



The Development of eServices in an Enlarged EU: eLearning in Poland

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EC-DG JRC-IPTS team

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PREFACE

Policy context

At the European Council held in Lisbon in March 2000, EU-15 Heads of Government set a goal for Europe to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion. The renewed Lisbon goals of 2005 emphasize working for growth and jobs, and include plans to facilitate innovation through the uptake of ICT and higher investment in human capital.¹

Information and Communication Technologies, and related policies, play a key role in achieving the goals of the Lisbon strategy. In 2005, the new strategic framework for Information Society policy - i2010² - identified three policy priorities: the completion of a single European information space; strengthening innovation and investment in ICT research; and achieving an inclusive European Information Society.

Education and training systems play an important role in reaching these goals. As ICT is a driver of inclusion, better public services and quality of life, all citizens need to be equipped with the skills to benefit from and participate in the Information Society. Enabling lifelong learning³ for citizens with the facilities that ICT can offer is an important way of fostering their competitiveness and employability, social inclusion, active citizenship and personal development. Policy actions such as the Education and Training 2010 Work Programme⁴ and the Lifelong Learning Programme⁵ have set objectives for education and support the development of learning in the knowledge society. One of the focus areas of the Lifelong Learning Programme is developing innovative ICT-based content, services, pedagogies and practice in order to promote better education and training throughout a citizen's life.

Research context

IPTS⁶ has been researching IS developments in acceding countries⁷ since 2002.⁸ The outcomes of this prospective research, which aimed to identify the factors influencing Information Society developments in these countries and the impacts these developments have on society and the economy, point to the need for better understanding the specific contexts in each member state for the take-up of e-applications, in particular eGovernment, eHealth, and eLearning. These key application areas have an impact not only on the relevant economic and public service areas but also on the development of the knowledge society as a whole.

Taking the above into account, IPTS launched a project to support eGovernment, eHealth and eLearning policy developments managed by DG INFSO and DG EAC. The research, which was carried out by a consortium led by ICEG EC in 2005, focused on the three application areas in the ten New Member States⁹ that joined the European Union in 2004, in order to build up a picture of their current status and developments in the field, the most important opportunities and challenges they face, the lessons other member states may learn from them, and the related policy options. National

¹ http://ec.europa.eu/information_society/eeurope/i2010/index_en.htm

² "i2010 – A European Information Society for growth and employment" COM(2005) 229

³ Lifelong learning means all learning activity undertaken throughout life, with the aim of improving knowledge, skills and competences within a personal, civic, social and/or employment-related perspective.

⁴ http://ec.europa.eu/education/policies/2010/et_2010_en.html

⁵ http://ec.europa.eu/education/programmes/lfp/index_en.html

⁶ Institute for Prospective Technological Studies, one of the seven research institutes that make up the Joint Research Centre of the European Commission

⁷ Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia, and Turkey

⁸ For a list of complete projects and related reports see <http://fiste.jrc.es/enlargement.htm>

⁹ Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia

experts from each country gathered the relevant qualitative and quantitative data for analysis, in order to develop a meaningful assessment of each country's current state, and trajectory, and to find out the main factors. This allowed them to derive the relevant conclusions in terms of policy and research.

The IPTS team designed the framework structure for the research, the research questions and methodology. This team and the consortium coordinator jointly guided the national experts in their work through workshops, extended reviews and editing of the various interim reports. Data sources such as international and national survey data, literature, policy documents, and expert interviews were used to capture the most recent situation of the country.

In addition to national monographs describing eGovernment, eHealth and eLearning developments in each country, the project has delivered a synthesis report, based on the country reports, which offers an integrated view of the developments of each application domain in the New Member States. Finally, a prospective report looking across and beyond the development of three chosen domains was developed to summarize policy challenges and options for the development of the Information Society towards the goals of Lisbon and i2010.

eLearning in Poland

This report was produced by the Leon Kozminski Academy of Entrepreneurship and Management Transformation, Integration and Globalization Economic Research Center, the consortium member from Poland, and it presents the results of the research on eLearning in Poland.

First, the report describes Poland's educational system and the role played by eLearning in it. Then, the major technical, economic, political, ethical and socio-cultural factors of eLearning developments, and the major drivers and barriers for them in Estonia, are assessed. These provide the basis for the identification and discussion of policy options to address the major challenges and to suggest R&D issues for facing the needs of the country. The report reflects the views of the authors and does not necessarily reflect the opinion of the European Commission. Its content has been peer reviewed by national experts, ICEG EC, and IPTS.

In this study, eLearning is defined as encompassing both learning through the use of ICT and learning the necessary competences to make use of ICT in the knowledge society. Hence, the study considers the use of ICT in formal education¹⁰ (schools and higher education), the use of ICT in training and learning at the workplace (professional education), the use of ICT in non-formal¹¹ education (including re-skilling and training for jobseekers) and the use of ICT in everyday life (digital literacy/digital competences and informal learning¹²).

All reports and the related Annexes can be found on the IPTS website at: <http://ipts.jrc.ec.europa.eu/>

¹⁰ **Formal Education** is typically provided by an education or training institution. Formal learning is structured (in terms of learning objectives, learning time or learning support) and leads to certification. Formal learning is intentional from the learner's perspective.

¹¹ **Non-Formal Education** is provided by any organised, structured and sustained educational activities outside formal education. Non-formal education may take place both within and outside educational institutions and cater to persons of all ages. Non-formal learning is intentional from the learner's perspective, but typically does not lead to certification.

¹² **Informal Learning** is learning that results from daily life activities related to work, family or leisure. It is not structured (in terms of learning objectives, learning time or learning support) and typically does not lead to certification. Informal learning may be intentional, but in most cases it is non-intentional (or "incidental"/random).

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LIST OF ABBREVIATIONS

AGH	University of Science and Technology
AHE	Academy of Humanities and Economics in Łódź
B.A.	Bachelor of Arts
BBC	British Broadcasting Corporation
B.Sc.	Bachelor of Science
bn	Billion
CBOS	Public Opinion Research Centre
CEE	Central and Eastern Europe
CeL	Centre of Excellence in eLearning
CKP	Practical Training Centres
CLS	Certified Lotus Specialist R6 Application Development
CKU	Lifelong Learning Centres
COME (WU)	Centre for Open and Multimedia Education (Warsaw University)
CSC	Computer Skills Card
ECDL	Certificate of European Computer Driving License
ECSC	The European Computer Skills Card
ECTS	European Credit Transfer System
EDGE	Enhanced Data Rates for GSM Evolution
ESF	European Social Fund
EU	European Union
EU10	European Union with 10 Member States
EU15	European Union with 15 Member States
EU25	European Union with 25 Member States
EUROSTAT	European Statistical Office
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GHz	Gigahertz
GPRS	General Packet Radio Service
HCM	Human Capital Management
HTML	Hypertext Mark-up Language
ICT	Information and Communications Technology
IDC	International Data Corporation
IIPA	International Intellectual Property Alliance
IS	Information Society
IT	Information Technology
PLN	Polish New zloty
M.A	Master of Arts
MEN	Ministry of National Education
mn	Million
MCAD	Microsoft Certified Application Developer
MCSD	Microsoft Certified Solution Developer
MCSP	Microsoft Certified System Professional
MP	Member of Parliament
M.Sc.	Master of Science
NEWW	Network of East-West Women's
NBP	National Bank of Poland
NCP	National Computerisation Plan
NDP	National Development Plan
NGO	Non-Governmental Organisation
NIK	The Supreme Chamber of Control
NIS	Newly Independent States

NMS	Network Monitoring System
NRDS	The National Regional Development Strategy for the Years 2007-2015
NRCVG	National Research Centre for Vocational Guidance
OEC	Office of the Electronic Communication
OECD	Organisation for Economic and Cooperation Development
OFEK	National Foundation for Computer Literacy
OP	Operational Program
PARP	Polish Agency for Enterprise Development
PHARE	Poland and Hungary: Aid for Restructuring of the Economies
PCLP	Principal Certified Lotus Professional (PCLP) R6 Application Development
PCSS	Poznań Supercomputing and Networking Centre
PIAP	Public Internet Access Points
PISA	Programme for International Student Assessment
PIONIER	Program of Polish Optical Internet
PPP	Public-Private Partnership
PUAP	Platform of Public Administration Services
PUW	Polish Virtual University
R&D	Research and Development
SGGW	Warsaw Agricultural University
SMS	Small and Medium-sized Companies
SPO	Sector Operational Programme
SPORZL	Sector Operational Programme of Human Resources Development
TP S.A	Telekomunikacja Polska S.A (Stock Exchange)
UMCS	Maria Skłodowska Curie University in Lublin
UMTS	Universal Mobile Telecommunication System
USD	United States dollar
VoIP	Voice over Internet Protocol
WiMAX	Worldwide Interoperability for Microwave Access

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EXECUTIVE SUMMARY

Over the last ten years, Poland has had positive rates of economic growth, relatively low inflation and intensive FDI inflows. However, unemployment continues to pose the biggest problem for the Polish society and economy. The ageing population and increasing labour migration abroad create another major challenge for the Polish labour market. One of the ways to improve this situation is to enhance investments in human capital and quality of institutions. The improvement of ICT skills and lifelong learning services provision are expected to contribute to a steady reduction of unemployment.

The ICT skills of people of working age have remained at a low level. Almost half (49%) of the people aged 16-74 in 2004 in Poland have never used a computer and two thirds (63%) of them have no Internet experience at all (Central Statistical Office, Warsaw 2005). However, a positive trend in improving ICT skills has been observed recently (2005-2006). Two of the most frequently mentioned obstacles to Internet access were no specific need for Internet use or the cost of Internet.

A look at the ICT infrastructure in Poland reveals the following features: insufficient access to computers and the Internet; the very high cost of IT services; a poorly developed IT market and the slow computerization of elementary and high schools.

The main ICT usage indicators for Poland show significant growth over the last two years in the number of households equipped with personal computers (45%), Internet connection (36%) and Internet worldwide access from mobile phones (31%) (2006). Each of these ICT access categories in households has increased by an average of 4% in comparison to 2004. Differences of computer equipment and Internet access were related to income inequalities among the population, place of living and number of dependant children. The respective access statistics for companies using computers in 2005 amounted to 93% but having the Internet access to 87% (growth in relation to the previous year, correspondingly by 1 and 2%) (Central Statistical Office, 2006).

Only 22% of Polish households had Broadband Internet access (Central Statistical Office, Warsaw 2006). 73% of households with the highest income level had access to Internet, as compared with 17% of household with the lowest income (Central Statistical Office, Warsaw 2006). Similar results were noted for computer and mobile phones. Moreover, in comparison with other countries, including New Member States, the cost of Internet access in Poland is very high, and amounts to 20.5% of a monthly salary (only in Bulgaria the cost of Internet access is higher).

Almost twice the number of households in towns with less than 100,000 inhabitants had access to the Internet at home, as compared with households in the rural areas (Central Statistical Office, Warsaw 2006). The school computerization process is still very slow, especially in rural areas. In 2005, there were 21 Polish students to each computer and 26 students to each computer with Internet access in the Polish general education system. Only 61.93% of Polish schools had computer equipment (Mediappro Final Report 2005). The most equipped with computers and Internet access were schools and households in the bigger Polish regions (voivodships) such as Mazovia (województwo mazowieckie) and Silesia (województwo slaskie).

Polish people are lagging behind most of their EU counterparts in terms of lifelong learning activities. The participation of low-skilled Poles aged from 25 to 64 in courses for adult learning or continuous education remains low. Similarly, there are still too few educational policy measures to better prepare students for entry into the job market and to prepare learning opportunities that can be adapted to the needs of workers.

Though eLearning is developing, it is still in the early stages in Polish higher education. The increasing importance given to eLearning has been noticeable in some official documents of the Polish government. However, as yet, there is no official eLearning strategy. The relative achievements of

eLearning can therefore be measured only by separate eLearning projects (e.g. Polish Virtual University (PUW), Virtual Technical University, Open and Multimedia Education Centre at Warsaw University, Warsaw School of Economics eLearning programme, Distance Education Centre at the Gdansk University of Technology, etc.) and digital library projects (e.g. IKONKA project, Polish Internet Library).

Only a few education institutions conduct advanced R&D work on eLearning. Most of them just discover the advantages of eLearning when they implement their first projects and initiatives. Some good examples of these projects are the following: public lifelong learning centres (such as Continuing Education Centres, Practical Education Centres and Labour Offices), the National Centre for Promoting Vocational Education, and Centres for Information and Career Planning. Moreover every university offers ICT supported distance learning courses or programmes, in addition to its regular studies.

Further reasons for the slow diffusion of eLearning in Poland are lack of initiatives and projects for promoting eLearning, little awareness regarding the benefits of ICT, insufficient ICT infrastructure, especially in schools in rural areas (ratio of pupils per computer and number of computers with Internet access far below the average in EU), the high cost of Internet access, insufficient human resources, and the lack of a policy and regulatory framework for eLearning. However, the favourable macroeconomic climate, the increasing significance of the ICT sector in GDP growth and improving digital skills, especially among the female population, constitute major incentives for eLearning.

There are at least four groups of R&D challenges specific to eLearning, which should be further explored. These are related to:

1. The need for organisational and management solutions for eLearning processes, such as management of distance learning systems in accordance with technology advancement as well as adjustment of the programmes to constantly changing needs of users, especially when offering professional training courses.
2. Improving the efficiency and accessibility of eLearning services. The problem here is to find and select the most effective technologies and methodologies for different situations, hence supporting effective take-up and deployment of eLearning both for eLearning users and service providers, e.g. with educational platforms.
3. Didactical readiness issues, i.e. establishing training and resources of the methodologies for ICT enabled learning, for learners and teachers, who are starting to or interested in developing their learning and teaching processes with ICT.
4. Improving personal awareness of the ICT tools available and competence in their use, as well as understanding of the possibilities ICT can enable for developing new ways of learning. The benefits and incentives for different actors (students, teachers, headmasters, employers, and employees) are different, and raising their motivation needs different approaches and examples.

Lifelong learning is an essential policy tool for enhancing employment and economic growth. Therefore, the future competitive position of Poland will crucially depend on further investments in human capital, lifelong learning and development of ICT skills in schools, public institutions and enterprises. Furthermore, distance education could contribute to developing open attitudes in society, increasing the level of knowledge and competence and promoting social inclusion.

INTRODUCTION

General data

Capital:	Warsaw
Language:	Polish
Population:	38 million
Currency:	1 EUR= 3.7966PLN (24.V.2007)
Area:	312 685 km ² (120 727 square metres)
Political system:	Parliamentary democracy

According to the new Constitution of 2 April 1997:

- Legislative authority: The Sejm (460 deputies) and the Senate (100 senators) of the Republic of Poland, both elected in a national election for a 4 years term;
- Executive authority: The President (elected in a general election for a 5 years term) and the Council of Ministers;
- Judicial authority: The courts and tribunals.

Administrative units:

- Województwa/voivodships: 16
- Powiaty/counties: 308 counties and 65 cities with counties status
- Gminy/communities: 2489

Map 1. Map of Poland



Source: www.poland.pl, 2000

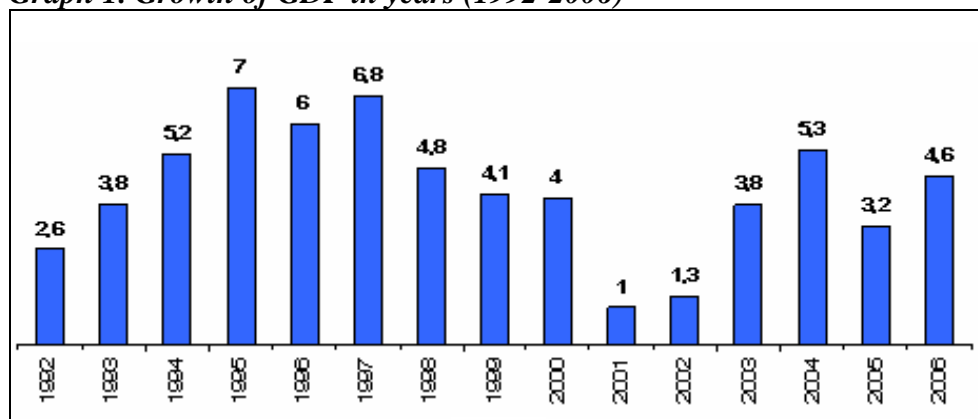
Table 1. Poland - selected indicators

Change from the previous year in %	2002	2003	2004	2005	2006
GDP (real)	1.4	3.8	5.3	3.2	4.6
Industrial output (real)	1.1	8.4	12.6	4	8.7
Inflation rate (in %)	1.9%	0.8%	3.5%	2.1%	1%
Gross fixed capital formation (real)	-6.8	-0.1	6.3	6.2	8.2
Consumer prices (yearly average)	1.9	0.8	3.5	2.1	1.3
Unemployment (yearly average)	20	20	19.1	18.2	17.3
Budget balance (in % of GDP)	-3.3	-4.8	-3.9	-3.8	-4.2
Merchandise exports in mn EUR	49 338	53 836	65 847	77 562	93 268
Merchandise imports in mn EUR	57 039	58 913	70 399	79 804	97 164
Current account in mn EUR	-5 399	-4 108	-8 670	-4 130	-6 273
FDI in mn EUR (inflow, net)	4 371	4 067	10 292	7 703	11 093
Gross foreign debt (in % of GDP)	38.7	43.7	46.2	43.5	40.6
Average exchange rate: PLN/EUR	3.85	4.4	4.53	4.02	3.82
Average exchange rate: PLN/USD	4.08	3.89	3.64	3.23	3.14

Sources: National Bank of Poland, 2006; Central Statistical Office, Warsaw 2005 (www.stat.gov.pl)

The beginning of transition witnessed a sharp decline of economic activity: GDP decreased by 11.6% in 1990 and 7.0% in 1991. In 1992, Poland returned to positive rates of economic growth, accelerating to more than 6% annually in the middle of the 1990's. In 1994-1997, the average GDP per capita growth amounted to 6.4%. Later in 1998-2001, this dynamic was lost due to the slow down in the structural reforms and increasing income gaps. The year of 2004 was very successful in terms of GDP growth, which reached a 5.3% growth rate and was followed by a significant decline in 2005 - 3.2% (Graph 1).

Graph 1. Growth of GDP in years (1992-2006)



Source: Central Statistical Office, Warsaw 2006 (www.stat.gov.pl)

Both euro-zone and EU25 GDP grew by 0.5% in the first quarter of 2005, compared to the first quarter of 2004 when GDP rose by 1.3% in the euro-zone and by 1.6% in the EU25 (Eurostat 2006).

On the supply side, the main driving force was a rapid expansion of industrial production and service sectors through privatisation and liberalisation processes. The share of the service sector in the total GDP has grown from less than 50% before 1989 to 59.3% in 1992 and over 66% in 2004 (Ministry of Economy and Labour data). On the demand side, growth was mostly co-related to export expansion and private consumption.

On the demand side, the early transitional recession led to a substantial decline in private consumption and investments. In 1993-2000, Poland experienced high rates of growth in all three components of GDP, with particular importance of investments (which increased by more than 20% in real terms). In the period of economic stagnation between 2001 and 2002, their contribution was heavily negative and could not be compensated by a positive contribution of the individual consumption. The foreign savings in the form of direct investments fluctuating from approximately 2% to 6% of the GDP annually constitute a substantial source of funding of investments in Poland, especially in context of a relatively low level of domestic savings. The FDI inflows to Poland were obviously affected by the global trends, but some domestic factors should be blamed as well. One of the main reasons is the slowing down of the privatisation process since the year 2000. The latter trend was due to at least two reasons: firstly, the most attractive assets have been already privatised; secondly, there wasn't a clear concept of privatisation (Poland. International Economic Report 2003/2004, Warsaw School of Economics).

According to the macroeconomic forecast covering the period of 2005-2020, the average economic growth rate will amount to 5.0%. This means the increase of the annual real convergence rate from the current level of 2.2% to 2.5%. The growth of GDP, consumption and investments will occur as a result of the inflow of the Union transfers. In terms of supply, the increase of the long-term growth rate will be possible basically due to the integration with the European Union (additional 0.4 percentage point of the growth rate), a positive impact of the human capital (that will increase the potential growth by 0.3 percentage point) and the improvement in the co-ordination of the macroeconomic policies (contribution of 0.1 percentage point to the growth) (Poland. International Economic Report 2003/2004, Warsaw School of Economics). The basic source of the economic growth in terms of demand will be the investments and domestic consumption. The growth of the private consumption rate will be slightly slower than the GDP growth rate and will, on average, amount between 2.9% in 2005-2006 and 5.0% in 2007-2013 and 2014-2020 (Macroeconomic forecast, MoEL Economic Analyst Department, 2006) (Annex II Table 32).

A low and stable inflation rate, despite accelerated economic growth and fiscal expansion, was a relative achievement of the Polish monetary policy in the second half of transition. The years 2001-2003, were a period of a strong reduction in the inflation rate: the average annual inflation rate dropped from 5.5% in 2001 to 1.9% in 2002 and 0.8% in 2003. EU inflation ticked up from 2.1% in 2004 to 2.3% in 2005 and a projected 2.2% in 2006, mostly due to energy price hikes (Eurostat 2006). This positive trend should not, however, overshadow the negative trends in the Polish economy, such as high unemployment (Table 1). Manufacturing is strengthening slightly and unemployment is dipping from 9.0% in 2004 to 8.5% in 2005 and 2006 (Eurostat 2006). The job redundancy affected first of, all the people who were least productive, whereas those employed improved their productivity, and, as a consequence, the real salary level only slightly reacted to a strong increase of unemployment. In the group of unemployed people aged 30-44 years female unemployment rate is higher by almost a half than male unemployment rate (Central Statistical Office, Warsaw 2005). Education does not seem to protect women against unemployment. Unemployed women are better educated than unemployed men. Over 50% of unemployed women have secondary, post-secondary or tertiary education, while respective percentage among men amounts to about 32% (Central Statistical Office, Warsaw 2005). Since the year 2003, the number of unemployed people has been systematically decreasing in Poland, however the overall output still remains under its potential level.

Investment growth is crucial for sustainable economic growth. Foreign direct investments (FDI) inflow to Poland was obviously affected by global trends, but some domestic factors should be blamed as well. After 5 years of a low FDI inflow Poland received over EUR 11 billion of foreign investments (Table 1). In 2004 and 2005, Poland has again become an attractive place for FDI. Poland's membership in the EU25 (with its 454 million people) and the country's economic potential (5.4% growth in 2004, an estimated 3.5% in 2005, and projected 4.5% in 2006) have increased its attractiveness. The EU accession has been perceived by many firms to have reduced Poland's country investment risks. One of the sectors of active FDI participation is the electronic sector. It is estimated that the number the foreign-owned firms in the above sector exceeds 250. There are among them such

well-known international concerns as Thomson Tubes and Displays S.A., Royal Philips Electronics N.V., France Telecom, Alcatel, Vivendi Universal, Lucent Technologies Network Systems, Siemens AG, and Flextronics International. Electronic firms, in which foreign capital is engaged, belong, as a rule, to the group of large and medium-sized enterprises (employing more than 49 people each), whereas the group of small firms consists mainly of Polish-owned enterprises.¹³

The net exports of companies developed almost in the opposite way as investments. The growth of export should be perceived as an optimistic factor since it proves the ability of producers to operate in different and highly competitive foreign markets (Table 1).

Poland has always been a net importer of ICT products and since the early transition period which has been running a long-term deficit of the total value of the ICT trade. In the meantime Poland has significantly increased its expenditure on IT market. The expenditure on IT market has risen by 25% in the last two years. In 2005, the IT market in Poland reached EUR 4.62 billion (PLN 17.6 billion) in comparison to 2002 results of EUR 3.28 (PLN 12.5 billion) (Table 2).

Table 2. The total IT market in Poland 2002-2006 in billion EUR and PLN

	2002	2003	2004	2005	2006*
EUR	3.28	3.59	4.09	4.62	5.25
PLN	12.5	13.7	15.6	17.6	20

Source: Rzeczpospolita of 24 March 2006

*Rzeczpospolita of 02 February 2007

It is forecasted, that the IT market will have doubled within five years period (2006-2010). In 2006 the IT market observed an increase of 13% and 12% forecasted for the year 2007 (Rzeczpospolita of 24 March 2006). According to the data for 2006 the IT market reached 5.26 billion EUR (PLN 20 billion PLN). In 2006, almost 230 million personal computers found a buyer. It is an increase of 10,5% in comparison to the year 2005. The dynamic of the market has continuously slowed down (16% in 2005). In Poland the sale has increased by almost 30% to 1,8 million PC. During the second quarter of the year 2006 the market has observed a 38% growth in comparison to the year 2005.

The negative syndrome of the economy is the low and deteriorating position of Poland in the international competitiveness rankings. The World Economic Forum ranking has placed Poland at one of the last positions among European countries in 2005 Global Competitiveness Index – 48th position. The weakest point of Poland in this ranking is the negative assessment of public institutions, while has a relatively positive assessment one in terms of technological advancement.

Population developments

The most important factor affecting the labour market and the information society development is the demographical structure. The demographic growth trend in Poland has been stable since the second half of the nineties, and by the year 2005 was already the seventh year in a row in which a real decline in population was recorded, as well as the third one with a negative birth rate. In the period of 2000-2005, as a result of a low birth rate and a negative balance of foreign migrations, the population of Poland dropped by over 106,000. At the end of 2005, it amounted to approximately 38.2 million people. It is, however, a significant growth in comparison to the first half of the twentieth century (Table 3).

¹³ www.paiz.gov.pl

Table 3. Population changes in thousands in 2000-2005

Specification	2000	2003	2004	2005
	in thousands			
Population	38,263	38,219	38,191	38,157
Actual increase	-10	-28	-17	-17
Natural increase	10	-14	-7	-4
Live births	378	351	356	364
Deaths	368	365	363	368
Net of international migration for				
Permanent residence	-20	-14	-10	-13
Immigration	7	7	9	9
Emigration	27	21	19	22

Source: Central Statistical Office, Warsaw 2006 (www.stat.gov.pl)

The Polish nation is ageing. In the years 1990-2004 the number of children and youngsters (0-17 years of age) declined by 8.5 percentage points to approximately 21.2% of the whole Polish population. Whereas the number of people of working age, accounted for 63.5% of the country population, increased by over 2.2 million. Similarly, life expectancy has been higher in case of the female population in the last ten years. The latter has been especially true for rural areas (Annex I/1).

The number of people in an economically inactive age (men aged 65 and over, women aged 60 and over) also has also been increasing in the last ten years. In comparison to 1990 there are over 940,000 more people of that age. At the end of 2004, the proportion of this group in the total population amounted to 15.3%, i.e. 2.5 percentage points more when compared to the year 1990. As a consequence, it is estimated that in total in the years 1996-2005 the working age population has increased by 2.15 million people.

The upward trend mentioned above will continue until 2010 when it will reach its maximum at the level of 27.3 million people (currently - 26.7 million). As a result of those processes, by 2020 the population of Poland will have decreased in relation to 2000 by approximately 2.5 million people (www.stat.gov.pl) (Annex II). The ratio of the number of elderly people of an economically inactive age to the number of people of working age, will nearly double and will amount to 37% (in 2004 it was 19%). It is also worth noting that among the increasing number of elderly people there will be people who will be unable to manage on their own, including the disabled and people requiring taking care of. It will constitute a challenge in terms of the health care system and social policy.

The number of people changing permanently their domicile dropped in 1990s, which was directly linked to the difficult situation on the labour market. In the context of a general decrease of the population mobility, a contrary trend can be observed in regards of the migration from the urban areas to the rural areas (National Development Plan 2007-2013). The increase of the urban population tendency to move to the rural areas that became visible in mid-1990s was partially caused by the wave of returns forced by an adverse change of the family or professional situation and more comfortable conditions outside the town or city (Annex I/2).

As a consequence of Poland's accession to the EU, the situation of Poles taking up employment in the Member States has changed partially. The first year of the membership in the EU did not cause any massive wave of Polish migration abroad. In 2004, some 500 000 people (mostly young people) took up work abroad, i.e. slightly more than in the previous years. The seasonal migrations (over 80%) prevail, above all to Germany (app. 324,000). The EU enlargement has not caused so far any increased inflow of foreigners on the Polish labour market.

Major education indicators

There were over 9 million pupils and students enrolled in educational establishments (excluding pre-primary education) in Poland in 2004 in comparison to 8.8 million pupils in 1998. This positive trend was due to the expansion of educational opportunities (increasing private education institutions) as well as increase of the adult population in the process of education (Annex I/3) (Eurostat 2007).

The proportion of four-year old children in pre-primary education amounted to 34% (2004). It means that less than one in two children aged four in Poland was enrolled in pre-primary education. Similar situation was observed in Ireland and Finland (Annex I/4). Relatively high pupil/teacher ratios considered being a success of primary education in Poland. In 2004, the ratio of pupils per teacher made up less than 13 in Poland, with only better results in Denmark - 11 pupils, Italy, Luxembourg and Hungary and worse results in the United Kingdom - over 21 pupils (Eurostat 2007) (Annex I/5).

Data on educational attainment show that in 2005 some 90% of the Polish population aged 20 to 24 had completed at least an upper secondary level of education. Moreover, only 5 % of those aged 18 to 24 (6.9% of men and 4 % of women) were early school leavers (Eurostat 2006) (Annex I/6).

Lifelong learning and continuing vocational training are becoming increasingly important in Poland.¹⁴ The number of Poles who participated in lifelong learning activities varied between age groups, from 40.8% for those aged 25 to 34 to 16.2% for those aged 55 to 64 in 2006. Similar values for EU10 and EU15 amounted to 51.6 and 40 for those aged 25 to 34 and 31.7 and 19.5% for those aged 55 to 64. Gender differences in lifelong learning activities were rather small, as for Poland these stood at 30.6% for women and 29.4% for men (Eurostat 2006).

General ICT usage indicators

Even though Poland has the biggest, from all EU new member states, IT market it had three times lower ratio than the EU average in terms of number of computers per 100 citizens. The ICT expenditure reached 5.5% of the GDP in 2005 in Poland. The percentage of households which have Internet access at home and the number of broadband connections related to population were very low compared with a weighed average for EU15 (Table 4).

Relatively low penetration rates could be explained by a high cost for Internet connection (one of the highest in Europe put in relation to average household incomes in Poland), highly monopolised market and delayed EU law harmonisation process.

Table 4. Selected ICT development indicators* in Poland, EU10 and EU15

	Poland	Ø EU10	Ø EU15
Internet access rates for households	36%	39%	54%
Broadband access rates for households	22%	24%	34%
Computer access rates for households	45%	49%	64%

Source: Eurostat 2006

Similarly, Poland has performed much worse in comparison to other EU members in the comparison of diffusion of PCs, Internet connections, phone lines, mobile subscriptions and TV sets, and share of population online. The latter is reflected in the low index UN Telecom Index - 0.25% exceeding only Lithuania, Bulgaria and Romania (Annex I/7). The Internet connection is mostly provided in urban

¹⁴ Lifelong learning statistics include formal education and non-formal education and training, which includes self-training (e.g. computer-based learning/training, online Internet based web education, making use of educational broadcasting or offline computer-based tapes or disks, or visiting facilities aimed at transmitting educational content (library, learning centres, etc.).

areas. Almost 20% of all network users come from the Warsaw district in comparison to Kielce, Jelenia Góra and Koszalin with only 1% share (Central Statistical Office 2005).

According to the Eurostat data for 2006, 45% of Polish citizens have a computer, whereas in 2005 some 40% of the households surveyed had a personal computer. The ratio was considerably higher in urban (49%) than in the rural areas (30%).

Over 93% of enterprises were equipped with computers as for 2006. Almost 36% of households and 89% of enterprises have access to Internet of which 22% of households and 46% of enterprises have a broadband connection. In 2006 over 43% respondents use regularly computer and 34% Internet (Eurostat 2007).

Taking into account the monthly income of households, an understandable relationship can be observed between its amount and the proportion of equipment of households with a personal computer: within the group of households with a net monthly income of over EUR 1 889 (PLN 7,200) as many as 86% possessed such a computer. The ratio was also high in the group of households with a net income between EUR 882 (PLN 3,361) and EUR 1890 (7,200) - 77%, but distinctly lower for families with an income between EUR 378 (PLN 1,441) and EUR 881 (PLN 3,360) and below EUR 378 (PLN 1,441) - 48% and 21% respectively (Table 5).

Table 5. Households equipped with a personal computer by location, income and composition

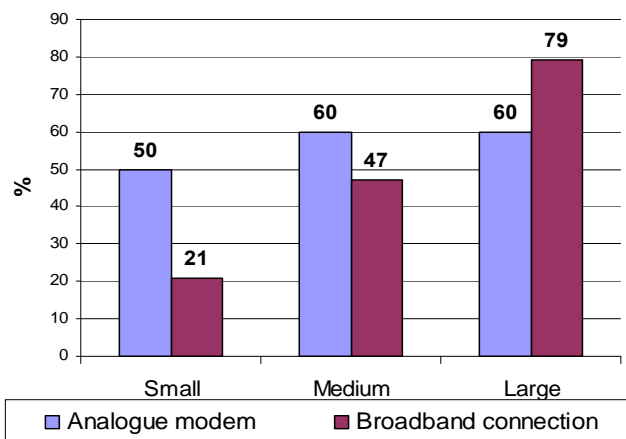
	Mobile telephone	Mobile telephone with access to Internet		Personal computer		Internet	
	2005	2005	2004	2005	2004	2005	2004
Total	62%	23%	19%	40%	36%	30%	26%
Towns with area of living							
over 100 000 of population	68%	32%	26%	49%	44%	40%	34%
up to 100 000 of population	62%	22%	18%	40%	39%	32%	28%
Rural areas	55%	16%	13%	30%	25%	19%	15%
Net monthly income groups in EUR (PLN)							
above 1 889 (7 200)	95%	59%	41%	86%	73%	71%	68%
Up to 1 889 (7 200)	89%	48%	35%	77%	69%	67%	54%
Up to 881 (3 360)	72%	26%	22%	48%	43%	37%	30%
below 378 (1 440)	44%	14%	10%	21%	16%	14%	12%

Source: Central Statistical Office, Warsaw 2005 (www.stat.gov.pl)

According to a survey conducted in mid 2004 by the Central Statistical Office among 4 000 households and 9 000 individuals (aged 16 to 74), there was a correlation between equipping the household with a personal computer and dependent children. In the group of the households surveyed consisting of two adults without children, only one out of five (19%) owned a computer, while in the group of such households with children the ratio was 55%. Also nearly a half (48%) of the households consisting of one adult person with children owned a computer.

According to a recent survey by the Central Statistical Office, 45% of Polish citizens have a computer, 22% of which use a broadband connection to access the Internet. The Internet penetration has been on a continual growth, starting from 22% in 2004 and reaching the level of 34% in 2006 (Central Statistical Office, 2006).

Graph 2. Type of the Internet connection used by enterprises for the year 2004

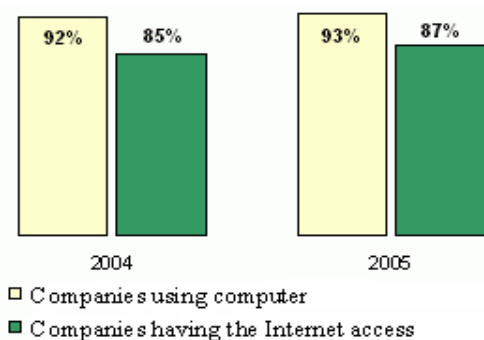


Source: Central Statistical Office, Warsaw 2005 (www.stat.gov.pl)

Internet penetration in enterprises: In terms of the Internet access, the number of broadband Internet users in Poland has been steadily increasing between 2001 and 2008 (Annex I/8). The take-up rates for the dial-up access via an analogue modem were similar among the enterprise groups and equalled 60% for large enterprises, 60% for medium and 50% for the small ones (Central Statistical Office, Warsaw 2005) (Graph 2).

The results, of the survey on the usage of ICT in enterprises conducted in 2004, showed that in general the level of indexes of computer utilisation and access to the Internet was high; therefore, indexes in 2005 have not increased significantly. The percentage of companies using computers in 2005 amounted to 93%, but having the Internet access to 87% (growth in relation to the previous year, correspondingly by 1 and 2%) (Graph 3).

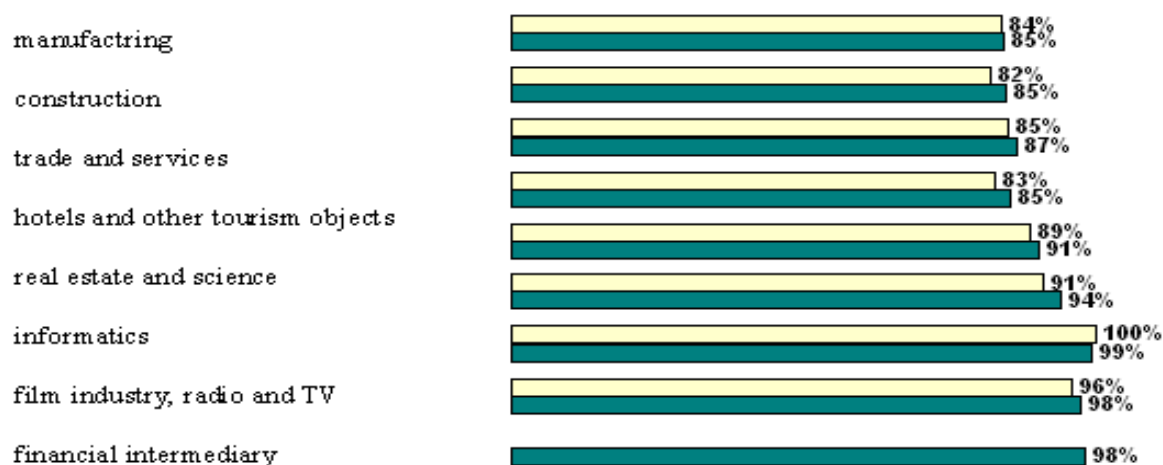
Graph 3. The percentage of companies using computers and having the Internet access for the years 2004 and 2005



Source: Central Statistical Office, Warsaw 2005 (www.stat.gov.pl)

In almost all analysed business sections the share of companies with the Internet access increased (Central Statistical Office, Warsaw 2005). The exception was the section "Informatics", where this percentage in 2005 amounted to 99% and decreased by 1% in comparison to the year 2004, which could be perceived as a mistake in statistics. The business activity with the most of the Internet access is the financial intermediary and media related industry (film, radio and TV). A significant disparity can be observed in the percentage of enterprises with a broadband connection depending on the profile of their activity. The highest rates were scored by Computer and related activities (86%) and Motion picture, video, radio and television activities (72%), the lowest by Manufacturing and Construction (24% each) (Graph 4).

Graph 4. Percentage of companies having the Internet access in 2004 and 2005 according to the activity

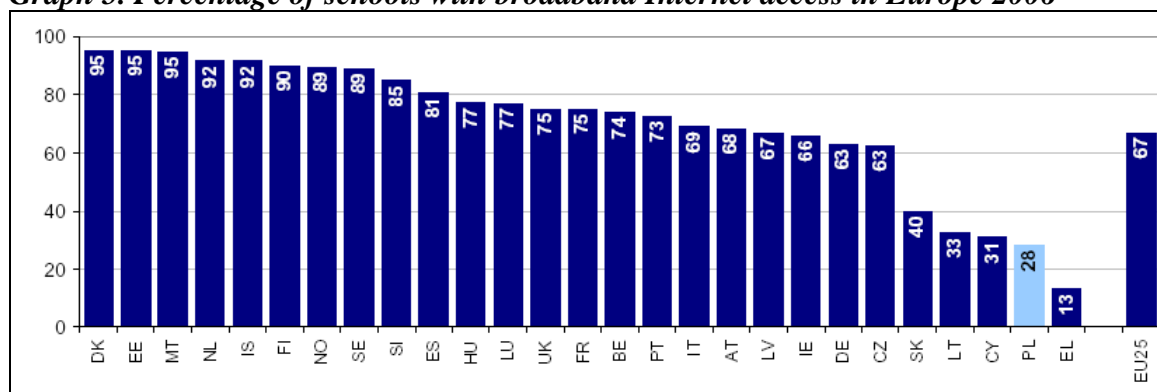


Source: Central Statistical Office, Warsaw 2005 (www.stat.gov.pl)

The business activity with the most of Internet access is the financial intermediary and media related industry (film, radio and TV). The take-up rates for the dial-up access via an analogue modem were similar among the enterprise groups and equalled 60% for large enterprises, 60% for medium and 50% for the small ones (ICT usage in enterprises in 2004, Central Statistical Office, Warsaw 2005). A significant disparity can be observed in the percentage of enterprises with a broadband connection depending upon their activity. The highest rates were scored by Computer and related activities (86%) and Motion picture, video, radio and television activities (72%), the lowest by Manufacturing and Construction (24% each).

Internet penetration in schools: Almost all (93%) Polish schools have Internet access (2006). However, only 28% use broadband connection. As result Poland ranks second last among the 27 countries (25 countries of EU plus Iceland and Norway) (Graph 5).

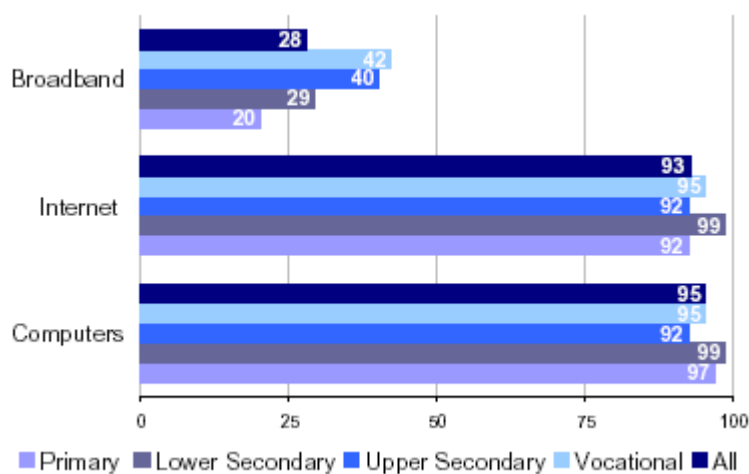
Graph 5. Percentage of schools with broadband Internet access in Europe 2006



Source: LearnInd HTS 2006.

The largest percentage of schools is still connected to the Internet by a narrowband connection. This five fold the European average (Use of Computers and the Internet in Schools in Europe 2006. Country Brief: Poland, Empirica 2006) (Graph 6). Yet, the penetration is the highest among upper secondary schools, with 40% and vocational schools reaching 42%, while only 20% of primary schools have a broadband Internet connection.

Graph 6. Percentage of schools using computers, Internet connection and broadband Internet access according to school type in Poland 2006



Source: LearnInd HTS 2006.

There is also some notable variation in terms of broadband access between urban and rural areas: 40% of schools in populated areas have broadband access compared to 21% of schools in less populated areas.

As for 2006, some 68% of schools had a website, 33% enabled e-mail to teachers and 19% of them did so to pupils. Moreover, schools with a broadband access to the Internet had relatively more sophisticated ICT infrastructure, including a school website, the use of a LAN or the availability of an intranet (Use of Computers and the Internet in Schools in Europe 2006. Country Brief: Poland, Empirica 2006).

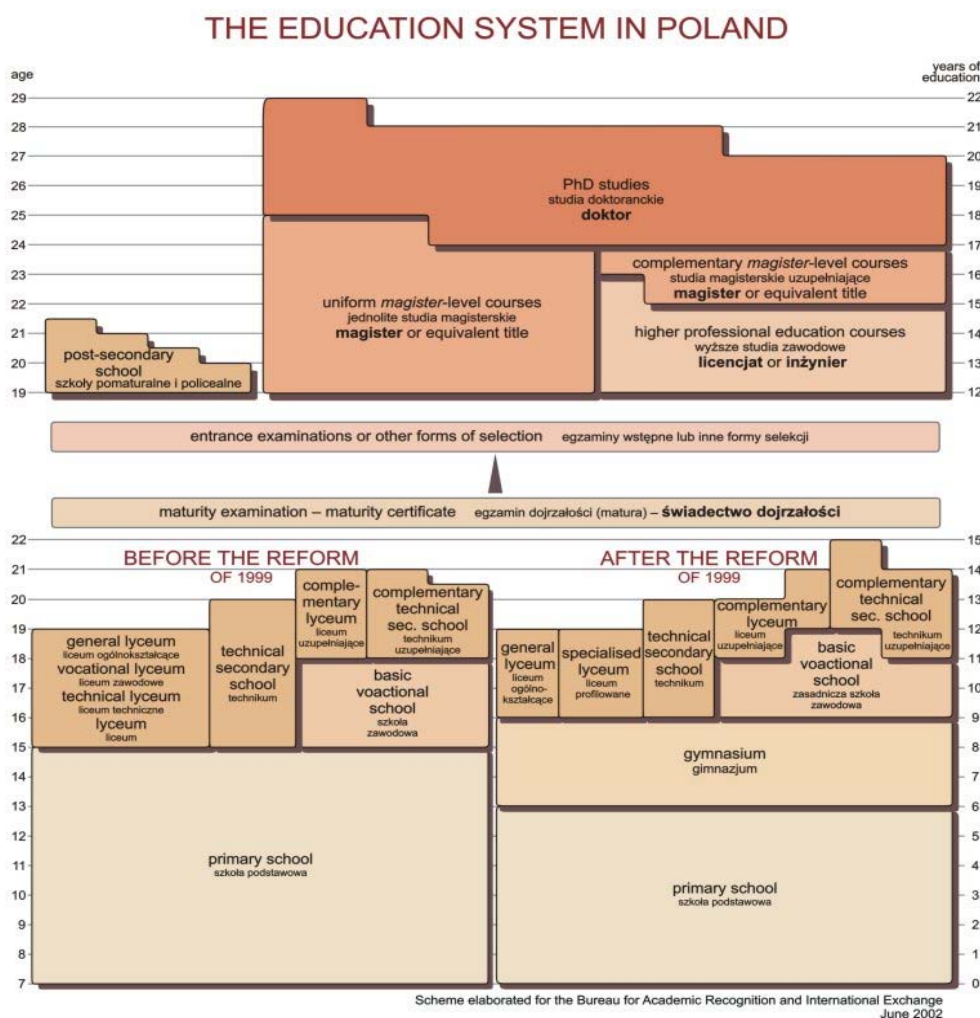
Summing up, in the last ten years, Poland has been observing positive rates of economic growth, relatively low inflation and intensive FDI inflows. Unemployment has remained the biggest problem for the Polish economy in the last ten years. The latter, together with the ageing population and increasing labour migration abroad will create the main challenge for the Polish labour market. The role of human capital is increasing in the current phase of liberalisation, integration and in particularly in the scientific and technological revolution in Poland connected with the expansion of ICT and knowledge based economy. For this reason, the high quality of education at all levels, offering the wide range of eLearning programmes as well as increasing spending on research and development will act as one of the key growth stimulants (Kołodko 2002). According to the recent available data for 2006 there were also a notable variation among the enterprises and households equipped with computers and Internet - 93% and 45% respectively (Eurostat 2007). Almost all Polish schools use computers for teaching (95%) and have Internet access (93%). However, only one-third use the Internet via a broadband connection. There is an understandable relationship between the income per capita rates among the households and the proportion of equipment of households with a personal computer (Central Statistical Office, Warsaw 2006). Considering the macroeconomic positive growth projections for the nearest years a number of computers and Internet users may increase.

I. CURRENT EDUCATIONAL SYSTEM AS THE PLACE OF E-LEARNING

I.1 Description of the education and training system

The Ministry of National Education carries out the state education policy as well as coordinates the work of departments and administrative bureaus. The Ministry cooperates in this respect with regional authorities and other relevant units involved in running the education system. The 16 Education Superintendents (one in each of the regions) are the chief educational officers at the regional level. The Superintendents are responsible for the general administration of education in a given region. They are appointed and supervised by the Head of Province (who is subordinated to the Prime Minister). The Ministry of National Education is responsible for implementing and organizing the educational system in Poland. It prepares projects of new legal acts and strategies in the field of education and sport development. The administrative division allows effective work coordination. The detailed structure of the education system in Poland is presented in Diagram 1.

Diagram 1. The education system in Poland (as for the school year 2004-2005)



Source: www.buwiwm.edu.pl/educ/schemat.htm

Primary schools and lower secondary schools: In 1999, the introduction of the school system reform was initiated (the Education Act of 8 January 1999 with later amendments). As a result of the introduction of the new education system in the year 1999/2000, the 8-year primary schools were

replaced by 6-year primary schools and 3-year lower secondary schools (Education System Reform Act).¹⁵

Upper-secondary schools: In the school year 2002/03, a system of upper secondary schools started to function. It included 2—3-year basic vocational schools, 3-year general secondary schools, 3-year specialized secondary schools and 4-year technical secondary schools. In the year 2004/05, supplementary general schools and 3-year supplementary technical schools were offered to graduates of basic vocational schools. Moreover, since the school year 2003/04, upper secondary schools also cover the art schools leading to professional certification, which until the school year 2002/03 (and in the case of graduates — until the school year 2003/04) had been classified as vocational secondary (post-primary) schools.

Public and non-public schools: Primary schools and lower secondary schools can be public, non-public with the rights of a public school and non-public. A non-public school can obtain the rights of a public school, if it implements the minimum programme as well as applies the principles of classifying and promoting pupils and students as established by the Ministry of National Education, e.g. allowing students to obtain state certificates or diplomas (Ministry of Education¹⁶). Central (government) entities and local self-government entities can only administer public schools.

Foreign-owned education institutions: Foreign private entities are permitted to establish educational and training facilities in Poland by registering with a provincial school Superintendent's Office. Private educational institutions, whether Polish or foreign-owned, are authorized to issue Polish diplomas, meet the same requirements as state-run schools and are regulated by provincial and national educational authorities. Private businesses providing educational services are not considered as being equivalent to state-run schools and are not obliged to meet state-run school requirements. Moreover, provincial or national education authorities do not regulate them. There is no ownership limitation in such ventures.

Post-secondary school: The Ministry of National Education in Poland is responsible for matters related to post-secondary education. The education at post-secondary level is available to the graduates of 2-year general secondary schools, 2-year supplementary general secondary schools, 3-year specialised secondary schools and 4-year technical secondary schools and 3-year supplementary technical secondary schools. At the post-secondary level, students are trained in a variety of vocational fields, including technical, allied health and business. Programs at these types of institutions last from 1 to 2.5 years.

Higher education schools: According to the Education System Act,¹⁷ two types of higher education schools can be distinguished: public (state) schools, which offer free education within the framework of the core curricula, and non-public schools (the curricula are approved by the Minister of National Education). Non-public schools ask for tuition fees and are financed by fees received from their students. Funds can also come from private enterprises and foundations. All certificates issued by such a school are recognised by all other schools and universities.

Adult vocational training and adult general education: Adult vocational training and adult general education can be provided both in in-school and out-of-school forms. Vocational training and general education for adults in out-of-school forms can be organized by public or non-public education institutions. There are two forms of vocational education and training:

- The most popular form is based on an employment contract between an employer and a young worker. The employer is responsible for the organisation of training. The practical training is

¹⁵ The 8 January, 1999 Education Act – enactment of the Act introducing the reform of the school system with later amendments (Ustawa z dnia 8 stycznia 1999 r. - Przepisy wprowadzające reformę ustroju szkolnego), Journal of Laws No. 12, item 96.

¹⁶ www.men.edu.pl

¹⁷ The Education System Act of 7 September 1991 (Ustawa z dnia 7 września 1991r.o systemie oświaty), Journal of Laws No. 95 item 425

organised either at the employer's enterprise or, if the employer cannot ensure suitable conditions for such training, at the Continuing Education Centre, Practical Training Centre, at a school firm, school workshop, school lab or at an individual firm.

- The other is a school-based form of training in which practical training takes place outside school or at the employer's place, and is based on a contract between the employer and the school head. In this case the school is responsible for the organisation of training.

The co-ordination in the field of adult education depends on the activities of the Department of Vocational and Continuing Education. The Minister is responsible for cooperating with other Ministers (Minister of Economy and Labour, Minister of Social Policy, Minister of Culture and Minister of Health). In Poland the general vocational training and adult education has an out-of-school form (except post-graduate studies) and is provided by schools for adults and higher education institutions, public centres of continuing and practical training and Labour Offices. At the end of December 2004, there were 86 institutions with accreditation (the highest number was noted in the Silesia region) offering continuing education in out-of-school forms (Ministry of Education¹⁸).

Career guidance and counselling on continuing education are some of the objectives of the National Resource Centre for Vocational Guidance (NRCVG), a member of the Euro guidance network. Two closely cooperating departments are responsible for the implementation of activities of NRCVG in Poland: The National Centre for Promoting Vocational Education and the Vocational Counselling Division at the Department of Labour Market (Ministry of Economy and Labour).

Table 6. Selected education indicators in 1995-2005 (number of schools)

Specification	2000/01	2003/04	2004/05
	SCHOOLS		
Primary	16,766	15,344	14,765
Lower secondary	6,295	6,927	6,980
Upper secondary (post-primary)	10,573	2,578	1,389
...basic vocational	2,372	98	1 (a)
...secondary	8,201	2,480	1,388
general	2,292	171	12
vocational	5,909	2,309	1,376
Technical	x	2,217	2,254
Arts (c)	x	215	206
Post-secondary	2,567	3,171	3,476
Tertiary	310	400	427
For adults	2,932	3,602	3,951
primary	21	7	9
Lower secondary	72	124	120
Upper secondary (post-primary)	2,839	3,287	1,819
Upper secondary	x	184	2,003

Source: Central Statistical Office, Warsaw 2005 (www.stat.gov.pl)

In the year 2004/2005 there were 14,765 primary and 1,388 upper-secondary schools in comparison with the year 1995/1996, where there were 19,823 and 6,535 schools respectively (Table 6). In the 2004/2005 school year, there were 723 non-public primary schools (180 private, 71 church and 472 civic).

¹⁸ www.men.gov.pl

In the 2004/2005 school year, there were 447 non-public general upper secondary schools (173 private, 102 church and 172 civic), and 340 non-public vocational secondary and basic vocational schools – 2,042 non-public schools altogether. Non-public primary school pupils make up 1.7% of the total number of pupils attending primary schools, pupils in non-public lower secondary schools - 2.3%, non-public general upper secondary school pupils - about 3.8% and non- public vocational secondary and basic vocational school pupils - 1.8%.

According to statistics for the year 2004/2005, there were 427 higher education institutions altogether with 1,926,100 students enrolled in them. In the year 2004, the majority of graduates from upper secondary schools – 554,900 - enrolled at universities, followed by 387,900 at schools of economics and 270,100 at higher vocational schools (see Table 7).

Table 7. Higher education institutions by type and the number of students in 2004/05

Higher education institutions by type	Institutions	Students (thousands)
Universities	17	554.9
Technical universities	22	34.2
Agricultural schools	9	107.6
Schools of economics	93	387.9
Teacher education schools	17	133.8
Medical academies	9	44.5
Maritime schools	2	12.1
Academies of physical education	6	27.0
Schools of arts	22	15.1
Schools of theology	14	10.4
Higher vocational schools	181	207.1
Other	37	85.5
Total	427	1 926.1

*Figures include non-state higher education institutions; Source: Structures of Education, Vocational Training and Adult Education Systems in Europe. EURYDICE/CEDEFOP/ETF 2004

In the 2004/2005 school years, there were 340 non-public vocational secondary and basic vocational schools. In the same academic year there were 140,410 adults enrolled in 1,869 secondary vocational schools and over 171,000 enrolled in 1,819 upper secondary schools (Table 7). Some one thousand adults still had to complete primary school.

Structure, education level and training of teachers

Pre-primary schools teachers: Out of the total number of teachers working in pre-primary schools, as few as 4.3% have completed only secondary education. In 2002/03 teachers with a Master's degree constituted 53.6% of pre-school teaching staff. The pre-school teachers are mostly female – women make up 99.3% of teachers at this level (Report Poland 2005).¹⁹

Primary school teachers: In 2002/03 almost 90.2% of 232 93 primary school teachers had completed higher education (81.1% - held a Master's degree), and 2.9% of the teachers had only completed secondary education. Many primary school teachers who have completed higher education are graduates of universities or teacher training schools (pedagogical academies).²⁰

¹⁹ www.eurydice.org

²⁰ The legal act defining the professional status and conditions of service of teachers employed in the school education sector is the Act of, 26th January, 1982 – The Teachers' Charter (with further amendments including the most important ones of 18th February, 2000 and 24th August, 2001). Structures of Education, Vocational Training and Adult Education Systems in Europe. EURYDICE/CEDEFOP/ETF 2004

Secondary school teachers: ought to have completed a university education (Master's degree) or equivalent. The highest qualifications are held by general secondary school teachers – 98.7% of those (full-time) teachers have completed higher education (school year 2002/03).

Vocational school teachers: In vocational schools, the percentage of teachers with higher education is slightly lower - 95.7% in technical and vocational secondary schools and 78% in basic vocational schools. In 2002/03 there were over 67 thousand full time teachers and instructors in basic vocational and upper secondary vocational schools (Table 8).

Table 8. Teachers and instructors in basic vocational and upper secondary vocational schools for youth

Full time teachers in total, including those teaching the following subjects:	Years 2002/2003
General subjects	67,430
General vocational subjects	36,231
Theoretical vocational subjects	6,466
Practical vocational subjects	16,053
Instructors of practical training	8,680
	1,854*

*in full time equivalents

Source: Structures of Education, Vocational Training and Adult Education Systems in Europe. EURYDICE/CEDEFOP/ETF 2004

Teachers working on all levels of education are often required by their employers to have completed an approved teacher training program. Most universities provide training for future specialists in the area of continuing and adult education at teacher training faculties. At present, the forms of training include: three-year teacher training colleges, teacher training schools (pedagogical academies), and teacher education faculties at universities.

I.2 Place of eLearning in educational system

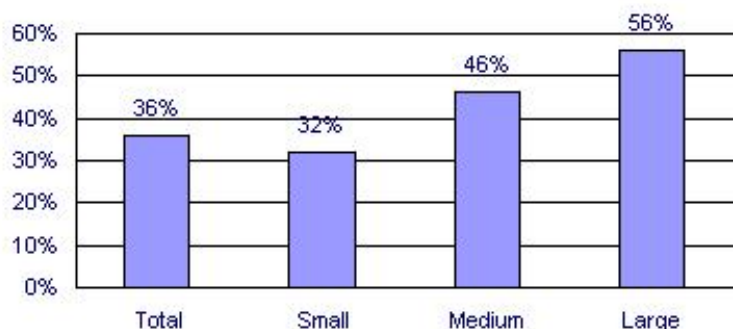
The increasing importance of eLearning has been noticeable in the official documents of Polish government bodies over the last few years. To date, no official eLearning strategy has been worked out. There are also no regulations in the present educational law supporting studies through Internet. At the same time, different actions aiming to support eLearning as a pedagogical tool have been taken in such public programmes as the Sectoral Operation Programme (SPO) Development of Human Resources for 2004-2006 (Act on National Development Plan dated 20th April, 2004). The programme covers the following supportive actions: providing schools with computer and Internet facilities, adjusting the eLearning standards in Poland to those binding in the EU; organizing computer training courses for teachers with special emphasis on ICT application in teaching processes; promoting information society in Poland; co-operating with international organizations offering eLearning courses (www.men.gov.pl).

In terms of the participation in lifelong learning activities, Poland is doing worse than most of its EU counterparts. Women seem to do slightly better than men, both in terms of participation in any learning activities and informal learning. Moreover, the latter indicator is more advantageous for the group of Poles between 25 and 34 years of age in comparison with the same group of other representatives of the EU, whereas learning at a later age, between 45 and 54, is less popular in Poland (AnnexI/9)

Participation in informal learning in Poland occurs more likely among those, who are already employed than in the case of those, who are seeking a job. This trend is quite the opposite in the EU15. The role of educational broadcasting in the process of studying is equally important in Poland as it is in the EU15 countries. However, Poles are keener on studying in libraries or learning centres (both men and women) in comparison to their peers in the EU15.

Over one third (36%) of the enterprises surveyed used the Internet for training and education in January 2004. This rate was the highest for large enterprises, where more than a half (56%) used it for that purpose, while for medium and small enterprises these proportions were 46% and 32%, respectively (Graph 7).

Graph 7. Enterprises using the Internet for training and education by size (percentage of each group; January 2004)



Source: Central Statistical Office, Warsaw 2005 (www.stat.gov.pl)

Taking into consideration Internet usage for training and education purposes by the NACE breakdown, the highest rate was noted in the division of computer and related activities (70%). (Graph 8) The proportions for other activity profiles did not vary much, ranging from 32% (for hotels and other provisory accommodation) to 43% (for real estate, renting and business activities).

Graph 8. Enterprises using the Internet for training and education by activity (percentage of each group; January 2004)



Source: Central Statistical Office, Warsaw 2005 (www.stat.gov.pl)

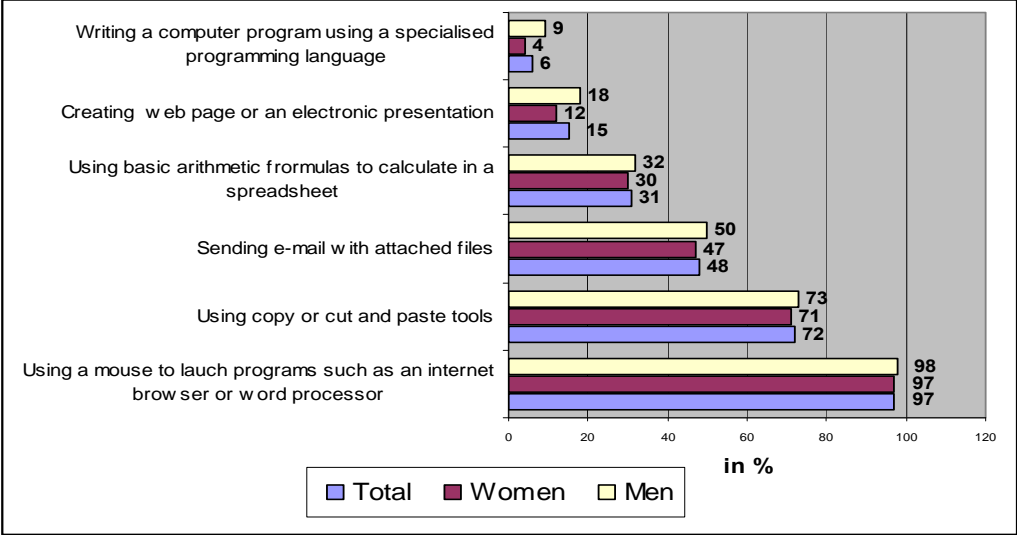
For example, the share of the hotels and other provisory accommodation amounted to 32%, manufacturing sector to 34%, with certain progress in real estate, renting and business activities - 43%.

I.3 ICT skills and attitudes towards ICT usage

The results of the survey, conducted by The Polish Central Statistical Office in mid 2004, showed positive trends in growing ICT skills. The people surveyed claimed they possessed certain computer skills, which they had applied while using the computer in the 12 months prior to the survey. Nearly everyone (98% of men and 97% of women) used the mouse to launch applications and almost three quarters (73% of men and 71% of women) knew how to use copy, cut and paste tools (Graph 9). On

the other hand, almost half (49%) of the people aged 16-74 in Poland never used a computer and two thirds (63%) of them had no Internet experience at all (ICT usage in enterprises in 2004, Central Statistical Office, Warsaw 2005).

Graph 9. Activities carried out by computer users according to gender (percentage in the last 12 months, July 2004)



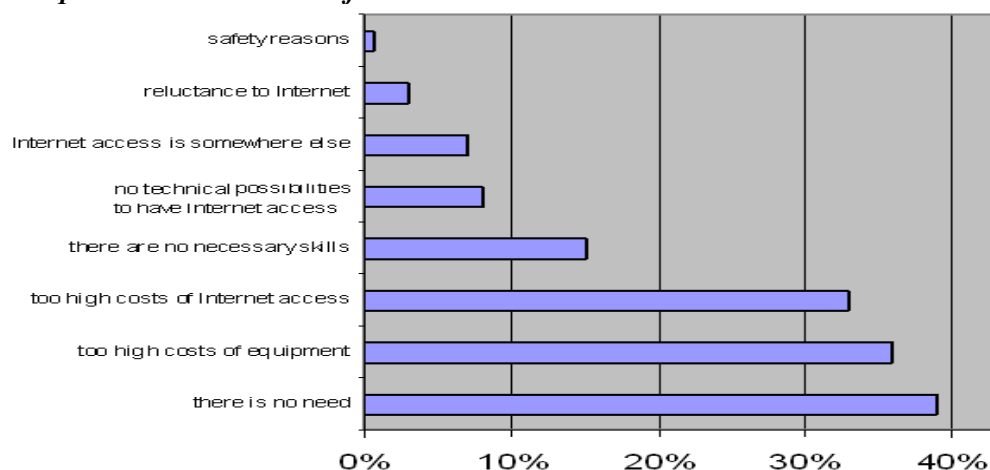
Source: Central Statistical Office, Warsaw 2005 (www.stat.gov.pl)

Only half (48%) of the people who used the computer in the last 12 months had sent emails with attachments during that time (50% of men and 47% of women). More complicated operations had been carried out even more rarely. One out of three people used arithmetic formulae to work out calculations in a spreadsheet. Creating web pages or multimedia presentations was declared by 15% of the respondents (18% of men and 12% of women) (Central Statistical Office, Warsaw 2005).

The lowest proportion was reported for writing computer programs with specialized programming language: 6% of the group had used the computer in the last 12 months, where the proportion was clearly higher for men (9%) than for women (4%), while with the remaining skills the gap showed only an insignificant advantage for men.

When an inquiry was made as to why they did not access the Internet, 39% of total households declared they had no specific need for Internet use. Another important reason mentioned by the households, were the high costs of computer equipment - 36%, as well as high costs of the Internet access - 33% (Graph 10).

Graph 10. The attitudes of households towards Internet



Source: Central Statistical Office, Warsaw 2005 (www.stat.gov.pl)

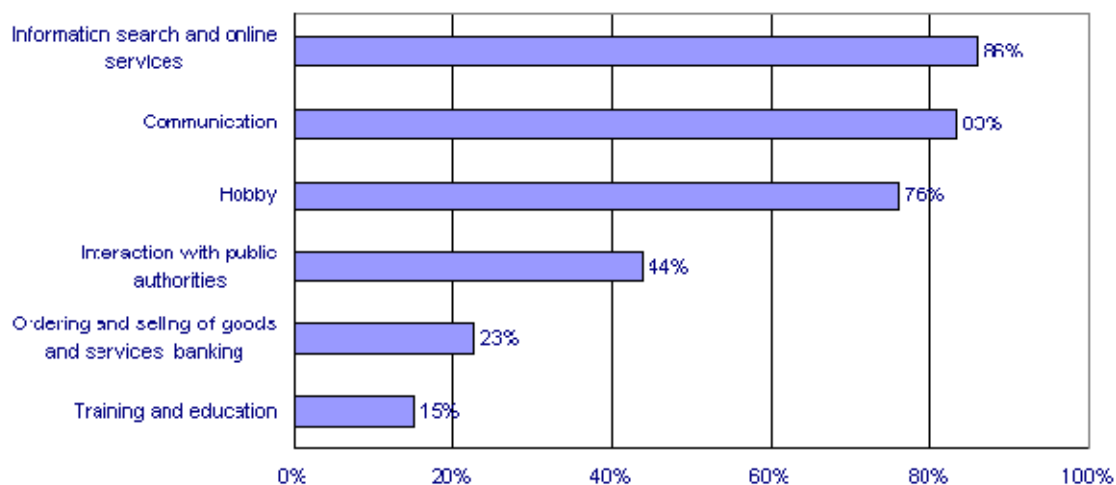
For 8% of the households one of the major obstacles was lack of technical facilities (necessary infrastructure). 7% of total households did not have access to the Internet, because their family members had the chance to access the Internet somewhere else.

However, it seems reasonable to claim, that the usage of ICT by individuals depends not only on costs of the Internet, the availability of the equipment (hard- and software), or prices of Internet connections, but results also from the individual's skills – abilities and competence in using information and communication technologies. These skills are comprised of computer and Internet skills. As far as the individuals' level of computer skills is concerned, Poland's score – with a few exceptions - is worse, compared to the EU25 and EU15 average. For example, only 53% of Poles had used a mouse to launch programs such as an Internet browser or word processor (EU25 – 66% and EU15 – 64%). However, it should be mentioned that within one year the value of this indicator rose in Poland by 10 percentage points (43% in 2004). Similarly, the percentage of Poles, who have used copy or cut and paste tools to duplicate or move information on screen in 2005 reached 34%, whereas on average 49% in EU25 and 52% EU15. Some 21% of individuals in Poland can use basic arithmetic formulae to add, subtract, multiply or divide figures in a spreadsheet. Average figures concerning these skills 35% in EU25 reach and 38% in EU15. Poland again has the lowest score compared to EU25 and EU15 average in regard to the percentage of individuals who have compressed files. Only 16% of Poles can conduct such tasks (26% in EU25 and 28% in EU15). Only every twentieth Pole has used a specialized programming language, whereas on average 9% in EU25 and 10% in EU15 (www.stat.gov.pl).

Unfortunately, in the category of the individual's level of the Internet skills, Poland's score was also the lowest. The share of Poles who have sent an email with attached files increased over the last year by 3 percentage points and reaches now 30% although is still 17 percentage points lower than the corresponding number in other new EU member states (47%) (www.stat.gov.pl). Between 2005 and 2006, Poland witnessed the most significant increase in the number of people who used peer-to-peer file sharing for exchanging movies, music, etc. It amounted to 4 percentage points, whereas for the EU15 it was on average 1 and for EU25 2 percentage points (www.stat.gov.pl). As far as the percentage of individuals who have created a Web page is concerned, Poland scored worse than the EU25 and the EU15, but only very slightly. (8% compared to 9% in 2006).

In the year 2004, only 15% out of 4 000 households and 9 000 individuals (aged 16 to 74) used the Internet for training and education, some 23% used the Internet access for ordering and selling goods and services or using financial services, including Internet banking (Graph 11) (Central Statistical Office, Warsaw 2005).

Graph 11. People accessing the Internet for private use by purpose (Percentage in the last 3 months, July 2004)



Source: Central Statistical Office, Warsaw 2005 (www.stat.gov.pl)

The biggest share of the above mentioned population - 86% - used the Internet for searching information and services online. A slightly lower number - 83% - used the Internet for communication purposes. Some 44% of the above mentioned population used Internet for interaction with authorities.

The mentioned survey data reveals that 54% of women and 42% of men (16-74 years old who used the computer in the last 12 months) have ever participated in a computer training course (Central Statistical Office, Warsaw 2005). As women become more active in the labour market in ICT, they have also become more aware of the different perspectives resulting from ICT training. The overall high level of education of women in Poland also contributes to the potential pool of women with skills and interest in IT careers. In addition, the percentage of women who continue their studies at the tertiary level is 57% compared to 43% of men. And yet, only 21.6% of all female students study the natural sciences, which commonly form the pipeline for careers in information technology and, specifically, networking. Stereotypes about male/female-appropriate roles and careers are still perpetuated through textbooks and programs in primary and secondary school that segregate girls and boys into homemaking and manual trade classes. Yet, during the past 10 years, women have started to pursue degrees in less-traditional sectors, such as business and management and the sciences, in which female students now form the majority (Academy of Educational Development projects www.aed.org/techequity/index.html).

In general, teachers in vocational schools were more active in using computers in class than their colleagues in general education, with 72% using computers in more than a quarter of their lessons as opposed to 41% in primary schools, 48% in lower secondary and 60% in upper secondary schools (the survey interviewed 500 head teachers and 1000 classroom teachers) (Use of Computers and the Internet in Schools in Europe 2006. Country Brief: Poland, Empirica 2006). Moreover, teachers working in schools in urban areas are the more intensive ICT users compared to those in rural areas.

Summing up, eLearning is developing, but is still at an early stage in Polish higher education. The increasing importance of eLearning has been noticeable in some official documents of the Polish government. Yet, there has not been any official eLearning strategy worked out. The relative achievements of eLearning can therefore be measured solely by separate eLearning projects (see more in Chapter II). In general, Polish people are doing worse in terms of lifelong learning activities than most of its EU counterparts. The positive trend has been observed in the improving ICT skills. Some of the most frequently mentioned obstacles to Internet access were no specific need for Internet use or the cost of Internet.

II. OVERVIEW OF E-LEARNING IN POLAND

II.1 The institutional structures and resources for eLearning

Traditionally, eLearning has not played an important role in Poland and eLearning is still at a very early stage of development in Poland. The main body responsible for implementing new educational strategies, including the ones concerning eLearning, is The Ministry of National Education. There is, however, no concrete organisational structure for managing and co-ordinating eLearning activities.

However, eLearning implementation has mainly been due to non-profit organisations. The Ministry of National Education is defining development directions of the information society and creating a legal, organizational and technological basis for the development of the information society. It is also coordinating and monitoring the development activities and promotion of the information society in Poland. The Ministry manages the matters concerning distance education and the work of the Internet portals, which provide the citizens with access to public information.

The institutions responsible for development and implementation of eLearning could be divided into those financed by public and private sectors. The data on division of tasks within the private entities is not available and may vary depending on company structure. The public units include: **Ministry of National Education, general inspectorates of education, Ministry of Culture, Ministry of Environment National Accreditation Board, Education System Development Foundation (or the Bureau for Academic Recognition and International Exchange).**

The Ministry of National Education is also responsible for implementing and organizing the educational system in Poland. It prepares projects of new legal acts and strategies in the field of education, sport and eLearning /eTraining. The detailed description of the Ministry's activities related to eLearning/training is presented below:

Table 9. Major public players involved in provision, control and financing of eLearning services

Name of Actor or institution:	Type of actor	Description:
Ministry of National Education/ Department for the Information Society	Public	<ul style="list-style-type: none"> - Defining courses of action for the information society development, - Creating legal, organizational and technological basis for the development of the information society, - Coordinating and monitoring the activities connected with the promotion and development of the information society in Poland, including the ones related to the realization of e-democracy program, - Planning the rules and procedures of funding the information society development projects, - Managing the application procedures for the information society development projects funding; evaluation of the realization of these projects, - Managing the matters related to information education, - Managing the work of Internet portals, which provide the citizens with access to public information, - International cooperation aiming to strengthen development of the information society.
eLearning Institute	Public	The institute offers engineering, graduate and supplementary studies as well as organizes annual conferences on eLearning in Poland and worldwide.

AGH - University of Science and Technology Distance Education Study Centre	Public	<p>The Centre realizes the following tasks: delivers an eLearning platform, according to the university's needs,</p> <ul style="list-style-type: none"> - prepares and compiles materials adjusted to the nature of lifelong learning and to an open distance education, - carries out analysis of the educational needs and possibilities (lifelong learning and open distance education, market research), - initiates, promotes and organizes modern forms of education <p>In November 2004, the centre attained the status of eLearning Perfection Centre "CeL" as a result of Resolution of the Scientific Research Committee.</p>
Maria Curie-Skłodowska University in Lublin and Academy of Humanities and Economics in Łódź	Public	<p>The Maria Curie-Skłodowska University in Lublin (UMCS) and The Academy of Humanities and Economics in Łódź (AHE) joined their eLearning forces and started the Polish Virtual University (PUW) as a common unit and project (see II.2). The University was one of the first public academic institutions to provide online studies and courses. The University carries out courses using the eLearning method.</p>
National Resource Centre for Vocational Guidance	Public	<p>Two closely cooperating departments are responsible for the implementation of the activities of the National Resource Centre for Vocational Guidance in Poland:</p> <p>National Centre for Promoting Vocational Education ("Krajowy Ośrodek Wspierania Edukacji Zawodowej i Ustawicznej") - The mission of the Centre established by the Ministry of National Education is to maintain the quality and standards of vocational education in accordance with labour market expectations and the state educational policy. The Centre is also involved in the collection, processing and distribution of educational information related to vocational education and training. The Centre provides detailed information, especially on training opportunities offered by the Centres of Continuing Education and Centres of Practical Education (about 250 institutions situated all over the country), also through a search engine on its website.</p> <p>Vocational Counselling Division at the Department of Labour Market (Ministry of Economy and Labour), ("Wydział Poradnictwa Zawodowego Departament Rynku Pracy Ministerstwa Gospodarki i Pracy") - Centres for Information and Career Planning, which are, specialised units of the province labour offices. They collect and provide information concerning available occupations, labour market, vocational qualifications, and which assist clients with making vocational decisions.</p>
Public lifelong learning centres	Public	<p>Public centres of continuing and practical training offer eLearning courses in Continuing Education Centres ("Centra Kształcenia Ustawicznego"), Practical Education Centres ("Centra Kształcenia Praktycznego") and Labour Offices.</p> <p>The centres offer general and vocational education of youth and adults as well as practical vocational training in practice firms.</p>

Source: www.einclusion-eu.org

The public administration and educational institutions cooperate with private actors on regional and national levels. The preferred ways of cooperation include: “clustering” (joining the local institutions for building the critical mass) of local projects. The projects are realised with the participation of local administration, universities and companies. The co-operation with local self-government receives the funds for organization of specific courses, such as workshops, conferences, public locations for broadband access to the Internet.

Other major public players involved in the provision, control and financing of eLearning services include networks of universities, such as the University of Science and Technology Distance Education Study Centre, the Virtual University (PUW) of Maria Curie-Skłodowska University in Lublin and the Academy of Humanities and Economics in Łódź. Vocational training and lifelong learning for adults are organised by Public centres of continuing and practical training: Continuing Education Centres ("Centra Kształcenia Ustawicznego") and Practical Education Centres ("Centra Kształceniawiazenia Praktycznego").

Only a few of the above mentioned education institutions conduct advanced R&D works on eLearning. A large number of them have just discovered the advantages of eLearning, and have started to implement their first projects and initiatives.

Involvement of private sector and civil society in the provision of eLearning: The most rapid growth in the provision of eLearning services is taking place in the private sector. The major private players involved in the provision, control and financing of eLearning services are presented in Table 10.

Non-public training institutions (associations, foundations, cooperatives, private companies) e.g. Association of Vocational Training ("Związek Zakładów Doskonalenia Zawodowego"), Polish Association of Adult Education ("Towarzystwo Wiedzy Powszechnej"), Polish Economic Society ("Polskie Towarzystwo ekonomiczne"), Folk Universities (Uniwersytety Ludowe), Association of Polish Artcraft ("Związek Rzemiosła Polskiego), Labour Offices (Public Employment Service). Schools for adults and higher education institutions.

Non-public lifelong learning centres: Lifelong Learning and eLearning, vocational training and general education for adults in out-of-school forms (except post-graduate studies) in Poland is provided also by non-public training institutions, associations, foundations, cooperatives or private companies e.g. The Association of Vocational Training ("Związek Zakładów Doskonalenia Zawodowego"), the Polish Association of Adult Education ("Towarzystwo Wiedzy Powszechnej"), the Polish Economic Society ("Polskie Towarzystwo ekonomiczne"), Folk Universities (Uniwersytety Ludowe) and the Association of Polish Arts and Crafts ("Związek Rzemiosła Polskiego").

Table 10. Major private players involved in the provision, control and financing of eLearning services

Name of the Institution	Type of the organization	Description of the activity
MyNetwork Polska Sp. z o.o. (MyNetwork Poland Ltd)	Private organisations/ firms	MyNetwork Polska Sp. z o.o. (MyNetwork Poland Ltd) is a company operating in providing companies, government and non-government institutions with advanced tools in the field of information technologies, including eLearning application and solutions. In the field of eLearning the company renders services, such as training and consultations. Broad experience in this matter allows the company to work out standards and unique applications supporting production and training implementation.
Umbrella	Private organisations/ firms	Conducts eLearning training for the public and commercial sector.
Brand IT	Private organisations/ firms	This service provides the possibility of gaining access to over 3000 e-trainings in a cheap and effective way. The company offers various forms of vocational training for enterprises and public administration units.
TEAMNET	Private organisations/ firms	Conducts eLearning training, consulting and marketing services for the public and commercial sector.
Education Centre of the Science and Technology Park in Szczecin	National/ Public	The Park develops web portals and organises the training of computer basics. The Szczecin Business Portal (www.e-mis.szczecin.pl) instructs how to run any kind of business activity; The Centre for testing of computing programs (www.cto.spnt.pl) delivers ready-made applications.
Polish Japanese Institute of Information Technology	Private educational institution	The Institute offers undergraduate on-line studies in computer science and WSB-NLU College in Nowy Sacz with a Master's degree online studies in management and marketing. There are also several projects in which eLearning is used to enrich traditional teaching, especially for part-time students.
4 system	Private organisations/ firms	Offers professional help in implementing eLearning methods for companies in the world as well as introduces systems of eLearning courses for companies with more than 5000 employees.

Source: www.einclusion-eu.org

Training for Small and Medium-sized companies: eLearning as a pedagogic tool is also being used in the training process organized by the Polish Agency for Enterprise Development (PARP). The portal Akademia PARP - www.akademia.parp.gov.pl – offers online training for every person interested in getting to know the principles of entrepreneurship (how to establish a firm, business plan), market research, structural funds for enterprises, the rules of participation in public procurement, industrial safety in the Small and Medium-sized companies (SMEs). In particular, the project aims to teach SMEs how to use modern technologies.

A private sector partner for the online training courses is ComputerLand, a stock company of Warsaw (the Polish capital). The company has already gained some experience in eLearning, having previously implemented an electronic training programme for its personnel, and for some of its customers (such as a Polish bank). Since 2000, ComputerLand has been operating a commercial hosting centre, WebInn, with eLearning opportunities on offer. For Umbrella Project training, WebInn provides servers, a data communication and processing platform (Lotus Learning Space), and offers a 24-hour guarantee for the quality and reliability of its information links. According to Mr. Tadeusz Buchacz of the Umbrella Project, the market cost for traditional training is about EUR 420 (PLN 1,600) per person. For the project's eLearning courses, the cost is about EUR 52.5 –100.5 (PLN 200–400) per person.

Information on the annual expenditure on eLearning applications from the public sector and private sectors are not available. Similarly, there is no access to research results on the price levels and affordability of the eLearning solutions for the target groups. The Ministry of National Education's main task, in terms of eLearning, is to provide schools with computer hardware and software. According to the estimation of The Polish Supreme Chamber of Control (NIK), these assignments have been realized in an economic and precise manner. It is important to underline that the central form of providing the equal standards of the software for schools, apart from rationalising costs, was activating school organs for the additional supply of computer hardware for schools, financed from the local municipal budgets. As a result, the number of schools with Computer Studies in their school curriculum grew radically in the period of 1999/2000 - 2003/2004 (as of January 2004) from 8 137 to 18,223 (a growth of 123.9%), including 9 950 computer laboratories (54.6% of the total number) proceeded from central budgetary supplies. The following number of schools received computer laboratories financed by the central budget in the 2000-2004: 2 583 units of elementary schools, 4,994 units of lower secondary schools and 1,973 units of post lower secondary schools.

The provision of schools with computer hardware results from the Ministry of National Education's contracted authorizations in budgetary acts for the period of 1998 – 2004. The sums of the state budget designated for computer supplies in schools laboratories have been steadily increasing, reaching its highest level in 2004 – EUR 36.75 million (PLN 140 million) (Table 11).

Table 11. The sums designated for the supply of computer laboratories of schools, financed from the state budget in 1998 - 2004 (in million of EUR and PLN).

Year	1998	1999	2000	2001	2002	2003	2004
EUR	24.95	7.87	26.24	15.35	22.40	10.50	36.75
PLN	95	30	100	58.5	70	40	140

Source: Supreme Chamber of Control 2005 (www.nik.gov.pl)

While analysing the annual expenditure related to eLearning from the public sector in general, one needs to consider that the total number of schools has been increasing annually. For example, in 2003 the number of lower secondary schools grew by 282, whereas the number of computer laboratories grew by 188. The latter phenomenon complicates the assessment of the demand for computer laboratories even more.

From the year 1999 onwards, all educational tasks carried out by the three levels of local government are financed in the framework of general subsidy from the State Budget. In the year 2000 a uniform system of allocation of funds with the use of the algorithmic formula based on the number of pupils was adopted for the whole education system.

The financing of training for pupils differs from the financing of training for young workers. If the trainee has a pupil status, the costs of practical training are covered by the school-running body. These resources cover, among others, the salaries of practical vocational training instructors. The pupil is not

remunerated. If the trainee has a status of a young worker, they receive wages from their employer, and their sum is calculated on the basis of amounts defined by the government.

Adult education in public schools is financed from the territorial self-government resources. Educational tasks implemented by territorial self-government units are supported by the educational part of the general subvention, defined in the Annual Budget for a given year. Opportunities in training services come from both the public sector and individual companies (like foreign investors) seeking to upgrade the skills of their workforce. Both sectors benefit from educational seminars, technical seminars and management sessions, provided by training companies to middle and top management, sales personnel and clerical staff.

Government ministries and independent government entities also have annual training programs, aiming to improve the performance standards and skills of employees. These programs cater for the needs of various levels of civil servants from senior executives (under secretary level) to mid-level executives (directors and controllers) and lower levels (Ministry of National Education).

Other types of financial aid, offered by the European Union, include scholarships and grants for eLearning projects. The competition for grants concerns three eLearning domains: digital society skills promotion, supporting the co-operation between universities and IT service providers. The average amount of grants per domain is EUR 170,000 (maximum EUR 300,000), 500,000 EUR (up to EUR 1 million) and EUR 250,000 (up to EUR 500,000) respectively.

The state and structure of advancement of eLearning related services have been monitored by the Ministry of National Education and The Supreme Chamber of Control (NIK). Moreover, The Supreme Chamber of Control evaluates the activity of MEN regularly. The Supreme Chamber of Control (NIK) promotes economic efficiency and effectiveness in the public service to the benefit of the Republic of Poland.

II.2 Strategies, policies, action plans and projects

There are a number of strategies and legal documents addressing lifelong learning and eLearning development in Poland. The most relevant of them are listed below:

The main strategy aiming to promote the implementation of eLearning in Poland is **The Development Strategy for Lifelong Learning to the year 2010** ("Strategia Rozwoju ksztacenia ustawicznego do roku 2010"). The Strategy defines the goals and tasks of the education policy in Poland up to the year 2010. The principal aim of the Strategy is to fit the lifelong learning development directions into the context of the idea of lifelong education and a knowledge-based society. The accomplishment of strategic goals is based on particular priority actions. Two of them are interlinked with the field of eLearning: 1. increasing accessibility to lifelong learning and 2. improving the quality of lifelong learning.

The priority goal of the program **The Strategy on the Development of the Information Society in Poland for the years 2004-2006** ("Strategia Informatyzacji Rzeczpospolitej Polskiej - ePolska na lata 2004-2006") is to prevent information exclusion. It must be achieved by ensuring technical possibilities of full participation in the information society for the "middle generation", the disabled and those in need of additional training. The exercising of the strategic goal is based on particular fields of action. The second goal concerns the eLearning domain. It describes priority activities - tele-learning, which is to support the programs allowing the equalization of the youth's educational chances regardless of their background and adult education programs aimed at decreasing unemployment and gaining new qualifications for new jobs or improving those one already has. The following results of activities are expected: offering basic studies (at least supplementary) in the form of teleLearning (via any medium, e.g. television), creating educational portals for students and teachers as well as offering basic qualification improvement courses.

The Strategy on the Development of Information Society - ePoland for the Years 2004-2006 was developed by the Ministry of Scientific Research and Information Technology aims at developing a competitive knowledge-based economy and at improving the quality of life of citizens by efficient implementation of information technology among all the areas defined as 'Development of valuable content and services accessible via Internet'. It provides for actions favouring distance learning including adult training (especially on the use of ICT). It also calls for the setting up of a legal basis for the standardisation and accreditation of distance learning courses. On the basis of ePoland strategy, the Ministry of National Education proposed the Strategy on development of eLearning (adopted in October 2004). The document basically mirrors the provisions of ePoland strategy concerning the area of eLearning.

The ePoland strategy - the strategy on the Development of the Information Society in Poland for the years 2004-2006 - mentions only projects, which have to be implemented, and does not introduce a long-term vision and aims in the area of eLearning. The strategy also does not mention how those projects are supposed to be financed. There is also a lack of information about the state of realization of current eLearning projects. The separate eLearning projects are too small and therefore do not lead to any institutional or regulative changes on both university and Ministerial levels.

The ePoland strategy has a conceptual character. The new Plan of Informatisation, as yet, has not seen the light of day, due to the delay of the legislative process caused by organizational problems. The Plan of Informatisation, to restate the law: is a tool of planning and coordinating the informatisation process in the public sector. This document responds also to the realization of the latest EU initiative „i2010” and is an example of the implementation of previously accepted foundations in the programmes of eEurope 2002, and eEurope 2005.

The Strategy of Education Development for 2007-2013, which covers the strategic activity entitled: “Development of the distance education system on different levels – from primary up to higher education”. The document underlines that distance education, mainly for adults, must be treated as an equally important manner of organisation of the educational process as long as it leads to the approved and confirmed qualifications. The institutions offering distance learning are subject to supervision and control of accreditation, like other schools and educational units. Therefore, the Strategy emphasizes the need for further development of proper quality standards and internal systems for the control of distance learning.

“The National Strategy for the Increase of Employment and Human Resources Development for the years 2000-2006” (“Narodowa Strategia Wzrostu Zatrudnienia i Rozwoju Zasobów Ludzkich w latach 2000-2006”) is a policy directive, whose realisation should contribute to an increase in effective employment, thus also limiting unemployment and its negative results. It includes proposed activities mainly of an educational, legal and economical nature, aiming at the improvement of human resources quality. The Strategy describes the necessary conditions for the functioning of lifelong learning for adults, which include: introducing new educational forms and methods, such as teleLearning, adjusting the didactical base to new tasks, by modernizing it and preparing the staff to carry out new tasks. Development of a flexible and effective adult education system is planned not only through diversification of educational offers, resulting from an open-minded attitude towards changing socio-economic needs, but also through individualisation of the educational path and diversification of educational forms and methods. There is a need to improve the essential level of lifelong learning institutes, by making their operations more efficient and adjusting to socio-economic needs. Moreover, many organisational changes, complementing traditional education with teleLearning and module learning, have to be implemented both in the in-school and outside-school forms.

The priority “Continuing education and eLearning” of **The Strategy for Development of Higher Education in Poland until the Year 2010** (“Strategia Rozwoju Szkolnictwa Wyzszego w Polsce na rok 2010”) provides the development of distance learning (including eLearning) as well as the introduction of e-diploma and mechanisms for accreditation of eLearning courses, which are crucial for the further development of eLearning in Poland.

In order to address the lack of a coherent lifelong learning strategy, **Strategy for the Development of Continuing Education until 2010** was adopted by the Council of Ministers in July 2003. It was the first document, of this rank, dealing with the problems of continuing education and lifelong learning in Poland. In 2003, the School Education Act was amended to define basic concepts connected with continuing education, and to insert reference to continuing education and adult education and training, in both in-school and out-of-school forms, including distance education. Training, re-training and improvement of vocational qualifications can be financed from the Labour Fund (a state fund). The District (local) labour offices are responsible for offering training schemes and other forms of professional activity to the unemployed and other job seekers.

The objectives of “i2010” Commission’s initiative were one of the most important reference documents while working on the final version of The Polish National Development Plan for the years 2007-2013.

Within a strategic aim focussed on “Education and vocation training of adults working with youth”, **State Strategy for Youth for the Years 2003-2012** (Strategia Państwa dla Młodzieży na lata 2003 - 2012.) (adopted in July 2003) provides for the preparation of educational materials including distance learning curricula and computer educational programmes for self-training of teachers.

On the basis of the above strategies and legal acts (e.g. Act on the Education System) the Ministry of National Education issued a Regulation on acquiring and improving of general knowledge and skills by adults in the out-of-school forms. The Regulation sets rules for organising distance learning (rules and conditions for recruiting participants for eLearning courses).

A major step forward, in the development of eLearning in higher education, was attained by including the provisions obliging to define rules for use of ICTs in higher education courses in the Act of Higher Education.

In 2000, during the session in Lisbon, the European Council confirmed that the European Union was facing fundamental changes, resulting from globalisation and development of a knowledge-based society. Taking action in order to increase the competitiveness of the European economy and building a knowledge-based society were mentioned among others. The way of achieving the main objective of the Lisbon Strategy through actions in the area of education is presented in the programme of works called “Education and Training 2010” adopted by Ministers of Education and the European Commission in 2002. Three groups of objectives were formulated in it: improving the quality and effectiveness of education systems in the EU, facilitating universal access to education systems and opening education systems for the environment and the world.

The above mentioned Polish strategies evoke such EU policy documents as e.g. “eEurope 2002” and “2005 Action Plans”, “eLearning: Designing tomorrow’s education”, “eLearning Action Plan”, “Community eLearning Programme”, adapting their provisions to the country reality. The above documents give the high priority to the development of computer and ICT skills among pupils, teachers and trainers, as well as to providing of educational institutions with computers and broadband Internet connection. Development of eLearning also constitutes an important element of Operational Programme – “Development of Human Resources” – a component of National Strategic Reference Framework for the implementation of the EU funds for the period 2007-2013. The programme aims at building an open and knowledge-based society, through ensuring the conditions for development of human resources in courses of education, training and work. The priority “High quality of education responding to requirements of labour market” provides tools, which refer to eLearning as: development of innovative curricula, methods and organization of education (including distance education) and promotion of a high quality of continuing and vocational education, including promotion of distance education.

Strategy for Development of Higher Education in Poland until 2010 underlines the significance of clarity rules of education stages and guarantees their comparability with education in other member

states of the EU. The education strategy aims at developing systems of assessing the quality of education and clearly specified rules of acceptability of education process and its participants' skills. One of the main objectives of the strategy is to increase the mobility of pupils, students and teachers. Hence, summing up the Polish education strategy, as well as the Programme "Education and Competence", which is a tool in its implementation, fully compose into the framework of the Bologna Declaration.

On 28th December, 2006 the Ministry of Education announced a call for proposals (Call for proposal - Distance learning centres in rural areas nr 9/2.1a/2006) for the Measure 2.1. "Increasing access to education – promoting lifelong learning" within the Priority 2. Development of the knowledge-based society of the Sectoral Operational Programme Human Resources Development. One of the main objectives of the Measure 2.1 "Increasing access to education – promoting lifelong learning" is the development of the distance learning tools. Moreover, the promotion of ICT use in the education process would improve the quality of education, which would strengthen future employment of students. Therefore, the set-up of the external examination system, support of the vocational guidance and counselling for students, teachers' development, accreditation of educational institutions and creation of a system of statistical educational data collection are the priorities under this measure.

One of expected results and impacts of the implementation of the Priority 2 is an increase in teachers' usage of ICT in the teaching process, from 26.4% in 2002 to an expected 32% in 2004 – 2006 (Sectoral Operational Programme, Human Resources Development).

Table 12. The expected results/impacts of the Implementation of the Priority 2 of the Sectoral Operational Programme Human Resources Development 2004 – 2006

Priority 2: Development of the knowledge based society	Value in the base year (2002)	Results of the period 2004-2006 (value for the end of 2006)
The % share of teachers prepared to use ICT in the teaching process	26.4%	32.0%

Source: Sectoral Operational Programme Human Resources Development 2004 – 2006, Brussels-Warsaw, January 2004, p. 148

Another initiative, supported by The European Social Fund, is "The Development of Lifelong Learning and Adult Education", including distance learning. The types of projects covered by this initiative are: working out the educational programs for the particular studies and specialisation on the university level, as well as conducting R&D activities related to the efficiency of distance learning.

One of the justifications for the selection of the priority was that in rural areas the level of education was lower than in urban areas. The data concerned people with primary or incomplete primary education (43.3%), with basic vocational (29.2%), secondary and post-secondary education (22.4%) and only 4.3% of the higher education (Sectoral Operational Program, Human Resources Development 2004 – 2006, www.npr.gov.pl).

The deadline for submitting applications was set for 16 February 2007. The aim of the project was to set up and equip some 250 distance learning centres in rural areas with computers and Internet access. In all the centres, an expert was to be employed in order to enable people in rural areas to use the opportunities of the lifelong learning and online education. Therefore, the beneficiaries, such as primary, lower secondary and upper secondary schools, kindergartens and local, regional and central education administration could, without the need for their own contribution, count on almost EUR 12.16 million (PLN 49.35 million) (European Social Fund 75% and the state budget 25%) (Call 1 for proposal: Distance Learning centres in rural areas, nr 9/2.1a/2006).

However, the full benefits from the above mentioned adjustments to the EU policy and legislation could only be obtained, if the administration was properly organised and had adequately skilled staff

to implement the policy actions. Yet, the biggest difficulties were not in the legislation, but in mindsets and in the rigidity of administration.

Following the guidelines of the Lisbon European Council, the importance of information society and eLearning in particular, has also been recognised in the **National Development Plans for the years 2004-2006 and 2007-2013**.

National Development Plan for the Years 2004-2006 (Narodowy Plan Rozwoju 2004-2006), has been launching two Sectoral Operational Programmes: Improvement of the Competitiveness of Enterprises, Development of Human Resources and the Integrated Operational Programme - Regional Development in the area of R&D and computerisation entitled “Knowledge-Computerisation-Competitiveness: Poland on the way to knowledge-based economy”.

The main objective of the Sector Operational Programme of Human Resources Development (SPO RZL) 2004-2006, within the NDP 2004-2006, is building an open, knowledge-based society by providing conditions for human resources development through education, training and work. Education actions have been planned as a part of Priority 2 of Programme entitled “Development of a knowledge-based society”, and they are as follows: Action 2.1 entitled: “Increasing access to education – promoting lifelong education” and Action 2.2 entitled “Improving the quality of education in relation to the needs of the labour market”. The institution in charge of implementing the above Actions is the Ministry of National Education (National Development Plan 2004-2006).

The purpose of Action 2.1 - Increasing access to education – promoting lifelong education is promoting education throughout one’s whole life by increasing access to education at all levels of education – from pre-school education to lifelong learning of adults, taking into account, especially, the needs of people living in rural areas. The following types of projects have been planned as part of the action 2.1:

- alternative forms of pre-school education (pilot implementation of the project in towns, where access of children to pre-school education is limited. The aim of the project is preparing children for the start of their school careers);
- school subsidies for development projects (within projects of such type, schools gain skills of localising problems, programming actions and improving the situation). Specific programmes of schools concern developing basic skills of students, helping students with particular learning difficulties and ensuring education compliancy with the needs of the local labour market;
- eLearning centres in the countryside (the purpose of such centres is to provide people living in rural areas with a possibility of lifelong learning *on-line*);
- examining the level of preparation of 6-year-olds for school education;
- purchase of modern specialist equipment, and enabling the teaching process of students with special educational needs;
- Internet centres of multi-media information in schools and pedagogical libraries – providing IT hardware and software;
- education portals on the Internet – updating its resources and increasing the contents of the portal with new educational elements of students and teachers of post-junior schools;
- developing programmes, didactic materials and methodology for eLearning (post-junior level);
- creating teaching programmes on eLearning methods at chosen courses and degree levels as well as conducting surveys on the effectiveness of eLearning.

The purpose of Action 2.2 - Improving the quality of education in relation to the needs of the labour market – aims to raise the quality of education in order to increase the skills of students for further employment, through spreading the use of ICTs in the process of educating, training and accrediting

education institutions, as well as developing the system of collecting and analysing educational statistical data. The following types of projects have been planned as a part of Action 2.2:

- equipping primary schools, junior schools, post-junior and post-secondary schools (including special schools) as well as teacher training centres, Lifelong Learning Centres (CKUs) and Practical Training Centres (CKPs) with computer equipment;
- equipping psychological and pedagogical advisory centres with specialist computer equipment and programming;
- creating a data base of accredited institutions;
- equipping Lifelong Learning Centres, Practical Training Centres and selected vocational schools with specialist locations for conducting external vocational examinations;
- supporting the system of external examinations: preparing teachers to conduct external examinations; publishing information materials for students – information about external examinations; conducting surveys on external examination results;
- career advice for students: creating and distributing methodical and didactic materials for professionals; career planning for students;
- modernisation of equipment of the Central and District Examination Boards, such as computer devices and specialist programming for conducting external examinations;
- conducting surveys on the level of basic skills among the pupils of the 3rd grade of primary school;
- post-graduate courses for graduates beginning work as teachers in the area of: Information and Communication Technologies; foreign languages and teaching two subjects (this module of studies is addressed to primary and junior school teachers);
- further training courses for teachers in the field of ICT, foreign languages, special pedagogy and methodology of general and vocational subjects;
- preparing teachers to fulfil the role of professional advisor as a part of post-graduate courses;
- training the administrative staff of education system in the area of accreditation procedure;
- developing new programme foundations, innovative teaching programmes (including module ones), as well as education packs for vocational training;
- creating a guide of accreditation procedures of facilities providing lifelong learning in extra-curricular forms;
- monitoring the work of accredited institutions;
- developing a system of collecting and analysing statistical data on education.

The total spending planned for Action 2.2 was EUR 450.5 million (EUR 337.9 million came from the European Social Fund (ESF) and EUR 112.6 million from the state budget means). The spending for the Action 2.1 amounted to EUR 278 million (EUR 208.5 million comes from ESF means and EUR 69.5 from the state budget means).

Three courses of action have been selected in the **National Development Plan for the Years 2007-2013 (NDP)** (Narodowy Plan Rozwoju na lata 2007-2013) within the “Knowledge and competence” priority: “Increasing access to education”, “Supporting the openness of the education system” and “Better quality of education”. On the above basis, priority areas of the Operational Programme “Education and Competence” have been formulated, ensuring their full compatibility with the national strategic document – NDP 2007-2013. The NDP 2007-2013 highlights the importance of the Information Society and the improvement of competence and anticipates two Operational Programs. The first OP - Education and Competency aims to increase the level of society education, propagation of pre-school education, increasing the number of people participating in vocational training, increasing graduates employment and increasing the efficiency of the education management. The second OP - Science, modern technologies and information society aims at increasing the efficient use of R&D expenditure in the fields that will contribute to the socio-economic development, scientific personnel quality development, increase of the position of Polish science in the national and

international economy, increase of the private capital involvement in research and development activities and gross domestic product (GDP), increase in the result of increasing public and private sector investments in information and communication technologies (National Development Plan 2007-2013). The program places emphasis on the development of e-services in the following thematic lines (Eisco 2005 - European information society conference):

- The Polish National Development Plan for the Years 2007-2013 - knowledge-based economy – development of eServices in eBusiness, eGovernment, eLearning, eHealth and other sectors of the economy;
- common access to electronic PA services – broadband infrastructure, ICT infrastructure for R&D, multiplatform access to eServices, software and equipment for telemedicine;
- development of digital content, crucial to the competitive position of Poland in the EU, development of entrepreneurship, social and economic cohesion.

At the same time the Lisbon objectives were reflected in Polish education policy as well as the assumptions of education policy, determined by the European Union within the Bologna Declaration, or the Copenhagen Declaration. On 17 March 2004, Poland ratified the Lisbon Convention on the Recognition of Qualifications concerning the Higher Education in the European Region (Council of Europe Convention of 11 April 1997, CETS No.: 165).

On 19 June 1999, Poland along with 29 other countries signed the Bologna Declaration, in which the central theme is to create a European Area of Higher Education (Official Information from the Ministry of Science and Higher Education for Bologna Process).²¹ Poland's contribution in the ongoing Bologna project is carried out by representatives of the Central Council on Higher Education as well as the State Accreditation Commission, through seminars and other meetings with the countries having signed the Bologna Declaration. These meetings are organized to realize the different points of the Declaration. A special Bologna Process Council has been formed in Poland. It is an advisory and opinion-providing body, which supports the Minister in the matters related to the Bologna Process. It is made of representatives from the above-named institutions "The Higher Education Law" taking into account principles and postulates of Bologna Process (Bołtruszko, Błażejowski, Bryzek, Majkowska, Skibińska, Koczyk, Bologna Process – National Reports 2004-2005):

- three-cycle study system;
- possibilities of transferring and accumulating achievements in the study process among various higher education institutions, in accordance with the ECTS standards;
- issue of diplomas other than typical ones and the issuance of the Diploma Supplement.

In general, Poland has witnessed beneficial transformations in higher education. Dynamic implementation of the Bologna Process assumptions, including, in particular, introduction of Diploma Supplement and growth of mobility are the most remarkable. For example, an extensive network of higher education institutions (approximately 400), such as "From Berlin to Bergen and beyond", offering wide accessibility of higher education as well as a larger higher education enrolment rate (47%), dynamic increase in the number of students (the number of students has grown four times since 1990 to the level of over 1 800 000 in 2004), increase of scholarship assistance and loans to include students from all kinds of higher education institutions and all forms of study, wide and diverse educational offer and implementation of education quality evaluation system (establishment of the State Accreditation Committee). However, further steps are needed - these include: further increase of general character and access to higher education; further actions to raise higher education quality and effectiveness (change of teaching standards, development of new fields of study, new educational methods); adjustment of education to the labour market requirements (development of enterprise and creativity, development of co-operation between entities involved in education and science as well as economy and labour personnel development; development of lifelong learning; broader openness of higher education system to educating in the area of the EU and third countries (wide participation in

²¹ www.kbn.gov.pl/proces_bolonski

European educational programs such as: Socrates-Erasmus, Erasmus, Mundus, etc., introducing and widening the offer of education in foreign languages, further popularization of the Bologna Process assumptions in the academic environment).

The most important ex post survey related to the eLearning policies relates to the evaluation of MEN, connected to supply and distributions of computer equipment in schools in budgetary acts on the years 1998-2004.

The main task of the MEN was to provide equipment for the schools (computers and software), which was bought through one call for tenders as it indicated in the national budget for 1998-2004. The Supreme Chamber of Control stated in its report, that the given task had been realised with economic prudence, efficiency and diligence. In the years 1998-2004, over EUR 101.60 million (PLN 387.1 million) was spent on that purpose. However, the central purchase approach of equipment with the same standard and software allowed to receive a better price for each item. Thus, it was possible to equip more schools than had been previously expected. The number of schools equipped with computers increased in the years 1999/2000 - 2003/2004 from 8,137 to 18,223 (by 123.9%), including 9,950 computer labs (54.6% of all).

There are no market research results available concerning the eLearning initiatives, projects and/or tools. Such research still needs to be conducted.

In the period of 2004-2006, the Ministry of Education previewed the purchases of the computer and programming equipment to schools and educational institutions worth EUR 412.16 million (PLN 1.57 billion). The total spending should proceed within 4 projects. According to NIK, by December 2006 only two of the mentioned projects had been implemented. The first project entitled "The Equipment of Lifelong Learning Computer Centres and Centres of Practical Education" worth of EUR 73.45 million (PLN 279.84 million) (18% of total value of the projects) and second project entitled "The Special Computer and Programming Equipment for Pedagogical and Psychological Consulting Office" worth of EUR 51.53 million (PLN 196.35 million) (13% of total value of the projects).

The NIK experts have not, however, conducted an external audit. The commitment to the other two projects was very low. The utilisation of financial resources for the "Computer laboratories for schools" project worth in total EUR 3.51 million (PLN 13.38 million) by December 2006 amounted to 32.1% of the value previewed, whereas in the fourth project "The Equipment of School and Pedagogical Libraries with Multimedia Information Centres" worth in total EUR 0.48 million (PLN 1.84 million) about 54.8% of the planned resources had been used. According to NIK, the above structure of expenditure gave evidence to the potential threat of not taking full advantage of the planned expenditure by the end of 2006.

According to NIK, the main irregularities in the MEN's activities, school superintendent's offices and public schools are:

- transferring the payment without the checking the quality of computer and programming equipment;
- reluctance in inquiring about the quality guaranteed and not executing the contractual penalties;
- introducing the unfavourable changes of the supply contracts; not compliant with existing regulations of accountancy, etc.

NIK has also negatively evaluated the activity of ten Headmasters out of 49 controlled schools and educational units (20.4%) in the sphere of the receipt of purchased computer and programming equipment 35 schools and educational units. In the general opinion of NIK, the above-mentioned irregularities have not caused significant constraint in the functionality of the equipment delivered to schools and educational institutions.

The latest audit of the NIK, from December 2006 (“The information on the control of the central purchase of the computer equipment for schools and educational centres” from December 2006, no 163/2006) reveals that there were several positive trends in MEN activities in improving ICT teachers’ skills, and their utilisation for learning processes. Between 1998 and 2002, the Ministry organized some 19 postgraduate studies with IT specialisation for teachers, financed with public research grants. Starting from 2000, the above-mentioned program was supplemented with the obligatory 30 hours of teachers training courses on use the IT tools for didactical purposes. In 2000-2004, some 9,223 teachers went through such training financed by MEN (EUR 5.63 million (PLN 21.47 million)) (in the time of observation there were another 31 postgraduate courses with 3,320 participants).

Within the regional educational initiatives, financed by the local self-government (province) in 2000 and 2001, over EUR 0.4 million and EUR 0.96 million (PLN 1.5 million and PLN 3.67 million) was spent on teachers training in the area of IT (3,397 and 14,670 of teachers participated in the courses). The results of a survey conducted in schools by NIK revealed the shortage of qualified teachers in almost every fifth school.

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Major public and private projects in eLearning: their aims, financing and results

Poland is participating in the eTwinning programme of schools in Europe. One of the programs objectives is to promote teacher training via strengthening and developing networking among schools. The eTwinning of schools also helps update teachers' and trainers' professional skills in the pedagogical and collaborative use of ICT. Internet-based learning communities contribute to improving intercultural dialogue and mutual understanding (eLearning Programme).

Poland has been very active in eTwinning program with 1,779 teachers and 1,747 registered schools within the program (Annex II. Table 27). It is the one of the best results only topped by Spain and Italy. One of the incentives enhancing the schools for eLearning initiatives is the award offered to schools by the European Union for promoting one of the three eLearning domains: digital literacy, co-operation between the universities and the service supporting the learning process. The average amount of the first grant is EUR 170,000 (at maximum EUR 300,000), second – EUR 500,000 (up to EUR 1 million), and third one – EUR 250,000 (up to EUR 500,000).

IKONKA Project: The aim of the IKONKA project is to establish open Public Internet Access Points (PIAPs) in local libraries and community centres across Poland. The project is financed by The Ministry of Higher Education and Science (MNiSW) and is aimed at enabling public Internet access in small towns and villages. The network of the public Internet access points has covered 534 public libraries in 11 regions. The project is specifically targeted at solving the problems created by the digital divide through the provision of free Internet access and computer training. The project was started in Podlaskie Province in 2003, where 117 (out of 118) local authorities applied for participation. The project is spreading around Poland and application processes are on the way in other provinces as well. In 2006, about one thousand libraries already applied for participation in the project. The project often provides the only public access to the Internet in certain regions of Poland.

Polish Internet Library: The largest digital library in Poland with 25,350 digitalised entities, in 2006 reaching the number of 30,000 entities. The free of charge Polish Internet Library was officially started on 21 December, 2002 at the Internet site www.pbi.edu.pl. Its online collection comprises over 9,000 titles of literary works, mainly school lectures and Polish classical literature. The Library is being constantly updated with the new collections. The complete library catalogue includes academic publications (including the publications that can be accessed by the handicapped), sheet music, maps, paintings, photographs and other graphics materials, as well as scientific periodicals. The Library is also rich in scientific and documentary films, museum resources and theatre performances.

From out of three projects only one, i.e. “The Internet laboratory in every community” (correspondingly in every lower secondary school and every school)” was finished by the end of the reviewing process by NIK, providing over 2,480 computer laboratories in 1998. It was initially planned that these computer laboratories would be dedicated to primary school building, where lower secondary schools had been planned.

The next initiative, realised in the subsequent years 1999 – 2003, covered the Internet laboratories. As for the year 2004, out of 6 423 lower secondary schools, some 4 930 had computer laboratories, i.e. 76.7%. In the year 2001, some EUR 15.22 (PLN 58 million) were devoted to the latter purpose, which differs from the initially planned amount for the year 2001 – EUR 26.7 million (PLN 102.77 million).

The market of eLearning services in Poland is very young and has been developing over the last 5 years. The eLearning courses are offered by both public and private education and research institutions developing the distance education activities in Poland. The projects are being financed by both public, including EU, and private funds. The detailed description of the projects is presented below:

a) Polish Virtual University (PUW) - joint project of The Maria Curie-Skłodowska University in Lublin and The Academy of Humanities and Economics in Łódź.²² The Academy of Humanities and Economics in Łódź (AHE) and Maria Skłodowska Curie University in Lublin (UMCS) joined their eLearning forces and started the Polish Virtual University (PUW) as a common unit and project. The main aim of the project was to build necessary resources, which could enable both institutions to provide online studies and courses. At the moment the AHE offers undergraduate online studies in 4 departments and more than 750 students study this way. More than 100 e-courses are available and used as a support for traditional teaching or offered as separated courses on the Internet. In October 2002, the Polish Virtual University started its first bachelor’s degree programme in Marketing and Management, with the diploma awarded by the Academy of Humanities and Economics in Łódź. Marketing and Management Advanced courses: public administration management, human resources management, company management and corporate finance and banking. Among other courses are: Negotiations, Bases of Interpersonal Communication, Polish language and Culture, Information Technology in Teaching - aimed at all teachers willing to learn more on how to use a computer and the Internet in a classroom.

b) Virtual Technical University²³

The second remarkable project - the project OKNO, is the first one among Polish universities, and provides online undergraduate studies in computer science as well as several postgraduate studies. The Virtual Technical University project was started in December 2002, by 7 technical universities from Poland: AGH University of Science and Technology in Kraków, Białystok Technical University, Gdansk University of Technology, Warsaw University of Technology, Kraków University of Technology, Poznań University of Technology and Wrocław University of Technology. The Virtual Technical University is not an independent university, but rather a project, whose main goal is to establish and develop a higher-level education system, based on Internet and multimedia techniques.

c) Open and Multimedia Education Centre at Warsaw University²⁴

The Centre for Open and Multimedia Education (COME UW) is a Warsaw University project aiming to provide online postgraduate studies and courses. The project was introduced in 1999. The goal of the Centre was to promote public access to academic education via modern ICT. The Centre offers eLearning courses at engineering studies. The system called SPRINT allows to study on an individual basis, and the enrolment for the studies is open around the year. The specialisations offered include: computer sciences, electronics, telecommunications and robotics. The postgraduate studies include: tools and techniques of virtual education, as well as information science and Internet techniques.

²² www.puw.pl

²³ www.okno.pw.edu.pl

²⁴ www.come.uw.edu.pl

COME is promoting and coordinating activities of Warsaw University in the open multimedia education, by conducting open multimedia and R&D activities on the new methods of implementation and efficient application of new educational techniques as well as on helping the teaching staff to face the educational standards. Some courses are free of charge.

d) Warsaw School of Economics eLearning programme

The programme of eLearning courses in Warsaw School of Economics started in 2001. Up to now there were only elective courses offered. In 2005, the eLearning courses started to be a supplementary to the program of extramural studies. In order to implement the eLearning program, special preparatory training was offered to teachers and promotional activities were launched as well, e.g. the establishment of eLearning laboratory for students and teachers. The School is also active in promoting online education all over the country, especially by publishing the eMagazine - eMentor.

e) Distance Education Study Centre²⁵

At the University of Science and Technology (AGH), there are different eLearning initiatives, promoting modern information and telecommunication technologies. A competition called "Notes in Internet" is held, where the best educational websites prepared by students are rewarded. In 2004, the Distance Education Study Centre at AGH became a Centre of Excellence in eLearning - "CeL". The CeL conducts research in international cooperation, especially within the European Union programs, with the aim of developing knowledge in the priority fields, for the economy and state policy, such as: health and life; energy, ecology, new materials; information and communication technology. The aims of the Centre of "CeL" are to: conduct scientific research in the field of eLearning; maintain contacts with similar centres at home and abroad as well as with international organizations, maintain cooperation with enterprises and administration; promote lifelong learning and analyze the effectiveness of eLearning methods.

f) Distance Education Centre at the Gdansk University of Technology²⁶

The project was implemented in 1997, within the framework of "The Phare Multi-country Programme for Distance Education". Its main assignment was to build the infrastructure supporting eLearning in countries covered by PHARE. The first stage of the project was to launch the national centres of distance learning. The second stage was to establish 40 regional centres of distance learning. The main aim of the program is to enable students and academic staff to participate in the courses using ICT tools. It is coordinating the youth projects and participates in some international projects. It also conducts on-line courses and organises professional training (courses of programming language Pascal, training about environmental protection, ethics, etc.). Some courses are free of charge and some courses end with diplomas and certificates.

g) Polish Centre of Logistics Competence – POLOCCO

Project's aim is to support development of logistics, and the implementation of its related initiatives and projects. As a result of the project, some 150 competence centres and research teams in various spheres have received the status of POLOCCO Competence Centres. The POLOCCO project has already invested into the supply and establishment of professional platform LMS – Learning Space 5.0 of IBM company as well as equipment for distance studies and virtual conferences. The type of courses and number of people participating within the particular course offered by the Centre is presented in the table below (Table 13).

²⁵ www.oen.agh.edu.pl

²⁶ www.dec.pg

Table 13. Number of people participating within the particular courses

Inventory management	Over 90 people
Stocks management	Over 70 people
Transport means	Over 90 people
Storehouse infrastructure	Over 85 people
Storehouse management	Over 65 people

Source: M.Kraska, Electronic economy in Poland, Poznań 2005

The main argument supporting the start of such courses was a lack of logistics courses using distance learning method in Poland. The demand for such knowledge was confirmed by an annual number of over 1,000 students participating in such courses run with traditional methods in the Centre of Logistics Education.

h) European Internet Academy²⁷

The European Internet Academy is the largest eLearning project in Poland so far, prepared by the NGO 'Pro Europa' Society. The project was started in 2005. The aim of the project is to educate children and youth on the Polish process of integration with the European Union. In 2006, some 42,000 students and 12,000 graduates were enrolled in the project.

According to the register conducted by MEN for 2004, there were 9 non-public initiatives supporting eLearning. The list of non-public programs supporting eLearning is presented below (Table 14).

Table 14. List of registered non-public programs supporting eLearning

Nr.	Title of program	Website
1	Intel – learning towards the future	www.intel-nauczanie.pl
2	Interkl@sa – polish educational portal	www.interklasa.pl
3	Internet w Szkolach – Presidential Project	www.prezydent.pl
4	Educational and Development Program of Information Society – Poland-Europe-Polonia („Polska-Europa-Polonia“)	www.waw.org.pl
5	Interszkola	www.interszkola.pl
6	Multimedia in didactics	www.kana.gliwice.pl/siemens-dydaktyka
7	SzkolaNET – School of Creativity	www.szkolanet.pl
8	Linux in schools	www.linux.com.pl/lws
9	Cross-school Internaut Club (Międzyskolny Klub Internautów – M K I)	e-szkola.net

Source: Ministry of National Education (www.men.gov.pl), 2006

The aim of these initiatives is to increase the students' accessibility to computers and Internet as well as raise the students' competence and skills. In particular, one of the important programs to be mentioned is the Interkl@sa Programme.

The Polish Educational Interkl@sa Portal Platform has gained educational and financial support from the Polish American Freedom Foundation and the National Foundation for Computer Literacy (OFEK). In cooperation with the Teachers Training Centre in Łódź, Interkl@sa Programme launched the pilot phase of the Computer Long Distance Training Programme. The program addressed the training assistance to 3 000 teachers (1 500 participants of the Computer for Teacher Programme and 1 500 cooperating with Interkl@sa Portal). Teachers are trained in using ICT tools for teaching and for their own work. The programme contains two phases: the eLearning phase and the face-to face phase.

²⁷ www.akademiaeuropejska.pl

Teacher training was organised near their places of residence (Training for Trainers on eLearning PT/05/B/F/PP-159147).

The main providers of digital literacy services include the Interkl@sa Portal, the ECDL program, the PBI and also computer giants such as Microsoft and Cisco.

The SOS Children's Villages Association aimed at enhancing computer literacy in the Lubelszczyzna region. The main goals are to prevent "computer illiteracy" and minimise its potential consequences. The Association is meant to integrate children and young people living in villages with the local communities.

The IT and eLearning service providers cooperate to build the information society. The Ikonk@ Program, for example, aims at enabling free access to modern technologies such as the Internet and its educational resources. The "Intel® - Teaching Towards the Future" program helps to train teachers. The above-mentioned Community projects contribute to support the eLearning method and the development of the information society.

The Umbrella Project works in cooperation with a private sector company ComputerLand, which uses the project as a tool for exploring the eLearning market. Thus far, training courses have been completed by about 300 people, who have enrolled in the courses on their own initiative. Although the numbers have been fewer than initially expected, the experience gained from the project is positive.

The WebInn Hosting Centre belonging to ComputerLand is a communication and processing platform for distance learning, servers and links, and offers technological guarantees. The availability of professional infrastructure is extremely important because it ensures adequate quality of training. For us, the partnership with the Umbrella Project is a typical pilot undertaking. The experience gathered to-date is very encouraging" (How to Build Open Information Societies). The online eLearning courses have already been completed by hundreds of local self-government authorities, central administration, police, and to a smaller extent business representatives. The purpose of such courses is to share quality management knowledge, demonstrate the benefits of implementing a quality system, consistent with ISO 9000 standards, and to provide a new outlook on work methods and performance within trainees' offices or companies. Implementation of a quality management system in administration means more efficient operating of a public office, better work organisation, improved transparency of adopted procedures, and higher reliability. As a consequence, it also facilitates obtaining and absorbing, for example, the European Union aid funding. Finally, it leads to more effective and user-friendly workplaces.

In regards to specific programs, aimed at specific groups, there are a few initiatives in Poland addressed to the disabled and to the inhabitants of remote areas, supported by the Microsoft Corporation (both financially and technologically). The initiatives include: the Education and Professional Activation Centre for the Disabled. The mathematics and computer science teachers with physical disabilities are provided with free computer courses for the disabled. Such courses prepare them for more efficient competition in the labour market. The Centre also runs "The Internet for the Disabled" portal. The total support (133,860 EUR (PLN 510,000)) obtained for software and learning materials from the Microsoft was used to establish two computer rooms in Warsaw, to improve the instructors' qualifications and to add new services.

Outside higher education there were also several good eLearning practices, e.g. free knowledge portal in economy, created by Polish National Bank (NBP). The NBP (www.nbportal.pl) offers, free of charge, the 4 following eLearning courses: "Economy around us", "Euro is approaching", "Financial analysis" and "Credits". This portal was launched in November 2003, but it has already ranked among the most popular educational portals in Poland.

II.3 The legal framework supporting eLearning

There is no legal base in the area of eLearning in Poland. Only in some legal texts minor and very specific regulations may be found which might have a positive or negative impact on further development of eLearning in Poland.

According to the regulation of the Ministry of National Education on the framework plans of teaching in public schools, the first compulsory information technology lesson starts in the fourth class of the primary school, continues for 3 years in the lower secondary school and for 3 years in the upper secondary school. Each year, for over nine years pupils are taught information technology for 2 hours each week (The regulation of the Ministry of Education and Sport on the framework plans of teaching in public schools of the 12 of February 2002 (Journal of Laws No. 15, item 142).

The Act on Higher Education of 27 July 2005 (Journal of Laws No. 164, text 1365) allows the universities to conduct teaching with methods and techniques of distance learning education. According to the article 9 of this act, the Minister responsible for higher education shall specify by regulation the training in information technology, including its use in the specialisation areas for which students are trained. The Minister promulgated this regulation in 2004 (Journal of Law No. 207, item 2210). These regulations, in force since 1 October 2004, have introduced changes of standards of teacher training, subjects of teacher training, the number of practical training hours as well as the syllabus and skills required (advanced knowledge of a foreign language and using IT). Another important change is also the duty of preparing teachers to teach two subjects at higher vocational study courses. Moreover, all higher education institution shall have a library and information system based on the library. The organisational and operational arrangements of the library and information system in a higher education institution, including the rules on access for persons other than staff, doctoral students or students of the institution, were subjects of the above regulations.

However, there is no regulative framework on how to evaluate the work of e-teachers. For example, teachers still receive their salaries for the number of hours spent in personal contact with students, which does not reflect the specific features of eLearning and the role that teachers have in it. There is no regulation on the legal conditions that must be prevailed in order to use methods and techniques of distance learning. The obligatory qualification requirements and professional advancement is regulated by art. 9 and art. 9a - 9i of The Teachers Charta of 26 January 1982 (Journal of Laws No. 3 item 19).

Poland has significantly improved its legal framework for intellectual property protection. Yet, the level of intellectual property rights (IPR) protection in Poland remains unsatisfactory. The principal problems are insufficient copyright and trademark enforcement.

According to the International Intellectual Property Alliance (IIPA), Poland suffers from high rates of piracy in large amounts. The latter is because, of the weak control of its eastern border and large outdoor markets. In 2002, the level of piracy in Poland amounted to: 43% for sound recordings, 30% for motion pictures, 54% for business software, and 91% for entertainment software. Most pirated materials available - particularly CDs, CD-ROMs and DVDs - are produced in the former Soviet Union and other Eastern European countries.

Poland is a member of the Madrid Agreement on the registration of trademarks and the prevention of false or deceptive indications of source of goods. Since 1991, Poland has also been a member of the Madrid Agreement on international registration of trademarks. A registered trademark is valid for 10 years (and may be renewed) from the date of filing unless it is proved that for five consecutive years the mark has not been used. Poland is also a member of the Stockholm Text of the Paris Convention on the Protection of Industrial Property as well as a signatory to the Patent-Cooperation Treaty (since 1990).

On 22 August, 2001 the new The Industrial Property Law of 30 June 2000 (Journal of Laws from 2001, No 49, item 508) came into force, which replaced four previous items of legislation (Laws on Inventive Activity, Trade Marks, Integrated Circuit Patents and on the Patent Office). The new legislation does not significantly change the regulations applied to industrial and commercial intellectual property rights (United Nations Industrial Development Organization). The Industrial Property Law regulates also the protection of inventions by patents and utility models. Applications are filed with the Polish Patent Office. The patent or protection right of a utility model gives the owner the exclusive right to exploit the invention on the territory of Poland while it is valid. Registered patents are valid for 20 years from the date of filing. The right of protection of a utility model is valid for 10 years. Patents are granted after an examination as to whether an invention is new, involves original research and can be commercialised.

The copyrights in Poland are protected by The Copyright and Related Rights Act of 4 February 1994 (Journal of Laws No. 24, item 83), substantially revised in June 2000. The law meets contemporary international standards and corresponds to the principles of free trade in intellectual property. The scope of copyright protection has been considerably broadened. The new law covers not only the protection of traditionally understood author's rights, but also related rights. The new owners include producers of sound and video recordings, TV, and radio stations as well as artist-performers. The law also provides protection of intellectual property in the area of science, technology and manufacturing (such as computer programs, industrial designs, etc.) The protection mechanism of computer software is similar to that used in the EU countries. The terms during which intellectual property rights are protected was expanded to 70 years after the author's death and, in the case where the copyright belongs to somebody else, to 70 years after its distribution. The law also provides a general compensation if losses incurred by authors, performers, and producers. The latter can be caused by uncontrolled mass reproduction for personal use (at home). The new revised law gives ground for more efficient procedures for enforcing copyright protection. It considerably strengthened copyright protection in Poland. By meeting international standards the intellectual property rights protection creates favourable conditions for foreign investments making use of property rights. Moreover, the law regarding protection against unfair competition protects Polish and foreign companies from such activities as: attempts to convince the public that goods or services originate from someone other than the true producer or supplier.

The Act on Electronic Signature of 18 September 2001 (Journal of Laws No. 130, text 1450) specifies conditions of the use of the electronic signature. The latter includes the legal effects of its use, the principles of provision of certification services and principles of supervision. Certification attestation shall mean an electronic attestation, which links authentication-verification data to a certification-service-provider or an authority referred to in the Article 30, paragraph 1 and confirms the identity of such provider or authority.

Additionally The Law on Protection of Personal Data (LPPD) implemented rules governing the collection and exchange of personal data (Journal of Law, No.133, item 883 and Journal of Law, No. 101 item 926). According to article 40 of LPPD, all administrators of personal data to register such databases with the General Inspector of Personal Data. Consequently individuals have the right to access to their personal data (to correct or delete them). With the implementation of the LPPD Poland has introduced to the internal law the European Directive 95/46 on data protection (Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995).

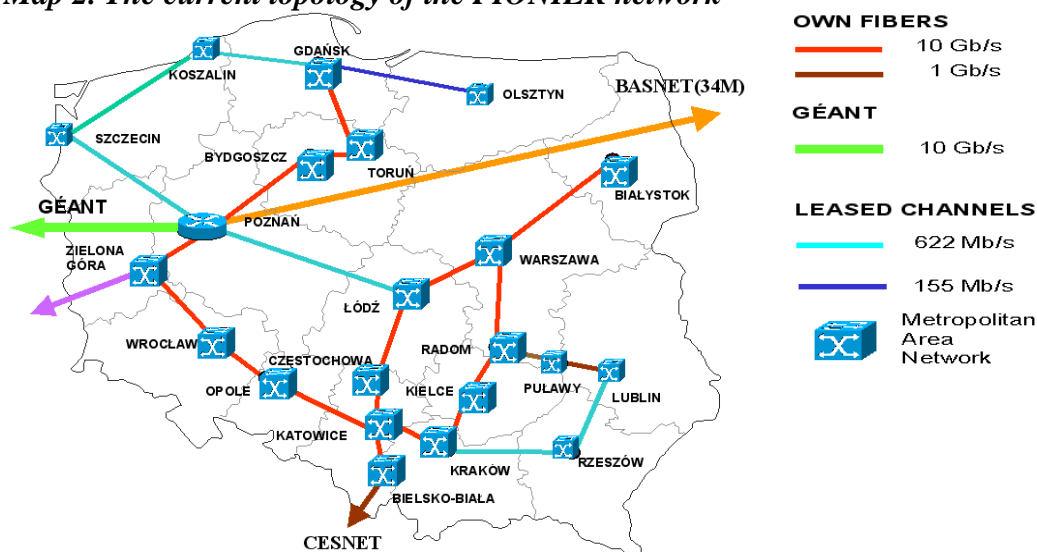
II.4 Dedicated ICT infrastructures and applications

The overview of ICT infrastructure in Poland reveals the following features: insufficient access to computers and the Internet in the Polish society, considerably high cost of the IT services, poorly developed market and slow elementary and high-school computerization process, to be completed in 2007. The situation significantly improved in 2005, where 41% of population declared to have a

personal computer, relative to 24% in 2004.²⁸ Yet, it is still much below the average level for NMS in terms of the number of public locations of Internet access. The low accessibility of the Internet is measured as the number of public locations of Internet access per 1,000 people.

An important element of provision of eLearning services is the ICT infrastructure of academic institutions. The fast Internet for Polish Science (dedicated high speed fibre optic) was built within the **PIONIER project (Polish Optical Internet Network)**. The project aimed to deliver countrywide optical network, connecting all academic and metropolitan networks in the country, and provide scientists with access to advanced network infrastructure (including supercomputers). PIONIER Network covers: 5 high performance computing centres (HPC), 22 metropolitan area networks (MAN), located in main research centres, over 700 academic units, including universities, institutes of Polish Academy of Sciences, hospitals, libraries, industrial R&D institutes and about 3 000 km length (optic fibre). The current topology of the PIONIER network is presented in the graph below (Map 2).

Map 2. The current topology of the PIONIER network



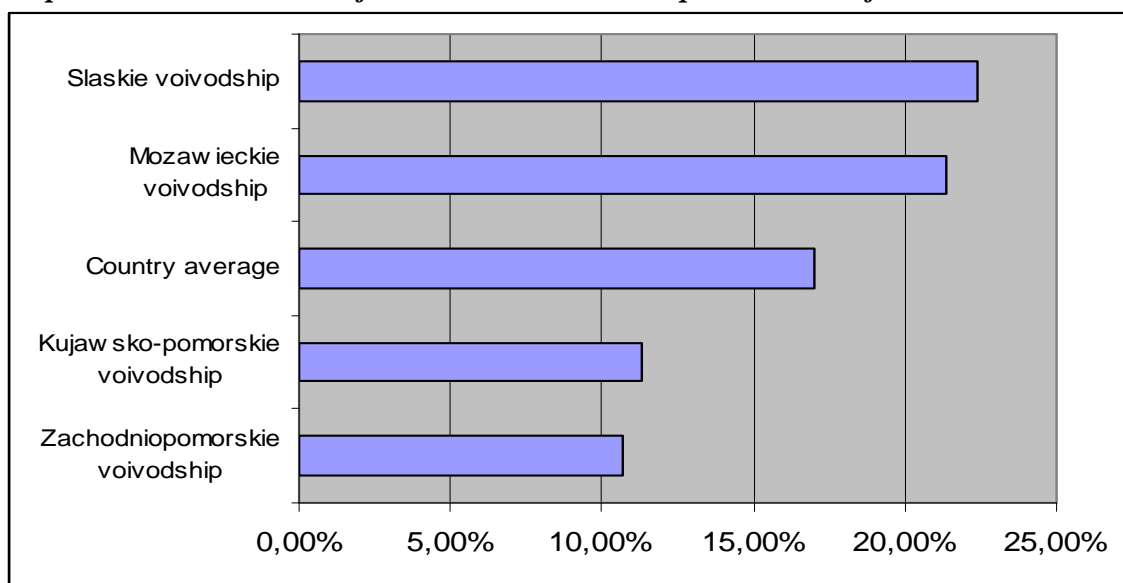
Source: www.pionier.gov.pl

The project has greatly contributed to the development of the ICT infrastructure for science, and the promotion of the idea of the information society in Poland. The Poznań Supercomputing and Networking Centre (PCSS) - www.man.poznan.pl - is the co-ordinator of the PIONIER project. The main providers of the Internet services include: Telekomunikacja Polska S.A., Netia S.A., Energis and cell communications companies (GPRS/EDGE/UMTS). In comparison to other EU member states, the prices of the services offered in Poland are considerably higher.

In general, only one fifth of the households in Poland have Broadband Internet access. In towns with less than 100 000 inhabitants this number amounts to nearly a half, whereas in larger cities, to two thirds (Central Statistical Office, Warsaw 2005). The household access to Internet ranges significantly among regions, e.g. from 10% in Zachodniopomorskie to 23% in Śląskie province (Graph 12). The latter reconfirms that Internet is a possible threat of social exclusion in the less developed regions.

²⁸ www.Money.pl/gospodarka

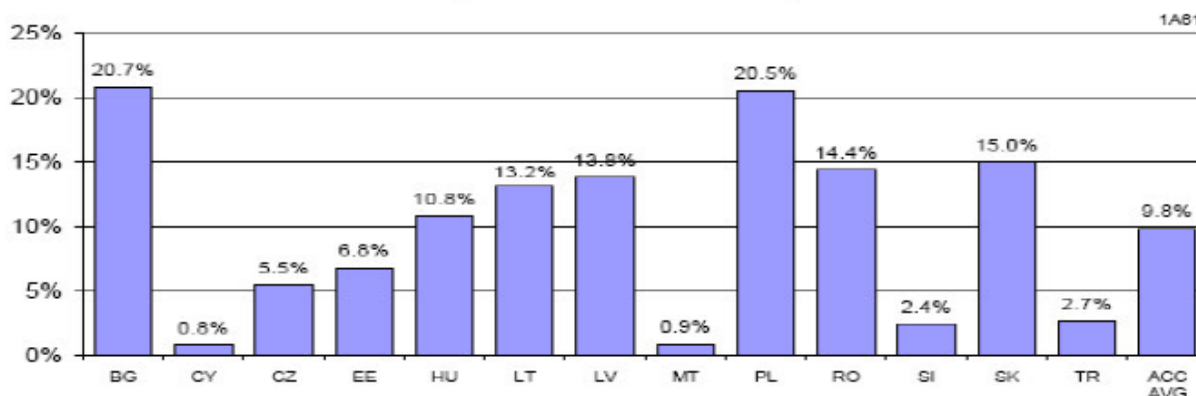
Graph 12. Internet access of households in selected provinces as of 2003 in %



Source: www.kpk.gov.pl/enews/eNews_2003

One of the most important factors impeding ICT skills, among others, was the cost of Internet access. In comparison with other countries, including NMS, Poland has the highest cost of Internet access, measured as % of a monthly salary – 20.5%. Among the EU and associated countries relatively higher cost of the Internet access had only Bulgaria (Graph 13).

Graph 13. The cost of Internet access in NMS as a % of monthly salaries



Source: eEurope+ Telecommunication and NSO Survey, June 2003

The financial barriers were the most frequently mentioned as the barrier of the Internet access and ICT usage in Poland. Some 15% of the questioned population in Poland, indicated that the main barrier is the price of computers, whereas some 9% complained about the expensive Internet connections (Graph 15). The second factor, affecting ICT literacy in Poland, is the lack of necessary skills or basic knowledge of computer utilisation. Some 30% of interviewed Poles declared they did not know how to use a computer, whereas 21% of interviewed did not know what the Internet was (www.stat.gov.pl). In comparison to other countries, including NMS, Poland had the worst results in terms of computer/Internet skills, as of 2003.

Interkl@sa programme provided organisational and technical services to schools. In 1998-2002, nearly 6 000 IT laboratories were established at schools under the programme of the Ministry of National Education, equipped with a total of 75 000 computers. Since September 2000, ICT workrooms have

appeared in almost all lower secondary schools in Poland. By the end of 2001, half of the secondary schools were equipped with ICT workrooms.

According to the Ministry of National Education sources (Internet labs in every lower secondary school and Internet labs in every school, Mediapro Final Report), in 2005 there were 21 Polish students per one computer and 26 students per one computer with Internet access in the Polish general education system. Only 61.93% of Polish schools had computer equipment.

Table 15. Equipping schools with computers in the school year 2003/2004

	Number of computer rooms per school	Number of computer for pupils' use per 100 schools	Number of pupils per 1 computer with the access to the Internet
Primary schools	74	732	43
in the city	90	1,002	57
in the countryside	67	621	32
Junior school	92	1,061	28
in the city	106	1,221	33
in the countryside	80	909	21
Post-junior school	58	956	22

Source: Central Statistical Office, Education and breeding in the school year 2003/2005 (www.stat.gov.pl)

The ratio of the average number of 15-year-old pupils per computer had significantly improved, from 28.5 in 2000 to 21.8 in 2003 (relative numbers in other countries are as follows: 6.6 – Luxemburg, 7.1 – Austria, 13 – the Czech Republic, 33.5 – Slovakia) (Progress Towards the Lisbon, OECD, PISA 2000 – 2003 Eurydice).

According to NIK some 54.6% of total spending on schools' computer laboratories proceeded from the central budget supplies. It covered altogether 255,000 of computers accessible to pupils, including over 193,000 computers with the access to the Internet (75.7%).

In the years 1998 – 2004, within the realised computer supplies for schools - a total number of 9,950 computer laboratories, at the time of control, covering 114,454 computers - half of them were directed to lower secondary schools – 4,994 (50.2%) with 49,164 computers, then to primary schools – 2,583 (26.0%) with 25,830 computers and to post-primary and post-secondary schools.

(Annex I/10). Some of the major impediments to eLearning implementation in schools, are still insufficient access to computers and Internet in the Polish society, considerably high costs of the IT services and the slow progress of the elementary and high-school computerisation processes, which are due to be completed in 2007. Another impediment to eLearning implementation, is lack of computer equipment and Internet access in small regions and rural locations. The most well equipped with computers and Internet access were schools and households in bigger Polish regions (provinces) such as Mazowieckie and Śląskie (Annex I/11).

There are also two important issues, which have to be analysed: the question of open-source products and licensed products. Open-source products (the non-commercial solutions) include: LRN, Moodle, ILIAS, Claroline, Manhattan Virtual Classroom, Fle3 Future Learning Environment, Atutor, TinyLMS, Spaghetti Learning. They are used by the following institutions: the AGH University of Science and Technology, the Gdańsk Technical University, the Maria Curie-Skłodowska University in Lublin, the Warsaw Agricultural University (SGGW), the Gdynia Maritime University, the Adam Mickiewicz University in Poznań, the Łódź University, etc.

Licensed products (the commercial solutions) include: Oracle iLearning, IBM Lotus Learning Management System, Tegrity WebLearner, Saba Learning Enterprise, LMS MyLearning, Learning Environment Online. The detailed description of the non-commercial and commercial solutions is presented in the Annex I/12.

In regard to technological parameters, all available eLearning applications are Internet database applications. However, none of the above mentioned solutions represent the dedicated client application type. The interaction with the e-platform user is conducted with the help of a search engine, which enables access to data, regardless of the user's current location. All the eLearning platforms employ both the commercial and open-source databases, from the Postgre SQLi to Oracle 10i (most of them operate using several sorts of databases). The eLearning technology itself lacks the innovative development solutions – all the technology has been used worldwide for a long time. This results in the stability of the functioning of these platforms.

II.5 eLearning services

There are no official statistics available on eLearning activities at elementary, secondary and higher education levels. The main suppliers of eLearning platforms are higher education institutions, such as universities: Distance Learning Centre at Warsaw University of Technology, Open and Multimedia Education Centre at Warsaw University, Distance Education Study Centre at AGH - University of Science and Technology, Polish Virtual University (PUW) - joint project of the Maria Curie-Skłodowska University in Lublin and the Academy of Humanities and Economics in Łódź, Distance Education Centre at the Gdańsk University of Technology, etc.

The information on eLearning courses is provided within elementary and secondary education by a Polish non-commercial educational portal www.interklasa.pl. The Interkl@saProgram is nation-wide and involves the cooperation of schools, teachers, students, etc. The Interkl@sa has participated in providing schools with computers and the Internet access, organizing teacher trainings and promoting the ICT in education. The portal offers:

- daily and weekly news;
- the eLibrary;
- presentations and lesson plans;
- educational animations;
- the list of links;
- tests, quizzes and educational games;
- information on projects involving international school cooperation;
- free mailboxes, possibilities for participating in discussion groups or chats;
- the Interactive School Map (with over 26,000 Polish schools);
- the Virtual Class – an innovative eLearning tool.

In terms of higher education, main eLearning courses are provided by The AHE (the Academy of Humanities and Economics in Łódź) and the PWU, as well as the Warsaw Technical School with its OKNO project. The latter project was the first one developed by Polish higher education institutions. It offers the undergraduate computer science studies and a few postgraduate programs. The COME established at the Warsaw University, deals with eLearning, providing several postgraduate courses. Among private higher education institutions, the Warsaw-Sased Polish-Japanese Institute of Information Technology offers the online undergraduate computer science studies and the WSB-NLU College in Nowy Sącz – the online master's program in marketing and management. In some cases eLearning complements extramural studies. Such programs were introduced by the Warsaw School of Economics and the Poznań School of Banking.

There is no data on the number of enterprises offering the distance learning courses or training. Among the most popular courses, however, are training on the office programming, system and databases administrators, as well as basic office tools (courses in Word, Excel, PowerPoint, Outlook). In recent years, among very popular courses were preparatory courses for Certificate of European Computer Driving License (ECDL). There are also eLearning courses offered in English (e.g.

WiedzaNet offers the courses in English on the computer systems). Other courses include finances and management, legal affairs, etc. (e.g. offered by companies like Incenti, Oracle, SABA). According to a survey results conducted in 2005 on micro firms (employing not more than 9 people), the Internet was one of the most important sources of training and education (Żołnierski 2005).

In order to achieve a strong position in the field, one needs to constantly renew one's knowledge and skills, and additionally – gain certificates that confirm the acquired qualifications. That is why companies such as Cisco, Microsoft, IBM, Novell, Intel, HP, Raiffeisen Bank, Allianz have worked out the world-renowned online certification programs functioning as a form of workplace training. These who gain the certificates are commonly considered experts at given fields.

About a dozen personnel from the National Police Headquarters took part in training courses run by the Umbrella Project. Police Superintendent Tomasz Szankin of the National Police Headquarters in Warsaw (a participant in a quality management course and a promoter of Internet training in the police). “Why the Internet? The cost of this form of training is not too high and people do not have to interrupt their normal work. This is important, because the budget assigned for the professional improvement of the police is, unfortunately, quite small.”

In spite of the relatively low availability of computers at Polish public offices and low Internet accessibility in Poland, technological shortages were not found to be a big obstacle for office personnel participating in the eLearning courses. In any case, adequate equipment can somehow be made available within a specific unit. A more serious obstacle may be caused by psychological resistance. When organising a training course, one must know how to prepare it so that various technology phobias or unwillingness are overcome by prospective trainees.

A few Polish companies (e.g. YDP Poland) offer very high quality eEducation products and export them. Last year PUW team in the AHE has prepared the eLearning concept and strategy for Mobile Centres of Vocational Information, established by Polish Voluntary Work Corps, which is going to be realised in the coming years. These are all good signs for the future prospects of eLearning in Poland.

Several of the leading training companies are currently starting to offer courses via local Internet service providers. In the near future eLearning and multi-media training are expected to become a critical training medium. A variety of institutions from the European Union countries, Canada and the United States are engaged in training services through distance learning and local satellite programs. They enter the Polish training market through joint ventures or business cooperation contacts with local entities or by establishing foreign-owned enterprises. Location of training companies: Warsaw – 39%, other major cities (Lublin, Łódź, Kraków, Poznań, Wrocław, and Gdańsk) – 40% and the rest of the country – 21% (Central Statistical Office, Warsaw 2005).

Description of nature of eLearning services

eLearning constitutes one of the main tools used for Lifelong Learning models. The key advantage of eLearning is the possibility to form a very broad service offer, its flexibility, the possibility to adapt it to individual needs and its lack of dependence on the particular time and place, which is natural in the case of traditional education. eLearning in Poland, most of all, requires its legitimisation. The Polish Parliament is currently working on two bills concerning the higher education system. The presidential bill – the higher education law – assumes the introduction of regulations related to eLearning as an element of Lifelong Learning. The other bill, submitted by the MPs, does not mention eLearning. Both bills are controversial and widely discussed

Two types of eLearning content can be specified in Poland – one focusing on higher education and the other one – on professional skills. They can be divided as follows:

Several-year-long university or other higher education institution programs culminating in B.A./B.Sc. or M.A./M.Sc. titles as well as postgraduate courses, for example the extramural engineering studies at

the Warsaw Technical University – an entirely Internet-based four-year university program. This content type concerns predominantly economics, foreign language learning, psychology, management and exact sciences.

The second content type concerns improving clients' professional qualifications. It includes:

Short courses aimed at developing specific (frequently professional) knowledge and skills, for instance, the BBC and Interia English language course available on the Web. The course is free of charge and comprises of 117 lessons, and students learn by listening to them in MP3 or Real Audio format and later working with the text and vocabulary online.

Internal large company programs aimed at meeting employees' training needs. The Microsoft Virtual Learning Machine (Microsoft Poland) web cast and workshop system can serve as a good example in this field.

The role of assessment and accreditation techniques in eLearning services

Assessment and accreditation techniques play an important role in eLearning and the whole information society as such. The increasing demand for professional certificates, regarding especially IT specialists, is an important factor for the development of distance learning.

Certificate courses include, for example: MCSP - Microsoft Certified System Professional, MCSD - Microsoft Certified Solution Developer, MCAD - Microsoft Certified Application Developer, CLS - Certified Lotus Specialist R6 Application, Development, PCLP - Principal Certified Lotus Professional (PCLP).

The European Computer Skills Card (ECSC, in Polish EKUK – Europejska Karta Umiejętności Komputerowych) is, in turn, a tool serving for the assessment of its user's computer skills and obtaining the European Computer Driving Licence (ECDL). The ECSC is handed to all the students before passing the first exam and updated when they pass the subsequent tests. After passing all the seven exams, students send their ECSCs to the Polish ECDL Office and obtain the ECDLs.²⁹ A number of exams referring to particular skills, as for 2006, were particularly high in 2 and 3 modules (Annex II Table 34).

The total number of exams held at national level was 190 364 in 2006. The number of exams in a particular city depends on its size measured by its population. The biggest cities like Warsaw, Rzeszów, Lublin, Poznań are the most attractive for ECSCs and the ECDL exams (Annex II, Table 35).

On the basis of the ECDL statistics a general conclusion can be drawn – this certification organization form is one of increasing popularity. They inform of the increasing preparation of local training centres for the introduction of this certification form on a large scale.

II.6 Specific issues and solutions

Universities in Poland are autonomous and can provide and decide on their own curricula and strategies of teacher training. Their programmes of initial teacher training differ, but all take into account the new technologies and ICT skills in their programmes. The local governments together with the head teachers are responsible for in-service teacher training. These services can be divided into two groups: teacher training and language related.

²⁹ The ECDL certifies that its owner can successfully solve basic computer-related problems and do the necessary research concerning: 1. Basic IT knowledge, 2. Computer literacy, 3. Text processing, 4. Spreadsheet-related knowledge, 5. Databases, 6. Management- and presentation-related graphic projects, 7. Services in the IT networks.

Teacher training services - the development of ICT and availability of eLearning services have resulted in changes in teaching practices. This refers to improvement of the technical and didactical skills of teachers. The obligatory qualification requirements and professional advancement is regulated by art. 9 and art. 9a - 9i of the Teachers Charta (The Teachers Charta of 26 January 1982 (Ustawa z dnia 26 stycznia 1982 r. - Karta Nauczyciela), Journal of Laws No. 3 item 19). The position of the teacher in elementary schools, gymnasiums and post gymnasium schools can be occupied by a person who, apart from medical and health requirements, must meet moral principles, must have obtained a higher education degree with necessary pedagogical preparation and possess the additional skills necessary to conduct a teacher's job (including the ICT). Currently, academic teacher training services connected with eLearning platforms are provided by the Polish Virtual University, Microsoft and Intel.

Finally, both teachers and parents must be aware of possible threats to privacy and security in Internet. The educational contribution of Internet however might create a dilemma over its ethics. However, the information delivered via ICT is never verified and neither are their users. The Foundation "Dzieci niczyje" is a social campaign started in February 2004, whose aim is to protect children and youth against sexual abuse and fight the distribution of child pornography. The initiators wanted to address the problem to the general public and educate children, parents and teachers about safety on the net. The action has covered over 15,000 children who have taken courses on safety on the Internet. Over 70,000 copies of promotional material were distributed. A project of similar character was carried out by the "Kidprotect" foundation, within the program *wiedz@ Chroni Dzieci*. The foundation is conducting 20-25 minute workshops in primary schools and lower secondary schools on the threats related to Internet access and how to avoid them.

Language training services – the availability of services in other languages and the impact of the lack of English knowledge on ICT literacy skills. As far as the availability of services in other languages is concerned, eLearning is generally conducted in English, e.g. the Microsoft courses. The higher education institutions offer their services predominantly in Polish. Such a situation results from the initial stage of eLearning development in Poland and the low demand for education in languages other than Polish. The Internet issues of the *Ridna Mova* quarterly as well as the information on the activities of the *Interkl@asa Portal* can serve as examples of eLearning services provided in a minority language, in this case Ukrainian.

ICT-enabled teaching and learning is often seen as an important vehicle for the development of English language competence by teachers and learners. In many countries, where English is not an indigenous or dominant local language science and mathematics, instruction are delivered in English, which raises the important issues related to learner equity, access to education and professional career.

According to the 2001 survey conducted by the CBOS (the Public Opinion Research Center in Poland), foreign language skills divide the Polish citizens into three groups. The largest group of people who have acquired those skills are primary school, high school and higher education institution students (two thirds of them declare having mastered such skills). Over a half of the citizens under 35, two fifths of the citizens at the age of 35-45 and only a quarter of these over 54 claim that they can speak a foreign language.

The command of foreign languages is closely connected with the citizens' level of education, their income and the place of residence. The CBOS survey revealed that 87% of Polish managerial staff claims to have a good command of foreign languages, whereas only 48% of the citizens running their own businesses admit to mastering foreign language skills. More than a half of city and town inhabitants speak foreign languages, whereas in the case of the rural inhabitants – only a third.

The eLearning services in Poland are provided in the Polish language. In some eLearning programs, on the higher education level, some courses are also provided in English. The courses provided in English or other languages are rather elective. The latter is a rather favourable condition for promoting eLearning services in Poland, as 58% of Polish citizens admit that they do not speak any foreign

language. The highest percentage – 23% – declares their command of Russian and 16% claim that they speak English. Polish citizens start learning foreign languages mainly for professional reasons. Around 80% of the Berlitz School students in Poland admit that they started foreign language courses because it was necessary to secure their jobs. In a broader sense, the lack of the command of English still has a significant impact on the ICT skills acquisition in Poland.

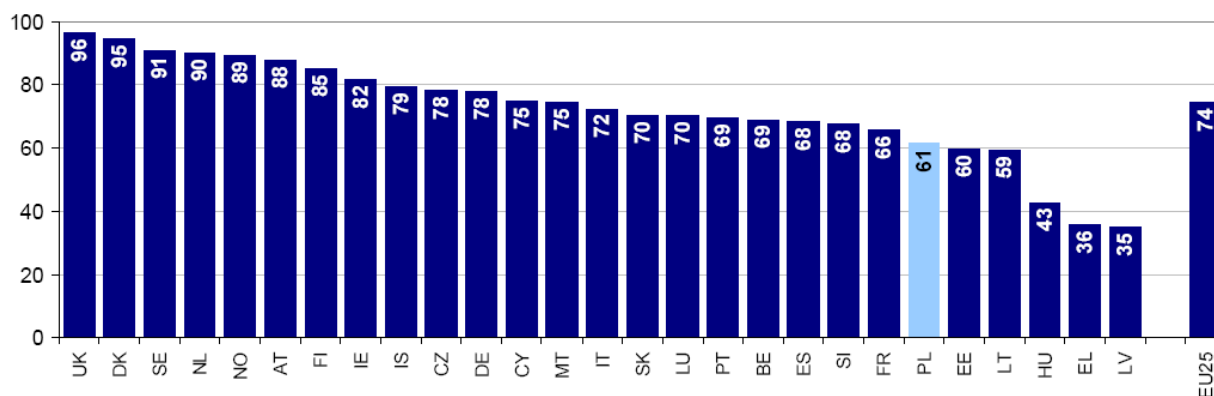
II.7 Acceptance and usage of eLearning services

The survey shows that an increasing number of Polish teachers accept eLearning as a pedagogical tool. Yet, most of them do not accept one particular teaching method and apply the multiple approaches to learning (blended learning), by using a wide range of different material for teaching purposes. The learning material, used most by Polish teachers (85%), includes offline eLearning materials such as CD-ROMs.

The motivation of teachers for ICT use in class is very high in Poland: 92% of Polish teachers saw significant learning benefits for pupils using computers in class and said that pupils were more motivated and attentive when computers and the Internet were used in class. Only 4% didn't see significant learning benefits for pupils when using computers in class.

Teachers working in schools in urban areas are the most intensive ICT users compared to those in rural areas. The usage of eLearning services depended also on the age of the teacher. The older the teachers, the less use they make of computers and the Internet in schools. While 57% of the younger teachers are heavy ICT users in class (in more than 50% of their lessons), for those with more than 20 years the figure was 43%. In general, 61% of teachers used computers in the last 12 months (2006) (Graph 14).

Graph 14. Percentage of teachers who have used computers in class in the last 12 months (2006)



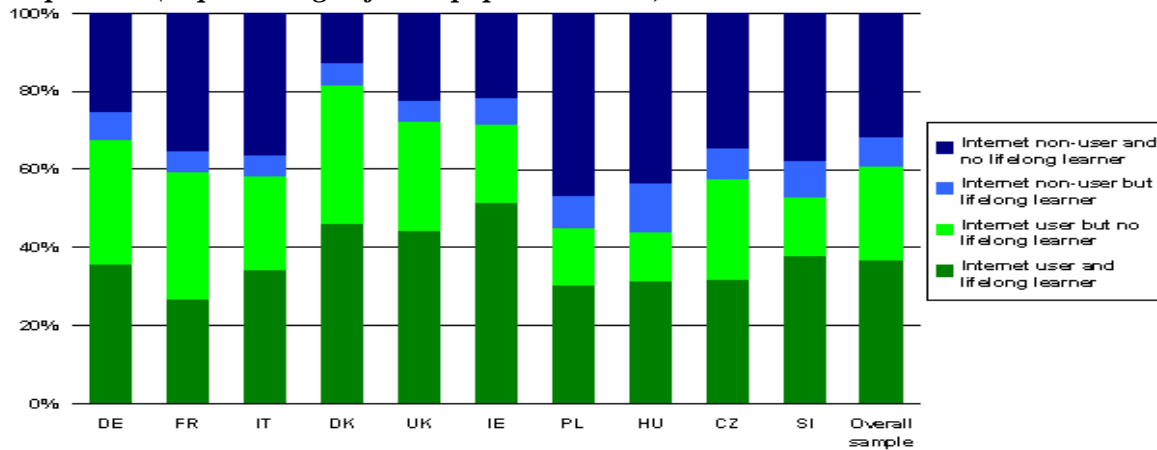
Source: LearnInd CTS 2006

However, the survey reveals that the majority of Polish teachers were still more or less satisfied with the technical access means in their schools. In particular, 78% stated that their school was well equipped with computers and 80% expressed the opinion that their Internet connection was fast enough. About 60% of the teachers wished there were better support and maintenance actions taken.

As far as the services provided to adults and children or teenagers under 18 are concerned, considerable differences can be observed. There are much fewer services aimed at the latter group, they are mainly non-profit and their quality and character is adapted to their target users. The exact data of private spending on eLearning is hard to estimate, though the number of different types of eLearning initiatives and projects is growing in Poland. Almost every public and private educational institution considers some kind of eLearning activities.

The popularity of eLearning, as a supportive tool in the learning process, could be observed in the statistics regarding the lifelong learners and non-learners among on-liners and off-liners. It is hard, however, to estimate the latter impact, though in Poland the number of both Internet non-users and no lifelong users are still dominant in comparison to such data in other EU countries (Graph 15).

Graph 15. Lifelong learners and non-learners amongst on-liners and off-liners - Country comparison (in percentage of total population 18+)



Source: eUsers 2005 (www.euser-eu.org)

There are considerable differences in the structure of the adult population of the ten EU countries, included in the survey according to the simple typology suggested here. Nearly one in two adults in Poland and Hungary belong to the group of offline non-learners. Even in Slovenia, Italy, France and the Czech Republic, this group accounts for more than one third of the adult population.

II.8 Impacts of eLearning developments

eLearning has not played an important role in Poland and it is still at a very early stage of development. There is also no 'official' eLearning definition, nor the official body coordinating eLearning activities. All this makes it hard to examine the impact of eLearning on country or regional levels.

There is a huge disproportion between Poland and average for the EU25 in utilisation of ICT in the process of learning. In order to diminish this gap more and more actions are being taken in order to join the traditional learning and modern technology. Nevertheless, the eLearning projects on the university level are too small and have a supportive role in the process of learning.

The impact effect of eLearning would be notable on the individual level as eLearning creates more favourable conditions for the independent work of students. eLearning also contributes to self-discipline and is a big motivation for learning. Moreover, the lack of direct contact with a teacher, who would examine the progress in learning, makes it harder to estimate the efficiency of this form of learning. One of the advantages of eLearning is the fact that the student may choose the appropriate time for lectures and the duration of the learning process. In times when professional work takes up a lot of time, this way of deepening knowledge seems to be ideal (see detailed comparison of traditional education and eEducation in the Annex I/13). The eLearning method has also contributed to narrowing the gap in technology between Poland and the average level in the EU, as well as enhancing the "catching up" process to more advanced European countries.

Summing up, ICT has emerged as one of the most popular tools used in training activities. The large-sized enterprises were more active in using Internet for training purposes as they were better equipped with the ICTs. Practically every second person in Poland went through a type of computer training course. The best equipped with computers and Internet access were schools and households in bigger

Polish regions (provinces) such as Mazowieckie and Śląskie. Lower Secondary Schools in the latter regions were mostly equipped with computer laboratories. The most important reason for not having access to the Internet was no specific need for Internet use. Main reasons for relatively low levels of eLearning or training service development included the lack of technical facilities (necessary ICT infrastructure), such as an access to the Internet. Institutions developing and implementing eLearning could be divided into those financed from either public sector or private sector. The most common way of cooperation between public administrations, educational institutions implementing eLearning projects and private sector included specific courses, such as workshops, conferences, public locations for broadband access to the Internet. Poland has significant barriers impeding the development of eLearning services, such as: the cost of access to educational literature as well as its quality. The eLearning development is also impeded by the lack of legal and organizational frameworks. Similarly, in case of trade exchange in eLearning products Poland is mostly an importer.

III. ASSESSMENT OF THE STATE AND DEVELOPMENTS OF E-LEARNING

III.1 Current main achievements and shortcomings

Given the general characteristics of eLearning in Poland, it is quite interesting to mention that eLearning hasn't been given the proper definition in the official documents yet. There are attempts to create one, for example the *Wirtualna Edukacja* ('Virtual Education' – the first bimonthly distance education online journal in Poland since October 2000) (Kubiak 2003). The above-mentioned definition of eLearning is very much linked to web-based learning at different levels of education and lifelong learning. However, this definition does not cover some important eLearning approaches as ICT supported classroom education and blended learning. Despite this, Poland has made a substantial progress in development and implementation of the eLearning policies in the last few years: improving ICT infrastructure, rising ICT role in learning and training. The detailed achievements may result from:

Improved ICT infrastructure: Contemporary eLearning policy in Poland has been most successful in creating an infrastructure at the general school level (especially as regards the ratio of computers per students, teachers or principals, and the availability of broadband connection in all schools). Improvement of ICT infrastructure is also notable on both institutional (firms, public administration and schools) and regional (including remote areas) levels, which enabled to increase number of eLearning projects. One particular project, which has contributed to ICT infrastructure development in Poland is the Polish Optical Internet Network (PIONIER project). The aim of the project was to provide Internet for Polish Science (dedicated high speed fibre optic) and build a countrywide optical network, which would connect all academic and metropolitan networks in the country and provide scientists with access to advanced network infrastructure (including supercomputers). The project has greatly contributed to the development of the IT infrastructure for science and promotion of the idea of information society in Poland.

eLearning in National Development Plan 2007-2013: eLearning was mentioned for the first time as a pedagogic tool in the national development strategy document. Even though, the document does not mention any specific priority given to eLearning, some relative information and action promoting eLearning were mentioned in two Operational Programs: „Science, modern technologies and information society” and „Education and competence”. The programs emphasise a need for an improved education system, which corresponds better to market needs, in particular in terms of training the specialist staff (www.npr.gov.pl).

Increasing number of eLearning in university programs: There has been a notable growth in the number of the public and private players involved in provision, control and financing of eLearning services. The most active universities in introducing and implementing eLearning projects include: AGH -University of Science and Technology Distance Education Study Centre, eLearning Institute, Virtual University (PUW) and Academy of Humanities and Economics in Łódź. Their activities include: delivering eLearning courses according to university's needs, preparing and compiling materials adjusted to the nature of lifelong learning and to an open distance education, carrying out analyses of the educational needs and possibilities (lifelong learning and open distance education, market research), initiating, promoting and organising modern forms of education.

Rising ICT role in training: ICT became one of the most popular tools used in training activities, especially among the large-sized enterprises. Also among the households, every second person in Poland went through a type of computer training (2006). Over one third (36%) of the surveyed enterprises used the Internet for training and education (as for January 2004). The rate was the highest for large enterprises, where more than a half (56%) used it for that purpose, while for medium and small enterprises the proportions were 46% and 32%, respectively (Central Statistical Office 2005).

Although there are significant achievements, there have also been some shortcomings. These include:
Lack of coordination mechanisms: Coordination is still missing; therefore the development and popularisation of eLearning have relied upon non-profit organisations, schools and universities, and local initiatives, rather than upon a central policy co-ordination and formulation from the government. As a result, various foundations and consortiums implement their eLearning policies independently. In effect, the government has not played a central role in developing eLearning. In the year 2005/2006, some information on how the program of distance education for computer science and was presented by several universities that had cooperated with one another. There is not, however, any common coordination mechanism for all eLearning projects in the country. Each eLearning project is led by an individual university or a group of universities. For example, in the case of distance studies in Polish Virtual University, there is no information on current projects and a lack of cooperation between particular units dealing with eLearning is evident.

Lack of political support: the lack of proper public campaign and political support for eLearning services has rendered the process of eLearning development much slower than it could have been otherwise. E-Poland strategy by the title and its content is a plan aiming to promote information and knowledge-based society, where the problem of eLearning (similar to other sectors of information society) was barely mentioned. In regards to the impact of the ePoland strategy on reforms in the educational sector, they had rather an administrative character. Reforms do not take into account the need of implementing the ePoland strategy nor do they consider any mechanisms enabling eLearning implementation (e.g. general broadband access to the Internet or effective systems of the electronic signature).

In general, Poland has just started to discover the possibilities of eLearning. There is a lack of an institution, which would take care of the adaptation of realized projects related to promotion and development of eLearning services. This is a reason for the minimal usage of existing best practices in Poland.

Lack of eLearning projects for special groups: The present state of ICT infrastructure in schools for the disabled and those with special needs is considerably worse than the EU average. This problem is also concerns the special technical equipment for institutions of higher education. The current reforms did not consider a wider access to ICT technologies in education of the youth and persons with disabilities. "Sectoral strategy on development of eLearning" mainly focuses on access to the Internet (access/availability and affordability) and there are plans for projects financed through structural funds (European Social Fund). Although the strategy does mention training for persons with disabilities, it does not mention projects focused on the improvement of content in this respect. As far as the services provided to adults and children or teenagers under 18 are concerned, considerable differences can be observed. There are much fewer services aimed at the latter group - they are mainly non-profit and their quality and character is adapted to their target users.

III.2 Factors behind the existing developments

The above mentioned achievements and shortcomings in the field of the Polish eLearning have been influenced by various factors, such as: macro- and microeconomic environment, legal regulations, policies at national, regional and local levels, technological, socio-cultural and ethical factors.

Economic factors

The transition and re-integration with the economies of the EU in May 2004 gave a important boost to the Polish economy. Yet, economic liberalisation and rapid development of ICT have brought many new competitive pressures, both for employers and employees. Businesses have to constantly adapt to new requirements and customer concerns, whereas employees have to adapt to new work relations and organisational forms. The new competitive pressures enforce enterprises to develop their human resources permanently.

One of the main, underlying economic problems of Poland is the stubbornly low employment rate. If the problem is to be solved faster, capital accumulation (including the human capital) is required. Lifelong learning and upgrading of ICT skills are important prerequisites to compete successfully in the labour market.

Legal factors

Poland has not introduced a comprehensive legal framework for eServices, which may support the development of eLearning. Some of these acts, which are not directly linked to the domain, but are important for its use, are: The Law on Protection of Personal Data, The Act on Electronic Signatures and The Act on Higher Education. There are no legal acts, which regulate the eLearning issues.

The Law on Protection of Personal Data (LPPD) is of importance to the eLearning domain, especially for the data administrators of eLearning platforms or of the virtual schools and universities. The law implemented rules governing the collection and exchange of personal data (Journal of Law, No.133, item 883; Journal of Law, No. 101 item 926). According to the article 40 of LPPD all administrators of personal data have to register such databases with the General Inspector of Personal Data. Consequently individuals have the right to access their personal data (to correct or delete them). With the implementation of the LPPD Poland has introduced to the internal law the European Directive 95/46 on data protection (Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995).

In addition, **The Act on Electronic Signatures** from 18 September 2001 is another important act that has had an impact on the development of eLearning applications (Journal of Law, No 130, item 1450). The implementation of the electronic signature allows, on the one hand, a secure way of communicating with eLearning providers and on the other, makes the entrance into agreement easier. The Act differentiates two types of signatures: the electronic signature and the secure electronic signature. The problem of the electronic signature implementation is compounded by various digital signature standards that are offered on the Polish market. The poor adoption of electronic signatures, particularly by ordinary citizens, is one of the major problems faced. One of the main reasons for the lack of adoption of advanced electronic signatures is the high cost of qualified digital certificates.

The main important legal act for eLearning usage in Poland is **The Act on Higher Education** from 27 July 2005 (Journal of Law No. 164, item 1365). According to the article 9 of this act, the Minister responsible for higher education shall specify by regulation the training in information technology, including its use in the specialisation areas for which students are trained. The Minister promulgated this regulation in 2004 (Journal of Law No. 207, item 2210). This regulation, in force since 1 October 2004, have introduced changes of standards of teacher training, subjects of teacher training, the number of practical training hours as well as the syllabus and required skills (advanced knowledge of a foreign language and ICT skills). Another important change is also the duty of preparing teachers to teach two subjects at higher vocational study courses. Moreover, all higher education institutions shall have a library and information system based on the library. The organisational and operational arrangements of the library and information system in a higher education institution, including the rules on access thereto for persons other than staff, doctoral students or students of the institution, were object to of a regulation.

The effect of the integration of Poland with the European Communities is clearly visible with respect to the results of the implementation of the following instruments: directives on electronic signatures, directive on protection of personal data, directive on the re-use of public sector information directive on the protection of privacy in electronic communication and other directives from the telecommunication package and so on. Polish laws implementing these directives contributed to the creation of a harmonized framework for eServices within the EU. Furthermore, one should also mention the positive effects of European strategies in this field such as eEurope action plans or i2010 strategy, which created a useful starting point for a development of national instruments in this area.

Policy factors

Since the political changes in 1989, the general telecom policy has focused on the liberalization of the telecommunications market and the extension and integration of existing regulations. The governmental change in 1997 has led to further liberalization of the telecommunications market, which resulted in the privatization of Telekomunikacja Polska S.A. (TP S.A.) and the restructuring of the Polish Post. As a result, new ICT providers came into the market and thus increased the customer-orientation and competitiveness of ICT market. The increasing number of private ICT market actors is important in the Polish government spending for ICT is one of the lowest within the EU25. Moreover, the different evaluation studies on the policy impact shows that little have been done in terms of improving ICT infrastructure. Broadband penetration in Poland has remained on a low level since the last few years.

There has been little labour and education policy impact on promoting the technical studies (e.g. scholarships, grants, increasing teachers' qualifications) as well as networking between science and business sector to increase the innovativeness of ICT sector, including the ICT applicability in learning processes. Currently, more than 40% of Polish students are pursuing degree courses in the social sciences. Courses in information technology, engineering, or fields relevant to the service sector are less popular, although demand for specialists in those fields is growing (Changes in the labour market situation in Poland).

The low quality of instruction results in difficulty with independent and abstract thinking of young Poles on both primary and university levels (according to results of the Programme for International Student Assessment, PISA). Moreover, **participation of low-skilled Poles aged 25 to 64 years in continuous education or adult-learning courses remains low**. The educational policy measures at better preparation of students for entry into the job market and greater adaptability among workers remains insufficient. The improvement of ICT skills and lifelong learning services provision are expected to contribute to a steady reduction of unemployment, especially among adult people.

Technological factors

Poland also invests in the development and diffusion of ICT through its many technical universities. Poland has many competence and technology ICT centres. Their R&D activity is related to the development of systems and tools for knowledge processing and knowledge transfer as well as the application of IT solutions in biotechnology and medicine (e.g. **Centre of Advanced ICT for Enterprises, Centre for Advanced Information Technologies, AERONET Aviation Valley, Western Pomeranian Centre for Advanced Technology**) (www.fistera.jrc.es/docs/Poland). The Centre for Advanced Information Technologies conducts the coordination and maintenance works of the Polish Optical Internet Network PIONIER, grid computing, and middleware (see II 1.2. and II.4.1.).

Some ICT teaching and research activities are offered by some private institutions such as the **Polish Information Processing (PTI)**, **The Association for Image Processing, Centre for Decision Science and Forecasting**. The main source of private research funds in Poland is the **Foundation for Polish Science**. The biggest among the private institutions is PTI, whose objectives are to support the scientific and technological activities in all areas of ICT and to perfect its effective use in the national economy. The PTI membership includes approximately 1 200 IT specialists. It is active in adult IT education by organizing courses, conferences, lectures, exhibitions, technology shows, and competitions. Additionally, through publishing, the PTI has a record of influencing Polish ICT policies, such as the introduction of computer science as a primary and secondary school subject, in the reviewing of customs tariffs on IT products, in the determination of the strategies for the further development of computer sciences and information technologies in Poland, as well as in the standardization of legislation. The PTI has been a member of the Council of European Professional Information Societies (CEPIS) since 1992 (www.fistera.jrc.es/docs/Poland).

The EU research networks regularly increase network capacity. Core network speeds of 2.5 Gbps are common and Poland already have 2.5 Gbps connections to the GEANT network and is therefore close to the EU on this front.

The number of companies offering the Internet access services in Poland continues to increase. The result of this increased competition is a decrease in the prices for the services. The companies operating on the market offer a wide range of Internet access solutions like modems, ISDN, cable television, radio and satellite lines, local networks, and mobile phones. There are also **many software companies that are co-operating with universities and public institutions in development of the advanced IT solutions** (e.g. PGS Software, AIS.PL, ASTEC, Computer Associates, ComputerLand SA, DRQ Sp z o.o., Logotec Engineering, Softbank, Prokom Software, Intelitech, Infoservice, Optimus, MKS, Young Digital Poland, Vulcan Media, SoftwareDevelopment.pl, SuperMemo World, Nahlik Soft, Creamsoft, Comarch, e-Pro, Future Processing, etc.).

According to the latest report from the Polish Market Review, the Polish data transmission services and the Internet access market will grow at a rate of 11% a year between 2005-2008 ("The telecommunications market in Poland 2005-2008", Polish Market Review Publication, December 2005). At the same time the rate of growth in broadband services will be almost threefold higher. The value of the Polish telecommunication services market will rise from about EUR 787.40 million (PLN 3 billion) in 2004 to EUR 1.15 billion (PLN 4.4 billion) by the end of 2008. Between 2005 and 2008 this market will grow at a rate of 27% a year, achieving a value of about EUR 603.67 million (PLN 2.3 billion) at the end of the period. The rise in the value of the Polish broadband services market will result in a rise in the number of Internet users with fast connections. The PMR expects the number of broadband subscribers in 2005-2008 to increase fourfold in Poland from 1.26 million at the end of 2004 to about 5 million at the end of 2008.

The penetration of the mobile telephony in Poland at the end of 2006 rose to 83%, and the Internet to about 34%. The mobile telecommunication is expected to remain the most competitive and fastest growing segment of telecommunications services. Moreover, it will be possible in the future to install software for identification of people and license plates, and further collecting and processing such databases. In addition, operators have delivered an innovative system of bandwidth allocation where, after 4pm, unused network resources are automatically rerouted to e.g. Internet clubs operating at schools. Due to separating the network from public resources, the risk of breaking into the system is minimized and the transmitted data are well protected against any unauthorized access. Alcatel and Netia announced that they have signed a cooperation agreement for the construction of a broadband wireless access network in Lublin, one of the largest cities in Southeast Poland, based on the WiMAX technology.

Socio-cultural factors

One of the factors impeding the development of eLearning in Poland is **the lack of knowledge of digital skills**, especially among elderly people. The reluctance to develop computer skills can be observed among the most elderly people, living in rural areas, with secondary and primary education, describing their economic situation as bad or average. ELearning is certainly one of the measures for digital integration of regional, local and global society.

Moreover, eLearning can promote social integration and inclusion. Thus, it is opening access to learning for people with special needs and those living in difficult circumstances (marginalised groups, migrants, single parents, etc.) (eEurope 2005). The digital skills also foster the development of a new form of social and cultural skills. It should be noticed that access to ICT is becoming more and more affordable for the general public in Poland.

Furthermore, there is a **large regional divide in ICT penetration in Poland**. Eastern and central southern Poland substantially lags behind the other parts of the country. The large divide in **ICT penetration mostly reflects the urban-rural divide**: most urbanized regions report higher penetration rates and vice versa. The biggest opportunity to close the digital divide will be the EU

structural funds, which will mostly be available to the poorest, rural regions of Poland where they will probably make a big impact (Piatkowski, 2004).

According to the survey of the Central Statistical Office, the ratio of people, who have at some point participated in **IT training increased by 10% in regards to 2004 and amounted to 31% in 2006** (Central Statistical Office, 2006) . It means that **there were 3 million citizens who levelled up their IT skills**. For the educational purposes the Internet was used by one fifth of the surveyed companies. Unsurprisingly, the highest level of the usage of ICT for upgrading skills was noted in the IT sector.

As the Polish experience shows the rapid growth of female digital skills (especially teachers) have contributed significantly to the increase of the Polish digital integration. A number of non-governmental organizations have been active in both women's issues and information technology programs in Poland: The Stefan Batory Foundation, Kobiety Online, the Network of East-West Women's NEWW Online, Women's Rights Centre, OSKA, EFKA.

The motivation to acquire digital skills develops only when the learner recognises a personal use in their acquisition. Thus, measures to promote digital integration must communicate more clearly the advantages of digital literacy on both personal and professional levels. **The increasing level of ICT competence and motivation to use ICT seem to have an important role in developing eLearning services in Poland.** Only a very low percentage (1-3%) of the teachers not using ICT were not convinced of any benefits of using computers (EMPIRICA 2006).

Demographical factors

The ageing population makes the productivity challenge more urgent. Europe is caught in a demographic squeeze of declining birth rates and rising life expectancies (Creating an Innovative Europe). This will increase the share of older people in total number of working population and competition on the present and future labour market among this age group. The decrease of labour activities will be particularly noticeable in the group of population aged 15-64. The forecasts indicate that average age in the population between the age of 15 and 64 will increase between 2004 and 2013 by two years – from 37.7 to 39.7.

In this situation, there will have to be more professional training courses and postgraduate programs designed for this age group. This **update of skills is a self-going process in the case of the young population. For the older group of the population eLearning might become particularly significant.** Such a situation opens up the field for the development of eLearning, which is a unique way to both upgrade the skills and increase the work flexibility of elderly people. This is why it is important for the eLearning projects to be related to changes in social structure and demographic composition. Although the role of eLearning as a pedagogical tool has been recognized in the previous strategic documents, not much has been gained in this area in Poland.

Old age often implies less active engagement in different societal areas, such as the field of ICT. The digital divide therefore holds an age-related division with senior citizens being in the group of “non-adopters”. The reasons are on the one hand, biological, psychological, social and economic. Therefore for this social group **eLearning can be both a means of learning new technologies and retaining their personal flexibility and professional upgrading. Adoption of ICT** (www.ingentaconnect.com). The major part of unemployed people consists of elderly people, particularly in the rural areas. This is why it is important for the eLearning projects to be related to local changes in social structure and demographic composition.

Internal mobility in Poland is low, whereas emigration movements abroad (especially to other EU countries) have been increasing significantly in the last years. **Low internal mobility and high external mobility have a positive impact on the development of the information society and eLearning.** The latter relates to the need of the emigrant population to discover new ways to stay in touch with their families and friends. The former can be an important tool of learning and professional development for those, who live in less advantaged regions

Regional factors

The last twenty years showed significant migration movements from rural to urban areas, especially by young and adult working age people. The reasons behind that is better access to educational institutions and the labour market. **ELearning allows the professional development without changing ones place of residence. The poor ICT infrastructure in terms of broadband and relatively low level of eLearning program promotion in rural areas also affected significant regional disparities in eLearning service provision.** A number of computer laboratories financed from central budget were established in particular regions (provinces) according to the number of schools in a particular region. As a result, the number of schools with computer laboratories grew proportionally.

However, due to the problems related to the lack of a proportionate division of students per computer mentioned in the previous chapter, the average number of students working in one laboratory varied in particular regions. The number of pupils in primary schools per one computer for didactical reasons in 2003/2004 ranged from 23 in Opolskie and Podkarpackie provinces to 30 of pupils in Lubuskie province and Zachodnie. In the case of lower secondary schools these indicators range from 21 pupils in Podkarpackie province to 30 pupils in Warmińsko – Mazurskie province (Supreme Chamber of Control).

Ethical factors

Ethical factors of eLearning have not been considered to be an important issue by either the Polish government or most eLearning product providers and the transfer of values. Ethical factors can be related to eLearning in at least two aspects: confidentiality of information and the transfer of values.

Taking into consideration the Recommendation of the Council of Ministers of the Council of Europe No. R/2000/10, the Civil Service Code of Ethics was introduced in October 2002. The Article 4 of the Code says: he/she shall respect the citizen's right to information, while preserving the confidentiality of information protected by law. It should be noted that **the right to information, also guaranteed in the Constitution of Poland, is at the basis of deployment of public services and its electronic version.**

One of the factors that affect the impact of an online classroom is transfer of values, particularly ethical and moral ones assisting to the process of learning. Both students and instructors come to the classroom with a certain number of values and ideas. In the case of the traditional method of teaching these values result from close observation and contact between students and instructors. Whereas in online studying, the shaping of students' attitudes is based rather on an outcome of the students' work. In both methods of studying, an abasement of the teacher's or student's authority could take place: publishing students' work as their own, using others' ideas as the own or breaching the confidentiality of data supplied by students. According the Polish lecturers' opinion (see List of interviewees in Annex) **virtual contact give a greater incentive to such abasement, as teacher do not have a chance to observe students better and get to know their abilities.**

In most of the Polish private and public universities a number of software programs have been released to identify plagiarism (turning in another person's work as one's own, copying other's ideas or words without giving due credit, not putting quotations in quotation marks, giving incorrect information about the source of a quotation, paraphrasing closely). These programs identify points of similarity in the selected texts. In response to plagiarism, the interviewed Polish instructors (see List of interviewees in Annex) used **different writing assignments discouraging from potential plagiarism, e.g. individual approach in topic selection, organizing brainstorming or writing of a paper based on individual research.**

III.3. Incentives and barriers in future eLearning in Poland

The major incentives result from relatively good macroeconomic performance of Polish economy, such as favourable investment. Poland is considered one of the fastest growing economies among the European countries, and ICT is one of the most crucial sectors of the Polish economy. **ICT services are also considered the most profitable sector, growing annually by 15%.**

According to the macroeconomic forecasts, especially for 2007-2009, there will be a strong growth of IT and tele-informatic market (data processing). This growth might be two times bigger than the average GDP growth (which took place already in the last decade of Polish IT market), (EITO 2004 and Teleinfo 500/2003). This would mean three times higher growth up to 2013 of total values of ICT. Considering the approximate, even a slightly more flattering dynamic of PC computer sales means almost three times higher growth of volume in 2013 in comparison to 2003. The latter might be a driver for the future growth of eLearning services and products, provided that eLearning becomes one of the government's priorities.

A very important **fiscal incentive for the ICT usage in Poland** is a 'new tax incentive' (Act of the Personal Income Tax from 18 November 2004 art. 6 a, Journal of Law No. 263, item 2619). The Act states that from each broadband subscription (even mobile phone broadband e.g. UMTS/EDGE) a tax payer may deduct EUR 200 (PLN 760) of his income starting from the year 2005. This incentive, next to the price reduction of the broadband access, has affected the growth rate of new broadband subscribers in Poland. According to the newest report The Polish Market of the broadband access in Poland in the years 2002-2006 (Polski rynek stałego dostępu do sieci Internet w Polsce w latach 2002-2006) of the Office of Electronic Communication between October 2005 and 2006 there was an increase by 172% from 633,798 (total Internet lines 1,374,931) to 1,727,753 (total Internet lines 2,225,085). The report informs also, that only 3.9% of all telephone lines available in the country can be used for broadband connection.

Other important incentives include the positive ICT trends such as **raising significance of ICT in increasing of training for public institutions and companies** as well as the role of eLearning as a means of professional training in companies. The **Polish government has demonstrated a commitment to expanding Internet access and IT training.** As a part of the Ministry of National Education's National Strategy of Education in the Information Society, a number of pilot programs have been initiated to bring Internet access to schools and technology training to teachers in partnership with the European Union, private sector and NGOs (see Non-Government Gender and IT NGO Activities). These include: the Web for Schools in Europe Project, Internet Classroom in Each Commune Project, Internet Classroom in each High School Project, and INTERKL@SA.

According to The Polish Supreme Chamber of Control (NIK), there were several positive trends in MEN activities in improving ICT teachers' skills and their utilisation for learning process. Between 1998 and 2002, the Ministry organized some 19 postgraduate studies with IT specialization for teachers financed by public research grants.

However, as discussed above, Poland's Internet access is one of the most expensive in Central and Eastern Europe, which impedes the use of IT by individuals. This is a barrier to the use of Internet for education (Annex I/14). Affordability of broadband Internet access is still an obstacle to eLearning. This is largely due to too high prices maintained by the national telephone operator, Telekomunikacja Polska. France Telecom purchased 35% of TP S.A. in July of 2000 and negotiations are underway for FT to purchase more. Such a situation leads to a digital divide between those who benefit from the access to computers and Internet and those who do not (e.g. poor, elderly, and less educated people).

There is also insufficient awareness regarding the benefits of ICTs and therefore motivation to use ICTs in learning and training processes (Annex I/15). The results of surveys conducted in schools by NIK revealed **the shortage of qualified teachers in almost every fifth school.** Some small rural schools often have teachers who teach multiple subjects and do not demonstrate subject matter

expertise in a particular one. In such schools eLearning can be a better method of teaching separate subjects. The teachers' didactic skills for designing learning with ICT tools were in most cases inadequate to conduct eLearning or blended learning courses, despite the fact that 46.2% of teachers were participating in the traineeship courses of computer science. Some teachers lack professional knowledge in the difference between the distance and conventional education methods.

The lack of qualified personnel of teachers also affects teachers conducting the computer courses, which is what appeared on average in 20.7% of the schools superintended by NIK. Moreover, in most of the inspected schools irregularities have been observed in using computer programs. In 17 out of 33 schools (51.5%) the usage of computer software was proceeding without required licences. Besides that, in 24 schools (72.7%) anti virus protection was not assured.

Another difficulty results from the insufficient penetration of school superintendent's offices and the **school's shortages in computer specialists and computer laboratories supervisors**. Moreover, in schools inspected by NIK computer laboratories were used mostly for the purpose of teaching computer science. In addition, **technological progress put a challenge of quick adjustment to new IT solutions and computer models**. Computers purchased by schools refer mostly to the years 1998-2000. Additional restrictions on computer utilisation for didactical process result from the lack of the portable computers in schools.

Table 16. List of major incentives and barriers in eLearning

Major incentives to eLearning	Major barriers in eLearning
<ul style="list-style-type: none"> - favourable investment and macroeconomic climate; - significance of ICT sector in GDP growth; - expanding broadband Internet access; - IT training for public institutions and companies; - development of the teachers' and instructors' digital skills; - eLearning as a mean of professional training in companies; - active participation of women in digital integration. 	<ul style="list-style-type: none"> - cost of technologies and Internet access; - lack of ICT infrastructure in rural areas; - high cost of Internet access and insufficient funding - lack of skills and motivation (awareness regarding the benefits of ICTs); - language barriers; - institutional barriers; - lack of policy and regulatory constraint; - lack of quality standards for eLearning projects. - lack of financial incentives such as credits and tax reductions for eLearning; - lack of interest groups from IT sector promoting eServices; - lack of the proper promotion and support for eSignature; - lack of local capacities (such as village information centres) for access and use of ICTs; lack of legal solutions enabling existing eLearning services.

Source: own evaluation.

There is a lack of required qualified human resources, skills and competence, and a lack of motivation to use various ICT tools more actively. The attitude towards using Internet for teaching purposes depended also on the age of users. The older the user is, the less use they make use of computers and the Internet in schools. The latter results in a relatively low demand for eLearning services in Poland because of the low penetration of the Internet in society (especially broadband Internet) and a lack of skills in using multimedia and Internet applications. The current demand, which exists, is created mainly by young people.

The situation of ICT infrastructure is still insufficient in rural areas. ICT usage is more popular in urban centres with greater income and level of education. The survey confirms that Internet

penetration is 100% lower in the case of rural areas. This creates a “natural barrier” in the development and taking advantage of eLearning for the less developed regions. The latter may lead to further polarisation and escalation of human resources in less advantageous regions (by study and job migrations to metropolitan areas).

While Poland has significantly improved its legal framework for intellectual property protection, the level of IPR protection in Poland remains unsatisfactory. The principal problems are insufficient copyright and trademark enforcement.

To sum up, the stable economic growth of the Polish economy during the last decade has created a solid basis for the expansion of e-services by both the business and public sectors. Nevertheless, the development of eLearning projects is relatively slow in Poland.

The detailed analysis of the barriers impeding the eLearning implementation in Poland enables to distinguish at least four groups of barriers. The first group of barriers is related to financial problems of eLearning, second is related to technical infrastructure of eLearning, third group of barriers include organizational and legal problems and finally, the fourth group of barriers is connected with educational and ICT skills. In terms of major incentives to eLearning it is important to mention: the favorable macroeconomic climate, increasing broadband Internet access and improving digital skills, especially among the female population.

IV. AN ANALYSIS OF POLICY OPTIONS

IV.1 The most important policy objectives in Poland

Institutional legal and regulatory

The ePoland strategy - The strategy on the Development of the Information Society in Poland has a conception character. It does not introduce a long-term vision of eServices in Poland nor does it have a financial plan for its projects. Moreover, the ePoland strategy does not have its operating unit, which make competence of Ministers still often cross.

Therefore, it is important to first introduce one eLearning strategy, Lifelong Learning or general educational curricula strategy, which would place a strong emphasis on ICT usage in the process of learning. Such eLearning strategy would enhance other educational institutions to apply modern ICT teaching approach and promote lifelong learning. The Strategy should have also a significant political, financial and legal support, to become an important document and assure the continuity of eLearning processes.

Secondly, the establishment of the operating centre would effectively administer the e-development of the country. Such a centre should cooperate with partners from local governments, local R&D units and academia as well as organizations representing the sector of ICT firms. The latter co-operation will shape the social dimension of e-development. The centre would also contribute to the spread of information on existing project and diffuse the “best practices”.

Coordination, financing and managing of eLearning projects

Poland only started to discover possibilities of eLearning, there is a lack of institutions which would take care of adapting the realized projects related to promotion and development of eLearning services. Even though opinions of eLearning users are divided amongst those who believe there should not be established any rules supporting the development of eLearning and those who would like to introduce the central co-ordination of implemented projects, the coordination may enable the application process for financial aid of educational projects from funds PHARE or other resources of EU. The coordinator could be also responsible for information and training in eLearning on how to apply for these funds. These projects must be coordinated and have a clear method of financing them. The big potential for eLearning development and diffusion is opening structural funds. The Operational Program Human Capital allows the establishment of a wide platform of professional eLearning trainings.

This coordination mechanism will share the responsibilities related to the absorption of financial aid from the European Union Structural Funds for the years 2007-2013. The implementation of Structural funds is a both an opportunity to solve the above problems and a major challenge for Poland, due to the still limited experience in managing large and complex Structural Fund programmes. Nevertheless, there must be a strong co-operation between government institutions and educational institutions.

The standards of eLearning organization process and methodology must be a result of the common works of the academic environment, governmental institutions and the best available practices. It is also important to adjust the eLearning projects to the framework of Regional Operational Programs for the years 2007-2013 for the particular provinces. The latter will assure the financial means for eLearning projects for the years 2007-2013.

The implementation of Structural funds is both an opportunity to solve the above problems and a major challenge for Poland, due to the still limited experience in managing large and complex Structural Fund programmes.

ICT infrastructure and broadband access

As it was previously stressed Poland has one of the lowest levels of broadband penetration rate, far below the average number of pupils per computer and computer with Internet access in EU. Much more effort should be made to change these unfavourable statistics. In addition, the process of eLearning requires increasing investments into specific programs, IT equipment such as cameras, without which the courses provided by eLearning cannot be conducted. There should be a special program established for providing public points of access to the Internet and digital libraries in particularly in certain regions of Poland.

The reasons for slowing down the eLearning services diffusion in Poland is also a lack of initiatives and projects for promoting ICTs. It is important to promote the access and use of ICT in the learning processes through local information centres and digital libraries. This will contribute to the development of eLearning services and increase the number of potential users. The interviewed experts' opinions show that large group of citizens did not take advantage of the Internet because they felt they did not have such a need. Promoting ICTs in local communities, especially in the rural areas will contribute to increasing awareness regarding the benefits of ICTs. Finally, the promotion and improvement of ICT skills and lifelong learning contribute to a steady reduction of unemployment in rural areas, especially among adult people.

Computerisation and ICT usage in schools

The computerisation and ICT usage in schools must become one of the policy priorities in the Polish educational system. To date, there have been no priorities in regard to eLearning on the Ministerial level. The computerization of schools would require further development of the essential ICT skills of both pupils and teachers, which would provide them with support in the learning process and the enable teachers to have the competence to enhance pupils' learning with the use of ICT. Nevertheless, it is still hard to give evidence on how ICT skills are used by pupils (e.g. Internet might be used for less educative purposes). Low-achieving students with limited exposure to high quality teachers and modern computing devices are clearly less likely to benefit from them. In terms of teacher participation in ICT education and training there should have both "bottom up" and "top down" motivation system approach, such as professional upgrading, financial incentives, compulsory training or acknowledgement of the importance of ICT. The experience of the Polish universities shows that training teachers in eLearning projects based solely on a voluntary participation principle did not bring any significant results. The teachers, usually of the older generation, are not aware of the advantages of ICT and therefore are the most reluctant to changes towards greater use of ICT in didactical and academic work. The training of teachers and pupils is strongly related to further reforms in the school management and overall future vision of work in school. Moreover, it is important to promote international mobility of students thanks to the availability of international eLearning platforms.

The distance education may also contribute to developing open attitudes of society, increase the level of knowledge and competence as well as steadily create active professional eLearning communities (communities of praxis). In order to ensure the right functioning of the processes of virtual communication and collaborative learning practices, other issues more related to cultural aspects should be taken into consideration. As such, European integration among learning systems, although encouraged and supported by ICT tools, cannot be realized without a great awareness of the value that can be created through knowledge sharing and through collaborative learning among different countries.

Competence and skills of university staff

New technologies and the Internet permit for the discovery of new educational possibilities, to make the learning process attractive and individualize it. Distance education will require accepting technological consciousness, interactivity, pragmatism and quick adaptation to the new circumstances, which were not included in educational program.

Therefore, it is important to not only train teachers of ICT on related skills and eLearning platforms but also on the advantages of eLearning in the learning process of a student. It is also important to provide teachers with the latest developments in eLearning. ELearning techniques make teachers more flexible and may lead to the better communication between students and teachers. The teacher does not have to be at school; instead he will be online. Finally, teachers may choose among greater methods of teaching: traditional face-to-face, eLearning or blended learning. Besides teacher training, concrete guidelines must also be given on how to incorporate eLearning materials in the subjects.

It is important to convince academic institutions to promote new methods of the administration works. At present they are only observers of this information society phenomenon. It is necessary to create such system of functioning of universities, so that they would be interested in creating and promoting modern solutions. It would be worth implementing such international solutions as: a tenure for professors, the admission of candidates for a PhD degree only with the professional experience and on regular posts outside universities, public research grants supporting innovative projects on eLearning, using mass media and education institutions for promoting eLearning, strengthening lobbying activities of IT companies inducing local administration to invest in infrastructure and implementation of IT tools.

National and international “best practices”

Poland due to its delay has a chance to learn from somebody else’s experience. Some countries of the EU15 and the United States have a lot of experience in eLearning program implementations, which could be used as reference by Poland. Danish, German and French experience regarding the standardization of eLearning processes in particular. The diffusion, however, of some of the innovative solutions in eLearning promotion and development is not always possible because of the different legal, organizational, technological and cultural environment in different countries.

At present, the applicable experience from other countries is possible rather on the level of creating programming documents, but not in their implementation. The latter is explained both by the lack of access to compactable databases of standard projects, as well as from irrational unwillingness to diffuse “best practices”. It is important to promote the knowledge of existing EU ‘best practices, especially in the area of networking between the academic and business sectors in adopting best ICT solutions related to eLearning. Some interesting solutions already exist in Estonia. In Estonia there is an early development of children’s technological consciousness and basic ICT tools on the level of primary school.

The diagram below presents the suggested proactive attitudes of government in order to achieve progress with this Information Society service area and eLearning in particular. The most important areas of policy challenges are the following: technological, legal and administrative, political, economic as well as innovative culture and best practices.

IV.2. Suggested policy measures

The policy measures that should be accomplished by all levels of the general government to meet the technical, social, economic, security and institutional challenges for the development of the eLearning:

Technological	<ul style="list-style-type: none"> - to facilitate transfer and implementation of the latest IT solution and projects to e-learning programs, - to systematically evaluate the effectiveness of the current e-learning projects versus the students' needs, - to create the IT compatibility frameworks in the eLearning programs, - introduce new programs with innovative teaching methods using IT tools
Legal and administrative	<ul style="list-style-type: none"> - to unify and simplify the laws regulating eLearning procedures - establish one coordinating institution for all eLearning programs - to introduce unified standards for electronic documents - to build legal basis for acceptance of certificates and diplomas offered by eLearning institutions
Political	<ul style="list-style-type: none"> - to promote a national debate on the vision of the future system of education with possible use of ICT in eLearning programs - to work out one strategy for all e-services and their standards - to draw the deadline for the implementation of the future eLearning projects and assure their financial support - to conduct the political pressure in the further development of ICT infrastructure (especially in the rural areas) - to adjust the e-learning projects to the needs of local government, labour market and companies
Economic	<ul style="list-style-type: none"> - to consider the current financial means on education for e-learning - to establish the mechanism of efficient management and evaluation of the use of the EU Structural Funds for 2007-2013 for e-learning projects
Innovation culture and best practices	<ul style="list-style-type: none"> - to apply the best practices and use the experience of other EU countries in regard to eLearning promotion and eSkills development - to use the professional advice of national and international IT companies on building and implementing of IT tools in e-learning process.

Source: own evaluation.

Promoting the information society in Poland

Distance education may also contribute to developing open attitudes of society, increase the level of knowledge and competence as well as steadily create active professional eLearning communities (communities of praxis). In order to ensure the right functioning of the processes of virtual communication and collaborative learning practices other issues more related to cultural aspects should be taken into consideration. As such, European integration among learning systems, although encouraged and supported by ICT tools, cannot be realized without a great awareness of the value that can be created through knowledge sharing and through collaborative learning among different countries. In order to explore the existing IT potential for the development of eLearning services it is important to shape the social awareness of importance of ICT skills and open source solutions.

In the education policy it is important to promote the IT tools by school programs among children, which usually help their families and parents (Finland and the United States can serve as an example).

Summing up, the policy options at local, regional and national levels should consider the above-mentioned incentives and barriers of eLearning development in Poland. Consequently the suggested list of policy options include not only further development of ICT infrastructure and technological advancement, but also investments into upgrading the teachers and pupils IT skills, promoting eLearning and lifelong learning among the adults as well as diffusing the knowledge about existing eLearning practices. Moreover, the success and popularization of eLearning as a pedagogical tool will depend on the establishment of the policy priority, coordination mechanism and financial plan for eLearning.

V. MAJOR R&D CHALLENGES FOR E-LEARNING

V.1. Major technical R&D challenges

eLearning is central to update individual knowledge and skills, to produce and diffuse knowledge as well as promote of the lifelong learning practices. It is especially important to Poland, whose prosperity is increasingly dependent on technological advancement, continuous renewal of human capital and the rapid exchange of information.

There are at least four groups of R&D challenges specific to eLearning, which must be mentioned here: 1. organisational and management solutions, 2. efficiency and accessibility, 3. didactical readiness, 4. human competence and personal awareness.

Poland is at the early stage of development of the eLearning services. It is important at this stage to conduct the **R&D aiming to reveal the most efficient organization and management mechanisms of eLearning**. The latter mechanism should include both macro (national system of education) and micro levels (university and company's level).

Some important technical R&D challenges related to the **organization and management mechanisms of eLearning** are presented below:

- to ensure the level of management of distance learning systems in accordance to the world level of education and technological development;
- systematize the cooperation in the creation and diffusion of educational contexts (including best practices exchange) at different organizational and administration levels;
- to adjust the eLearning programs to constantly the changing needs of users, especially in offering when professional training courses;
- to create an information platform for professional training and Internet studies, professional opportunities, threats and gains;
- to build up proper information systems (data basis, knowledge basis and Internet portal as well as applications supporting the "eExam", "eBooks");
- to aggregate and distribute electronically educational context to all levels of education (except the three years of primary education);
- introduce public access to „Open Universities“.

Second type of R&D activities should focus on looking for the **technical solutions to increase the efficiency and accessibility of the eLearning systems** as well as convince the society of the advantages of eLearning. The problem here is to select the most effective and mostly suitable teaching technologies and teaching methodology. Possible R&D activities could concentrate on creating cheap and effective programming for eLearning users and service providers, e.g. educational platforms.

In order to check the effectiveness of the existing eLearning programme, it is important to conduct a survey on its **adaptability and accessibility among students and teachers at all educational levels, including lifelong learning and workplace**. The question to be answered during the survey is to what extent the eLearning programmes and related new approach to learning processes, benefit its users. The next stage of the above mentioned survey must consider the equal accessibility of eLearning programs in most subjects, in which students and teachers declared the supportive role of ICT in the process of learning or teaching. Finally, it is important here to promote and raise social awareness about the importance of ICT and eLearning activities in the process of innovation, knowledge creation and diffusion.

Moreover, the successful eLearning organisation and management mechanism must assure the interoperability of existing information systems and the integration of the data and information at

various service providers levels integration (communication, launch and course). Therefore the technical R&D challenges included.

The third group of **R&D activities would focus on establishing methodology, tools and ways of multimedia presentation, models in time.** Rapidly changing technologies, requiring complex choices. It is important to establish the methodology related to eLearning, which would be a reference to newly entering users and academic staff to their learning and teaching involving the use of ICTs. In order to establish the best methodology related to eLearning it is important to integrate the best content and delivery from both the public and private sectors to increase access to state-of-the-art eLearning.

Finally, the fourth type of **R&D activities would concentrate on behavioural and sociological factors determining** diffusion of eLearning services. This type of research activities would analyze personal awareness as well as human competence and potential of using IT tools. The motivated staff is the principal driving force in any educational organisation. The strategic solutions and policies will not succeed without a motivated, creative and supportive bottom-up. The “university leadership” significantly determines the successful implementation of eLearning programs and new educational perspectives. However, the latter depends on the willingness and attitudes of the university staff to choose between the “traditional or modern approach”. One of the ways to increase the pro-modern approach of academic staff to teaching processes is to train them in both ICT skills and broader eLearning types, methodologies and content.

There must be also initial and sustained professional development for teachers as well as a well-developed network for instructors and student eLearning experiences. It is recommended that a separate institution be created to monitor and evaluate the teachers’ eLearning courses.

Finally, it is important to further work out the educational programs, develop the eLearning platform; increase the degree of absorption for ICT solutions. The development of training courses must ensure the realization of the strategy of life-long training as well as the need to promote eLearning services as high standard education. It is also important to educate people on how to improve and update their knowledge and competence.

V.2. Major financial R&D challenges

An important non-technical R&D challenge is the review of existing funding mechanisms and procedures in Poland in terms of their efficiency in supplying schools with the equipment of ICTs.

The pace of change in technology is linked to limited financial resources of universities to decide which upgrades or investments to make. The present university funding is based on student number or university historical levels of funding, which do not allow investment in rapid technological changes and upgrade teaching standards.

It is important to develop systems and technologies enabling application of cheap solutions of personalization of distance learning and studying. Financing the costly eLearning programs and solutions remains an important challenge for many schools, universities and small and medium enterprises. One of the possible solutions is to get the lower prices from producer or distributor of eLearning services, another solution would be to increase the state aid for eLearning programs and solutions. The companies would be interested in offering lower prices if there will be possible benefits, so it is important to constantly look for ways to establish a common platform of co-operation between educational institutions and businesses.

On the other hand it is important to establish similar co-operation between the business sector and state, based on the public-private partnership (PPP). This model of financing is particularly important when applying for the EU funds. The individual projects must be financed from all possible resources, including structural funds. ELearning projects in Poland must be financed by public funds (at the early stage implementation and promotion – in order to enhance institutions to implement the eLearning

projects), as well as private (at the development stage). The latter could be supported by tax reductions, co-financed from the state budget, administrators' advice and financial support when competing for the EU funds. Yet, the best financial model of eLearning projects can only be derived using the precise investigation results.

In the view of the Lisbon Strategy objective it would be interesting to examine how the eLearning and blended learning relative to traditional learning methods contribute to innovativeness, productivity and the economic growth of Poland (Lisbon strategy's objective is to make the EU the most competitive and dynamic knowledge based economy with improved employment and social cohesion. The Lisbon Strategy was the basis of the Polish strategy). (National Development Strategy 2007-2013, www.npr.gov.pl).

V.3. Major security R&D challenges

ICT solutions related to eLearning should be reliable. This entails having instant access to the services free from errors generated by the information system. Ensuring that eLearning products are in step with society's expectations in this area is a crucial means of building trust. Together with the benefits resulting from the Internet and other technologies, the challenge to secure privacy for citizens appears.

The security related problems must be solved by the implementing institution. It is important to invest especially in the security systems of personal data transfer. In general, the level of security must be adequate to the importance of data linked to eLearning services. In case of the need of a high level of security, it would be important to invest in electronic system of user identification. This entails further R&D activities in the domain of the electronic systems of users. E-services, such as eLearning, might be in particularly exposed to various types of fraud as they contain personal data.

Finally, it is also important to conduct R&D works on the interdependencies between pedagogical concepts and technological solutions in the context of distance learning systems. Such R&D activity would focus on the network capacity measures and evaluation of the accessibility of the eLearning platform during the highest user activity hours.

Summing up, the ICT sector is considered to be one of the most rapidly developing R&D areas in the world. The latter is however related to constant technological, financial and security challenges of academic institutions and private firms offering eLearning courses. The most important barriers and incentives as well as factors of eLearning in Poland suggest that the main R&D challenges should address further improvements in the quality of IT facilities, management and organization of eLearning platforms, co-ordination of eLearning courses and policy priorities for eLearning.

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Interview with Jerzy Skrzypek, Director of the e-Learning Centre at the Academy of Economics in Cracow, on the 30 October 2006

Interview with Wojciech Sadowicz, Redactor of the Polish Portal of Development, on the 14 August 2006

Interview with Jerzy Maria Mischke, Professor at the Academic Computer Centre CYFRONET AGH (University of Science and Technology), on the 2 October 2006

Interview with Magdalena Jasińska, distant learning methodologist at the University Centre for Distant Learning and Open Courses at the Maria Curie-Skłodowska University in Lublin, on the 03 October 2006

Interview with Anna Grabowska, Professor Assistant Gdansk Polytechnic, on the 05 October 2006

Interview with Krzysztof Glomb, President of the organization “Cities in the Internet” organization, on the 28 August 2006

Interview with Krzysztof Gerant, Quality Director of Alcatel Poland Plc., on the 28 August 2006

Interview with Anna Drzewińska, lecturer, researcher and PhD student on eLearning subject (at the Leon Kozminski Academy), on the 09 October 2006

Interview with Marcin Dąbrowski, Director of the eSGH ePlatform (Distant Learning Development Centre at the Warswa School of Economics), 27 August 2006

Interview with Jerzy Cieślik, Professor at Leon Kozminski Academy established its own eLearning platform, on the 27 August 2006

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Abstract

In 2005, IPTS launched a project which aimed to assess the developments in eGovernment, eHealth and eLearning in the 10 New Member States at national, and at cross-country level. At that time, the 10 New Member States were Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovenia and Slovakia. A report for each country was produced, describing its educational system and the role played by eLearning within both the formal education system and other aspects of lifelong learning. Each report then analyzes, on the basis of desk research and expert interviews, the major achievements, shortcomings, drivers and barriers in the development of eLearning in one of the countries in question. This analysis provides the basis for the identification and discussion of national policy options to address the major challenges and to suggest R&D issues relevant to the needs of each country – in this case, Poland.

In addition to national monographs, the project has delivered a synthesis report, which offers an integrated view of the developments of eLearning in the New Member States. Furthermore, a prospective report looking across and beyond the development of the eGovernment, eHealth and eLearning areas has been developed to summarize policy challenges and options for the development of eServices and the Information Society towards the goals of Lisbon and i2010.

The mission of the JRC is to provide customer-driven scientific and technical support for the conception, development, implementation and monitoring of EU policies. As a service of the European Commission, the JRC functions as a reference centre of science and technology for the Union. Close to the policy-making process, it serves the common interest of the Member States, while being independent of special interests, whether private or national.

