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The Benefits of a Telepresence Platform

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November 2008

Study sponsored by:



Table of Contents

UNDERSTANDING TELEPRESENCE	1
TELEPRESENCE DEPLOYMENT OPTIONS	2
AN EXAMPLE OF A TELEPRESENCE PLATFORM SOLUTION	6
SUMMARY / CONCLUSION	7
ABOUT WAINHOUSE RESEARCH	8
ABOUT THE AUTHOR(S)	8
ABOUT LIFESIZE	8

List of Figures

Figure 1: Deployment Options - Comparison Chart.....	5
Figure 2: LifeSize Conference - Telepresence Platform Solution	6
Figure 3: LifeSize Conference - User Interface	7

Understanding Telepresence

Wainhouse Research (WR) defines telepresence as follows:

“Telepresence is an experience based on videoconferencing in which remote session participants appear to be located in the same room and sitting on the other side of the conference room table.

WR refers to the feeling that remote participants are in the same room as the “telepresence effect,” and systems able to provide this experience are said to be telepresence-ready or telepresence-capable. Telepresence capable systems must meet the following requirements:

- The system must provide life-size images of the face and upper body of the remote participants
- The system must maintain a position and proximity perspective that makes the remote participants appear to be sitting on the other side of a conference room table
- The system (and the implementation of the system) must not materially interfere with the telepresence effect

The feeling that remote participants are physically in the same room is called the “telepresence effect.”

Multi-Codec Telepresence Solutions

This paper focuses on a segment of the videoconferencing market that WR has dubbed “multi-codec systems.” Although available for more than 10 years, multi-codec systems have attracted significant enterprise interest in recent quarters thanks to a wave of new product offerings and aggressive market efforts by vendors including Cisco, HP, LifeSize, Polycom, and Tandberg.

Multi-codec systems typically include the following:

Video Sub-System – this includes the video cameras, displays, and all required video switching equipment. Typical multi-codec systems include 3 or more cameras and displays. To properly simulate an in-person experience, WR recommends that telepresence-capable system provide end-to-end video resolution of at least 1280 x 720 pixels (a.k.a. HD720p) with a frame rate of at least 24 frames per second.

Audio Sub-System – this includes the microphones, speakers, and all required audio processing / switching equipment. Some systems provide mono audio, while others provide stereo / multi-channel audio or even proximity-aware audio.¹ WR recommends that telepresence-capable systems provide end-to-end wide-band audio of at least 14 kbps.

Signal Processing / Transmission System – this includes the system codec and the network connections used to transmit the audio / video / data signals between the connected rooms.

¹ Proximity-aware audio systems provide a remote person’s audio from speakers located near (typically directly below or above) the display on which the person is shown. This adds to the reality of the session by making the audio sound as if it’s coming from the speaker himself.

Telepresence Operating System – this includes the user interface and the embedded control system / engine which simplifies and automates the performance of the system.

The combination of the above allows multi-codec systems to provide the realistic and immersive collaboration experience that users have long wanted (and expected) from their video conferencing investments.

Telepresence Deployment Options

Deployment Options

Enterprises seeking to deploy telepresence-capable multi-codec video systems have the following options:

Option 1 – Turnkey Solution

Turnkey telepresence offerings are standard products available via a single part number (rather than piece parts integrated by a channel partner / integrator) that include the system codecs, displays, audio and video sub-systems, and the telepresence operating system.

The fact that turnkey telepresence solutions are off-the-shelf products yields the following benefits and strengths:

- The system is pre-designed, pre-tested, and already debugged
- The vendor shoulders the burden of selecting, sourcing, and stocking all required components
- The system should be field-proven
- It should be possible to talk to reference clients and see system demos BEFORE purchasing
- Relatively short deployment lag time (time between system order and installation / hand-off)
- System should be available from a variety of sources / integrators / technology partners
- Systems should be relatively easy and cost-effective to support
- A turnkey service / support package, including both hardware and software maintenance, should be available from the integrator or vendor

The weaknesses of this type of solution include:

- High cost related to the vendor's need to purchase and then re-sell all required components (displays, furniture, switching equipment, etc.).
- Very limited flexibility in terms of form-factor, design elements (e.g. screen sizes, products included in the system), and functionality. Such systems tend to offer only a pre-defined set of options (e.g. adding a document camera, connecting to standards-based video systems, etc.).
- Depending upon the solution, a turnkey system installation may require the user to adhere to strict room requirements (dimensions, power, lighting, HVAC)

Option 2 – Fully Customized Solution

Enterprises with very specific requirements or preferences have the option of purchasing a fully customized solution from one of the thousands of audio-visual integration firms around the world, many of which also have significant expertise and experience with videoconferencing.

The fact that these solutions are custom-designed from the ground up, built, and integrated based on the end-users requirements and specifications yields the following benefits:

- Total flexibility in terms of ...
 - System form factor (e.g. number of screens, number of cameras, type of furniture, physical layout of the equipment / space)
 - Equipment selection (e.g. manufacturer, model number, capability, etc.)
 - Features and functionality

For example, a fully customized solution lets the end-user select:

- The type (LCD, plasma, rear or front projection, etc.), quantity, and size of the displays
- The type and quantity of videoconferencing codecs / encoders / decoders
- The type, quantity, and locations of the speakers and microphones
- The type, look and feel, and capability of the user interface (wired or wireless touch panel, web interface, hand-held IR or RF remote, etc.)
- The type, shape, and color of the room furniture

There are also a number of disadvantages and risks associated with the purchase of a customized telepresence-capable system including:

- The system must be designed from the ground up, resulting in ...
 - Higher cost
 - A longer development cycle
 - A more extensive debugging / punch-out period
- Limited expansion capability (additional systems will probably have to be purchased from the same integrator / reseller)
- High cost for system updates / future modifications
- Limited options for support / maintenance (most likely will need to be provided by the integrator / reseller that designed the system)
- Increased support costs (economies of scale cannot be achieved)
- Higher risk of ...
 - Field changes / design updates
 - Cost over-runs
 - Inconsistency between installed systems (cabling, configuration, etc.)
 - Long lag time between order, installation, and final hand-off
 - Reliability / performance issues during the first weeks / months of use
- End-user acts as the beta-tester / pilot customer for the solution

Perhaps the most significant weakness / area of risk for a fully customized solution is that the overall success of the project depends on the expertise and performance of the system integrator. In some cases this becomes an advantage as it allows the integrator to provide additional value / functionality.

Option 3 – Telepresence Platform Solution

Enterprises can enjoy many of the benefits of the prior two options while avoiding most of the weaknesses by deploying a telepresence platform solution. Such solutions are available from several videoconferencing / telepresence vendors including LifeSize (the sponsor of this document). Telepresence platform solutions include two parts;

- 1) the core system elements (provided as an off-the-shelf product from the vendor) including:
 - a. the video communications system including the system codecs / encoders / decoders
 - b. the system cameras / camera array
 - c. the system microphone(s) / audio system
 - d. the telepresence “operating system” (user interface, touch panel, hand-held remote, etc.)
 - e. detailed installation guidelines / instructions for the system integrator

- 2) integrator-provided items (which the end-user can specify / influence) including:
 - a. system displays
 - b. additional microphones and speakers as required
 - c. room-related enhancements (furniture, acoustic treatments, lighting accessories, etc.) as required

The power of the telepresence platform is that the package purchased from the vendor includes the most complex and critical parts of the telepresence system. The integrator then integrates other items around the system core based on the user’s specific requirements, preferences, and budgetary restraints.

Key benefits include:

- Compared to both the turnkey and fully customized option
 - o Decreased acquisition cost
- Compared to turnkey option:
 - o Increased flexibility (selection of components, screen sizes, etc.)
 - o Expanded support options (end-user is not forced to deal with one particular vendor if they want that particular solution)
- Compared to fully customized option:
 - o Ability to demo key areas (user interface, etc.) of the solution BEFORE purchasing
 - o Decreased dependency on the design skills of the integrator
 - o Decreased risk of cost over-runs
 - o Faster system deployment
 - o Increased consistency between systems (the UI will always be the same)
 - o Increased reliability
 - o Expanded purchasing options (the availability of the core elements as an off-the-shelf product increases the number of integrators capable of offering this type of solution)
 - o Decreased support costs (the core is field-tested and proven)

As with the fully customized solution, albeit it to a lesser degree, the success of a telepresence platform system deployment depends on the design skills and integration capabilities of the chosen integrator. In some cases this represents an advantage as it allows the integrator to provide additional value / functionality.

Multi-Codec System Deployment Options Summary

The chart below highlights the key differences between the three deployment options.

	Turnkey System	Custom System	Telepresence Platform
System is complete – out of the box	Yes	No – Integrator must provide <u>all</u> items	Partial – Integrator must provide some items
System is field proven	Yes - Complete System	Typically No (Custom Offering)	Yes –UI and system core / programming are proven
Flexibility of offering – Features	Low	High	Medium
Flexibility of offering – Product Selection	Low	High	Medium
Cost (estimated) – Including all equipment, installation, etc.	High (\$150k - \$350k+)	Medium to High (\$75 - \$200k+)	Low to Medium (\$50k - \$100k+)
Deployment time (typical) – From order to first use	Short to Moderate	Moderate to Long	Short to Moderate
Includes telepresence operating system / control system programming	Yes	No	Yes
Support for inter-company telepresence *	Yes	No (unless companies use the same basic system)	Yes
Obsolescence protection (Access to updates / system enhancements)	Strong (Vendor updates typically available)	Weak (Requires custom work from reseller)	Moderate (Vendor updates available for part of system)
Support availability	From Reseller backed by Vendor	From Reseller Only	From Reseller backed by Vendor

Figure 1: Deployment Options - Comparison Chart

* Assumes network connectivity between enterprises is in place.

An Example of a Telepresence Platform Solution

This section provides information about the LifeSize Conference telepresence platform solutions available from the sponsor of this white paper, LifeSize Communications.



Figure 2: LifeSize Conference - Telepresence Platform Solution

LifeSize's Conference and Conference 200 telepresence platform solutions include:

- three LifeSize HD videoconferencing systems / codecs
- four LifeSize HD cameras
- one LifeSize Phone (including a circular array of 16 omni-directional microphone elements)
- an optional AMX control system (including a wide-screen color touch panel) running LifeSize Conference control software

LifeSize Conference and Conference 200 provide:

- End-to-end HD video resolution
 - o Conference 200 – 1080p at 30fps or 720p at 60fps (and 720p at 30 fps for H.239 stream)
 - o Conference – 720p at 30 fps
- Support for HD at < 1 Mbps (Conference 200 provides 720p at 30 fps at 768 kbps per screen)
- Native interoperability with H.323 and SIP-based video systems
- Wide-band audio (Siren-14 / G.722.1C or MPEG AAC-LC)
- H.239 / data collaboration support
- External audio, video, and data inputs and outputs
- Support for both telepresence mode and standard videoconferencing mode (including both point to point and multipoint calls)

In addition to multi-display calls between LifeSize Conference systems, this solution also supports point-to-point and multipoint calls with standards-based video systems.

A vital part of this solution is the field-tested user interface and telepresence operating system (based on AMX hardware with LifeSize-provided programming) as it allows the system reseller / integrator to provide a consistent and reliable user experience across all system installations without having to provide custom control system programming.



Figure 3: LifeSize Conference - User Interface

LifeSize's Conference solutions are available via a network of certified telepresence partners for an MSRP starting at \$39,999 for LifeSize Conference and \$49,999 for LifeSize Conference 200.

The remaining items (video displays, data display(s), speakers, furniture, etc.) are provided by the system resellers and/or end-users and integrated by the reseller (based on equipment selection and installation guidelines provided by LifeSize). This is one of the primary benefits of the telepresence platform architecture; the ability to customize elements of the solution based on the customer's specific requirements and preferences.

LifeSize Conference is an excellent example of how to provide an exceptional user experience, while permitting some degree of customization and flexibility, at a reasonable price.

Summary / Conclusion

The multi-codec telepresence market is comprised of several types of offerings including turnkey solutions, fully custom solutions, and telepresence platform solutions. There are many differences between these types of solutions including cost, system flexibility, deployment time, associated risk, and system reliability.

A relatively new entrant to the marketplace, telepresence platform solutions combine elements of turnkey and custom solutions by leveraging a pre-configured and field-proven system (including the telepresence operating system and user interface) and allowing the system integrator and end-user to define the other elements in the system to meet special requirements and budgetary restrictions. The result is a compelling combination of low risk, high reliability, design flexibility, and cost-effectiveness.

Enterprises seeking to add telepresence to their arsenal of communication tools should consider the use of a telepresence platform solution.

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 as well as speaker presentations at industry group meetings. Wainhouse Research publishes Conferencing Markets & Strategies, a three-volume study that details the current market trends and major vendor strategies in the multimedia networking infrastructure, endpoints, and services markets, as well as a variety of segment reports, the free newsletter The Wainhouse Research Bulletin, and the PLATINUM (www.wrplatinum.com) content website.

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