

DIAZAIA JOAO NDONGA
ID# UB16857STE24598

COURSE NAME: TELECOMMUNICATIONS

ATLANTIC INTERNATIONAL UNIVERSITY
AIU

Table of Contents

Cover page-----	1
Table of contents-----	2
Interest of the course and Delimitation of subject-----	3
Introduction-----	4
Short history of Telecommunication-----	5
Development of Telecommunications-----	6
Vast areas of Telecommunications-----	7
Telephone Network-----	8
The Telephone-----	9
The IP Telephone-----	10
Fiber-Optic-----	11
Internet access -----	12
Cable Television -----	13
Description of some areas involved in wireless technology-----	14
WAN-----	15
LAN-----	16
Satellite-----	17
Wi-Fi and 3G-----	18
General Recommendation-----	19
General Conclusion-----	20
References-----	21

Interest of the course and the Limitation of subject

My studies of interest, both theoretical and practical.

From the theoretical point of view the present work, may provide sufficient inquires to consumers.

From the practical point of view is proposed the new note deficiencies and shortcomings of the current positive law and the fore of some actual cases

Delimitation of subject

As a part of my course I will briefly recount the telecommunications history, talk about the development in short form, the several areas involved in telecommunications, some requirements, some advantages and disadvantages, future prospects and my viewpoint according the telecommunications technology in some countries and in the world.

Introduction

During this course, I am going to speak about the telecommunications in some aspects, several areas that make up the telecommunications, the use of them, the advantages and the disadvantages.

Definition:

We call Telecommunication the transmission of information from one point to another by using electronic and electromagnetic means.

"The word 'telecommunication' is divided from the Greek stem 'tele' meaning 'at a distance' and the word 'communications' meaning 'the science and practice of transmitting information". (From: Wright, Edwin. Reynders, Deon (2004). Practical Telecommunications and Wireless Communications for Business and Industry. In Practical Professional books from Elsevier. Elsevier)

Wired communications and wireless communications are the two vast areas that can be found within the telecommunications. One of them sending data or information by using wire and one sending data or information without using wire.

The contribution of telecommunication can connect people each other, at any time and any links. Someone can communicate with other using wired communication or wireless communication.

Short history of telecommunication

Communicate need for short or long distance, has always existed since antiquity, although the ways in which our ancestors were using for communicating were not sophisticated. But through them, communicate with each another or from one location to another. Signs such as the beating of drums, sound signals, gestures, painting and others, were indispensable elements for the communication.

Modernization of Telecommunications

"The story goes back to the Telecommunications late 18th century, when the main systems were used for the transmission distance. However, their final deployment occurred in the second half of the 20th century, as a consequence of the rapid advancement of electronics and the sciences associated with automation". (From: Portuguese. <http://www.siemens.com.br> 1968)

Telecommunications was the discovery of a great value, because allow the interconnection of people, and several equipments in short or long distance or, from one point to another. The emergency of telecommunications partially connected or joined the world in term of communications.

Telecommunications has evolved the significantly becoming faster and more viable to provide communication between people and several equipments from one point to another, starting from 19th century to 21st century.

With the invention of the first telegraph, in 1844 by Sir Samuel Morse, the telecommunications gained more significant progress. This telegraph facilitated the communication than has it was chaotic.

"The conventional telephone now in use worldwide was first patented by Alexander Graham Bell, in March of 1876. That first patent by Bell was the master patent of the telephone, from which all other patents for electric telephone devices and features flowed. Credit for the invention of the electric telephone has been frequently disputed, and new controversies over the issue have arisen from time-to-time. As with other great inventions such as radio, television, the light bulb and the digital computer, there were several inventors who did pioneering experimental work on voice transmission over a wire, and then they improved on each other's ideas. However, the key innovators were Alexander Graham Bell and Gardiner Greene Hubbard, who created the first telephone company, the Bell telephone in the United States, which later evolved into American Telephone & Telegraph (AT&T)". From: (Le Telegrahes Chappe (2003). <http://chappe.ec-lyon.fr>, Cedrick Chatenet, l'Ecole de Lyon)

Development of telecommunications

With the invention of the first telephone by Alexander Graham Bell, the telecommunication has evolved significantly. This development offered more opportunities and boosted the implementation of the new technologies in the communications world.

“19th century to the 21st century telecommunications are revolutionizing people’s lives, putting them closer to each other. If in the beginning was so shy, now the changes are profound and rapid boosting the economy of the planet and influencing the way of life” (From: Portuguese-1968 <http://www.sciemens.com.br>)

Many organizations involved in telecommunications such as International Telecommunication Union, and certain operators of telecommunications, they are continuing work hard for modernization, implementation and development of the technologies of telecommunications. The implementation of telecommunications networks in rural areas remains a sign of development of telecommunications.

Worldwide, telecommunications are increasingly evolving, making easy the communications. Some organizations and some operators, continue to challenge the market, presenting new technologies, in order to attract the customers and win the market.

The telecommunications join and open up the world in terms of communications.

The new telecommunications technologies have been facilitate the interconnection of individuals, and they have also creates supplementary budgets because of payable and sometime even at the highest prices.

Telecommunications play an important role in society, because it has facilitated the transmission of information/data from one point to another in the short time.

Advantages and Disadvantages

Some Vantages:

Easy to communicate at long distance;

Quick communication;

Ability to communicate in different points or regions;

High-speed communication;

Saving travel time to communicate;

Saving effort for traveling to communicate;
Data transmission at high-speed for long distance;
Ease for instant communication;
Ease to reach someone in emergency.

Some Disadvantages:

Inability to see someone with whom we are talking (in some cases);
Inability to communicate in areas without network coverage;
Inability to have the communications between several equipments in areas without network coverage;
Difficulty of operating equipments in unsuitable areas for telecommunications networks;
Difficulties of communications during the rainy;
Difficulties of communications during the strong winds;
Messaging is no true using telecommunications facilities (the media).

Vast areas of telecommunication

Within telecommunication can be found two vast areas, namely: wired communication and wireless communication.

Wired communication

As its name implies, wired communication, refer to the transmission of information/data using wire.

Within wired communications we can find several areas such as: network telephone, telephone, internet access, fiber-optic, etc.

Telephone Network

Telephone network are senders and receivers capable for performing all functions related to telephone exchanges.

The networks can be grouped into: international network, , switching networks or long distance networks, local area networks or access networks, WAN (Wide Area Network), LAN (Local Area Network), The Public Switched Telephone Network, the Central public (CP), the Intelligent Network (IN)

Description of networks

The International Network: are used for connecting countries and regions;

The Switching Networks: allow national and international connection of a country;

The Local Area Networks or Access Networks: these networks are the ones that make the use of telephones or connection the subscribers or customers. Thos network can be divided into primary network, secondary network, and tertiary network.

The Primary Network makes the connection from the splitter to the cupboard;

The Secondary Network makes the connection from cupboard to the distribution box;

The Tertiary Network makes the connection from distribution box to the customer;

The Public Switched Telephone Network (PSTN): within this network can be found the Local Exchanges; Transit Centers and International Centers.

The Central Public (CP): this network is commonly used in companies for reducing the costs.

The Intelligent Network, the network has the function to control and manage multiple services.

Functions of Telephone Network

They have the functions of call management, call concentration, possibility of linking or connecting another, call distribution, control the line calls, etc.

Advantages and Disadvantages of networks

Some advantages:

Speed for processing any requested information;
Quality in sending and receiving information/data;
Possibility of applying security measures in several programs;
Communications ease between various points;
Quality in sending information over long or short distance;
Possibility of increasing of network capacity for better serve customers;
Possibility of sending any information in the short time;
Ability to connect companies, banks, etc

Some disadvantages:

Impossibility to communicate for reasons of networks congestion;
Functioning chaotic of the network;
Internal damage of network;
Damage caused by the customers;
Inability of the technicians operating in a given network;
Old equipment;
Improper operation of equipment for climatic reasons;
Delay in detecting faults in the network;
Takes the market to find the part needed to overcome failure in the network;
Takes to overcome failures in the network.

The telephone

The phone or landline is used for communication between two persons at large distance. This telephone communication is considered conventional because works through landline base and cable. The phones are directly connected to the local exchanges.

The phones are half duplex and not full duplex, means talking with who is online without combination.

In general telephone, one of the telecommunications devices, was invented by Alexander Graham bell, on 1876. The telephone

This telephone is connected to the networks through the wire.

Some components of telephone: keyboard to dial terminal, microphone for speaking, speaker for reproducing the voice, hook for the telephone plug, etc.

The IP Telephone

The IP Telephone or Internet protocol Telephone, is connected to the computer through the internet. It receives the signal in the form of data packet from the network and send this data packet to the computer. This is one of fast technology being used in several areas.

Many telecommunications operators or companies are working hard for developing the current telephone technology and implement new technologies in telephone business.

Advantages and disadvantages

Some advantages:

Ease of communicating someone over long distance;

Rapid sharing of;

Economization of time to go out for transmitting message;

Ease for communicating in several points in short time;

Some disadvantages:

Transmissions ease of message without credibility;

Inability to see who is spoken (some phones);

Network availability;

Network congestion;

Phone malfunction;

Lack of electrical power;

Incorrect dial number.

Fiber optic

Optic-Fiber: set of wires thin glass capable of carrying light signals over long distances. The material used for manufacturing is called dielectric. The center is called the fiber-optic nucleus and the outside is called a shell or coating.

The emergence of the technology of fiber-optic, improves significantly the quality of telecommunications in the world.

The fiber-optic is premise used for long distances, passing efficiency and viability with phone signals, the internet communication, etc. And the installation requires high precision techniques.

The fiber-optic, since its inception to the present, has been successfully developed, because it offers good quality in data transmission.

At 5.5 ms, fiber-optic can send data over a distance of 122.000 km.

Advantages and Disadvantages

Some advantages:

Transmission capacity of amount data per second;

Properly insulated or armored;

The climatic influences do not hinder its operation;

Large bandwidth;

Amount of raw material;

Safety of signal to be send.

Some disadvantages:

High cost;

Trouble connection, because they are small;

Dual attention to the handling;

The components are not standards.

Internet access

Internet access is a large and valuable technology of communication that can be used in short and long distance.

The internet has been used for various organization, such as public and private companies, also has been used in unique way.

Like any technology, the internet access, has also the advantages and disadvantages.

Some advantages:

Offers the possibility of online studies;

Research of several interest topics;

Sending and receiving of email;

Chat by using several programs such as windows live massager, Skype, face book, etc.

Browse anytime.

Some Disadvantages:

Access for all ages;

Ability to search inappropriate sites;

Slow signal;

Posting offensive message, photo and videos;

Facility to send and receive messages without credibility.

Cable Television

Cable Television is one of technology that allows the transmission of several television programs by using wire. These programs reach the customer via radio frequency.

The technology of cable television (CTV), previously allowed the issuance of the television signal by consumers in mountainous regions, thus allowing them (the consumers) the access to all programs broadcasting starting at television station.

Currently the cable television technology (CTV), has been used not only in mountainous regions, but also in no mountainous regions.

For signal transmission, the cable television operators use the multiplexing technique. The multiplexing technique allows sending many signals in a signal channel transmission. The signals carried by consumers, are first divided into number of frequencies and modulated for the transmission channel.

The cable television (CTV) has been use by various entities and telecommunications carriers. And there have been adherence by consumers, and are foreseen for the future this technology improvement.

Advantages and disadvantages

Some advantages:

Fast;

Are rarely affected with the weather situation, because of the quality cable in use (optic fiber, etc) ;

Allow the users to make the choice favorite programs.

Some disadvantages:

Complaints from consumers, because of poor quality of service in certain occasion;

The consumer's connection is series. If the first consumer has problem, this will affect the others, mean they will not have the signal.

Wireless communication

When we are transmitting information between two different points without the use of wired, means we are facing the wireless communication.

Wireless communication, is one of advanced technology used for the transmission data/information from one point to another. Has been played an important role in transmitting information at various points through the several areas where this technology applies. This technology can be implicated in several places for various uses, such as in office, mobile office, shopping centers, airport, libraries and other public places and private.

Can be found within wireless communication several areas such as: Mobile Phone, , Satellite, LAN and WAN, Internet Wi-Fi, 3G technology, etc.

As a whole any technology, the wireless communications has also the advantages and disadvantages.

Some advantages:

No need wired to transmit information from one point to another;

Able to transmit information to various points;

Able to connect difficult access areas;

Able to connect wired communication;

Easy to configure.

Some disadvantages:

Easily bypass the signal to be transmitted;

Insufficient use of some programs;

Limitation of coverage area;

Slower.

Description of some areas involved in wireless technology

Mobile phone

As the name says, the mobile phone or cell phone does not need wire for sending or receiving information. The cell phone is connected to the network through the cells, they use the air to transmit or receive information from a given point. Antennas are connected covering certain area. Cells are the region illuminated by base stations.

In case of increasing traffic demand, cells new can be added or sectorized, for the best service for the users of mobile phones.

In other words can be said that this communication is based on radio waves.

The mobile phone central they perform the functions inherent the switching.

The base stations are adapted from a sender and receiver.

Within the mobile phone, there are two channels, namely: Channel Traffic and Control Channel.

The Traffic Channel is intended for talking. And the Control Channel is intended for SMS.

Advantages and disadvantages

Some advantages:

Immediate communication;

Easier for communication over long distance;

Communicate anytime;

No-binding displacement;

Schedule to record numbers;

Sending and receiving messages;

Play games; Listen music and watch videos;

Clock and alarm clock and Camera;

No wired needed for communicating.

Some Disadvantages:

Network availability or network congestion; Phone battery discharged; Be stopped; Lack of regulation that sets the age of the use of mobile phone.

WAN

The WAN (Wide Area Network): is one of telecommunication technology used for making large geographical connection through computers.

Several organizations such as companies, universities, research centers, cities can be linked by WANs for sharing several information/ data, in long distance. WAN is also used for connecting other network, such as MAN, LAN, etc.

Advantages and disadvantages

Some advantages:

Interconnection capacity of companies and other entities in the long distance;

Sharing internet;

Some Disadvantages:

Expensive material in use for installation;

Equipment malfunction;

Unavailability of the internet.

LAN

The LAN (Local Area Network): is one of telecommunication technology used for computer connection in limited area. They can link equipments such as computers, servers within a company, university, etc.

Is called LAN network, when the computers are on the same place, e.g: building, library, etc.

Advantages and Disadvantages

Some advantages:

Ease for installation;

Can use the Ethernet, where can be linked 4 users;

Inexpensive;

Some disadvantages:

Limited communication;

Unavailability of the internet;

Private use.

Some disadvantages

Unavailability of the internet;

Equipment malfunction;

Unable to connect outside of geographical area defined.

Satellite

Satellite is the most advanced technology of the telecommunications business. Is also the interconnection element that act as repeater. Satellite is composed by ground and space segment.

The inability to connect the word by the using the physical means in terms of communication was the basis for the use of satellite. Satellites have the ability to cover virtually all globe areas.

The satellite sends the down link to the station and receives the up-link earth station starting.

The earth segment is formed by antenna and the transmission equipment, such as filter, amplifiers, etc. And the space segment is formed by satellite, telemetry, power, etc.

The satellite can be considered as an active repeater, because receives the signal from stations, converts the frequency, amplifies and relays to ground station, through the transponder.

The satellite is launched through rocket.

“Sputnik 1, was the first satellite launched by Soviet Union, on 1957”. (From: September 26, 2011 <http://en.wikipedia.org>)

INTEL SAT is the entity’s most famous of satellite.

Advantages and disadvantages

Some advantages:

Ability to cover the entire land surface, including the difficult access areas;

Transmission of information anywhere in the world;

Thousands users at several points;

Thousands users at same time.

Disadvantages:

Expensive; Affect the ozone layer;

Difficulties repair in case of failure.

Wi-Fi (Wireless-Fidelity) and 3 G

Wi-Fi (Wireless-Fidelity)

Wi-Fi, is one of telecommunication technology that allow the connection of laptops computers, mobile phone, to be connected to the internet in short distance. This technology avoids the use of wire or any other physical for connecting the device to the internet. The device connection to the internet is done by using the space.

Wireless Fidelity is one the technology that can be implemented in several places such as office, classroom, residence, public places as airports, libraries, internet cafe, snack bar, hotel, etc.

As any telecommunication technology, wireless fidelity, has its advantages and disadvantages.

Some advantages:

Do not need physical means or eliminate the physical congestion;

Easy to use;

Can be implemented in several places such as office, classroom, residence, public places as airports, libraries, etc. ;

Easy to configure;

Some disadvantages:

Impossible to operate in long distance;

Ease of use by outsiders;

Facility to be affected by weather conditions.

3G (3rd Generation)

The 3G is also one of telecommunication technology that drops the internet connection through the physical means, and is specially applied in some mobile phones.

The mobile phones with this technology, can access the internet, TV, games, downloads in short time, etc.

As any technology, the 3rd generation has its advantages and disadvantages.

Some advantages:

Downloads in short time;

Video chat using same technology;

Ability to reach speed above 200 kbps.

Some disadvantages:

The mobile phones enabled with this technology are expensive;

Impossibility to chat with different technology;

General Recommendations

Without telecommunications, should be impossible to talk with somebody who is so far from us, in second or minute or sharing information long distance in a short time.

Currently. Some countries are serious problem in their telecommunications network, providing poor service to the users. There are countries with only one or two operator's furnishing providing poor services to the users. I recommend them the improvement in their telecommunication services, increasing the capabilities of existing equipment, allowing the entry of more operators in the country. We need to know that the telecommunications technology is not static but is evolutionary. There are also companies using the old technology, they must adapt to the technology changes.

The telecommunications make easy the communication between peoples, equipments, and companies or organizations in the world, by sending several information or data, using wired communication or wireless communication.

The telecommunications industries and other telecom operators, need continue work hard for becoming increasingly and impeccable, the wired and wireless technologies. They need find out the mistakes that are weakening the progress of these technologies.

The application of these technologies, require good training of all the candidate of telecommunications, just to avoid some mistakes that can be considered fatal, and affect the operation of the telecommunications equipments and their development.

The specialties telecommunications institute, need to be more clear during the transmission of knowledge to their candidates.

All the telecommunications technicians need familiar with the traditional threats against voice network security, unauthorized access, wall dialing, eavesdropping, toll fraud, etc.

All the standards of wired communication and wireless communications, they need be followed as well, for avoiding some disadvantages that can occur and damage the equipments and slow the development or the progress of telecommunications.

We need be careful, when we are teaching or learning about the wired and wireless communication. After learning them, we need know how and when to apply these tools.

We need also be careful with implementation of the vision within the technologies wired and wireless.

In all areas of application of wired communications and wireless communications, there are the advantages and the disadvantages. And for better applications of these areas, these advantages and disadvantages need be followed as well. Mainly for new arrives for telecommunications world.

General Conclusion

During this course I gained knowledge on telecommunications, the operation of some equipment, and the particular utility and general.

Telecommunications plays a vital role in international commerce, and industrialized nations it is an accepted necessity. The telecommunications networks in all countries are linked together or form a global network for carrying information of all kinds.

Was possible to know identify the two vast areas involving telecommunications and some several areas, the advantages and disadvantages. How do they send the information from one point to another.

The equipments as device's telecommunications for sending data, need be duly approved

Not only the some areas I talked about involve the wired and wireless communications. There are other areas that were not described in this course, such as broadcasting, marine radar, microwave, and so on. Remember that telecommunication is very wide area.

References

1. Groth, David and Skandler, Toby (2009). Network+ Study Guide, Fourth Edition. Sybex, Inc.
2. McQuerry, Steve (November 19, 2003). CCNA self-study: Interconnecting Cisco Network Devices, Second Edition.
3. University of Cambridge (20 December, 2001). Archived from the original <http://www.cl.cam.ac.uk>
4. Significant Archivement in Space Communications and Navigation, 1958-1964 <http://ntrs.nasa.gov>
5. Rockets in Science Fiction (late 19th Century) <http://www.history.msfc.nasa.gov>
6. <http://www.electrica.info>
7. <http://www.everything2.com>
8. <http://www.wiki.answers.com>
9. <http://www.en.wikipedia.org> Telephone Network
10. <http://www.informatica.hsw.uol.com.br> Telefone
11. <http://www.siemens.com.br> (1968)
12. <http://www.homepages.wmich.edu> Phone
13. US 174465 Alexander Graham Bell (Feb. 14, 1876). Improvement in telegraphy.
14. Wright, Edwin. Reynders, Deon (2004). In pratical Telecommunications and Wireless communication for Business and Industry;
15. Carpenter (2010). CWTS Certified. Wireless Technology Special Study Guide (Exam-070).
16. Mullen, Megan. Gwynne (2003). Rise of Cable Programming in the United States: Revolution or Evolution?