tough economic times, executives can motivate and lead their people.

Finally, with an integrated, standards-based solution, meetings that otherwise would have been conducted solely via teleconference can be enhanced and made significantly more productive by conducting them via telepresence.

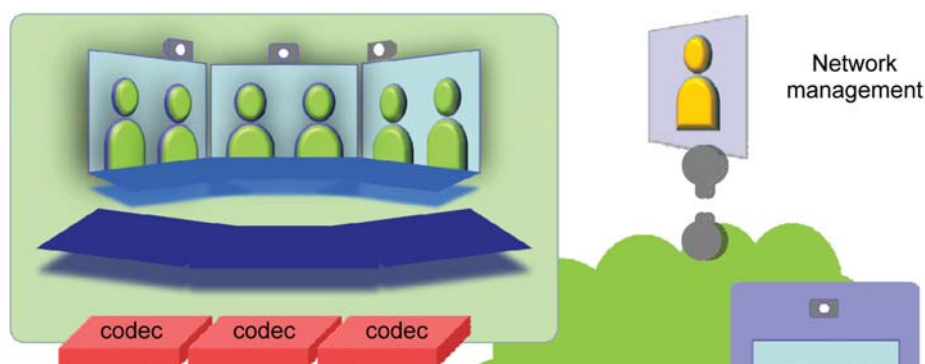
DEFINING TELEPRESENCE

Telepresence has clearly captured the video conferencing and collaboration market; every vendor in the space has grabbed hold of the term and made it their own. But true telepresence is in fact a distinct set of technologies, capabilities and experiences. Customers should know what they're buying before they open the checkbook. Ultimately, the proof of telepresence is in the experience.

Frost & Sullivan defines telepresence as a tightly integrated set of visual, audio and network technologies and services that together deliver an immersive, life-like communication experience. The goal is to reproduce the best characteristics of direct human interaction that result from a face-to-face meeting.

(Please see Figure 2: The Telepresence Market Overview.)

Figure 1 – The Telepresence Infrastructure



Source: Frost & Sullivan

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Questions to Ask Your Telepresence Vendor:

- Is TelePresence natively interoperable at the highest quality with systems from other vendors?
 - How can connection be made to other telepresence units at external organizations that do not share the same network?
 - How would an executive in a hotel room join a TelePresence call using desktop video, and what will the quality be like?
 - Can I share documents or AV resources like DVD-based videos with video units from other vendors?
 - How many management tools are required to manage the TelePresence solution?
-

On the technology side, a complete telepresence solution relies on careful architecture, design and deployment to create a lifelike encounter for meeting participants. The aim is to present life-size, high-definition images—characterized by smooth and realistic motion, accurate color replication, and an eye-to-eye perspective—and audio quality that sounds both natural and open, and which is accurately synchronized with images. Participants shouldn't be aware of the technology that enables such an immersive experience—they should simply be able to go about their business without worrying about how it's being supported. The overarching goal is to support continuous interaction—even over several hours—without inducing participation fatigue.

Meanwhile, the experience of arranging and conducting successful telepresence meetings creates for users a strong expectation that all such future encounters will begin on time and run without incident, and that they will help them achieve their business goals. To do that, telepresence must deliver a highly consistent, predictable and reliable collaboration experience. More often than not, that ongoing performance requires services to succeed.

Immersive Architecture and Design

Any telepresence solution requires that vendors and customers pay particular attention to the layout and design of the room in which the system will sit. The telepresence room lies at the center of the telepresence experience, and it plays a large role in making telepresence different from other forms of visual collaboration.

Before they deploy a telepresence system, companies should choose a room that meets the needs of all meeting participants and the requirements of the technology. A telepresence system may be set up in a dedicated space or can make use of a general-purpose meeting room, which can continue to be used for entirely live meetings as well.

The room must meet minimum size requirements (telepresence rooms typically support four to as many as 28 participants) and be available for any needed design changes, including electrical, heating and air conditioning, sound proofing and optimization, and lighting. Even the carpeting and wall colors may need to be changed to better simulate the required immersive environment. (Some telepresence solutions vendors will provide the necessary upgrades to the room acoustics, carpeting and wall coverings as part of their offering.)

High-Quality Technology and Experience

A telepresence solution is a collection of high-quality audio, video and network components, all of which are designed to work together for maximum effect.

- **Audio** The current “wideband” audio standard used by some video conferencing systems is 7 kilohertz (kHz). That’s roughly twice the frequency bandwidth of the typical telephone, yet it still excludes some of the lower and higher frequencies used in human voice communications. Telepresence solutions in contrast typically support bandwidths up to 22 kHz, which delivers a fuller range of voice frequencies and harmonics. As a result, participants are much better able to hear all of the spoken information.

A well-designed, multi-channel audio system also gives meeting participants a sense of where each speaker is, by digitally processing the audio signals, as well effectively positioning the necessary microphones and loudspeakers.

Taken together, the clear, precise audio and sound localization support the immersive experience and help participants work more effectively for longer periods. This is especially important in communications among people who don’t share the same native language (the greater clarity helps listeners understand accented voices); and the greater bandwidth delivers more information, meaning the human brain does not have to work quite so hard, and hence tire as easily.

- **Video** For obvious reasons, picture quality is a key component of any video communications system. A well-designed telepresence system can help create for the participants the illusion that they are all sitting in the same room, even when they may be miles, even continents, apart.

The key components of video quality are definition and the ability to convey motion. Definition is described as the number of vertical and horizontal pixels displayed on the screen. High definition (HD)—now the norm for telepresence systems—will support 720 or 1080 vertical pixels. To best process and convey any motion inherent in an image—including subtle visual cues such as eyebrow movement and head tilts—telepresence systems generally offer frame rates of 30 frames per second. By comparison, television frame rates are typically between 25 and 30 fps.

To help simulate a lifelike experience, telepresence designers pay close attention to camera and screen placement, perspective and eye-to-eye contact. To achieve these effects, telepresence solutions usually rely on three plasma, LCD or rear-projection screens of typically 42 inches or larger. Visual cues are a vital part of human to human communication, and higher definition and frame rates enhances the ability for telepresence to convey this valuable information among participants.

- **Network** Telepresence requires a highly reliable, secure and manageable network. Some companies can support the necessary infrastructure on their own, but many opt for a services agreement with a vendor that can provide all required components while meeting strict service level agreements, quality of service, and end-user needs. Network bandwidth requirements can range from 4 Mbps to 18 Mbps, depending on the quality of audio and video being used and number of codecs in the solution. Companies must decide whether they can accommodate this bandwidth requirement within their existing network capacity, or choose to acquire dedicated capacity for their telepresence solution.

Works Every Time

To be effective, a telepresence solution must work every time an employee wants to use it—simply, easily and without fail. While this is true for all video conferencing these days—no one is willing to wait for a system to work, let alone ask for help from tech support whenever they need to hold a meeting—this is expected even more so of telepresence, which users expect to find switched on and connected to the required remote locations as soon as they enter the room.

CONCLUSION

Telepresence has the ability to change the way companies do business. In these days of global business, with widely distributed workforces that must communicate and collaborate across geographies and time zones—all while cutting costs to the bone—virtual meetings that deliver an experience as good as those held in person can accelerate decision making and drive productivity. To enable such an experience, telepresence solutions must integrate and interoperate with other video conferencing and communications systems.

To ensure they get the most from their technology, companies embarking on a telepresence implementation should compare and contrast solutions from multiple vendors, and they should do so in a real-world context: Ask for access to a telepresence room for a strategic meeting or executive session, and see exactly how it works. Done right, the experience should change the way your business gets done.

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