The Videoconferencing Guide

All you need to know about videoconferencing
Videoconferencing is changing the way companies do business. It facilitates a face-to-face meeting environment across borders, clearing the way for efficient communication and collaborative decision-making both within and between organizations. It is an effective form of communication with distinct benefits. Today, more than ever, it is proving to be an extremely powerful business tool, transforming day-to-day business operations by helping to increase effectiveness, maximize resources and optimize productivity.

Some of the distinct benefits of videoconferencing:
- it lets you be two places at the same time
- you can have more frequent contact with colleagues, partners, suppliers and customers without having to leave the office
- it allows for ad hoc meetings letting you discuss urgent matters and take immediate decisions
- life like audio and video let you act as you would in a physical meeting
- by letting you save time, resources and money, it improves the effectiveness of your working day and your quality of life

There are five essential components that comprise a videoconferencing system: a camera, microphone, monitor, speaker and codec. The camera and microphone capture the image and sound at one location. The codec converts the video and audio into a digital signal and compresses it before sending it out over the network. At the other end, the codec decompresses the signal and feeds the picture to a monitor and the sound to a loud speaker. This may sound complicated but the user sees none of this. All the user has to do is dial the number and press "Connect".

In the following pages you will learn more about the basics of videoconferencing, and about the different videoconferencing solutions offered by TANDBERG. We offer guidelines for selecting a system, designing a conferencing room, choosing a network, as well as tips for running a powerful meeting and creating effective presentations. For readers who are new to videoconferencing, this will provide a valuable introduction. For those who are already using videoconferencing, this booklet will be a useful reference tool.
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Videoconferencing Brings Benefits to Your Business

With the stringent demands for effective use of time and resources that are prevalent in today’s society, videoconferencing is the ideal tool for helping businesses address these challenges. There are many reasons why companies are installing videoconferencing on an increasing basis:

- The majority of systems installed can communicate using standards, ensuring interoperability
- Worldwide availability of ISDN makes simple the installation and use of the systems
- The rapid development and increasing availability of IP networks and infrastructure is encouraging even further the use of videoconferencing
- Network installation and usage charges are now relatively inexpensive
- Videoconferencing systems have become less expensive and rapid return on investment is well documented
- The reliability of the systems and networks has increased considerably
- The quality of video and audio makes using videoconferencing as realistic as being there in person
- Making a call is as easy as dialing the number and pressing "Connect"
- As the installed base increases, companies are using videoconferencing to talk to their partners, subsidiaries and even their competitors

Videoconferencing delivers immediate benefits. It will enable your company to increase top-line performance and profitability in several ways:

- Improve productivity
- Faster time to market and response to market change
- More efficient allocation of resources
- Acceleration of decision-making process and the ability to make more informed decisions by involving experts when required
- Reduce travel time, stress and expenses

A video call allows you to be in several locations at once. There is increased participation in crucial meetings at all levels of the organization, as all company locations can meet together at one time. This also enables access to executives or specialists not otherwise reachable. Real-time document and application sharing accelerates the decision making process by requiring fewer revision cycles on a project. Consider trying to describe the artwork for an ad campaign over the telephone, or reading a faxed blueprint. The effective use of various peripherals, such as a document camera, PC, or VCR, enables you to greatly enhance your videoconferencing application.
Videoconferencing has been in existence since the mid-1970s. The technology and the industry have changed dramatically since that time. For many years the situation was such that it was necessary to operate on high bandwidth at high operating expenses, there were no industry standards and units were so expensive that only large companies and government agencies could afford them. The situation today is quite different with the global availability of systems and networks at affordable prices, guaranteed interoperability based on standards, excellent picture and audio quality, as well as software upgradeable systems that protect the technology investment and ensure low maintenance costs. Systems today are also easy to use with a wide range of features that may include such functionality as embedded multisite with audio conferencing, the possibility of easily connecting a PC and interactive presentation possibilities such as DuoVideo™. The use of new network types is also increasing, with the ability to run at high bandwidth over IP.

There are several major players in the industry, of which TANDBERG is one of the top three. As videoconferencing is no longer only for large groups and large companies, one of the factors that now characterizes the industry is a range of products available to suit all types of need and budget. There are two main philosophies in the industry, the first of which can be called the "cheap and cheerful" option where you buy a "one size fits all" product, regardless of the type of room and number of participants who will be using the system. The other option is one where TANDBERG is at the forefront – offering a full service, value add solution with a complete portfolio of products from small group set-top boxes to large group boardroom systems.

The products on offer can be spilt into PC based and appliance based systems. The main challenge with PC based systems is the unreliability of the PC platform. Within the appliance category in which TANDBERG operates, there are integrated systems, set-top boxes that can be placed on top of any TV screen and codecs that can be integrated into other solutions and multimedia rooms.

With the high standard of videoconferencing now available, the industry is continuing to grow at a rate of 40% a year as an ever-increasing amount of users discover the benefits that videoconferencing can bring to their businesses.
Since the mid-1990s, the International Telecommunications Union (ITU) has defined worldwide standards for videoconferencing. These standards have been written to guarantee compatibility between different manufacturers’ systems. When choosing your system, it is very important to ensure that it complies with these standards, and does not offer only a proprietary method of communication. Proprietary systems will only connect with another of the same design. Investing in videoconferencing equipment that meets worldwide standards will ensure that:

- Your systems are equipped with the latest technology
- Your investment will not become obsolete within a short period of time
- Your system provides improved picture quality at all data transmission rates
- Your system will communicate freely with all other standards based systems

The following example demonstrates the importance of standards. Originally, fax machines were not standardized. Most manufacturers had different communication protocols causing miscommunication between fax transmissions. However, later fax machines complied with the accepted worldwide standard, allowing faxes to be sent globally. Interoperability is now transparent to the user, who need not be concerned with the make or model of the fax machine on the far end. All TANDBERG videoconferencing solutions are ITU standards compliant, ensuring connectivity to all other standards based equipment, whether it be a TANDBERG system or that of another standards based manufacturer.

Some videoconferencing systems can be compliant with ITU standards and be proprietary at the same time. These systems may not support all features and speeds, or the same quality image in both modes of transmission. It is important to understand how a system will perform when it is connected to equipment manufactured by another videoconferencing company. These are prime considerations since you want to ensure the best quality call with all types of systems.

The main standards for videoconferencing are:
H.261; H.221; H.242; H.230; G.771; G.771.1; G.728; H.262; H.263; H.281; H.245 and H.225.

All TANDBERG systems are standards based and support all of the main ITU videoconferencing standards.
The main factors contributing to the quality of the image you will see during a video call are:

- the quality of the codec, and
- the amount of bandwidth available

Videoconferencing relies on "sampling" and "compression" to generate the picture and sound signals that are sent from one conference site to another. A video signal is made up of a vast amount of data. For most applications, it is not cost-effective to transmit all that information. As a solution, the codec receives the video signal feed and "samples", or takes a snapshot of portions of the video signal at precisely timed intervals of a fraction of a second each. In addition, the video data output is further optimized through "compression." Compression reduces redundant data associated with the video image.

For example, since background information in a typical conference room seldom changes, it is not necessary to continuously transmit that part of the picture over and over again. By saving bandwidth not needed for such repetitive information, the codec can devote more attention to elements that change or move, such as people, and transmit more visual data across the network. Substantial movement or changes during a call requires the codec to do extensive processing. A better quality codec will support superior motion handling. Additionally, the codec is responsible for the refresh-rate of the monitor. This is measured in frames per second, the optimum being 30 frames per second.

Having good audio quality is crucial to the success of your videoconference. The audio system is comprised of different elements; the microphone and echo cancellor for capturing the sound, the balance and maximization of the available bandwidth for audio data relative to video data, and the speakers. As with every other area of videoconferencing, the adherence to international standards is a must. You will want to not only ensure that you will have superior audio when talking to a similar system, but excellent audio when communicating with every other standards compliant system.
Selecting your Network
When selecting your network, there are several factors which should be taken into consideration. The questions you should ask yourself include:

1. **Who do you plan to call?**
   For example, are the sites you plan to call all internal? Do you plan to call other sites not owned by your company? Does it need to be a public network such as ISDN? Will you require additional hardware?

2. **How widely available is the desired network?**
   Not all networks are available worldwide. For example, ISDN is widely available but is still being introduced into countries new to the technology every day. The same goes for IP networks; not all countries are connected to the Internet. Check which networks are available in the countries where your company operates.

3. **What are the costs associated with the network?**
   Some networks cost more than others. For instance, if you plan to use public ISDN networks such as PRI and BRI, make sure to consider per minute charges and strategic locations of the MultiSite™ units.

4. **How reliable is the network?**
   For example, the public Internet is not as reliable as private IP networks. IP networks in general are still not as reliable as ISDN that has a reliability of around 99.99%.

5. **How much bandwidth will you require?**
   Will you, for example, be using MultiSite™ functionality or other features that require higher bandwidth.

Digital networks are available from your local telephone company in a variety of optional configurations. Such digital networks include ISDN, PRI/T1, IP, Frame Relay, and ATM.

**ISDN**
Integrated Services Digital Network, or ISDN, is an international communications standard for sending voice, video, and data over digital telephone lines or normal telephone wires. It is also known as a Basic Rate Interface, or BRI. ISDN supports data transfer rates at multiples of 64kbps (64,000 bits per second), and is most commonly used by individuals and small businesses. Each ISDN line consists of two B-channels and one D-channel. Each B channel can carry up to 64kbps of data. A Primary Rate Interface, or PRI, is a type of ISDN service designed for larger organizations. A PRI includes 23 B-channels (30 in Europe) and one D-Channel.

**IP**
H.323 is a standard for audio, video, and data communication over IP-based (Internet Protocol) networks. It specifically describes how multimedia communication occurs between terminals, network equipment, services on Local Area Networks (LAN), Wide Area Networks (WAN), and the Internet. IP networks do not currently have guaranteed quality of service (bandwidth), which makes it difficult for real-time applications such as videoconferencing.

**Frame Relay**
Frame relay is a packet-switching protocol used for connecting devices on a Wide Area Network (WAN).

**ATM**
ATM, asynchronous transfer mode, is a network technology based on transferring data in cells or packets of a fixed size. The cell used with ATM is relatively little compared to those used in older technologies. The small, constant cell size allows ATM equipment to transmit video, audio, and computer data over the same network, ensuring that no single form of data dominates the line.

**xDSL**
xDSL is a network technology becoming very popular in the consumer household as well as small businesses. The most popular being ADSL for the home and SDSL for the small business. Videoconferencing will typically utilize IP over xDSL to complete calls. It is important to remember that these services are typically not guaranteed which means video calls may or may not be successful from minute to minute. Also remember when using ADSL that due to the asymmetrical properties of this technology, you may be limited to upload speed for a videoconference, which is typically much lower than the download speed.
Who is Using Videoconferencing?
# Applications & Benefits

Uses of videoconferencing vary widely. What remains unchanged among users is the value it adds to business operations. The following outlines common applications currently in use by TANDBERG customers.

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<th>Applications</th>
<th>Benefits</th>
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<td><strong>Manufacturing</strong></td>
<td>Discuss changes in product design with a colleague</td>
<td>Offers all parties the ability to collaborate</td>
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<td>Conduct quality control inspections</td>
<td>Speeds up information gathering process</td>
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<td>Remote machinery repair</td>
<td>Decreases machinery down-time</td>
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<td>Reduces time to market</td>
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<td>Allows instant feedback</td>
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<td>Increases customer satisfaction</td>
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<td><strong>Marketing</strong></td>
<td>Review copy and layout for a new ad campaign</td>
<td>Speeds approval process and turnaround time</td>
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<td>Conduct market research focus groups</td>
<td>Allows input from a variety of locations in a short time frame</td>
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<td></td>
<td>Launch new products</td>
<td>Provides the ability to involve participants from remote locations</td>
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<td>Conveys critical information to everyone within hours of a launch</td>
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<td>Collaboration tools allow layout to be shown and discussed at several</td>
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<td>sites at the same time</td>
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<td><strong>Employee Training</strong></td>
<td>Provide ongoing education and training</td>
<td>Allows people in remote locations to tap expertise not available locally</td>
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<td></td>
<td>New employee orientation</td>
<td>Enhances employee expertise and morale</td>
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<td></td>
<td>Human Resources' recruiting and benefits roll-out</td>
<td>Shortens employee time away from job</td>
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<td></td>
<td></td>
<td>Enables greater participation with no incremental costs</td>
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<td></td>
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<td>Allows for interviewing of candidates at remote locations without the</td>
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<td>need to travel</td>
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<td><strong>Sales</strong></td>
<td>Cover monthly results, forecasts, and objectives with sales team</td>
<td>Shortens introduction time and increases sales</td>
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<td>Strategic account planning</td>
<td>Improves understanding with eye-to-eye contact</td>
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<td>New product and program roll outs</td>
<td>Reduces meeting and travel expenses</td>
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<td>Relays new product information to all sites simultaneously</td>
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<td>Provides consistent and timely information</td>
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<td><strong>Legal</strong></td>
<td>Review documentation and exhibits</td>
<td>Promotes more productive use of billable time</td>
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<td>Pursue settlement discussions</td>
<td>Reduces travel time and costs</td>
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<td>Interview witnesses and confer with experts</td>
<td>Provides access to experts</td>
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<td>Enables instant recording of meetings for documentation purposes</td>
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<td><strong>Interactive Distance</strong></td>
<td>K-12</td>
<td>Links rural areas to educational facilities otherwise not available</td>
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<td><strong>Education</strong></td>
<td>Colleges &amp; Universities</td>
<td>Allows educational institutions and students to share resources</td>
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<td>Continuing Education</td>
<td>Provides access to field experts</td>
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<td>Special Education</td>
<td>Enables electronic field trips</td>
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<td>Promotes curriculum development</td>
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<td>Corporate Education and Training</td>
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<td><strong>Interactive Tele-Health</strong></td>
<td>Remote diagnostics from rural to urban centers</td>
<td>Cuts patient transportation costs</td>
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<td>Care**</td>
<td>Consultation with experts</td>
<td>Increases access to specialty services for patients in rural areas</td>
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<td>Continuing Medical Education (CME)</td>
<td>Allows doctors to store examination results, along with test images</td>
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<td>Reduces redundant tests</td>
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<td>Provides a real-time second opinion</td>
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<td>Cuts diagnosis and treatment time</td>
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<td>Provides access to international resources for continuing medical</td>
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American Cancer Society

In 2000, NuVision teamed up with the American Cancer Society, the community-based voluntary health organization dedicated to eliminating cancer and helping those who have cancer, for the national rollout of over 150 videoconferencing systems. "The use of video is the CIO way of making ‘Distance Equal to Zero.’ The use of videoconferencing has increased collaborative efforts, especially within the divisions," stated Zachary Patterson, national Chief Information Officer of the American Cancer Society. Being able to communicate more effectively allows the Society to increase the efficiency of their services. The cost savings experienced by reducing travel and travel times allows the American Cancer Society to appropriate more money to cancer research, education and patient services.

After evaluating the needs and goals of the American Cancer Society, the NuVision team coordinated the order of TANDBERG systems, using the full range of products. This included the TANDBERG 7000 for boardrooms, the TANDBERG 6000 and the TANDBERG 2500 for conference rooms, and the TANDBERG 800 for offices. The solution also involved providing document cameras to facilitate video meeting requirements, and switching gear for the routing of ISDN lines.

The American Cancer Society is headquartered in Atlanta, Georgia, and has 17 state divisions and more than 3,400 local units across the United States.

Gjensidige NOR

Gjensidige NOR is Norway’s second largest financial corporation, offering a complete range of services. The company consists of three equally-positioned parent companies, Union Bank of Norway, Gjensidige NOR Forsikring, and Gjensidige NOR Spareforsikring. TANDBERG has installed units in Union Bank of Norway as well as two subsidiary companies, Karl Johan Fonds, and Avanse. Union Bank of Norway is over 175 years old. It represents the collective strength of more than 100 formerly independent savings banks and has an extensive network of branches throughout Norway. Avanse Forvaltning has been a leader in Norway’s mutual fund industry for more than 30 years, and Karl Johan Fonds is a well-reputed stockbroker and financial consulting company.

Due to the degree of success the Gjensidige NOR companies have had using the TANDBERG systems, the companies plan to continue their investment in videoconferencing during the coming years. With offices and branches located throughout Norway, Gjensidige NOR has already found videoconferencing to be the ideal method for maintaining internal contact and communicating information from the head offices in Oslo and Trondheim to regional offices throughout the country. The broad range of products offered by TANDBERG has allowed Gjensidige NOR to meet the requirements of the various locations both in terms of functionality and size. As Jan Erik Simonsen, Senior Consultant, comments, "TANDBERG’s extensive product portfolio has provided the flexibility to meet the needs of our nationwide network of offices, allowing us to maintain daily contact throughout the corporation."
Kapi‘olani Medical Center

Based in Honolulu, Hawaii, Kapi‘olani’s Fetal Diagnostic Center is the only tertiary-level hospital for women and children in the Pacific Basin. The Fetal Diagnostic Center specializes in the care of women with high-risk pregnancies. Unfortunately, due to the large coverage area, the distance between the islands, and the limited number of specialists, the Center has had difficulty providing immediate access to the extremely specialized care their patients require. Until recently, the medical staff had to travel extensively between the islands to examine patients and meet with colleagues. This travel was expensive, time consuming and presented unacceptable risks when dealing with high-risk pregnancies.

To overcome these problems, the Kapi‘olani Medical Center recently deployed the first tele-ultrasound network in Hawaii. After reviewing available products and solutions, the Center chose TANDBERG, determining that the TANDBERG HCS III product line could best meet their requirements.

Perinatologists are now able to "see" a fetus remotely using video technology. The medical personnel then provide advice and care to patients and to their consulting medical personnel, including obstetricians, radiologists and sonographers, 24 hours per day, seven days per week. Dr. Greigh Hirata, the Director of the Fetal Diagnostic Center, states, "The fetal tele-ultrasound service solves the problem of needing to be at two or more places at the same time for patients, our remote/rural physician colleagues and sonographers. It’s like being able to extend our hands, eyes and ears right across the ocean to neighboring islands."

Shanghai Baosteel Group Corporation (SBGC)

Shanghai Baosteel Group Corporation (SBGC) is the largest modern iron and steel manufacturing corporation in China with fixed assets of 134.4 billion RMB (16 billion U.S. dollars). It is also one of the largest state-owned companies in China, measured by its market capitalization position, and includes over 60 subsidiaries and 140,000 employees worldwide. The company’s core business is the smelting, processing and sale of high-grade steel and steel products. SBGC is China’s leading steel supplier to industry, including the automobile, household appliance, container, oil and natural gas exploration and pressure vessel industries. SBGC also occupies a special lead position in the manufacture and sale of cold-rolled and hot-rolled steel products and seamless tubes.

With innovation as its main theme, SBGC is looking to be one of the most competitive steel makers in the world. The company is already regarded as a model enterprise in China for its ability to create "learning and ever-innovating enterprise," which allows it to capitalize on long-term competitive advantages, such as low labor costs, low transportation costs, and short delivery times.

During 2000, SBGC started using videoconferencing as a way to increase efficiency and coordination between its local subsidiaries and operating groups. The Director of SBGC’s Division of Enterprise Management, Mr. Guo Jian Guang, explains that videoconferencing is one example of how SBGC uses technology to its advantage. "We need to increase productivity, encourage cooperation and share ideas. The TANDBERG videoconferencing solution is an excellent way to do this, and we will be looking for more ways in 2001 to use videoconferencing at most of our subsidiaries."
How to Select the Vendor and System to Meet Your Needs
What You Should Look For in a Videoconferencing Vendor

There are many attributes to consider when choosing a vendor for your videoconferencing systems. The ideal company will have the following characteristics:

- A sound financial profile and a good business model
- A strong company history
- Proven customer service and support
- Cost effective maintenance programs
- Progressive research and development
- Ethical business practices
- Enterprise-wide application solutions
- A true global presence for effective implementation around the world
- Satisfied customers

How to Identify the Solutions that Satisfy Your Business Requirements

It is important to identify the best solution for your business requirements. There are different categories of videoconferencing systems and it is crucial to understand the limitations and benefits of each. TANDBERG offers a complete product line, supporting the belief that "one size does not fit all". How you answer the following questions, as well as a review of the description of the available systems and applications, will help you decide which system is best suited to meet your needs.

- How do you envision your company using videoconferencing?
- What kind of information do you exchange?
- What size rooms are currently used to hold meetings?
- How many people participate in each type of meeting?
- What bandwidth will be optimal for your communications?
- Do you want a fully integrated system or a set solution where you can use an existing monitor?

The answers to these questions will enable you to identify which solution best suits your specific application. For example, a remote site may only need a set-top product for a small office, while headquarters needs a fully featured, high quality rollabout system for the boardroom (see TANDBERG solutions).

When purchasing a videoconferencing system you should consider the following:

Reliability and Quality
- Systems that work every time
- Standards implemented to deliver the highest performance
- State-of-the-art technology
- Innovative engineering design
- Manufactured under the ISO 9002 certification
- High mean time between failures

Ease of Use
- Clear concise menu prompts and intuitive user interface
- Easy to install
- Easy to maintain
- Easy to service

Value
- Standards based for worldwide interoperability
- Non-proprietary solutions for superior video and audio
- Feature-rich products that are competitively priced
- Systems that are optimized for both high and low bandwidths
- Software upgradeable
TANDBERG Videoconferencing Solutions

TANDBERG offers videoconferencing system solutions for a variety of business requirements and specific vertical market applications, while retaining a common user interface.

Business Solutions
Integrated Medium-Large Group & Boardroom Systems
The TANDBERG 7000 is the ultimate boardroom solution. The perfect centerpiece, this product transforms the boardroom into a highly effective meeting environment. With its two 40” plasma screens, the TANDBERG 7000 is exclusive and elegant, providing the user with award winning design, combined with a commitment to innovative technology.

The TANDBERG 6000 has the same feature set as the TANDBERG 7000 but is designed as a flexible rollabout with two monitors on a single stand. Ideal for large meeting rooms and boardrooms, the TANDBERG 6000 provides the means to share knowledge simply, quickly and efficiently with any location in the world, using the most technologically advanced videoconferencing system available today.

The TANDBERG 2500 is ideal for medium to large meeting rooms, and well suited for a wide range of applications. With its sleek stand, the system can easily and cost-effectively be transformed from a single monitor to dual monitor system.

The TANDBERG 2500 leverages TANDBERG’s award winning technology into a highly affordable yet feature-rich system.

Integrated Small Group Systems
The TANDBERG 1000 is a fully integrated system specifically designed for small meeting rooms and executive offices. The design of the TANDBERG 1000 is revolutionary in videoconferencing, being the first unit to offer you two fully integrated space saving alternatives in one; a freestanding tabletop system or a state-of-the-art wall mounted solution. The system includes an LCD flat screen, camera, microphone and speaker.

Set-top Units
The TANDBERG 800 is an elegantly designed set-top unit that is ideal for medium to small meeting rooms. With the same extensive features as the TANDBERG 2500, this unit provides the user with a set-top product that captures a dynamic mix of features and functionality in a lightweight and portable unit.
The TANDBERG 500 is an extremely compact and portable set-top box that can be used with any standard television set, providing the user with a high degree of flexibility. Easily deployed in small meeting rooms and professional offices throughout an organization, this practical unit provides users with all they need for basic videoconferencing.

All TANDBERG products run on a range of networks including ISDN and IP. The systems are available in different combinations of bandwidth configurations from 56kbps-2Mbps.

**Vertical Market Applications**

TANDBERG is renowned in the videoconferencing industry for its dedication to both Distance Education and Healthcare. Combining years of experience and expertise in these markets, TANDBERG has developed an in-depth understanding of the evolving needs of educators and healthcare professionals. Using this knowledge to develop technologically advanced products, TANDBERG is able to deliver the most innovative solutions currently available.

The Educator Series is designed with maximum flexibility for the demanding challenges of today’s classroom. Based on the powerful TANDBERG 6000 codec, the feature rich Educator Series includes an intuitive touch panel in addition to all of the modular components needed to create a fully interactive distance education classroom. This product line is available in modular configurations. All of our education systems offer you flexibility in designing a solution that fits your application.

The TANDBERG Distance Education product line incorporates the industry’s most intuitive user control system – based on a single-screen touchpanel. Through the graphical touchpanel interface, the instructor can control all aspects of the call as well as all peripherals including sources such as cameras, a PC or VCR. This industry leading touchpanel design provides you with an interactive video system that is as easy to use as it is functional, allowing the instructors to do what they do best – teach. The Health Care System III is TANDBERG’s premiere Tele-HealthCare solution. Incorporating the 6000 codec, the HCS III was developed to meet the specific needs of the healthcare industry by providing the tools for real-time interactive Tele-Healthcare. By adding peripheral medical and non medical devices, the HSC III supports much more than traditional clinical applications, including dermatology, cardiology, and pathology. The system also supports a wide variety of business functions such as administrative meetings, Continuing Medical Education, consulting, and research.

The Intern is an entry-level Tele-HealthCare system. The Intern’s unique design is ideal for tele-healthcare applications in which a smaller, mobile system is needed to perform remote consultations, rural healthcare, assisted living exams, and small group meetings. Built around the TANDBERG 800, the Intern utilizes a flat screen monitor creating a completely self-contained videoconferencing system for use in administrative conferences or R&D applications.
Company of the Year 2000
TANDBERG was awarded Company of the Year 2000 by Videoconferencing Insight magazine.

TANDBERG has the most outstanding and complete range of products in the videoconferencing industry and was therefore the obvious choice for the Company of the Year 2000 award. My decision was confirmed by the large number of industry-first features launched throughout the product range in the year 2000, as well as the tremendous increase in sales and market share achieved by TANDBERG"

Richard Line, Editor

Peripherals
There is a wide range of peripheral equipment that can be used to enhance your videoconferencing experience and get maximum benefit from the features offered by the TANDBERG systems. This equipment includes:

PC
On the TANDBERG systems, a direct access plug on the front of the cabinet, the PC Presenter, makes plugging a PC into the system extremely simple. This enables you to hold presentations and show documents from your PC on a planned or an ad hoc basis.

Document Camera
With one touch of the button on the remote control, you can transmit an image from the document camera to show detail in a document or on an object. The document camera has an extensive zoom meaning that even minute detail becomes clear.

Tracker
The TANDBERG tracker is a small infrared remote control that can be used to steer the camera on the TANDBERG videoconferencing system to any desired location within the room. Typically, several trackers are attached to each TANDBERG videoconferencing system. Often trackers are assigned to other peripheral tools such as a document camera or a whiteboard.

VCR
A video recorder can easily be used together with a TANDBERG system to either show a video film or record a presentation.

DVD
With the possibility of operating TANDBERG systems at up to 3 Mbps, the quality of video and audio that can be transmitted using a DVD player is exceptional.

Whiteboard
A whiteboard is a tool that is frequently used in meetings. An extra camera can be easily set up to view a whiteboard in a video meeting.

Audio Science Microphone
Just one TANDBERG Audio Science ceiling-mounted microphone replaces 6 or more conventional microphones. Suspended from the ceiling, this unique microphone has a usable reach of 4 meters, offering an exceptional pickup range.
The TANDBERG Range

TANDBERG Education Series

TANDBERG 7000

TANDBERG 6000

TANDBERG HealthCare Series

TANDBERG 2500

TANDBERG 1000

TANDBERG 800

TANDBERG 500
Designing your Videoconferencing Room

This section explains how to carry out basic adjustments and simple tests to ensure that you send and receive the best possible image and audio quality during your videoconference.
Room Layout
The microphone should be placed at the front of the table to ensure that all speech will be detected. The best position for the microphone is at least 6.5 feet in front of the videoconferencing system, on a plain, flat surface with at least 12 inches of table in front of it. The document camera should be close to the leader of the meeting, or the designated controller of the document camera, for ease of use. Remember to arrange all the peripherals so that one participant can reach each of them to point, change the display, tape, or to perform other functions during the conference. Position the videoconferencing system in such a way as to avoid the possibility of someone inadvertently walking into the camera’s field of view when entering the room. Other than the conference participants, there should be no moving items in the set image. To help ensure the most natural meeting environment, position the camera on the top center of the receiving monitor. The camera should point directly at the meeting participants to guarantee eye contact with those at the far-end.

Lighting
The TANDBERG Wide Angled View (W.A.V.E.) Camera uses an automatic iris to compensate for changes in lighting. In addition to this feature, you may further assist the camera in maintaining the best possible image quality by paying special attention to environmental lighting and background colors as described in the following:
- Avoid direct sunlight on the subject matter or camera lens as this will create harsh contrasts.
- If light levels are too low, you may need to consider using artificial lighting.
- When using artificial lighting, "daylight" type lamps will produce the most effective results. Avoid colored lighting.
- Indirect light from shaded sources or reflected light from pale walls often produces excellent results.
- Avoid harsh side lighting or strong light from above as this may put part or all of the subject matter in shadow or cause silhouetting.

Loudspeaker Volume
The audio system will use the loudspeakers built into the TV monitor or TANDBERG’s Natural Audio module (if installed). The default volume level can be set by adjusting the volume on the TV monitor using its own remote control.

Background
The appearance of the picture background is very important but easily overlooked. It is important to remember that the camera shows what is behind you when in a videoconference. To ensure a suitable background, we recommend the following:
- Use a neutrally colored background with a medium contrast and a soft texture, such as a plain curtain with no heavy patterns or strong colors that may adversely tint the whole scene.
- Avoid moving backgrounds such as curtains in a draft, moving objects, or people walking behind you, as this may both reduce image quality and distract the attention of those on the far-end.
- Do not place the camera facing a doorway.

Brightness Control
For adjusting brightness, colors or other settings of the TV monitor, you must use the TV monitor’s own remote control. Adjust the monitor to suit the conditions of the conference room. The TV monitors used by TANDBERG have on-screen menus that are very easy to use. For more information on configuring the TV monitor, refer to the user manual for that unit.
How to Conduct a Powerful Meeting and Give an Effective Presentation
If you are already familiar with the most common formats and methods of live presentation, you are well on your way to becoming an effective communicator via video. Video meetings and presentations require that we make some minor changes in our delivery of information. The changes are so subtle that they often remain overlooked by the videoconference newcomer. The following are the six most important points to follow when giving your presentation:

1. Always test your system and your source materials prior to any meeting or event. Do not leave this responsibility to someone else, and do not assume that since the systems worked well in one type of connection that they will work for every connection. You may be connecting to a dissimilar and less capable system or into an unstable network, and this may result in small difficulties that need to be worked out ahead of time.

2. Eye contact comes from looking towards the camera, not the display. Make certain that your camera is located as close to top-center of your receive-video display as is possible. This will give the impression of good, strong eye contact.

3. Speak up. If you mumble and cannot be heard by the person seated next to you, the people at the far-end will also have a problem hearing you.

4. Cameras and video displays tend to make everything "bigger". Nervous habits or little recurrent gestures will be greatly magnified and distracting. No rocking and no swaying or "playing" (no fidgeting with pens, pencils, papers, eyeglasses or spare-change in your pocket, etc.) is a good rule to follow. RELAX! This is like any other meeting except it includes people who are not physically present in your room.

5. When you are connected in a video call, the electronics of the system will faithfully pick up all your images and words. Smart remarks, quips and asides, or demeaning gestures such as rolling eyes, will be greatly amplified at the far end. Assume they always see and hear you, even when the camera is not pointed in your direction.

6. This is videoconferencing, not TV. A videoconference is two-way. TV is passive and only one-way. Build in opportunities to verbally engage the participants at the far-end. Vary your source materials and provide visually interesting items that will elicit responses.
A Final Word

Videoconferencing is transforming the world of business communications. The technology can help companies to improve their effectiveness as well as providing them with a strategic advantage over the competition. Videoconferencing has also greatly impacted the medical and educational communities, improving access to essential resources such as instruction and healthcare to those living in remote locations.

Implementation of interactive distance education programs in learning institutions around the world is soaring, joining students, faculty and staff in an atmosphere that facilitates learning, teaching, research, and administration.

TANDBERG believes that the success of any videoconferencing solution depends upon high quality, reliable, and easy to use products that deliver excellent value. We specialize in standards-based videoconferencing systems that provide worldwide interoperability at competitive prices. By utilizing innovative engineering processes and state-of-the-art technology, the TANDBERG portfolio of videoconferencing systems offers a complete range of products built upon feature-rich core technology. Our systems' software upgradeable features reduce the cost of ownership, thereby protecting investment in the technology.

OUR VISION

To provide innovative high quality videoconferencing solutions that are reliable, easy to use and represent significant value for our partners and customers.
Appendix:
TANDBERG
Corporate Background

TANDBERG is a leading global provider of videoconferencing solutions. The company designs, develops and manufactures videoconferencing systems and offers sales, support and value-added services in more than 50 countries worldwide. TANDBERG has its headquarters in Oslo, Norway and major offices in the United States, the United Kingdom, Canada, China and Japan.

Vision
To provide innovative, high quality videoconferencing solutions that are reliable, easy-to-use, and present a significant value to the Company’s partners and customers.

Business Model
TANDBERG’s business model is structured to allow the Company to focus on its core competencies: product development, sales, and marketing. By outsourcing its complete manufacturing processes, the Company maintains low overheads, thereby providing competitively priced products while enjoying a strong balance sheet. This model also allows TANDBERG to respond quickly to the needs of the market. With short product development cycles, the Company can rapidly adapt to new opportunities.

Ownership
TANDBERG is publicly traded in Norway on the Oslo Stock Exchange under the symbol TAA.

Market Presence
TANDBERG has achieved critical mass within the industry with systems installed in over 80 countries worldwide, including group video-conferencing systems, multi-point conferencing bridges, distance education installations and specialized telemedicine systems for the health care industry. The Company has established itself as one of the leading global videoconferencing providers in the market.

Products, Programs, and Services
Products
TANDBERG provides a full line of standards-based videoconferencing products that range from solutions for executive applications to small, medium and large group applications. TANDBERG’s systems offer feature-rich core technologies that guarantee the highest video and audio quality and deliver unparalleled ease-of-use and reliability. Systems are available for business applications, as well as application-specific solutions for high-growth markets such as distance learning and telemedicine.

Global Presence Program (GPP)
TANDBERG’s Global Presence Program is unique within the industry, and allows customers to benefit from our expertise in international distribution. By offering a single source solution for purchasing videoconferencing systems for installation anywhere in the world, the GPP eliminates the complexities of implementing a truly global network. Working closely with our Authorized Partners, who provide GPP coverage in over 80 countries worldwide, TANDBERG is able to offer a complete implementation program. The GPP compliments our product offerings and expands our ability to meet the diverse needs of our clientele. Through the GPP, customers can benefit fully from TANDBERG’s investment in videoconferencing technology. It ensures that customers with international requirements receive the highest standard of professional sales and qualified technical support.

One of the best solutions for saving time and money was given to us by

TANDBERG’s GPP Program which helped us to easily implement videoconferencing as a new communications medium throughout our global network"

Siri M. Sanna, Jotun Paints

Customer Services
TANDBERG understands that as a customer, you regard videoconferencing technology as a vital communications tool essential to the success of your organization. It is with this knowledge that we have designed our Customer Service Program. We are committed to excellence in delivering world class customer support at competitive prices. Our commitment to high-level service and support is fundamental. We invest heavily in the staffing and training of our Technical Service Representatives in order to deliver the highest quality and most responsive support in the industry. We regularly survey our clients’ level of satisfaction so that we can continually improve our programs. As part of TANDBERG’s value added services, we provide seminars and training for your videoconferencing needs.
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