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Olsztyn Economic Journal 6/1, 51-74

2011

Artykuł został opracowany do udostępnienia w internecie przez Muzeum Historii Polski w ramach prac podejmowanych na rzecz zapewnienia otwartego, powszechnego i trwałego dostępu do polskiego dorobku naukowego i kulturalnego. Artykuł jest umieszczony w kolekcji cyfrowej bazhum.muzhp.pl, gromadzącej zawartość polskich czasopism humanistycznych i społecznych.

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**NEW INFORMATION AND COMMUNICATION
TECHNOLOGIES AS THE FACTOR
OF SOCIAL INCLUSION**

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Key words: new information and communication technologies, social inclusion, e-inclusion, technological determinism, digital divide, IT skills and competences.

A b s t r a c t

The paper presents the opportunities and limitations in using new information and communication technologies as a factor of social inclusion. It consists of three basic parts. The first part presents the actions for development and use of new technologies as factors of economic growth and employment increase undertaken within the frameworks of programs of the European Union and its Member States during the recent years. Use of new information and communication technologies has an increasing role as a factor of economic growth, social development and social inclusion.

The second part of the paper deals with the access to and use of the information and communication technologies in Poland and comparison of the situation in Poland and in other Member States. Here the paper indicates the existing disproportions and threats for the information society.

Part three criticises the technological determinism putting excess stress on technological aspects while underestimating the social aspects.

The examples of good practices from a few selected EU Member States where the use of new information and communication technologies was combined effectively with the measures for social inclusion also support the social approach to the introduction and use of modern information and communication technologies.

**NOWE TECHNOLOGIE INFORMACYJNO-KOMUNIKACYJNE JAKO CZYNNIK
INKLUZJI SPOŁECZNEJ**

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Słowa kluczowe: nowe technologie informacyjno-komunikacyjne, inkluzja społeczna, e-inkluzja, determinizm technologiczny, digital divide, umiejętności i kompetencje informatyczne.

Abstrakt

W opracowaniu przedstawiono możliwości i ograniczenia w wykorzystywaniu nowych technologii informacyjno-komunikacyjnych jako czynników inkluzji społecznej. Składa się ono z trzech zasadniczych części. Część pierwsza przedstawia działania na rzecz rozwoju i wykorzystywania nowych technologii jako czynników wzrostu gospodarczego i zwiększania zatrudnienia, podejmowane w programach unijnych i krajów członkowskich w ostatnich latach. Wykorzystywanie nowych technologii informacyjno-komunikacyjnych jako czynnika wzrostu gospodarczego, rozwoju społecznego i inkluzji społecznej odgrywa coraz większą rolę. Część druga opracowania traktuje o dostępności i wykorzystywaniu technologii informacyjno-komunikacyjnych w Polsce i porównaniu sytuacji w Polsce z innymi krajami członkowskimi. Wskazano na występujące dysproporcje i zagrożenia w tworzeniu społeczeństwa informacyjnego. W części trzeciej skrytykowano determinizm technologiczny, w którym kładzie się nadmierny nacisk na aspekty technologiczne z jednoczesnym niedocenianiem aspektów społecznych. Na społeczne podejście do wprowadzania i wykorzystywania nowych technologii informacyjno-komunikacyjnych wskazują również przykłady dobrych praktyk z kilku wybranych krajów UE, w których wykorzystywanie nowych technologii informacyjno-komunikacyjnych łączono skutecznie z działaniami na rzecz inkluzji społecznej.

Introduction

New technologies represent new possibilities and opportunities for better living for the entire societies of the 21st century. At the same time, however, they carry with them threats in the form of the digital divide and digital exclusion. Overcoming those threats is given increasing attention in, among others, programs of information society building and programs of socioeconomic development.

The paper aims at presenting a concise review of actions aiming at combating digital illiteracy undertaken at the level of the European Union and in Poland during the recent years. At the same time it criticises the phenomenon of the technological determinism and indicates the need for wider consideration of the issues of social exclusion.

E-inclusion is both the social necessity and the economic opportunity.

Increased role of the ICT in the process of socioeconomic growth in the EU

The European initiatives supporting economic growth and competitiveness of the European Union in the global scale increasingly often indicate the key role of information and communication technologies (ICT) in the transformation of all the EU countries to the phase of the information society. The European Commission on numerous occasions pointed out that the ICT development level and the availability of the global information resources will increasingly determine the individual and group position as well as the position of individual countries in the international systems.

Numerous initiatives, starting with the report by Martin Bangemann “Europe and the global information Society – Recommendations to the European Council (1994), Report “The information society: from Corfu to Dublin”, the European Union Green Paper and many initiatives under the name of eEurope have shown that the issues of the information society have been and still remain one of the major pillars of the widely understood development strategy.

Information and communication technologies have become the key element of the Lisbon Strategy because of their role in the process of economic growth and social development. The sector of ICT hardware and services has been one of the most innovative and productive sectors during the recent years. Increasingly extensive application of technology, according to many analysts, guarantees increase of productivity, effectiveness and competitiveness of regions and enterprises. Modern information and communication technologies increasingly form an integral part of all industrial and service markets (Challenges for the European). The renewed Lisbon Strategy placed also a significant stress on innovation and building the economy based on the knowledge as well as improvement of conditions for operating business and regional conditions of growth and development. Initiating the Partnership for Growth and Employment at the European Council summit in 2005 the knowledge and innovation were considered the drivers of sustainable growth and it was concluded that building the fully integrated information society on the base of the information and communication technologies (ICT) applied widely in public services, small and medium enterprises as well as households was necessary.

A year after revision of the Lisbon Strategy in 2005 that took the form of the European Commission and Member States partnership for economic growth and employment the review of performance of the Sustainable Development Strategy (SDS) was also conducted. As a result, in June 2006, the European Council the Revised European Union Sustainable Development Strategy addressed to the enlarged Community and considering a wider, global dimension of the undertaken challenges was accepted (Ministerstwo Gospodarki).

On the 11th of June 2006, the Ministerial Declaration¹ concerning actions in preventing digital exclusion was taken unanimously at the Ministerial Conference “ICT for an inclusive society” organised by the Austrian Presidency, European Council and European Commission in Riga. It was agreed that information and communication technologies are a powerful driver of development and employment growth.

On the base of the comprehensive analysis of challenges facing the information society and on the base of extensive consultations with the stakeholders on

¹ Ministerial Declaration – 11.06.2006 Riga, Latvia.

the preceding initiatives and instruments², the European Commission initiated the five year comprehensive strategy for information society development “i2010 – A European Information Society for growth and employment” and proposed three priorities³ of the European policy in the field of the information society and media:

- i. the completion of a **Single European Information Space** which promotes an open and competitive internal market for information society and media;
- ii. strengthening **Innovation and Investment** in ICT research to promote growth and more and better jobs;
- iii. achieving an **Inclusive European Information Society** that promotes growth and jobs in a manner that is consistent with sustainable development and that prioritises better public services and quality of life.

To solve the appearing difficulties and meet the current challenges the 10 goals of the Local Agenda for the i2010 program were formulated that should be implemented in all the European countries. Among them the following should be highlighted from the perspective of our considerations:

- full access to on-line services for all citizens of Europe in 2010 and establishing Public Internet Access Points (PIAP’s) in every European town;
- awareness and inclusion; each local and regional authority should conduct the campaign to involve the public, the SME’s and the local organisations in the joint effort for implementation of the assumed program and help in understanding the social value of the ICT. The importance of appropriate training in use of on-line services and training programs for economically and socially excluded groups should be highlighted here as well as the need for financial support for such groups;
- e-participation – allowing, by means of digital systems, participation in decision taking processes on local issues influencing the work conditions and living standards directly;
- digital solidarity – each local and regional authority should participate in the digital solidarity initiative supported by the UNO for combating the digital divide in the global scale. It was also proposed to establish the global fund for digital solidarity and the digital solidarity agency.

The next long-term program of the European Union countries socioeconomic development, which is a modified continuation of the Lisbon Strategy, is called “Europe 2020 – A Strategy for Smart, Sustainable and

² eEurope Initiative and the communication on the future of European audio-visual regulatory policy, COM(2003) 784.

³ i2010- A European Information Society for growth and employment, Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions, COM (2005), Brussels, 1.6.2005.

Inclusive Growth”⁴. Its assumptions, as highlighted by Jose Manuel Barroso, are more jobs and higher standard of living. Instead of a single supreme goal, this Strategy assumes the package of five main qualitative headline targets⁵ (determined individually for the individual Member States while considering their specific conditions and abilities). That strategy also employs a new implementation instrument in the form of the so-called flagship initiatives for achievement of the three main, mutually interlinked priorities of the strategy: smart, sustainable and inclusive growth. In each of them the information and communication technologies have an important position.

- Smart growth means increasing the role of knowledge and innovation as the drivers of the future development. The necessity for improving education quality, improvement of research activities results, support of knowledge and innovation transfer in the EU as well as full use of information and communication technologies were highlighted. Innovative ideas should be converted into new products and services that would assure economic growth and creation of new jobs and that would help in solving social problems in Europe and worldwide;

- Sustainable development means building the sustainable and competitive economy making efficient use of the resources, more environment friendly and employing the current technological achievements of Europe;

- Inclusive growth means strengthening the position of the citizens by assuring high levels of employment, investments in qualifications, combating poverty and modernising labour markets, systems of training and social protection to help the people predict the changes and cope with them and to build the coherent society.

Within the frameworks of the three presented priorities, the European Commission presented seven flagship initiatives the implementation of which will allow achievements of the assumed targets of the strategy: – “Innovation Union”, – “Youth on the move”, – “Digital agenda for Europe”, – “Resource efficient Europe”, – An industrial policy for the globalisation era, – “An agenda for new skills and jobs”, – “European platform against poverty”.

Each of the proposed flagship initiatives of the Europe 2020 strategy should consider to a larger or smaller extent the issues related to popularisation and

⁴ The new European strategy for employment and economic growth called Europe 2020 was accepted at the EU summit in Brussels on the 17th of June 2010.

⁵ Increase of the current employment rate of the population aged 20–64 from the current 69% to at least 75%,

- achievement of 3% GDP investment in the R&D,
- reduction of the greenhouse gases emissions by at least 20% as compared to 1990 or 30% under favourable condition, increase in the share of energy from renewable sources to 20% of the final energy consumption, 20% increase in energy efficiency,
- reduction of school dropout and increase in the share of people aged 30–34 with a degree or a diploma,
- reduction in the number of people living below the poverty line.

availability of information and communication technologies, the issues of digital divide and the methods of using such technologies.

The “Digital agenda for Europe” is the first of the seven flagship initiatives presented in the strategy that got into the implementation stage (Digital agenda for Europe...). “The objective of this Agenda is to chart a course to maximise the social and economic potential of ICT, most notably the internet, a vital medium of economic and societal activity: for doing business, working, playing, communicating and expressing ourselves freely”. The ten year period of the Digital agenda for Europe implementation is to contribute to achievement of lasting economic and social benefits from the homogenous digital market based on the fast internet and interoperative applications. The Agenda, similar to the i2010 initiative preceding it, is a strategic document containing around 100 actions of legislative and extra-legislative character in the area of the information society.

Based on the wide consultations, the conclusions contained in the Grenada Declaration⁶ and the resolution by the European Parliament, seven problematic areas were identified around which the major actions will be focused.

As Neelie Kroes, Vice-President of the European Commission responsible for the implementation of the Agenda said, “priority in the digital revolution must be given to the interest of the European citizens and entrepreneurs and in that way we must make optimal use of the ICT potential for creating new jobs, sustainable development and social inclusion”. Next to the issues such as establishment of the new, uniform market, improvement in development of ICT standards, improvement of confidence and safety, stimulation of pioneer research and innovation in the ICT sector, attention was also focused on the necessity of increasing the access of the Europeans to the fast and very fast internet and equipping all the Europeans with the information skills and access to internet services. Very fast internet is necessary to assure economic growth, creation of jobs and welfare as well as assuring access of the citizens to the contents and services they demand. Only 1 percent of the Europeans have access to the fast fiber-optic connection with the internet while in Japan that share is 12 percent and in South Korea 15 percent.

An increasing volume of daily tasks is performed via the internet, starting from the search for a job and applying for it and ending with paying taxes or booking of tickets. Using information and communication technologies, including the internet, has become an integral part of our daily life. However, around 30 percent of the Europeans have never used the internet although the network offers access to an increasing range of services. Closing the digital gap

⁶ The Ministers of telecommunication accepted on 19.4.2010 the “Grenada Declaration” for the purpose of establishing the uniform digital market.

may increase the opportunities of the people from less privileged social groups to participate in the digital society and use such services as e-education, e-administration or e-health. The information competences have been included among the eight key competences of fundamental importance for the people functioning in the knowledge based society (Recommendation of the European Parliament and the Council of 18 December 2006 on key competences for lifelong education). The key competences are those that all the people need for self-fulfilment and personal development, being active as citizen, social integration and employment.

An important place among the designed measures has also been given to the use of modern technologies in services to the elderly (Ambient Assisted Living, AAL). The common EU and Member States program covering, among others, the task of monitoring the health of patients, general access to telemedical services, internet assistance in the field of social services, etc. will open new areas for employing the ICT to serve the most vulnerable members of the society.

Providing public services by electronic means: e-administration is another immensely important field for employing modern technologies. Services of e-administration may decrease the costs, save the citizens, and entrepreneurs, time and help in decreasing the risk of climate change as well as natural and caused by human activities threats as a result of sharing the data and information on the environment. Despite a high level of availability of e-administration services in 2009 only 38% of the EU citizens used internet to access services of e-administration. The European governments committed themselves that by 2015 they would popularise user focused, personalised and multi-platform e-administration services. The current focus of public authorities on the domestic needs is unfavourable for mobility of enterprises and citizens. Europe needs better administrative cooperation for the purpose of development and implementation of crossborder internet based public services.

All pillars of the digital agenda possess the international dimension and that dimension is key to implementation of the planned measures, in particular considering the strategic importance of the internet. According to the Tunis Agenda⁷ Europe must play the leading role in supporting internet management in the possibly most open way supportive for the public inclusion.

Analysis of the status of development of the information society in Poland, the rapid increase in importance of information and services provided by

⁷ The summit in Tunis (WSIS 2005) accepted two documents: Tunis Commitment and Tunis Agenda for the Information Society. The Agenda committed the governments, international organisations, private sector and civic society to build the information society in which the major role is played by the people, the inclusive society focused on development and free from discrimination.

electronic means and, as a consequence, increasingly wide use of information and communication technologies in the economy, administration and daily life of citizens were the premises for development of the Strategy for development of information society in Poland by 2013 (Strategia rozwoju społeczeństwa informacyjnego do roku 2013. 2008). The vision of the strategy: “Active society achieving high quality of living in the personal and social perspective” and the assumed mission: “Enabling the society to make common and effective use of the knowledge and information for harmonious development in the social, economic and personal dimension” have become the base for determination of the strategic directions for Poland in the field of the information society development. Within the frameworks of three areas: The Man, The Economy, The State the key directions of activities and initiatives the implementation of which is necessary for achievement of the determined strategic goals were identified.

In the first area THE MAN attention was focused, among others, on the necessity of increasing the level of motivation, awareness and skills in the area of using the information and communication technology, the need for adjusting the educational offer to the labour market requirements, inevitability of increasing the level and accessibility of education and popularisation of the principle of lifelong learning thanks to the use of modern technologies and the need for increasing the social, cultural and political activity.

In the area of THE ECONOMY the necessity of improving the effectiveness, innovation and competitiveness of companies and by the same of the Polish economy in the global market and better use of information and communication technologies for facilitating communication and cooperation between companies was pointed at.

In the third area, THE STATE, the importance of availability and effectiveness of public administration services provided by electronic means was highlighted.

The principles of review and development as well as available sources of financing prepared within the frameworks of the Strategy represent an important element for implementation of the assumptions of the Strategy of information society in Poland.

Efficient achievement of the targets assumed in the Strategy requires the diagnosis and appropriate choice of the means of implementation as well as coordinated measures undertaken at various levels. Limitation of digital exclusion through identification and elimination of the existing educational, economic and geographic barriers is necessary.

Availability and use of new information and communication technologies – disproportions and threats

Poland, as the EU Member State, must consider the strategies, guidelines, priorities, initiatives and instruments developed at the EU level in its economic and social policy. In the world of global competition the developing states must follow the changes and starting later than others they must take much effort to close the gaps at an accelerated rate. Experiences of numerous countries show that expenditures on the efficient application and absorption of the information and communication technology products represent the best support to economic and social development.

Let's remember that already in 2002, in the conclusion of the United Nations Development Program (UNDP 2002) „Poland and the Global Information Society” indicates the major threats related to informatization of the country and the attention was brought to the issue of information exclusion of the Polish society as both exclusion from the community of the most developed societies and the increasing digital division within our country.

As of 2001, the World Economic Forum in collaboration with the INSEAD – The Business School for the World prepares the yearly report on the development and modernisation of network infrastructure and use of information and communication technologies in the global world. The main tool of the report is the NRI (Networked Readiness Index)⁸. The NRI is defined as the level of readiness of the country or society for participation and obtaining benefits from the development of information and communication technologies. The NRI for each country is based on several tens of data grouped into three categories:

- legal-economic environment index: market, policy and regulation, infrastructure;
- readiness (skills, knowledge, education) index: individual, business, administration;
- usage index (availability, costs): individual, business, administration.

In March 2010, the latest report (The Global Information Technology Report 2009–2010), was published presenting, among others, the level of the ICT development in Poland as compared to the other countries of the European Union and the world. Considering all the analysed factors Poland with the score of 3.74 ranked 65 among 133 countries covered, which, independent of the opinion on the NRI itself (opinions of analysts are diversified), is not

⁸ NRI (Networked Readiness Index) is built as a combination of 68 variables of which 27 are the so-called hard data, coming from, e.g. the International Telecommunication Union, the United Nations Organisation or the World Bank while the remaining 41 are the soft data obtained from expert studies.

a satisfying result. Among the EU-27 countries we ranked the last but one position just ahead of Bulgaria (ranked 71 with the score of 3.66).

In the digital economy ranking of the Economist Intelligence Unit 2010 (EIU) Poland ranked 39 in the group of 70 countries.

The top ten most advanced countries are: Sweden, Denmark, USA, Finland, The Netherlands, Norway, Hong Kong, Singapore, Australia and New Zealand. The bottom of the ranking was occupied by: Ecuador, Nigeria, Vietnam, Sri Lanka, Ukraine, Indonesia, Pakistan, Kazakhstan, Algeria, Iran and Azerbaijan.

The ranking is based on the analysis of one hundred factors aggregated in six categories with different weights expressed as percentages. Those are, e.g. the ease of connections and infrastructure, business environment for the digital technologies, legal and political aspects as well as application in business and by consumers. The ranking introduced first 10 years ago initially focused on the ease of access to the internet and mobile telephony and network coverage. Currently the EIU assumes for the starting point the evaluation of how generally the internet and mobile connections are accessible and tries to evaluate to what extent digital technologies translate into benefits to the economy and social life and what their quality is.

As indicated in the report by the Office of Electronic Communication (UKE)⁹ in almost 1/3 of the municipalities in Poland less than 30% of residential units possess access to the internet. Analysis of use of the services showed that the vast majority of municipalities (97.8%) make very limited use of wideband services (links with transfers of $\geq 2\text{Mbit/s}$). The quality of the links (mainly the data transfer speed) is one of the elements characterising the quality of technology. According to the latest Cisco report (quality of links was surveyed in 72 countries) Poland ranked 30 together with Slovakia while all the other EU countries are ahead of us.

During the first year of implementation of the Strategy for development of information society in Poland by 2013 the Department of Information Society of the Ministry of Interior and Administration drafted the report named *The information society in numbers 2009 (Społeczeństwo informacyjne...)*. The areas of the information society development: *The Man, The Economy and The State* defined in the Strategy represent the frame of reference for the data and analyses presented in the report. The chapter of the Social diagnosis 2009 by Dominik Batorski titled "Use of information and communication technologies" was also devoted to the diagnose of the information society in Poland and the conditions, methods and consequences of using modern technologies. Let us then have a look at the statistical data that respond to the questions of our

⁹ The data comes from over 1500 telecommunication enterprises; <http://www.eke.gov.pl>

interest: how computerised the households are?; what internet access infrastructure we have?; what are the differences in the access to the internet?; what use of the information and communication technologies we make?; what information skills the residents of Poland possess and in what way we develop our information skills. The answers to those and other questions will allow us illustrating the division lines, disproportions and threats as well as the trends in that field.

During the first half of 2009, over 60% of households possessed a computer and the continual growth, although smaller during the last two years than previously, can indicate gradual saturation of the market. However, not all possessing a computer at home make use of it. As many as 17.3% of the Poles aged over 16 years are people who do not use a computer although they have a computer in their own household. Those are usually the elderly people, people with poorer education, working in agriculture as well as pensioners and retired people. Also, fewer household members use a computer in small towns and in rural areas (BATORSKI 2009).

The broadband internet access rate is considered currently one of the most important indicators of economic development of countries. What then are the possibilities of using information and communication technologies by the Polish society. Although the number of broadband fixed links per 100 residents in Poland is increasing very fast (during the period from January 2008 until January 2009 the penetration index increased from 8.4% to 13.2%) Poland still ranks below the European Union average of 22%. Similarly and fast the percentage of households with internet access increased (from 11% in 2002 to 48% in 2008) but still Poland is lagging behind the average for the 27 Member States, which is 60%.

The largest disproportions in the internet access relate to the income groups. In 2008, in group of households with the income below PLN 1250, as many as 83% did not have access to the internet (studies by the Central Statistical Office (CSO)) while in the group with the income exceeding PLN 2600 there were 20% of such households.

Availability of computers and internet at households is highly diversified depending on the family type. Both a computer and the internet access are much more frequently present in households of couples with children. Presence of the school age children has immense importance for possessing a computer and the internet access (as many as 91% of households with a learning member have a computer and 79% have the internet access). The data indicates what great driving forces for investing in new technologies the school age children and efforts to secure their development are.

Analysis of the CSO data indicates that from 2005 until 2008 the percentage of people who had never had contact with the internet decreased significantly in all the social groups in Poland.

However, the decrease in the group threatened by digital exclusion was not large enough to close the gap. Still more than a half of the people aged 45–54, as many as 72% of those aged 55–64 and over 90% of those aged 65–74 do not use the internet. Similarly high percentages of people who have never used the internet is found in the groups of farmers, unemployed as well as pensioners and retired people.

The statistical data illustrating the situation as concerns the use of modern technologies show clearly that despite many actions aiming at limiting the digital divide in Poland more than a half of the population, and in some groups over three fourths and more do not use modern information and communication technologies. Possessing an internet-connected computer does not mean that the information and communication technologies have been well established in those households and that they are used in an optimal way as compared to the opportunities offered.

In Poland, similar to the other European (and not only) countries the internet serves most frequently communication (42.3%), followed by finding information (32.6%) and complementing the knowledge (27.7%). Participation in on-line training ranks the last (1.5%) and applies mainly to the youngest age groups (3.4% in the 16–24 years age group and 2.6% in the 25–34 years age group).

Possessing an internet-connected computer (the transfer rate is also an important consideration) is just the first step to be able to use the contents and services offered in the net. First, awareness of their existence and second possessing adequate skills of operating the available equipment are necessary. The statistical evaluation of the computer skills of the residents of Poland does not look too well, particularly in the group of the people with the high skills. Compared to the European leaders (Luxembourg, Norway, Iceland, Denmark and Austria) or even the European Union average we rank only third from the bottom of the ranking.

Age and level of education are the main factors differentiating our computer skills. Although the distance separating the residents of Poland from the average European Union level is smaller in case of the internet using skills still at the domestic level those differences are much larger than in case of the computer skills. This is determined mainly by the age, level of education and the place of residence (urban/rural).

To be able to limit the existing divides we must diagnose the factors influencing the level of use of modern information and communication technologies in daily lives. **Lack of the need to use it** is the most frequently declared cause of lack of the internet access at home (in case of 45% of households) The other causes included mainly the excessively high hardware costs – 29%, excessively high access costs – 26% and lack of skills in case of 23%

of the households. Lack of technical possibilities for connecting to the network was declared by just 8% of the households. In the groups threatened by exclusion the above causes manifested even more clearly.

Another question worth answering is that concerning the level of the internet access at Polish enterprises. The internet is an extremely important business tool used in numerous areas of operation of businesses such as sales, financial settlements, transmission and transfer of information, promotion, advertising, search for suppliers, competition identification, public relations, performance of work from a distance, etc. As concerns the internet access, Polish enterprises have achieved the EU-27 average level with 100% access in case of large enterprises, 99% access in case of medium and 91% in case of small enterprises). Within that seemingly positive image the low level of use of wideband access represents a negative aspect. In 2008, only less than 60% of enterprises had wideband access to the internet, which ranked us 25 among the EU-27 countries. It is worth noticing that the hardware connected to the internet in enterprises serves mainly using the services of internet banking and on-line services of public administration. Much less frequently the net connected hardware available is used for training purposes. In 2008, 57% of enterprises in Poland possessed their own websites and the major function of those websites was to present products and pricelists (43%). Only 6% of the enterprises made on-line purchasing and 4% on-line payment possible.

Perception of benefits they might gain through investing in the ICT is the factor motivating enterprises to implement and use the information and communication technologies. Two thirds of the enterprises that implemented IT projects during the years 2007/2008 saw reorganisation and simplification of routine activities as the major benefits. More than a half of the respondents believed that the ICT implementation gave minor or no benefits at all in the field of releasing the resources, increasing incomes or development of new products or services.

The status of development of the teleinformation infrastructure and the skills of using it among both the citizens and the enterprises represent the base for the effective operation of e-administration. Providing a wide spectrum of electronic services, improvement of their level and by the same increasing satisfaction of the recipients of those services is one of the major tasks of the electronic administration. As of 2007, all administration agencies in Poland use computers and the internet access. However the percentage of those using the services of e-administration does not look excessively optimistic. In 2008 (Stan informatyzacji urzędów... 2009), only 16% of people aged 16-74 conducted official transactions via the internet of which 14% searched for information on public administration websites, 10% downloaded official forms and only 5% uploaded completed forms to the administration agencies. The small percen-

tage of people using e-administration services results probably from the not excessively developed offer. The possibility of conducting the entire range of official transactions by electronic means during the surveyed year was offered by just 7% of administration agencies. Almost all the agencies offered their customers the possibility of obtaining the information on their services from their websites (97.4%), a smaller percentage (80%) the possibility of downloading the forms and only 22% the possibility of uploading the completed forms.

Using a Public Internet Access point (PIAP) is also impossible in many municipalities of Poland because more than a half of such municipalities (56.4%) do not have such a point while in 20% of the municipalities there is only one such point available.

Who then can use and uses e-administration services? Similarly to the computers and internet the on-line contacts with the public administration is used the most frequently by people with tertiary education, professionally active, particularly working on own account and young people living in towns with over 100,000 residents. In those groups the interest in using e-administration services is high and only 5% of the internet users do not plan settlement of official transactions by the internet. E-administration services are not used or used extremely rarely by people with lower education, unemployed, farmers, pensioners and retired people as well as people in the 55–74 years age group and residents in rural areas.

The presented picture of the development and use of modern technologies in numbers shows where the dividing lines are situated and who is threatened by the digital exclusion. As Krzysztof Głomb – President of the Association “Towns on the Internet” said during the 14th Conference “Towns on the Internet” – “This is the sad picture of the Polish internet revolution. Digital illiterates will not develop the Polish knowledge based economy, competitive in the European or global scale. The severe gap in competences characterising the majority of Poles aged over 45 years weakens significantly the dynamics of Polish economy and questions the sense of implementation of numerous initiatives proposed in the government report Poland 2030”. The participants of the conference prepared the memorandum under the title that says a lot “Digital Poland of Equal Opportunities”¹⁰, which presents the summary of proposals and recommendations of the community of territorial government activists and territorial government organisations concerning the changes in the development of the information society in Poland.

All the proposed activities have their weight but in the context of the subject considerations I would like to draw attention to the necessity for

¹⁰ Memorandum on the necessity of changes in managing the information society development in Poland – “Digital Poland of Equal Opportunities”.

development and implementation of a general program of the digital education of adult Poles called the Digital Poland of Equal Opportunities during the years 2011–2014. Its implementation, as we read in the Memorandum, should unite the efforts of the government, regional and local territorial governments as well as specialised businesses and nongovernment organisations. The communities of digital exclusion the needs of which have been identified in social studies: on one hand the people over 45 years of age, residents in rural areas and small towns, the disabled, women and entrepreneurs and on the other the employees of the public sector, including the decision-makers should be the main target group of that continuous education of adults program. The program should make use of the already existing infrastructure of public access to the internet – the municipal centres, libraries, Voluntary Fire Service units, schools, tele-centres and the PIAPs that for several years have been proposed to fulfil the tasks of proliferating the training activities and popularisation of internet use and use of the global network content similar to the units of that type operating in other countries.

Activities for development of the ICT and e-inclusion

The actions taken so far for the development of the ICT and e-inclusion considered the priorities of the European policy in the field of the information society consequential to the assumptions of the Lisbon Strategy as well as the initiatives eEurope – a information society for all’ and its continuation – “i2010 – a European Information Society for Growth and Employment”. Analysis and evaluation of the activities undertaken so far as well as the community and subject discussions in the area of our interest have become the base for elaboration of the Strategy for development of information society in Poland by 2013.

Assuring secure and fast access in the section of the “last mile” for households and small enterprises, particularly in rural areas still remains the current problem in the development of mass informatization of the country. Assuring general access to the electronic services and modern information and communication technologies creates new opportunities for the economy and social development. Actions related to the electronic business (e-business), electronic administration (e-government), distance learning (e-learning) and electronic medical services (e-health) are particularly important for the potential economic growth and creating new services. Public administration in its contacts with citizens and business entities will be required to expand the offer of services available by means of the electronic information media (*Strategia rozwoju kraju... 2006*).

The current practices and successes achieved so far in the information society infrastructure development in the regional aspect, both European and Polish, indicate clearly the need for investment in the areas such as the public internet access points, development of tele-centres and tele-cottages, wideband access, information technology education and promotion of good practices in the field of innovation. Development of internet nets and expanding their active use in business, culture, education and administration is particularly important for poorer developed regions that are lagging in that area more than the metropolitan regions. Closing the gaps in the level of access to and use of the net and the ICT has been one of the major tasks of the regional policy for many years (Projekt Narodowej Strategii Rozwoju Regionalnego na lata 2007–2013. 2005).

The action plan contained in many programs for informatization of Poland assumed that everybody that does not possess access to the internet at work or at home should have the possibility of such access in the near vicinity. That idea formed the base for establishing tele-centres as Public Internet Access Points – PIAP. Involvement of the Member States in such development of the information society infrastructure, particularly in rural areas and in small towns has become one of the targets of the European Union structural policy. It was projected that stimulating the economic development of those areas would contribute to:

- increasing professional activity
- stopping unfavourable migration trends
- diversification of the sources of support of the local population (decreasing unemployment rate by creating alternative jobs outside the sector of agriculture)
- acceleration of agriculture restructuring process
- increasing the level of education
- creating conditions for preventing the “information/digital exclusion and digital illiteracy”

Tele-centre, which is the place for providing and performance of generally available services adjusted to the needs of local communities teleinformatics related needs is one of the public internet access point type. Experiences of many countries show that Tele-centre may successfully fulfil the service, information and education point function. Internet access points may not limit their activities to providing physical access to the computers and network but they must become the centres of competence and increasing their educational role will allow closing the gaps in the levels of skills and needs of the users.

As concerns the Polish initiatives in the field of establishing the Tele-centres we should mention:

– **“Ikonka” Program** – covering establishment of the internet access points in public libraries of all the municipalities in the given voivodship.

– **PIAPs** – according to the principle of sustainable development and active cooperation with residents of many towns and municipalities a decision was taken on construction of a network of the Public Internet Access Points. Within the frameworks of the IROP projects implementation 1021 internet access nodes and 1238 public internet access points have been built.

– **Municipal Information Centres (GCI)** – are units operating in the comprehensive way allowing the local community access to modern information transfer technologies influencing development of local initiatives and promoting enterprises operating in the region.

– **Internet Education Centres (ICK)** – during the years 2007–2009, within the frameworks of three EU programs 693 ICK were established on the base of the Voluntary Fire Service units.

– **Tele centres and tele-cottages** – units established within the frameworks of the Community Initiative Equal “Tele-work as an opportunity in combating inequality and discrimination in the labour market” project implementation.

– **Model project “Culture Information Success – the PIAP network in the voivodship”**. Modernisation and construction of public internet access mainly in rural areas and small towns with up to 20.000 residents in the municipalities of the voivodship (municipal tele-centres, county tele-centres, voivodship tele-centres, info-kiosks, automatic information points) was the subject of the project.

From the perspective of the digital education implementation of a number of projects and measures is worth remembering:

– **ECDL (European Computer Driving Licence)**, which is the honest proof and objective measure of actual computer skills accepted in all the European Union countries.

– educational training project **n@utobus (Wireless Internet Bus)**¹¹, building technological awareness through development of the internet use skills.

– preparation, under the sponsorship of the Ministry of Interior and administration, of the television program “**E-lementarz**” (broadcast by the TVP as of April 2007) promoting the idea of the information society, modern technologies and teleinformation solutions as well as their applications in daily life, including also public administration, Police and emergency services.

¹¹ Project implemented by the Ministry of Interior and Administration in collaboration with the Economic Education Foundation and the IT sector partners.

– Interkl@sa¹² Program supporting educational processes at schools, in particular in the regions threatened by digital exclusion.

Despite investing almost PLN 2 billion of the European funds in informatization of administration and computerisation of public education, consequent equipping Polish schools with computer laboratories, creating public internet access points in rural communities, incurring immense outlays on informatization of the public sector and numerous educational initiatives, the Poles do not notice the benefits resulting from information systems implementationm (*Polska Cyfrowa...* 2010). The Polish society is digitally stratified. More than 13 million of adult Poles are digital illiterates – the people who, first of all, have no motivation and skills allowing use of the ICT, which is an obvious manifestation of digital exclusion.

From the model of the flame to the model of the clothing – searching for the optimal paths of combining the digital development with the inclusive social development

The search for optimal methods of combining digital development with inclusive social development is not an easy task, which is confirmed by numerous examples and results of experimental studies. Already many years ago it was established that access to the ICT is the necessary condition but in itself insufficient to assure digital integration and achievement of the demanded benefits for the individual as well as the results that might be consequential to it for the society. Informatization understood as a factor of socioeconomic development is a continuous and dynamic process requiring continual monitoring and systematic improvement. Digital exclusion is a much wider problem than just the digital divide. The term “digital divide”, today frequently considered inadequate and obsolete (*Analiza wiedeńska...* 2009), was popularised in mid-1990s by the US National Telecommunications and Information Administration. Initially the notion meant division of the society into two opposite groups of which one had access to the modern information technologies (computer, internet) while the other did not have such access. That division was dependent on the income, ethnic origin, age, education, marital status or place of residence. A similar division was also applied in the

¹² Program Interkl@sa was developed in 1998 under the sponsorship of the Parliamentary Commission of Education, Science and Youth. Soon after it was supported by the Ministry of National Education, important nongovernment organisations and many private businesses. The patronage of the program was taken by the Telewizja Polska S.A., Polskie Radio and Gazeta Wyborcza. In cooperation with the Polish-American Freedom Foundation and assistance of Poznań Supercomputer-Net Centre of the Polish Academy of Sciences, Interkl@sa created the first in Poland, non-commercial educational portal www.interklasa.pl.

global scale dividing the countries into those that used the modern information and communication technologies and those that did not have access to such technologies. That binary, black-and-white division into those connected and those not connected to the net represented an immense simplification and frequently lead to the conclusion that the gap can be closed by applying the digital solutions increasing accessibility of the computers and the internet. In this approach, however, the complex context in which the information hardware was to operate was not considered.

The focus on just the technology referred to as the technological determinism assumes that presence of technology in itself will lead to social changes. Christopher Dede from the Harvard's Graduate School of Education called it the **model of the flame**, according to which it was considered that the computer by its sole presence will generate learning and development similar to the flame generating the heat.

Based on such thinking the governments, the private sector, foundations and charities allocated hundreds of millions of dollars to overcome the digital divide understood in that way without paying much attention to the social conditions within which those new technologies were applied. Programs based on good intentions frequently strayed in unexpected directions and ended in real disaster when people tried to solve complex social problems by limiting themselves to supplying the hardware.

Already in 1999, in New Delhi the experiment was initiated in cooperation with the Indian Institute of Information Technologies that involved providing access to the computers and the internet for children from the poorest districts of the city. The program was approved by the organisers as a breakthrough model for providing information to the poor in towns and by the same of crushing the barriers to the information century. After 9 months of that experiment the minimally invasive education proved to be minimally effective education. Excessive focus on the hardware without sufficient attention paid to pedagogics and education schedules gave no effects beyond providing a new and attractive entertainment.

After ten years, in the spring of 2009, two American economists – Ofer Malamud from the University of Chicago and Christian Pop-Eleches from Columbia University analysed the effects of a large Rumanian government project within the frameworks of which the poorest families were allocated € 200 grants for purchase of computers for the household (LESZCZYŃSKI 2010). The program has been in operation for several years and as the surveys conducted in the spring of 2009 the money actually goes to the poorest and the vast majority of them actually spend the grants awarded to them on purchase computers for the household. Hardware manufacturers and distributors that participated in the program were encouraged by the Rumanian ministry of

education to install free educational software. Unfortunately, although the educational software was available free of charge it was used to the minimal extent while in almost all the computers games were installed that became the major attraction substituting for watching the television, doing the homework or traditional reading. Children from the families that won the grants did much better than the others (possessing no computer at home) in the test of general cognitive abilities and the test of computer skills but achieved a clearly worse result in education. In the families where there is no tradition of reading books or spending time on learning the computer that is only a tool becomes a toy.

In small towns of the United States Bill Gates presented computers to libraries believing that access to the internet would stop escape of the population from rural areas. Internet connections improved and diversified the life of the local communities allowing interpersonal contacts at a distance but did not stop the outflow of population in search for a job. Availability of employment and not the internet access was the main factor influencing the behaviours of the local population.

Many more examples of that type can be found. Studies on the digital divide conducted in the USA and many other countries as well as observation of the attempts at reducing that divide and implementation of modern technologies in the developed and developing countries have shown that the **model of the clothing** (Christopher Dede) that provides the heat but is tailored to the individual needs and abilities is a much better model than the model of the flame. Not only the issue of unequal access to the computers but, first of all the use made of them have become the major issue.

The technological determinism was criticised rightly in the communities supporting the absolutely different approach called the social information sciences. Implementation of new technologies should be conducted in a specific context that encompasses the hardware, software, supporting materials, infrastructure, education and also the people in different roles and mutual relations. The technology and the social systems influence one another in a similar way as the biological populations and their environment (Warschauer 2003).

This is undoubtedly confirmed by the examples of new solutions combining elements of infrastructure with local organisational, educational and social solutions in an innovative way. Considering a significant number of the initiatives undertaken in different countries I will limit the presentation to a few selected solutions that were appreciated at the ministerial conference devoted to e-inclusion that took place in Vienna in 2009 (WRIGHT 2009).

As of 1996 until the present time, Estonia within the frameworks of the “Tiger jump” program (referring in its name to the rapid economic growth of

the countries of south-eastern Asia) has equipped all schools with computers and wideband access to the internet. For the purpose of program implementation the government established the foundation with the same name that implements consecutive projects (e.g. “Scientific tiger”, “Learning tiger”, “Technological tiger”, “Robot tiger”) related to modern information and communication technologies.

Immense stress in the implemented activities was placed on equipping the pupils, students and teachers with IT skills and competences. As of 2006, within the frameworks of the “Learning tiger” program the focus was on the e-learning, its contents and improving qualifications of the teachers. Implementation of programs is evaluated after completion by the teachers as well as the students and parents. Training within the frameworks of the implemented programs is free and teachers are awarded certificates on completing them. To define the training needs the “Tiger jump” foundation created the educational standards of competences in educational technologies. The teachers most active in e-learning or use of modern methods of education received (free) 4,000 laptops that they may use at school and at home. Aiming at streamlining the didactic process the “School life” portal was established which is the forum for exchange of experiences, gathering didactic materials as well as modifying and complementing them. The teachers training program obtained financial support from the Intel and Microsoft companies. The “Tiger jump” project was positively rated at numerous international conferences and, as practice shows, may be applied in other countries.

The program implemented by a nongovernment organisation in Norway called “Seniornett Norge” is another interesting solution. The initiative continued for 12 years now covers training on use of the ICT and e-inclusion of people aged over 55 years. Every year in the entire country the so-called “Senior surfing day” is organised that aims at encouraging the elderly people to get interested in the use of technology in family life as well as opportunities for obtaining the necessary skills in that field. The network of “Clubs” or training centres where the seniors may start and continue their IT education forms the basic platform of operation. This is supported by both the economic reasons (banking, tax and trade services) as well as the social reasons. To reach hundreds of thousands of the seniors not using the internet it was necessary to focus on training the trainers working in the systematically expanded net of clubs, which gives the effect of the pyramid. In 2008, more than 100,000 seniors over 65 years of age entered the internet for the first time, which is, to a significant extent, the effect of the program. Effective attracting the seniors to participate in the program assumes going through consecutive stages:

- 1) the motivation stage during which the fears of the seniors have to be overcome and the new opportunities offered for them by the computer and the

internet must be shown presenting at the same time how that technology may improve their quality of living,

2) the education stage during which the specific characteristics of that age group (e.g. simple terminology, readiness to answer all the questions, controlled exercises, patience in correcting mistakes, appropriate distribution of activities over time, etc.) must be considered,

3) the support stage during which the senior has the possibility of using the contacts and help if needed.

There is a high risk that the seniors, after completing the 24-hour course, will lose their skills if they are not using and strengthening them. The idea of the "Clubs" has an advantage in that respect over the traditional training centres because the effect of training is strengthened by the opportunity of practical exercises and obtaining help not only from the trainers (in their majority volunteers) but also other participants and members of the Club. The program is supported financially with government grants and the private sector, including banks, interested in the seniors using their banking e-services. The authors of the idea of the "Clubs" are convinced that they are a good solution, maybe the best in Europe in attracting the seniors to use the ICT and encourage other countries to apply it.

In the majority of countries, libraries play an important role in e-inclusion offering those interested access to the computers and the internet. The city library in Tampere (Finland) in addition to classic task of making available the computers connected to the net and training in the basic computer skills has developed a novelty, so far unknown solution in the form of the "Netti-Nysse", the bus equipped with the necessary hardware that allows those still excluded from the city of Tampere and its surroundings acquisition of the skills of using the equipment and the internet in practice. The new media and the new challenges related to them require a new approach. The idea "of putting the net on wheels and driving it to the people" is to assist in the initial contacts with the computer and the internet and in acquiring the basis IT skills. The training process managed by trainers takes place in groups consisting of a few people and allows training participants acquiring the basic knowledge on computers and the internet as well as practical use of that knowledge. This is a new, informal, free and easy way of assisting the people and lowering the obstacle on the path to the information society. The "Netti-Nysse" bus has been in operation since 2000 (in 2005 the old bus "Netti-Nysse I" – The Mother, was replaced by the new "Netti-Nysse II"), it enjoys immense interest and sympathy, particularly among the elderly and those who wish to participate in training must register three months in advance. To use the skills acquired in the bus the residents of Tampere have unrestricted access to over 140 internet access points as well as the opportunities for further training at

the library branches where the so-called “Net Square” was established and where help can always be obtained. The internet bus from Tampere has visited a number of European countries presenting its experiences. The European and domestic prizes and awards are the expressions of appreciation for the creators of the “Netti-Nysse”.

Under the motto of creating the digitally and socially inclusive town the City Council of Milton Keynes in the United Kingdom embarked on the initiative aiming at assuring access to the technology for the disabled residents, providing assistance in development of the information skills, increasing employment opportunities and achievement of economic benefits thanks to the connection to the net. The founders of the idea attacked e-exclusion on a number of fronts. They made wideband internet connections available throughout the entire city of 250,000 people, rented hundreds of computers to families in need and not affluent families (for the symbolic fee of £ 1.5 per week), provided training in the computer skills, implemented the e-health application and the avatar (virtual assistant) on the City Council website to facilitate the contact between the residents and the office. As of 2006, development of the network of digital service centres assuring free access to the ICT equipment and training managed by specialised agencies has started. The project implemented in Milton Keynes serves achievement of the targets related to e-inclusion in the innovative, low cost, environment friendly, easily rolled-over and, first of all, suitable to the needs of the residents way.

The wealth of positive actions taken for e-inclusion is confirmed by the list of projects awarded by the European Commission. Already in 2008, out of almost 500 projects presented 35 were awarded in 7 subject categories concerning the youth, the elderly, e-access, digital literacy, cultural diversity, inclusive public services and geographic inclusion¹³.

The information and communication technologies, as can be seen from the presented good practices should not exist as external variables implanted from outside for the specific purposes. The technologies should be included in the social system and social processes. From the policy perspective the aim of introducing the technology for the marginalised groups is not just overcoming the technological divide but continuation of the social inclusion process.

The most general conclusions resulting from the considerations presented can be reduced to the following statements.

During the recent years the increased interest in the here discussed problems can be noticed, which is expressed by the diversified program initiatives at the European Union level as well as the level of the individual countries and other entities.

¹³ European Commission: e-Inclusion Ministerial Conference Vienna 30 November – 2 December 2008. Conference Report 2009.

The position of Poland in the international rankings is not satisfactory. The appropriate approach to the here discussed issues expressed by considering not only the technological aspects (which has taken place to a significant extent so far) but also the social aspects is important. Only then we may aim at social inclusion using the information and communication technologies really effectively.

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Accepted for print 31.03.2011

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