Telecommunication

Telecommunication is the assisted transmission of signals over a distance for the purpose of

communication. In earlier times, this may have involved the use of smoke signals, drums, semaphore or

heliograph. In modern times, telecommunication typically involves the use of electronic transmitters such

as the telephone, television, radio or computer. Early inventors in the field of telecommunication include

Alexander Graham Bell, Guglielmo Marconi and John Logie Baird. Telecommunication is an important

part of the world economy and the telecommunication industry's revenue is placed at just under 3 percent

of the gross world product.

The word telecommunication was adapted from the French word telecommunication. It is a compound of

the Greek prefix tele, meaning 'far off, and the Latin communicare, meaning 'to share. The French word

telecommunication was coined in 1904 by French engineer and novelist Edouard Estaunie.

Basic elements

A telecommunication system consists of three basic elements:

• A transmitter that takes information and converts it to a signal;

• A transmission medium that carries the signal; and,

• A receiver that receives the signal and converts it back into usable information.

In a radio broadcast for example, the broadcast tower is the transmitter, free space is the transmission

medium and the radio is the receiver. Often telecommunication systems are two-way, and a single device

acts as both a transmitter and receiver or transceiver. For example, a mobile phone is a transceiver.

Telecommunication over a phone line is called point-to-point communication because it is between one

transmitter and one receiver. Telecommunication through radio broadcasts is called broadcast

communication because it is between one powerful transmitter and numerous receivers.

Analogue or digital

Signals can be either analogue or digital. In an analogue signal, the signal is varied continuously with

respect to the information. In a digital signal, the information is encoded as a set of discrete values (for

example ones and zeros). During transmission the information contained in analogue signals will be

degraded by noise. Conversely, unless the noise exceeds a certain threshold, the information contained in

digital signals will remain intact. This represents a key advantage of digital signals over analogue signals.

Networks

A collection of transmitters, receivers or transceivers that communicate with each other is known as a

network.

Channels

A channel is a division in a transmission medium so that it can be used to send multiple streams of

information. For example, a radio station may broadcast at 96.1 MHz while another radio station may

broadcast at 94.5 MHz. In this case, the medium has been divided by frequency and each channel has

received a separate frequency to broadcast on. Alternatively, one could allocate each channel a recurring

segment of time over which to broadcast — this is known as time-division multiplexing and is sometimes

used in digital communication.

Modulation

The shaping of a signal to convey information is known as modulation. Modulation can be used to

represent a digital message as an analogue waveform. This is known as keying and several keying

techniques exist (these include phase-shift keying, frequency-shift keying and amplitude-shift keying).

Bluetooth, for example, uses phase-shift keying to exchange information between devices.

Modulation can also be used to transmit the information of analogue signals at higher frequencies. This is

helpful because low-frequency analogue signals cannot be effectively transmitted over free space. Hence

the information from a low-frequency analogue signal must be superimposed on a higher-frequency

signal (known as a carrier wave) before transmission. There are several different modulation schemes

available to achieve this (two of the most basic being amplitude modulation and frequency modulation).

An example of this process is a DJ's voice being superimposed on a 96 MHz carrier wave using frequency

modulation (the voice would then be received on a radio as the channel "96 FM").

Mobile:

The mobile phone, cellular phone, or simply cell phone is a long-range, portable electronic device used

for mobile communication that uses a network of specialized base stations known as cell sites. In addition

to the standard voice function of a telephone, current mobile phones can support many additional services

such as SMS for text messaging, email, packet switching for access to the Internet, and MMS for sending

and receiving photos and video. Mobile phones generally obtain power from batteries which can be

recharged from mains power, a USB port or a cigarette lighter socket in a car.

Applications

Mobile news services are expanding with many organizations providing "on-demand" news services by

SMS. Some also provide "instant" news pushed out by SMS. Mobile telephony also facilitates activism

and public journalism being explored by Reuters and Yahoo and small independent news companies such

as Jasmine News in Sri Lanka. Companies like Monster are starting to offer mobile services such as job

search and career advice.

Features

The camera phone now holds 85% of the mobile phone market. Mobile phones often have features

beyond sending text messages and making voice calls, including Internet browsing, music (MP3)

playback, memo recording, personal organizer functions, e-mail, instant messaging, built-in cameras and

camcorders, ringtones, games, radio, Push-to-Talk (PTT), infrared and Bluetooth connectivity, call

registers, ability to watch streaming video or download video for later viewing, video calling and serve as

a wireless modem for a PC, and soon will also serve as a console of sorts to online games and other high

quality’s games.

Technology

Mobile phones and the network they operate under vary significantly from provider to provider, and

country to country. However, all of them communicate through electromagnetic radio waves with a cell

site base station, the antennas of which are usually mounted on a tower, pole or building.

Cell Broadcast

It is also known as Short Message Service - Cell Broadcast (SMS-CB). Cell Broadcast is a mobile

technology that allows messages (up to 15 pages of up to 93 characters) to be broadcast to all mobile

handsets and similar devices within a designated geographical area. The broadcast range can be varied,

from a single cell to the entire network. Cordless telephone (portable phone) Cordless phones are standard

telephones with radio handsets. Unlike mobile phones, cordless phones use private base stations that are

not shared between subscribers. The base station is connected to a land-line.

Fax:

Fax (short for facsimile, from Latin fac simile, "make similar", i.e. "make a copy") is a

telecommunications technology used to transfer copies (facsimiles) of documents, especially using

affordable devices operating over the telephone network. The word telefax, short for telefacsimile means

for "make a copy at a distance". The device is also known as a Telecopier in certain industries. When

sending documents to people at large distances, faxes have a distinct advantage over postal mail in that

the delivery is nearly instantenous.

Traditional Fax

A "fax machine" usually consists of an image scanner, a modem, a printer, and usually a phone combined

into a single package. The scanner converts the content printed on a physical document into a digital

image, the modem sends the image data over a phone line to another device, and the printer at the far end

produces a copy of the transmitted document.

Fax machine — Phone line — Fax machine

It transmits data in the form of pulses via a telephone line to a recipient, usually another fax machine,

which then transforms these impulses into images, and prints them on paper. The traditional method

requires a phone line, and only one fax can be sent or received at a time.

Computer-based faxing

Another alternative to a physical fax machine is to make use of computer software which allows people to

send and receive faxes using their own computers.

As modems came into wider use with personal computers, the computer was used to send faxes directly.

Instead offirst printing a hard copy to be then sent via fax machine, a document could now be printed

directly to the software fax, and then sent via the computer's modem. Receiving faxes was accomplished

similarly.

• Computer — Phone line — Fax machine

• Fax Machine — Phone line — Computer

A disadvantage of receiving faxes this way is that the computer has to be turned on and running the fax

software to receive any faxes. Note: This method is distinct from Internet faxing as the information is sent

directly over the telephone network, not over the Internet.

Internet Fax

One popular alternative is to subscribe to an internet fax service. Internet fax uses the internet to receive

and send faxes. Fax service providers allow users to send and receive faxes from their personal computers

using an existing email account. No software, fax server or fax machine is needed. Faxes are received as

attached .TIF or .PDF files, or in proprietary formats that require the use of the service provider's

software. Faxes can be sent or retrieved from anywhere at any time that a user can get internet access

Utilizing a fax service provider requires no paper, toner, fax line, etc.

Advantages of using the internet can include

1. No extra telephone line required for the fax

2. Paperless communication, integrated with email

3. Send and receive multiple faxes simultaneously

4. Reduction in phone costs Internet fax servers/gateways

The Internet has enabled development of several other methods of sending and receiving a fax. The more

common method is an extension of computer-based faxing, and involves using a fax server/gateway to the

Internet to convert between faxes and emails. It is often referred to as "fax to mail" or "mail to fax". This

technology is more and more replacing the traditional fax machine because it offers the advantage of

dispensing with the machine as well as the additional telephone line.

• Fax machine — Phone line — Fax gateway — email message (over Internet) — computer email

account

A fax is sent via the Public Switched Telephone Network (PSTN) on the fax server, which receives the

fax and converts it into PDF or TIFF format, according to the instructions of the user. The fax is then

transmitted to the Web server which posts it in the Web interface on the account of the subscriber, who is

alerted of the reception by an email containing the fax in an attached file and sometimes by a message on

his mobile phone.

Sending:

• Computer — Internet — Fax gateway — Phone line — Fax machine

From his/her computer, in the supplier Web site, the user chooses the document s/he wants to send and

the fax number of the recipient. When sending, the document is usually converted to PDF format and sent

by the Web server to the fax server, which then transmits it to the recipient fax machine via the Standard

Telephone Network. Then the user receives a confirmation that the sending was carried out, in his/her

web interface and/or by email.

An Internet fax service allows one to send faxes from a computer via an Internet connection, thanks to a

Web interface usually available on the supplier's Web site. This technology has many advantages:

• No fax machine — no maintenance, no paper, toner expenditure, possible repairs, etc.

• Mobility — All actions are done on the Web interface; the service is thus available from any computer

connected to Internet, everywhere in the world.

• Confidentiality — The faxes are received directly on the account of the user; he is the only one who

can access it. The received faxes are not likely to be lost any more or read by the wrong people.

• No installation of software or hardware — All actions are done on the Web interface of the supplier,

on the account of the user.

• No telephone subscription for an additional line dedicated to the fax.

• Many faxes can be sent or received simultaneously, and faxes can be received while the computer is

switched off.

Fax using Voice over IP

Making phone calls over the Internet (Voice over Internet Protocol, or VoIP) has become increasingly

popular. Compressing fax signals is different from compressing voice signals, so a new standard has been

created for this. If the VoIP adapter and gateway are T.38 compliant, most fax machines can simply be

plugged into the VoIP adapter instead of a regular phone line.

• Fax machine — VoIP adapter — VoIP gateway — Phone line — Fax machine (or vice versa)

Fax using email

"IFax" was designed for fax machines to directly communicate via email. Faxes are sent as e-mail

attachments in a TIFF-F format. A new fax machine (supporting iFax/T.37) is required, as well as a

known email address for the sending and receiving machines.

• IF ax machine — email message (over Internet) — computer email account

Video Conferencing:

A videoconference (also known as a video teleconference) is a set of interactive telecommunication

technologies which allow two or more locations to interact via two-way video and audio transmissions

simultaneously. It has also been called visual collaboration. Video conferencing uses telecommunications

of audio and video to bring people at different sites together for a meeting. This can be as simple as a

conversation between two people in private offices (point-to-point) or involve several sites (multi-point)

with more than one person in large rooms at different sites. Besides the audio and visual transmission of

people, video conferencing can be used to share documents, computer-displayed information, and

whiteboards. The core technology used in a video teleconference (VTC) system is digital compression of

audio and video streams in real time. The hardware or software that performs compression is called a

codec (coder/decoder).The screen of the dual plasma on the left is primarily used to show people during

the conference or the user interface when setting up the call. The one on the right shows data in this case

but can display a 2nd 'far site' in a multipoint call.

The other components required for a VTC system include Video input: video camera or webcam Video

output: computer monitor, television or projector Audio input: microphones Audio output: usually

loudspeakers associated with the display device or telephone Data transfer: analog or digital telephone

network, LAN or Internet Issues Some observers argue that two outstanding issues are preventing

videoconferencing from becoming a standard form of communication, despite the ubiquity of

videoconferencing-capable systems. These issues are:

Eye Contact:

It is known that eye contact plays a large role in conversational turn-taking, perceived attention and intent,

and other aspects of group communication.12 While traditional telephone conversations give no eye

contact cues, videoconferencing systems are arguably worse in that they provide an incorrect impression

that the remote interlocutor is avoiding eye contact. This issue is being addressed through research that

generates a synthetic image with eye contact using stereo reconstruction.1

Appearance Consciousness:

A second problem with videoconferencing is that one is literally on camera, with the video stream

possibly even being recorded. The burden of presenting an acceptable on-screen appearance is not present

in audio-only communication. Early studies by Alphonse Chapanis found that the addition of video

actually impaired communication, possibly because of the consciousness of being on camera. The issue of

eye-contact may be solved with advancing technology, and presumably the issue of appearance

consciousness will fade as people become accustomed to videoconferencing. Videoconferencing is now

being introduced to online news websites, in order to include the element of more liveliness.

Cable TV:

Cable television is a system of providing television to consumers via radio frequency signals transmitted

to televisions through fixed optical fibers or coaxial cables as opposed to the over-the-air method used in

traditional television broadcasting (via radio waves) in which a television antenna is required. Cable TV is

a system that uses cables rather than antennas for the transmission of TV programs and commercials. A

broadband communications technology in which multiple television channels, as well as audio and data

signals, may be transmitted either one way or bidirectional through an often hybrid (fiber and coaxial)

distribution system to a single or to multiple specific locations.

It is a TV broadcasting service that delivers signals to households via a fiber optic cable rather than a

conventional aerial or a satellite dish. Like satellite, it also requires a set top box. A set top box is a box

that connects to your TV and allows you to receive digital television either through cable, satellite, an

aerial or through the phone line. It literally translates the digital information and displays it on your

television screen. It is a component of your video system that takes an external signal (cable, satellite,

etc.) and converts it into a format for your TV to view. And it is typically known as a cable box, satellite

box, etc.

Coaxial cables are capable of bi-directional carriage of signals as well as the transmission of large

amounts of data. Cable television signals use only a portion of the bandwidth available over coaxial lines.

This leaves plenty of space available for other digital services such as broadband internet and cable

telephony.

V-sat:

A Very Small Aperture Terminal (VSAT), is a two-way satellite ground station with a dish antenna. An

innovative feature of VSAT is that the technology has evolved to the point that previously could only be

done with large, high-powered transmitting satellite dishes can now be done with a much smaller and

vastly lower-powered antenna at the customer's premises. Nearly all VSAT systems are now based on IP,

with a very broad spectrum of applications.

VSATs (Very Small Aperture Terminals or Via Satellite Terminals) have emerged as the preferred means

of wide area networking for financial institutions, utilities and services sector, as the VSAT has the ability

to integrate data, voice, fax and also voice across remote locations. There are different VSAT

technologies namely SCPC, DAMA, TDM/TDMA, and FTDMA. Adding a new location takes less than a

week, and enhancing services is limited to adding or modifying software at Headquarters (Hub Control

Station) only. VSATs offer high network reliability (99.5 %), remote accessibility at lower costs,

transmission costs independent of distances, and centralized network control, independent of a public

carrier. VSATs offer more flexibility in network expansion and redesign whereas the terrestrial network

requires re-engineering, which is process that can take months and involve scores of vendors. Car

dealerships, gas stations, lottery systems, banks, insurance companies, drug stores, general stores,

supermarkets, healthcare companies, manufacturers, couriers, hotel chains, car rental businesses, food

manufacturers, heavy industries, mines, electrical utilities, oil and gas pipelines, energy production and

exploration, timber companies, plantations, various government departments and agencies use VSAT

systems. VSAT services can be deployed in hours or even minutes (with auto-acquisition antennas).

E-mail:

E-mail, short for electronic mail and often abbreviated to e-mail, email or simply mail, is a store and

forward method of composing, sending, storing, and receiving messages over electronic communication

systems. Messages are exchanged between hosts using the Simple Mail Transfer Protocol with software

programs called mail transport agents. Users can download their messages from servers. When a message

cannot be delivered, the recipient MTA must send a bounce message back to the sender, indicating the

problem. Despite these disadvantages, and despite the availability of other tools, email-based

communication is still the most widely used written medium in businesses.

Challenges

Spamming and computer viruses

The usefulness of e-mail is being threatened by three phenomena: spamming, phishing and e-mail worms.

Spamming is unsolicited commercial e-mail. Because of the very low cost of sending e-mail, spammers

can send hundreds of millions of e-mail messages each day over an inexpensive Internet connection.

Hundreds of active spammers sending this volume of mail results in information overload for many

computer users who receive tens or even hundreds of junk messages each day.E-mail worms use e-mail as

a way of replicating themselves into vulnerable computers. The combination of spam and worm programs

results in users receiving a constant drizzle of junk e-mail, which reduces the usefulness of e-mail as a

practical tool.

Privacy concerns

E-mail privacy, without some security precautions, can be compromised because:

• E-mail messages are generally not encrypted;

• e-mail messages have to go through intermediate computers before reaching their destination, meaning

it is relatively easy for others to intercept and read messages;

• Many Internet Service Providers (ISP) store copies of your e-mail messages on their mail servers before

they are delivered. The backups of these can remain up to several months on their server, even if you

delete them in your mailbox;

• The Received: headers and other information in the e-mail can often identify the sender, preventing

anonymous communication.

Video Technology:

Digital Camera

A digital camera is a camera that takes video or still photographs, or both, digitally by recording images

on a light-sensitive sensor. Many compact digital still cameras can record sound and moving video as

well as still photographs.

Digital cameras can include features that are not found in film cameras, such as displaying an image on

the camera's screen immediately after it is recorded, the capacity to take thousands of images on a single

small memory device, the ability to record video with sound, the ability to edit images, and deletion of

images allowing re-use of the storage they occupied. Digital cameras are incorporated into many devices

ranging from PDAs and mobile phones (called camera phones).

Digital photography

Digital photography is a form of photography that utilizes digital technology to make digital images of

subjects. Until the advent of digital technology, photography used photographic film to create images

which could be made visible by photographic processing. Digital images can be displayed, printed, stored,

manipulated, transmitted, and archived using digital and computer techniques, without chemical

processing.

Camcorders

A camcorder is a portable electronic device for recording video images and audio onto an internal storage

device. The camcorder contains both a video camera and (traditionally) a videocassette recorder in one

unit, hence its portmanteau name. This compares to previous technology where they would be separate.

Broadcasting:

Broadcasting is the distribution of audio and/or video signals which transmit programs to an audience.

The audience may be the general public or a relatively large sub-audience, such as children or young

adults. There are wide varieties of broadcasting systems, all of which have different capabilities. The largest broadcasting systems are institutional public address systems, which transmit nonverbal messages

and music within a school or hospital, and low-powered broadcasting systems which transmit radio

stations or television stations to a small area. National radio and television broadcasters have nationwide

coverage, using retransmitted towers, satellite systems, and cable distribution. Satellite radio and

television broadcasters can cover even wider areas, such as entire continents, and Internet channels can

distribute text or streamed music worldwide. Television and radio programs are distributed through radio

broadcasting or cable, often both simultaneously. The term "broadcast" was coined by early radio

engineers from the Midwestern United States. Broadcasting forms a very large segment of the mass

media. Broadcasting to a very narrow range of audience is called narrowcasting. Recorded broadcasts and

live broadcasts

One can record and live broadcasts. The former allows correcting errors, and removing superfluous or

undesired material, rearranging it, applying slow-motion and repetitions, and other techniques to enhance

the program. However some live events like sports telecasts can include some of the aspects including

slow motion clips of important goals/hits etc in between the live telecast.

A disadvantage of recording first is that the public may know the outcome of an event from another

source, which may be a spoiler. In addition, prerecording prevents live announcers from deviating from

an officially-approved script, as occurred with propaganda broadcasts.

An overview of current technology trends in ICE (Information, Communication and Entertainment) and

digital convergence and future of media - What Next?

The key factor of change in ICT (Information and Communication technologies) today is digital

convergence. Convergence is bringing a fundamental modification not only to the ICT sector but also to

the way we use ICT across society and the economy. We are on the verge of a whole new wave of ICT

applications and services that will transform the way we live, do business and spend our leisure time. The

ICE (Information, Communication and Entertainment) industries are being shaped by the constant drive

of convergence and the commoditization of products and services. These drivers are placing tremendous

pressure on telecom, media, software and IT companies around the globe. In order to plan a successful

path, the various players will need to recognize the need to adopt new business models that reflect

emerging ways in which consumers want to access and pay for content.

Digital convergence is mainly driven by the TIME industries (Telecommunication, IT/Internet, Media

and Entertainment) and provides new, innovative solutions to consumers and business users. Based on

digital technologies and digitized content it encompasses converged devices (such as smart phones,

laptops, internet enabled entertainment devices), converged applications (e.g. music download on PC and

handheld) and converged networks (IP networks).

Convergence describes a process change in industry structures (Computer Industry, Information/Content

Industry, & Communication Industry) that combines markets through technological and economic

dimensions to meet merging consumer needs. This process change takes place, inter and intra industry, in

the following structure:

• Computer Industry •S

• Computers •S

• Software •S

• Interfaces

Digital convergence brings together the separate worlds of audio, video, data and voice communication

services. Already today we can access the same services and content (e-mail, music television) using

different terminals over different types of networks. The borders between fixed-line and wireless mobile

networks are disappearing. In the convergent world, consumers will be in control of their entertainment

and media content; what they want, when they want it, and where they want it. The process by which all

separate media become digital and come to be delivered via the global network is known as Digital

Convergence.

Online Journalism – MCM 517 VU

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Digital convergence is increasing the importance of content and services in the ICT sector. In many

European countries, operators already offer triple-play services, a bundle of voice, internet and video

services. Triple Play service is a marketing term for the 3 services: high-speed Internet, Video (TV) and

telephone service - all over a single broadband connection. The main current examples of converged

services concern Voice and Television over the Internet Protocol. Voice over IP, as we know it, is

transforming telephony and will soon be delivered over mobile phones. Already today, there are more

radio stations on the Internet than radio stations broadcasting over the airwaves. The combinations of

these technologies are unleashing a wealth of opportunities, blurring the boundaries between market

sectors, and proving a powerful driver for innovation and change in a global market. In the future, almost

every device will be a network device. Some of these devices will be large and immobile, like movie or

television screens. Others will be small and portable, like wallets, watches, or cellular phones. All will be

hooked up to the global network.

Information, Communications and Entertainment ("ICE") represents the converging industries of

communications, media, software and the Internet, electronics and travel, leisure and tourism. (KPMG,

1996) defines that convergence entails the coming together of content, infrastructures, the storage and

processing capabilities of computers, and consumer electronics. Convergent technologies, which blend

multiple streams of information into a single presentation on a single device, are central to the future

growth of IT industry. Digital networks redefine what kinds of infrastructure are possible under the

sweeping trend of convergence and highlight the need for privatization and regulatory changes

commensurate with such developments. Convergence of technologies takes place at the transmission

level, the terminal level and the service level. IT convergence began with the digitization of switching and

transmission and the utilization of Intelligent Network (IN) platforms.

The result is a Big Bang of convergence, and it's likely to produce the biggest explosion of innovation

since the dawn of the Internet. As these technologies evolve over the next decade, a new digital world will

emerge. Analysts predict that these nascent networks will speed up by an average of 50% a year, the

historic norm. As networks grow and chips continue to strengthen, companies will work madly to come

up with winning products and services. Within the next five years, industry analysts say, practically every

machine in the wide realm of communications -- every gadget that sings, talks, beams images, or

messages -- will sport a powerful computer and a network connection. And every bit of digital

information, whether it's a phone call, a song, a Web page, or a movie, will flow among these machines in

the very same river of data.

Think of the force of digitization as the "mother of all forces" the underlying tectonic shift that is creating

change everywhere. New media rely on digital technologies, allowing for previously separate media to

converge. Media convergence is defined as a phenomenon of new media and this can be explained as a

digital media.” The idea of 'new media' captures both the development of unique forms of digital media,

and the remaking of more traditional media forms to adopt and adapt to the new media technologies.”

Databases

Information Services

Audio-Visuals products

Films

Music

Photos

Communication Industry

PSTN

Cable Networks

Broadcasting

Mobile networks

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The result is a Big Bang of convergence, and it's likely to produce the biggest explosion of innovation

since the dawn of the Internet. As these technologies evolve over the next decade, a new digital world will

emerge. Analysts predict that these nascent networks will speed up by an average of 50% a year, the

historic norm. As networks grow and chips continue to strengthen, companies will work madly to come

up with winning products and services. Within the next five years, industry analysts say, practically every

machine in the wide realm of communications -- every gadget that sings, talks, beams images, or

messages -- will sport a powerful computer and a network connection. And every bit of digital

information, whether it's a phone call, a song, a Web page, or a movie, will flow among these machines in

the very same river of data.

Think of the force of digitization as the "mother of all forces" the underlying tectonic shift that is creating

change everywhere. New media rely on digital technologies, allowing for previously separate media to

converge. Media convergence is defined as a phenomenon of new media and this can be explained as a

digital media.” The idea of 'new media' captures both the development of unique forms of digital media,

and the remaking of more traditional media forms to adopt and adapt to the new media technologies.”

Databases

Information Services

Audio-Visuals products

Films

Music

Photos

Communication Industry

PSTN

Cable Networks

Broadcasting

Mobile networks

Information/Content Industry

Convergence, its nature and levels of convergence

The ability of different networks and user equipment to carry similar services & the ability of one

network or user equipment to carry different services. Handsets that carry voice, data and video services.

Cellular networks carrying streaming video in broadcast mode and broadcasters being able to provide data

services on unused portions of their spectrum.

Towards multi channel environment

• Same services via different networks and technologies

• Same terminals use different networks

• Same customized services in different countries

Possibility of various networks platforms to provide practically the same set of services.

Unification of user’s devices, such as telephone, PC and TV set in the form of a single terminal.

Convergence is the coming together and integration of two or more technologies. Digital television,

computers and telecommunications being combined is an example of convergence.

Device Convergence

• Endpoints (devices) are converging.

• Integrated service platform for phone, Internet, music, video games, and PDA functions allows

end users to access a variety of services that would require multiple terminals previously.

• Computer with multimedia player/soft phone.

• GSM Wi-Fi handsets.

• GSM DVB handsets

Network Convergence

• Convergence of service platforms.

• The integration of voice, data and video networks' transport and signaling infrastructures in a

single unified networking system, often referred to as a "multi service network“

• Broadband wireless technologies delivering both fixed and mobile services.

• IP multimedia subsystem (IMS), an enabling service platform which offers to support both fixed

and mobile services.

Services Converged

• Service providers have the capabilities to provide different services that could only be provided

by one service provider previously.

• Cable TV service provider deploying VOIP to offer voice service.

• 3G service provider offering broadband internet access.

• Digital terrestrial TV offering mobile data service.

Media convergence?

• Convergence of media occurs when multiple products come together to form one product with the

advantages of all of them.

• Media Convergence is gathering and dissemination of news across a multi-media platform.” -

Traci Mitchell.

• Media Convergence is the process of combining and presenting of different media (multimedia)

into a single delivery system. The Internet is an example of convergence.

• Data and Voice Services - from separate voice and data services to multimedia applications (IPTelephony, Web Contact Centers)

• Fixed and Mobile Networks and Services - from separate ones to the single infrastructure:

CAMEL, VHE, IPv6, IMS

• Public and Corporate Networks – from dedicated networks to open networks

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• Phone, TV and Computer Terminals – from separate devices to combined multimedia terminals

• Broadcasting services-from broadcasting services to Web-based TV services: IATV, VoD,

WebTV

• For the consumer: more features in less space.

• For media companies: remaining competitive in the struggle for market dominance.

• An ever-wider range of technologies are being converged into single multipurpose devices.

Convergence within Journalism

In the converged media organizations of the future, the journalists who best understand the unique

capabilities of multiple media will be the ones who are most successful, drive the greatest innovations,

and become the leaders of tomorrow, (Kawamoto, 2003: 72)

Therefore it is important for journalists to understand what convergence within the media is and how it

affects journalism.

Kawamoto describes convergence as the melding or blurring of historically discrete technologies and

services. (Kawamoto, 2003: 4) Convergence is occurring on many levels. Convergence within content,

within the newsroom, within the way news is disseminated and within the way information is collected.

A good example of where convergence within journalism has been successful is Media General in Tampa.

The company combined three of its branches newspaper Tampa Tribune, television station WFLA-TV

and web site TBO.com- into the one building. The television and news staff still operates independently

but share resources and communicate with one another. The branches all cross promote each other, the

website has its choice of content from both the news and television branches and reporters from the

tribune are often interviewed by the television station for its newscasts (Thelen, 2002: 98).Different

journalists mean different things when they talk about convergence. But generally, convergence takes

three forms.

Newsroom convergence

In a converged newsroom, journalists from different media (TV, radio, newspaper, online) all share the

same workspace instead of occupying separate offices in separate buildings. One of the most notable

examples is the News Center in Tampa, Fla. In 2000, the staffs of the Tampa Tribune, WFLA-TV and

TBO.com — all owned by Media General Inc. — moved into a huge $40-million facility with a TV

studio on the first floor and a joint newsroom above it. Sharing a newsroom encourages cross-platform

cooperation. When editors from different media attend the same meetings and plan coverage together,

they can steer each story to the format that tells it best.

Newsgathering Convergence

Here, reporters, editors and photographers collaborate on story production. In its simplest form, news

crews might share a helicopter to report on a flood. A TV newscast might borrow one of the newspaper’s

graphics. A TV reporter might cover an event for broadcast, and then write a longer story for the Web

site. With training, print reporters learn to deliver TV news reports; photojournalists shoot photos, video

and conduct interviews. In other words, journalists multitask in multimedia, whether it’s one story

produced by a team of TV, print and online staffers — or one reporter preparing variations of one story

for several different media.

Content convergence

This is where the final story is presented in multimedia form, combining text, images, audio, video, blogs,

pod casts, slideshows — the options are continually expanding. At present, content convergence is still in

its infancy, but you can glimpse the future on innovative Web sites. Imagine, years from now, a new

hybrid medium combining the audio and video of TV, the responsiveness and resources of the Web, the

portability and print quality of newspapers. Editors and reporters will become “content producers” trained

to choose the most effective, entertaining storytelling techniques from a vast menu of multimedia options.

Media convergence

Text + photos + audio + video + graphics = multimedia.

Suppose you decided to profile, a brilliant painter/composer. Which medium, or media, would produce

the best story? To display his paintings, you’d use photographs. To present his music, you’d use audio

recordings. To show him at work — conducting a rock band or painting — you’d use video footage. To

explain the meaning and impact of this art, you’d use text. In short, to create the ideal profile, you’d need

multimedia, Cross-platform journalism, Media convergence. Whatever you call it, it’s an idea whose time

has finally come. Stories once trapped on paper can now be posted online; stories once confined to text

and photographs now integrate audio, video and interactivity. Technological innovations are transforming

21st-century journalism. Your job, your newsroom, even the stories you write will soon change

dramatically. Kawamoto makes a prediction about where convergence will take journalism over the next

decade:

1- Content management systems will be created within media companies that will be able to store content

in digital formats allowing it to be delivered relatively easily to different platforms.

2- Wireless internet access will be proliferated either through cellular telephone systems or through more

localized wireless networks that in turn connect to the wired internet.

3- Television sets will transform to take on more and more attributes of computers. Technology

convergence will enter the living room by allowing televisions to connect with the internet creating the

ability for viewers to receive and store digital content, and the ability for viewers to interact with content

on the screen. This area has already begun to take off with the invention of digital broadcasting and

products such as TiVo.

4- A new generation of portable devices will be created that come closer to replicating the advantages of

paper by being lighter and having longer battery life. These devices could be descendants of today laptop

computers, personal digital assistants or cellular phones.

Vision of a Converged World

• Consumers use a single terminal point to access any desired information available on any network

without limitations.

• Media convergence is prompted by the development of information technology.

• Convergence will lead to:

• Reformulation of media economics and politics

• Reorganization of media companies

• Radically change media environments in the name of digitalization

• With the advent of IP technology, competition in telecom services becomes a global phenomenon

and is no longer confined to within the national or regional boundary.

• The potential for change will be felt in different ways and at different levels (e.g. technology,

industry, services and markets).

• Regulators and the policy makers need to put in place a forward looking and adaptable regulatory

framework, or they will be left behind and become irrelevant.

• The unrestricted exchange of information through transmission of images, text, voice or other

forms of data, the info-communications infrastructure will improve the productivity of

knowledge-based activities and help to bring about an Information Society.

• Efforts will continue to be needed to equip workforce with the skills which the Information

Society requires.

• This will open opportunities and challenges especially to the developing countries.

• The global nature of communications platforms today, especially the Internet, is providing a key

which will open the door to the further integration of the world econom

• Telecommunications, media and information technology sectors are seeking cross-product and

cross-platform development as well as cross-sector share-holding.

Examples of new products and services being delivered include:

• Home-banking and home-shopping over the Internet

• Voice over the Internet

• E-mail, data and World Wide Web access over mobile phone networks, and the use of wireless

links to homes and businesses to connect them to the fixed telecommunications networks

•

More examples:

• Data services over digital broadcasting platforms; iTV

• On-line services combined with television via systems such as Web-TV, as well as delivery via

digital satellites and cable modems;

• Web casting of news, sports, concerts and of other audiovisual services.

Advantages of Convergence

Technology is so positive, it allows for interactivity-real time-and promotes public dialogue and

communication.” -Larry Pryor

Convergence is collaborating in a way that best tells the news.”

Challenges for Convergence

Market

∗ Convergence phenomenon requires adaptation of new approaches to be applied to issues of market

entry; licensing; customers; pricing.

Training

∗ Convergence reporters must be trained to report in multiple media. They should be multi skill able to

work in a converged media environment. If necessary, a convergence reporter might file a brief for the

Web, edit video for television and then write a story for the next day's paper. Convergence reporters often

specialize in a single medium, but their familiarity with other forms of storytelling gives them an edge in

today's ever-changing media landscape.

Digitalization?

Digitization is the process of converting information into a digital format. In this format, information is

organized into discrete units of data (called bits) that can be separately addressed (usually in multiple-bit

groups called bytes). The process by which all these separate media become digital and come to be

delivered via the global network is known as Digital Convergence.

Digital Divide

The term 'digital divide refers to the gap between those people with effective access to digital and

information technology, and those without access to it. It includes the imbalances in physical access to

technology, as well as the imbalances in resources and skills needed to effectively participate as a digital

citizen. In others words, it’s the unequal access by some members of the society to information and

communications technology, and the unequal acquisition of related skills. Groups often discussed in the

context of a digital divide include socioeconomic (rich/poor), racial (white/minority), or geographical

(urban/rural). The term global digital divide refers to differences in technology access between countries.

Many expressions were used to describe the dichotomy of people’s participation or not in the Information

Society such as information poor/ rich or have/ have not, but the most widely spread now is the "Digital

Divide". Used by most international organizations, this expression has become the reference term. At

first, some narrower definitions of the digital divide were focused only on access to computers and

Internet but access alone does not bridge the technology gap. As a result, definitions are much wider

today.

"The term 'digital divide' describes the fact that the world can be divided into people who do and people

who don't have access to - and the capability to use - modern information technology, such as the

telephone, television, or the Internet. The digital divide exists between those in cities and those in rural

areas. It also exists between the educated and the uneducated, between economic classes, and, globally,

between the more and less industrially developed nations".

• "The digital divide is the "Differences based on race, gender, geography, economic status, and physical

ability:

• In access to information, the Internet and other information technologies and services

• In skills, knowledge, and abilities to use information, the Internet and other technologies".

Access:

When looking at access, you can see that the Internet is expanding its territory so rapidly that soon you

might be able to get it anywhere and in multiple forms (you can already find it in mobile phones or digital

Televisions). However, today it is still mainly through computers that one can access the web. Either you

can buy your own computer to access

Internet but this is not affordable for all. Governments aware of this financial problem are pushing for

installation of computers in public spaces, such as libraries or post offices. The market also tries to answer

this new demand by the creation of cyber cafés. -Their success relies on fast access connections at low

price and a 24 hours opening and clearly show that there is a demand for such access. These different

approaches might well be part of the answer to bring access for all. A study done in the UK shows that the

success of bringing a new audience to the Internet primarily relies on the social environment, as well as

on the staff support you can get. Therefore, it is challenging the value of attempting to extend access via

unstaffed Internet access points (Milne, 2000, p57).

Necessary knowledge to use Internet:

There are user’s needs for information and training in order to participate in the Information Society, and

this is definitely another major risk of exclusion. Learning the potentialities of the information and

communication technology may be a bigger barrier for new users than lack of technical access. For

example, people who are not computer literate have no chance to take advantage from the Internet. The

education system must be the main provider of this new knowledge.

Moreover the fantastic pace of evolution of information technology obliges any participant in the

Information Society to continually improve one’s knowledge; learning does not stop once one has

completed a training course. In addition, mastering the Internet, one needs formal training, but knowledge

also develops through learning by doing (Milne2000); one can improve it by trying things out, sharing

one’s problems and seeing what others are doing. All this will contribute to a lifelong learning society

where people will have to continuously learn to master these constantly changing technologies, and

therefore to be able to participate in their society.

Content

Finally to participate, people must have access to information that is relevant for them; the contents can

be found on the Web will determine the success of this participation. Currently on the web, more websites

are in English (bridges.org, 2001, p20). The dominance of English, and especially US content, makes it

less useful to other countries. English speakers were the first users of Internet, so the predominance of

their language was natural. So there is a necessity to have more variety in languages on the Web.

Additionally, non-English countries produce less local content making the Internet less relevant to their

lives. It is also necessary that users become content creators as well by the creation of their own websites.

By doing that, they participate in the construction of the Web and produce sites that might interest others.

There are two different forms of Digital divide, one between countries but also between groups within a

country. Bridges organization extensive report puts it in these terms "Real disparities exist in access to

and use of information and communications technology (ICT) between countries (the "international

digital divide or global digital divide") and between groups within countries (the "domestic digital

divide")".

International Digital divide:

The International Digital Divide, also sometimes call the global DD, is easy to understand but hugely

difficult to overcome. Firstly, this divide is an infrastructure problem. For example, in all of Africa, there

are fewer phone lines than in New York City alone and owning a phone is seen as a luxury item. The

costs are enormous and this is why developing countries need support otherwise they might not even be

able to give access to their population. The structural problem is not the only one.

In developing countries, the majority of people besides wealthy individuals cannot currently afford the

technology, even when it is available, so usage remains low. Poverty is the greatest barrier to Internet

growth in Developing countries. Costs to access Internet are in comparison to developed countries much

higher and therefore unaffordable.

Domestic Digital Divide

The domestic digital divide is more complex to define, because multiple factors are involved. Access

within countries can be looked according following socio-economic factors:

• Age

• Income

• Geographical location

• Education

• Gender

• Disability

Income: It is interesting to notice that socially excluded people have mostly a low income and once more,

this economic factor could affect their participation in the Information Society. Income is the first factor

of exclusion, because even if computer prices and access costs drop by a large margin, they would still be

inaccessible to poor people who need to cover their basic needs first.

Age: There is a normal difference because ICT are easily used and adopted by younger generations and

they benefit from their school training.

Geographical gap: there is a difference in use between different parts of same countries. It is easier to get

an Internet access in cities and this trend might not be changed soon.

In Fact, the new fast access technologies to Internet such as the optical fibre for example, are mostly

available in urban areas and there is a risk that this divide increases. This is why there is a necessity of

national planning at a country level to insure that all areas have the same possibilities.

Education: is closely correlated with employment and income. Those with higher levels of education are

more likely to have ICT at home and at work. The less educated people show least interest in getting online, may be because they do not see the interest for them. All these questions related to the domestic

Digital Divide are mainly studied in developed countries but there is evidence indicating that these

inequalities are far more pronounced in developing country where small elite own everything and

cumulate the advantages leaving most of the population with very little.

Disability: Internet and Information Technologies are promising for people with disabilities because it

can assist them in overcoming their handicaps, however the potential may not be realized if they cannot

afford assistive technologies or if accessibility of equipment or web-content is not ensured.

Gender: Women have less access to the IT use and skills. Also Working women have lower levels of IT

use and skills than working men.

Concrete examples of the global digital divide

In the early 21st century, residents of First World countries enjoy many Internet services which are not

yet widely available in Third World countries, including:

Affordable and widespread Internet access, either through personal computers at home or work, through

public terminals in public libraries and Internet cafes, and through wireless access points; E-commerce

enabled by efficient electronic payment networks like credit cards and reliable shipping services; Virtual

globes featuring street maps searchable down to individual street addresses and detailed satellite and

aerial photography;

Online research systems like LexisNexis and ProQuest which enable users to peruse newspaper and

magazine articles that may be centuries old, without having to leave home; Price engines like Froogle

which help consumers find the best possible online prices and similar services like Shop Local which find

the best possible prices at local retailers; Electronic services delivery of government services, such as the

ability to

Pay taxes, fees, and fines online.