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

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PREFACE

Policy context

At the European Council held in Lisbon in March 2000, EU15 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 Information and Communication Technologies (ICT) and higher investment in human capital.¹

ICT, 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 Lifelong Learning Programme⁵ have set objectives for education and support the development of learning in the knowledge society. One of the special 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

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

face, the lessons other member states may learn from them, and the related policy options. National 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 Lithuania

This report was produced by the Lithuanian Free Market Institute, the consortium member from Lithuania, and it presents the results of the research on eLearning in Lithuania.

First, the report describes Lithuania'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

| | |
|---------|-----------------------------------------------------------------------------------|
| ALEPH | Library system |
| BALTECH | The University Consortium for Science and Technology |
| CDK | Course Developer Kit |
| CPD | Continuing Professional Development |
| DE | Distance Education |
| DSL | Digital Subscriber Line |
| EC | European Commission |
| ECDL | European Computer Driving Licence |
| EMU | Economic and Monetary Union |
| EQUAL | One of four Community Initiatives co-financed by the European Union (2000 – 2007) |
| ERDF | European Regional Development Fund |
| EU | European Union |
| EU15 | European Union until 1 May 2004 |
| EU25 | European Union until 1 January 2007 |
| EUR | Euro |
| FDI | Foreign Direct Investment |
| GDP | Gross Domestic Product |
| HE | Higher Education |
| HEI | Higher Education Institution |
| ICEG EC | International Centre for Economic Growth, European Centre |
| ICT | Information and Communication Technology |
| IPTS | Institute of Prospective Technological Studies |
| ISCED | International Standard Classification of Education |
| ISDC | Information Society Development Committee |
| IT | Information Technology |
| ITI | The Information Technology Institute |
| ITMiS | Information Technologies for Higher Education and Science |
| JAP | The Joint Assessment of Employment Policy Priorities |
| KTU | Kaunas University of Technology |
| LABT | Lithuanian Academic Libraries Network |
| LAN | Local Area Network |
| LieDM | Development of Distance Education Network in Lithuania |
| LieDM-2 | Expansion of Distance Education in Lithuania |
| LieMSIS | Lithuanian Science and Higher Education Information System |
| LITNET | Academic and Research Network in Lithuania |
| LLL | Lifelong Learning |
| LLMTA | Lithuanian Labour Market Training Authority |
| LMTC | Labour Market Training Centre |
| LOLA | Learning about Open Learning |
| LTL | Litas |
| MDTV | Digital microwave multi-channel television transmitters |
| NDEA | National Distance Education Association |
| NGO | Non-Governmental Organisation |
| ODL | Open and Distance Learning |

| | |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------|
| OSF | Open Society Fund |
| PC | Personal Computer |
| PHARE | European Union initiative, which supports the development of a larger democratic family of nations within a prosperous and stable Europe. |
| PLC | Programmable Logic Controller |
| PPP | Purchasing Power Parity |
| RAIN | Rural Broadband Internet infrastructure |
| RIAPs | Rural Internet Access Points |
| RRT | Communications Regulatory Authority |
| SMDB | Database of Study Modules |
| SME | Small and Medium Enterprise |
| SPD | Single Programming Document |
| VET | Vocational Education and Training |
| ViPS | Video Lectures System |
| VLE | Virtual Learning Environment |
| WebCT | Web based Course Training systems |
| WIPO | World Intellectual Property Organization |
| WTO | World Trade Organization |

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EXECUTIVE SUMMARY

Lithuania, a former transition economy country and a member of the EU since 1 May 2004, is one of the fastest growing economies in the Baltic Sea region.

ICT usage indicators in Lithuania show a remarkable growth over the past years. For example, the usage of computers by individuals has risen from 43% in 2005 to 53% in 2007 (the EU15 average was 69% in 2007), according to Eurostat measurements. The use of personal computers and other ICT tools is increasing, mostly in households and in businesses. This growth is expected to continue in the immediate future, because the domestic market is not saturated yet and modern technologies in households and in the public sector are not fully utilised. Broadband penetration is still low in comparison with the EU15 average (according to Eurostat, 34% in Lithuania and 46% in the EU15 in 2007) but, due to strong competition between providers, it is growing. In order to decrease the digital divide between urban and rural residents, Rural Internet Access Points (RIAPs) and Rural Broadband Internet Infrastructure (RAIN) are being developed. Science and education institutions are being connected to the secure broadband LITNET network. Secondary schools have been equipped with personal computers and other ICT. However, personal computers in schools are rather old.

ICT literacy is one of the most frequent requirements by the employers in Lithuania. People therefore participate in organised computer courses, or are keen to learn necessary skills by various means. As a rule, young people are more ICT literate and use ICT more often than older people. For example, in 2007 only 16% of 16 - 24 year olds had no computer skills, as opposed to 89% of 55-74 year olds (Eurostat). Schoolchildren are being taught to use ICT at secondary schools, which have to ensure their ICT literacy.

ICT are increasingly finding their place in learning processes. Demand for eLearning solutions is high, because these provide flexible forms of training for early school leavers, full time and especially part time university and college students, disabled people, the unemployed, etc. This demand is further increased by growing individual and corporate interest in continuous professional development and in lifelong learning. For example, in 2007, 50% of enterprises in Lithuania announced that they were using eLearning applications for employee training and education (Eurostat).

ICT-supported learning usually takes place in, or is provided by, schools, universities and other public institutions, most commonly for learning ICT-related disciplines. ICT are used to search, store and access information and materials relevant for learning and teaching, to present information and materials digitally or to communicate between educational institutions and between teachers and students. However, ICT are seldom incorporated as a tool for enhancing the learning processes. Distance education is being especially promoted by the established distance education and study support centres. To sum up, it can be said that, while ICT are being used in Lithuania, they are usually treated as a separate mechanism/field of learning, and only very seldom as a tool to learn other subjects.

International experience and foundations have been a great support and the base for eLearning development and growth in Lithuania. At the moment, eLearning developments are mainly supported by national policies, which focus predominantly on the digital literacy of the population and the development of information infrastructure in formal education institutions. Implementation of these national policies has mainly been funded by the EU (PHARE, and later EU structural funds) for establishing Rural Internet Access Points (RIAPs), Rural Broadband Internet infrastructure (RAIN), expanding the existing Distance Education Network (LieDM) to each municipality, etc. There are also private business initiatives like "Window to the Future", which has set up public Internet access centres and aims to increase the number of Internet users. Moreover, major public institutions and universities have divisions or people responsible for the development of eLearning.

Due to these policies and other programmes established by the Government, progress has been made in modernising education. Training centres, universities and colleges have begun to offer eLearning courses and a wide network of distance education has been established. These and other Government initiatives which have provided greater access to the ICT for the households, educational institutions and other public places and have promoted civil engagement in information sharing via ICT, could be said to have encouraged the development of the information society in the country. On the other hand, it can also be said that the use of ICT in educational processes themselves has only been a secondary target so far.

As mentioned above, people seek opportunities for eLearning and this means that there are market opportunities for eLearning solutions. However, these market opportunities are not fully exploited, presumably because business does not see the possibility for profit in Lithuania's small market. Moreover, new forms of education made possible by ICT are not yet formally recognized and there is no system of acknowledgement of skills acquired through non-formal and self-directed learning.

In order to further promote the use and development of eLearning solutions, measures have to be taken that would allow a formal recognition of the new forms of learning made possible by ICT. These measures also have to ensure the quality of eLearning activities and services, which include both the assessment of proposed eLearning solutions and an adequate competence of teachers and other education professionals. Moreover, collaboration in the development of eLearning products and services between public and private institutions has to be promoted.

Nevertheless, the main constraint for the development of eLearning continues to be the motivation of public administration institutions, public education institutions and teachers. The existing motivational mechanisms do not support individual attempts to provide better and more user-friendly education services. Also, the rather low involvement of private sector in the development of eLearning, its products and its services continues to be an additional challenge.

The necessary legal base, though it is far from perfect, is in place. Financial resources are also available (though they are not sufficient), actual and potential consumers seem to be ready and willing to use eLearning and formal policies exist. The main thing lacking in Lithuania is the motivation to deliver eLearning services that create added value for users and learners. Main policy measures to foster eLearning to the optimal level should target the system of motivation of public education institutions, and of their personnel. The structure and motivation of public education institutions is a much broader aspect than just eLearning. However, this aspect is of primary importance to the prospect of eLearning and of integration of ICT into the conventional system of education. The traditional educational institutions should be encouraged to use more ICT in the study process and to apply the range of eLearning methods.

The most relevant eLearning-related issues of public debate and the challenges for the future in Lithuania are:

- Centralization vs. decentralization in eLearning developments;
- The question of open source vs. commercial software usage in public eLearning;
- Standardisation, integration and interoperability of different learning resources and services, at both national and EU levels;
- The involvement of the private sector to overcome the lack of knowledge/resources/speed in public education institutions;
- The creation of motivation for public education institutions to develop more ICT-based learning services, which are more efficient and user-friendly;
- ICT-based working methods face the challenge of ensuring personal effort and genuine work products, which serve learning, for each student;
- Maintenance and renewal of ICT in educational and public institutions.

INTRODUCTION: COUNTRY FEATURES

General Information about Lithuania

| | |
|---------------------|-----------------------------------------------------------------------|
| Capital - | Vilnius |
| Surface area - | 65,200 sq. km |
| Population - | 3,403,200 - 1 st quarter of 2006 |
| Lithuanians - | 83.45% (Polish – 6.74%, Russians – 6.31%, other nationalities – 3.5%) |
| Catholics - | 79% |
| National currency - | litas (1 LTL= EUR 3.45) |

Economic situation, economic growth¹³

Lithuania maintains a strong macroeconomic position and remains one of the fastest-growing economies in the Baltic Sea region. The composition of the Lithuanian economy has changed over the past decade in favour of the services sector. With 56% of total working population, the services sector accounted for 66.5% of Gross Domestic Product (GDP) in 2004, up from 58.4% in 1995. The largest services sectors are transport, storage and communication and retail and wholesale trade (12.8% and 18% of GDP respectively). Industry, which employed 21% of the working population, contributed 25.7% of GDP. Agriculture is decreasing. In 2004 it made up 5.6% of GDP, a decrease from 10% in 1998. Agriculture employs 14% of working individuals, which is the second-highest indicator after Poland among the new European Union (EU) member-states.

The composition of the Lithuanian industry remains fairly stable. In 2004 manufacturing accounted for 20.5% of GDP; mining and quarrying - for 0.5%, and electricity, gas and water supply - for 4.4%. Manufacturing is dominated by low-skill branches, including food products and beverages (18.9% of total industrial production sales in 2004) and the woodworking and furniture industry (11%). A profound impact on the country's economy is exerted by the oil industry, which accounts for one-fifth of total industrial sales. The textile and apparel industry, which boasts old tradition in Lithuania, is grappling with falling competitiveness on the world markets and looking for new ways to bolster it. Yet, its share stays quite sizeable at one-tenth of industrial sales (10.6%). Radio, TV and communication equipment and apparatus, electrical machinery and medical apparatus (which account for 7.5% of all industrial production sales and export the bulk of production) were showing a solid growth in recent years. However, the electronics industry (kinescope and television production) is now faced with a crisis due to lost competitiveness globally. For example, kinescope producer "Ekranas" - one of the three largest electronics industry companies - has sustained considerable losses and got bankrupt in 2006. These high- and medium-high-technology sectors account for about one-fifth of total value added produced in manufacturing. Other robust sectors include the chemical industry (5.2%) and the rubber and plastic industry (3.8%). The bulk of manufacturing production (over 60%) is exported. The textile and apparel industries, the radio, television and communication equipment industry and the chemical industry export more than 80% of their output.

Lithuania has maintained a high rate of economic growth for the past several years, hitting a record high of 10.3% in 2003. In 2005 Lithuania's GDP grew by 7.5%, up from 7.0% in 2004. In 2005, GDP at current prices amounted to EUR 245.843 billion (LTL 71.200 billion). Purchasing Power Parity (PPP) GDP per capita totalled EUR 5,264. Growth was recorded in all branches of the economy, except for mining and quarrying. Transportation, warehouse and communication, construction, trade, manufacturing, and hotels and restaurants showed the highest rates of growth. Growing household income, positive consumer outlook and a growing consumer credit market have boosted wholesale and retail trade. The construction industry has been affected by the expanding housing loan market and a growing affordability of construction services caused by competition-affected price cuts. Admittedly, residential prices are soaring today, as the demand for residential facilities, which is being driven by people's growing income and wishes, is markedly exceeding the supply. The growth of supply in turn

¹³ This section is primarily based on data from the Department of Statistics to the Government of the Republic of Lithuania (Statistics Lithuania), <http://www.stat.gov.lt/en/>

is being impeded by a shortage of land, which is caused by a slow land restitution process and land planning regulations. Fears related to possible price rises after the introduction of the euro are also adding to the residential purchase and investment boom. Economic developments in Lithuania have been adversely affected by high and continuously volatile oil prices on the world market and economic difficulties in the euro area.

Growing domestic demand has been the most powerful engine of growth since 2003. An impressive export growth has been another major contributing factor. In 2005, export grew by 27% comparing with the year 2004. Despite favourable preconditions for investment (falling interest rates on loans, growing profitability and a growing confidence in the economy), the growth rate of capital investments dropped from 12.6% in 2004 to 11.8% in 2005. The biggest, twofold increase was recorded in investments into the purchase of real estate, while the areas of investments supported with EU assistance funds did not experience an upsurge.¹⁴ Recently Foreign Direct Investment (FDI) flows have been quite meagre and have had a minor impact on material investments in Lithuania. On 1 October 2005 FDI in Lithuania totalled EUR 5,278 billion, or EUR 1,549 per capita.

An impressive growth of credits, recorded since 2003, has been a major factor of the rising domestic market and private consumption. In 2005, the loan portfolio of Lithuanian banks grew by 53.6% (an average of 44% during 2002-2004), while the growth of the private loan portfolio was traditionally almost twice as big (92%). The housing loan portfolio went up by 86.5%. Such a rapid growth of the loan market is attributed to a low credit base (the ratio of domestic loans to GDP was 30% in 2004,¹⁵ while the ratio of the housing loan portfolio to GDP in Lithuania is a mere 7%), a longer maturity of loans and improved economic outlook. Intense competition in the banking sector continued to push down interest rates. In 2005, the average interest rate on loans was 5% for loans in litas and 3.87% for loans in euros.

Rising wages have been an important factor of consumption growth. Wages started to pick up in the last two years, overtaking labour productivity growth in 2004. In 2004 real labour productivity growth was estimated at 7.1%,¹⁶ while nominal wage growth stood at 7.9%.¹⁷ It is expected that migration caused a decrease in labour force; growing corporate efficiency and profitability and an upcoming reduction in the personal income tax (from 33% to 27% from July 2007) will continue to stimulate real wage growth.

Until 2005 Lithuania complied with all Maastricht criteria set for the EU members wishing to join the Economic and Monetary Union (EMU). Inflation continued to be very low until 2004 (-1.3% in 2003), largely due to intense competition and fiscal discipline. The annual rate of inflation grew to 2.9% in 2004 and 3.0% in 2005. In 2005 the average annual rate of inflation stood at 2.7%, up from 1.2% in 2004. Lithuania met the Maastricht criterion for inflation throughout six consecutive years, while the recent rise in the price level was caused by rising oil prices on the world market. In 2005 the biggest price increase was recorded in the transportation sector (10%). Utility services, water, electricity, gas and other fuel ranked second (6.7%), followed by food and beverages (3.5%). Communication prices fell the most (5.2%). Lithuania's plans to introduce the euro from 2007 failed due to rising inflation, but Lithuania is set to achieve this goal in 2009.

In 2005, the public sector deficit stood at 2.3% of GDP, down from 2.5% in 2004. Lithuania's indicator is below the Maastricht ceiling placed on public sector deficit (3%). Pursuant to the Lithuanian Convergence programme, the public sector deficit in Lithuania should not exceed 1.8% in 2006 and 1.5% in 2007.

¹⁴ In 2005 investments in equipment and machinery rose by 11.9%, a twofold decrease from 2004 (25.5%). Investment in construction and repair rose by 3.8%, as compared with 4.8% in 2004, *Statistics Lithuania*

¹⁵ An average of 120% was in the EU member-states in 2003.

¹⁶ The biggest increase in labour productivity was recorded in manufacturing and consumption-related sectors (construction and manufacturing services).

¹⁷ During 2001-2003 labour productivity grew by more than 20%, as compared with a 9.2% wage growth.

Lithuania maintains a relatively low and stable public sector debt. It fell from 19.7% of GDP in 2004 to 18.8% in 2005 (against a 60% Maastricht requirement), which is one of the lowest indicators in the European Union.

The completion of many major restructuring projects¹⁸ (for example, development of social and economic infrastructure, human resources development, modernization of agriculture) and a rising demand for workforce caused by a steady economic growth and more recent migration, have pushed down unemployment. Unemployment fell from 10.2% in December 2004 to 6.8% in December 2005 (the EU25 average was 8.5% in December 2005).¹⁹ Yet, the rate of long-term unemployment, comprising half of all jobless individuals, remains a concern, according to Statistics Lithuania. The main reason behind the high level of long-term unemployment is a large proportion of low-skilled jobless people (they account for half of the unemployed). The level of youth unemployment fell almost twice over the year and stood at 12.8% in the third quarter of 2005. Lithuania's labour market is characterised by disparities in the distribution of labour force, with a surplus in certain professions and a shortage of qualified workers. This is attributed mainly to a lack of flexibility in the professional training system against market needs and increased economic migration stimulated by the opening of EU labour markets.

Economic growth in Lithuania is expected to slow down over the next few years. The forecasts are 6% for 2006, 5.3% for 2007, and 6.8% for 2008.²⁰ Domestic demand will remain the main engine of economic growth. A faster wage growth, falling unemployment, the opening of EU labour markets and high consumer expectations will be the main factors that will continue to boost the domestic market.

Demography indicators, population developments²¹

Lithuania's population is decreasing. At the beginning of 2006, Lithuania's population totalled 3,403,200, a decline of 22,100 per year. Since 1995 the population has decreased by 218,000 or 6%. Men account for 46% of Lithuania's population and women comprise 54%.

A falling birth rate, natural decrease and economic migration are the main causes of these downward population trends. The birth rate has been falling steadily since 1990 (with the exception of 2003) and has decreased almost twofold. In 2004 there were 30,400 live births, or 179 less than in 2003. The birth rate stood at 8.9 per 1,000 population, down from 9.8 in 2000. The total fertility rate was 1.26 in 2004, compared to 1.39 in 2000.

The mortality rate has been on an upward trend since 2001, reaching 12 per 1,000 population in 2004 against 11.1 in 2000. The mortality rate in Lithuania is a quarter higher than the EU15 average (9.5). Over the past five years the mortality rate went up by 7.5%. The male mortality rate is 28% higher than the female one. Infant mortality stood at 7.9 per 1,000 births, up from 6.8 in 2003 (4.6 per 1,000 live births in the EU15 in 2002).²² In 2004 a total of 240 infant deaths occurred, 34 more than in 2003. The mortality rate in the age groups of 1 to 14 and 15 to 59 remained almost unchanged over the past five years and in 2004 stood at 0.3 and 4.6 per 1,000 respectively. A falling birth rate and growing mortality have conditioned a trend towards a natural decrease, which was 3.2 in 2004, compared to 1.3 in 2000.

Average life expectancy decreased slightly in 2004 and stood at 72.06 years.²³ A big gap remains between the male and female indicators, and this gap is the biggest among all the EU member-states,

¹⁸ Except for the Ignalina Nuclear Power Plant and the Lithuanian Railway.

¹⁹ Euro-Indicators Newsletter - January 2006

²⁰ Prognosis of the Ministry of Finance of the Republic of Lithuania

²¹ This section is primarily based on data from the Department of Statistics to the Government of the Republic of Lithuania (Statistics Lithuania), <http://www.stat.gov.lt/en/>

²² 8 per 1,000 live births (2003), Human Development Report 2005

²³ 72.2 years (2000-2005), Human Development Report 2005

according to Eurostat reports. In 2004 the average life expectancy for men was 66.3 years and for women – 77.7 years, so women live 11.4 years longer than men.²⁴ In the EU the corresponding figures are 81.2 years for women and 75.1 years for men, making the gap between men and women only 6 years. The gender difference in Lithuanians' life expectancy is probably caused by alcoholism and a high suicide rate among men, as well as general difficulties of men to adapt to the changing environment. Over the past five years the average life expectancy of men in Lithuania fell by 0.4 a year and that of women by 0.3 a year.

Similarly to other European nations, the Lithuanian population is aging: every year elderly people comprise a growing proportion of the population. At the beginning of 2005, one in five Lithuanian inhabitants (691,700) was aged 60 and above. It is predicted that at the beginning of 2050 every third person (34.6%) will belong to this group. Children constitute one-fifth of the Lithuanian population. The number of children has declined steadily. From 2000 until 2005 the number of children went down by 14.4% or 125,000. Over the past 15 years it has decreased by one-fourth. A particularly big reduction has been recorded in the pre-school age group (45%).

It is predicted that by 2030 the Lithuanian population will decrease by 10% and stand at 3,117,200, according to the Department of Statistics of Lithuania. The trend towards an aging society will persist. It is expected that the birth rate will increase in the near future due to deferred procreation. Yet, the total fertility rate will stand below 2.1. The mortality rate is expected to decline slowly during the period from 2005 to 2030, mainly due to sustained economic growth, better quality of social conditions and healthcare, and a healthier life. By 2030, the average life expectancy is expected to reach 73 years for men and 83 years for women, an increase of 7 and 5 years respectively from 2002.

Major education indicators²⁵

In 2005, state and municipal budget (national budget) expenditure on education totalled EUR 1.076 million (LTL 3,714 million),²⁶ of which 39% was state budget funding and 61% was municipality money. Financing of education in Lithuania is high compared to both total government expenditure in Lithuania and education expenditure in other countries. In 2005, public sector expenditure on education accounted for 5.4% of GDP and 21.3% of total national budget allocations. The share of public sector spending on education has fallen since 2003, when it stood at 6.3%. The 2006 national budget envisages that expenditure on education will increase by 8%, but its share in total national budget allocations will drop to 19.6%. The ratio to GDP will remain unchanged at 5.4%. However, public financing of education is relatively low on a per-student basis because of the highest student enrolment rate in the EU. Unlike in the European Union, the share of total annual expenditure per student fell from 25.3% of GDP per capita in 1999 to 22.1% in 2002. This has negative implications for the efficiency and quality of education.

Education is widely accessible in Lithuania, and the proportion of educated people and the rate of participation in education in Lithuania are high. In 2004, a total of 85% of Lithuanian citizens aged 25 to 64 had secondary or professional education, and 35% of persons aged 25 to 34 had higher or professional education (the EU25 average was 25%). Among EU25 Lithuania is ranked 7th in terms of young people with higher education. Over the past five years the number of young people aged 7 to 24 seeking education went up from 85% to 90%. The overall participation rate in education rose from 225 per 1,000 inhabitants in 2000 to 235 per 1,000 in 2004. The number of students was steadily growing since 1993–1994, but the growth rate started to fall in recent years due to a falling birth rate. The total number of students dropped from 810 400 in the 2003–2004 academic year to 805,000 in the 2004–2005 academic year. The decrease was recorded mainly in basic school students (a decrease of 20,000²⁷) due to a sizeable reduction in the number of school-age children. The number of first-

²⁴ 66.6 years for men and 77.8 years for women (2003), Human Development Report 2005

²⁵ This section is primarily based on data from the Department of Statistics to the Government of the Republic of Lithuania (Statistics Lithuania), <http://www.stat.gov.lt/en/> and Eurostat, <http://ec.europa.eu/eurostat>

²⁶ Ministry of Finance of the Republic of Lithuania, <http://www.finmin.lt/finmin/lang.do?language=en>

²⁷ The number of basic schools went down by 298 in 2004–2005

formers fell the most, by 12,000 or a quarter. This means that the total number of young people pursuing education will continue to decrease in the coming years.

Enrolment in secondary education is high. 85% of the population aged 20 to 24 has completed at least upper secondary education in 2004. This number has increased from 80.5% in 2000 and was higher than the EU25 average of 77%. A sizeable growth is observed in tertiary education enrolment. In 2004-2005 as many as 80% of secondary school graduates were enrolled in tertiary education, up from 65% in 2001. 47% out of the 80% mentioned above were enrolled in universities and 22% in colleges. Enrolment in tertiary education is very high and continues to increase: currently it is 57 per 1,000 inhabitants, up from 43 in 2001. The number of university students stood at 138,500 in the 2004-2005 academic year, an increase of 8,300 in one year.

The number of early school leavers is descending. There was 9.5% of the population aged 18-24 with at most lower secondary education and not in further education or training in 2004 compared to almost 17% in 2000. The average of early school leavers in EU25 reaches 15%. Unfortunately, there is no data available regarding reading literacy of young Lithuanian pupils.

The total number of tertiary level graduates in science and technology grew from 13.5 in 2000 to 17.5 per 1,000 inhabitants in 2004 and this number was one of the highest in comparison with other EU25 countries.

The proportion of Lithuanians aged 25 to 64 engaged in life-long learning grew from 2.8% in 2000 to 6.5% in 2004, but it remains relatively low in comparison with the EU25 average of 9.4%.

During the 2004-2005 school year 80% of students in general schools studied English as a foreign language (62% in 2000-2001), 19% – German (23% in 2000-2001), 4% – French (5% in 2000-2001) and 39% - Russian (36% in 2000-2001). Moreover, during the 2005-2006 school year 34% of students in general school studied one foreign language, 52% – two foreign languages and almost 1% studied three foreign languages.

The number of educational establishments is constantly shrinking. It has fallen from 2,521 during the 2000-2001 school year to 1,766 in 2004-2005. A new higher education sector – higher non-university studies (professional studies) offered by colleges – is rapidly developing. A 2000 reform made it possible to establish colleges as new-type higher education establishments on the basis of existing professional schools. The number of colleges rose from 7 in 2000-2001 to 27 in 2004-2005, while the number of college students went up fifteen fold, from 3,500 to 52,200. Every fifth college student (10,100) is studying in a private institution.

The private education market has been evolving steadily over the past decade. The number of private educational establishments has grown from 36 in 1995-1996 to 41 in 2004. The range of private education institutions has changed qualitatively. In 1995-1996 the most dominant non-state basic education schools were primary schools. Today the dominant private schools are basic, secondary and gymnasiums. The number of private vocational schools is the lowest and remains unchanged (2). There are 19 private secondary schools, and six out of the country's 21 universities are private.²⁸

General ICT usage indicators²⁹

ICT usage indicators show a remarkable growth, which is also expected in the nearest future. Such prognosis can be explained by an unsaturated domestic market and a low-level utilization of modern technologies in households and in the public sector.

²⁸ Organization for Economic Co-operation and Development, www.oecd.org

²⁹ This section is primarily based on data from Communications Regulatory Authority of the Republic of Lithuania, <http://www.rta.lt/index.php?69789744>

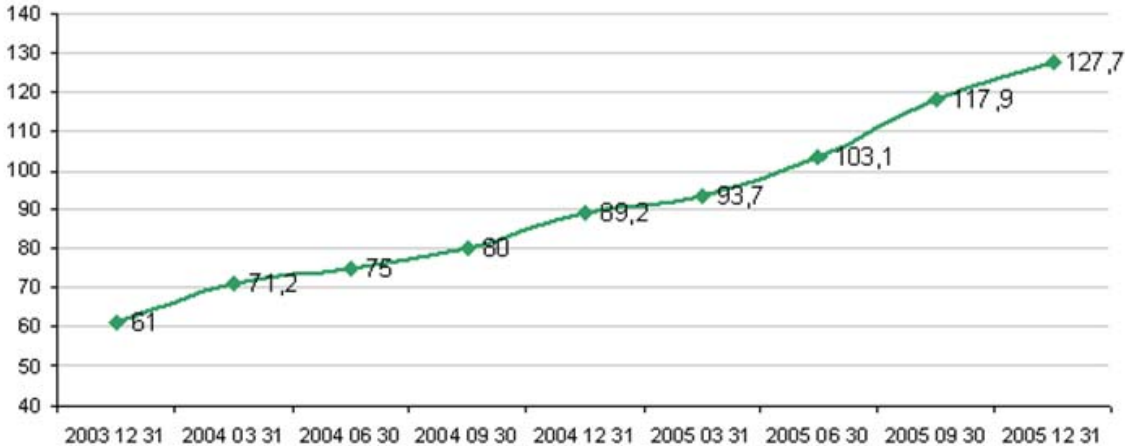
Computer usage and access to the Internet is expanding rapidly. ICT penetration in Lithuania is rising mostly in households and business. During 2005 the number of Internet subscribers doubled and reached 1.078 million, or 31.7 subscribers per 100 inhabitants, the Communications Regulatory Authority (RRT) reports. 76% of Internet subscribers used mobile communication network, 22% used broadband communication technologies, and 2% connected to the Internet via the dial-up. During 2005 the number of subscribers using broadband communication technologies went up by 81.4%. In 2005, 32.4% of population aged 15 to 74 used the Internet, and almost 22% of the population use the Internet regularly. In the third quarter of 2005 there were 109 Internet access providers, up from 60 in 2004. In 2005 there were around 700 public Internet access points in Lithuania. Of these, as many as 300 public Internet access centres were opened in rural areas in 2005.

The broadband penetration rate stood at 5.76% in October 2005 and ranked fourth among the new EU member states. It was 1.7 times higher than the average rate (3.43%) in the new EU member states. It is projected that Lithuania will reach a broadband communication penetration rate of 52% by 2010. Broadband communication provided via Digital Subscriber Line (xDSL) technologies constitutes less than 50% of the market in Lithuania, and the share of the market of broadband communication provided with other technologies is 57%, the best indicator in the EU25. A recent European Commission (EC) report³⁰ notes that technological competition in the broadband communication market in Lithuania is the most intense in all of the EU. However, this competition mainly focuses on urban areas and bypasses rural ones due to the lack of adequate ICT infrastructure outside the urban areas.

Mobile penetration in Lithuania is growing rapidly. The total number of active users of mobile telephone services rose from 3.5 million at the beginning of 2005 to 4.35 million at the end of the year, reaching 127.7 subscribers per 100 inhabitants. In 2005 mobile penetration in Lithuania grew the most amongst the EU member states, according to the European Commission report. The annual growth was estimated at 37%. Lithuania ranks second after Luxembourg in terms of mobile penetration. The number of fixed line subscribers is falling. In October 2005 there were 807,600 fixed telephony lines, down from 820,000 at the beginning of the year. The penetration rate for fixed telephony was 23.9 lines per 100 inhabitants in 2005.

Driven by sharp competition, the telecommunications market has experienced a rapid decrease in prices. In 2005, the prices of communication services decreased by 5.2%. Mobile operators in Lithuania offer the lowest prices in Europe in the low-end segment, and middle-end and high-end segment prices are also among the lowest. Fixed telephony prices in Lithuania are the lowest in the low-end segment and the second lowest in the business segment compared to the EU.

Figure 1. Active mobile telephone communication subscribers per 100 inhabitants



Source: Communications Regulatory Authority of the Republic of Lithuania, <http://www.rrt.lt/>

³⁰ Europe in figures: Eurostat yearbook 2005

Figure 2. Internet subscribers per 100 inhabitants



Source: Communications Regulatory Authority of the Republic of Lithuania, <http://www.rrt.lt/>

Households. In 2005 every third household had a personal computer, compared to 28.1% in 2004 and 5.3% in 2000. A total of 14.4% of households had access to the Internet in the first quarter of 2005, an increase from 10.6% in the previous year and 2.3% in 2000. However, there is a wide gap between urban and rural indicators. In the first quarter of 2005 every fifth urban household had access to the Internet compared to four in one hundred in rural settlements. The ongoing state-run rural Internet installation project is expected to help bridge this gap. It is predicted that about 65% of Lithuanian population will use the Internet and 56% of households will have access to the Internet in 2010.³¹

Business. ICT usage in the business sector is growing rapidly. The overall ICT penetration is higher in services and trade compared to industrial sectors. At the beginning of 2005 nine out of ten manufacturing enterprises and companies in the services sector with the staff of 10 and more used computers in their daily work. A total of 85% of companies in the manufacturing and services sectors (or 93% of companies possessing computers) had access to the Internet, an increase from 80% in the previous year. All large companies use computers and the Internet in their work. Computer usage and Internet usage are the lowest in small enterprises with 50 and fewer employees, 89% and 81% respectively. For the medium-sized companies (50 to 250 employees) these indicators are 99% and 98%. Some 77% of enterprises used the Internet for banking and financial services. In 2004 there were a mere 6% of enterprises, which pursued sales on the Internet and 15% that bought goods and services electronically.

Education. The number of computers and Internet usage in educational establishments is growing, but the proportion of computers used for educational purposes fell over the past year. According to the Department of Statistics of Lithuania computers are used for teaching purposes most widely in general schools: 78% of all computers. In comparison, this indicator is 66% for vocational schools, 68% for professional colleges, 64% for colleges, and 52% for universities. The number of computers per student is increasing quite negligibly, with the exception of professional schools. In 2004-2005 the number of computers used for teaching purposes were 4.6 per 100 students in general schools, 7.2 in vocational schools, 19 in professional colleges, 6.3 in colleges, and 5.3 in universities. The proportion of computers with Internet connection is growing. It stands at 71% in general schools, 85% in vocational schools, 84% in professional schools, 89% in colleges, and 96% in universities. In recent years the biggest growth in Internet connection was recorded in general schools.

Government. Government institutions are lagging behind the business sector in terms of Information Technologies (IT) usage. The proportion of public institutions providing electronic access to the main

³¹ Information Society Development Committee, http://www.ivpk.lt/main_en.php

information about their activities had reached the EU level and comprised 80% at the beginning of 2005. Public institutions with their own websites accounted for 60%. Data shows that 72% of employees in public administration institutions used computers and 60% used the Internet. In 2005 half of all state and municipal institutions provided services on the Internet, up from 33.5% in 2003. The level of transposition of basic public services to the electronic environment in Lithuania stood at 64% in 2005, up from 50% in 2004, according to the Information Society Development Committee (ISDC) reports. According to May 2005 data, the total number of eGovernment services was 733.³²

Business-designated government services are being transmitted to the Internet faster than services for private individuals. In 2005 the rate of transposition of business-designated government services reached 76% (up from 60% in 2004), while the rate for eGovernment services for private individuals was 56% (44% in 2004). Basic public services are supplied at the second level on average, which means that many governmental institutions offer application forms or blanks online but the submission of completed forms via the Internet and electronic supply of services is not possible. The most advanced eGovernment services are related to income declaration, public libraries information search, social payments, customs declarations, and statistical reporting. It is planned that by 2010, 40% of the population will be using eGovernment services, 95% of basic government services will be provided electronically, and 70% of all eGovernment services will be rendered under a one-top system.

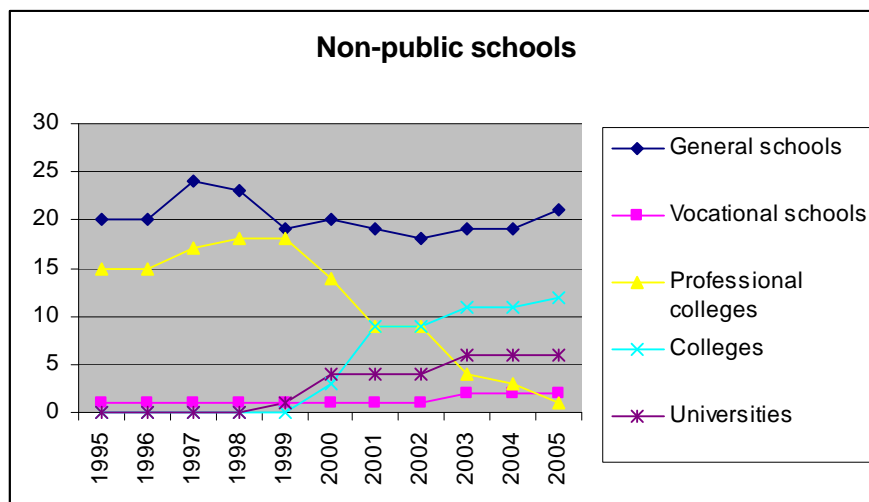
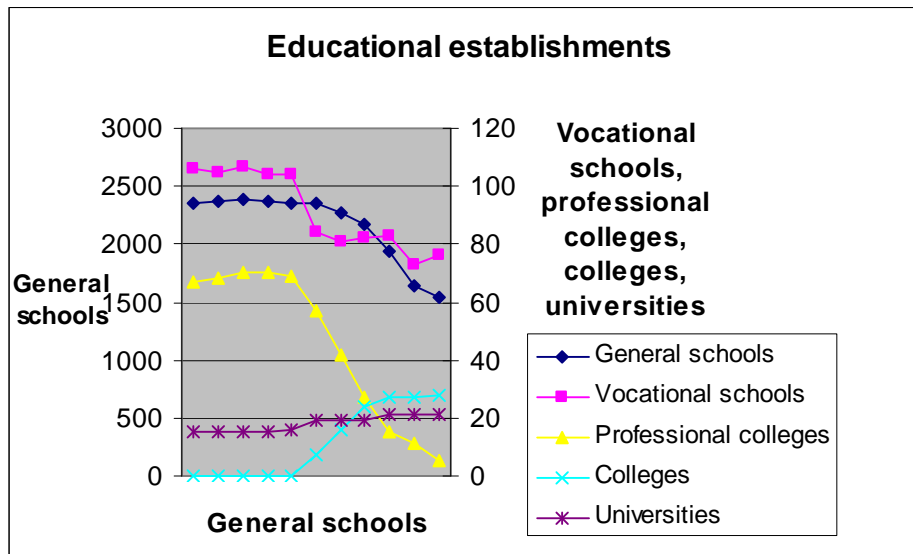
³² Information Society Development Committee, http://www.ivpk.lt/main_en.php

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

I.1. Description of the current education and training system in Lithuania

Lithuania's formal education system consisted of 21 universities, 28 colleges, 5 professional colleges, 46 sport schools, 118 art schools, 66 special schools, 76 vocational schools, 89 gymnasiums, 478 secondary schools, 639 basic schools, and 683 primary schools in the year 2005.

Figure 3. Number of public and non-public schools



Source: Department of Statistics to the Government of the Republic of Lithuania (Statistics Lithuania), <http://www.stat.gov.lt/en/>

Formal education begins with pre-schooling in Lithuania. The last year in the kindergarten prepares 6-year old children for school.

Secondary education is compulsory. However, according to the statements of the Ministry of Education and Science, about 2% of children of an appropriate age do not attend school at present, and

this number has been increasing during the last decade. Secondary education is undergoing a reform in Lithuania. According to the reform plan, secondary schools are institutionally separated from primary schools (1st – 4th year of training), and divided into basic schools (4th – 10th or 8th year) (after finishing the latter, there is a possibility to study at vocational schools) and gymnasiums (10th or 8th – 12th year) (after finishing these, young people can get higher or high education). Youth schools, vocational schools, arts gymnasiums, special schools for adults and special education institutions are also a part of and an alternative to secondary education.

Primary and secondary education institutions are almost all state institutions. Most of them belong to municipalities (with the exception of Lithuanian schools in predominantly Polish regions around Vilnius and special schools for disabled or especially talented children). There are also some gymnasiums, which belong to church. The network of private institutions is also expanding. Private schools usually provide services for richer customers.

Secondary schools' governing boards consist of pupils', teachers' and parents' representatives. The board usually has some supervisory or advisory functions. Pupils' "parliaments" in schools are also becoming more and more popular. A school's principal, appointed by the municipality, adopts the main decisions in municipal secondary schools. Although secondary schools are regarded to be autonomous, regulation of school activities is very extensive: municipality education departments can take virtually any decision concerning a school's management, and the Ministry of Education and Science governs the curriculum, as well as teachers' qualification categories and salaries.

Private schools had a specific legal status of an "educational institution", but now they are registered as business entities or non-governmental organisations (NGOs).

Secondary schools are financed through two different mechanisms. Resources for the "process of education" (salaries to teachers, teaching equipment), which account for around 2/3 of total expenditures, are financed through school vouchers funded from the state budget. The size of the voucher for a particular child is adjusted to individual circumstances of the school and the pupil (the year of studying, the distance from administrative centres, disability of the child, etc.). Municipalities have a possibility to redistribute finances within municipal schools. Vouchers go both to public and private schools.

Resources for the "environment of education" (buildings, electricity, heating, etc) are provided by the owner (by municipalities in the case of municipal schools). Religious schools usually get municipal support as well. Fees are allowed only in religious and private schools (primarily used only in private ones).

Tertiary education consists of universities, colleges (lower level and practice-orientated institutions), schools of high education or professional colleges (orientated towards providing professional skills of high quality) and, partly, vocational schools.

Universities and colleges are also publicly financed budgetary institutions. Private universities and colleges are either businesses or NGOs. Statutes of state universities are approved by the parliament.

Universities have boards, but rectors are elected by the university's staff. State universities and colleges have significant autonomy in management issues; however, immovable property used by universities and colleges is government property. Many aspects of the curriculum, salaries and reporting are regulated by the Ministry of Education and Science either directly or through financial instruments.

State universities and colleges do not get fees from their students, except for the standardized fee for all students (which is actually paid by half of all students – the ones that get worse than "good" results). The Lithuanian Constitution provides a "right to free education in public higher education institutions for all students whose study results are good".

Vocational schooling in Lithuania is currently declining. Most of those institutions fail to attract students, face serious financial problems and often are not ready to prepare skilled workers. Although roughly 80% of all students choose universities and colleges, the demand for workers is sometimes increasing even more rapidly; hence there is a shortage of skilled workers, and some changes in this situation are likely to take place. At the moment, the shortage of skilled workers is mostly filled by corporate training initiatives and centres of professional training.

Formal education is also provided by the centres of professional training, which are owned by Labour Exchange offices.

In general the system of education and vocational training does not match the demand of the labour market. According to a study by the Lithuanian Labour Exchange ("Lietuvos darbo birža"), the qualification of almost 80% of individuals registered in State Labour Exchange Offices does not correspond to the demand of the labour market. Although learning is also provided by large private companies and public institutions that fulfil their employees' educational needs, there is no reliable statistical data on these efforts and the role of this activity is not to counterbalance the mismatch of demand and supply on the labour market.

Lifelong learning as a concept does not have deep traditions in Lithuanian society. There is lack of statistical data of its state as well. The current system of adult education and professional training does not provide sufficient possibilities for lifelong learning and does not support the evolution of a learning culture in society.

Distance education is an important component of lifelong learning, however the spread and the demand for it depends on the size, need and preparation for eLearning of the content developers, content providers and the learners.

The main groups involved in eLearning and distance education are the following:

- Content and training developers,
- Content, information and training providers,
- Tutors and facilitators (in specific cases, administrators and managers as well),
- Students and learners enrolled in formal education.
- Potential learners:
 - the business sector (employees from small and medium enterprises (SMEs) and the industry),
 - the unemployed,
 - the disabled,
 - dropouts (early school leavers),
 - others.

There have been several PHARE, Leonardo da Vinci and Socrates projects aimed at training and eInclusion of the disabled. The educational level of the disabled is lower than that of other people. While 52% of people in the first group of disability and 33% in the second group have a primary or lower level of education, only 17% of those from the first group of disability and 25% from the second group have vocational or higher education qualifications. At present, most of disabled people who are able to work are the clients of the Lithuanian Labour Exchange. In 2003, the Labour Exchange registered 34% more unemployed disabled people than in 2002. Only 26% of all disabled people were employed. During 2003, only 4% of the disabled participated in vocational training programmes.³³ So, the demand for training is very high, and distance education and eLearning are appropriate and effective forms of training for the disabled.

³³ Distance education in Lithuania – The National Study 2005. Lithuania

The digital divide between large cities and provincial towns still exists, as does the uneven distribution of technological infrastructure and low IT literacy. Disadvantaged target groups (the elderly, the unemployed and IT illiterates) are concentrated mostly in the provincial towns and rural areas.

I.2. The current state of eLearning in the educational system

The institutional framework for eLearning is integrated into the general framework of education – major public institutions and universities have divisions or people responsible for eLearning. The Ministry of Education and Science has also established a Centre for Information Technologies in Education. The Centre coordinates the main eLearning programmes as well as schools’ technological equipment.

Recent reports (for example, the World Information Society Report 2006) on information society and eLearning have estimated the size of the European global market for eLearning at several billion euros, in part due to general economic growth in countries experiencing rapid development and modernization, for instance, Lithuania, and in part due to changes in demographic patterns. But perhaps for the most part it is due to the ever growing individual and corporate interest in continuous professional development and in lifelong learning, the requirements for which are now quite different from those of a decade or so ago.

36% of the population in the Baltic Sea region have participated in organised computer courses organised, with a maximum of 60% in Denmark. Computer courses are less used in the rest of the Baltic Sea region, but still in Iceland and Germany the share of people aged 16-74 who are eager to capture ICT knowledge is above the average. In addition, more than 20% of the population in Poland, Latvia and Lithuania have improved their skills in such a way.³⁴

Figure 4. Share of the population who participated in organised computer courses. 2004. Percent of population aged 16-74.



Source: Indicators for the Information Society in the Baltic Region 2005

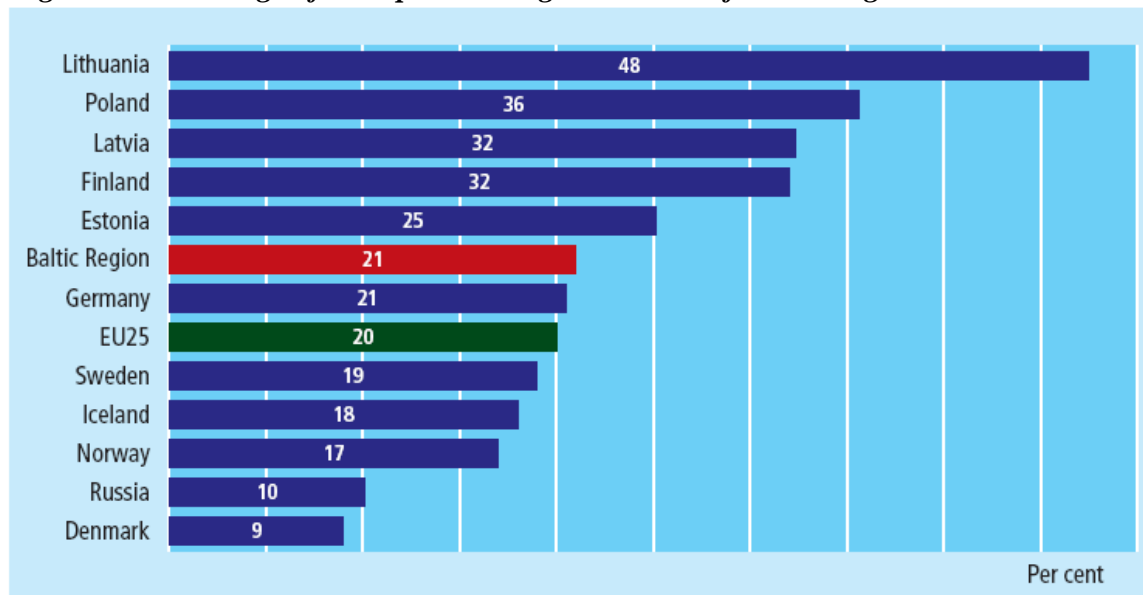
According to the Indicators for the Information Society in the Baltic Region 2005, Lithuanian, Polish and Latvian enterprises were the leaders in using training and education via the Internet in 2004:

- 48% of Lithuanian enterprises used the Internet for training and education, which is far more than the EU25 average of 20%.

³⁴ Indicators for the Information Society in the Baltic Region 2005

- Approximately one-third of the enterprises in Poland, Latvia and Finland made use of the Internet for training and education.

Figure 5. Percentage of enterprises using the Internet for training and education. 2004



Source: *Indicators for the Information Society in the Baltic Region 2005*

According to Department of Statistics of Lithuania data, it is evident that the number of students in higher education is growing, but educational institutions have limited space and a limited number of professors, etc., so the need for eLearning and distance education is increasing as well.

According to the National Distance Education Association (NDEA), distance education is popular among correspondence students, especially those who work, have family commitments and would like to receive a diploma or re-qualification without interrupting their work. The typical “picture” of the potential correspondence student is as follows:³⁵

- Mostly working;
- Wishes to combine work and studies;
- Mostly possesses basic IT skills (word processing, e-mail, web browsing and the Internet search);
- 22-45 years old;
- Either gender;
- Living in any part of Lithuania.

The Lithuanian government’s one of the primary aims is to support and promote the expansion of lifelong learning at higher education levels, particularly in the form of continuing professional development, when after finishing studies in universities or colleges people improve their professional skills or knowledge in various professional centres or other institutions that offer self-development opportunities in the professional field. But it also offers means to help increase social inclusion. The concept of eLearning, and especially distance learning, will provide opportunities for learners who otherwise would not be able to take advantage of higher education (such as people with certain forms of disability). eLearning should make education accessible for such disadvantaged groups.

Formal education plays a key role as competences gained in non-formal or informal education are generally not acknowledged. However, non-formal education performs an essential role in new innovative learning schemes, including eLearning.

³⁵ Distance education in Lithuania – The National Study 2005. Lithuania

Economic growth and rapidly changing demands for new qualifications open new markets for eLearning and distance education providers. Numbers in the target groups, such as early leavers from the educational system, working people who intend to improve their qualifications, part time university and college students, etc. are rising, too. These trends provide the potential for distance education usage.

According to the official statistical data for the analysis of potential eLearning and distance education target groups, the labour force was 1,625,400 in the second quarter of 2004, of which 1,442,100 (~88.7%) was employed. Over one million people are employed in the private sector. Most of the employed work in the services sector; 55,400 and 28,300 work in the industry and construction.³⁶

Data of the Lithuanian Labour Exchange shows that in 2003, 28% (12,100) out of 43,400 graduates from different educational institutions applied to the Labour Exchange (44% vocational school graduates, 38% high vocational school and college graduates and around 13% higher education institution graduates). These numbers differ compared to wealthier European countries with low unemployment rates, high labour costs, stable social guarantees, a minimal number of poor families and a high level of social cohesion.³⁷

Lithuanian institutions of labour market training have been providing services of vocational training for more than ten years, inviting people to study, helping to make information-based, realistic decisions for vocational growth, developing core work and social skills. Each year, over 70,000 unemployed receive training at Labour Market Training Centres. Surveys show that 65-80% of the course graduates get jobs. In 2003, the volume of vocational training was the largest since 1995 when 28,485 people participated in vocational training programmes. Of these, 8,321 long-term unemployed people participated in programmes for updating their knowledge and skills. In 2003, the Labour Exchange and employers referred more people to training; the number of those who applied for training on their own initiative was smaller.

8,887 people improved their professional qualifications: 6,241 out of them were referred to training by their employers; 1,446 were jobless; 1,200 enrolled on their own initiative.

11,277 people completed retraining and acquired primary qualifications: 7,424 out of them were jobless; 1,931 were referred to training by their employers; 1,681 enrolled on their own initiative; 241 were prisoners. 4,558 people completed employees' safety and health training programmes and were granted registered certificates. According to data provided by the Lithuanian Labour Market Training Authority, during the first half of 2004, 15,400 people received their first vocational qualifications, retrained or improved their qualifications; 339 of them passed the equivalency examination (there is no official data about eLearning usage in these retraining courses).

According to data from the Department of Statistics of Lithuania, there are 308,377 unemployed people in the country at the moment (data provided by the National Labour Exchange indicates 146.5 thousand). But the unemployed are with various educational backgrounds and vocational training, so their demand for training is different as well. It should be emphasized that about 30% of unemployed people live in rural areas (see Table below: Population by economic activity (aged 15 years and older).

³⁶ Distance education in Lithuania – The National Study 2005. Lithuania.

³⁷ National Long-term Development Strategy

Figure 6. Population by economic activity in 2005 (aged 15 years and older)

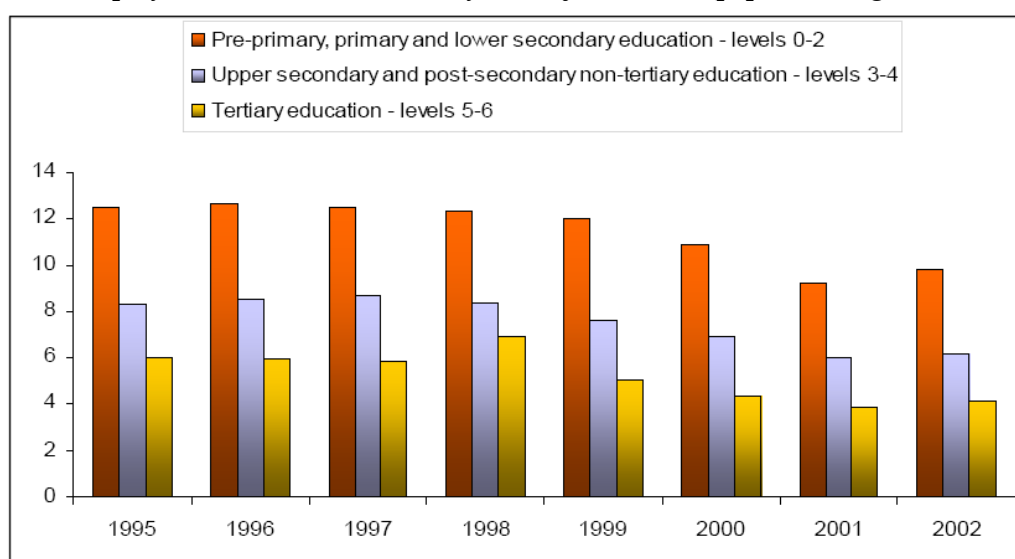
| | Total | Urban | Rural | Males | Females |
|-------------------------------------------|----------------|----------------|---------------|----------------|----------------|
| Population aged 15 years and older | 2803988 | 1895411 | 908577 | 1280708 | 1523280 |
| Labour force | 1582197 | 1156736 | 425461 | 803626 | 778571 |
| Employed | 1273820 | 951289 | 322531 | 631821 | 641999 |
| Unemployed | 308377 | 205447 | 102930 | 171805 | 136572 |
| Inactive population | 1189232 | 711393 | 477839 | 458044 | 731188 |
| Pupils, students | 284501 | 205551 | 78950 | 134320 | 150181 |
| Pensioners | 718335 | 419446 | 298889 | 248711 | 469624 |
| Homemakers | 98137 | 39127 | 59010 | 15962 | 82175 |
| Other | 88083 | 47154 | 40929 | 58943 | 29140 |
| Not indicated | 176 | 115 | 61 | 108 | 68 |
| Not indicated | 32559 | 27282 | 5277 | 19038 | 13521 |

Source: Department of Statistics to the Government of the Republic of Lithuania (Statistics Lithuania), <http://www.stat.gov.lt/en/>

Data provided by the Lithuanian Labour Market Training Authority (LLMTA) shows that during the first half of 2004, the Labour Exchange referred 8.4 thousand of the unemployed and 0.5 thousand employees under redundancy to training in the Labour Market Training Centres (LMTC). Employers referred 4.7 thousand employees to attend re-qualification programmes, and 1.9 thousand people attended training programmes on their own initiative.

The European data provides an indication of the difficulties that people with different levels of education have to face in the labour market and gives the first indication of the impact of education in reducing the chances of being unemployed (see below). Another important aspect is that a person's employability and income is likely to be considerably higher if he/she is better qualified. On average, the income of a person with less than upper secondary education was 90% of the national median, compared with 147% for those with tertiary education.³⁸ eLearning is one of the means that help people to improve their education, gain professional qualifications and avoid unemployment.

Figure 7. Unemployment rates in the EU15 by level of education (population aged 25 to 59; in %).



Source: Lithuanian Labour Market Training Authority, <http://www.darborinka.lt/english/?pid=600>

³⁸ Eurostat yearbook 2004. The statistical guide to Europe

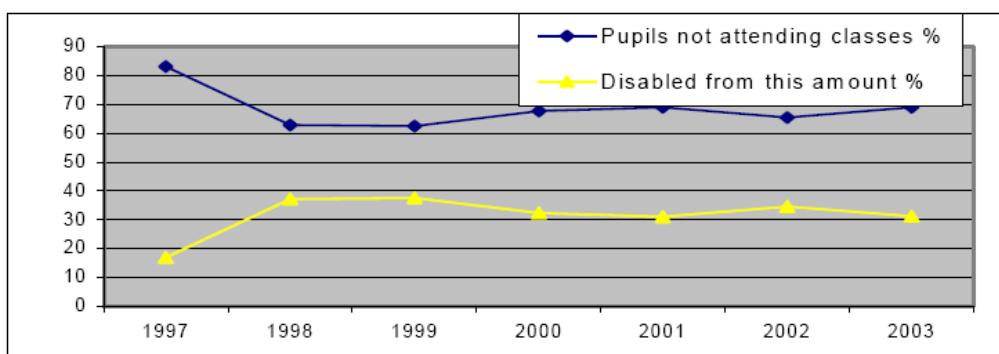
The indicators focus on 25 to 59 year-olds. They show the ‘probability’ of being jobless for those who would like to have a job, depending on their education.

Another group in need of eLearning is people with disability. Each country has a proportion of the population that faces some obstacles in entering, participating, gaining or completing education. These people mention their disabilities at enrolment and request special services for access to information sources. Changing social and economic conditions in Lithuania have had a profound impact on the place of the disabled in society. For a long time, society looked upon the disabled as helpless people who could not adapt to the surrounding environment by themselves. Following European trends in higher education, universities recently introduced measures concerning access to universities’ development plan for social integration of disabled people into society. It is important to take their needs into consideration and to underline the opportunities available as well as the obstacles that prevent disabled people from fulfilling their needs for education.

The Lithuanian SPD for 2004-2006 adopted measures for developing professional rehabilitation for the disabled, enhancing employability and integration into the labour market for the unemployed, preventing social exclusion and promoting social integration. In 2004, funds from the European Commission’s initiative EQUAL (one in four Community Initiatives co-financed by the European Union (2000 – 2007) were allocated to 30 projects aiming to satisfy the needs of socially excluded groups.³⁹

Data from the Ministry of Education and Science indicates that about one-third of pupils not attending classes are disabled. Although research data indicates that this number has decreased over the last seven years, it actually remains almost the same (see Figure: Disabled pupils in Lithuania.).

Figure 8. Disabled pupils in Lithuania



Source: Ministry of Education and Science of the Republic of Lithuania, <http://www.smm.lt/en/>

Students’ diversity, particularly concerning formerly under-represented groups, becomes an important issue in the contemporary organisation of higher education. With eLearning, there are fewer barriers for disabled people to participate in education, since everyone starts from a common base, at least in the first stages of the learning process.

Analysis of the existing situation enables us to identify the following situation concerning the current and future students and how they are related to the system of education:

- Students are entitled to quality educational services, which provide opportunities to acquire the skills of “learning to learn” and “how to use ICT”, even though, as young people, they are already very technology-literate.

³⁹ Modernisation of the Education and Training Systems towards the 2010 common goals of the EU

- Another aspect is the changing profile of students; the increasing number of part-time students from traditional enrolment groups poses certain challenges, since their initial level of skills is quite different in a considerably diverse group of participants; however, all these students must be offered an opportunity to gain the skills they need. But although the growing number of students benefits society, it also presents a challenge to the higher education system to provide appropriate learning opportunities for these larger ranks of students.
- The academic community differs from other communities because the measures and efforts of education and learning here are individualized for the promotion of self-directed learning.
- eLearning appears to be both an answer and an additional challenge as it creates opportunities to expand this special community; it is a challenge as well as it is a demanding task to maintain the cultural characteristics of this community.
- Therefore, the third aspect – flexibility of higher education – becomes of extreme importance, and this is the way to provide a diverse group with appropriate services.
- The appropriateness and flexibility of eLearning should be the focus: as the number of technologies is on the rise (both the Internet, CD-based facilities for video conferencing, and other constantly emerging technological developments), they should be applied according to the needs of students, not *vice versa*. Moreover, the development of eLearning technologies should be strategic – with the emphasis on “usability” to all potential clients/students.

Another main target group is teachers. The importance of technical and pedagogical support for teachers should be emphasised as this is a crucial factor for success in implementing eLearning in higher education. Teachers need support in both overcoming their own learning barriers and in assisting students to achieve their aims; therefore, teachers’ competences and the support enabling them to increase it should be the focus at institutional, national, and international levels.

At present, there are no correspondence or distance vocational training programmes in Lithuania, although such programmes would be popular among those who need vocational training. There is no data about eLearning and distance education needs in the general education system, but there is data for those adults who have left the school early, which identifies their general education needs.

1.3. ICT skills and attitudes towards ICT usage

ICTs are becoming more widely used and are benefiting more people. But today over half of Lithuania’s population either does not reap these benefits in full or is effectively cut off from them. The Government intends to ensure full participation of the population in the digital-knowledge society by introducing various programmes and projects related to ICT usage.

Currently, a large number of users have access to infrastructure and services, which allow the delivery of many types of digital content. This means that there are tremendous market opportunities in the development of attractive and stimulating content and services that will benefit both the user and the economy. Yet, the progress in this area is slow. Digital literacy ensures that citizens have the necessary critical skills to be able to make full and effective use of ICT.

There is some criticism based on the notion that the consumers cannot provide any other impact but economical, since they are not organized or sufficiently represented in the educational and lifelong learning market and thus cannot pressure the providers.⁴⁰ In addition, since the infrastructure is owned by the providers it is thought that wider usage of ICTs is hampered; therefore students can access high quality infrastructure only through the educational institutions.

The high level of expertise in the ICT sector is not being fully exploited (in fact, some of it is being exported elsewhere and therefore is a loss for Lithuania), but the education sector lacks ICT expertise. The IT sector is one of the most dynamic sectors in Lithuania as well as in the rest of the world. When

⁴⁰ Distance education in Lithuania – The National Study 2005. Lithuania.

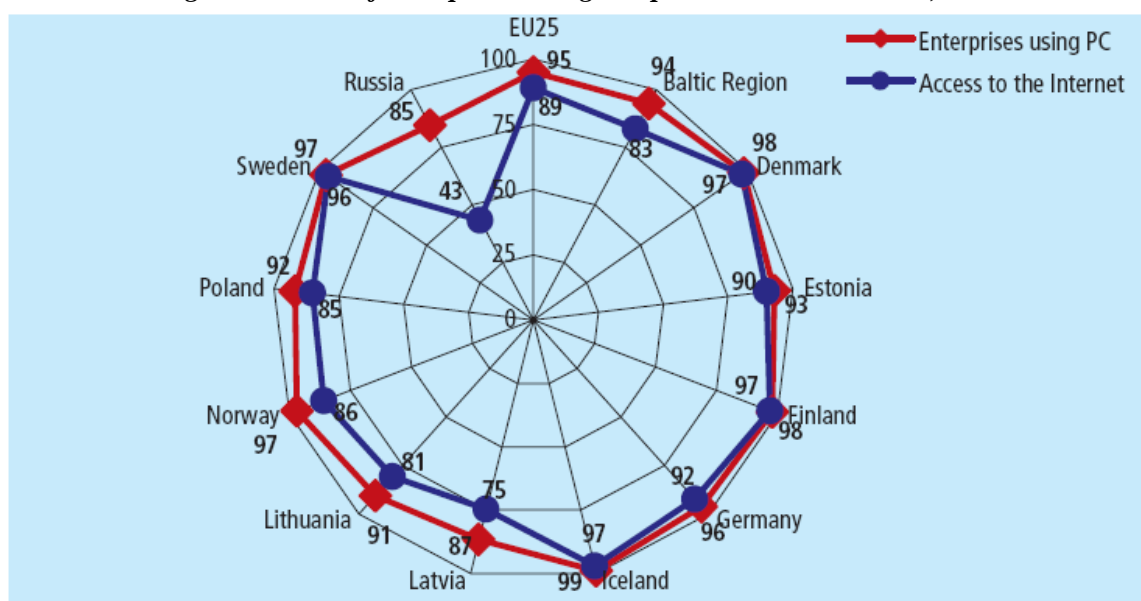
distance education was first introduced into education, the need was created for introducing ICT; likewise, ICT facilitated more diverse learning and learning at distance. There is great potential for partnership between the ICT and educational sectors.

Human capital is a central pillar of growth and productivity, thus investing in people and skills is a vital issue not only for policy makers, but also for enterprises. That is one of the reasons why the share of the labour force with ICT skills has been steadily growing.

Usage of PC's and access to the Internet⁴¹

Computer use is widespread in today's business enterprises in the Baltic Region. At the beginning of 2004, approximately 670,000 enterprises in the Baltic Region used computers, and the average share of enterprises using computers in the region was 94% (cf. figure 11). The proportion of enterprises using computers in the Baltic Region ranges from 85% in Russia to 99% in Iceland. The share of enterprises using PC's in Lithuania was 91%, lower than the EU25 average, whereas the shares in the other countries of the Baltic Region are higher than the EU25 average.

Figure 9. Share of enterprises using computers and the Internet, % 2004



Source: *Indicators for the Information Society in the Baltic Region 2005*

Computer and Internet usage has been increasing rather quickly in Lithuania, though, as in many other new EU member states, the issue of Internet access is still very important. Based on data from the 1st quarter of 2005,⁴² the number of people with a PC at home has increased; 33.8% of people (aged 15-74) in the country indicated that they had a PC at home (cf. the 3rd quarter of 2004 – 28.1%); the proportion of people planning to buy a PC during the next 12 months was 14% (cf. the 3rd quarter of 2004 – 10.2%); the proportion of people with Internet access at home was 13.7% in the 1st quarter of 2005.

32.4% of all citizens between 15 and 74 years of age were using the Internet in the 1st quarter of 2005 (cf. the 3rd quarter of 2004 – 30%). Notably, the increase in the number of people using the Internet on a regular basis, i.e. at least once a week, is especially rapid - in the 1st quarter of 2005 the proportion of such people was 24.4% (cf. the 3rd quarter of 2004 - 18.2%). This has been the result of an increasing ability to access the Internet for free.

⁴¹ Indicators for the Information Society in the Baltic Region 2005

⁴² Data source: TNS Gallup, <http://www.tns-gallup.lt/en/>

The Internet is mostly used for communication, information search, and reading online newspapers and magazines. E-mail was used by 75%; newspapers and magazines were read or downloaded from the Internet by 70% of Internet users. 63% of Internet users were searching for information on goods or services. The number of Internet users has grown negligibly this year, but the variety of purposes, for which the Internet is used, has increased – in 2005 the penetration of eBanking reached 30% of Internet users (in 2004 – 23%) and that of information search regarding goods and services reached 63% (in 2004 – 52%).

The extent of Internet use depends markedly upon age – the biggest proportion of Internet users is among young people: 73-75% of 16-24 year-olds were using the Internet; the proportion of Internet users among 25-34 year-olds was 44.9%. The percentage of Internet users among 35-44 year-olds reached 32.7 and among 45-54 year-olds – 25.6%. Meanwhile, older people use information technologies rather seldom: during the above-mentioned period, only 8.8% of people aged 55-64 were using the Internet and only 1.9% of those older than 64 years were using the Internet. Vast differences in information technologies' usage are noticeable between urban and rural residents. In the 1st quarter of 2005, almost 50% of people in cities and towns (with more than 2,000 people) were using computers, compared to 26% in rural areas. The figures for Internet usage were 40% and 18%, respectively.

Figure 10. Percentage using PC/ using the Internet

| | 1st quarter of 2004 | | 1st quarter of 2005 | | 1st quarter of 2006 | |
|-----------------|---------------------|---------------------------|---------------------|---------------------------|---------------------|---------------------------|
| | Percentage using PC | Percentage using Internet | Percentage using PC | Percentage using Internet | Percentage using PC | Percentage using Internet |
| 16-24 years old | 82 | 71 | 80.6 | 73.7 | 88.1 | 84.2 |
| 25-34 years old | 44 | 35 | 54.8 | 44.9 | 63.0 | 56.9 |
| 35-44 years old | 37 | 26 | 44.1 | 32.7 | 50.3 | 42.8 |
| 45-54 years old | 26 | 18 | 32.9 | 25.6 | 36.9 | 31.2 |
| 55-64 years old | 11 | 8 | 12.1 | 8.8 | 14.8 | 12.3 |
| 65-74 years old | 3 | 2 | 2.4 | 1.9 | 3.6 | 2.9 |

Source: Communications Regulatory Authority of the Republic of Lithuania, <http://www.rrt.lt/>

Successful introduction of new technologies in Lithuania is also demonstrated by technologies used for providing Internet access. It should be noted that technologies used for providing Internet access differ depending on the service's recipient - whether it is a private consumer or an organisation. Private consumers predominate among subscribers using the Internet via a dial-up line (63.5%); xDSL line (68.0%); public mobile radio connection network (76.2%); wireless communication lines (66.2 %); cable TV network (97.2%); optic lines (89.7%); Local Area Networks (LAN) (93.9%); and Programmable Logic Controller (PLC) or satellite communications (65.9%). Meanwhile, other service recipients – companies and organisations – predominate among subscribers using the Internet via a leased line (97.9%).⁴³

⁴³ Lithuanian Communications Sector 2004. http://www.rrt.lt/get_file.php?file=WjZwcHBtcXJtV05xb214am1jNXRrbTdKbTg2WnpwU1haNnBpbEhDd2tzcHJvWEtNYXB4c3AveGttSnJLeXA2ZlpzaWFsOFNWeEdka2JtaVRiNmxeUcyZW0yJTJCYWlYQ0duSWxxVkpVGFaUm8xMnZhbGRXVW5aV1lhYzV1clpIRmNGaHRuVzZsYTYzodm1taW15WUdjZUd5eFo1T2EwcGlXWXAxbm9KeDBsQS UzRCUzRA

It is important to encourage people to acquire information technologies and access to the Internet. A significant step forward was the Law on Amending the Law of the Republic of Lithuania on Personal Income Tax, as passed by the Parliament of the Republic of Lithuania on 15 June 2004, which stated that expenses incurred by a resident during a taxable period for acquiring one unit of hardware and software and/or installation of one Internet access place once in three years can be deducted from taxable income.

Since 2002, a private business initiative “Window to the Future”⁴⁴ has been setting up public Internet access centres. Thanks to the initiative’s collaboration with the Ministry of Internal Affairs, 100 public Internet access centres were established in 2003. The efforts of the initiative “Window to the Future” have resulted in 175 Internet access centres in Lithuania during a three-year period. Since 1 June 2005, 300 more new public Internet access centres all over Lithuania began their activities. This completed the first stage of implementation of the project “Establishment of Public Internet Access Points in Rural Areas,”⁴⁵ funded in accordance with the PHARE 2003 Social-Economic Cohesion Programme (European Union initiative, which supports the development of a larger democratic family of nations within a prosperous and stable Europe.). Public Internet access points were established in frequently visited places such as libraries, cultural centres, premises of public administration bodies, community centres, etc. The aim was to ensure that the distance between the rural residents and their nearest public Internet access point is less than 8–10 km. Each newly established point of public Internet access has up to five PC-equipped work-stations with Internet access. The funds of the EURO PHARE programme have been used for the acquisition of technical equipment and furniture that enable the Internet access and provision of services used for the implementation of the project. All other current expenses will be covered by the founder of a public Internet access point at his own expense or with the supporters’ funds. The total funding assigned for the implementation of the project is EUR 3.15 million. Public Internet access points will offer the Internet services free of charge, whereas other services will be provided for a minimum fee. Public Internet access points provide Internet access 40 hours a week; the Internet connection will be paid for from the funds assigned for the project for 18 months.

Instructors working at the above-mentioned facilities will inform users about the available services and training programmes, help people to find and receive services from eAuthorities, monitor the use of PCs and software at the Internet access points, and assist in training rural people in using computers and the Internet. Furthermore, proposals will be made for rural people and companies on how they could use current and forthcoming training courses based upon the existing distance education modules, introduced in the near future through distance education centres (funded in accordance with the PHARE 2000 Social-Economic Cohesion Programme).

In order to create more opportunities for people to use the Internet for free, an application has been filed for funding the establishment of public Internet access points from the EU structural funds. The implementation of this project would result in the establishment of additional 400 public Internet access points. Before these important investments were carried out, public libraries were the main location of public Internet access; libraries had more than 200 Internet access points. Currently Lithuania has about 700 centres where people can use the Internet for free.

In order to create conditions for people to seek general computer literacy corresponding to their education and profession, the Lithuanian Government approved the Global Computer Literacy Programme.⁴⁶ The programme is aimed at creating and developing people’s computer literacy and at partly financing the training of people in computer literacy. In addition, the Ministry of Education and Science approved the General Computer Literacy Standard, which established unified requirements and recommendations for computer literacy qualifications and provided principles for certifying

⁴⁴ Window to the Future, <http://www.langasiateiti.lt/vid.php4?mid=9>

⁴⁵ Development of Rural Internet Access Points network, <http://www.vipt.lt/cms/app?service=direct/1/index/border.border.testLocale>

⁴⁶ Global Computer Literacy Programme, http://www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=241518&p_query=&p_tr2=

computer literacy. The qualification requirements and recommendations established by the Standard are based on the European Computer Driving Licence (ECDL) programme.

II: OVERVIEW OF E-LEARNING IN LITHUANIA

II.1. Institutional structures and resources for eLearning

To implement the State Distance Education Development Programme, approved by the Government of the Republic of Lithuania in 2001, a project for the EU structural funds was made. While creating the Research and Study Information System, 22 successful projects for distance learning courses were backed; educational and technological materials for distance courses were renewed. To promote consistent development of the Lithuanian Distance Learning Network, in 2004 equipment was purchased, 2 new small distance learning studios and 2 new classrooms were set up, and equipment was updated in two operating distance learning centres. The provision of non-degree courses and validation of prior learning are limited at Higher Education Institutions (HEI).⁴⁷

After implementing the PHARE project “Multi-country cooperation in Distance Education”, the Lithuanian investment programme “Development of Distance Education Network in Lithuania” (LieDM) was started in 1998. This Network was established alongside the programme "Information Technologies for Higher Education and Science (2001-2006)" (ITMiS) supported by the Act of the Minister of Education and Science No 115, dated 30 January 2001. The Programme consists of three main interrelated sub programmes: the Lithuanian Science and Higher Education Information System (LieMSIS), the Lithuanian Academic Libraries Network (LABT) and the Lithuanian Distance Education Network (LieDM). The major goal of the LieDM Network is to promote the establishment of the information society in Lithuania by developing and coordinating the Higher and Continuing Education system based on the information and communication technologies. Studies in the LieDM network are based on the modern information technologies, while blending Internet-based learning and videoconferencing, expanding the network of Distance Learning classes and Centres, as well as establishing multimedia laboratories and videoconferencing studios.

eLearning development is mainly performed through the Lithuanian Distance Education network that consists of several interlinked distance education networks which already exist or will be established in the future: regional networks, several educational level networks, separate distance education providers or development institutions. The institutions' approach to the network is very important, as they are the main actors in the networks; they influence the distance education development strategy and are in direct contact with distance education professionals and learners.

The mission of LieDM network is to ensure lifelong learning by increasing the variety of services and providing equal learning opportunities to all Lithuanian citizens, and by enabling people to use resources of other international distance education networks through the national distance education network.

II.1.1. LieDM tools coverage for technologies used in eLearning

The publicly available Network is the basic infrastructure for distance education in the country; thus, all institutions - universities, colleges, vocational schools and other educational organizations - are able to participate in the delivery of distance learning services. The costs of educational services can be reduced considerably, since these institutions provide many different educational resources for students all over Lithuania, as well as organize examinations and plan the implementation of new technologies.⁴⁸

About LTL 2.7 million (EUR 782,608) were budgeted by the Government alongside the projects “Development of Distance Education in Lithuania” and “Expansion of Distance Education in

⁴⁷ Modernisation of the Education and Training Systems towards the 2010 common goals of the EU, http://www.smm.lt/svietimo_bukle/docs/apzvalgos/EC_LLL_report_final_ENG.doc

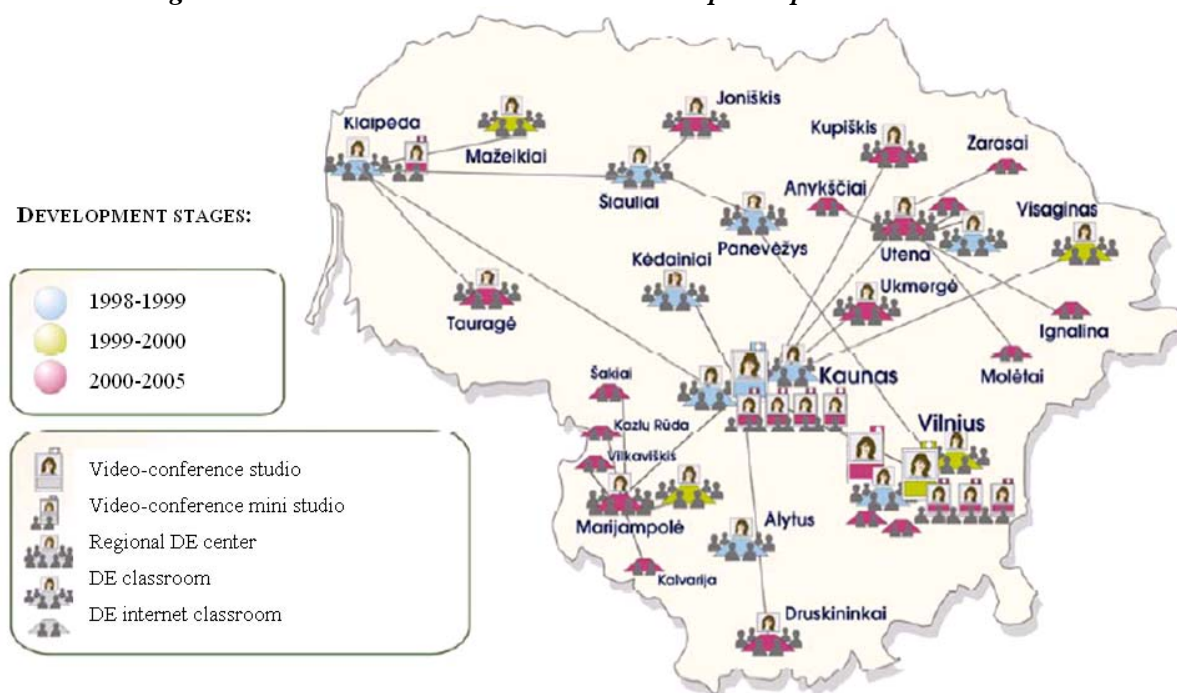
⁴⁸ Distance education in Lithuania – The National Study 2005. Lithuania; Lithuanian Distance Learning Network, www.liedm.lt

Lithuania (LieDM-2)” before the ITMiS programme was validated (until the year 2000 inclusive), while funds for network activity support were not allocated.

After starting implementation of the ITMiS programme in 2001, LTL 1 million (EUR 289,855) was budgeted for investments for the LieDM-2 project and LTL 350,000 (EUR 101,449) from ITMiS programme resources for network activity support. LTL 500,000 (EUR 144,927) was earmarked for the LieDM project and LTL 600,000 (EUR 173,913) from the ITMiS programme resources for network activity support in 2002. In 2003, LTL 580,000 (EUR 168,116) was allocated from the ITMiS programme for network activity support and network expansion. In 2004, LTL 973,000 (EUR 282,029) was provided for network activity support and LTL 254,000 (EUR 73,623) for investments.⁴⁹

Geographically, the LieDM network covers almost the entire territory of Lithuania, with the main emphasis on large cities, which have the greatest number of universities, institutes and colleges, as well as students and educators. The LieDM Network consists of the following units: 3 video conference studios, 7 video conference mini studios, 2 regional distance education centres, 18 distance education classrooms, 6 distance education Internet access classrooms with 340 computerized workplaces, and a professional video, audio and multimedia production studio.

Figure 11. Distance Education Network development phases in Lithuania.⁵⁰



Source: Lithuania Distance Learning Network, <http://www.liedm.lt/>

Critics argue that inter-institutional competition in the small educational market restricts the development of distance education. However, the fact that one institution does not recognise the courses delivered by another institution is not competition’s fault; rather, it is due to a lack of institutional cooperation and distance education recognition standards. Universities already share much research online and now offer courses fully or partially online. eLearning developers need to be encouraged to collaborate in eLearning content development and distance education providers need to be encouraged to share resources; thereby to adopt a more “open” approach.

In 2000, KTU (Kaunas University of Technology) established the Information Technology Committee with the primary goal of developing information technologies at the University. At the beginning of 2001 (which is the most recent data at the moment), a working group for Information eLearning

⁴⁹ Information Technologies for Science and Higher Education, <http://www.itmis.lt/eng/>

⁵⁰ Distance education in Lithuania – The National Study 2005. Lithuania

Technologies undertook sociological research that aimed to clarify university students' and teachers' attitude towards the employment of IT methodology and distance (continuing) education in the study process. Three research instruments – questionnaires – were developed: the first one for teachers who already employ distance education methodology in the study process (hereafter – *experts*), the second one for teachers who are not using information technologies, and the third one for students. The questionnaires were filled in by 52 experts, 169 teachers and 291 students.

The following diagrams present the results of the KTU research about the knowledge and attitudes of the identified groups on eLearning.

Figure 12. Picture: Do you realize the meaning of the words 'open and distance learning' and 'eLearning'?

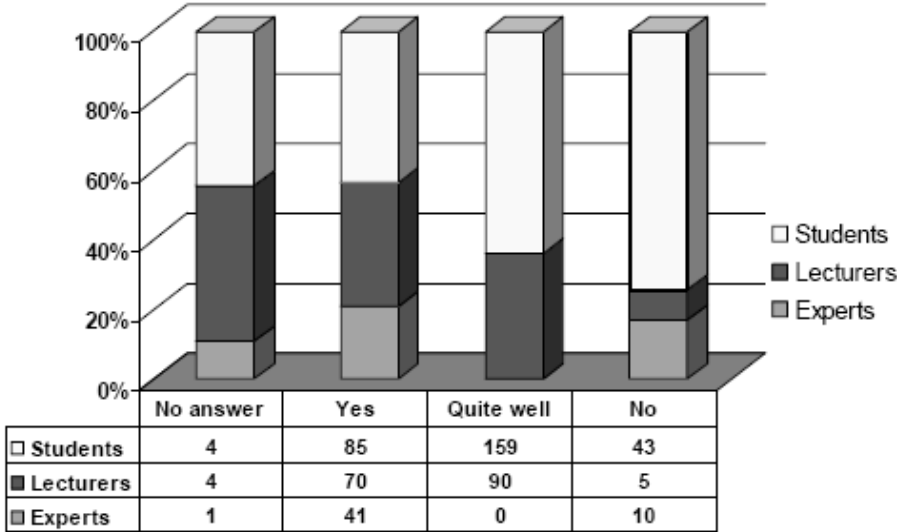


Figure 13. Picture: Would you like to participate in distance learning?

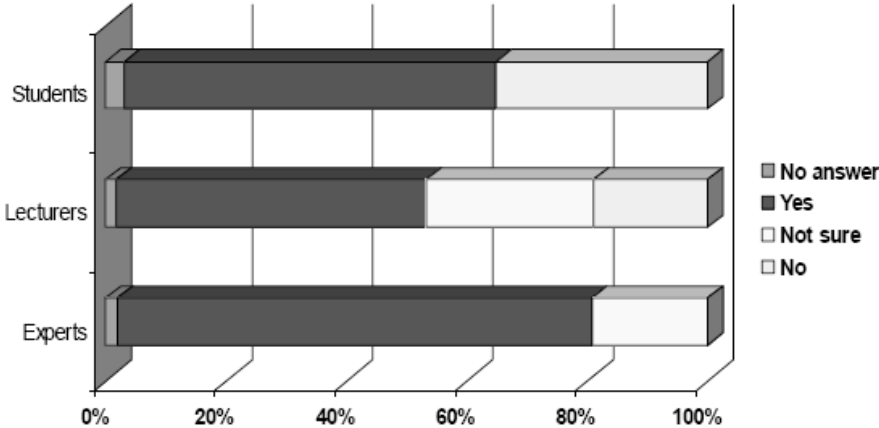


Figure 14. Picture: What are the ICT teachers using in the teaching process?

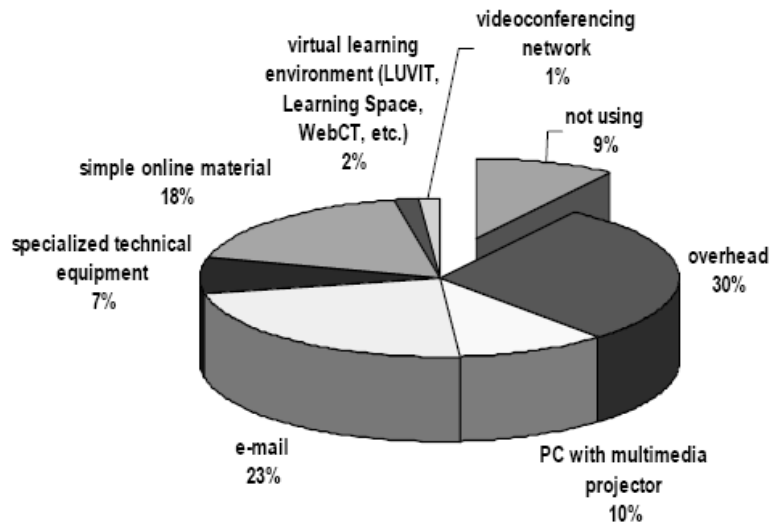


Figure 15. Picture: What are the main obstacles to start development of eLearning courses and deliver them to university students?

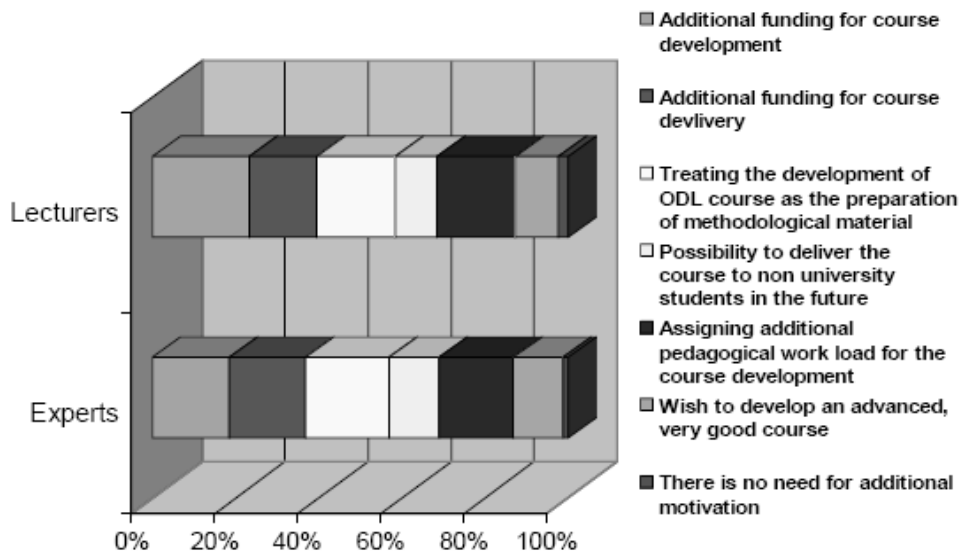
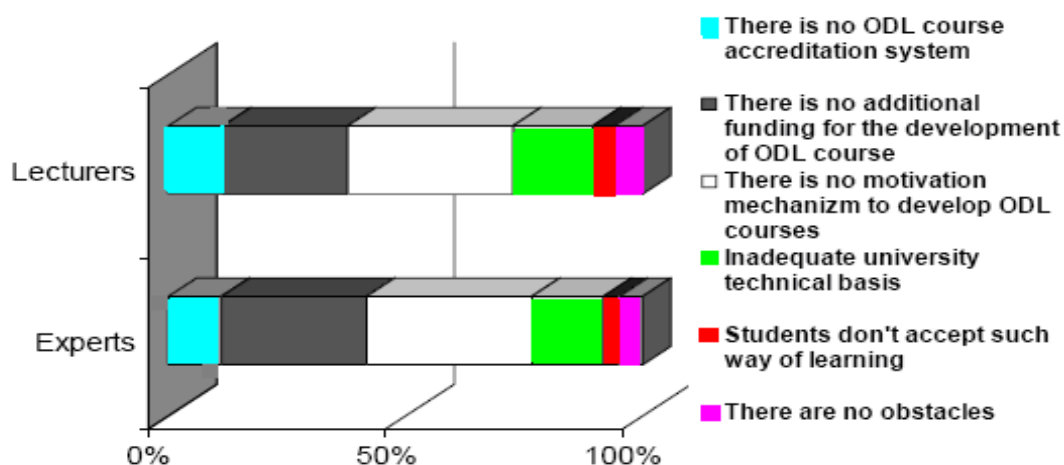


Figure 16. Picture: What factors could motivate the development of eLearning courses?



This research shows that eLearning and distance learning in particular are familiar both to students and lecturers and that eLearning is an attractive option to the students. The research also shows that ICT usage in studying is already very common, but it can grow further with sufficient funding and a proper motivation mechanism for lecturers to develop eLearning courses.

eLearning development in Lithuania can be traced back to early 1990s, whereby the pilot projects were mainly supported by European funding initiatives (PHARE, Copernicus, INCO-Copernicus, Leonardo and others). More than 30 projects focusing on different target groups resulted in new eLearning content.⁵¹

One of the activities of the National Education Strategy was the PHARE programme “Multi-country cooperation in Distance Education” (Pilot Project 1995-1996 and Follow-up Programme 1997-1999). Lithuania joined this programme in 1995.

During this project’s implementation three main activities were carried out: first, the establishment of a Distance Education Network infrastructure in PHARE project countries; second, the creation of distance education courses, and third, staff training.

In total, 40 distance education centres were established in PHARE countries. In Lithuania, two distance education centres were established at Kaunas University of Technology and Vilnius University, and study support centres were set up at Vilnius Gediminas Technical University, Vilnius Electronics College and Kaunas College of Technology.

Within the project’s framework, 7 distance education courses were created with Lithuanian project partners. 18 distance education course tutors from Lithuania successfully completed the Learning about Open Learning (LOLA) course, provided by the Scottish Development Overseas and Scottish Knowledge, using a Web-based Learning Environment and course materials designed by the Institute for Computer-based Training.

All these activities provided the initial impetus for distance education and eLearning development in Lithuania.

⁵¹ Targamadžė et al. 2005

The present Single Programming Document (SPD) for Lithuania for 2004-2006 sets out the economic context for the Programme and the existing conditions in Lithuania. Priorities have been developed taking full account of the EU, national, regional and local policies and initiatives: Priority 1 – development of social and economic infrastructure and Priority 2 – human resources development.

Two national projects were presented – “Development of Information and Communication Technologies based on the Distance Education Network in Lithuania” (Ministry of Education and Science, priority 1.5, budget LTL 3.6 million (EUR 1.04 million) and “Integral Development of Activities in the Lithuanian Distance Education System” (Ministry of Education and Science, priority 2.4, budget LTL 4.3 million (EUR 1.25 million).

In addition to that, several proposals relating to eLearning and Distance Education were presented to the Ministry of Education and Science and the Ministry of Social Affairs and Labour.

II.1.2 eLearning in secondary education

Secondary education is under direct responsibility of the Ministry of Education and Science. The Centre for Information Technologies under the Ministry of Education and Science is a body dedicated to execute the Ministry’s ICT-related policies. At present stage, the implementation of eLearning in secondary education is limited mostly to:

- Achieving computer saturation in schools recommended by the European Commission;
- Ensuring the basic eLiteracy level of schoolchildren;
- Introducing computer-based learning for IT-related disciplines.

Most observers notice uneven distribution of equipment throughout Lithuanian schools. ICT proficiency disparities exist among teachers both based on the subject that they teach and on the location

There are some research and policy proposals to concentrate more on eLiteracy for teachers and on the introduction of eLearning into IT-non-related disciplines, but such proposals are rare and do not have substantial influence on policies. The Ministry of Education and Science states that the policy is as it is because of insufficient technological background in schools:

- Too few computers;
- Too few and too low-speed Internet connections;
- Low support for computerised schools.

II.1.3. Distance learning

The National strategy for Lithuanian Distance Education Network Development states that the development of distance learning is aimed at building the infrastructure, material and organization to provide facilities for lifelong learning in Lithuania, which is a requirement for knowledge society’s development.

In 1998-2000, the Lithuanian Distance Education Network (LieDM) was established. The central goal of this network has been the creation of the infrastructure for videoconferences and web-based distance education. The main activities of LieDM are:

- Strategic development of distance education system;
- Analysis of users’ needs and research of distance education market;
- Preparation, adaptation and delivery of distance courses and study programmes;
- Development and support of interactive virtual learning environments;
- Co-ordination of video conference network;
- Video production of educational means.

The ongoing programme “Information Technologies in Science and Studies” (ITMiS), financed by the Ministry of Education and Science, includes further development of the LieDM network for higher and vocational education.

By 2004, the network consisted of 24 distance learning centres and classrooms located at universities, colleges and vocational schools. This network already provides distance learning services at higher education and vocational training levels.

Although the ICT infrastructure is mostly developed in big cities, the ongoing initiatives of PHARE and European Regional Development funds are expected to expand it significantly to the remote regions by establishing Rural Internet Access Points (RIAPs), Rural Broadband Internet infrastructure (RAIN) and by expanding the existing Distance Education Network (LieDM) to each municipality.

Public institutions began using distance education to provide work-related knowledge to their employees. For example, the Ministry of Interior runs an “IT security” project whereby distance learning material is prepared and will be available to public institutions in order to raise their employees’ awareness of the security threats. Web-based distance learning material will be made available through the infrastructure of KTU (Kaunas University of Technology) Distance Learning centre.

Private organizations, mostly large international ones, intensively use distance learning capabilities for providing information to their employees or specific knowledge to limited groups. Distance learning is used as a low-cost alternative to training. The material used belongs to the organisation and is used for internal purposes only.

Rapid economic development, changes in society, the educational reform and the developments in distance education provide a starting point for planning future steps. In general, good conditions for the development of distance education have been created in Lithuania and should be exploited; these conditions include enthusiasm for, and commitment to, change and innovation.

Though the development of distance education was substantial from 1998 until today, there are strategic and operational issues that need to be solved.

A mechanism and a system must be established to motivate teachers to improve their competences and skills to design distance education and apply it at their institution. This could be done in each institution by introducing a system for recognising and accrediting the institutions’ efforts in this area. However, in the majority of cases, a lack of enthusiasts, funding and other resources and bureaucratic mechanisms still result in a shortage of distance education study programmes, as well as high-quality distance education courses. There is also a wide gap between traditional learning/teaching experience and the possibilities provided by distance learning. This barrier exists both for students and teachers.⁵²

Moreover, specialists in distance education lack training and knowledge on how to modernize and make the study processes more effective and how to implement innovative learning methods and tools. Not enough attention has been devoted to training Lithuanian academics and teachers how to use information technologies in teaching and how to create individual learning paths according to models and templates during learning processes, e.g. application of different learning environments, tools and scenarios.⁵³

Limited financial resources prevent the education system from adapting to rapid changes in society and applying technologies in the education process. Thus the academic staff cannot benefit from all

⁵² Distance education in Lithuania – The National Study 2005. Lithuania

⁵³ Distance education in Lithuania – The National Study 2005. Lithuania

the opportunities to become acquainted with advanced distance education technologies and methodologies.⁵⁴

Neither state- or institutional-level distance education research activities nor analytical systems (e.g. quality assurance, monitoring methods and tools) are being developed to evaluate the effectiveness of a distance education course, its ability to satisfy the needs of the target groups and to make proposals to distance education designers and deliverers, through the use of good practice examples and cases.⁵⁵

II.1.4. Involvement of the private sector

Leading Lithuanian businesses – mobile telecommunication company Omnitel, fixed telecommunication company Lietuvos Telekomas, the largest banks Hansabankas and SEB Vilniaus Bankas as well as the largest IT companies Alna and Sonex and Co. – in May 2002 formed the alliance “Window to the Future”⁵⁶ to support the information society development in Lithuania. Today the alliance joins 13 private companies and the Ministry of Internal Affairs. The aim of the alliance is to increase the number of Internet users and to achieve the average EU Internet penetration within three years. The fields of activities are: (1) the establishment of public Internet access points, (2) training of PC and Internet users, (3) eServices to citizens. 175 public Internet access points were established by the alliance (half of them – in small towns and villages) and the average EU Internet penetration target was met in 2004. In 2003, 20 thousand people received basic PC and Internet user training.

The Open Society Fund Lithuania (OSF) (G.Soros Foundation)⁵⁷ supported the ICT infrastructure development projects in schools and public institutions from 1990 until 1998. In 1998 the strategy was shifted to promote eContent, recognizing the ability of businesses to sponsor the infrastructure. The OSF launched a number of projects on ePublishing, eInformation, eHealth, eCommunity and the like, altogether worth about LTL 6 million (EUR 1.74 million). The OSF not only funded the projects but also organized training and seminars to improve the applicants’ capabilities.

II.1.5. The costs involved in terms of human resources, equipment, etc.

There is no data regarding eLearning expenditures by the public sector. But as an example of planned expenditures, we can consider the Academic and Research Network in Lithuania II LITNET projects which aim to build the infrastructure for eLearning and distance learning. The project will be funded by the Lithuanian Government, which aims to build a public eLearning infrastructure because it would be more effective and could be used in a better way, and the usage would be clear.

The number of educational institutions that are integrated in the LITNET annually increases. Throughout the programme’s duration, the number of participating institutions should triple (from 630 to 2,000). Naturally, the expenditures for the institutions’ network development are expected to increase, too (30% annually).

⁵⁴ Distance education in Lithuania – The National Study 2005. Lithuania

⁵⁵ Distance education in Lithuania – The National Study 2005. Lithuania

⁵⁶ Window to the Future, <http://www.langasiateiti.lt/vid.php4?mid=9>

⁵⁷ Open Society Fund Lithuania, <http://www.osf.lt/eng/main.htm>

Figure 17. The consolidation development plan of education institutions in 2005–2009

| Year | The need for finances, (LTL / EUR) | Targeted number of integrated institutions |
|------|------------------------------------|--------------------------------------------|
| 2004 | 310,000 LT / 89,782 EUR | 630 |
| 2005 | 400,000 LT / 115,848 EUR | 900 |
| 2006 | 600,000 LT / 173,772 EUR | 1,200 |
| 2007 | 800,000 LT / 231,696 EUR | 1,500 |
| 2008 | 1000,000 LT / 189,620 EUR | 1,700 |
| 2009 | 1200,000 LT / 347,544 EUR | 2,000 |

Source: Academic and Research Network in Lithuania, <http://www.litnet.lt/index.php>

II.1.6. Spending by private actors for eLearning applications

As eLearning services are predominantly provided by public organizations, private institutions tend to outsource eLearning applications from foreign partners, so they do not tend to invest in eLearning applications' development. Money is invested in order to provide Lithuanian content, but, according to experts, those investments are meagre compared to investments in infrastructure.

II.1.7. Price levels and affordability of eLearning solutions for the target groups

Services provided by public organizations are free or might have a fee fixed by universities' senates. Usually those fees are about 100 euros for a course. Services provided by private companies target the business sector and their prices are higher. Present examples show for example course prices between 1,000 and 8,000 LTL (between 300 and 2,300 euros).

Even though the governmental and public institutions are the main providers of eLearning services, the development and provision of eLearning services within the private sector are growing and becoming influential.

II.2. Strategies, policies, action plans and projects

Lithuania has undergone rapid socio-economic transformation since regaining its independence in 1991. Learning from other countries' experience has facilitated Lithuania's educational development and growth.

Since 1992, Lithuania has signed many contracts and agreements with the EU and other countries with the aim of increasing collaboration in the areas of education, science, studies and culture. The importance of lifelong education was acknowledged at the start of the education reform just after the restoration of independence in 1990. The following are the main policy documents:

In the General Concept of Education in Lithuania (1992) it is stated, "common education during this education period matches contemporary requirements and encourages a person's striving for lifelong learning".

In the first paragraph of the Law on Non Formal Adult Education (1998) it is stated that the "purpose of this law is to provide judicial guarantees for participants, implementers and social partners of non formal education, to help implement natural personal right to develop his personality all his life."

Discussions over the Lifelong Learning Memorandum took place in May - June 2001. The discussions were organized by the Association of Adult Education in Lithuania and coordinated by the Ministry of

Education and Science. The debate was held at national and regional levels and it showed that a comprehensive and integrated lifelong learning strategy in Lithuania was required. Three main objectives were agreed upon:

- To develop the motivation for learning and to train learning abilities at pre-school and primary education levels. This is important in order to avoid early desertion of the formal education system and lifelong learning;
- To implement an education portfolio system (accumulative certificates of learning achievements) in non-compulsory and continuing education levels. This would help eliminate barriers between academic and professional education, formal and non-formal learning. An education portfolio could motivate people to continue education and would stimulate employers to invest in organizational learning and personnel training.
- To incorporate NGOs and social partners in the development of adult education.

The Programme for Increasing Employment of the Republic of Lithuania for 2001-2004 was prepared in accordance with the European Employment Guidelines, taking up the latter's four pillars - employment abilities, entrepreneurship, adaptation and equal opportunities. The programme's planned activities exhibit close links with the theses of the Memorandum, yet lifelong learning is not incorporated into the programme. According to this programme, education and professional training are highly important in the combat against unemployment. Therefore, the needs of the employment policy should also be included in the Strategy for Ensuring Lifelong Learning and Implementation Action Plan.

The Plan for National Development of the Republic of Lithuania for 2002-2004 states the development of human resources as a key priority. The plan's activities are relevant for securing support from the European structural funds. A Whitebook on Lifelong Learning was prepared as part of the plan. The background of the Whitebook stressed the need to achieve progress in all major fields, such as general education, primary vocational education, continuing vocational learning, professional information and consultation, etc.

The Joint Assessment of Employment Policy Priorities (JAP) highlighted those policy fields in which further progress is still necessary in the Lithuanian labour market. It was agreed that the most crucial issue in the field of youth education and training is the high rate of dropouts (low completion rates) during the general education period and at its end. Another conclusion was that priority should be placed on improving accessibility, quality and relevance of vocational education and all this could be achieved through eLearning and Distance Studies.

In light of the preparations for EU accession in 2002, the Parliament of the Republic of Lithuania has approved the document "Regulations of National Strategy of Education 2003-2012". This strategy is based upon the European Commission's identified tasks for Lithuania, upon the Europe Memorandum on Life Long Learning, upon the European Employment Strategy and the Bologna Declaration of 1999.⁵⁸

Provisions of National Education Strategy 2003-2012⁵⁹

On 4 July 2003, the Parliament passed a major policy document concerning the development of education and training in Lithuania - The Provisions of National Education Strategy 2003-2012. The strategy states the following central objectives regarding the development of education:

⁵⁸ Sources: Europe Memorandum on Life Long Learning, http://www.education.gov.lt/edu/edu_division/life_long_learning/introduction.htm; European Employment Strategy, http://europa.eu.int/comm/employment_social/employment_strategy/index_en.htm; Bologna Declaration of 1999, http://www.cepes.ro/information_services/sources/on_line/bologna.pdf

⁵⁹ Implementing the 'Education and Training 2010' Work Programme. Progress report 2005. Lifelong Learning: Education and Training policies Coordination of Lifelong Learning Policies. Brussels, December 2005

- 1) To create an effective and coherent educational system based on responsible management, targeted at financing and rational use of resources;
- 2) To develop a continuous, accessible and socially just educational system that ensures lifelong learning;
- 3) To ensure the quality of education geared to meet the needs of an individual who lives in an open civic society and market economy, and with the general needs and demands of the contemporary world.

The Strategy for Ensuring of Lifelong Learning and the Implementation Action Plan were approved in 2004. The purpose of these documents is to attract more people to the labour market and to make larger and more effective investments in human resources and lifelong learning. The documents set forth measures that would ease providing all individuals with the skills necessary for modern labour force in a knowledge-based society, create conditions for their career advancement and reduce the incompatibility of the skills and hurdles in the labour market. The Strategy for Ensuring of Lifelong Learning indicated these principal goals regarding lifelong learning development.⁶⁰

- To enhance the effect of vocational education and training (VET) and lifelong learning on the employment strategy;
- To increase access to learning, in particular for the individuals who have benefited the least from the educational system; to create “second chance” opportunities for people who have failed to acquire basic education by the age of 16;
- To develop educational infrastructure by consistently increasing investments in the technical upgrading of the institutions that provide education, vocational information, guidance and counselling services;
- To improve the coordination of lifelong learning through better cooperation in this sphere;
- To increase spending for lifelong learning by setting up special funds and involving both employers and employees;
- To upgrade the qualification of vocational training and counselling personnel;
- To differentiate between the regional lifelong learning frameworks, taking into account the social and economic needs of the regions;
- To build up a monitoring system for education quality and establish the indicators of education, especially eLearning quality.

Lithuania has also developed distance education and traditional education. One of the national education strategy’s activities was the PHARE programme “Multi-country cooperation in distance education” (Pilot Project 1995-1996 and Follow-up Programme 1997-1999). eLearning is one of the central themes of this programme, which Lithuania joined in 1995 and has participated in it until now.

Lithuanian education institutions benefit greatly from EU sponsorship by participating in programmes such as European Social Fund, PHARE, SOCRATES, etc. Many of these programmes are used to create new ones and to perform training for Master’s and doctoral students.⁶¹

For Lithuania, as a new member state, to be able to keep pace with the challenges of the huge European market driven by the “knowledge economy”, it is getting increasingly more important to keep an eye on brand new developments in information and communication technologies, related to eLearning. In Lithuania some decision-makers think that eLearning is a mixture of entirely different things: network, computers, authentication and authorization, intention to learn, and something digitalised to learn. Government policies on eLearning are scattered among general policies, information society and education policies. However, the leading institution in the formation of eLearning policy is the Ministry of Education and Science. There are numerous strategic documents

⁶⁰ Implementing the ‘Education and Training 2010’ Work Programme. Progress report 2005. Lifelong Learning: Education and Training policies Coordination of Lifelong Learning Policies. Brussels, December 2005

⁶¹ European Social Fund, http://europa.eu.int/comm/employment_social/esf2000/index-en.htm

adopted regarding this issue (see the list below); however, eLearning is still quite new both in formal education as well as in lifelong learning. eLearning policies are focused predominantly on digital literacy of the population and the development of information infrastructure in formal education institutions (see the targets of strategic plan of the Ministry of Education and Science below). The use of ICT tools in the education process itself has been a recognised, albeit secondary, target so far.

In 2005, a National Strategy for Distance Education Development was prepared by a team of foreign consultants. It envisages an entire plan to create a distance education network, covering the whole territory of Lithuania and all education sectors. Certain amendments to legislation are needed for successful implementation of distance learning – first of all, a legal guarantee of equal treatment of traditional courses' and distance education qualifications.

The highest institution responsible for education in Lithuania is the Ministry of Education and Science. This institution formulates and executes the national policy concerning education, science and studies, drafts strategic education plans, annual programmes, and submits proposals and resolutions to the Government, which passes them as laws. It also organises school completion examinations, approves the general content of teaching, training and studies under the framework of formal education, national standards for attained education levels, standards for vocational training, guidelines for study areas in higher education, accreditation criteria applicable to curricula and the order of accreditation, etc.⁶²

The Law on Education of Republic of Lithuania defines the main objectives of education in Lithuania, the principles and the structure of the education system, education activities and national responsibility in the area of education. The Law on Higher Education of Republic of Lithuania defines higher education, the system of higher studies, the degree of the autonomy of higher schools, the major requirements for higher schools and the study programmes, the principles of sponsorship for higher schools, etc. The Government of Lithuania adopts both laws.⁶³

The Ministry of Education and Science also adopts national programmes, which have an impact on the technological aspect of higher education. One of such projects is ITMIS (Information Technologies for Higher Education). This programme is designed for one of the most important spheres of the information society, i.e. science and higher education, by creating, collecting, storing and imparting information, and includes the main directions of its computerisation. The programme is made up of three basic parts closely linked together - sub-programmes dealing with information of the following systems: the Lithuanian Higher Education and Research Information System (LieMSIS), the Development of Distance Education in Lithuania (LieDM), the Lithuanian Academic Libraries Network (LABT).⁶⁴

II.2.1. Other reforms and policies that affect eLearning developments

The European Union has a very wide range of ambitious objectives and programmes directly impacting the issues of eLearning in Lithuania:

- 1) The objectives of the Socrates and Leonardo da Vinci education and training programmes;
- 2) The conclusions of the European Council meeting held in Lisbon;
- 3) The initiative “eLearning: designing tomorrow’s education”;
- 4) The “eLearning Action plan” developed four action lines within the eLearning initiative (infrastructures and equipment, training, European quality contents and services, and cooperation at all levels);
- 5) The Bologna Declaration;
- 6) eEurope;
- 7) eEurope 2005: an Information society for all;

⁶² Ministry of Education and Science of the Republic of Lithuania, <http://www.smm.lt/en/>

⁶³ Law on Education of Republic of Lithuania, <http://www3.lrs.lt/cgi-bin/preps2?Condition1=238731&Condition2=>; Law on Higher Education of Republic of Lithuania, <http://www3.lrs.lt/cgi-bin/preps2?Condition1=259508&Condition2=>

⁶⁴ Information Technologies for Science and Higher Education, <http://www.itmis.lt/eng/>

- 8) eContent Programme;
- 9) eEurope 2010.

The Lithuanian Government has set the development of the information society as one of its top priorities. In order to improve the quality of education in the basic schools, the Ministry of Education and Science prepared the Education Improvement Project (the core goal is to involve the educational system in society's processes; it is also important to involve new management in education). The implementation of this project is funded from a loan issued by the World Bank and it is co-financed by the Government of the Republic of Lithuania and municipal funds. The strategic lines of the Project were approved by the Government of the Republic of Lithuania on 4 October 2001 and were included in the Action Plan of the Government Plan of the Government Programme for 2001-2004.

According to the Information Society Development Committee, which operates under the Government of the Republic of Lithuania, EUR 62.8 million will be allocated from EU structural funds to facilitate IT development in Lithuania in 2004-2006. One of the largest projects that is planned to be financed by the European Regional Development Fund (ERDF), aiming to bridge the digital divide between urban and rural areas, is the project "Rural Area Interconnection to the Educational Broadband IT Network" (RAIN). While RAIN aims to establish a broadband infrastructure, the PHARE project "Rural Internet Access Points" (RIAPs) has been started and will fund the establishment of around 300 public Internet access points in rural areas. The Government is promoting a more active involvement of Lithuanian people in information society development by providing greater access to the Internet and promoting civil engagement in information sharing via the Internet.

There is a need to ensure that the Lithuanian system of education is relevant to the challenges we will meet in the years ahead. The onset of the 21st century has brought changes in social, cultural and economic relations spawned by the ICT revolution. At the centre of these changes is the notion that in the 21st century knowledge and the processing of information will be the key driving forces for wealth creation and social and economic development. Therefore, the policy of the Lithuanian government recognizes the significance of human resources and technological development. The multiple objectives and agendas that education management is faced with are creating big concerns for leaders in terms of institutional positioning, capacity building, strategic planning and choices, institutional regulation, the balance between collegial welfare of students, entrepreneurial agendas and cultures. Lithuania has undergone rapid socio-economic transformation since regaining independence in 1991. The entire territory of Lithuania, upon accession to the European Union, falls within Objective 1 of the EU regional policy and therefore will be able to benefit from financial assistance provided by all EU structural funds.

The present Single Programming Document (SPD) for Lithuania for 2004-2006 sets out the economic context for the Programme and the existing conditions in Lithuania. Priorities have been developed taking full account of European, national, regional and local policies and initiatives:

- Priority 1: Development of social and economic infrastructure.
- Priority 2: Human resource development.

Two national projects were presented:

- "Development of Information and Communication Technologies based on the Distance Education Network in Lithuania (Ministry of Education and Science, priority 1.5, budget LTL 3.6 million (EUR 1.04 million).
- "Integral Development of Activities in the Lithuanian Distance Education System" (Ministry of Education and Science, priority 2.4, budget LTL 4.3 million (EUR 1.25 million).

Information technologies are increasingly applied in education and adult training. The Schools' Improvement Programme has been the largest investment project in the Lithuanian general education system since the restoration of the country's independence. Its budget reaches LTL 180 million (about 51 million euro), out of which more than LTL 100 million (about 29 million euro) is the loan extended

by the World Bank. The repayment of the loan will be started in 2007 and finished in 2019. 68 schools participated in the first stage of the Schools' Improvement Programme and 96 schools took part in the second stage.

The aim of the Schools' Improvement Programme is to improve the achievements of the country's 5th-10th form pupils by modernising general education and ensuring effective and rational application of the resources allocated for education. During the programme's implementation, effects will be produced on the entire general education system as an array of other problems are being solved simultaneously – the qualification of teachers is being raised, new management, education and training principles are being implemented through cooperation with different schools and school communities, which will strengthen and improve education. With the help of the Schools' Improvement Programme, schools are not only receiving modern educational aids (computers, multimedia projectors) but they are also learning about new educational and management methods, the virtual environment being one of them. A uniform information system of education management is being created to ensure a high-quality education policy and more effective management, and this system will be used by everyone, starting from the minister and ending with a regular school teacher.

The Coordination Service of the Schools' Improvement Programme under the Ministry of Education and Science has been formed for the coordination of the project implementation, and the main components are being managed by the leadership of the Ministry of Education and Science, the Education Information Centre, the Education Provision Centre and other related institutions. The actual implementers of the programme are teachers of secondary schools and their head teachers. They are acquiring the development know-how and disseminating it to children.

II.2.2. General planning documents

In order to actively contribute to the initiatives of the EU members states in developing the knowledge society and competitive economy, in 2005 Lithuania prepared the Lithuanian Strategy for the Development of the Information Society.⁶⁵ It is a planning document for a term of six years, outlining the main aims to be achieved by the country which would ensure the information society's development in Lithuania: the document defines the state's vision and priority directions, determines goals and also lays down a model of implementation and monitoring.

The strategy which was approved in 2005 is oriented towards several priorities, the first being People's Competence and Social Cohesion. This priority seeks to create conditions for Lithuanian people to acquire knowledge and skills necessary for successful application of ICTs in their daily activities and to ensure possibilities to make use of them, having in mind equal opportunities and uniform development of the country. The strategy's second priority is Modernisation of Public Administration by Making Use of Information and Communications Technologies. As Europe and the rest of the world pays more and more attention to the development of the information society, one of the main factors is the development of public services provided online. eGovernment services are oriented towards an individual as a client and the services' main features are their quality, simple use and universal availability. This priority aims to introduce information technologies into the field of public administration by creating eGovernment, increasing the efficiency of public administration's authorities' activities through electronically provided services, and by ensuring the development of electronic democracy.

Knowledge Economy is the strategy's third priority, which is intended to encourage economic development based on knowledge, innovation, science achievements, and information technologies. In the development of the knowledge economy, high skill labour becomes especially important, therefore many counties are oriented towards constant improvement of their education systems. It is also necessary to ensure an attractive environment for co-operation between science and business and the introduction of innovations into business.

⁶⁵ Lithuanian Strategy for the Development of the Information Society,
http://www3.lrs.lt/pls/inter2/dokpaieska.showdoc_l?p_id=257174

Information technologies are used in Lithuania to foster and spread the Lithuanian culture, to encourage society's creativity and cultural variety, and to ensure the preservation of the Lithuanian cultural heritage and the Lithuanian language in the global context. As Lithuania is becoming more active in the world's cultures' open dialogue, there is a need to take actions that would ensure the national culture's competitiveness and the preservation of the Lithuanian language. Information technologies create new possibilities not only to keep but also to spread information about the culture, encourage modern cultural and artistic initiatives. Therefore the Lithuanian culture and the Lithuanian language are the fourth priority of the Lithuanian Strategy for the Development of the Information Society.

The planning documents' primary aims are directed towards consistent development of the Euro-integration processes, increasing the efficiency in the public administration sector, making favourable conditions for eBusiness's development and creating public eServices.

The Means for Implementing the Programme of the Government of the Republic of Lithuania for 2004-2008 envisages measures for the implementation of the Government's programme. The action plan is to be followed throughout the Government's term in office; the plan sets forth activity guidelines for the relevant period. Part 10 of this document "Development of the Information and Knowledge Society" covers the main measures related to the state authorities' activities in the development of the information and knowledge society.

The Lithuanian National Strategy of the Information Society Development⁶⁶ reviews the Lithuanian information society development, formulates aims and objectives, gives priorities and describes expected results, taking into account Lithuania's specific conditions and the principal goals raised by the initiative "eEurope".

The Lithuanian Strategy for the Development of the Information Society⁶⁷ outlines the main aims to be achieved by the country which would ensure the information society's development in Lithuania: the document defines the state's vision and priorities, determines the goals and also provides a model of implementation and monitoring of this strategy.

The programme for Introducing Information and Communications Technologies in the System of Education⁶⁸ specifies how Lithuania is going to implement the relevant goals raised by the initiative "eEurope". Specifically, it aims to encourage and to create conditions for teachers and students at basic and secondary schools to use information and communications technologies for teaching and learning and thus promote the information society's development. The programme's goals are a global ICT literacy of students, an adequate ICT literacy of teachers and librarians to implement eLearning solutions, a sufficient ICT infrastructure and software for eLearning in schools and school libraries and an elaborate legal base regulating the subject matter of the previously mentioned goals.

In order to prepare specialists needed in the labour market and to implement the programme of preparing IT specialists, in 2004 the number of students accepted to IT and IT-engineering study programmes doubled (ac compared to 2000). In 2004, the improvement of IT specialist studies' quality continued; essential upgrades and renovations were made to the facilities necessary for IT study programmes, the Internet reading rooms and computer classes.

In developing the information society, a lot of attention is paid to ensuring equal opportunities for the disabled to use ICTs. In the course of implementing the National Programme for Social Integration of the Disabled 2003-2012, approved by the Lithuanian Government, the Methods of Adapting the

⁶⁶ Lithuanian National Concept of the Information Society Development, http://www3.lrs.lt/pls/inter2/dokpaieska.showdoc_l?p_id=123561&p_query=&p_tr2=

⁶⁷ Lithuanian Strategy for the Development of the Information Society, http://www3.lrs.lt/pls/inter2/dokpaieska.showdoc_l?p_id=257174

⁶⁸ Programme for Introducing Information and Communications Technologies in the System of Education, <http://www.emokykla.lt/admin/file.php?id=15>

Informational Environment for Education, Training, Professional Rehabilitation and Employment of the Disabled and the Standard of the Format of Electronic Education Means for the Disabled have been prepared and approved. It is planned that in 2006 the software for training and testing of the disabled on computer literacy and use of eServices will be prepared.

II.2.3 Assessing the impacts of eLearning initiatives, projects and/or tools

There is no detailed research or concrete documents regarding this issue at the moment. The European statistical system provides data on education and training which forms the basis for the indicators which measure the performance of the education and training systems in the European Union and which monitor the progress towards the knowledge-based economy and society within the broader policy for lifelong learning. Lithuanian participation in lifelong learning is still quite low.

According to the official statistical data for the analysis of potential eLearning and distance education target groups, the labour force was 1,625,400 in the second quarter of 2004, of which 1,442,100 (~88.7%) were employed. More than one million people are employed in the private sector. Most of the employed work in the services sector; 55,400 and 28,300 work in industry and construction.⁶⁹

According to data provided by the Lithuanian Labour Market Training Authority, during the first half of 2004, the Labour Exchange referred 8,400 thousand of the unemployed and 500 employees under redundancy to training in the Labour Market Training Centres. Employers referred 4,700 employees to attend re-qualification programmes, and 1,900 people attended training programmes on their own initiative.

European data indicates the difficulties that people with different levels of education have to face in the labour market and gives the first indication of education's impact in reducing the chances of being unemployed. Another important aspect is that a person's employability and income are likely to be considerably higher if he/she is better qualified. On average, the income of a person with less than upper secondary education was 90% of the national median, compared with 147% for those with tertiary education.⁷⁰ The indicators focus on 25 to 59 year-olds.

Despite all the initiatives, eLearning and distance education in Lithuania is still quite a new and underdeveloped area. Effective actions and incentives could encourage the expansion of distance education services for all educational levels as well as facilitate the involvement of new actors and wider target groups. Implementation of these measures along with appropriate monitoring and strategic planning would assure better access to higher quality education, increased competitive abilities of the labour market, and sustainability of the eLearning and distance education network.

Development of information society is one of the top priorities of the Government of Lithuania. Together with the wide range of European Union programmes Lithuania is accepting national projects and strategies for ensuring proper development and improvement of information society.

II.3. The legal framework supporting eLearning

II.3.1. Laws and acts that have been adopted in the area of eLearning

Legislation, relevant to eLearning, consists, first of all, of general laws regulating education activities and institutions.

The Education Law (No. IX-1630, 17 June 2003) – the main law in the field of education; it provides for equal opportunities and continuity of education and defines the educational system in Lithuania. The law serves both as a source of regulatory rules as well as the umbrella-law, which defines other laws in the field of education.

⁶⁹ Distance education in Lithuania – The National Study 2005. Lithuania

⁷⁰ Eurostat yearbook 2004. The statistical guide to Europe

The Law on Non-Formal Adult Education (no.VIII-822, 30 June 1998) foresees distance education as an alternative to non-formal correspondence education.

The Law on Higher Education, the Law on Vocational Adult Education and the Law on Special Education regulate relevant topics of education.

The Law on Tax on Income of Individuals (2 July 2002). There is a possibility for adults (Lithuanian citizens), who have paid for and finished their studies and received a diploma (including doctoral studies) to retrieve the amount paid, not larger than 25% of taxed income per year.

II.3.2.The legal framework for intellectual property rights

The Ministry of Culture of the Republic of Lithuania is responsible for the formation of intellectual property rights policy. The council of copyright and related rights is an institution subordinated to the Ministry of Culture. The regulation and definition of intellectual property and related rights is laid down in the “Law on Copyright and Related Rights of the Republic of Lithuania” (Law number IX-1355, by the Parliament, 5 March 2003). To implement the rules of the Law, the decision of the Government of the Republic of Lithuania has been adopted (Resolution No 1106 “On The Approval Of The Procedure For The Distribution And Payment Of Remuneration For The Reproduction Of Audiovisual Works Or Works Fixed In A Phonogram For Personal Use”, 29 August 2003).

The administrative responsibility for illegal use of intellectual property objects is laid down in the article 214 (10) of the Code of Administrative Offences of the Republic of Lithuania. The Criminal Code of the Republic of Lithuania provides the penalties for the crimes against intellectual property in the chapter XXIX “Crimes against intellectual and industrial property”, articles 191 – 194.

Lithuania had joined the Convention of World Intellectual Property Organization (WIPO) in April 1992. The Convention of Bern was ratified on 28 May 1996 (Law No I-351). The convention of Rome was ratified on 22 December 1998 (Law No. VIII-1001). The convention of Geneva was ratified on 13 April 1999 (Law No. VIII-1140). The WIPO Agreement on intellectual property was ratified on 26 September 2000 (Law No. VIII-1956). On 31 May 2001 Lithuania joined the World Trade Organization (WTO) and ratified the Agreement of creation of WTO on 24 April 2001 (Law No. IX-292).

II.3.3. The degree of the alignment of national legislation with the EU requirements, the effects of the *Acquis* on legal developments

In general, Lithuania is a leading country in the EU with respect to formal implementation of the *Acquis*. There were no indications concerning the national legislation’s non-alignment with the EU requirements. As binding formal requirements in the field of eLearning are not a common practice, the preliminary conclusion may be drawn that the national legislation is in line with the EU requirements.

In the field of intellectual property, the Lithuanian legal framework reflects the requirements of these directives of the European Union:

- Council Directive 91/250/EEC of 14 May 1991 on the legal protection of computer programmes;
- Council Directive 93/83/EEC of 27 September 1993 on the coordination of certain rules concerning copyright and rights related to copyright applicable to satellite broadcasting and cable retransmission;
- Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases;
- Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonization of certain aspects of copyright and related rights in the information society;
- Directive 2001/84/EC of the European Parliament and of the Council of 27 September 2001 on the resale right for the benefit of the author of an original work of art;
- Directive 2004/48/EC of the European Parliament and of the Council of 29 April 2004 on the Enforcement of Intellectual Property Rights.

II.3.4. The major legal issues, constraints affecting the development of eLearning

Several legal constraints to eLearning may be indicated:

- Regulations related to intellectual property rights (these regulations limit both teachers' and learners' access to software and digital content);
- A general tendency of bureaucratisation of the learning process and activities of a teacher are directly affecting (this does not formally restrict eLearning) a more rapid development of eLearning;
- Regulation of working hours of educational personnel is not suited for eLearning-related jobs and does not pay proper attention to the fact that eLearning is an alternative to traditional learning. There is no relevant indicators and standards for evaluating eLearning-related jobs' cost effectiveness;
- Non-existence of the system of accreditation of informal (in some cases also non-formal and formal) education (eLearning is especially used in informal education);
- Rules regarding documentation and formal acknowledgement of digital documents (teachers and learners have at least reasonable doubts whether their submissions, remarks, evaluations, etc., made digitally will be accepted in the case of a formal dispute, there is a tendency to back all digital interaction with paper documents and texts).

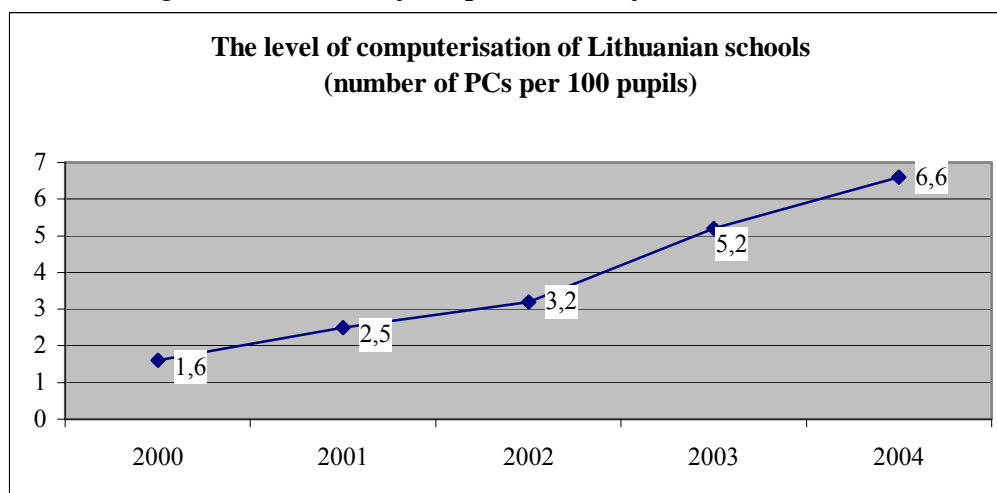
There is no tendency to cover obligatory training with an eLearning service as a compulsory form of education. Some examples, however, may be mentioned: the "theory" part of exams to get driver's licence is completely computerised, there is also a possibility to prepare for the exam informally (in this case, plenty of digital equipment is available). This system works efficiently and in general is welcomed by the public. eLearning is increasingly being used in formal education: management solutions, such as electronic systems of evaluation and examination, communication with schoolchildren's parents are being introduced, information is often provided on the Internet, etc. However, it would be too optimistic to maintain that there is a clear tendency to cover obligatory training by eLearning services.

The legal framework is supposed to facilitate adequate development of eLearning services and information society. However, many regulatory barriers prevent a smooth functioning of information society.

II.4. The dedicated specific information and communication technologies infrastructures

In order to educate people in the field of computer literacy, the problem of school computerisation must not be overlooked. More and more attention has recently been paid to the computerisation of Lithuanian schools. The aim is to create conditions for each pupil to get IT-related knowledge at school, through training adapted at every school. The Ministry of Education and Science continued the provision of secondary schools with necessary facilities of information technologies and telecommunications. At the end of 2004, 1 PC was shared by 15 pupils, whereas in senior classes (9–12) 1 PC was shared by 6 pupils. 52% of schools had the Internet access (with speed more than 64 kbps).

Figure 18. The level of computerisation of Lithuanian schools



Source: Ministry of Education and Science of the Republic of Lithuania, <http://www.smm.lt/en/>

In order to provide science and education institutions with broadband Internet, in 2004 the LITNET network will be further developed, the quality of communications for institutions connected to LITNET will be improved (mostly by the use of optic communications), the communications security will be ensured, and secondary schools will be connected to LITNET (more than 650 educational establishments have already been connected). The number of Internet users in Lithuania connected to the European Union academic network has quadrupled since 2000.

According to the data of the Ministry of Education and Science, there were 31,547 computers in Lithuanian schools in 2004. Most of them are located in computer classrooms – 18,392 (58.3%). There are only 2,827 computers (8.9%) in other classrooms but administration rooms have 4,196 computers (13.3%).⁷¹

The number of computers in the school years 2003/2004 and 2004/2005:⁷²

- Special computing classrooms or the rooms of computer studies contained 18,052 (58.8%) and 18,392 (58.3%) computers respectively,
- Other subjects' classrooms – 2,713 (8.83%) and 2,827 (8.9%),
- Libraries and reading halls – 3,398 (11.1%) and 3,441 (10.9%),
- Teachers' rooms or other places for teachers – 1,118 (3.6%) and 1,146 (3.6%),
- Administrative areas – 3,973 (12.9%) and 4,196 (13.3%),
- Other places at school – 1,466 (4.8%) and 1,545 (4.9%),
- The total number of computers – 30,720 and 31,547.

About one-third of the existing computers have processors with less than 300 MHz, and this shows that schools still have old-fashioned computers, which should be upgraded. Most computers (96%) have the Microsoft operating system. In separate cases the Linux operating system is used.

The number of computers in school-years 2003/2004 and 2004/2005:⁷³

- With processors less than 300 MHz the number was 10,195 and 10,668 respectively,
- With processors of 300 MHz and higher – 20,525 and 20,879,
- With Microsoft operational system – 29,504 and 30,301,
- With LINUX operational system - 268 and 275.

⁷¹ Ministry of Education and Science, <http://www.smm.lt/en/>

⁷² Ministry of Education and Science, <http://www.smm.lt/en/>

⁷³ Ministry of Education and Science, <http://www.smm.lt/en/>

A relatively small number of computers is used to perform the functions of servers. Due to the fact that servers are registered at schools by ICT specialists, the LINUX operational system is spreading faster. However, the Microsoft operational system is used more often to monitor the servers and this can explain that similar operational systems are coordinated better inside.

II.4.1. Development of broadband infrastructure

Regarding the near future, the direction of development of the electronic communications sector should be affected by the development of broadband communications. All the EU member states, implementing the goals of the Lisbon Strategy, should achieve 50% broadband penetration during the next five years. An increase in broadband communications services on the Lithuanian market of Internet access was clearly discernable in 2004, when broadband communications technologies were being used by 129,050 subscribers. During that year, the number of broadband communications subscribers almost doubled (the increase was 93.2%). The broadband communications penetration changed accordingly, growing by 1.6 percentage points from the beginning of the year and reaching 4.5% per 100 people. In the context of the EU member states, broadband communications penetration in Lithuania is low – 50% less than the EU15 average and approximately 42% less than the EU25 average. However, in the context of the new EU member states, the penetration in Lithuania is high and the current Lithuanian index of broadband communications penetration is higher than the average of the 10 new member states by approximately 52%. It should be noted that the trend towards the growth of the broadband communications penetration persists, and, to compare the 1st quarters of 2004 and 2005, it more than doubled.⁷⁴

Furthermore, Lithuania has a technological broadband communications distribution structure, which is favourable in terms of competition and further market development. From the point of view of competition, the situation of technological broadband communications in Lithuania is the best in the EU: in its choice of broadband communications technology, Lithuania's dependence on the historical network is the lowest in the entire EU: in the middle of 2004, 61% of all fixed broadband accesses were other than xDSL, and the broadband communications portion of non-historic operators made up 64% of the market.

The strategy adopted by the Resolution of the Government of the Republic of Lithuania in 2005 aims to allow a larger number of institutions of public administration, private enterprises and individuals to access broadband networks; develop provision of electronic services. Competition promotion in the market of broadband access, by using public and private capital investments, strives to influence the state's social and economic development and to reduce the digital divide. Particularly, it is important to promote broadband networks and access in non-competitive (rural) areas. The long-term strategy will contribute to the creation of a knowledge society and a competitive economy. It will promote the development of other sectors of the Lithuanian economy. When connecting public administration institutions and bodies to the broadband networks and creating an opportunity for small and medium-sized enterprises as well as the population to use the broadband infrastructure and eServices all over the country's territory (especially in peripheral/uncompetitive locations where the level of use and development of wideband connection services is low), the following assessment criteria are important.⁷⁵

- 1) By 1 January 2007, to create an opportunity in 50% of the country's territory to connect to the available broadband networks for all small and medium-sized enterprises willing to do so as well as the population, and to connect at least 40% of public administration institutions and bodies (i.e. educational institutions, libraries, healthcare institutions and bodies, etc.) to the broadband networks.

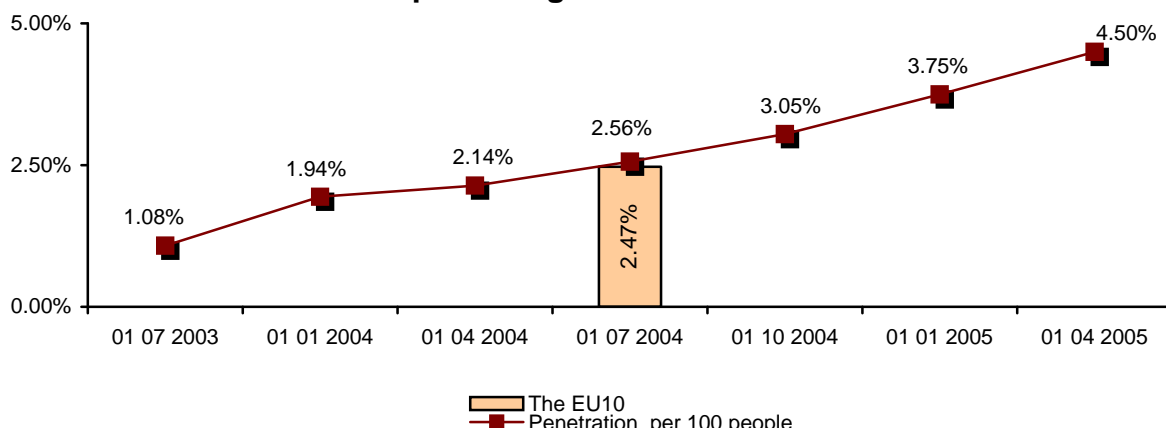
⁷⁴ Development Strategy of the Broadband Infrastructure of Lithuania for 2005-2010, <http://www.transp.lt/Default.aspx?Element=IManagerData&DL=E&TopicID=215&ArticleID=1936&Page=0&Page2=0&Action=0&SearchTXTS>

⁷⁵ Development Strategy of the Broadband Infrastructure of Lithuania for 2005-2010, <http://www.transp.lt/Default.aspx?Element=IManagerData&DL=E&TopicID=215&ArticleID=1936&Page=0&Page2=0&Action=0&SearchTXT>

- 2) By 1 January 2008, to create an opportunity in 50% of the country's territory to connect to the available broadband networks for all small and medium-sized enterprises willing to do so as well as the population and to connect at least 60% of public administration institutions and bodies to the wideband connection networks.
- 3) By 1 January 2009, to connect 100% of public administration institutions and bodies (except for some diplomatic representations of the Republic of Lithuania abroad) to the broadband networks.
- 4) By 1 January 2010, to create an opportunity in 98% of the country's territory to connect to the available broadband networks for all small and medium-sized enterprises willing to do so as well as the population.

Figure 19. The dynamics of broadband communications penetration

The dynamics of broadband communications penetration, percentage in 2003-2005



Source: Communications Regulatory Authority of the Republic of Lithuania, <http://www.rrt.lt/>

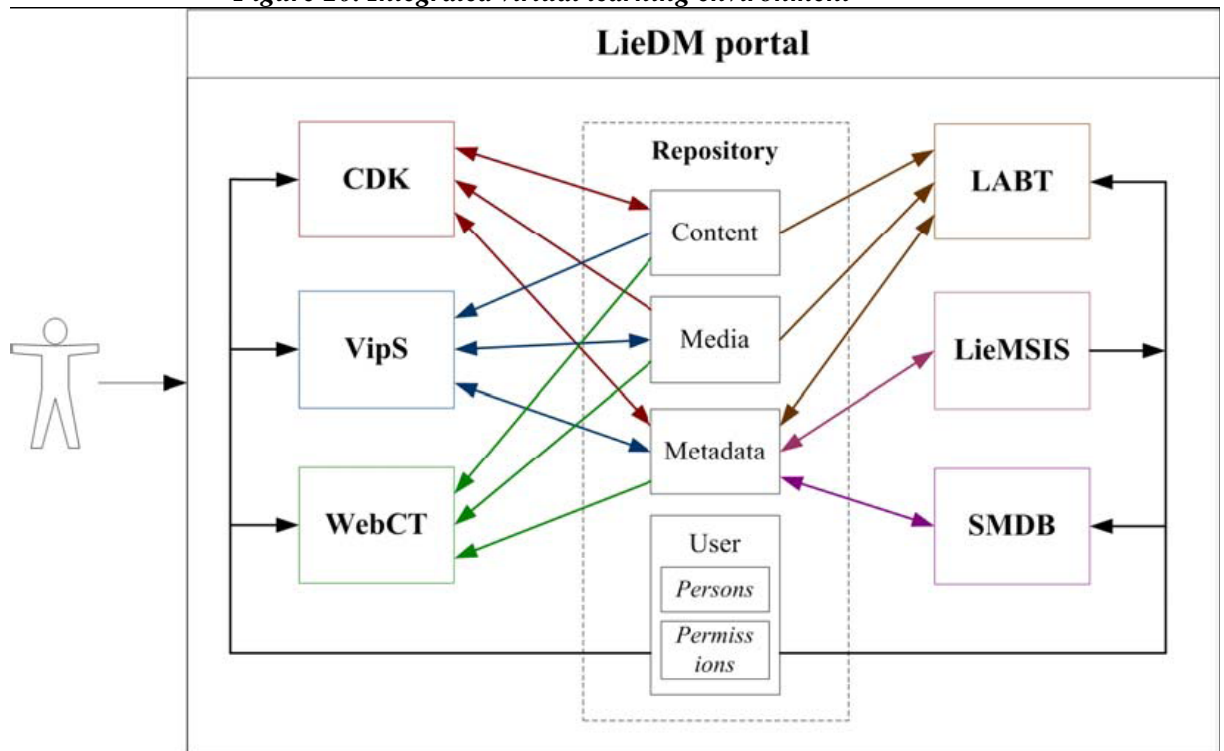
As technological solutions for information access are developing dynamically, the digital format of information and terminal equipment makes it possible to have a variety of electronic communications services, as well as the convergence of technologies, networks and services. The audiovisual market should also be mentioned in the context of convergence and broadband access: in 2004 there was a fast development of the audiovisual market, especially that of digital radio and television. The Model of Introducing the Digital TV in Lithuania determines that from 2012 analogue television will be gradually replaced by digital television, though the process of introducing digital television started back in 2004. In that year the co-ordination of the first radio frequencies was completed and the Model of Introducing the Digital TV in Lithuania was approved. In 2004, digital microwave multi-channel television transmitters (MDTV) started operation in Klaipeda (3 channels, 30 programmes); Siauliai (4 channels, 36 programmes), Panevezys (4 channels, 36 programmes). In the same year, the broadcasting of digital cable television started in Klaipeda (4 channels, 37 programmes). It should be also noted that in June 2005 a tender was held which resulted in two business entities being granted permits to use digital television radio frequencies.

Various World Wide Web virtual learning environments are used for learning in LieDM network. Currently, Web-CT is the most popular distance and eLearning environment in Lithuania. About 87% of all distance education courses of LieDM network are designed in this environment. Learning Space and First Class environments are also used for distance learning, though they are not so widespread. About 13% of distance education courses are designed in these environments.

The architecture of LieDM portal merges learning technologies and tools, which have been successfully used so far in LieDM network as separate means for different learning processes. However, the architecture does not establish a finite set of tools: if any tool is needed, it can be

integrated. A general repository is the core of an integrated virtual learning environment (VLE), whereby the repository acts as the main link for integration. Each information module in this repository is a learning object with its own metadata. The overall integration of tools and the exchange of learning objects is based on international eLearning standards (LOM, IMS, SCORM) and data exchange technologies (XML, CVS, web services). The arrows from each tool to the repository signify data flow and links' directions. For example, the digital library (LABT) has links to the eLearning resources – learning objects in the content and media repositories. Finally, the arrows from each tool to the user repository indicate user usage and management, which may be done only in LieMSIS (Lithuanian Higher Education and Research Information System) system.

Figure 20. Integrated virtual learning environment



Source: Lithuanian Distance Learning Network. www.liedm.lt

- LieMSIS – Lithuanian Higher Education and Research Information System
- LABT – Lithuanian Academic Libraries Network
- SMDB – Database of Study Modules
- CDK – Course Developer Kit
- ViPS – Video Lectures System
- WebCT – Web based Course Training systems

If all the layers of these groups were analysed together, we could notice that the most important point in this architecture is the user. The user has a common login name for all systems. By using the login name and the central LieDM network's portal, the user connects to all the integrated VLE information systems, and, according to his role, the user acquires access to a set of tools and technologies.⁷⁶

Despite the fast spread and improvement of communication lines (broadband penetration), old-fashioned equipment continues to be a problem.

⁷⁶ Lithuanian Distance Learning Network, www.liedm.lt

II.5. eLearning services

Currently, eLearning solutions are mostly used by universities, so the content is oriented towards high education students. As the main tool, WebCT is used for the transfer of teaching material through text, pictures, audio and video means.

At present, eLearning content developers and providers are mainly universities and colleges. In addition, some distance education content is developed within the framework of the European Commission's programmes Socrates, PHARE, Leonardo and others.

There are nine distance education Master Degree programmes:⁷⁷

- Information Technologies (Kaunas University of Technology, 133 students);
- Information technologies for Distance Education (Kaunas University of Technology, 38 students);
- Specialised Professional Studies for Teachers (Kaunas University of Technology, 24 students);
- Realty Assessment and Management (Vilnius Gediminas Technical University, 50 students);
- Internet Technology and Realty Management (Vilnius Gediminas Technical University, 45 students);
- Construction Management (Vilnius Gediminas Technical University, 40 students);
- Business worth Management (Vilnius Gediminas Technical University, 16 students);
- Investment Management (Vilnius Gediminas Technical University, 19 students);
- International Communication (Vilnius University, 42 students).

The number of students applying to distance programmes is constantly growing.

Universities and colleges also offer many eLearning courses and modules, which are mainly for correspondence students or for blended learning. Some eLearning programmes are provided as a result of international cooperation and collaboration. For example, BALTECH (The University Consortium for Science and Technology) was initiated in May 1997 by rectors of seven universities from Sweden and the Baltic countries. The Consortium was set up to serve as a solid base for stronger partnership and closer cooperation between universities in the Baltic Sea region within natural sciences, technology and industrial management. In the long-term perspective, the goal is to create a virtual "Baltic Sea University of Science and Technology" with partner universities serving as a strategic resource for long-term development of education and research in accordance with the region's needs. Consortium's Mission Statement contains a list of priority areas for future cooperation. The scientific and educational subject areas are business administration and management, energy-related problems, environmental engineering, environmental science, information technology and materials science and technology. Among other important fields to be covered are the development of distance learning, industrial liaison and university management. Vilnius Gediminas Technical University and Kaunas University of Technology are members of BALTECH. Currently two Master's degree programmes are offered: the Master of Science programme in Environmental Management and Cleaner Production, and the International Master of Science Programme in Engineering and Management.

Another example of international cooperation is the Baltic Virtual Campus. Vilnius University is a partner in this project, which offers a distance Master's course in trans-regional management. Since 2003, Kaunas University of Technology and the University of Liege, Belgium, have had an agreement through which the DES Form@sup programme is delivered to Lithuanian students. Currently there are 9 students enrolled in this programme and 3 distance education professionals have gained this diploma. The DES Form@sup programme is designed to provide the participants with key competences associated with the teaching/supervising/training profession.

Other institutions providing DE courses are regional distance education networks, established within the framework of the PHARE 2000 programme in 2002:

⁷⁷ Lithuanian Distance Learning Network, www.liedm.lt

- Klaipeda-Taurage regional DE network (17 DE support centres, 30 courses);
- Utena regional DE network (4 DE support centres, 8 courses);
- Marijampole Regional DE network (4 DE support centres, 10 courses).

There are also a number of potential distance education content providers and deliverers:

- Universities and colleges planning to start providing DE;
- Private companies and consultancies;
- Public (profit and non-profit) companies;
- Non-governmental organisations;
- Labour market training and consulting centres, etc.

For example, in late 2003, 266 enterprises, organisations and educational institutions had a licence to provide labour market vocational training programmes: 14 licences were held by labour market training centres; 91 by educational institutions; 8 by government enterprises; 20 by stock companies; 53 by closed joint-stock companies; 3 by general partnerships; 36 by individual enterprises; and 41 by organisations. Some of these programmes can be provided as distance education programmes as well.⁷⁸ However, there is no official information about the usage of eLearning in these organizations.

About 87% of all distance education courses of LieDM network are designed in Web-CT environment. During 2004, 24,284 students were registered in LieDM network, there were 422 distance education students, 409 distance education courses administered. In 2005, the number of distance education students grew up by 29%: 546 registered distance education students and 729 distance education courses.⁷⁹ Most of them are students and teachers from universities and colleges. According to the LieDM data of 2003, the majority of distance education students are from large Lithuanian cities - Vilnius, Kaunas, Klaipeda, Siauliai, Panevezys, and approximately only 5% are from provincial towns. Low participation rates among rural population are mainly due to low computer usage in households in rural areas, since only few of these households use the Internet, e.g. in the first half of 2003, every 1 in 10 households in the cities used the Internet, while in rural areas the ratio was 1 in 100. As the Department of Statistics of Lithuania data shows, the Internet is mostly used at workplaces in Lithuania. According to the data of 1st quarter of 2003, 41% of all Internet users used the Internet at their workplace, 29% at home, 26% in educational institutions and 20% in public Internet access points (such as Internet cafes, etc.). About 82% of all inhabitants aged 15-17 used the Internet in Lithuania (the EU average is more than 50%). Seeking to have more learners from provincial towns and rural areas, it is necessary to increase the number of Internet access points in these areas and to develop their inhabitants' IT usage skills.

The data presented by the Lithuanian institutions of higher education proposed formal and non-formal training courses for distance learning all over Lithuania.

However, there has been, so far, insufficient support for distance education content development from the Government, i.e. only a very small number of distance education courses are funded by the Ministry of Education and Science (12.5% of the total number of distance learning courses developed in the LieDM network in 2001-2003). The rest of the courses are developed voluntarily by enthusiastic educators or are funded from international programmes. Proponents of government-funded courses say that the small proportion of state funding often results in low-quality distance education courses; about half of them consist of mostly "electronic page turning" in single subjects and very few complete study programmes.

Currently, eLearning material in Lithuania is mainly being prepared by experts or expert groups. Its quality depends on experts' IT knowledge, their collaboration skills and

⁷⁸ Lithuanian Labour Market Training Authority, <http://www.darborinka.lt/english/?pid=600>

⁷⁹ Lithuanian Distance Learning Network, www.liedm.lt

involvement. Still, even expert groups often prepare their material in a “chaotic” way, without considering eMaterial development as a process, and the quality of material depends on individual efforts. When preparing the material, experts quite often just divide up the themes and prepare them individually without the use of material development management tools. Consequently, the result is learning material with low coherence which does not exploit many possibilities of eMaterial’s presentation.

II.5.1. The role of assessment and accreditation techniques in eLearning services

The Quality Study Council at the Ministry of Education reviews the quality of all the courses and their syllabi. An education quality board ensures the quality of programmes and courses at the institution. For example, there is an eStudy board at KTU that supervises the quality and syllabus of eLearning at the University.

National responsibility for quality policy lies within the Ministry of Education and for quality attestation (accreditation) within the Lithuanian Centre for Quality Assessment in Higher Education, while quality assurance on the institutional level is the responsibility of higher education institutions themselves. The Centre for Quality Assessment in HE is an independent institution, which organizes external evaluation of education and studies. Independent experts invited from various institutions are usually more critical and can identify the shortcomings that could be skipped by the staff of the same institution, so the evaluation is impartial and it is easier to ensure the quality.

The Information Technology Institute (ITI) is a representative office of the ECDL Fund in Lithuania and Belarus, representing the ECDL (European Computer Driving Licence) programme acknowledged in Europe and many other countries of the world. ITI creates sets of computer literacy tests for various software versions and languages, provides testing systems and remote training courses, publishes books on this topic and carries out necessary research work. Until now, ITI has tested and granted 3,861 ECDL certificates and 4,212 ECDL Basics certificates in Lithuania. The first 65 ECDL certificates were granted in Belarus. The ECDL initiative can be accessed by all Lithuanian residents. Residents willing to obtain a computer literacy certificate may turn to an authorised ECDL testing centre and become tested by Internet. There are 71 authorised ECDL testing centres in Lithuania and one pilot testing centre in Minsk (Belarus) at present. Testing centres are established not only in the cities but also in the provincial towns (Alanta, Kelme, Zarasai, Vilkaviskis, Visaginas, etc.). All the testing centres are connected to ECDL’s testing system through the website www.ecdl.lt.

II.5.2. Major services in providing digital literacy skills for the population

Human capital is a central pillar of growth and productivity, thus investing in people and skills is a vital topic not only for policy makers, but also for enterprises. That is one of the reasons why the share of the labour force with ICT skills has been steadily growing.

Adapting education and training systems to the knowledge society should reduce the digital divide. The diffusion and use of ICT modify employment, work and skill patterns; moreover, ICT usage fosters lifelong learning and enables the mobility of the workforce.

The major documents presently governing the use of ICTs in education include:⁸⁰

The Strategy and Programme for the Introduction of ICTs into the Lithuanian Education in 2005-2007 (approved by Order No. ISAK-2015 of the Minister of 14 December 2004).

Objectives:

- Achieve a breakthrough in teaching and learning of pupils via the use of modern ICTs.

⁸⁰ Modernisation of the Education and Training Systems towards the 2010 common goals of the EU, http://www.smm.lt/svietimo_bukle/docs/apzvalgos/EC_LLL_report_final_ENG.doc

- Create a network of educational computers - a cyber space filled with information for teaching and learning – while creating conditions for modern management of the educational system and for communication among school communities at the same time.
- Improve computer competence of residents, in order to reduce social seclusion in the sphere of ICTs.

➤ *The Strategy for the Implementation of ICTs in Vocational Training*, approved by Order No. ISAK-1722 of the Minister of 4 November 2004).

➤ *General Computer Literacy Programme* (approved by Resolution No. 1176 of the Government of 15 September 2004).

➤ *Strategy of Schools' Provision with Computer Teaching Aids* (approved by Order No. 537 of the Minister of 8 April 2002).

The effective Computer Literacy Standards:

➤ *General Computer Literacy Standard* (approved by Order of the Minister of 14 December 2004).

➤ *Teachers' Computer Literacy Standard* (approved by Order of the Minister of 21 December 2001).

➤ *Students' General Computer Literacy Standard* (approved by Order of the Minister of 31 January 2002).

➤ *Computer Literacy Standard of School Librarians* (approved by Order of the Minister of 25 October 2002)

As a result of the annual 2001-2004 Programme “Education for the Information Society”, the Strategy for the Introduction of ICTs into the Lithuanian education system has been implemented (approved by Order No. 1279 of the Minister of 18 October 2000).

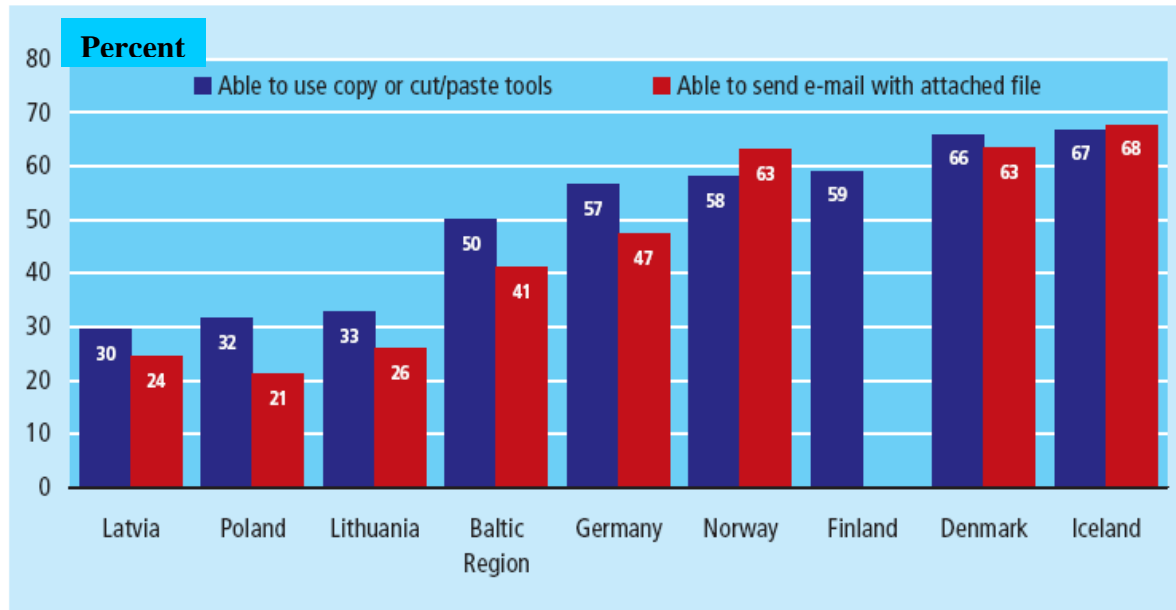
The main results are as follows.⁸¹

- *Students per computer ratio*: seven pupils in grades 9-12, 17 pupils in grades 1-12.
- *Internet in schools*: 50% of schools actively use the Internet in teaching and learning.
- *Training of teachers*: 30% of teachers trained under the Technological Part of Teachers' Computer Literacy Standard, 12% of teachers trained under the Educational Part of Teachers' Computer Literacy Standard, 15% of teachers trained how to use various educational software during the lessons.
- *Provision with educational software*: schools received 38 computer teaching aids provided with licenses for schools, 52 provided for testing.

As far as the basic skills related to computer usage are concerned, an average of 50% of the population in the Baltic Sea region can use copy, cut and paste tools (Figure: Share of the population with basic skills related to computer use. 2004. Percent of population aged 16-74). In Iceland and Denmark approximately 65% of the population knows how to do this, while the corresponding figure for Latvia, Poland and Lithuania is 30-33 %. 41% of the population in the region is able to send an e-mail with attachments. In Iceland more than two-thirds of the population are able to carry out this activity, and in Norway and Denmark only a slightly lower number of people, or 63%, are able to do this. Iceland and Norway are the only two countries in which more people are able to send e-mails with attachments than to use copy and paste tools, which may indicate the importance of computers and the Internet as tools of communication.

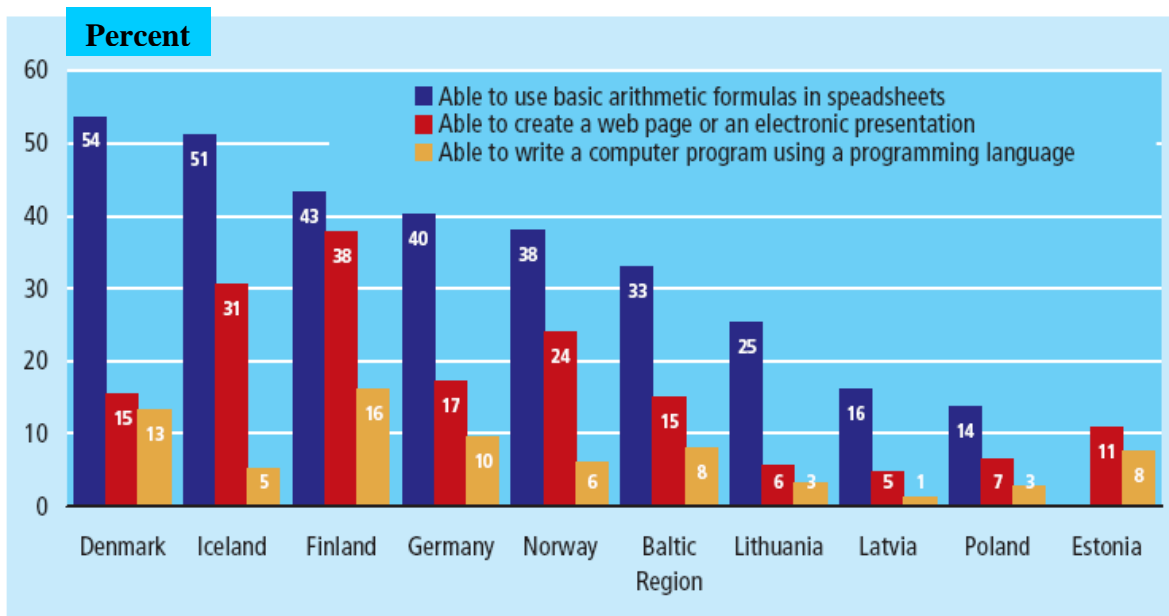
⁸¹ Modernisation of the Education and Training Systems towards the 2010 common goals of the EU, http://www.smm.lt/svietimo_bukle/docs/apzvalgos/EC_LLL_report_final_ENG.doc

Figure 21. Share of the population with basic skills related to computer use. 2004. Percent of the population aged 16-74



Source: Indicators for the Information Society in the Baltic Region 2005

Figure 22. Share of the population with more advanced skills related to computer use. 2004. Percent of the population aged 16- 74.



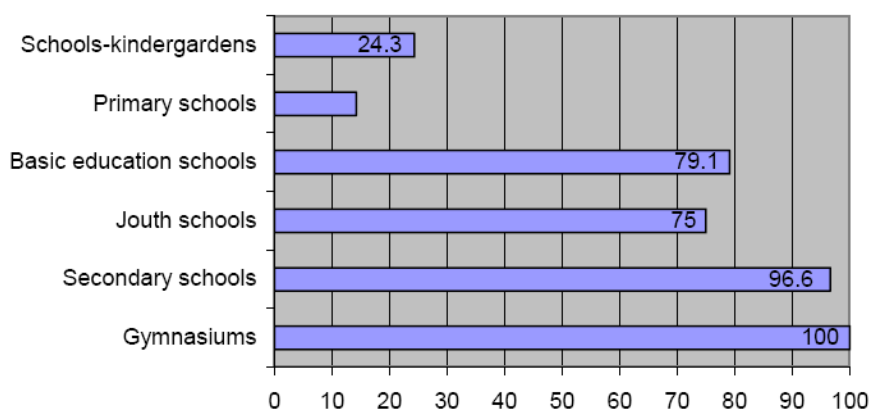
Source: Indicators for the Information Society in the Baltic Region 2005

With rare exceptions, primary (elementary) schools in Lithuania do not provide any computer literacy or IT education. Secondary schooling has to ensure digital literacy of all schoolchildren.

Secondary schools usually use a two-step approach in training in the field of information technologies: 1) a practical introductory informatics course during the 9th or 10th year; 2) a course on information technologies to deepen skills during the 11th or 12th year. A standardized requirement of computer literacy and education defines the required IT skills. Almost all secondary schools and all gymnasiums have Internet connections installed. Most schools use radio connections to the

LITNET network, so they do not need to pay for the Internet, but only for the equipment maintenance.

Figure 23. Availability of the Internet in schools, % (2003-2004)



Source: Ministry of Education and Science, <http://www.smm.lt/en/>

At the moment all schools have computers for their computer lessons. However, their number per student (2.5 per 100 students in 2001) is lower than in the old EU countries; moreover, the equipment in Lithuanian schools is not always up-to-date. Despite the strategic targets to integrate IT into the learning process, observers usually notice the isolation of IT classes and IT equipment from the learning process as well as poor use of IT technologies. Reluctance and low computer literacy of other subjects' teachers is one reason for low IT integration, management of schools is another.

All tertiary education institutions provide courses related to computer literacy and (or) information technologies. These courses are adapted to students' needs. Students usually have good access to IT technologies in their faculties and dormitories. IT technologies, on the other hand, are seldom incorporated into the formal learning process.

Centres of professional training provide additional or new qualifications necessary to enter the labour market or to adapt to it. eLearning brings new opportunities to adapt the qualification-seekers to a rapidly changing working environment.

Despite all these initiatives, the digital divide between large cities and provincial towns still exists, as does an uneven distribution of technological infrastructure and low IT literacy. Disadvantaged target groups (the elderly, the unemployed and IT illiterates) are concentrated mostly in the provinces.

A wide gap in the speed of the developmental of two kinds of technologies - information technologies and educational technologies - causes problems of ICT use in education. The development of educational models and methods is far behind the technological development. Technologies become outdated before it is time to incorporate them into educational processes. Education fails to articulate the pedagogical need for new technological means; it merely "copes" by using the existing IT.

II.5.3. Training of the trainers and teachers

There are formal, non-formal and informal learning possibilities, as well as professional and qualification study programmes on ICT and education delivered in various modes in Lithuania, in addition to those delivered by a single university or by several Lithuanian universities.

Concerning formal training, the following programmes are offered to teachers and trainers in distance education in Lithuania:

- Modules in Bachelor programmes: future teachers who pursue a Bachelor's degree have to undertake modules on ICT and their application in teaching in Lithuanian higher education institutions;

- Specialised Professional programme in Education (Kaunas University of Technology);
- Master's degree programme on IT in Distance Education (joint programme of Kaunas University of Technology, Vilnius University, and Vilnius Gediminas Technical University).

Concerning non-formal possibilities to improve staff members' competence, there are various courses organised by teacher competence centres, the Ministry of Education and Science, institutions of higher education, VET organisations and other institutions.

Networks and organisations are very important in providing Continuing Professional Development (CPD). For example, the LieDM network organises annual competitions for distance education developers and provides support for institutions willing to design training courses for various purposes. One of them is staff development course for teachers and trainers. LieDM initiatives include staff training on specific and general skills delivered twice a year for teachers and trainers all over Lithuania. There is not only financial support from the Lithuanian Ministry of Education and Science, but also training on course design and methodology, as well as on the tools that can be used to implement their course design. This trains and motivates new institutions to join the network whose members already have their distance education courses developed and which have staff trained to carry it out.

A number of community programmes were implemented in Lithuania. In the context of different programmes, a project related to the development of distance education and eLearning was implemented. For example, it may be worth mentioning the following projects that are aimed at developing eLearning and distance education, according to Lithuanian experts' opinion:

Projects of Leonardo da Vinci programme:

- I*Teach (2005-2007)
- OpenDock (2005-2007)
- EVETE- (2005-2007)
- SVVĮ (2004-2007)
- Voca-(2003-2005)
- IT Academy (2001-2004)
- Mobility (2001-2002)

Projects of Socrates programme:

- B*Learn - (2005-2007)
- e-Taster (2005-2006)
- EUI-Net (2004-2007)
- Nettle -(2004-2006)

Projects of EUREKA programme:

- TESTVIL II (2004-2006)
- TESTVIL (2001-2003)
- FP6 programme projects:
- iCamp – innovative, interactive, intercultural environment of learning (2005-2008)

According to national experts, these projects allowed substantial eLearning progress in Lithuania.

eLearning is an efficient way of learning and working for special needs people in the information society. In addition, higher education institutions are interested in creating and improving the conditions for special needs people to study and get professional skills. Although we can't yet boast of a wide availability of eLearning for special needs people, the demand is high: more and more individuals and NGOs are interested in offers for special needs people and also in educational courses provided by educational institutions.

The number of eLearning services and service providers is growing together with the market need for well e-skilled professionals. Despite that, the majority of older population is not able or not interested in getting acknowledged with modern informational technologies.

II.6. Specific eLearning issues and solutions

The National Study of Distance Learning performed in 2005 outlined various aspects of eLearning in Lithuania. According to the study, the strengths of eLearning and distance education in Lithuania are:⁸²

- Geographically, the distance education network covers almost the entire territory of Lithuania with the main emphasis on large cities, which have the biggest number of universities, institutes and colleges, as well as students and educators.
- The Lithuanian Distance Education Network (LieDM) successfully delivers distance education courses in both synchronous and asynchronous modes. Together with videoconferencing, virtual learning environments such as WebCT, Learning Space and First Class are used.
- The LieDM network is widely used for the organization of the entire community's events: seminars, conferences, meetings, etc. In 2002, more than 30 videoconferences and seminars were organised, and in 2003 their number doubled. During 2005, 590 events were staged where videoconferencing methods were used. Most of them were international distance seminars and conferences.
- More than 95% of LieDM staff has tertiary education, which ensures high quality of distance education delivery to the network members. Subjects using distance education technologies are taught mostly by specialists in the information technologies (educationalists and informatics engineers) as well as re-qualified specialists in other subjects, e.g. mathematicians, engineers, etc.
- The LieDM facilitates academic institutions' participation in international projects (EU's Socrates Minerva, Grunting, Leonardo da Vinci, etc.) to promote the development of distance education programmes and courses.
- The LieDM network is connected to the Trans-European Tele-Education Network and World Bank Global Development Learning Network, which allows its members to attend competence and qualification-raising courses delivered by different training bodies from other countries.
- In the LieDM network, funds are allocated to single network members according to how active they are in distance education initiatives. This stimulates institutions to increase effective exploitation of distance education network resources and increases social benefits to society as a whole.

II.6.1. Weaknesses of eLearning and distance education in Lithuania

Those involved in distance education face many obstacles, summarised below, that prevent them from active, effective and efficient participation in the development processes:⁸³

- Insufficient support for distance education content development from the Government, i.e. only a very small number of distance education courses are funded by the Ministry of Education and Science (12.5% of the total number of distance learning courses developed in the LieDM network in 2001-2003). The rest of the courses are developed voluntarily by enthusiastic educators or are funded from international programmes. Proponents of government-funded courses claim that the

⁸² Distance education in Lithuania – The National Study 2005. Lithuania

⁸³ Distance education in Lithuania – The National Study 2005. Lithuania

small proportion of state funding often results in low-quality distance education courses; about half of them consist of mostly “electronic page turning” and in single subjects and very few complete study programmes.

- According to the LieDM data of 2003, the majority of distance education students were from major Lithuanian cities - Vilnius, Kaunas, Klaipeda, Siauliai, Panevezys, and approximately only 5% were from the provincial towns. First, this is mainly due to low computer usage in households in rural areas. Second, few households in rural areas use the Internet, e.g. in the first part of 2003, every 1 in 10 households in the cities was using the Internet, while in rural areas the ratio was 1 in 100.
- Educationalists lack training and knowledge on how to modernize and make the study processes more effective and how to implement innovative learning methods and tools. Experience from more developed eLearning countries indicates that the development team of a typical distance learning course has 10 to 15 members from different IT areas (operating systems, databases, programmers, web designers, content brokers, etc.). In the LieDM network institutions, only 2 or 3 specialists are allocated per team.
- “Mainstream” Lithuanian academics and teachers have not received sufficient training on how to use distance education technologies, in order to better organise the teaching and learning processes, e.g. application of different learning environments, modelling programmes, etc. Such training has been implemented in the LieDM network since 2001, but there are still very limited resources allocated for this purpose. At the moment, only 4.53% of all LieDM network maintenance funds are allocated to human resource development, while the World Bank experts, in the recommendations in their Report that has been referred to in 6.3 of this Study, suggest 30% allocation to human resources.
- Limited financial resources prevent the education system from adapting to rapid changes in society and in applying technologies in the education process. Academic staff thus has limited opportunities to become acquainted with advanced distance education technologies and methodologies. The distance education network has had very limited impact on the vocational training system; only 4 distance education classes have been established in 86 vocational training schools.
- There is neither a state-level distance education research activity nor an analytical system (e.g. quality assurance, monitoring methods and tools) to evaluate the effectiveness of a distance education course, its ability to satisfy the needs of the target groups, etc.
- Dissemination of information about lifelong learning possibilities is also insufficient.

II.7. The acceptance and usage of eLearning services

II.7.1. Barriers to wider development of eLearning and distance education in Lithuania⁸⁴

The weaknesses, discussed in the previous section, indicate the existence of barriers, or obstacles, which delay or restrict distance education implementation and should be considered when developing a strategy. Barriers can arise in parts of the national educational system, in educational institutions or among individuals:

- Most of the (comparatively few) recorded failures of eLearning systems can be attributed to inadequate attention being paid to the factors indicated below.

The barriers resulting from the macroeconomic context:⁸⁵

- Small market: there is no incentive to invest in advanced educational technologies when the education market is small; there are many issues concerning eLearning profitability.
- Short distances: there is no pressing need to develop distance education programmes and courses because distance is not a big problem for students to access learning resources.

⁸⁴ Distance education in Lithuania – The National Study 2005. Lithuania

⁸⁵ Distance education in Lithuania – The National Study 2005. Lithuania

- Digital divide between the cities and provincial towns: a regional digital divide still exists, as does an uneven distribution of technological infrastructure and users' low IT literacy.

The barriers resulting from the educational system:⁸⁶

- Educational vs. business thinking: on the one hand, actors in the educational sector do not have a business "mindset" while on the other, IT businesses may not understand the educational and lifelong learning markets.
- Lack of knowledge brokerage: knowledge brokerage services are not yet developed.
- The 'blind' zones in managing distance education: there is no functioning monitoring system which provides progress indicators on distance education at all levels (national, regional, institutional) in all educational sectors in Lithuania.
- The digital divide among different educational sectors: there are no distance education standards (official documents), which link different educational sectors (general education, higher education, adult education, and vocational training, in-service training).

The barriers resulting from lack of legislation and legitimisation of innovation:⁸⁷

- Recognition of new professionals: there is no national framework of distance education professionals' qualifications: (managers, authors, ICT specialists, administrators, teachers, tutors, etc.). The new professionals are not recognized either at national or at institutional level.
- Understanding of distance education as a new form of education and learning: in many universities eLearning is not acknowledged as a form of education; no formal recognition of distance education courses is possible until a quality system is set up.
- Lack of legal bases as a motivation system: there is an insufficient legal basis to ensure intellectual property rights, and there is no reward system, which encourages the sharing of products and resources.

The barriers resulting from inadequate educational organization:⁸⁸

- Providers vs. customers in education and the lifelong learning (LLL) market: customers are not organized and represented substantially in the education and LLL market. They are not able to manage learning infrastructures and resources.
- Inter-institutional competition: it is argued that competition in the small educational market may restrict distance education development because it is a still quite new and undeveloped market (recognition by one institution of the courses delivered by another, joint degree programmes, etc.)
- Rigid organizational structures: rigid organizational structures of traditional educational institutions do not fit the requirements of open and flexible learning.

The barriers resulting from the old pedagogic and didactic principles:⁸⁹

- The old pedagogical models in 'E' format: the shift from traditional teaching to online learning requires revised and changed pedagogical bases of educational practice. There is a wide gap in understanding and implementing new pedagogical models.
- Personal barrier to entering a new learning culture: here, too, there is a wide gap between traditional learning/teaching experience and the possibilities of distance education. This barrier exists both for students and teachers.

The barriers resulting from the rapid development of technology:⁹⁰

⁸⁶ Distance education in Lithuania – The National Study 2005. Lithuania

⁸⁷ Distance education in Lithuania – The National Study 2005. Lithuania

⁸⁸ Distance education in Lithuania – The National Study 2005. Lithuania

⁸⁹ Distance education in Lithuania – The National Study 2005. Lithuania

⁹⁰ Distance education in Lithuania – The National Study 2005. Lithuania

- Rapid IT development and slow utilization: there is a big difference in the speed of development of two kinds of technologies: information technologies and educational technologies. The development of educational technologies, models and methods is far behind the development of information technologies.
- Technological complexity: there is a variety of good technological solutions available for distance education in Lithuania; however, some may be too complex for the user to employ, which then becomes a serious barrier.

The barriers resulting from miscommunication:⁹¹

- Imprecise terminology: the lack of precise and recognized Lithuanian vocabulary for distance education and eLearning restricts the conceptualization of reflected practice, communication and collaboration between the actors in this field.
- Miscommunication among specialists: as a result of narrow specialization, limited experience and communication competence, a considerable barrier exists in multidisciplinary communication among IT specialists, subject specialists, teachers, and distance education methodologists.

According to national experts' opinion, the following are the main barriers for adult learning:

- State financial support for distance learning is decreasing.
- There is no legislation on the employees' and employers' duties regarding continuous improvement of qualification;
- The system of professional consultation and information is underdeveloped;
- There is no system of acknowledgment for skills acquired through non-formal and self education;
- Low-income residents face severe risk of social disjuncture as they do not have access to higher education and adult education (or lack motivation);
- There is no system to give people with an unfinished secondary school a "second chance";
- There is a lack of education programmes for other nationals, in particular for the large Russian minority in the country;
- There is a lack of learning locations for the disabled;
- There is a lack of education services in the army;
- There is a lack of education services for prisoners;
- Uneven availability of vocational training and lifelong learning across the country: some regions have only a few professional education institutions with a limited number of training courses, which does not satisfy the demand on the local labour markets. The majority of offerings are in the two biggest cities, Vilnius and Kaunas.

The system of eLearning has quite good or almost perfect technical conditions, such as communication lines, but the shortage of e-skilled educationalists and financial resources slows down the possible modernisation.

II.7.2. Opportunities for eLearning and distance education development in Lithuania

Rapid economic development, changes in society, the educational reform and the developments in distance education provide a starting point for planning future steps. The potential for developing eLearning and distance learning lies in these areas:

Socio-economic development opens up new possibilities for the development of distance education and eLearning:

- Economic growth and rapidly changing demands for new qualifications open new markets for distance education providers of vocational training and continuing improvement of qualifications.

⁹¹ Distance education in Lithuania – The National Study 2005. Lithuania

- The number of target groups, such as education system's dropouts, working people who intend to improve their qualifications, part-time university and college students, etc., is growing. These trends contribute to a potentially wider distance education usage.

The human and social resource potential for the development of distance education and eLearning:

- Experience that is accumulated in the higher education sector has great potential to be exploited in other sectors as well (adult education, vocational training, in-service training, etc.)
- Dialogue between the education and business communities has started, with several initiatives established linking the business sector with education. The potential – including joint ventures – of their collaboration in distance education is not yet exploited.
- The high level of expertise in the ICT sector is not fully exploited (in fact, some of it is being exported elsewhere and is therefore a loss for Lithuania), but the education sector lacks ICT expertise. IT is one of the most dynamic sectors in Lithuania as well as in the rest of the world, so there is great potential for a partnership between the ICT and educational sectors.
- The existence of the Lithuanian Association of Distance Education facilitates collaboration among professionals and institutions within different sectors of education; here, too, there are strong possibilities to overcome the previously described barriers to eLearning development.
- There are well-developed international relations in the distance education community, and these relations form an important network, which should be exploited in facilitating the overcoming of barriers.

The current level of resource and infrastructure development:

- The rapidly developing infrastructure in Lithuania creates conditions for the development of distance education; the LieDM network covers the major part of Lithuania, and there is high demand for classes in remote regions that could become “agents” for this form of learning in rural areas.
- The infrastructure and resources (tools and courses) accumulated in the higher education sector have great potential to be exploited in other sectors, too (adult education, vocational training, in-service training, etc.).

Emerging new LLL possibilities as a new arena for Distance Education:

- The implementation of the LLL policy opens new prospects and new markets for distance education and eLearning.
- The wide networks of libraries in Lithuania, which are being computerized, have the potential to become learning centres.
- Distance education offers great potential for learning. It can be seen as enabling individuals to share experience. Support for reflective and shared learning has great potential as distance education itself increases learning through sharing experience.

Constant economic growth influencing the demand for well e-skilled professionals, improving dialogue between the education and business sector and increasing interest in distance studies are the main incentives pushing the information society forward.

II.8. The impacts of eLearning development

Education has a very significant role, since it is the key to an effective participation in the information society. Higher education is no exception: there have already been changes stimulated by the Internet and other technologies, which have reduced geographical and time boundaries. The pedagogy of on-line learning is still in the beginning of its lifecycle, but asynchronous eLearning services are used in the mainstream education nowadays, so it is already a powerful tool and, if used properly, can increase the range and excitement of learning. A lot of Lithuanian universities are developing imaginative responses to the opportunities, sometimes individually, sometimes in groups.

Looking back at the eLearning development in Lithuanian institutions of education, the following evolutionary steps of eLearning development can be mentioned:

- 1) Learning materials with scripts. The first projects resulted in lots of content developed, which, yet being static, was enriched with individual client-server scripts. While some of the courses were produced as CBTs and delivered on CD media, others were web-based courses and already had some lightweight anonymous self-test engine included. Concisely, this eLearning generation can be described as follows: non-personalized content with technical tools to increase the interactivity level of the material.
- 2) Own learning platform. The number of learning tools grew; some attempts have been made towards integration, thus providing means to envision a personal platform for eLearning. The ownership was twofold – the sky is the limit to implement something new, yet software bugs transformed the organization from being focused on education into a software development house. Learning this lesson took some time, but finally professional learning platform was chosen and universities could again focus time and resources on education.
- 3) A set of information systems. The infrastructure establishment deployed elaborate professional stand-alone information systems: library system (ALEPH), virtual learning environment (WebCT), course development kit (CDK), streaming media (both synchronous and asynchronous) eLearning component (ViPS), PeopleSoft Campus information system and others. Operating well as stand-alone components, those systems do not yet offer cohesive learning experience as there is no connection among the different information bits covering a variety of learning aspects: information sources (library system), course bookings and student allocations (student information system), course development and teaching and so on. All of the different information systems work well and provide everything they are intended to, but, on the other hand, lack of integration decreases student experience as a lot of potential value added of integrated system inter-operation is missing.
- 4) Integrated virtual learning environment. It is the next step undertaken under the current LIEMIS information integration project.

At the same time videoconferencing network was developed and was used to broadcast to country-wide audiences.

III. ASSESSMENT OF THE CURRENT DEVELOPMENTS AND TRENDS

In order to evaluate the current state of eLearning developments in Lithuania, it is necessary to take into account some important indicators, such as eLearning services, eLearning services content, and eLearning services usage in different target groups. In Lithuania, eLearning services are not widely used but there are many programmes established by the Government and various funds designed to develop eLearning services and distance education, to create the information society and to make such services more accessible to society. However, legal and institutional background is not well defined for eLearning, insufficient investments restrict the development of eLearning, and, moreover, the education sector lacks ICT expertise due to limited financial resources. Nevertheless, progress has been made in modernising education and training centres; universities and colleges offer eLearning courses; there are special projects for the disabled training and eInclusion. eLearning is going to be recognised as one of the principal targets in the Lithuanian educational system. The main specific achievements and shortcomings in developing eLearning in Lithuania are listed below.

III.1. Current main achievements and shortcomings

Main achievements

- After implementing the PHARE project “Multi-country cooperation in Distance Education”, the Lithuanian investment programme “Development of Distance Education Network in Lithuania” (LieDM) was started in 1998. This Network was established alongside the programme "Information Technologies for Higher Education and Science (2001-2006)" (ITMiS) supported by an Act of the Minister of Education and Science No 115, dated 30 January 2001. The Programme consists of three main interrelated sub programmes: the Lithuanian Science and Higher Education Information System (LieMSIS), the Lithuanian Academic Libraries Network (LABT) and the Lithuanian Distance Education Network. The major goal of the LieDM network is to promote the establishment of the information society in Lithuania by developing and coordinating the higher and continuing education system based on the information and communication technologies. Studies in the LieDM network are based on the modern information technologies, while blending Internet-based learning and videoconferencing, expanding the network of distance learning classes and centres, as well as establishing multimedia laboratories and videoconferencing studios.
- As it was shown in Chapter II, the number of DE students and training courses is constantly growing in Lithuania.
- The Lithuanian Government has set the development of the information society as one of its key priorities. In order to improve the quality of education in the basic schools in Lithuania, the Ministry of Education and Science prepared the Education Improvement Project which seeks to involve the educational system in the processes of society and to involve new management in education. This project is funded from a loan extended by the World Bank and it is co-financed by the Government of the Republic of Lithuania and municipal funds. The strategic lines of the Project were approved by the Government of the Republic of Lithuania on 4 October 2001 and were included in the Action Plan of the Government Plan of the Government Programme for 2001-2004. *The Strategy and Programme for the Introduction of ICTs into the Lithuanian Education in 2005-2007* (approved by Order No. ISAK-2015 of the Minister of 14 December 2004)
- ICT-related legislative environment is becoming more mature and more supportive of eLearning activities. Even though there are no sufficient legislative guarantees that eLearning will not be discriminated against (compared to the traditional learning methods), there are no obstacles to implement eLearning methods. The implementation of different eLearning techniques into traditional learning is also allowed and meets no obstacles in the legal environment.

- Annual 2001-2004 Programme “Education for the Information Society” and the Strategy for the Introduction of ICTs into the Lithuanian education system have been implemented, which helped foster eLearning techniques, especially in secondary education.
- The strategy adopted by a resolution of the Government of the Republic of Lithuania in 2005 aims at enabling a larger number of public administration institutions, private enterprises and individuals to access broadband networks. The strategy also aims to develop the provision of electronic services and to promote competition in the market of broadband access, by using public and private capital investments. Overall, these goals strive to augment the social and economic development and to reduce the digital divide.
- The following EU goals seek to modernise the education and training systems by 2010:
 - *Students per computer ratio*: seven pupils in grades 9-12, 17 pupils in grades 1-12.
 - *Internet in schools*: 50% of schools actively use the Internet in teaching and learning.
 - *Training of teachers*: 30% of teachers trained under the Technological Part of Teachers’ Computer Literacy Standard, 12% of teachers trained under the Educational Part of Teachers’ Computer Literacy Standard, 15% of teachers trained how to use various educational software during the lessons.
 - *Provision with educational software*: schools received 38 computer teaching aids provided with licenses for schools, 52 provided for testing.
- The ongoing initiatives of PHARE and European Regional Development funds are expected to expand the Internet to remote regions by establishing Rural Internet Access Points (RIAPs) and Rural Broadband Internet infrastructure (RAIN), as well as expanding the existing Distance Education Network (LieDM) to each municipality.
- At present, Lithuania has about 700 centres where people can use the Internet for free. The number of these centres is growing.
- More than 26% of the Lithuanian population have developed their skills in using eLearning solutions. According to the Indicators for the Information Society in the Baltic Region 2005, Lithuanian, Polish and Latvian enterprises were the leaders in using training and education via the Internet in 2004.
- Universities and colleges also offer many eLearning courses and modules (approximately 500 courses), which are mainly for correspondence students or are used in blended learning.
- The Lithuanian SPD for 2004-2006 adopted measures for developing professional rehabilitation for the disabled, enhancing employability and integration into the labour market for the unemployed, preventing social exclusion and promoting social integration. In 2004, funds from the European Commission’s initiative EQUAL were allocated to 30 projects aiming to satisfy the needs of socially excluded groups.⁹² There have been several PHARE, Leonardo da Vinci and Socrates projects targeted towards training and eInclusion for the disabled.
- Competition in secondary education forces institutions to meet the demands of schoolchildren and parents. These demands often call for the improvement of eLearning techniques.

Main shortcomings

- Analysis of the current legislation shows that the legal and institutional background is not developed sufficiently at present: eLearning and distance education are not recognized and declared officially as an equal form of education.
- Negligible progress in the education reform, therefore competition and flexibility of the system in meeting the demand is lacking, except for the competition in secondary education. Institutions are still able to perform without paying enough attention to the demand. The regulation of governance and financial regulations of institutions of education do not allow a flexible and efficiency-oriented allocation of resources;

⁹² Modernisation of the Education and Training Systems towards the 2010 common goals of the EU, http://www.smm.lt/svietimo_bukle/docs/apzvalgos/EC_LLL_report_final_ENG.doc

- Low interest and investment of the business sector in the development of eLearning, therefore, limited financial resources prevent the education system from adapting to rapid changes in society and in applying technologies.
- The lack of financial resources and often limited possibilities to use them flexibly often do not allow academic staff to even become acquainted with advanced distance education technologies and methodologies.
- The education sector lacks ICT expertise.
- Most of the computers in educational institutions are located in computer classrooms (58.3%). Only 8.9% of computers are placed in other classrooms, while 13.3% of computers are used and located in administration offices. This isolation of ICT equipment shows that despite the presence of ICTs in educational institutions, there is a low integration of ICTs in the actual learning process.
- Schools still possess old-fashioned computers that should be renovated.
- All indicators show that despite the efforts to introduce public Internet access points (especially in rural areas), the digital divide between the large cities and provincial towns still exists, as does an uneven distribution of the technological infrastructure and low IT literacy. Disadvantaged target groups (the elderly, the unemployed and IT illiterates) are concentrated mostly in rural areas.
- There has been, so far, not a lot of financial support from the Government for distance education content development, so only a very small number of distance education courses are funded by the Ministry of Education and Science (12.5% of the total number of distance learning courses developed in the LieDM network in 2001-2003). Proponents of government-financed courses argue that the small proportion of state funding often results in low-quality distance education courses.
- There is no well-functioning mechanism and no system to motivate teachers to improve their competences and skills to design distance learning and apply them at their institutions. Thus, each institution could introduce a system to recognise and accredit the teachers' efforts. However, in the majority of cases, the lack of enthusiasts, funding and other resources as well as impeding bureaucratic mechanisms still result in the shortage of distance education study programmes and ICT usage in learning. There is a wide gap between traditional learning/teaching experience and the possibilities provided by eLearning. This barrier exists both for students and teachers.⁹³
- Specialists in distance education lack training and knowledge on how to modernize and make study processes more effective and how to implement innovative learning methods and tools. Insufficient attention has been paid to training Lithuanian academics and teachers on how to use IT in teaching and how to create individual learning paths according to models and templates during learning processes, e.g. application of different learning environments, tools and scenarios.⁹⁴
- Neither state-level or institutional-level distance education research activities nor analytical systems (e.g. quality assurance, monitoring methods and tools) are being developed to evaluate the effectiveness of distance education course, its ability to satisfy the needs of the target groups and to make proposals to distance education designers and deliverers through the use of good practice examples and cases.
- Intellectual property rights regulations may limit teachers' and learners' access to software and digital content of different material.
- A general tendency of bureaucratisation of the learning process and teacher's activities does not formally restrict eLearning, but the focus is legally set on a standardised approach.
- Regulation of working hours of educational personnel does not pay proper attention to the fact that eLearning is an alternative to traditional learning.

⁹³ Distance education in Lithuania – The National Study 2005. Lithuania

⁹⁴ Distance education in Lithuania – The National Study 2005. Lithuania

- Non-existence of the system of acknowledgement of informal (in some cases also non-formal and formal) education (eLearning is especially used in informal education).
- Rules regarding documentation and formal acknowledgement of digital documents (teachers and learners have at least reasonable doubts whether their submissions, remarks, evaluations, etc., made digitally will be accepted in case of the formal dispute, there is a tendency to back all digital interaction with paper documents and texts).

III.2. Factors behind the existing developments

Lithuania maintains a strong economic position and remains one of the fastest-growing economies, which, together with a shortage of the labour force, means that the demand for education, financial accessibility to education, and the need for better, more cost- and time-saving techniques of education are growing. So the economic factor provides possibilities to develop eLearning services in Lithuania and this enables to make the education system more flexible and more convenient not only for students but also for a larger part of society.

The market is too small for big technology investment projects; relatively short physical distances to learning centres do not act as barriers to access education; however, differences in the level of education in urban and rural areas are significant. Such situation encourages, at first, to expand the usage of ICT to remote areas and then to adapt eLearning services and distance education.

The country is too small and distances are not very large in order for some eLearning services (first of all, distance education) to be very attractive in comparison with traditional education.

In the legal area, there is a lack of structure, standards and national frameworks in many aspects (neither standards of professional skills in distance learning nor formal recognition of distance education courses exist). So, the legal factor in Lithuania still restricts the expansion of eLearning in the education sector, though ICT-related legislative environment is becoming more mature and more supportive of e-learning activities.

On the other hand, legal problems are not harsh enough to prevent eLearning. In most cases the lack of motivation by learning institutions, administrators of education and teachers themselves is an essential problem. Despite the lack of strong legal background and clear requirements for distance learning, the Lithuanian policy on eLearning, the information society and lifelong learning is clear enough to develop these areas and to overcome the present problems. The Government is trying to increase the role of eLearning in the education system.

There is a legal basis to ensure property rights and confidentiality; however, it is argued that the legal basis is not satisfactory enough to prevent intellectual property breaches, viruses and hacker attacks.

General ICT usage indicators show a remarkable growth, which is also expected to continue in the near future, but many people still lack necessary skills, especially the older generation and the rural population. A lot of teachers do not know how to use ICT, especially distance learning ICTs, and this poses a negative impact on eLearning and distance education development in Lithuania.

The shift from traditional to online learning requires many changes in the culture and society because it is a new phenomenon in society and education. Differences in approaches towards eLearning among generations are obvious. The older generation has no tradition of lifelong learning at all, is often afraid of computers and, in general, does not see a big need to use ICT. The younger generation, on the contrary, is willing to catch up with the standards of richer European countries. New fashionable means are especially attractive to the younger generation.

Different people see either more possibilities or more challenges in eLearning. For example, while some institutions and teachers tend to post everything on the Internet, a number of teachers do not

present any material online and do not like the material for students to be published in order to avoid copying–pasting when students conduct individual research or homework.

As teachers and students belong to different generations learning in general and eLearning in particular often become complicated.

There is a strong tradition in Lithuania to go to institutions of tertiary education upon completion of secondary education. An individual who is not a full time student being of a “proper” age to study is often treated as a loser. This approach does not contribute to individual, distance and lifelong learning as non-traditional forms of studies are very often not treated as an equivalent “minimum” standard of finishing studies at a University.

A gap between cities and rural areas means that cities are developing much faster than rural areas, while rural inhabitants, especially the older ones, have strong prejudices and fears of technological learning. A lack of technologies and specialists in those areas is a considerable barrier to the spread of eLearning, but big projects are going to be established with the aim of developing eLearning and the usage of technologies. On the whole, a lot of factors have a positive effect on developing and expanding eLearning in Lithuania.

III.3. Drivers and barriers for future eLearning in Lithuania

Drivers:

- The growth of the national economy. An overall growth of welfare allows citizens and institutions to acquire instruments for eLearning.
- The modern labour market’s needs for both ICT literacy and ability to use ICT in everyday work.
- Well-developed ICT infrastructure, which has actually already solved the problem of accessibility to the Internet.
- The existence of governmental budget programmes of ICT implementation in education. However, there is always a problem with such programmes - they utilise resources, yet do not always achieve their goals.
- Past experience of public-private partnership in eLearning programmes. This has created a positive example for future partnership and involvement of private institutions, donors and NGOs into promoting of eLearning.
- Experience in participation in international programmes and projects on ICT implementation in education.

Barriers:

- The general structure of public education, which does not encourage innovation, efficiency and orientation towards the customer. Institutions of public education, being publicly-financed budgetary institutions, do not face pressure from the market to provide ever better services. This lack of incentives also creates the culture of stagnation, which is especially harmful for innovation and innovative teaching.
- There are no sufficient, systematically developed national level strategies for the implementation of distance and eLearning.
- Market for the educational services’ and aids’ development is rather small.
- ICT integration through the curriculum in all subjects is difficult to accomplish because of the lack of motivation in public educational institutions, together with the lack of resources, knowledge and skills.
- Foreign language barriers (students know English, but teachers know Russian better). The language barrier is also important when using eLearning services abroad.
- Low computer usage in rural areas.

- Older teachers usually have not enough skills in computer usage.
- A low current level of public and private partnership.

IV. ANALYSIS OF POLICY OPTIONS

An educated, competent workforce is the greatest asset of the nation and the most important prerequisite for successful economic growth and competitiveness. It is very important to break the chain of low academic achievement, unemployment and poverty. Concern for universal access to education, as well as the quality of education and a high level of competence, are therefore essential.

As described in previous chapters, multiple policies have been created and applied aiming to foster eLearning. In order to ensure the greatest relevance of the qualifications of the workforce to the labour market and development of the national economy, Lithuania has prioritized human resource development and employment as key factors to meet these requirements. Education and training systems must adapt to the new societal realities where “lifelong learning is an essential policy for the development of citizenship, social cohesion and employment.”⁹⁵

So far, according to our analysis as well as the experts interviewed in the context of this research, the impact of these policies was tangible but insufficient. There is a number of satisfactory and successful cases of eLearning indicators, services and practices. However, these cases appear to be the result of an exceptional attitude and skills of the respective public institutions’ leaders rather than the features of the education system as such. Meanwhile, the overall development of eLearning is not sufficient enough to meet today’s challenges.

As concluded in Chapter III, the main constraint for the development of eLearning services is distorted motivation of public administration institutions, institutions of public education and teachers. The existing motivational mechanisms do not support individual attempts to serve their users and to save resources, and to provide better and more user-friendly education services (in general, not just in eLearning services).

This particular conclusion is supported by our analysis and the prevailing opinion of the experts polled that the necessary legal base, even being far from perfect, is in place, that financial resources are also available (even though they are not sufficient), that actual and potential consumers seem to be ready and willing to use eLearning, and that formal policies are in place. The main thing lacking is motivation to deliver eLearning services that create value-added for real users in Lithuania.

Further we will describe policy measures to be taken in order to remove the obstacles and benefit from eLearning.

Motivation, according to most experts, is the key element in identifying the problems related to the implementation or non-implementation of eLearning. It can take a long time to solve this problem in public institutions of education as well as in administration of education; however, it has to be addressed immediately as it is a bottleneck for eLearning development (as well as for many other political, economic and social problems in the country). It will remain to be the major obstacle, even if a number of secondary obstacles are eliminated.

The resources and services of eLearning have enabled a broadening of the users’ circle while providing these services to every ICT user and employing Internet access points. In practice, as it was also noted by most of the experts, potential users of eLearning may access services if they are provided, and the problem of digital divide is not of the primary concern.

However, the supply side of eLearning is more complicated. One of the key requirements that eLearning has to meet is to provide an access to the latest learning material. The ultimate content

⁹⁵ European Council Presidency Conclusions, Lisbon, 23-24 March 2000, paragraphs 5, 24 and 25, pp. 2 and 8; European Council Presidency Conclusions, Santa Maria da Feira, 19-20 June 2000, paragraph 33, p. 6.

owners - traditional publishers - are beginning to realise the market potential of the multimedia and online learning environment and the increasing use of mobile devices to access content. There is a need to maximise the mutually beneficial collaboration between educational institutions and eLearning developers (whose specialist staff are in many cases content and design experts) on the one hand and commercial publishers (who are marketing experts) on the other. This would result in a synergy; moreover, the employment of all the players' strong aspects would lead to a more efficient achievement of their own goals. At the moment, there are not many incentives for such collaboration. While there are no means to question why commercial entities do not go for these opportunities (most probably, they do not see profit opportunities here), public institutions may be encouraged to collaborate by introducing more flexibility and economic incentives.

eLearning does not recognise any physical boundaries. Sharing the knowledge on how best to blend eLearning with our existing systems will benefit all partners because such collaborations can spread information better and supply eLearning users with better services. This will guarantee more customers for eLearning. In the case of Lithuania, which faced massive emigration during the last few years, the feature of non-existence of boundaries may be specifically important.

As was noted before, any new and more efficient and progressive forms of eLearning, including the use of ICT for learning in schools and universities, may be implemented. However the problem of motivation of teachers and institutions in the area of public education is essential, because teachers think it is unnecessary to quest and to do what is not specifically required. This leads to the conclusion that in order to bring eLearning to the optimal level, a successful policy should target the motivation of public education institutions, as well as their personnel.

IV.1. Institutional development

The institutions' approach to the eLearning strategy is very important, as they are the main actors in the networks; they influence the strategy of eLearning development and are in direct contact with teachers and learners. There is a need to take actions to strengthen cooperation and dialogue at all levels — local, regional, national and European — for measures, initiatives, sharing of expertise and best-practice between all institutional players: universities, schools, training centres, decision-makers and administrators responsible for selecting equipment, software, content or services (including social partners). This will ease the development and expansion of eLearning services. Public actors, such as universities and public institutions, should take a more proactive role in catalysing and strengthening such cooperation.

Public institutions need to act to encourage eLearning developers to collaborate in eLearning content development, as well as to share resources, to become more open to society, and to increase access to eLearning content, especially in non-formal education. Linkages, interactions and potential partnerships should be organised between eLearning actors who should support potential joint actions, collaborative initiatives and partnerships.

In the nearest future, public institutions also should collaborate to develop a qualification system for eLearning services providers. There should be no discrimination in qualifications' recognition, which should be awarded to all those who qualify through the modular training programme. This system must not develop into a restrictive system, but rather help mutual recognition of degrees, qualifications and other academic and training achievements.

Cost effectiveness and sustainability (e.g. the economies of scale which can be achieved through eLearning's ability to establish closer working relationships inside and across the different educational sectors) should be aimed for at all times. The development of international networks and recognition of qualifications acquired abroad should continue. This is especially important for

Lithuania which is not big enough (and the Lithuanian language is not spoken widely enough) to have all eLearning materials fully adapted to Lithuania.

Rigid organizational structures of traditional educational institutions do not fit the requirements of eLearning. These institutions use few ICT methods in the study process. Although eLearning is just a small aspect of the structure and motivation of public education institutions, it is of primary importance to the prospect of eLearning and its integration into the conventional system of education.

The traditional educational institutions should be encouraged to use more ICT in the study process and to apply a range of eLearning methods. All institutions should also adopt – and encourage their students to adopt – the principles of ownership of their own learning development. Commitment from educational institutions' senior management is needed to develop more flexible structures encouraging new ways to meet new pressures and thus widening access to learning.

An array of obstacles exists in the area of credit recognition and their transferability between one institution and another. This is a major issue, which the institutions need to resolve urgently. Institutions need to discuss and agree on a joint recognition process and certification, by which a student's qualification obtained through one institution is fully recognised by the others.

eLearning is related to the creativity in education, new forms of education, efficiency tools in education, thus making all changes in education patterns of crucial importance to the development of eLearning. There is a need to recognize distance learning as well as other non-traditional forms of learning as a proper form of education. Open and Distance Learning (ODL) programmes and courses are not treated in the same way as traditional ones in educational institutions. The quality system for distance education courses and programmes (evaluation, monitoring, quality assurance and management) has just been initiated at national level as well as at some educational institutions. No formal recognition of ODL courses, programmes and new professionals is possible until the quality system has been set up. Therefore there is a need to establish a system for development and continuous renewal of quality criteria, indicators and standards for evaluation of different kinds of products and services in open and flexible learning:

- To establish an eBoard of professionals that would include specialists of education, all three levels of distance education, teachers and tutors, ICT specialists and learner representatives to discuss the aspects of eLearning quality and accessibility;
- Different subsystems of quality criteria and indicators should cover different forms of open and distance learning (interactive packages for individualised learning; web based collaborative learning, learning through videoconferencing, blended learning, etc.);
- To analyse the existing criteria/indicators/standards systems for ODL worldwide and in Europe and to adapt the solutions from best practice examples;
- To develop National Quality Standards in the area of ODL that could be applicable for the purposes of external evaluation and accreditation;
- To support a continuous discussion forum on quality criteria and standards among providers, clients and stakeholders of ODL.

Moreover, developing an accreditation system is the main factor in the recognition of open and flexible learning in the Lithuanian education system and the European market. Hence a system for accreditation of ODL products and services in the area of open and flexible learning should be developed:

- To distinguish and link together different levels of the accreditation system; to associate different types of ODL products or services with different levels of accreditation (courses, modules and programmes);
- To further develop the system for accreditation of ODL courses which was developed in the higher education sector; this system should be piloted and implemented; parallel systems should be developed for other educational sectors;
- To link ODL programme accreditation systems to appropriate quality assurance agencies that are responsible for accreditation of study programmes in different educational sectors: the Lithuanian Centre for Quality Assessment in Higher Education (for higher education); the Lithuanian Labour Market Training Authority (for vocational training), etc.

Knowledge brokerage services are not yet developed. All learning involves some form of competence development - skill acquisition, knowledge acquisition and experiential learning. The number of methods by which it is now becoming possible to develop these competences is increasing. Thus there is a need for knowledge brokerage services to match the user's needs with the increased variety of service providers. A knowledge broker is the interface between the user and the supplier. The role of an independent knowledge broker therefore becomes more important. This person or organisation could operate at all levels and offer a wide range of advice. However, a critical issue is that it is demand-led by users at whatever level they operate, rather than supply-driven. But, of course, the knowledge broker, as the go-between, does also have the role of making potential users aware of what can now be supplied. There is a need to encourage the establishment of eService providers – knowledge brokerage institutions. They are limited to being intermediaries in the delivery of vocational training courses and their main activities are marketing of eLearning and recruiting of students. A wide-area knowledge representation (which has evolved from global hypermedia to ubiquitous knowledge webs) needs to be provided.

To develop a sustainable system of continuous research in eLearning in different educational sectors and across different initiatives and to progress from the old to the new paradigm of education several steps can be taken:

- To establish an “umbrella programme” for setting research priorities, planning research activities, and initiation and coordination of research in different educational sectors and across different initiatives for eLearning;
- To provide methodological support to research initiatives at an institutional level; methodology and survey instruments should be developed and/or adapted and inventoried in order to ensure the re-use and comparability of survey results;
- To encourage and implement state level research activities on eLearning (efficiency factors, tools, quality assurance, monitoring methods and other issues);
- To review (by research/analysis) the existing trends in eLearning methodology in Lithuania by allocating necessary human and financial resources for analysing the existing paradigms in eLearning design and delivery;
- To evaluate the existing practice and define further steps, to facilitate the adaptation of new eLearning pedagogical models as well as implementation of new practices.
- To ensure all learners' equal access to high-quality learning content, prepared in the new paradigm.
- To assure the visibility of research results via annual online publications.

IV.2. Human resources development

There is a wide gap between traditional learning/teaching experience and the possibilities provided by eLearning. Personal obstacles to entering this new learning culture are clearly

noticeable among learning designers and deliverers, as well as with the learners themselves. This problem exists both for students and teachers.

The transition from traditional teaching to eLearning involves a different pedagogical basis of educational practice and changing the old pedagogical models into the new paradigm of 'E' format. Educationalists do not give sufficient priority to the development and adaptation of new pedagogical models for eLearning. They tend to simply convert their normal teaching into "E" format. Neither experienced graduates from teacher training courses nor more recent ones have sufficient understanding of the pedagogical basis of eLearning. The initial teacher training system simply reproduces traditional teachers with "added-on" ICT skills. Teachers should be supported and encouraged to adopt these new pedagogical practices. They should review all their accumulated experience and determine how best to incorporate this into the new learning models. The roles and responsibilities of the teachers need to be redesigned and new eLearning professionals need to be academically recognized. A competence-based, modular training programme for teachers should be established, funded and delivered by the educational institutions themselves. There is also a need to take further steps in this direction:

- To analyse the existing training programmes and to propose a template scenario that could be applied to prepare eLearning professionals in the institutions of higher education and further training;
- To develop vocational standards of ICT usage for teacher and tutor training;
- To develop competence improvement and re-qualification programmes for teachers;
- To prepare training programmes for teachers on how to apply ICT tools during the learning and training strategies' implementation;
- To start developing learning competences at school level, which would bring a new generation prepared for eLearning. They would thus already be in a position to demand access to multimedia and online resources, which would also provide encouragement to implement eLearning;
- To develop an integrated teacher training and qualification upgrading system oriented towards the changing role of the teacher in the knowledge society and the new competences and values that are necessary for a modern teacher;
- To develop and implement a teacher and learner portfolio system. To further capture best practice in eLearning and to ensure equal access for all eLearning participants; external experts should be invited to staff development sessions as well as to evaluate eLearning and delivery procedures.

Professional, timely and effective learner and teacher support network, providing access to expertise and best practice in eLearning would be of crucial importance in Lithuania, especially as long as the skills of both teachers and students are not good enough. Some concrete actions may be taken:

- To establish eLearning support centres in educational institutions, while seeking to maintain a regional balance;
- To develop knowledge management for learner support;
- To develop online advice, guidance and diagnostics to ensure adequate tutorial support to learners;
- To develop and apply a professional, timely and effective learner support system in both formal and non-formal education by ensuring access to high quality eLearning resources to all participants;
- To establish ePortfolios for lifelong learning;
- To support the wide networks of libraries in Lithuania, which are being computerized, to become learning centres;

- To enable the creation of information systems for teachers and tutors, as well as for students, to facilitate gathering of information about existing eLearning possibilities;
- To encourage institutions and eLearning professionals to register their eLearning products in common databases and to advertise their products (complete or demo versions) as good practice examples;
- To provide a single database listing the eLearning catalogues for Lithuania and abroad which will enable the learners to search more effectively for training possibilities.

The education sector often does not have a business “mindset” while; on the other hand, IT businesses may not understand the education and lifelong learning markets. At an individual human resource level, collaboration between the education and business communities should be maximised and proper and efficient collaboration guidelines must be developed.

There is no national framework of qualifications for eLearning professionals (managers, authors, ICT specialists, administrators, teachers, tutors, etc.). This forms an obstacle for the development of their competences, assessment of professional qualifications and recognition of these professionals in the education system. Definition and recognition of their qualifications and competences will create possibilities for collaboration among institutions and eLearning professionals across different sectors of education and interdisciplinary areas, and will contribute to solving the above problems. There is a need to prepare flexible competence and qualification descriptions and requirements for eLearning professionals and providers, for their assessors, and for the quality boards monitoring the assessment process (assessors of assessors).

In addition, as a result of narrow specialization, limited experience and communication competence, substantial problems in multidisciplinary communication among eLearning professionals exist. Miscommunication among specialists is clearly noticeable. Precise activities and responsibilities for interdisciplinary professionals participating in eLearning development should be defined in order to avoid the overlapping of duties, responsibilities and activities:

- To introduce precise and agreed terminology in Lithuanian for important areas of eLearning as there is no recognised vocabulary related to eLearning;
- To facilitate practical training, communication and collaboration between actors in this field;
- To define areas of responsibilities and activities for different specialists.

IV.3. Quality assurance and monitoring

A properly functioning quality system assures continuous processes of quality assessment, evaluation and improvement of eLearning at all levels of the education system. The standards themselves do not assure quality. A mechanism is needed to advance quality processes. Therefore there is a need to develop a system for continuous quality assessment, evaluation and improvement of eLearning activities at all organizational levels:

- To subdivide the main levels in the organization of eLearning (institutional, regional, sectoral, national, etc.);
- To define the key processes at each level and the main foci of evaluation and improvement at these levels;
- To develop quality methodologies, techniques and procedures for quality assessment and improvement at different levels in the organization of eLearning;
- To develop an organizational structure for supporting quality processes;
- To allocate responsibility for quality assessment and improvement for individuals, groups and/or organizations.

External evaluation, formal accreditation and certification are important, but are insufficient for carrying out quality assurance in eLearning systems. Quality awareness within institutions and specific competences in quality management are major factors for successful implementation of quality systems within institutions. Hence it is advisable to support development of the quality culture within those institutions providing eLearning services:

- To develop methodological guidelines and tools for internal evaluation and quality assurance inside institutions;
- To develop competences of assessment, evaluation and planning of improvement. Training of staff in quality should be initiated and supported;
- The participation of providers and customers in the quality processes is important, too. They should be introduced into the quality dialogue;
- To support coordination of the internal quality assurance systems with the system of external evaluation and accreditation.

Quality depends on the actors' professionalism. As noted in the earlier chapter, the roles and responsibilities of teachers need to be redesigned, with the advent of eLearning opportunities. As it was also noted, at present there is no national framework of competences or qualifications for professionals in the area (managers, authors, ICT specialists, administrators, teachers, tutors, etc.), which restricts the development of their competences, assessment of professional qualifications and recognition of these people in the educational system. Thus a system for certification of professionals in the area of eLearning should be developed:

- The full range of staff required for each form of eLearning (using ICT for learning in schools and universities, using ICT for training at work, using ICT for lifelong learning, learning to use ICT, using distance learning programmes, etc.) should be defined and the required competences should be identified;
- Frameworks of qualifications should be developed for the main professionals involved in eLearning. Where frameworks exist, they should be extended by expanding the specific competences required in the specific areas of eLearning;
- The methodology and tools for assessment and evaluation of professional competence should be developed (or adapted from other sectors) for all professionals involved in eLearning;
- A system for recognition of acquired work-based competences should be developed and implemented.

The establishment of the system for new professionals' accreditation will solve these problems and will enable the professionals not only to define and gain necessary competences, but also to become recognised in Lithuania and in Europe, working in different sectors and at different levels.

Opening up of the market of eLearning products and the increasing diversity of the services it offers and provides is currently the main trend, yet the emergence of those seeking to make a quick profit is this development's side effect. The rights of consumers to get quality services and products should be assured by developing a licensing system for eLearning services' providers.

- Different types of eLearning services should be defined, described and catalogued;
- Providers of different services should be offered the opportunity to acquire an appropriate license.

There is no monitoring system in place that would provide progress indicators on eLearning activities at all levels (national, regional, institutional) in all educational sectors in Lithuania. The absence of such a system creates "blind zones" in managing eLearning. Developing a monitoring system should have two foci:

- 1) Promotion of continuous research,

2) development of an information system.

In order to achieve such a monitoring system, a system should be developed that collects information on products and services, providers and professionals:

- The typology of information should be defined, data sharing and metadata system should be created in order to have better information about possibilities of eLearning and its techniques;
- The platform for an information system should be developed;
- Information providers and users should be identified;
- The information handling system should define separate responsibilities for information provision and database administration as well as the periodicity of information provision and access rights for users of the information.

IV.4. Development of ICT infrastructure for eLearning

What can be offered to every citizen and learner will depend on whether or not the right ICT infrastructure is in place. The investments in the last few years have already shown significant improvement in the nature and extent of ICT resources available. But we need to accomplish a further rapid change; particularly as mobile and wireless technologies become more commonplace. Therefore it is necessary to interconnect all the educational institutions to the broadband network and to support provision of relevant ICT at each institution (this has yet not been achieved):

- Provision of relevant funding for interconnection of all educational institutions to the broadband Internet must be assured;
- Resource planning, procurement and collaboration among institutions have to be improved in order to achieve the highest returns on investments in the ICT infrastructure and services;
- In the longer term, education institutions will take responsibility for the ICT planning and provision within their overall expenditure; however, funding bodies should play an important role in supporting institutions in the initial stages of investment to improve value for money. The costs of sustainability, including maintenance, technical support, upgrading and replacement have to be estimated while planning investments in ICT.

Educational institutions have to use and to support a growing demand for multimedia and online services by providing access to learning resources and increasing provision of new eLearning opportunities. However, a diversity of tools and services used in different institutions produces technological complexity for learners. This problem can be tackled by aiming to implement international standards for learning technologies and to develop a single framework for integration of different learning applications. Compatibility of standards would allow interoperability of eLearning applications and integration of resources that are available or will become available in the near future. International standards and best practices for learning technologies have to be looked up to when planning procurement of ICT for educational and public institutions. The development of best practice guidelines and recommendations for ICT acquisition would be helpful to most public institutions. Coordinated development and procurement of publicly-funded services would also be very helpful and ensure value for money and interoperability.

V. THE MAJOR R&D CHALLENGES FOR E-LEARNING

There are numerous topics, which are being discussed with different intensity in the concerned public and political circles. They might define, in some aspects, long-term developments of eLearning; however, only some of them can be regarded as R&D issues. The most relevant eLearning-related issues of public debate are presented here:

- Centralization vs. decentralization in eLearning developments. A lot of experts in the field indicate the need for deeper centralisation, i.e. for a more active role of the central government in the development of eLearning, while also a big number of experts say that centralisation is one of the problems at present. There are worrying tendencies that these questions do not always end up in open discussions and solutions but they seem to be operational decisions, based on short term pressure rather than strategic thinking.
- The question of open source vs. commercial software usage in public eLearning. It is often mixed, for the sake of argument, with the usage of open standards in public administration. Still, due to the lack of defining arguments, this discussion does not seem to be resolved anytime soon.
- In order to meet technological changes, policy must be flexible and technologically neutral. Therefore, it is not reasonable, in the long term, to attach government ICT policies to any particular technology. Political bodies shall not pick up a challenge of technological standardisation. Standards grow up in the market, as it is a natural business interest to have them.
- A variety of technological solutions increases complexity for the users, so standardisation, integration and interoperability of different learning resources and services both at national and EU levels will play an increasingly important role in the future.
- Digital rights and use of copyrighted materials in learning processes.
- Effectiveness of eLearning and other eServices implementation is hardly treated as a matter for discussion, but rather as a matter of belief. It is widely and strongly believed that eServices exert a positive influence on learning effectiveness notwithstanding the way they are implemented and the costs of implementation. This belief arises mainly in all kinds of progress reports; however, it is usually undersupplied with arguments. Therefore, before introducing modern efficiency and investing in technologies, institutional management has to be strengthened.
- The involvement of the private sector is essential in providing eLearning. The lack of knowledge/resources/speed in public institutions of education is recognized. Still, there are no clear mechanisms how the private sector involvement may be fostered and how the private sector may be motivated. Despite the fact that the private sector could bring its natural motivation, skills and know-how in pursuing both goals – user satisfaction and cost saving, in some cases the business could also provide some extra investment. Hence, very serious challenges, in our view, are related with business models for incorporating the private sector into the process. The main challenge here is to define the cooperation models in a way that proper responsibilities are clearly allocated to the relevant parties. The model and its legal implementation have to be sufficient to prevent one party from benefiting at the expense of the other so that both public and private interests are fulfilled. More integrated participation of the private sector could become a challenge for the existing institutional and organisational structures.
- eLearning being a practical tool faces, first of all, organisational challenges. As it was explored previously, management of eLearning projects is still an evident weak point impeding further development. Good management is not limited by proper education and skills in public education institutions (though this also remains a serious challenge). The main

bottleneck and the primary challenge are to create motivation for public institutions of education to provide eLearning services (or, in a broader sense, more services, as well as more efficient and user-friendly services). In the process of creating motivation for public officials to serve the users and to save costs, the following particular nationwide and regional R&D challenge occurs: to develop and apply a set of indicators that would measure and allow monitoring the usage and impact of each eLearning service to the users; to set up and introduce the procedures of cost calculation of eService implementation and operation in public administration institutions.

- The task to treat the users as real clients is an essential part of any programme seeking to make education more user friendly (including the use of eLearning possibilities). Orientation towards the consumer implies the need for competition in education in general.
- At present, access to broadband connectivity and ICT equipment is provided by educational institutions, while in the future, increasing numbers of individual learners will have Internet access at home. The majority of experts pointed out that eLearning, as a phenomenon, does not create or deepen the problem of social exclusion. However, in order to ensure equal learning opportunities for all society members, the digital divide between cities and provincial towns as well as among different social groups is still important. The principle of combined public and private provision of access (leaving the essential part to private business and NGOs) will be fundamental in encouraging access for all.
- ICT development made gathering of information for student and learners a lot easier. However, it also made available new means of cheating like compilation and plagiarism. Hence, implementation of eLearning faces a challenge on how to safeguard that works and efforts of students are genuine.
- Maintenance and renewal of ICT in educational and public institutions is and will always remain an important aspect of eLearning facilities and equipment.

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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, Lithuania.

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.

