

A Glossary of Telemedicine and eHealth



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FOREWORD

The eHealth industry is evolving rapidly, along with an ever-increasing number of applications. The terminology being used to describe eHealth is also evolving. With this glossary, CTEC seeks to clarify terms currently in widespread use.

Defined simply, Telemedicine and eHealth (TM/eH) are the use of electronic communication technologies as a method of delivering health care, education, and related services. Dissolving barriers such as distance, time, geography, weather, and economics, TM/eH applications are designed to bring services to clients rather than clients to services. The common goal of any TM/eH application is to increase access and ease of health care, especially for rural and underserved populations.

When data rather than clients are moved, health resources extend their reach: the arm of specialty care extends further, access to better informed primary care services increases, and there is greater chance for utilization of medical education and training by medical professionals and community members. Because TM/eH systems increase access to specialty care and education as well as communication with larger, more comprehensive hospitals, rural doctors and clinicians are able to maintain a working relationship with their peers, and can increase their professional and social connections to the medical realm and its information flow.

Essentially, TM/eH systems are designed to increase the reach, as well as reduce both the time and cost, of medical consultations and care by bringing both preventative and maintenance-based information and services to the patient.



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Notes: "Tele-" added to the front of a word refers to "distant"
"e-" added to the front of a word refers to "electronic"



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The California Telemedicine & eHealth Center (CTEC) is a statewide organization dedicated to improving the health care of underserved communities through the use of innovative health technology solutions. Funded through grants from The California Endowment, the California HealthCare Foundation, and the Blue Shield of California Foundation, CTEC has supported a variety of eHealth programs and networks statewide and also maintains a unique eHealth Resource Center that provides training and technical assistance to promote eHealth capacity and competency among providers.

CTEC GLOSSARY OF TELEMEDICINE AND eHEALTH

Analog

A means of transmitting data as an electrical replication of the original signal. The signal is represented by a continuous waveform that varies in direct proportion to variation in the original signal.

Compare Digital

Aperture

Controls the amount of light that reaches the digital camera's charge coupled device (CCD). The diameter of an aperture is measured in "f-stops." A lower f-stop opens the aperture to admit more light. Each f-stop doubles the amount of light available to the sensor. A combination of aperture and shutter speed determines exposure value. Most digital cameras have automatic exposure modes that control the aperture and shutter speed, although the automatic settings may not be ideal for all clinical uses.

See Exposure Value, Shutter Speed

Artifact

In digital imagery or video, an unwanted byproduct of the image creation, compression, or transmission process. Especially with lossy compression techniques, errors can inadvertently appear in the compressed image that are perceptible to the viewer.

See Digital Image Noise

Assistive Technology (or Adaptive Technology)

Congress passed the Assistive Technology Act in 1998. This Act defines assistive (also called "adaptive") technology as any "product, device, or equipment, whether acquired commercially, modified or customized, that is used to maintain, increase, or improve the functional capabilities of individuals with disabilities." Assistive technology devices in general use include visual magnification enhancements, alternative input devices such as touch screen displays, speech recognition systems, and devices to produce audible text.

Asynchronous Communication

A mode of communication where the transfer takes place over a period of time, or in separate time frames, not requiring the transmission to take place simultaneously. Examples include e-mail or store and forward Telemedicine/eHealth.

Compare Synchronous Communication

Asynchronous Transfer Mode (ATM)

A high-speed networking standard designed to support both voice and data communications. Point-to-point connections are established by ATM switches, and data flows directly from source to destination. It is connection-oriented, rather than connectionless like traditional IP. ATM creates a dedicated path between source and destination, which can guarantee bandwidth and quality of service.





Authentication

The means to confirm the identity of a user requesting access to an information system. This is primarily accomplished through combinations of user ID and password, but may also employ techniques such as biometrics (recognition of fingerprints, retina, or voice), or through a digital signature or other encoded system.

Bandwidth

A measure of the information-carrying capacity of a communications channel. The higher the bandwidth, the greater the amount of information or data that can be transmitted in a given time period. Bandwidth is usually measured in Kilobits (Kbps) or Megabits per second (Mbps). Higher levels of bandwidth allow video and audio data to be transmitted more rapidly from point to point, allowing smoother display of images and movement.

See Broadband, Narrowband

Basic Rate Interface (BRI)

An ISDN access line, consisting of two 64 Kbps Bearer channels (that carry voice and data) and one 16 Kbps Data channel (that carries call control information). When configured as a data circuit, the BRI carries data at 128 Kbps. Multiple BRI lines can be linked together using a multiplexer to achieve higher bandwidth levels. For instance, a popular choice among Telemedicine networks is to combine 3 pairs of BRI lines to provide 384 Kbps of bandwidth for videoconferencing.

See Integrated Services Digital Network; Compare Primary Rate Interface

Bits Per Second (Bps)

A measure of transmission rate. Bps, also called “bit rate,” is concerned with the rate of data transmission, and should not be confused with the often seen term “baud rate,” which refers to the rate of the carrier signal, not the amount of data actually carried.

Bitmap

Also referred to as a raster graphics image, is a family of methods for storing digital imagery in a rectangular grid of pixels. A bitmap is generally described by its height and width in pixels, and the number of bits used to record each pixel (“color depth”), which determines how many colors may be displayed. The quality of a bitmap depends upon its resolution (total number of pixels) and its color depth. Bitmaps are not inherently “scalable” (i.e. enlarging a bitmap will often result in a perceptible loss of image quality).

Bridge

A device that can link multiple videoconferencing sites into a single videoconference. A bridge is necessary to conduct a multipoint conference with three or more participants (exception: some videoconferencing equipment has built-in limited multipoint ability). A videoconferencing bridge is also often referred to as a multipoint control unit (MCU).

See Multipoint Control Unit

Broadband

In networking terminology, a telecommunications medium capable of transmitting multiple data signals simultaneously. The term broadband is also used to describe media that transmit data at a high rate, generally comparable to T1 or better, and occasionally as a synonym for DSL. Television, microwave, and satellite telecommunications are examples of broadband media.

See Bandwidth, Digital Subscriber Line; Compare Narrowband

Cache

A dedicated system of memory designed to alleviate processing bottlenecks and improve the performance of computing devices and peripherals. Caching also refers to the mathematical techniques for efficiently storing and retrieving data from such memory systems.

California Public Utilities Commission (CPUC)

State regulating body for privately owned telecommunications and other utility providers.

See also www.cpuc.ca.gov

Camera Control

An important consideration in conducting an encounter via videoconferencing. The provider should have the ability to control both the local and remote video cameras. This control is usually a built-in functionality of the videoconferencing system. The acronym “FECC” (Far End Camera Control) is often seen in the literature describing features of videoconferencing systems. The acronym “P-T-Z” (Pan-Tilt-Zoom) is often used to describe the range of camera control functions, though focus and iris control may also be equally important, depending on the application.

See Camera Preset

Camera Preset

A time-saving feature of some videoconferencing systems. Using presets, the controller can select pre-defined camera zoom, angle, and other features and save them for recall at the push of a button. This allows a uniform appearance for camera transition throughout a conference.

Cascading

A method to accommodate a greater number of conference participants than a single Multipoint Control Unit (MCU) can handle. By joining a second zone’s MCU into a conference hosted by the primary MCU, all of the endpoints of the second zone become participants in the overall conference. The primary MCU provides a stream to the secondary MCU, which routes it to participants in its zone.

See Multipoint Control Unit





Central Office (CO)

An office in which subscriber lines are connected to the Public Switched Telephone Network on what is termed the “last mile” or “local loop.” The CO houses switching equipment that can either handle calls locally or pass them along to long distance carriers.

See Last Mile, Local Loop, Digital Subscriber Line, Telco

Certification Commission for Health Information Technology (CCHIT)

Voluntary, private-sector commission formed by leading healthcare organizations “to accelerate the adoption of robust, interoperable HIT throughout the US healthcare system, by creating an efficient, credible, sustainable mechanism for the certification of HIT products.” CCHIT was created in response to a 2004 Executive Order calling for widespread deployment of health information technology.

See also <http://www.cchit.org/>

Channel Service Unit / Data Service Unit (CSU/DSU)

An interface device that connects a Local Area Network router to a circuit such as a T1 line. This unit provides signal timing to coordinate communication, as well as conversion of packets configured to transmit across a specific type of network (“data frames”) between the format used on a Local Area Network (LAN) and the format used on a Wide Area Network (WAN).

Chair Control Mode

A feature of the H.243 multipoint videoconferencing standard that allows the conference “chair” or moderator to control which sites are seen by participants, who can join the conference, and when the conference will end.

See Multipoint Videoconferencing

Charge Coupled Device (CCD)

Photosensitive cells used to record images by generating voltage in response to light. The quality of resolution achievable by a digital camera is determined by the number of CCDs (“chips”) employed, and the number of cells on each CCD. The number of cells per chip determines the resolution in pixels that the camera can display. Greater resolution is achieved either through larger CCD chips, or by using a greater number of CCDs.

Checksum

In the process of data compression or transmission, a checksum is often employed as a mathematical method to determine if the data was correctly stored or transmitted. Checksums work by comparing a mathematical sum obtained when the file was created with the results of the same calculation once the file is decompressed or transmitted.

See Compression

Circuit Switched Network

A type of network in which a dedicated circuit must be set up between sender and receiver before communication may occur. During the communication, no other traffic may use that circuit, and the connection must be terminated when communication is complete. The most common example is the Public Switched Telephone Network.

Compare Packet Switched Network

Class of Service (CoS)

A traffic management technique that classes similar types of network traffic together (e.g., e-mail, streaming video, file transfers) and manages each class with its own level of service priority. Class of Service does not guarantee a level of bandwidth and delivery time as does Quality of Service (QoS). It is a “best effort” traffic control methodology.

Compare Quality of Service

Clinical Decision Support System (CDSS)

Interactive tools which directly assist healthcare providers with clinical decision making. CDSS are generally used to facilitate diagnosis and treatment plans, and take into account patient history as well as the results of physical examinations and laboratory testing. A CDSS generally consists of a dynamic knowledge base (including drug interaction data, results of clinical trials, etc.) and a set of rules derived from expert systems and evidence-based medicine.

Coder-Decoder (CODEC)

A device, either hardware or software based, that encodes analog video and audio signals to digital video and audio, and vice versa. CODECs typically compress the digital code to conserve bandwidth and increase effective throughput.

Compression

This term refers to the mathematical means used to reduce bandwidth requirements for digital signals, enabling richer video and audio at a more manageable file size. A number of standards for both video and still picture data (e.g. MPEG, JPEG, GIF) are in common use. Compression techniques are either “lossy” or “lossless.”

See Lossless, Lossy

Continuous Presence

In multipoint conferencing, a mode that displays multiple participants in a portion of the screen at all times. Although an effective format for discussion, continuous presence is not generally the ideal mode for lectures, as any presentation graphics will be limited to a segment of the available viewing area.

Compare Voice Activated Switching





Color Checker Chart

Industry standard color value reference chart used in still and video photography to identify and evaluate factors that may affect accurate color reproduction. Specific charts have been developed to evaluate white balance and color accuracy of digital cameras.

Crop

The use of image manipulation software to remove unwanted portions of an image. Cropping allows a particular feature of the image to be emphasized, or eliminates distracting elements.

Depth of Field

Refers to how much of an image remains in focus from front to back as the camera focuses on the main subject. Depth of field is controlled by aperture and focal length of the lens. “Deep” depth of field is useful for panoramic shots. “Shallow” depth of field is more appropriate for close-up and portrait shots, and is most useful for clinical imagery. Shallow depth of field is produced by using a larger aperture and/or longer focal length (zoom lens).

See Aperture, Focal Length

Digital

Data that has been encoded into a discrete series of binary digits (“bits”), as opposed to the continuous variable waveforms of analog signals.

Compare Analog

Digital Camera

A digital camera is typically used to take still images of a patient. General Telemedicine uses for this type of camera include dermatology and wound care. This camera produces direct capture images that can be transmitted to a provider/consultant over a network without scanning or conversion. A wide range of digital camera types are available, from inexpensive commercially available models, to ultra high resolution devices with specialty lenses and peripherals. When developing a store and forward Telemedicine practice, it is important to consider cost and benefits of various models of commercial and specialty camera equipment to ensure the best fit of image quality per unit cost.

See Charge Coupled Device

Digital Image Noise

Unwanted artifacts, such as randomly spaced pixels, which can occur in digital imagery. The possibility of image noise may be reduced by use of a lower ISO setting, use of the recommended flash settings in low lighting, and use of a tripod when using slow shutter speeds. Noise reduction software is available to remove these unwanted artifacts, but care must be exercised to avoid removing clinically significant elements.

See Artifact, ISO Sensitivity

Digital Imaging and Communications in Medicine (DICOM)

A set of standards that describe the formatting and storage of digital imagery used in radiology developed by the American College of Radiology and the National Electronic Manufacturers Association. The DICOM standards facilitate interoperability among medical imaging devices regardless of manufacturer.

See also <http://medical.nema.org/>

Digital Signal-X Transmission Standards (DSx)

Digital Signal-X is the general term used for the standard digital transmission rates that are based on the bandwidth of a normal telephone voice channel (64 Kbps, known as DS0). The T-Carrier system used in the US for high speed data transmission carries digital signals based on the multiples of DSx. DS1 is the signal used in the common T1 carrier, and consists of 24 DS0 (64 Kbps) signals to produce a rate of 1.544 Mbps. DS3, used in the T3 carrier, consists of 672 DS0 signals to produce a rate of 44.736 Mbps.

See T-Carrier System

Digital Signature

A digital tag attached to electronic documents to verify the identity of the sender and validity of the document. Legislation has been passed to allow electronic signatures to have the equal status with physical signatures for most electronic transactions. Digital signatures have been mandated by HIPAA to facilitate electronic prescriptions and online document management.

Digital Subscriber Line (DSL)

A dedicated broadband technology that uses the ubiquitous twisted pair copper wire connecting most homes and businesses today through the public telephone system to provide connectivity at relatively high speeds. DSL accomplishes this by dividing the existing telephone frequencies so that voice and data may be carried simultaneously without interference. Unlike a dial-up connection, DSL is always available. There are several different implementations available. The most common is called Asymmetric or Asynchronous (ADSL). An ADSL connection is characterized by a high-speed downstream channel, and somewhat lower speed upstream channel. Synchronous DSL is also available for business use. Distance from the subscriber site to the Telco's Central Office (CO) is the main determinant of the actual performance of a DSL connection.

Digital Zoom

A method employed by many digital cameras to enlarge a portion of the image in order to simulate the effects of optical zoom (the use of lenses to bring the subject view closer). The camera crops a portion of the image and then enlarges it back to the required size. Digital zoom generally results in a loss of image quality, compared to a similar shot taken using actual optical zoom.





Direct Capture

The process by which images are created directly by a digital system, rather than being converted from the output of an analog device. This allows for efficient, high quality reproduction, without the loss of any data from scanning or conversion. Examples of digital devices capable of direct capture include MRI and CT systems.

Document Camera

A type of video camera designed to display documents and even 3-dimensional objects onto a monitor, or displayed via connection to a projector. During videoconferencing, it is possible to display items via the interactive whiteboard. Often thought of as the digital equivalent of an overhead projector, the document camera is capable of much greater functionality, allowing display of a wider range of objects in much greater detail, and enabling transmission of images across a network. Various peripherals are available for some models, including microscope attachments and visualizers for x-rays.

Dual Tone Multi-Frequency (DTMF)

The standard for producing tones in touchtone telephony. Producing DTMF during a videoconferencing session may be necessary to join conferences, communicate with automated systems, etc. Handling DTMF may be problematic over some videoconferencing equipment. The unit may not be set up to generate or receive DTMF while in conference mode. Also, in general the audio CODECs used to support voice compression (G.711, G.722, etc.) do not handle music or DTMF well, and they may need to be handled by an “out of band” workaround.

Duplex

A system that allows data to be transmitted in both directions simultaneously. Using full duplex, the system is capable of transmitting and receiving in both directions at the same time. A voice conversation over the public telephone network is one example of this. Conversely, a half duplex system is capable of both transmitting and receiving information, but only in one direction at a time.

eHealth

The provision of healthcare supported by electronic processes and communication. eHealth is an overarching term that could include real time videoconferencing, store and forward applications, electronic health records, remote disease monitoring and many other modalities.

See Telehealth, Telemedicine

Electronic Data Interchange (EDI)

The process of sending and receiving of data directly between organizations without physical paper trail or human intervention. The security and privacy of EDI processes is a central concern of the HIPAA legislation, and of enterprises developing Electronic Health Records and other systems for exchanging Protected Health Information.

Electronic Health Record (EHR)

An electronic record composed of health information regarding an individual patient that exists as part of a complete system designed to provide access to, and management of, such information. The EHR is developed and managed by the health facility or provider. The term Electronic Health Record has largely replaced the older “Electronic Medical Record.”

See Electronic Medical Record, Personal Health Record

Electronic Medical Record (EMR)

An older expression, now largely replaced by the term Electronic Health Record (EHR).

See Electronic Health Record (EHR)

eMental Health

Use of technological solutions such as Telemedicine, online mental health websites, or disease management programs to facilitate mental healthcare. The term Telepsychiatry, which typically involves real time videoconferencing to evaluate or manage patients at a remote site, is often used interchangeably with eMental Health. eMental Health may also include the use of other means of electronic communication to facilitate the delivery of mental healthcare, consultation, or access to information.

See Telepsychiatry

Encryption

Encoding of information to protect it from unauthorized access. Encryption is one facet of electronic communications security, and is often used along with digital signatures and similar techniques to verify the integrity and authenticity of the communication. Common electronic encryption techniques include Public Key Infrastructure (PKI) for messaging and Secure Socket Layer (SSL) for transactions over the World Wide Web.

Endpoint

A terminal used to make or receive a videoconferencing call. Calls originate and terminate at endpoints.

ePrescribing

Use of electronic devices to create, review and transmit prescriptions for medication.

Compare Telepharmacy

Ethernet

The most widely used technology for Local Area Networks. Standard Ethernet, called 10BaseT, operates at 10 Mbps. Fast Ethernet, or 100BaseT, currently the most prevalent, operates at 100 Mbps. The latest form, called Gigabit Ethernet, or 1000BaseT, can provide 1,000 Mbps connectivity to the desktop.





Evidence-Based Medicine

The use of expert systems to enhance the practice of medicine through integration of research evidence, best clinical practices, and scientific studies to support clinical decision making.

See Clinical Decision Support System

Exposure Values (EV)

Numeric values that measure the compensation necessary for the amount of light illuminating a subject, in order to control proper “exposure” (the amount of light that reaches the sensor (CCD) of a digital camera). Very light (“overexposed”) subjects require a lower EV, while overly dark (“underexposed”) subjects call for an increased EV.

See Aperture, Charge Coupled Device

Far End Camera Control (FECC)

The ability to control camera functions at the distant end of a videoconferencing link.

See Camera Control

Firewall

A method of analyzing and controlling access to and flow of data across a network through the use of hardware, software, or a combination of the two. Specific ports will have to be configured through the firewall to enable videoconferencing protocols to pass through. (When troubleshooting connectivity problems involving videoconferencing over IP, firewall issues can be a common culprit).

Focal Length

A measure of the optic properties of a camera lens. Lenses are generally categorized as “wide-angle,” “normal,” or “telephoto,” depending on their focal length. A “zoom” lens can have variable focal length for a range of uses. In digital photography, the size of the image sensor (CCD) also has an affect on equivalent focal length.

See Aperture, Depth of Field

Fractional T1

A common leased service that provides the customer with a subset of the 24 available 64 Kbps DS0 lines that make up a T1. For example, leasing a “Quarter T1” would provide the user with a bandwidth of 384 Kbps, generally adequate for real time videoconferencing, at a cost savings over leasing a complete integrated T1 line.

See T-Carrier System; Compare Integrated T1

Frame Rate

The rate at which video frames are displayed, generally measured in frames per second (fps). Broadcast quality full motion video is considered to be 30 frames per second.

See Full Motion Video, Slow Scan Video, Freeze Frame

Frame Relay

A connectionless technique to send digital information quickly and inexpensively. Commonly, frame relay operates over private or leased lines. Currently, other protocols such as ATM and native-IP have begun to replace frame relay, though there are still some rural areas where 128 Kbps frame relay is the most cost effective solution for an “always on” connection.

Freeze Frame

The transmission of individual video frames (still images) selected from a video feed or file. Also used in reference to the technology of slow scan video employed in videotelephony applications.

See Slow Scan Video

Frequency Response

A measurement of audio quality, generally expressed in cycles per second (Hz). A broader frequency response range generally equates to better acoustic accuracy. Equipment such as electronic stethoscopes are often adjustable to enhance quality of a specific range of sounds.

Full Common Intermediate Format (FCIF or CIF)

A video format that is 352 pixels wide by 288 pixels high. Full CIF is primarily used for videoconferencing at bit rates of 128 Kbps and higher.

Compare Quarter CIF

Full Duplex

A system capable of transmitting and receiving in both directions at the same time.

See Duplex

Full Motion Video

Video picture quality that is perceived without unnatural motion or delays by the viewer. In videoconferencing, compressed full motion video delivers approximately 10 to 30 frames per second, depending on bandwidth and network activity. Broadcast quality video is generally considered to be approximately 30 frames per second.

See Frame Rate; Compare Slow Scan Video

G.711

The ITU technical standard for compression of 8-bit audio in the voice range, used in standard telephony and low-end videoconferencing connections.

G.722

The ITU technical standard for wideband speech encoding used to provide high quality audio in videoconferencing systems.





G.723

The ITU technical standard for dual-rate voice compression, designed for videoconferencing over videotelephony or IP.

Gatekeeper

A device that manages videoconferencing traffic and address translation within an IP-based (H.323) network, often for a specific zone. This device is useful in eliminating bottlenecks, enhancing quality of service, and simplifies addressing of videoconferencing endpoints.

Gateway

A device that provides protocol translation between H.320 (ISDN) and H.323 (IP) networking environments, allowing endpoints using ISDN to interconnect with endpoints videoconferencing over IP.

Ghosting

A video artifact often seen in the display of video images over a connection experiencing an unacceptable degree of latency. As the image moves across the screen it can leave a trail of perceptible “ghost” images.

See Artifact, Latency

Graphics Interchange Format (GIF)

A common lossless compression format for storage of digital images. GIF is generally limited to a depth of 256 colors, making it unsuitable for digital photography, but it is popular on the World Wide Web for diagrams and other design elements requiring sharp clarity with a small file size.

H.239

The ITU technical standard that addresses multiple video streams (conferencing, presentation, etc.) within a single videoconference. Endpoints that support H.239 will receive the streams and display them in separate windows. Systems that cannot support H.239 will display the graphics in a single window instead of the far end video.

See T.120

H.261

The original ITU technical standard designed for video compression over ISDN connections. H.261 was the first digital video compression standard that came into widespread use for videoconferencing, supporting the FCIF and QCIF formats. Subsequent video compression standards, including MPEG, H.263, and H.264 are all based on H.261.

H.263

The ITU technical standard that specifies video coding at low bit rates. It was originally designed for videoconferencing over H.324 (POTS-based) systems, but has also found usefulness in connections over ISDN, IP, etc. H.263 achieves acceptable compressed video over a low bandwidth using techniques including those similar to the MPEG standards.

H.264

The ITU technical standard (also known as MPEG-4 Part 10) that governs video coding at a very high compression rate. It represents a major improvement over H.263 and other previous CODECs. H.264 was designed to produce acceptable video quality at substantially half the bit rate required by previous standards.

H.320

The ITU technical standard for videoconferencing that allows different equipment to interoperate via ISDN connections.

H.323

The ITU technical standard for videoconferencing that allows different equipment to interoperate via TCP/IP.

H.324

The ITU technical standard for videoconferencing that allows different equipment to interoperate via Plain Old Telephone Service (POTS).

Half Duplex

A system capable of both transmitting and receiving information, but only in one direction at a time

See Duplex

Health Level Seven Messaging Standard (HL7)

A series of communications protocol standards for the transmission of health information. HL7 messaging allows various applications and medical devices to successfully interact and exchange information.

See also <http://www.hl7.org>

Hub Site

In Telemedicine, the location from which specialty or consultative services originate.

Compare Spoke Site

Institute of Electrical and Electronics Engineers (IEEE)

Professional organization that develops standards for electronic devices, including medical imaging and communication between medical devices.

See also http://standards.ieee.org/catalog/olis/arch_meddev.html

Integrated Services Digital Network (ISDN)

A dial-up digital connectivity medium used commonly for videoconferencing. ISDN can transmit voice, data, and video simultaneously over a connection. Since ISDN services are used on demand by dialing another ISDN-based device, per-minute charges accumulate at a contracted rate and then are billed to the site placing the call. This service is analogous to using the dialing features associated with a long distance telephone call – whoever dials pays the bill.

See Basic Rate Interface, Primary Rate Interface, H.320





Integrated T1

A T1 communications circuit leased for exclusive use of one customer. All 24 DS0 lines are available to the end user.

See T-Carrier System; Compare Fractional T1

Interactive Video/Television (IATV or ITV)

Two-way transmission of digitized video images occurring in real time between users at two or more locations.

International Maritime Satellite (INMARSAT)

An international satellite network established by treaty between 79 member countries. Fixed or portable terminal stations provide links between rural locations and telecommunications networks. INMARSAT can provide connectivity anywhere on Earth for a per minute charge.

International Telecommunications Union (ITU) Recommendations

Now an agency of the United Nations, the ITU was originally founded in 1865 to standardize telegraphy. The ITU's Telecommunication Standardization Sector (ITU-T) publishes a wide range of "Recommendations" (i.e. standards) relating to telecommunications and videoconferencing. Equipment based on these standards allows successful conferencing regardless of platform or manufacturer. The ITU-T standards most familiar to videoconferencing users are found in the H-series, "Audiovisual and Multimedia Systems," (primarily for control of videoconferencing over ISDN, IP, etc.), the G-series, "Transmission Systems and Media, Digital Systems and Networks," (primarily for control of audio transmission) and the T-series, "Terminals for Telematic Services" (primarily for control of data collaboration and similar features).

See also <http://www.itu.int/ITU-T/index.html>

Interoperability

The ability of two or more systems (or components) to exchange information and to use the information that has been exchanged. Generally achieved through the implementation of standards.

ISO Sensitivity

Taken from the acronym for International Standards Organization, "ISO" is a term used in digital photography to denote how sensitive the image sensor is to the amount of light present. The higher the ISO, the more sensitive the sensor and the better suited it is for taking pictures in low-light situations.

See Digital Image Noise

Joint Photographic Experts Group (JPEG)

A series of image compression formats made popular by their small file size and suitability for digital photography. JPEG images are typically *lossy* when compressed, depending on the algorithm employed by the device or selected when creating the file.

Kilobits Per Second (Kbps)

A measure of transmission rate. A kilobit is roughly one thousand bits (1,000 or 1,024 often depending on marketing usage).

Kiosk (Electronic Kiosk)

A purpose-built computer system designed to allow access to a specific set of programs or search sites. An electronic kiosk is generally designed with a sturdy housing to prevent theft or tampering, and withstand unattended public use. The system uses software operating in “kiosk mode,” which restricts access to carefully defined functionality, whether a search for health information, assistance in completing forms, etc. Kiosks have been used to provide access to health information, online applications for state programs such as health insurance (i.e. Medi-Cal or Healthy Families in California), or to generate vouchers for specific treatments such as flu shots.

Last Mile

The final portion of connectivity between a Telco and the customer (often referred to as the “local loop”). The term “mile” is used figuratively. In a central business district, it may be less than half a mile. In a rural area it may be far more than one mile. Especially in the case of the Public Switched Telephone Network, the last mile is the most problematic, as it is often the last remaining analog element of the circuit path. The condition and distance from the customer to the Telco along the last mile is the primary driver for the quality of a DSL or ISDN connection.
See Digital Subscriber Line, Integrated Services Digital Network, Central Office

Latency

Perceptible delay between transmission and receipt of data across a connection. Latency can be increased due to a high level of network activity, or a poor or slow connection. A connection with high latency can produce unacceptable delays and lost data in video and audio transmission. Network management techniques often seek to improve quality of service by decreasing latency of audiovisual data.
Compare Shot-to-Shot Latency

Leased Line

A line leased from a Telco for the exclusive use of one client. Also called a “dedicated line.”

Local Area Network (LAN)

A typical computer network within an organization, supporting a wide range of devices, linking computers, printers, servers, and other equipment. It can support audio, video, and data exchange. A LAN generally operates at 10, 100, or 1,000 Mbps (or some combination thereof).
Compare Wide Area Network





Local Loop

The wired connection from a Telco's central office to its subscribers' home or business sites. Historically, this connection has been made by twisted pair, though efforts are underway in some locations to replace this analog medium with high speed fiber optic connections.

See Last Mile, Central Office

Loopback

A common diagnostic tool in which a signal is transmitted over a connection and then returned to the sending device. Loopbacks are often used to test video equipment.

Lossless

A technique for data compression that preserves all elements of the original. Lossless formats cannot always guarantee a high level of compression, but are necessary when it is important to reproduce an exact duplicate of the original (e.g. an executable file). Common lossless formats include GIF and PNG for graphics, and ZIP for data files.

See Compression; Compare Lossy

Lossy

A technique for data compression that achieves a relatively high level of file size reduction by removing elements of the original deemed to be unnecessary or imperceptible to the intended viewer. Lossy compression is most commonly used when processing audio, still image, or video data. Videoconferencing CODECs often take advantage of lossy compression methods to produce an acceptable quality presentation while minimizing bandwidth requirements. Common lossy formats include MP3 for audio, JPEG for still images, and MPEG for video.

See Compression; Compare Lossless

Megabits Per Second (Mbps)

A measure of transmission rate. A megabit is roughly one million bits (1,000,000 or 1,024,000 or 1,048,576 often depending on marketing usage).

Megapixel

A popular measurement of the potential resolution of a digital camera, in millions of pixels. The megapixel rating of a given digital camera can give the user a general idea of the maximum effective print size and image resolution that it is capable of, although many factors can affect the usefulness of a particular camera for a particular task.

See Pixel, Resolution

Modulator - Demodulator (Modem)

A device that converts digital signals to analog tones, and vice versa, to enable data transmission over telephone lines. Commonly referred to as “dial-up,” modem connectivity is limited in theory to the 64 Kbps rate used for voice telephony, though effectively, a modem connection is limited to 56 Kbps or less due to overhead and latency.

See Digital Signal-X

Moving Picture Experts Group (MPEG)

A series of standards for compression and file format for digital video and audio. The most common formats in this series are MPEG-1 (used in Video CD, MP3 audio, etc.) and MPEG-2 (provides broadcast quality pictures, and is used with some modification in the DVD format).

MPEG Audio Layer-3 (MP3)

A popular lossy compression format for digital audio.

See Moving Pictures Expert Group

Multiplexer (MUX)

A device that combines multiple inputs (such as ISDN PRI channels or ISDN BRI lines) into an aggregate signal to be transported via a single transmission path. For example, a MUX can be used to achieve a speed of 384 Kbps for effective videoconferencing by combining three pairs of BRI lines into a single data circuit.

See Basic Rate Interface, Primary Rate Interface, Integrated Services Digital Network

Multipoint Control Unit (MCU)

A device that can link multiple videoconferencing sites into a single videoconference. An MCU is necessary to conduct a multipoint conference with three or more participants (exception: some videoconferencing equipment has built-in limited multipoint ability). An MCU is also often referred to as a “bridge.”

See Multipoint Videoconference

Multipoint Videoconference

Videoconference with three or more participants. A multipoint conference generally requires the use of an MCU (or equipment with built-in multipoint capability). During a multipoint conference, there are two modes available to present the participants. In a continuous presence videoconference, all participants can be seen at the same time on the far end monitors. Microphones at all sites can be active, which may lead to extraneous noises and interruptions. This mode is not the best choice if data is to be displayed (e.g. via document camera, whiteboard, etc.) as the presentation will be limited to a portion of the screen. Conversely, in the voice activated mode, only the participating site that produced the most recent audio input will be visible. Other sites must ensure their microphones are muted to prevent inadvertently switching the video away from the intended speaker. Where several speakers take turns in voice activated mode, they must realize there is a tangible delay as the view switches from one site to the next.

See Multipoint Control Unit, Continuous Presence, Voice Activated Switching, Chair Control Mode; Compare Point to Point Conference





Multiprotocol Label Switching (MPLS)

An advanced network traffic management mechanism that can enhance quality of service by its ability to distinguish and handle different types of data packets according to specific criteria.

Narrowband

A term with various uses in communications and other fields, generally signifying a low-capacity circuit. Commonly used as the opposite of broadband, it often refers to a communications medium of relatively slow speed (significantly less than T1) without the capacity to handle multiple data signals simultaneously.

See Bandwidth; Compare Broadband

National Health Information Infrastructure (NHII)

An initiative of the Department of Health and Human Services to improve the state of health information technology in the U.S. One vision for the future of this initiative involves work towards a National Health Information Network (NHIN), to help face the significant challenges of inconsistent quality and rising costs in U.S. healthcare, and integrate Regional Health Information Organizations as they develop throughout the country.

See also <http://www.hhs.gov/healthit/>

Noise Cancellation

A technique for reducing or preventing audio feedback during a videoconference. Without noise cancellation, the signal emanating from a speaker is captured by the microphone and sent back to the originating location, thereby creating an echo or distortion.

Packet Switched Network (PSN)

A type of network in which data is transmitted in relatively small “packets” and routed based on the address contained within each packet, relying on the network infrastructure to choose and manage the route. Transmitting data in packets allows the same path to be shared by many users at once. This type of communication is also called “connectionless.” In contrast, regular voice telephony or modem connections are “circuit-switched” and use a dedicated data path that is unavailable to other users during the call.

Compare Circuit Switched Network

Pan-Tilt-Zoom (P-T-Z)

A system allowing control of the major movement and focus functions of a video camera. Near and far-end camera control is essential to conduct a professional encounter via real time videoconferencing Telemedicine.

See Camera Control

Patient Exam Camera

A camera typically used to examine the general condition of the patient. Types of cameras include those that are embedded in set-top videoconferencing units, handheld video cameras, gooseneck cameras, camcorders, etc. The camera may be analog or digital depending upon the connection to the videoconferencing unit.

See Digital Camera

Peripherals

Attachments designed to enhance the functionality of various electronic devices. Examples include blood pressure monitors, ophthalmoscopes, document cameras, etc.

Personal Health Record (PHR)

A longitudinal patient-maintained record of individual health history. The PHR is generally a consumer product that can be accessed, and in a growing number of cases, populated, by the patient. The intent of many such systems is to allow the PHR to be either owned or at the least shared by the patient. The PHR is meant to move along with the patient no matter where they are located or what health plan or organization they are connected to.

Compare Electronic Health Record, Electronic Medical Record

Picture Archiving and Communications System (PACS)

A digital system for the acquisition, storage, transmission and display of images from various sources, including X-ray, CT, MRI, and ultrasound. PACS generally include optical storage servers, high resolution displays, printers, and other functionality.

Picture-In-Picture (PIP)

Allows both sides of a videoconference to be viewed simultaneously on a single screen. PIP may allow choices so the near-side or far-side image can change positions. Implementations of PIP may also facilitate viewing live video and graphics presentations simultaneously.

Pixel (Picture Element)

The smallest unit of a video display, used as a measure of resolution for video formats.

Portable Network Graphics (PNG)

A popular lossless compression format for still images. PNG files do not have the 256 color limitation of the earlier GIF format.

Primary Rate Interface (PRI)

A telecommunications standard over ISDN that uses 23 DS0 Bearer channels and one DS0 Data channel, capable of achieving 1.544 Mbps, or the equivalent of T1.

See Integrated Services Digital Network; Compare Basic Rate Interface





Private Branch Exchange (PBX)

An internal telephone system owned and operated by a private enterprise. The PBX switches calls between users on internal lines and allows for sharing of a limited number of external lines, saving the cost of requiring a public switched telephone line for each user.

Plain Old Telephone Service (POTS)

The ubiquitous, partially analog phone system currently in public use worldwide. Also known as the Public Switched Telephone Network (PSTN). Although a relatively low bandwidth medium, POTS is sometimes a suitable medium for Telemedicine, based on ease of access and low cost. POTS videophones and telemetry devices are often used in Telehomecare.

Point to Point Conference

The classic videoconferencing mode consisting of two participants connected directly. This is the most common usage for patient encounters or provider consultations.

Compare Multipoint Conference

Presentation Mode

Videoconferencing mode in which one site (e.g. a lecturer) is continuously displayed to all endpoints. Sometimes also called broadcast or lecture mode.

Presenter (Patient Presenter)

Telemedicine encounters require the distant provider to perform an exam of a patient from many miles away. In order to accomplish that task, an individual with sufficient clinical background and training in the use of Telemedicine equipment must be available at the originating site to “present” the patient, manage the cameras, and perform any “hands-on” activities to successfully complete the exam.

See Hub Site, Spoke Site

Protected Health Information (PHI)

Under HIPAA, any individually identifiable health information, including information not specifically linked to an individual that could reasonably be expected to allow individual identification.

Public Switched Telephone Network (PSTN)

The circuit switched telephone system in public use worldwide. To a great extent, the PSTN is governed by ITU-T standards, (e.g., E.163 which defines telephone numbers) which allow interoperability between telephone systems around the globe. The PSTN is now almost entirely digital, with the notable exception of the majority of the world’s “last mile” connections.

See POTS, Telecommunications, Last Mile

Quality of Service (QoS)

A technique used to prioritize network data traffic. Identifying videoconferencing data as a high priority ensures that the session will not be interrupted by other network traffic, such as large file transfers.

Compare Class of Service

Quarter Common Intermediate Format (QCIF)

A video resolution one fourth the size of Full CIF, 176 pixels wide by 144 high. Quarter CIF is commonly used for desktop videoconferencing over low bit rate connections (128 Kbps and below). QCIF is the default minimum specified by the H.261 standard.

Compare Full Common Intermediate Format

Raw Image Format (RAW/DNG)

The original, uncompressed, unfiltered image captured by a digital camera. RAW image data may be useful for manipulation in certain clinical applications. In general, RAW formats are proprietary to the individual camera manufacturer. However, the Digital Negative (DNG) format is an emerging non-proprietary standard for raw digital imagery.

Real Time

In Telemedicine terms, conducting an encounter or consultation where both parties are available and interacting simultaneously. Real time Telemedicine is generally conducted via full motion videoconferencing.

Compare Store and Forward

Regional Health Information Organization (RHIO)

A regional organization of stakeholders enabling the exchange and use of health information to facilitate improvements in healthcare quality, safety, and efficiency.

For California-specific information, please see also <http://www.calrhio.org/>

Remote Monitoring

An application of telemetry and Telehomecare, using measuring devices linked via a communications medium, such as a phone line, to remotely collect and transmit patient data to a provider site for interpretation. Common uses include monitoring of one or more vital signs, such as blood pressure, weight, glucose levels, ECG data, etc.

See telemetry, Telehomecare

Resolution

The level of detail a given device is capable of displaying, generally measured in pixels, dots per inch, color depth, or similar criteria.





Rural Health Care Division (RHCD)

RHCD is a component of the Universal Service Administrative Company (USAC). The RHCD manages a universal service support mechanism that provides reduced rates to rural healthcare providers for telecommunications and Internet services necessary for the provision of healthcare.

Session Initiation Protocol (SIP)

Emerging standard for initiation, termination, and control of multimedia communications sessions over IP. SIP is widely used in Voice over IP and instant messaging applications, and is becoming more prevalent in videoconferencing solutions. SIP provides a feature-rich control set with telephone-like operations, and human-readable elements similar to HTTP (e.g. “404 – Not Found”).

Shot-to-Shot Latency

In digital photography, the physical time required to write a captured image file to internal or card memory produces a tangible delay in the frequency at which multiple shots can be taken.

Shutter Speed

Controls the amount of time the digital camera’s sensor (CCD) is exposed to light. At slower shutter speeds, moving objects will appear to blur in the picture. “Shutter lag” is a common problem with low-end digital cameras, producing a perceptible delay between pressing the shutter control and exposure of the image.

Slow Scan Video

Narrow bandwidth video image transmission, capable of transmitting still images over standard telephone lines at a rate of approximately 2 to 7 per minute.

See Freeze Frame

Spoke Site

The remote site where the patient is presented during a Telemedicine encounter, or where the professional requesting consultation with a specialist is located.

Compare Hub Site

Store and Forward

A Telemedicine/eHealth encounter or consult that relies on the asynchronous transfer of still digital images of a patient, or clinical data, such as blood glucose levels or electrocardiogram measurements, from one site to another for the purpose for rendering a medical opinion or diagnosis. Common types of store and forward services include radiology, pathology, dermatology, ophthalmology, and wound care.

Compare Real Time

Streaming

Transmission of video or audio data over a network on an as-needed basis. Such content is often available on web pages in various formats which play on demand by buffering portions of the file to temporary local storage as it is displayed rather than downloading the entire file before playing.

Synchronous Communication

A mode of communication where the transfer takes place simultaneously. Examples include real time videoconferencing or standard telephony.

See Asynchronous Communication

Systemized Nomenclature for Medicine: Clinical Terms (SNOMED CT)

A standard code set covering medical terms, procedures, and diagnoses maintained by College of American Pathologists and licensed by the National Library of Medicine. Used as a framework to promote interoperability among healthcare applications.

See also <http://www.snomed.org>

T.120

The ITU standard for videoconferencing that covers a wide range of compatibility requirements for multipoint conferencing, including specifications for file transfer, program sharing, and whiteboard functions. Subsequent standards in this series cover specific functions in greater depth (e.g. T.126 for whiteboarding and remote application control).

T-Carrier System (T1 / T3)

Introduced by Bell Labs in the 1960s, originally to support digital voice communication, but now carrying data as well. The original transmission rate (1.544 Mbps) carried by the T1 line is still in common use today, as is the considerably faster high volume T3 line, at 44.736 Mbps. The T-carrier system consists of a number of 64 Kbps DS0 channels that are multiplexed. A T1 line consists of 24 DS0 signals, which may be “integrated” for dedicated use of a single customer, or often “fractionalized” into some portion of the 24 channels. A common cost-saving arrangement is to lease a fractional “quarter T1,” operating at 384 Kbps, a preferred, though not standard, bandwidth for videoconferencing.

See Digital Signal-X

Tagged Image File Format (TIFF)

A popular file format for digital images, known for its flexibility and adaptability. TIFF images are generally uncompressed, though there are options for the use of lossless compression. TIFF is often used for document imagery (e.g. fax and scanner applications).

See Bitmap, Lossless





Telco

Generic acronym for telephone company or telecommunications service provider. Also occasionally used as an acronym for “Telephone Central Office.”

Telecardiology

The use of store and forward Telemedicine to transmit a patient’s cardiac data between the remote location and the specialist’s site. This may involve data from digital stethoscope auscultation, echocardiograph readings, or radiographic images.

Telecolposcopy

The use of Telemedicine to provide specialist interpretation of cervical cancer screening, typically involving transmission of store and forward imagery, use of computer-based diagnostic equipment, or real time consultation.

Telecommunications

Transmission and reception of voice, video, or other data over a distance. A telecommunications system has several components: a transmitter (electronic device), a transmission medium (e.g. wire-based Telco or LAN, wireless antenna, satellite), and generally a specific channel (e.g. radio frequency, phone number, IP address). Telecommunications can be point-to-point, multipoint, or broadcast (one way transmission from a sender to multiple receivers).

Teleconferencing

Interactive communication between two or more individuals at geographically separated sites, via a telecommunications system. Teleconferencing may be audio only, include video, and/or support the transmission of various files, graphics content, and other information.

Teleconsultation

Consultation between a provider and a specialist at a distant location, utilizing either store and forward Telemedicine or real time videoconferencing.

Teledentistry

Improving access to oral healthcare using Telemedicine through Teleconsultation and the examination of patients at a distance.

Teledermatology

Specialist use of Telemedicine to provide dermatological care at a distance. Teledermatology has been found to be an effective use of store and forward transmission of digital images and text, though real time consultation via videoconferencing is also used.

Teledisease Management (Remote Disease Management)

Disease management at a distance is most often done by a variety of remote monitoring technologies which rarely require video.

Telehealth

An older term still in widespread usage, generally referring to the provision of healthcare and health information through the use of technological means rather than traditional clinical encounters.

Compare eHealth, Telemedicine

Telehomecare

The use of remote technologies to provide care in a home setting. Based upon the clinical needs of the patient, this may include the use of real-time interactive videoconferencing systems to conduct homecare visits, or the use of remote monitoring systems that transmit patient data, such as blood pressure, weight, or pulse oximetry. Both of these approaches can use a wide variety of peripheral devices to collect vital signs or lab data, such as glucose levels. An education component is often a part of Telehomecare services, to promote medication compliance and encourage patients to become more involved with managing their health care needs.

Telemedicine

The use of telecommunications and information technologies for the provision of healthcare at a distance. New methods continue to evolve over time, but this includes real time videoconferencing as well as store and forward methodologies.

Compare eHealth, Telehealth

Telementoring

The use of a telecommunications system to provide guidance and consultation between healthcare professionals.

Telemetry

Remote measurement and transmission of patient data via a telecommunications system to a provider's site for analysis and decision making.

See Remote Monitoring

Teleneurology

Specialist use of Telemedicine to provide neurological care at a distance. Teleneurology often makes use of real-time videoconferencing to aid in diagnosis (e.g. gait assessment), although store and forward solutions (provider-to-provider consultation for unusual neurological symptoms) have also proven effective. Teleneurology has also shown significant promise in the on-going treatment for stroke patients.

Telenutrition

Use of Telemedicine for nutritional counseling and monitoring of patient progress from a remote location (often in a home setting).





Teleophthalmology

Use of Telemedicine to examine and diagnose diseases of the eye between geographically separated sites. Teleophthalmology has been found to be an effective use of store and forward transmission of digital images, though real time consultations also occur.

Telepathology

Use of Telemedicine to view pathological specimens remotely in order to facilitate diagnostic testing.

Telepharmacy

Use of Telemedicine to facilitate dispensing medication and providing pharmaceutical information at a distance.

Telepresence

The use of robotic and other technologies to perform clinical procedures at a remote location.

Telepsychiatry

Use of videoconferencing to connect patients at a distant site to a psychiatric specialist at different location.

See eMental Health

Teleradiology

Use of electronic systems, such as a Picture Archiving and Communications System (PACS), to transmit, store, view, and analyze radiographic images and patient information over a distance.

Telesurgery

Use of Telemedicine through telepresence systems or videoconferencing to facilitate the success of a surgical procedure either through consultation or actual participation in the procedure from a distance.

Teletrauma

Use of videoconferencing to provide specialist consultation with trauma surgeons during pre-hospital or hospital-based trauma procedures.

Telewoundcare

Use of a telecommunications system to assess and manage a patient's wounds at a distance. Remote assessment is often based on images of the patient's wounds delivered to a consulting specialist via store and forward technology. Careful selection of digital cameras and peripherals to ensure high quality pictures and precise color reproduction are essential to effective Telewoundcare. Some providers have also found great benefits to conducting wound care management via real time videoconferencing, recognizing the importance of assessing the whole patient and having the opportunity to provide patient education on wound care at the time of the assessment.

Throughput

Measure of the amount of data transmitted across a network over a period of time, generally expressed in bits or bytes per second. Achieving higher throughput is one factor in reducing latency in a large transmission such as a videoconference.

Transmission Control Protocol/Internet Protocol (TCP/IP)

A series of protocols used to control communication across the Internet. TCP/IP uses two main protocols, TCP and IP. TCP enables two hosts to establish a connection and exchange packets of data. IP specifies the format and addressing scheme used for packets of data.

Transmission Rate

The speed at which data travels over a communications channel, generally expressed in bits or bytes per second.

Twisted Pair

A name for the ubiquitous standard phone wire, which consists of a pair of copper wires that have been twisted to minimize interference. Twisted pair may be used to transmit voice or data.

Unified Medical Language System (UMLS)

A specified subset of medical terminology and “Knowledge Sources” useful to ensure accurate communication and interoperability between medical systems.

See also http://www.nlm.nih.gov/research/umls/about_umls.html

Universal Service Administrative Company (USAC)

The Universal Service Administrative Company administers the Universal Service Fund, which provides communities across the country with affordable telecommunication services. The Rural Health Care Division of USAC manages the telecommunications discount program for health care.

Videoconferencing

Interactive teleconferencing with video capabilities.

Videophone

Video telephony provides full duplex audio and video communication over standard POTS lines. Conferencing over videophone is generally low bandwidth, limited to roughly 15 frames per second or less, and is covered by the H.324 ITU videoconferencing standard.

Virtual Private Network (VPN)

A method to carry private communications network traffic over the public Internet. VPN traffic is made possible by “tunneling” or “port forwarding”, which involves the transmission of private data over public lines in an encapsulated form.





Voice Activated Switching

In multipoint videoconferencing, a mode that allows all participants to see the current speaker. Only the endpoint with the most recent audio input is displayed. This is often an ideal mode for lecture-style videoconferences.

Compare Continuous Presence

White Balance

A setting on a digital camera that adjusts the brightest portion of the framed shot so it appears white. Although the human eye will see white objects as white regardless of lighting conditions, a digital camera will not always do so. Most digital cameras are equipped with white balance settings to compensate for different lighting conditions (e.g. daylight, clouds, fluorescent, incandescent).

Whiteboard

A feature of videoconferencing systems that allows participants to write, draw images, and display other inputs during a conference. Whiteboarding and other collaboration functions are specified in the ITU standard T.120 and subsequent updates.

Wide Area Network (WAN)

A network covering a wide geographic area, whether several company sites or services by a common Internet service provider.

Compare Local Area Network

Wireless

Refers to a wide range of communications technologies along the radio frequency spectrum. Applications specific to Telemedicine and eHealth take advantage of wireless technologies including cellular telephony and wireless networking. Wireless networking has become increasingly common due to the implementation of the IEEE 802.11 series of standards, which allow wireless networking devices to easily interoperate regardless of manufacturer. Especially in rural areas, some companies are taking advantage of wireless technologies to provide broadband service where wired access is impractical or cost prohibitive.

See also <http://grouper.ieee.org/groups/802/11/>

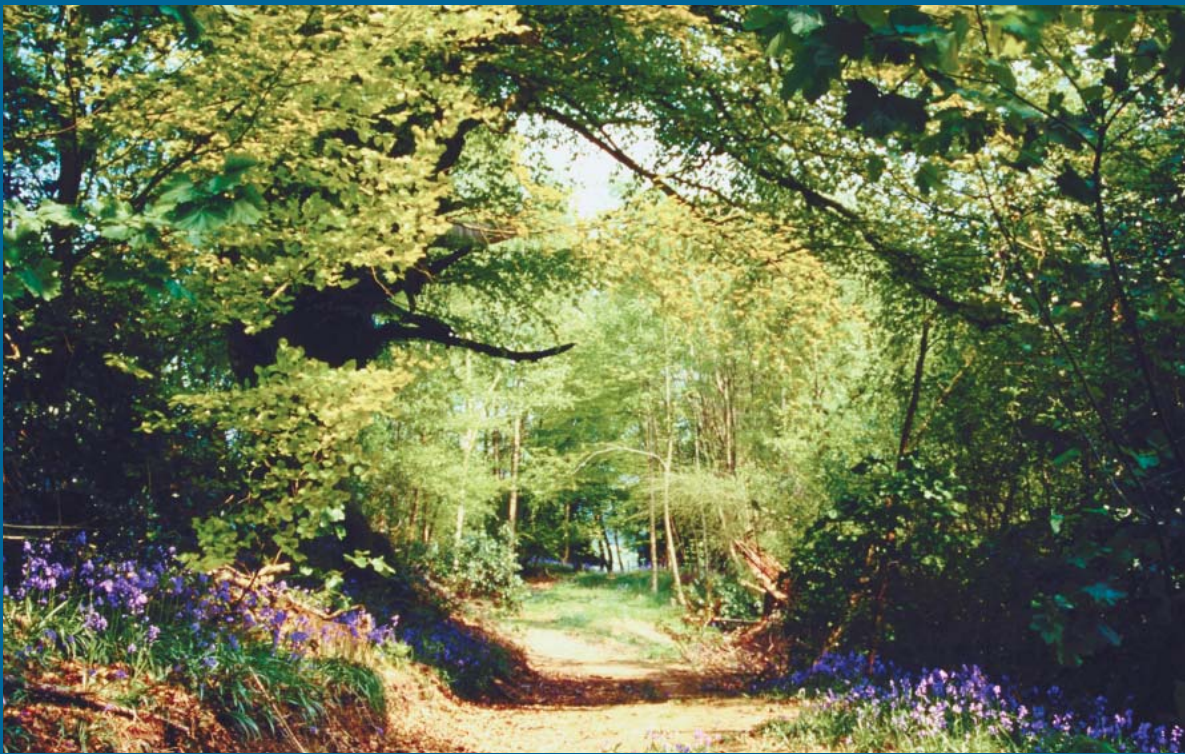
ZIP

A popular format for compressing one or more files into a single archive. ZIP archives can be useful for transmitting large amounts of data, by reducing overall file size and ensuring complete receipt of an entire set of files through the use of checksums. The ZIP format uses lossless compression techniques, and cannot always guarantee smaller file size, especially when archiving highly compressed originals (such as JPEG images).

See Compression, Lossless

Improving the quality of health care ultimately requires improving the availability of health care information.¹

1 Institute of Medicine. (2005). Quality through collaboration. The future of rural health. Washington DC: Institute of Medicine.



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