GLOBALIZATION UNDER THE INFLUENCE OF DEVELOPMENT OF INFORMATION AND COMMUNICATION TEHNOLOGY (ICT)

Ivana Mudrovčić, M. Sc. Candidate
Željko Dujmović, M. Sc. Candidate
Dražen Andrašić, M. Sc. Candidate

Abstract

This paper deals with development of information and communication technology, which is also one of the causes and consequences of globalization. With the development of information and communication technology world is becoming much smaller, so that connection between two subjects in different parts of the world is established within a few seconds. Digitalization shall undoubtedly be confirmed as one of all-present generic trends, which to a large extent brought forth appearance of the rest of them. In this paper telecom market and some of the specific info-phenomena of the modern society shall also be considered, such as the Internet, which greatly influence contemporary culture.

Key words: globalization, information and communication technology, ICT market

Introduction

Technological novelties, especially advancement in the field of exchange of information and communication have, without any doubt, played and still play one of the most important roles in the formation and development of globalization. ICT represents an attribute of globalization from different points of view. Globalization of finance market, transfer of large sums of money from one part of the planet to the other within a few seconds, organizing of transnational production, etc. would be impossible without this technology. Globalization is as much as a political and technical and cultural as it is an economical process. It is more than anything under the influence of development of communications system, which started just at the end of 60ties.

It must be pointed out that besides simple definition, globalization as a concept raises disputes and opposition. In addition to outmost positive approaches to global-

ization and its influence on quality of life, also an opinion that globalization itself is a fundamental cause of uneven distribution of wealth is widespread, since it, through its system as it is today, mainly contributes to economic growth of developed countries.

Globalization concept

Term *globalization* is derived from the word "global", which means completeness; *globalizm* is a way of perceiving of events in global. Globalization can therefore be understood as a social process that strives for comprehensiveness and uniqueness of the world (Turek, 1999). Speaking of globalism, there is also an extended definition which explains globalism through arguments of modern microelectronic revolution.

Thanks to the globalization, relationships between people and countries are becoming more intense and people are starting to think globally and are seeing the world as a whole differently.

Globalization has also certain demands- constant investing in knowledge, technologies, research and development. Those who once fall behind in process of globalization or do not get involved in modern processes, fall behind significantly. Modern world "opens up" and it is "getting smaller" and this is how a well-known saying about the world as a "global village" was created. Globalization as an idea refers to "shrinking" of the world, but also to strengthening of consciousness of the world as a whole (Robertson, quoted in Milardović, 1999). It can be said that globalization is one of the consequences of development of science, modern technology, market economy, democracy. Globalization has allowed for free movement of capital, goods, information and people through widening and abolishing of borders. Environmental, cultural and social sides of globalization are often neglected with regard to its political and especially its global dimension, however those are gaining more space lately. One must mention for example antiglobalists, human rights fighters, animal rights fighters (Greenpeace etc.) and so on.

Globalization process is nowadays opposed by antiglobalists. Referring to negative sides of new ICT technologies let us list just a few: irresponsible and unlimited utilization which leads to isolation from family; indifference and hostile attitude towards members of religious and ethnic groups and moral as a result of postmodern environment which interprets the truth as only that which can be comprehended, understood and experienced by human sense; fear, indifference and inability of some individuals regarding new technologies; violence, pornography and pedophilia; misuses and new forms of crime and terrorism, violation of privacy, placing of false information, immorality.

Globalization theory was formed in the 20th century, during 80ties and 90ties, by Ronald Robertson. Based on that theory he could describe events that have supranational and worldwide meaning. Besides Robertson, numerous authors wrote about globalization and attribute different meanings to globalization.

Everybody interprets this term in his/her own way, but it is nevertheless commonly interpreted as integrated world with all economic, social and political activities as a whole without borders and barriers.

Origins of ICT

In the middle of 19th century a portrait painter from Massachusetts, Samuel Morse, transferred the first message, "Whath hath god wrought?" over an electric telegraph. By doing so, he started a new phase in world's history. Never could a message be sent without being carried over to receiver. Since the appearance of satellite communication[1] each bit represent dramatic breakup with the past. The first communication satellite[2] was launched 47 years ago. Nowadays, there are more than 2.000 communication satellites, each of which transfers large quantities of information and all of which are circling around the Earth. For the first time an immediate communication between locations on total opposite sides of the world is made possible. Other types of electronic communication, more and more integrated with satellite transmission, have sped up as well. There were no transatlantic or transpacific communication cables before 50ties. The first transmitted less than 100 lines for voice communication. Optical cables nowadays transmit more than a million lines. On February 1, 1999, about 150 years since Morse invented his dots and dashes system, Morse code was finally set aside as a means of maritime communication. It was replaced by satellite technology which allows for immediate positioning of each ship in trouble. Most of the countries prepared in advance for this crossover. French have, e.g., two years later as they stopped using Morse code as a call for help in their local waters, stopped the emitting in Gaelic flamboyance style: "Calling all. This is our last cry before our eternal silence".

Timely proximity of electronic communications does not consist only of the way that allows for faster spreading of the news or information. Its existence chang-

---

[1] Satellite communications can be understood as a number of wireless repetitive stations (satellites) which allow communication between geographically distant areas over microwave communication. Due to the length of the signal transmitted by the satellite, it covers large areas of the Earth.

[2] In 1960 "Echo 1", a plastic balloon made of aluminum construction with diameter of 30 meters, was launched. "Echo 1" was a representative of the 1st generation of so called passive transmission- radio signals were bouncing off the balloon in all directions and they could be received all over the world.

es the fundamental meaning of our lives, which are not only rich, but also poor. The range of media technology increases with each wave of innovations. It took 40 years for radio population to reach number of 50 million in the USA. The same number of people used personal computers after only 15 years since PC (Personal Computer) was invented.

Only four years after access to the Internet was made possible, 50 million Americans became regular users.
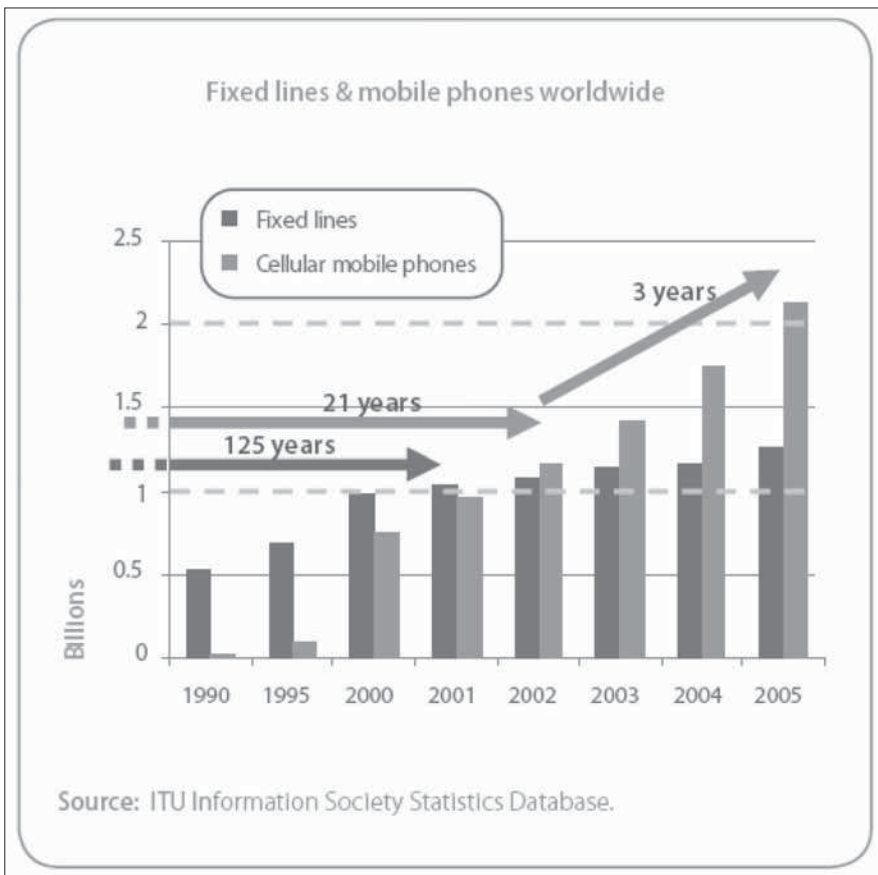
Information and communication revolution

While world social processes move from industrial to information society, driven by digital technology and globalization convergence powers, most of the countries are finding it more and more difficult to keep pace with forthcoming changes and are less and less successful in defining the right politics as an answer to this civilization challenge. Therefore information and communication technologies create new information revolution in the whole world. This revolution is based on information and it reflects human knowledge. Such technological progress allows us to develop, to memorize, to go back and to communicate through information in any shape, written, oral or visual, unrestrained by distance, time and volume.

Forthcoming revolution contributes to increase in human intelligence capacities und determines new sources that change living together and work manners. Therefore, those countries that become the first in joining information society shall have the greatest benefits. They shall determine the working scheme for those who follow. On the other hand, countries that hesitate can in less than a decade confront with horrible deficit of jobs. Namely, information revolution speeds up primeval changes and ways we perceive our society and its organization and structure. It represents a great challenge for us in which case we can either take the opportunities that lie before us and face the challenges or undergo them, together with all insecurities that might appear. Furthermore, forthcoming information society appears hand in hand with changes in legislative field of new professions and skills. Uninterrupted dialog between social partners shall therefore be extremely important, if we want to control inevitable changes in work places, initiated by changes in the environment which should reflect in new relationships at work places. New communication systems, linked with advanced information technologies, are keys of information society. Time limitations and distance disappear in networks (phones, satellites, cable TV) that transmit information through basic services (e.g. e- mail, interactive video) that enable people to use networks and applications (e.g. distance learning, distance working) that offer solutions adapted to users. Traditional network also changed its character. It was formerly built as audio recording media, while nowadays it is con-

fronted with communication needs of modern economy that go beyond ordinary telephone calls. An important novelty is Integrated Services Digital Network ISDN[3]. It offers possibilities of transmission of voice and data and even of video material over telephone lines. Further technological wave strives for multimedia world. These are namely integrated broadband communications that allow for arranging of all media in a flexible manner. Leading technology for linking is called Asynchronous Transfer Mode- ATM [4] .

In fact, mobile communication grows at enormous speed.

Fixed lines & mobile phones worldwide

Source: ITU Information Society Statistics Database.

---

[3] ISDN: *Integrated Services Digital Network* It is a system of services, equipment and access protocols to immobile, i.e. fixed digital telecommunications network.
[4] ATM (*Asynchronous Transfer Mode*) is broadband technology that supports high transfer rates and allows for various data traffic (data, voice, video) over a unique technological platform.

Europe takes important place in mobile communications and its standards for digital communications are adopted worldwide. Particularly GSM[5] is an excellent example how private and public European initiative can successfully be transferred into market- lead operation opening new work places. Satellites are nowadays used mainly for television broadcasting, Earth observation and telecommunications. Main advantage of satellites lies in their broadband coverage without any need for expensive networks on Earth and there are many advantages in form of coverage of rural and distant areas by advanced technologies. Therefore, satellites can maximally be used only in new phase of satellite politics and goal should be development of transeuropean network. We are nowadays witnesses of new communication services in the field of e-mail, data exchange and interactive multimedia. Required technology (ISDN, DSL[6], ADSL[7]) for such a communication is available, putting aside all limitations of telephone networks. Hence, today's Internet as a network of all networks that belongs to nobody, offers e-mail, discussions, data and resource exchange. The Internet is so big and it is growing at such a speed that it cannot be neglected. However it has certain disadvantages, such as noticeable problems with security. However, regardless of that, we must also carefully reconsider following of Internet evolution, participating more actively in development of era of mutual interlinking. European tendency toward adjustment and export of new technologies and opportunities these open shall form a necessary partnership between an individual, employer, unions and governments dedicated to watching over changes. Hence, if we embrace changes that are awaiting with decisiveness, having in mind social consequences, we shall all come out the long-term winner.

Worldwide communications developed during past decades into fast growing sector with large number of participants. Present communication between states consists of word, video, text and data flow between members of government, social movements and business organizations. World news flows at a global level are presented by most printed news agencies (World Television Network and somewhat less CNN and BBC). Flows of entertainment and educational materials, which include music, movies, books and TV-entertainment, are spread by the largest global companies. Commercial materials, consisting mainly of commercial marketing in international newspaper, magazines and electronic media, are produced by the largest

---

[5] GSM (*Global System for Mobile communications*) is the most used standard for mobile phones.
[6] DSL (*Digital Subscriber Loop*) is the technology that enables digital transmission over copper telephone lines to end user. Nowadays it is mainly referred to as *Digital Subscriber Line*.
[7] ADSL (*Asymmetric Digital Subscriber Line*) is digital subscriber line that allows greater volume flow towards user than in the opposite direction. Common versions of ADSL also allow simultaneous use of basic telephone service at the same copper line since they use frequency range above frequencies required for telephone operation. Nowadays, ADSL is used mainly for broadband Internet access.

global marketing agencies. Data in electronic data exchange, transfer of electronic goods, satellite communication are transmitted by global computer networks such as Internet or networks between companies, such as the largest network between world-wide banks SWIFT. Voice mail service, either individual or commercial, is provided by the largest global telecommunications institutions.

Text messages are transmitted by mail, fax, and telex and increasingly in the form of SMS[8]/MMS[9] messages over telecommunication service providers.
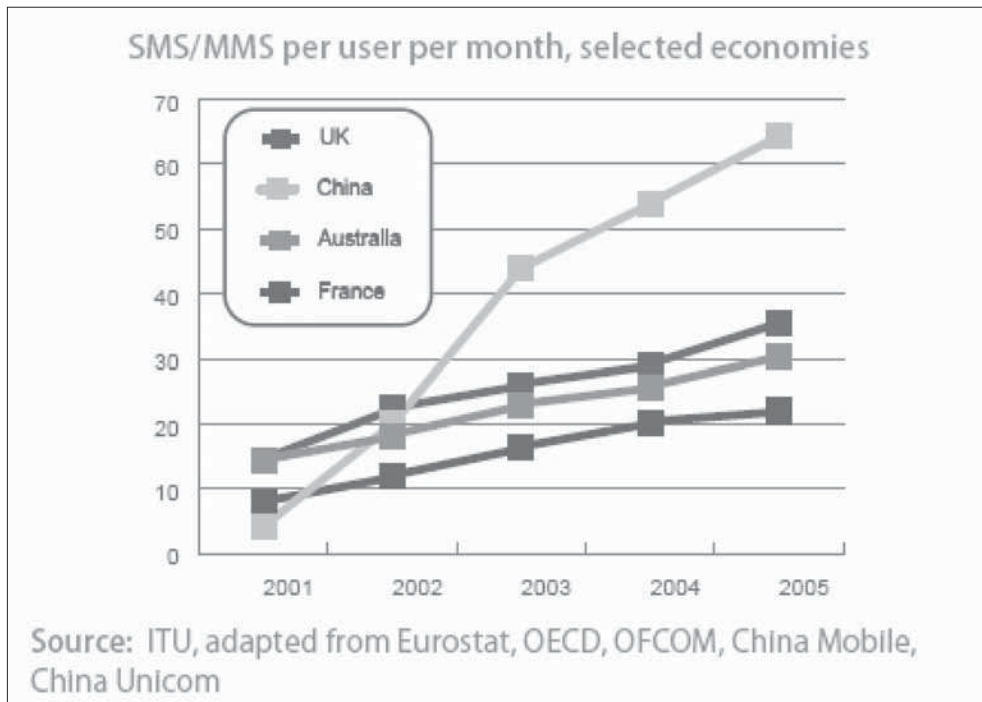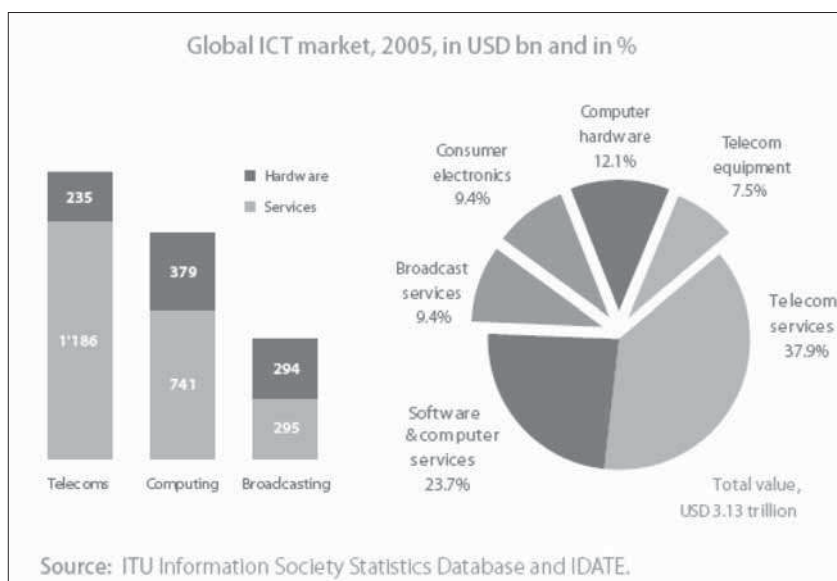

Products such as software and data bases are sent in record time measured in seconds from one part of the world to the other.

Communication service providers and manufacturers of the equipment which enable these information flows together form multi-trillion global ICT- markets.
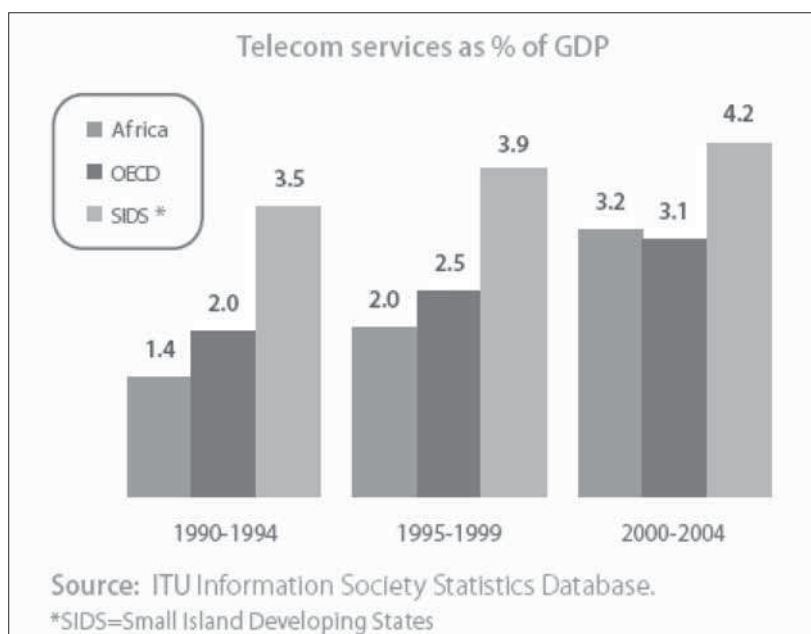
---

[8] SMS (*Short Message Service*) is a service of sending short text messages within GSM standard for mobile phones.
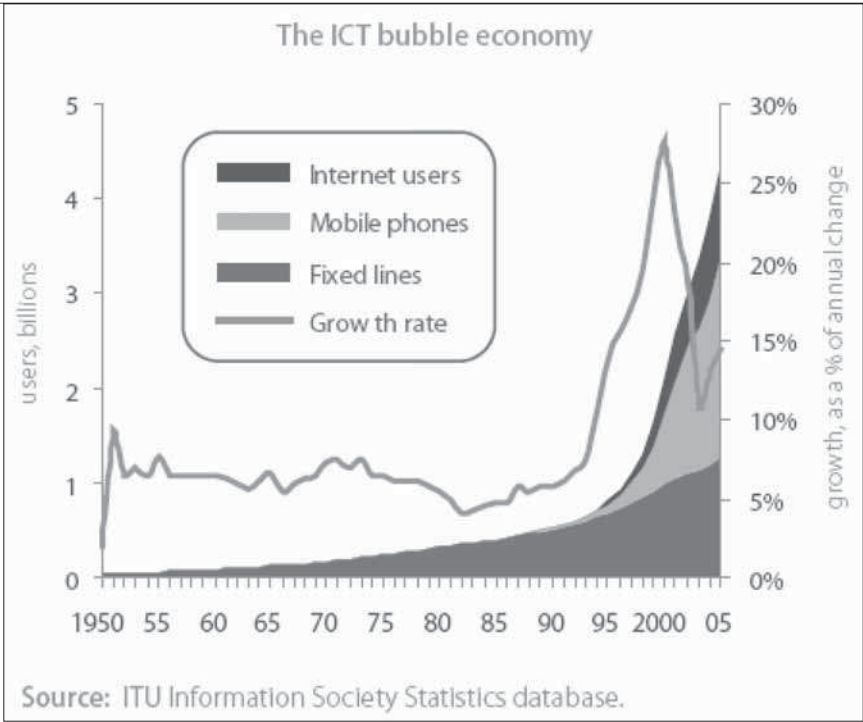[9] MMS (Multimedia Messaging Service) is a GSM standard of a similar concept as SMS- standard: it enables immediate (and simple) sending of messages from mobile phone. There is a gre-at difference in message content. MMS enables sending of more alphanumeric characters and a graphic (.gif and .jpg formats), video (.mpeg4 format) and audio recordings (.mp3, .wav and .mid formats).

Global ICT market, 2005, in USD bn and in %

Source: ITU Information Society Statistics Database and IDATE.

The growth of digital business can be observed in ICT-economy's share in global GDP.

In 2004 share of ICT-economy in global GDP amounted to 3,3 %, whereas it amounted to 1,8% in 1990.


Telecom services as % of GDP

Source: ITU Information Society Statistics Database.
*SIDS=Small Island Developing States

The ICT bubble economy

Source: ITU Information Society Statistics database.

Tracking the "Big Fives"

Market capitalisation and annual revenues for the top five companies in the digital content and telecom service sectors
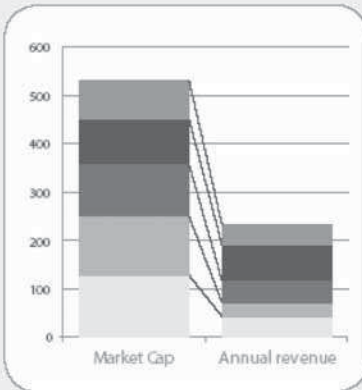
Top 5 digital content companies
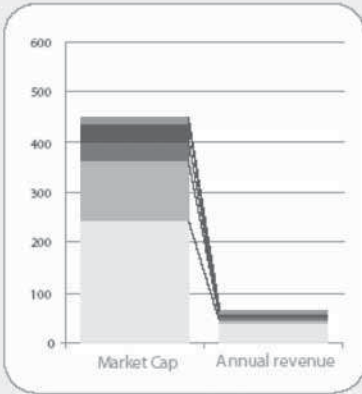
Company	Market cap (USD bn)	Annual revenue (USD bn)	Year-to-date
Microsoft	244.8	39.8	31/06/ 05
Google	118.5	6.1	31/12/ 05
Yahoo!	38.0	5.3	31/12/ 05
Ebay	35.4	4.6	31/12/ 05
Amazon	14.3	8.5	31/12/ 05
Totals	451.0	64.2	

Ratio of market capitalisation to revenue=7.02

Top 5 telecom service companies

Company	Market cap (USD bn)	Annual revenue (USD bn)	Year-to-date
Vodafone	128.4	41.3	31/03/ 06
China Mobile	120.6	30.9	31/12/ 05
AT&I	108.0	43.9	31/12/ 05
Verizon	95.1	75.1	31/12/ 05
Telefonica	78.3	42.6	31/12/ 04
Totals	530.3	233.8	

Ratio of market capitalisation to revenue=2.27

Note: Market capitalization data is for 21 July 2006. Annual revenue is for latest available year. Companies are ranked (top five) according to market capitalization rather than annual revenue.

Source: ITU, adapted from Company reports, Finance.Yahoo.Com and Edgar Online.

Popularity of contents offered by new media significantly increased when users started editing them, either through demand or through creating them, e.g. over websites YouTube and MySpace.

Unique users of social networking sites, millions

Source: Adapted from the Financial Times using Nielsen/Net Ratings figures, 23 August 2006.
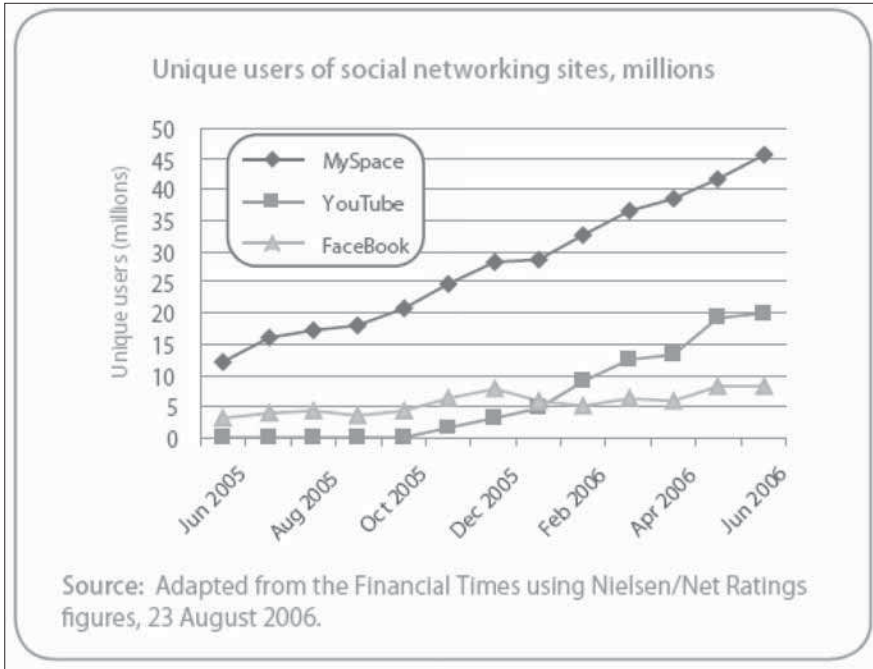
Future of global ICT

Organization «Pew Internet & American Life Project», which studies the consequences of influence of the Internet on the society, conducted a survey on 742 Internet professionals (entrepreneurs, activists, analysts...), asking them how they envisage the Internet by year 2020:

In the future shall people live and work in virtual worlds. There shall be less and less privacy and experts predict isolated and violent attacks. Not all believe in network nirvana. Internet shall become advanced, cheap network of billions of machines by 2020, as leading technological philosophers predict. More than half of respondents see a bright future for "network of all networks", but 46% of them are reserved regarding optimistic vision of the Internet. As much as 60% of respondents believe that there shall be serious disturbances at work market and that a sort of so called Luddites-contraculture shall arise therefrom. "Luddites" was the name of workers in Great Britain who at the beginning of 19th century destructed machines as a response to replacing of people by machines and the name of the movement is

derived from the name of movement leader Ned Ludd. While most of respondents agreed on direction of development of technology, opinions on its influence on society were different.

Respondents were given a series of potential scenarios of technological development within next 15 years and its potential influence on global society. These themes attracted the attention of respondents the most and they chose the following scenarios as more or less likely:

- Thanks to successful development of technology most of the population shall by 2020 have favorable network access and this technological "equality" shall open new opportunities for success of individuals at global level.

- A number of respondents doubts this scenario and believes that business sector shall not give up control over information and communication that easily and that the level of equality shall not be sufficient for abolishing of existing social inequalities.

- Almost all respondents agree that people will have to give up on some of their privacy involuntarily. A number of respondents believe that some individuals shall be forced by the law to give up on their privacy, while others believe that such a process would be a result of social consensus itself. It is also expected that governments and corporations shall continue with surveillance and securing of own access to information; the mighty and the privileged shall profit the most from growing availability of personal information.

- Most of respondents believe that technology shall remain in hands of people within next 15 years, while others fear that technological development shall create machines and processes that shall get out of our control.

- Even though English shall remain *lingua franca* of intercultural communication within next 15 years, it shall not repress other world languages, whose influence shall get stronger. Some of respondents believe that "the internet shall develop into a large community of micronets that serve micronets in their languages". Those who do not agree with predictions of dominance of English believe that it shall remain the most popular "second language", while most of the users shall use their mother tongue in online communication. Technology that would allow everybody to speak and write in their mother tongue, while others could easily understood them, arises as a possible solution.

- Existence of synthetic **online worlds shall allow for higher productivity of people in technologically advanced areas in comparison with working in "real-time world" but most of them shall be at risk of developing of addiction to virtual worlds and losing touch with reality**.

- A new cultural group of neo-Luddites shall be formed, of fighters against technology who choose to live offline in order to avoid overcrowding with information, while others shall remain active enemies of technology who will use violence against technology inspired changes. As the Internet becomes unavoidable resource, it could become a target of violence in the future and the question whether such acts shall be perceived as an act of terrorism or civil disobedience remains open.

When asked about priorities in ICT development, more than 3/4 of respondents placed development of network infrastructure and knowledge as most important. As second comes "development of legal and operative basis that will enable people to use the Internet in the way that they want to, using the software they want to", which was supported by 64% of respondents.
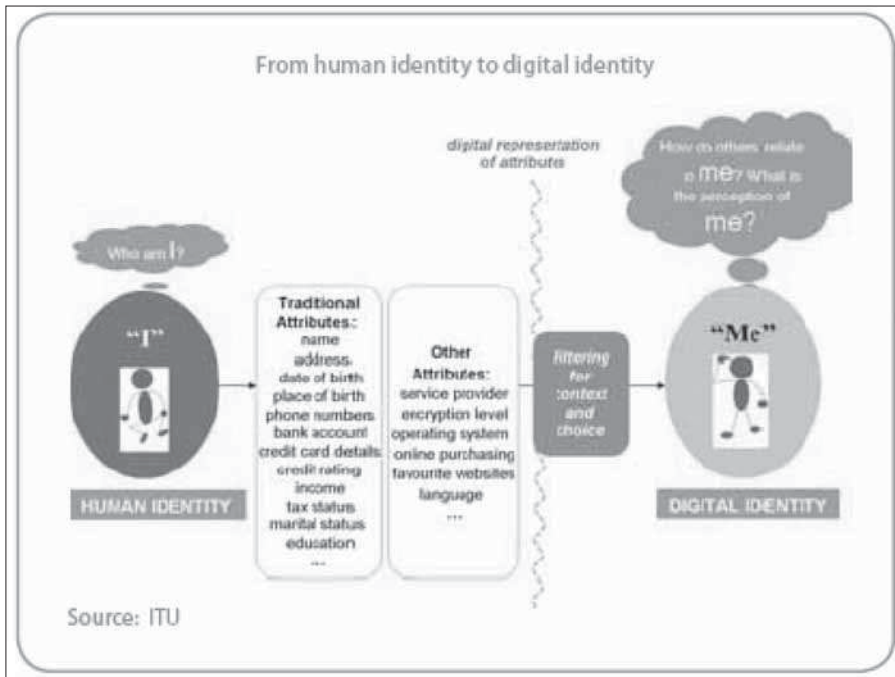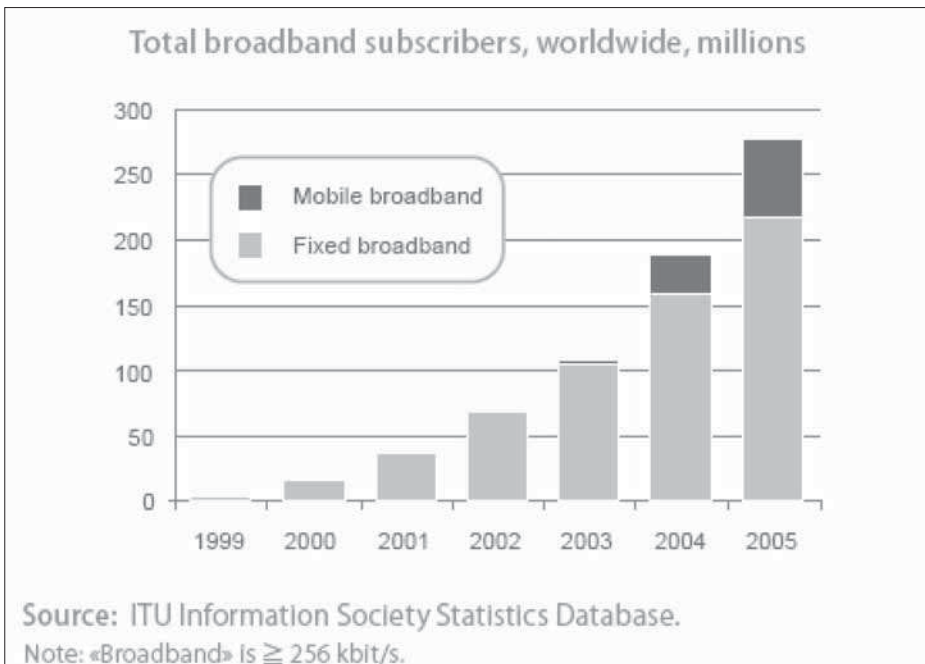

Company JupiterResearch has announced that the Internet become the most important media for greater part of American community. An average user of the Internet devotes 14 hours of his time to the Internet, which is the same time that he/ she spends watching TV. Those same Americans, who are the best readers of magazines and publications, have stated that they spend less time searching for publications than they spend on the Internet and watching TV. Therefore, the publishers and broadcasting companies are afraid that they will lose an entire generation of users if
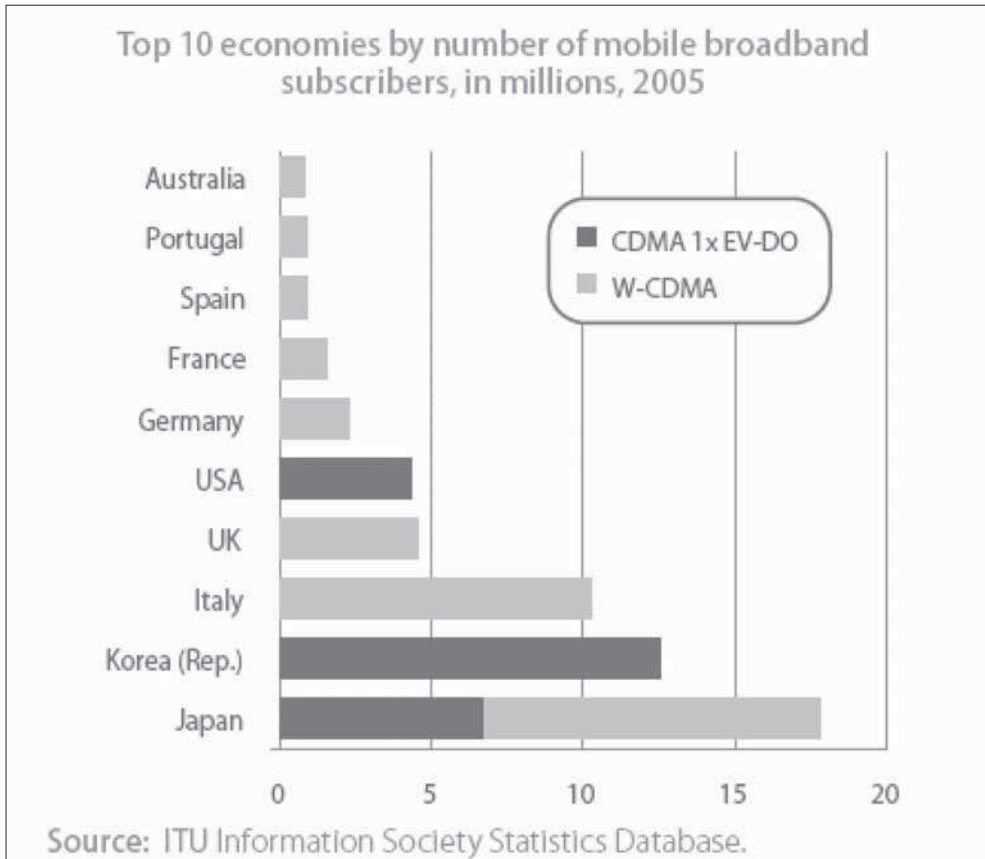
they do not start promoting their Internet services. Books have lost the most readers, since approx. 37% of users stated that the read less books because of the Internet.

Nowadays you can rent a movie from a virtual video store over remote control and watch it immediately, without leaving your comfortable chair. This is possible not only in America, but also in Croatia. To use such a service, a special device is required, which is plugged into TV, and broadband access to the Internet. Soon you will be able to bet at the pools, take part in public surveys, insure oneself, pay the bills and file your income tax return over TV.

Fast Internet access does not only mean faster surfing and easier download of "documentaries" over the Internet, but also opens new possibilities for doing business and leads to establishment of new companies, which were unimaginable in the past. Development of broadband Internet access[10] has become a prerequisite for economic development.

Total broadband subscribers, worldwide, millions

Source: ITU Information Society Statistics Database.
Note: «Broadband» is ≥ 256 kbit/s.

---

[10] Broadband Internet access or often broadband Internet is joint name for means of accessing the Internet, which allow for high speeds of data transmission. Technologies that private users mainly use, cable modem and ADSL allow for speeds over 256 kbit/s, which is usually considered to be a lower limit for broadband access. Business users can also access the Internet over rented digital lines which are achieved by using various DSL-technologies and optical fiber. Newer access technologies include Wi-Fi, WiMAX, UMTS, CDMA.

Top 10 economies by number of mobile broadband subscribers, in millions, 2005

Source: ITU Information Society Statistics Database.

European Commission estimates that 90% of companies in the Union shall within the following 4 years organize and start using own strategies of electronic business, thanks to high speed Internet access.

During the first half of 2006 number of visitors at websites of American newspaper agencies has increased by one third, according to research of American Journalist Association. Moreover, according to research of company JupiterResearch, Europeans weekly spend four hours on the Internet (unlike 2 hours in 2003), while they spend reading newspaper and magazines approximately 3 hours. The fact that Internet usage has overcome reading of printed media contributes further more to strengthening of the position of the Internet in European media world. This change will significantly influence new strategies of media agencies, as well as of big companies which will have to direct their marketing budgets to the Internet media. It can be concluded from the report that the main factors for growth of the Internet usage are age of users and broadband Internet access. Namely, people who were born after

1970 did not acquire a habit of buying newspaper or watching TV-news and rather gather information on the Internet portals. They are looking for fast, up-to-date and concise news and since they spend most of the day in front of a computer and have mainly high speed Internet access, Internet portals fulfill their need for information. Research agencies estimate that more than 1 billion of people use the Internet. Most of them are located in Asia (over 35%), than in Europe and Northern America and approximately 2% of Internet users are located in the Middle East and Australia.

Conclusion

Globalization is a process of uniting of the world into one unit or one system, which is made possible thanks to general constant information and communication technical development. World is becoming mutually integrated and everything that happens locally can also be reflected globally.

However, it remains uncertain what globalization and ICT-development, as cause-and-effect relationship with globalization in the future, carry about.

Bibliography and Internet sources:

Anđelko Milardović: Globalizacija, Pan Liber, Osijek-Zagreb-Split, 1999.

Annabel Z.Dodd: Telekomunikacije, Algoritam, Zagreb, 2002.

Joseph Stiglitz: Globalizacija i dvojbe koje izaziva, Algoritam, Zagreb, 2004.

Miroslav Mikula: Razvoj telekomunikacija: od dimnih signala do svjetlovoda, Zagreb, Školska knjiga, 1994.

Franjo Turek: Globalizacija i globalna sigurnost, Interland, Varaždin, 1999.

Giddens, Anthony: Odbjegli svijet: kako globalizacija oblikuje naše živote, Biblioteka Diskrepancija, Zagreb, 2005.

http://www.itu.int/net/home/index.aspx

http://www.dadalos.org/globalisierung_hr/index.htm

http://www.cpi.hr/hrvatska_u_procesu_globalizacije.htm

http://www.pewinternet.org/

http://www.jupiterresearch.com/bin/item.pl/home

http://www.geografija.hr/novosti.asp?id_novosti=773&id_projekta=0&id_stranice=0