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COMPUTER NETWORK AND VIRTUAL COMMUNICATION

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***Summary:** It is known that the development of civilization rests on transfer of knowledge and experience from one to the next generation. In that way, to each of the following generations the viewing, comprehension and understanding of natural and social changes and flows has been significantly facilitated. The paper presents the analysis computer network and virtual communication.*

***Keywords:** computer network, virtual communication.*

1. INTRODUCTION

It is known that the development of civilization rests on transfer of knowledge and experience from one to the next generation. In that way, to each of the following generations the viewing, comprehension and understanding of natural and social changes and flows has been significantly facilitated.

Each period of social development has undoubtedly left behind a recognizable social signature.

An epoch, namely the reached civilization level can be recognized both by the manner of acquiring and transferring of knowledge and by social values in general. And that is certainly correlated with the level of development of science, engineering, technology and primarily of the social awareness.

Telegraph, telephone and fax-their evolutionary effect on business operations as well as increasingly massive usage-represent some of the significant marks of the previous century. The evolution of telecommunication services by the appearance of the Internet has grown into the revolution at the end of XX century. Each revolution brings significant changes into all spheres of human life and primarily in business operations. The changes are great and fast and anyone ignoring or underestimating them inevitably drops out from the market match.

The technological advance as well as the application of technology by itself is becoming increasingly the component part of everyday life. This permanent and ubiquitous change points out to great possibilities that are given in the nearer future. Computer communications certainly fall among the most popular technologies. The philosophy "all through the IP" represents the future of market communications.

The best example of the importance of changes in communications is electronic mail. Today it has the same if not even greater importance than the telephone or fax. In modern business world no one asks you anymore if you have it, but what is your electronic address. By the electronic mail not only ordinary letters can be sent but also the letters with audio and video messages.

By the usage of optical fibers the access to the Internet of high quality through fixed connections is enabled. 3G systems are becoming the solution for wireless access to the Internet which has a specific

influence in rural areas, distance areas, in the East European countries and also in other developing economies wherein the expenses for the fixed connections access are great so that it is impossible to provide advanced services for data transfer. To the systems of wireless local networks the connections of wide bandwidth will be enabled on the local level and also a simple access to the Internet without the necessary "wiring".

The development and advancement of various communications systems leads to creation of global multimedia infrastructure that should enable the communication among all of the users and execution of the universal applications. It is apparent that the global multimedia infrastructure will be based on the Internet technologies.

2. THEORETICAL DETERMINATION OF COMPUTER NETWORK

As the period of origination of the first computer network the period from 1967 to 1971 can be taken when within the Advanced Research Project Agency, formed in the American Ministry of Defense, the ARPANet – a computer network including 23 computers has been designed and started functioning successfully in 1971.

A computer network is comprised of a limited or unlimited number of different physical channels (cable- classical, optical, radio waves, satellite) of mutually connected computers the technological-programming compatibility and synchronized operation of which is provided by the standard protocols.

This (multi)media enables a synchronous and/or asynchronous exchange of visual (written, printed, iconic, holographic), audio and audio-visual messages to the users of the computers that are the network's part and it by:

the possibility of using all the data based found in the memories of computers connected into the network,

electronic mail and

network conferences/forums.

2.1. Computer networks types

Starting from the number and the characteristics of a computer network users, within this media the following can be recognized:

local networks

global networks and

global system of computer networks - The Internet.

It is about the communicology criteria because from the informatics aspect, having as the criteria the manner of computer connection, the computer networks are divided into those that are organized as a star, ring, highway and the different combinations of the mentioned.

2.2. The computer network significance

Communication technology significantly influences the flexibility of work process. Owing to communication technology the employees can perform the job at home (or at some of the alternative locations in relation to the traditional workplace). The future turns towards virtual organizations.

The computer communication networks have contributed that the work of many organizations becomes more efficient and successful. The term telecommunication relates to the communication at a distance and includes telegraphs and telephones but also the data transfer.

The data transfer consists of:

the senders,

the recipients,

the media,

the messages

A message is transferred between the sender and the recipient and is presented by a group of bits. The sender or the transmitter emits a message whereas the final destination of the message is the recipient. The message is transferred through a media.

The data that is the message being sent through communication network can be: text, image, video and audio recording.

Virtual communication

The new form of communication represents the exchange of messages through a computer network between two or more or unlimited number of people (individuals, groups, organizations) with a possibility of reciprocal replacement of the functions of emitters and recipients in the real or asynchronous time, therewith annulling a great amount of differences among the classical forms of communication practice primarily of the interpersonal and mass communication.

The essence of the new form of communication is in annulment of differences between all the classical forms of communication practice first of all of the interpersonal and mass communication.

The media, in this case a computer network is no longer the factor of separation of communication centers and mass of recipients but is the point of balance of unlimited number of emitters/recipients or recipients/emitters.

The message distributed through some of the conferences/forums of computer network can for a short period of time become a subject of interpersonal communication at the vertical emitter/recipient(s) or at the horizontal recipient(s)-recipient(s), just like as the messages exchanged between two or more users can through some of the conference services enter into the orbit of 'mass communication'.

Terminological determination

However, in the communication literature, informatics theory and practice, and especially in the popular journalism, still a certain polyphony is present when the issue is about naming the new form of communication defined in this way.

The following adjectives are used: interactive, hyperactive, universal, total, digital, computer, networking ... and finally, virtual communication.

In modern sense it is deduced from the expression virtual reality, coined by the writer of science-fiction novels William Gibson and first used in the work Neuromancer, published in 1984.

The term virtual, when the meaning in modern English is neglected, originates from the Latin word virtus (courage, strength, virtue) with the meanings:

powerful, strong, capable of action but hidden, not appearing but can appear, possible in the future, potential, eventual; and

unreal, imagined, conceited.

These meanings can be fixed on a powerful and strong seeming, that is virtual reality, similar to the one caused by the fata morgana in the desert. Inside a computer network a new form of communication is developed as 'digital fata morgana' the etheric contours of which, by the power of an unreal source in the desert, affect the behavior and life of people, capturing them till the complete absence from the real world.

The flow of information patterns

REGISTRATION (central storage of information in electronic form – bases/banks of 'data')

CONSULTATION (the possibility of access to the stored information, under certain conditions-
HYPERTEXT: MESSAGE 'NO LIMITS')

ALLOCUTION (group and mass communication)

CONVERSATION (interpersonal communication)

The Internet

Significant changes in the global business and communication in general have been introduced by the Internet and the dominant internet technologies.

Depending on the source, the estimates are that by the end of six year of the third millennium there will be over 1.000.000.000 users of the Internet in the world. But the rendered statistics are constantly growing and geometrically progressing so that it is difficult to make an exact prognosis. The reasons that the analysts most frequently mention are:

the increase of the total usage,

significant increase of the auditorium,

relatively low expenses with a great flow rate will have the prestige in the market game, simple user software.

The Internet as the global communication system is primarily intended for exchange of information of any forms such as:

- text,
- graphical messages,
- audio recordings,
- video recordings.

Nowadays, it is possible to find easily numerous and various information through the Internet. Each individual or institution which by means of the computer are being included into global network and can exchange information fast, easily and cheap with any user and which is of great significance at any location in the world.

That is why the advantage of this media in relation to the other is reflected into:

- the most wide availability,
- simple protocol,
- minimum means for connection,
- small possibility of control.

The Internet is primarily a specific set of technologies that to the authorized users in the environment of a higher level of protection enables a relatively easy

- finding,
- distribution, manipulation,
- creation,
- updating,
- and usage of information.

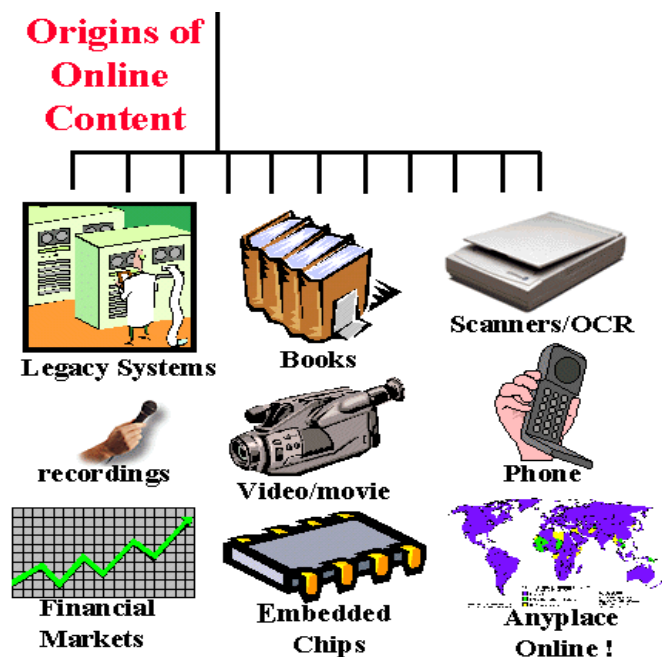


Figure 1: The Internet possibilities Reasons for introduction of the Internet

- Approach to the active and efficient data base,
- The possibility of improved communication,
- Cost-effectiveness,
- Easy maintenance of the central network,
- Increased safety of data
- Enables the advancement of business and internal organization
- And a set of other reasons from both personal and company's aspect

Electronic mail

The transfer of multimedia contents through the Internet is in a great expansion. That is why the prognosis that the traffic generated by the data transfer will soon be greater than the telephone content is realistic. It is often said that the Web is the most popular service of the Internet, but the electronic mail is anyway being used the most frequently and the most. Every month several thousand milliards of electronic messages are exchanged. Delivery of posts to another continent takes days, that is weeks, and the electronic messages through the Internet arrive after several minutes from the sending time.

Electronic mail is defined as the transfer of messages by the electronic way.

The integration with the classical telecommunication services and mobile telephony – the messages are not related only to the Internet but also to the modern telephone services.

The advantages of the electronic mail are the following:

- the usage simplicity,
- communication rate,
- savings in time and money,
- replacement for telephone, that is fax,
- efficacy,
- Delivery safety,
- cost-effectiveness

Mobile Internet:

What do you get when you mix mobile telephone and the Internet? On one hand we have the Internet which has undoubtedly brought the revolution into modern business and marketing. On the other hand, we have the increasingly present 'personal device –mobile telephone which enables us a direct communication with a user, wherever he/she is. The fusion of the two technological-culturological phenomena has a huge potential to start the next wave of the revolution in business and marketing.

Trends and statistics

The analytics office Nielsen Mobile has made an analysis of the mobile internet users in 2008 with the following information: The leaders in mobile telephones usage through the Internet access are Americans with 16% that is 40 million subscribers using the technology. The second are the citizens of Great Britain with 13% of the citizens accessing the Internet while moving, whereas the third come Italians with 12%. The lowest rank among 16 countries included in the research is Indonesia with only 1.1% of the spread of the technology.

The most visited sites, enjoying great popularity at the mobile users in the UK is the webpage BBC News, with 1,7 million of them (24% of the mobile users of the Internet). It is interesting that the BBC page is dedicated to weather forecast. Sports station of the media house Sky as well as Gmail have greater access by the mobile internet than by the PC. On the other hand, the Google page for the Internet search and the auction site eBay are the locations where the PC access most dominates over the mobile phone access. One of the leading search engines is also Opera, the number of users is increasing with tendency (figure 2).

The fact that the sites with the news, weather forecast, sports news and electronic mail are dominant in the mobile world shows that the maximum functionality, expected from the mobile Internet, in contrast to the traditional Internet, where entertainment and somewhat electronic business services are in the foreground. In favor of the statement also speaks the fact that the average user of mobile Internet visits only 6 different sites a month, whereas in the same period from its PC opens over 100 locations on the Internet.

A great share of the effort in construction of a mobile website lies in the selection of the contents and ways it is presented but also in the manner of navigation through the site itself. The mobile user at any moment should be offered precisely the information he/she wishes to get and it on the first page he/she accesses, as much as possible. The traditional Internet sites use complex models of navigation in order to keep the user as long as possible and induce him/her to a more wide interaction with the sites' contents. The modality and the context of the access to the Internet by mobile phone make these navigation models extremely undesirable and counterproductive.

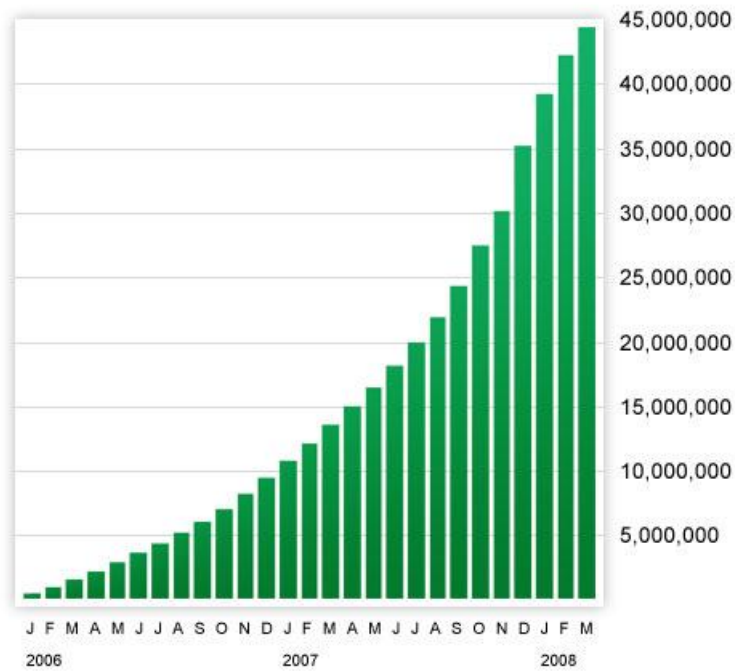


Figure 2: The growth tendency of the Opera search engine users

Audio-visual communications

In distinction from a private conversation happening by means of video-telephony, in business a greater importance have video-conferences, where the quality of the transferred video is at the highest level. Video-conferences enable individuals or groups of people to, from different locations in the real time, by audio and video communication share the information and make decisions more efficiently. This system functions well in the enclosed corporative environment wherein all the computers share the same video-conference network, hardware and software. Video-conference technology in conjunction with the Internet will enable connection of the companies, state institutions, academic institutions, etc.

Television and the Internet

The television and computer integration has reached a higher level that can be called integration of television and the Internet. This integration implies broadcasting radio and television program through the Internet, but also broadcasting the Internet through television.

Owing to a large base of potential users of the Internet, special additional devices have been developed which make the Internet terminal from the television appliance connected to the cable television.

The Internet and radio

Apart from the classical way, radio programs today can be broadcasted through the Internet as well. The sound is compressed and transferred through the Internet by special audio servers. There is an increasing number of stations that broadcast the programs both in the classical way and through the Internet, therewith increasing the auditorium.

3. CONCLUSION

In any type of progress an offset of new achievements is hidden. It is a cyclic process, ‘pushing’ the world forward.

The accelerated development of science and engineering leads to increasingly faster exchange of knowledge and information among people. Practically every new discovery has opened up new outlooks, thus creating the possibility of education of increasingly greater number of people.

Learning, based on the new technologies is permanent and has completely changed the national and cultural standards.

The vast scientific potential is directed today towards studying of neurons and the possibility of connection with human brain. The purpose is researching the artificial intelligence, an intriguing area of science that could change the world.

Certain scientists claim that soon a computer will be designed that will, according to the complexity and size, be equal to human brain and that the work will be incomparably faster. The question is whether the artificial intelligence is capable of reaching the human. What interest the most the widest auditorium is whether the man in generating the offspring has in the essence created also the tomorrow's masters.

Nowadays, we are the witnesses of incomparably faster implementation of the scientific discoveries. The reliance on science is increasingly present, and the man with every new cognition is more and more prepared for new "miracles".

However, globalization is inevitably having also good sides. And that is certainly the most evident through the effects of overall electronization of the world communication system.

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