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1) The Truth Behind the Myths

So what is the truth behind the myths of Video Conferencing and what are the arguments and barriers?

The quality of video is not good enough for business purposes.

The majority of opinion about Video Conferencing is based on old experience. Those who tried Video Conferencing a number of years ago and found it to be of poor quality still hold that opinion today, even though the technology has improved considerably over the last few years.

I've used a web cam at home so I know all about Video Conferencing.

Acceptance is also hampered by confusion between proper video tools and hobbyist toys on the Internet; the quality and user experience between these is vast. Many have seen Video Conferencing on the Internet and have been unimpressed by the quality. This is like saying, "I don't go to the cinema - I've seen one in my friend's house" because professional Video Conferencing equipment is just about as far away from Web-Conferencing as the cinema is from the 42 inch flat screen TV.

It's nothing like as good as meeting face to face.

Technology is constantly changing and improving. For the first time ever, Video Conferencing has overtaken terrestrial television. We now have High Definition Video Conferencing, where most people don't have High Definition televisions at home yet. Video Conferencing now gives the most life-like Conferencing experience possible, approaching the same value as face-to-face meetings.

Video Conferencing is a nice have; we just don't have the budget.

It is commonly believed that Video Conferencing is expensive. But expensive compared to what? A photocopier? A Car? A few international flights? A Video Conferencing system can cost anything from £2,000 at entry level to £50,000 for an integrated solution. It is better to ask whether it is cost effective. Many companies are finding that their investment in Video Conferencing is paying for itself in less than 6 months if used appropriately and are seeing considerable savings on travel costs.

It's going to mean a lot of investment in the network and I don't have the bandwidth.

Many people still believe that Video Conferencing needs lots of expensive bandwidth. Over the years Video Conferencing technology has improved dramatically to send better image quality through less bandwidth. Networking technology has also developed to provide wider and wider oceans of bandwidth available at ever lowering prices. A good quality Video Conferencing system will operate comfortably at 384k, with HD needing around 1Meg, which is very much less than the bandwidth most people are able to get as ADSL in their homes. ADSL bandwidth of 2Meg is commonplace; many have 8Meg and all of this for very little money. Dedicated corporate bandwidth is available in abundance and no longer is the size of your pipe an inhibitor.



I like to travel, as there is no substitute for a personal meeting.

You like to travel but does your Finance Director like paying for it? Video Conferencing can't replace all of your meetings but it can allow you to meet more often. It is an alternative way of getting in front of your colleagues and associates - we use the telephone, and video increases the richness massively. Maybe we can get by on video for 3 meetings out of 4 - the face-to-face then becomes more meaningful.



Barriers may therefore just be misunderstanding of Video Conferencing? The benefits are many...**Cost Cutting**

While meeting on Video you are not spending so much money on travel, accommodation and entertainment costs. Your employees have more productive time so can do more business. Key people and key information become more accessible, enabling best use of resources.

Cut Travel Time

Employees who travel a lot suffer a lot. With Video Conferencing your people will be less stressed, spend more time contributing to the success of the business and less time twiddling their thumbs in airports, train stations and traffic jams. From their perspective the work/life balance is more in equilibrium.

Reduce Carbon Footprint

With phrases such as climate change, global warming and carbon footprint becoming hot topics in the business world, many companies are developing or re-assessing environmental policies to improve their social responsibility. Looking at travel reduction is a vital part of this. Video Conferencing uses little energy: no petrol, diesel or aviation fuel, only a few units of electricity.

Collaboration

Your people can meet more often and share knowledge easily, improving internal communications and facilitating collaborative working environments. A definite plus when the trend of flexible working and home workers is on the increase.

Competitive Edge

The strategic benefits of Video Conferencing can substantially increase your competitive advantage. No matter what business you are in the success of your business is driven largely by the quality and speed of your decision-making. With faster decision-making and greater consensus, new products can be brought to market quicker. In the event of a crisis, Executives can meet at short notice wherever they are located in the world for faster and more effective crisis management.

Face to Face

Of course, there is no substitute for a face to face meeting but it is not always possible and can also be expensive. Video Conference facilities add an alternative way of getting in front of your colleagues, associates and customers. Video increases the richness massively far and above that of just using the telephone. The in person meetings then become more powerful.

"The benefits are so compelling that when companies see the technology effectively demonstrated, the question is no longer should we opt for Video Conferencing but when."



2) The basics

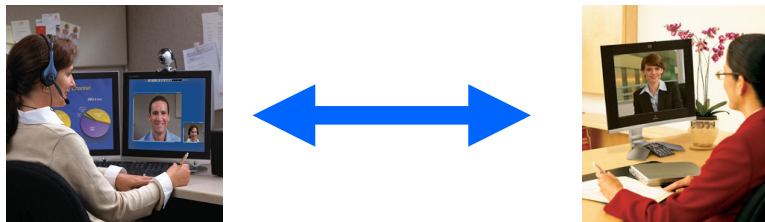
a) What is Video Conferencing?

Video Conferencing is a real-time connection between people in disparate locations for the purpose of communication, usually involving audio and often text as well as video. Video Conferencing in its simplest form transmits static images and text between two locations. Sophisticated video systems today can transmit full-motion video images and high-quality audio between multiple locations.

Video Conference calls can take place in an ad hoc manner (i.e. your organisation owns, rents or leases all of the necessary equipment and infrastructure to make video calls as and when required) or video meetings can be scheduled with a service provider (you book and utilise the infrastructure provided by a host to facilitate your call).

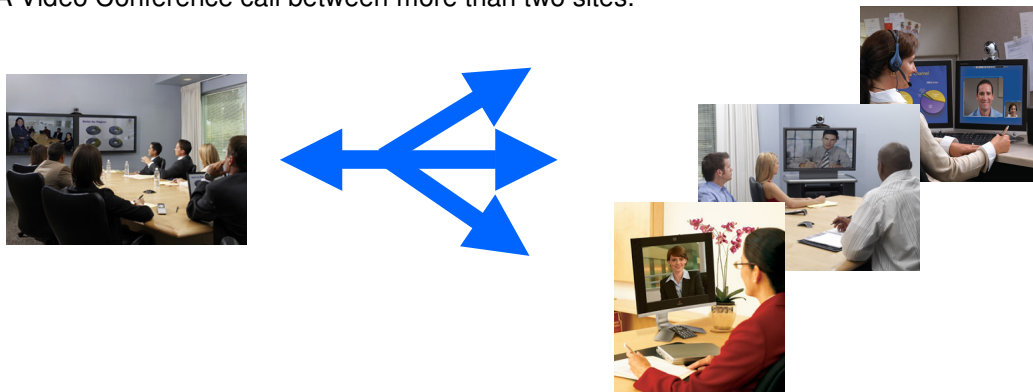
b) What is a 'point to point' call?

A Video Conference call between two locations.



c) What is a 'multipoint' call?

A Video Conference call between more than two sites.



Many Video Conferencing systems are available with embedded multipoint functionality. Video Conferencing bridges (MCU's) are more suited to organisations that have the need to make numerous and frequent multipoint calls. Multipoint calls can also be hosted by a service provider, allowing you to utilise their Video Conferencing Bridge.



d) What components are required for a video meeting?

Each site participating in the Video Conference will require, as a minimum, a camera, a codec, a microphone, a speaker, a monitor and an IP or ISDN connection.



The camera and microphone capture the image and sound, the codec compresses the video and audio into a digital signal, encodes it and sends it out over the IP network or ISDN line. The codec at the other end decodes the signal and distributes the video and audio to the monitor and speaker.



3) The Equipment

a) The different types of system...

One size doesn't fit all!

There are different categories of Video Conferencing systems available, from those designed for one to one Video Conference calls right through to sophisticated systems that can be integrated into large boardrooms. AuDeo will work with you to advise on the solution that best suits your requirements.



Desktop - webcam, software and speaker/microphone solutions to operate on your pc. Suitable for 1 person.



Executive Desktop - stand alone flat panel LCD with integrated video conferencing that also doubles up as your PC screen. Suitable for 1-2 people.



Small Room System - Video Conferencing system (screen, camera, Video Conference codec, speakers and microphone) that can be wall mounted or placed on a cart that rolls from room to room. Suitable for groups of 3-10 people.



Large Room System - Video Conferencing system (screen, camera, Video Conference codec, speakers and microphone) integrated into your room with added extras, such as lighting and electrical items (projectors, projector screens, DVD players, document cameras, etc).



Fully Integrated System - Video Conferencing solution that is fully integrated into your room, combining technology with room design to create the perfect environment. Suitable for large meeting rooms and boardrooms.





Telepresence – Telepresence systems are fully integrated, all-inclusive, freestanding, modular environments available in different configurations to accommodate your specific needs. The objective of a Telepresence system is that all participants of the Video Conference call feel that they are sharing the same table in the same room.

b) Compliance

All manufacturers systems agree/comply to common industry standards. The two basic standards are IP and ISDN. Most of the Video Conferencing systems available today are IP with optional functionality for ISDN.

c) High Definition

In December 2005 LifeSize shipped their first high definition Video Conferencing system, Tandberg announced that its MXP product range was High Definition-ready in July 2006 and Polycom followed later in the year with their launch of the HDX series.

High Definition is the newest set of standards for high quality Video Conferencing; picture resolutions of 720p and 1080i/1080p with a refresh rate of 24, 25, 30, 50, 60 frames per second and a resolution image of 1280x720 pixels or 1920x1080 pixels. The higher number of pixels translates into sharper and clearer pictures. The higher refresh rate results in less flickering to the human eye. High Definition uses the progressive scan format rather than interlacing, treating the entire video image as one frame and does not suffer from jagged edges in the picture.

Until recently price has been an inhibitor to the adoption of high definition Video Conferencing systems. High Definition is now widely available and commonplace in many homes.

So what does all this mean?

Well, better pictures, sharper images, smoother motion, greater detail and massively improved audio. All of this translates into a more **REAL** experience for meetings.

- Vibrant & realistic colours
- Approaching face-to-face value
- Sharper & smoother movements
- Greatest visual, audio & content detail



Polycom HDX9000 series



Tandberg Edge Series



LifeSize Room



These are some of the questions that AuDeo will ask you to ask yourselves...

How will we use Video Conferencing?

For board meetings, for sales meetings, for supplier meetings, for client meetings, for engineering/technical meetings.

Who will we need to call?

Other sites, internal communication, external home workers, clients or partners outside of our organisation.

How many people/sites will participate in our meeting(s)?

One or many.

Will we need to share information?

On PowerPoint presentations, documents or multimedia?

How do we plan to connect our Video Conference call?

Via IP on our network, over the Internet or via ISDN.

Will our present infrastructure meet our Video Conferencing needs?



4) Connectivity

a) How to connect your Video Conference call

Choosing the type of network you run your Video Conference calls over is an important decision, as it plays a key role in the overall reliability and quality of your solution.

When you make a Video Conference call, the call is broken up into video and audio packets, which are sent over your network in real time, reassembled and delivered the other end.

Initially, you may simply want to start working from home and have some form of visual link to the office and participate in occasional meetings from the comfort of your home. To do this you will need either ISDN lines installed or a broadband Internet connection. So, there are two general types of network that you can choose: ISDN or IP (broadband).

b) ISDN

ISDN is very similar to your telephone line. It is a circuit-switched telephone network system, which allows digital transmission of voice, video and data over ordinary telephone copper wires.

ISDN can be expensive, as its cost is based on duration and distance of calls as well as rental charges. You pay a fixed fee per month for each ISDN line and a per minute call charge (a typical Video Conferencing installation would require 3 ISDN lines).

The advantage of ISDN is that you generally get a reliable call connection for the duration of your call, but you pay a premium for this.

c) IP

All Video Conferencing systems purchased today are IP enabled with ISDN as a separate option.

Around £20 per month buys a consumer grade broadband connection. More money gives you higher bandwidth, reduced contention (sharing with other users), possibly symmetric data flow to and from the Internet, which will allow you to send better quality video as well as receive it.

If your corporate LAN/WAN can support the bandwidth and quality of service required for Video Conferencing, then you can benefit from low or non-existent usage fees (no per minute call costs as with ISDN). If the infrastructure already exists, then why not use it, you already pay for it so there's no additional cost involved. It may also be worth considering that it could cost you less to improve your network to handle Video Conferencing than to spend out on ISDN lines.

The public Internet is a less reliable Video Conferencing connection; you cannot guarantee how your call is routed or how much bandwidth is allocated for that call. There is no guarantee that your call will be successful or of high quality. Again your calls are free but subject to your monthly rental charges.



d) Call Speeds / Bandwidth

Bandwidth is the amount of data that can be transmitted in a fixed amount of time, usually measured in thousands of bits per second (kbps) or millions of bits per second (Mbps).

Price was once an inhibitor to the availability of bandwidth, but now lease lines in the home and dedicated corporate bandwidth are widely available. In the world of bandwidth you really do get what you pay for, you should choose your supplier carefully and consider whether it is worth paying more for quality of service. It can mean the difference between successful Video Conferencing or not.

All Video Conferencing systems will allow you to select call speed/quality in the menu.

You can make a good quality Video Conference call comfortably at 384k.

A high definition call needs around 1mbps, but High Definition Video Conferencing systems provide dramatically better resolution and motion handling at all bandwidths from 384k to over 1mbps.

These are some of the questions that AuDeo will ask you to ask yourselves...

Who will we be calling and what connection do they use?

Internal employees with access to our IP network. External customers, suppliers, partners or home workers using IP. External customers, suppliers, partners or home workers using ISDN.

How widely available is the desired network?

Check which networks are available in our area and which companies are able to supply them.

What are the costs associated with the network?

Costs vary depending on the choice of network and supplier. Consider ISDN call charges, existing network architecture and implementation costs of an IP network.

How reliable is the network?

The public Internet is not as reliable as private IP networks.

How much bandwidth will we require?

Will our firewall cause us any challenges?

Corporate security is often a challenge. We want to stay secure but we also want to be open the world & any incoming Video Conferencing traffic.



5) Planning your room

a) The things to consider...

In an ideal world the perfect environment for a Video Conference call is a dedicated room that has been built for the specific purpose of Video Conferencing. A virtual presence or Telepresence room, which has no windows and all the necessary equipment in the right place to optimise sound, image and lighting.

We know that in reality this is not always possible. AuDeo are on hand to take you step by step through the process of planning your room, from positioning the screen and camera through to the room acoustics, lighting, décor and furniture. Enabling you to get the best possible experience from Video Conferencing.

"A room that works well for ordinary meetings usually works just as well for videoconferences".

Have a go at planning your own room with our online room planner:

www.audeo.co.uk/what_we_do/room_planner.html

b) Sound is just as important as the picture!

Your system could be a Video Conferencing system with attached microphones/speakers, speakerphones for ordinary point-to-point and multipoint telephone calls or microphone/speaker arrays controlled by sophisticated hardware for echo cancellation, balancing, noise reduction, etc. Whatever your system, the importance of audio cannot be overstated. Without audio there is no conference!

The more microphones, the better! For perfect audio pick up, everyone would have a microphone in front of them. Again, we know that this is not always possible and we are there to advise you of the best set up for your particular room.

c) Room acoustics

In most rooms, the existing acoustics are fine for Video Conferencing. Your goal should be to create an acoustically "dead" room. Sound should not easily reflect or bounce around the room causing distortion and inconsistent audio levels. A perfect illustration of this effect - you wouldn't want to make a phone call in the bathroom!

You can always add things to the room to absorb the annoying sound reverberation. For example, if your room has large windows, install curtains, drapes or blinds. Consider installing a carpet and adding acoustic ceiling tiles, as tile floors and ceilings of hard materials can also cause sound reverberation. When choosing artwork and furniture for your room, avoid large glass framed artwork and hard, shiny surfaces.

You can use items like automatic gain controllers (AGCs), limiters, filters, and feedback eliminators to resolve audio problems. These are worth considering for rooms with non-optimal layouts, glass walls, and high background noise and also for large rooms.



d) Lighting

First, some simple rules:

- Cameras need LOTS of light, especially High Definition ones!
- More light equals more depth of field (amount in focus)
- 70 foot candles measured at the subject is ideal
- Should be indirect, ideally diffused
- Cameras don't handle glare, so avoid it where possible
- Aim for even light levels
- Aim for a single light temperature*

*Light temperature refers in this case to incandescent light or daylight. Incandescent light has a temperature of 3200K, which is ideal, however if windows are letting in daylight, then it is often easier to change all the room lights to 5600K to avoid blue or orange tints caused by the inability of the camera to set a white balance because of two temperatures.

Vertical blinds are preferred to horizontal blinds because the horizontal lines corrupt the scanning nature of camera technology whereas vertical lines aid focussing.

It is important to help cameras 'separate' background from people; this is often achieved by simply painting the background blue! Why blue? Because the lack of blue pigment in human skin helps cameras achieve separation without the need, or at least minimising the need, to use backwash lighting although this is still helpful if available.

Video Conferencing from a meeting room involves a degree of compromise; cost of broadcast quality cameras is prohibitive, cost and appearance of 'professional lights' not to mention the heat. Position of camera and size of display are all factors in the experience.

It is important to understand and agree the level of compromise that you are willing to accept and to make cost effective improvements where possible to get the most from your Video Conferencing investment.

e) Décor

The best décor for your Video Conferencing room is plain and simple. Try to keep the area in the camera's field of view as uncluttered as possible. This keeps the focus of your Video Conference on your participants.

The best wall colour is a neutral non-white colour, such as light grey, light blue or beige.

Avoid distracting objects such as mirrors, artwork or plants.

f) Furniture

Most rooms have rectangular or circular tables, and these are fine for Video Conferencing. If you have a choice, select a table that can show all of your meeting participants facing the camera.

For smaller rooms a trapezoid-shaped table works well.

For large conference rooms, you can arrange three rectangular tables to form a U shape.



These are some of the questions that AuDeo will ask you to ask yourselves...

Which room will we use?

Office, meeting room, conference room, boardroom, classroom, lecture hall or auditorium?

Can the room comfortably fit all of the people that we plan to have in our Video Conferences?

Is the room secluded from sources of annoying external noise, such as climate control systems, common areas like copier rooms, storage rooms, cafeteria areas and ringing telephones?

What connections do we already have / will we need?

A network service connection.

A power connection for the Video Conferencing system and any other additional equipment you plan to use in the room.



6) Some important questions to get you started

What is driving us to look at Video Conferencing?

Travel and Hotel costs Environmental Costs

What type of meetings could be replaced with Video Conferencing?

Board meetings Sales meetings
 Supplier meetings Client meetings
 Engineering/technical meetings HR, Training & other internal

Who will we need to call?

Other departments Other sites
 External home workers Clients or partners outside
 Worldwide our organisation

How many people/sites will participate in our meeting(s)?

One person to one person Multiple sites
 One site to one site

Will we need to share information?

PowerPoint presentations Multimedia
 Documents

How do we plan to connect our Video Conference call?

Via IP Our network
 Via ISDN Mixture

Will our present infrastructure meet our Video Conferencing needs?

How much bandwidth do we currently have freely available? _____

Is High Definition important to our organisation? Yes No

Are we talking functional or state of the art wow factor? Functional Wow factor

Is there existing kit on site, which we would like to re-use? Yes No

Realistically when do we want this to happen? _____

Can we afford not to put aside budget, and how much? _____

Or would we prefer to rent / pay over time? _____

What do we need from AuDeo in order to progress?

Scoping Meeting Demo
 Consultancy Case Studies
 Reference Sites Manufacturer Overview

7) About AuDeo Systems Ltd

Who is AuDeo?

AuDeo is a specialist integrator of high quality Video Conferencing and AV solutions into boardrooms, meeting rooms and conferencing rooms.

We believe in working in partnership with you to understand and provide a solution that meets your requirements.

We are able to assist with every aspect of your project, from room design to complete installation & deployment including after sales services such as full support & maintenance contracts and training.

We have strong vendor relationships with Polycom, Tandberg, LifeSize and many other top vendors in conferencing & associated technologies, ensuring that we can provide the right system for you.

"Our aim is to be your trusted advisor, working with you from day one to guide you through the process of choosing the right solution to suit your individual needs for today and the future"

Sarah Leeke, Marketing Manager of AuDeo Systems Ltd.

AuDeo's Clients...

Our clients stretch across a wide spectrum of size and sector.



Get in touch with us to find out how Video Conferencing can help your business and how AuDeo can help you to implement Video Conferencing.

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