

The Telepresence Payoff:

High Definition Video Elevates Business Performance in the Boardroom and Beyond

Telepresence, a vivid, true-to-life experience based on high definition (HD) video communications, promises to dramatically enhance business performance in the coming years. The quality, simplicity and manageability of this new medium promise far greater usage and value than traditional videoconferencing.

With its crystal clear imagery, high-fidelity sound and high reliability, telepresence takes video communication to a new level. It's not uncommon for decision-makers to be immediately captivated as they experience the striking realism of telepresence. It's a visceral, intuitive reaction. "I want that," they say.

But the key performance gains and business benefits associated with telepresence won't be limited to senior executives at the world's largest organizations. As telepresence systems increasingly go mainstream, they will be actively used by work teams throughout organizations and throughout the globe.

From high-end boardroom systems to the plug-and-play systems that can be implemented in any office or room, telepresence is about to become a far-reaching phenomenon.

In this paper, we will discuss how telepresence solutions drive usage and value, overcoming many of the key business performance challenges that organizations now face. We'll also show how telepresence is now breaking the cost barrier to wider implementation, leveraging inexpensive HD codecs and reduced bandwidth requirements. Telepresence, as we'll demonstrate here, is increasingly enabled by high definition communication systems. With HD technology, telepresence participants engage in a superior experience and enterprises realize superior business value.

The trend to prepare for is the coming proliferation of telepresence both within and beyond the boardrooms of the world's largest corporations. Now, any space can be a telepresence space – and any business person can participate in a telepresence experience. As decision-makers see the powerful business benefits and returns associated with telepresence, they will embrace these solutions and take them to all levels of the enterprise.

BARRIERS TO BUSINESS VALUE: TIME AND TRUST

In order to succeed in today's fast-paced, hyper-competitive markets, enterprises must become increasingly agile. They must make rapid and smart decisions. They must collaborate effectively across geographic boundaries.

But the barriers to meeting these objectives are steep. Airplane travel is costly, inefficient and slow. It fails to cross the barrier of time. Even when that barrier is crossed – with "real-time" communication such as phone and Instant Messaging, for instance – a barrier of trust remains. Considering the subtleties of human communication, such approaches that are not face to face often fail to establish the confidence necessary for effective decision-making and productive collaboration.

Traditional videoconferencing was designed to address these problems. However, it is generally underutilized and thus, underperforms.

Users complain about the relative low quality of audio and video. They tend to be particularly distracted by the graininess or jerkiness of the visual image. But there are other factors leading to user dissatisfaction including difficulties associated with using and managing these systems. Wainhouse Research finds that typical videoconferencing rooms are used a mere 10-15 hours per month.

With that in mind, some organizations have embraced high-end telepresence systems to address these problems. They've introduced them into their boardrooms with great success – reducing travel for top executives, while increasing their ability to communicate effectively with other top executives.

The trouble is that these premier systems have simply been too expensive to bring to a wider array of professionals. At hundreds of thousands of dollars per telepresence conference room, the sheer cost of these systems have prevented wider application. As a result, many technology decision-makers consider high definition telepresence a tool of top executive leaders – beyond the financial reach of managers, professionals and workgroups within the rest of the enterprise.

That is changing, however. Cost-effective telepresence solutions, powered by HD technology, are now available in the marketplace.



MARKET DRIVERS BEHIND TELEPRESENCE

There are several key market drivers behind the demand for today's telepresence solutions. Among them:

- **Time to market objectives demand better, faster decision-making.** As markets intensify and grow more competitive, enterprises have a shrinking window for bringing their products and services to market. In order to address the rising expectations of their customers, they must enhance their decision-making processes – both in terms of time and quality.
- **Global, distributed and virtualized organizations face heightened communication and collaboration challenges.** In an increasingly flat world, enterprises have shifted roles and responsibilities abroad as they seek ways to reduce costs and tap the talent necessary to address market demands. Indeed, organizations are challenged to facilitate the coordination of all teams and workgroups as they become more geographically distributed.
- **Skyrocketing travel costs have negative business implications.** As travel rules and regulations have multiplied, the costs of travel – both business and personal – have grown as well. Companies not only experience the direct costs associated with airline tickets, hotels, food and entertainment. They have to bear the opportunity costs of time spent in transit as well.
- **Macro-economic environmental drivers.** Many organizations across the globe are going to need to play a role in managing environmental impacts to run their business. As a result, video communication can play an important role in reducing unnecessary travel and change the paradigm of distributed communication that has an impact environmentally.

Forward-looking organizations increasingly have the opportunity to drive significant performance and operational gains through telepresence. But they also face significant threats if they fail to adopt solutions that address today's challenges around agility, speed and productivity.

EXPERIENCING TELEPRESENCE

Experience in the field now suggests that an immersive, high definition, easy to use and easy to manage approach is what business professionals are demanding. They want a vivid, life-like quality that videoconferencing has never delivered. This makes sense. According to Ray Birdwhistle's book *The Language of the Body*, "more than 65% of the social meaning of a typical two-person exchange is carried by nonverbal cues."

But business and IT decision-makers want a solution that addresses not only the needs of top corporate leaders, but the rest of the enterprise as well. They want high performance *and* cost-effectiveness. They want the new generation of *telepresence*.

We define telepresence here in terms of a simple value equation. **High performance telepresence = (quality x simplicity x management)/cost.** While there are minimum thresholds to be met in order to deliver a telepresence experience, we think that virtually any room can be a telepresence space and anyone can be a telepresence participant.

The core factor enabling the mainstreaming of telepresence is the introduction of cost-effective, HD technology. Traditional videoconferencing which is lower resolution than standard definition (SD) television or VCR quality even at high bandwidth, is distracting to and demanding on the participant. The image degrades significantly as it is enlarged to allow people to appear full-size as meeting participants. High definition video communication and modern compression tools, by contrast, enable the image to be scaled in high resolution on high definition displays with nearly 10 times the resolution and native 16:9 aspect ratio at relatively low bandwidth (1Mbps). This provides for up to 40% more viewing area and a concept of visual acuity where at a shorter distances, the human eye can no longer see degradation of the image.

"While television brings to mind passive entertainment and videoconferencing feels like passive communication, high definition telepresence encourages you to actively communicate and collaborate," says Paul DeFlorio, a telepresence specialist with NASA's Jet Propulsion Lab. *"Telepresence is about more deeply and successfully connecting with colleagues, customers and partners."*

The technology becomes far more transparent than conventional videoconferencing because it seems as if the participants – presented at actual size – are in the room or across the table. There is no need to pan cameras or concentrate on managing devices in order to communicate effectively. And while traditional videoconferencing offers a sub-standard communication experience, many of today's high-end systems lock users into proprietary standards with high equipment and communication costs.

New telepresence solutions must be standards-based, leverage HD tech-

WHY HIGH DEFINITION VIDEO COMMUNICATION NOW?

There are several technology drivers that are making high definition video communication widely available in the market. Among them:

- **High definition video.** High definition television is making standard definition TV obsolete. But HD technology also is eclipsing conventional videoconferencing. High definition offers nearly 10 times the resolution of previous video communication systems and a much larger 16:9 viewing area – fundamentally changing the remote video communications experience.
- **Broadband communication.** Broadband access is now pervasive and cost effective. While ISDN networks are still actively used, the continued migration to broadband IP networks is in full swing worldwide. As bandwidth costs rapidly decline, high definition video communication becomes increasingly accessible to the mainstream market.
- **Processing power.** As Moore's Law continues its relentless march, computing power doubles every 18 months. The performance of video communications technology advances, too. The price of high definition displays and video codecs continues to fall even as processing power increases.

Given these trends, organizations that invest in video communications technology that lacks high definition capabilities will soon be stuck with obsolete equipment.

nology for maximum video and audio quality, and reduce bandwidth costs. In the past, one could use significant bandwidth and still obtain only low resolution FCIF image or less than standard definition quality. The image resolution became particularly poor as it was presented on large displays. Alternatively, one could purchase a high end/broadcast style codec (or MPEG encoder/decoder) and pay for vast amounts of bandwidth. This approach proved extremely expensive. Now, high definition video is available with relatively low bandwidth requirements (1Mbps on average) and communication expenses.

According to the Wall Street Journal, *“A new generation of high-end video-conference systems is facilitating virtual meetings that users say are almost like being there – especially compared with conventional systems plagued by jerky video and speech that isn’t synchronized with lip movements.”*

As a result of the widening impact that such solutions will have in coming years, corporations, government entities, educational institutions and other organizations will derive immense benefit from a telepresence experience.

The key factor differentiating telepresence from traditional videoconferencing is the experience itself. The telepresence experience can be evaluated on four dimensions: quality; simplicity; manageability; and cost.

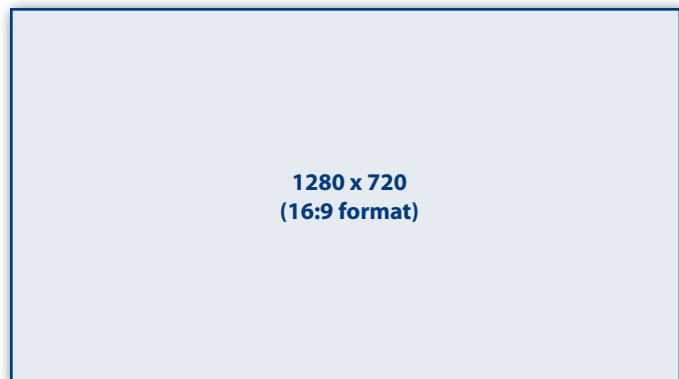
Telepresence Solution = $\frac{Q \times S \times M}{\text{Cost}}$

Quality. This dimension is related to the ability of the audio and video elements to create a feeling of “sensory immersion.” While there are different levels of immersion one might experience, the baseline aspects of a telepresence meeting include true-to-size participants and a three-dimensional perspective – matching the visual acuity of the human eye. It feels like you are across the table from the other party (or parties).

High definition audio and video are essential foundations of telepresence. They create a vivid, compelling and natural experience that cannot be provided through conventional videoconference technology based on FCIF (352 x 288) resolution video and often sub-optimal, low fidelity audio. New technologies enable 1280 x 720 resolution at 30 frames per second – 10 times the quality of FCIF and considerably better quality than 480p (704 x 480 resolution). They scale to provide vivid, life-like images on a large 16:9 format without becoming fuzzy or pixilated – taking advantage of today’s high definition display technologies. And it’s not only about the people in the picture but also the sharing of multimedia, content and presentations that are now crystal clear in high resolution.



Conventional
Videoconferencing
vs
High Definition
Videoconferencing



Such capabilities give telepresence a level of visual and acoustic realism that encourages active usage. The quality of experience also may be influenced by room customization or trained facilitators who greet you at the door. While high-end telepresence users might have many of these added services, other users may have simple rooms outfitted with plug-and-play, high definition technology. Indeed, any room can be a telepresence room. Senior executives can even put telepresence systems in their own offices, enabling them to participate in important meetings with people around the world and forego the opportunity costs associated with travel.

Simplicity. This dimension revolves around ease of use. Whereas previous generations of videoconferencing often have experienced technical glitches and hurdles, true telepresence solutions are expected to make it easy for the user to launch the system, communicate and interact, and share multi-media content.

While some users may operate “click-to-connect” technology and remote control devices (high-touch) at the baseline level and mid-level users may need to take a certain level of initiative in terms of the technology (low touch), others at higher levels of simplicity may operate no devices at all (no touch).

Ultimately, telepresence takes participants far deeper in terms of “technology transparency.” Its high ease of use is designed to make it virtually invisible – eliminating all technical barriers between the participants engaged in the meeting.

Manageability. This dimension revolves around the necessity of the participants and enterprise IT professionals to manage the technology and the event. There is a strong emphasis on reliability and assured uptime. The experience is seamless to the end user. At the highest levels of telepresence usage, companies have an out-sourced, managed service available 24x7 with service level agreements guaranteeing extremely high performance and virtually no downtime.

At lower levels of the telepresence continuum, internal IT professionals take responsibility for the systems. But they too should expect extremely high levels of technical performance. The pre-planning for an optimized network is a fundamental requirement at this level and, when designed correctly, can provide cost-effective but high quality and reliability for an always-on and available network.

Cost. The size of the investment necessary to outfit a room for the telepresence experience is a key consideration for most enterprises. While some top-level executives may not be price sensitive, it is a paramount issue.

The essential elements of a plug-and-play, high definition telepresence solution can be purchased for as low as \$10,000 per room. This is the reason that any space can now be a telepresence space. However, it will be necessary to make larger investments in these solutions as room customization and design, lighting, special display hardware, bandwidth, and other factors are considered. At the high end of the market, organizations are now investing a minimum of \$100,000 and as much as \$500,000 per room to address their whole array of specifications.

LEVELS OF TELEPRESENCE

As mentioned in the previous section, there are varying levels of telepresence. This is comparable to the Silver, Gold and Diamond packages associated with many clubs and consumer relationships. Cost will be influenced significantly depending on the “package” or level of telepresence that is required.

Telepresence depends on high definition audio and video as a foundational standard of quality. This is a minimal

threshold of telepresence that traditional videoconferencing doesn't reach. This is the point at which a participant feels like he or she is actually sharing the room with a geographically distant colleague. The experience is good enough that you forget you are not physically in the same place. Beyond the HD threshold, we see telepresence in terms of three levels of performance – with progressively higher capabilities tied to higher investments.

Level 1: With plug-and-play telepresence systems and displays large enough to present a true-to-size image, participants at this level are assured of high-quality, high definition video and sound that far surpass videoconferencing experiences of the past. High definition provides the stunning visual experience that captures non-verbal cues, synchronizes all sound and enables geographically dispersed participants to feel as though they are physically sharing a room.

While typically no significant room customization is necessary at this level, users would still engage in vivid, life-like, immersive meetings. However, they would likely find it necessary to operate remote devices and schedule their own meetings. That makes it a high-touch experience.

The individuals that typically would be addressed in this level are the wide-ranging knowledge professionals that drive the performance of today's corporations, governmental entities, educational institutions and non-profit organizations. They would actively use the technology to communicate and collaborate with their colleagues – whether they are located around the world, across the country or even on the other side of the corporate campus. Cost for a room at this level would typically run between \$10,000 and \$25,000 per room with a reliable 24/7 uptime network (\$) and 384K-1Mbps bandwidth.

Level 2: This second level of user typically would experience virtually the same immersive, high definition, audio-visual experience associated with the first level. One also should expect systems to be outfitted with camera and display capabilities that enable direct eye-contact or a reciprocal gaze.

The key differences would come in factors such as room design. They may have semi-custom conferencing rooms, outfitted with special lighting capabilities, multiple screens and other features. They probably would have other people to schedule their meetings and, when they attended them, would be required to operate a minimum of devices. Often in this scenario, a specially designed, kiosk touch-panel is available to make calls that is highly intuitive for users. This makes it a low touch experience.

The individuals that typically would fall into this level are senior managers and middle managers who hold responsibility for divisions, units and workgroups. Cost for a room at this level typically would run \$25,000-100,000 with a 24/7 managed network (\$\$) and 1Mbps bandwidth.

Level 3: At this highest level, we again find high definition standards of audio and visual quality as well as direct eye contact. But we also find an array of trained facilitators and support personnel who focus on every

| Telepresence Performance Matrix | | | | |
|--|---------------------------------------|-------------------|--|---------------------------------|
| | QUALITY | SIMPLICITY | MANAGEABILITY | COST |
| Level 3 | <i>High Definition, Fully Custom</i> | <i>No Touch</i> | <i>Outsourced, Guaranteed Performance</i> | <i>\$100,00 and up per room</i> |
| Level 2 | <i>High Definition, Semi Custom</i> | <i>Low Touch</i> | <i>Insourced or Outsourced, High Performance</i> | <i>\$25,000-100,00 per room</i> |
| Level 1 | <i>High Definition, Plug and Play</i> | <i>High Touch</i> | <i>Insourced, High Performance</i> | <i>\$10,000-25,000 per room</i> |

aspect of an executive's experience. Rooms tend to be fully customized. While that certainly includes luxurious conference tables and chairs, carefully designed lighting, and deluxe video monitors, it may also cover other aspects of room design such as plants and artwork.

At this level, one typically finds the senior-most executives in the world's largest corporations. There may not be a lot of people in this group, but their time is immensely valuable. Some organizations are willing to invest the \$100,000 and up or the investment necessary to customize these rooms. They also invest in a network with guaranteed 24/7 99.999% service levels (\$\$\$) and 1Mbps-2.5+Mbps bandwidth. The return on investment is calculated based upon private jet flight avoidance and the opportunity cost of time in transit.

It's important to recognize that the value to the organization that comes from these different approaches can vary widely. While the time of executives spent in the Level 3 boardroom may be extremely valuable (and cuts down on the need for use of the corporate jet), the lower price points associated with Level 1 and Level 2 telepresence make it possible to reach a great many more people. As telepresence becomes more widely used throughout organizations, the performance-driven benefits that organizations are now seeking can begin to multiply.

THE TELEPRESENCE PAYOFF: USAGE = VALUE

As mentioned previously in the paper, current levels of usage for video teleconferencing systems are quite low – averaging roughly 10-15 hours per month. However, Wainhouse Research points to indicators that advanced visual communications capabilities – such as high definition audio and video – can increase those usage levels by a multiple of five. That represents tremendous gains and lays the groundwork for closing the performance gap now associated with geographically distributed communication and collaboration.

To return to the elements of the performance gap discussed earlier, organizations can expect to realize several benefits as a result of this growing usage:

- **Enhanced Productivity.** Organizational and personal productivity are increased as enterprises realize they can do more with less or accomplish more with their existing resources. They can, for instance, schedule 10 customer meetings in the time that it might typically take them to engage in one meeting that requires a long plane trip. They can deliver projects and products at a faster rate. They can raise their revenue per employee dramatically by better leveraging employee time.
- **Reduced Costs.** Enterprises can lower their direct costs associated with travel by reducing the amount of time spent on planes, in taxis and in hotels. Opportunity costs also are reduced as time, energy and resources are invested in the activities that deliver the greatest returns.
- **Heightened Morale.** When talented, knowledge professionals are no longer required to spend their lives on airplanes, they can be expected to experience greater job satisfaction and employer loyalty. Considering the costs of employee turnover, this factor alone can lead to huge – and tangible – benefits.
- **Increased Agility.** Given the increased competitive demands of the marketplace, it's vital that organizations increase the speed and intelligence of their decisions, actions and responses. Telepresence facilitates agility by making it easier to collaborate with colleagues, partners and customers.
- **Strengthened Trust.** At the root of successful commerce is a foundation of trust. By enabling individuals to communicate and collaborate in a natural environment, you enable them to understand each other better, pick up on non-verbal cues and develop stronger bonds of trust.

The benefits listed here merely grow as they are experienced beyond the boardroom. While 10 people on airplanes might experience 1,000 hours of lost productivity, 1,000 people on airplanes can mean 100,000 hours of lost productivity. The costs add up for those who embrace the status quo. But so do the benefits for those who embrace telepresence.

As professionals at all levels of today's organizations engage in the vivid, true-to-life and trust-building interactions associated with this increasingly accessible solution, they will begin to reassess their reliance on costly, time-consuming activities – such as air travel – that conflict with the high-speed, high-performance demands of today's markets.

WHAT TO LOOK FOR IN A SOLUTION PROVIDER

As business and technical decision-makers explore their options for investing in telepresence solutions, there are several key success criteria they should consider when looking at potential solution providers.

- **Vendor Partnerships.** Central to the success of all telepresence implementations is high definition technology. Telepresence depends on minimal thresholds of quality and performance in this regard. With this in mind, it's important to ensure your solution provider has strong partnerships with leading vendors that can deliver core audio-visual technology that matches this expectation. This includes not only standards-based, video/audio codecs (compression/decompression) and management systems, but screen technology and displays, cameras and lighting experience as well.
- **On-Premise or Managed Service.** While some companies will choose to manage the telepresence solution on-premise and need an implementation specialist, others look to outsource the solution on a hosted basis to a managed services provider. While the total cost of ownership may often be lower for on-premise solutions, managed services enable you to focus on your core competencies and rely on the service provider for guaranteed performance levels.
- **Audio-Visual & Custom Design Capabilities.** At the lower levels of telepresence performance, it may not be critical to have a solution provider that specializes in audio-visual installations. The technology should be relatively plug-and-play, making it possible for general IT solution providers to deliver a rapid and successful implementation. On the other hand, high level expectations may lend themselves to bringing in audio-visual specialists and custom room integrators. They can address room design, acoustical and visual considerations, and provide a great deal of insight, skill and best practices to help ensure continuing success at a high level.
- **Cost and Business Case.** One of the key criteria in bringing telepresence technology to a wider group of work teams and decision makers is cost. While some boardrooms may be relatively price insensitive, cost is clearly a key issue when telepresence is considered in other parts of the organization. As one looks at solution providers and the services being sought, it's important to consider the size of the investment that one is prepared to make in relation to expected business value. It makes perfect sense to expect solution providers to provide a list of reference clients, and even assist in the creation of your business case.

In most cases, the decisions that are made with respect to these criteria will have key implications in terms of cost. Companies should consider where they intend to be in terms of the levels of telepresence performance when they weigh these criteria and considerations against their business needs and objectives.

ABOUT LIFESIZE

LifeSize delivers the core high definition video communications technology for next-generation telepresence and draws on a network of dedicated partners to provide compelling and cost-effective solutions. Founded in 2003 by industry veterans, LifeSize's award winning solutions combine exceptional quality, user simplicity and administrator manageability to make video communications a productive, true-to-life experience. LifeSize is headquartered in Austin, TX with subsidiaries in Europe and Asia Pacific, and a network of channel partners in more than 20 countries.

Free Strategic Assessment: Telepresence Solutions for Your Performance Challenges

To learn how telepresence solutions can address your performance objectives, contact one of our client specialists for a free strategic assessment and a live demonstration.

Call 1.877.LIFESIZE in North America, +44 1256 480591 in EMEA and +852 8239 3695 in APAC or visit the LifeSize Web site at www.lifesize.com/solutions/telepresence.

APPENDIX

Scenarios: Travel vs. Telepresence

Imagine you are the manager of an IT development group for a large, globally distributed corporation. You have team members in India and other members in the Czech Republic. You have been running yourself ragged flying all over the world to meet with them.

You get things done when you get there, but you don't seem to accomplish much while you are actually traveling. You find yourself standing in long lines to get through security and you are too uncomfortable to productively work on the plane – or even catch up on your lost sleep. You are thinking about quitting.

And then, the company begins introducing these vivid, high definition video systems that enable you to collaborate with your team without extensive travel. You can have even casual conversations as if they were taking place in the company hallway. You recognize expressions in meetings that would have eluded you on the phone. You are glad that you traveled to Bangalore and Prague previously because this enabled you to build trust with your colleagues. But now, your team accomplishes far more in far less time. You are strengthening and spreading the culture of the company.

As a result, you get projects completed and products to market far faster than you ever could before. You are about to be promoted to a senior position that you've long aspired to take. Quitting is now the farthest thing from your mind.

Or consider this scenario: You are a successful young financial executive for rapidly growing, mid-market company. However, travel time is severely limiting the number of deals you can analyze and complete. You cannot have the number of conversations you need to have in order to build new business partnerships and assess possible acquisitions.

So you approach your company and seek an alternative. Turns out, the company is aware of the impact that constant travel has had on profitability and performance in other parts of the company as well. It has been considering implementing a new telepresence solution with a goal of cutting travel expenses by 40% and increasing meeting time by 70%. It will be rolled out within the next eight weeks, bringing an advanced video collaboration solution to a wider array of knowledge professionals that was previously available only to the CEO, the CFO and the Board of Directors.

You realize that's good news not only for your company, but your family as well. You can meet your business objectives and even reach for more aggressive targets. But you can also attend the games and recitals and spend time with your family that previously would have been spent on airplanes and in distant hotels.

Or imagine that your largest customer has just received news that its latest shipment of raw materials is going to be delayed by weeks. It will slow down production, putting pressure on your ability to meet customer obligations in several countries. Your customer relationship is at risk. In order to set expectations and keep this relationship on track, a meeting of the minds is necessary.

A few executives, product team leads and manufacturing experts are needed to get a game-plan together and present it to the customer. Time is of the essence. The customer is in Asia and the business leads are in Chicago and London.

To get on an airplane will require 24-36 hours of lost time before the communication takes place, let alone the pre-planning for the customer meeting. The issue needs to be resolved before that time with alternatives and options.

The customer is invited to the Asia/PAC center just an hour trip from its headquarters and the team has been assembled and briefed prior to the telepresence meeting. At the end of the meeting, the situation has been addressed and a solution has been worked out for the interim two months. The customer is able to get directly back to the office to communicate the plan internally. And everyone is able to sleep that night.

Insert your telepresence case study here. Visit www.lifesize.com.

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