JRC Scientific and Technical Reports

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

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EUR 23367 EN/2 - 2008

JRC EUROPEAN COMMISSION

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JRC42862

EUR 23367 EN/2

ISSN 1018-5593

Luxembourg: Office for Official Publications of the European Communities

Printed in Spain

ACKNOWLEDGEMENTS

Martins Kalis from BICEPS wrote this report, and carried out the study on which it is based.

Peer review

The report has been peer reviewed and commented by Atis Kapenieks of the Riga Technical University Distance Education Study Center.

ICEG EC team

ICEG EC has coordinated this project, and has reviewed and commented on the research extensively. Special acknowledgement for the work on the eLearning is due to Pal Gaspar, Renata Anna Jaksa, Gábor Kismihók, and Susan Szalkai.

IPTS team

The following IPTS staff have also extensively reviewed and commented on the eLearning reports: Kirsti Ala-Mutka, Marcelino Cabrera, Clara Centeno, Sabine Delaitre, Lajos Nyiri, Yves Punie. Patricia Farrer gave editorial support.

The contract was awarded by:

Institute of Prospective Technological Studies (IPTS) of the Joint Research Centre, European Commission

Contractor:

International Center for Economic Growth, European Center (ICEG EC), leading a consortium of 10 other institutes in Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia.

Contract title:

Next steps in developing Information Society Services in the New Member States: The case of eLearning

Contract number: 150342-2005 F1ED HU

PREFACE

Policy context

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

Information and Communication Technologies, and related policies, play a key role in achieving the goals of the Lisbon strategy. In 2005, the new strategic framework for Information Society policy - i2010[2] - 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 learning[3] 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 Programme[4] and the Lifelong Learning Programme[5] have set objectives for education and support the development of learning in the knowledge society. One of the focus areas of the Lifelong Learning Programme is developing innovative ICT-based content, services, pedagogies and practice in order to promote better education and training throughout a citizen's life.

Research context

IPTS[6] has been researching IS developments in acceding countries[7] 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 States[9] that joined the European Union in 2004, in order to build up a picture of their current status and developments in the field, the most important opportunities and challenges they face, the lessons other member states may learn from them, and the related policy options. National experts from each country gathered the relevant qualitative and quantitative data for analysis, in order

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/llp/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

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 eGoverment, 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 Latvia

This report was produced by BICEPS, the consortium member from Latvia, and it presents the results of the research on eLearning in Latvia.

First, the report describes Latvia'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 Latvia, 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 education[10] (schools and higher education), the use of ICT in training and learning at the workplace (professional education), the use of ICT in non-formal[11] education (including re-skilling and training for jobseekers) and the use of ICT in everyday life (digital literacy/digital competences and informal learning[12]).

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

BDA	Baltic Computer Academy
CSB	Central Statistical Bureau of Latvia
DEAC	Digital Economy Development Centre
DESC	Distance Education Study Centre
ECDL	European Computer Driving Licence
ERDF	European Regional Development Fund
eSecretariat	Secretariat of Special Assignments Minister for Electronic Government Affairs
ESF	European Social Fund
EU	European Union
EU-15	Countries that were European Union Member States before the 1 May 2004 accession
EU25	Countries that were European Union Member States after the 1 May 2004 accession, and before the 1 January 2007 accession
GDP	Gross Domestic Product
ICEGEC EC	International Centre for Economic Growth, European Centre
ICT	Information and Communication Technology
IKTIK	ICT for the Quality of Education
IPR	Intellectual Property Rights
IPTS	Institute for Prospective Technological Studies
ISDG	Information Society Development Guidelines
ISP	Internet Service Provider
LETA	National News Agency LETA
LIA	Latvian Internet Association
LIIS	Latvian Education Informatisation System
LIKTA	Latvian Information and Telecommunication Technology Association
LMS	Learning Management System
LU	University of Latvia
LVL	The currency of the Republic of Latvia – the Latvian lat
MES	Ministry of Education and Science
NGO	Non-Governmental Organisation
NMS	New Member States
PHARE	Pologne-Hongrie Assistance à la Reconstruction des Economies (Poland and Hungary Assistance for Economic Restructuring Programme)
PIAP	Public Internet Access Point
RTU	Riga Technical University
R&D	Research and Development
SIA	Sabiedrība ar ierobežotu atbildību (Limited liability company)
SMS	Short Message Service
Turība	School of Business Administration *Turība*
ViA	Vidzeme University College (Latvian: *Vidzemes Augstskola*)

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EXECUTIVE SUMMARY

The Republic of Latvia has 2.3 million inhabitants and is one of the poorest, yet fastest growing, Member States of the European Union. Most of its economic activity is concentrated in cities, especially in the capital – Riga. Approximately 60% of the population are Latvians and 29% Russians. Almost three quarters of the GDP are produced by the service sector. Latvia has 552 students per 10,000 inhabitants – the second highest proportion of students in the world after Canada, which has 580 students per 10,000 inhabitants (Abizāre, 2008).

The ICT sector in Latvia has experienced rapid growth in recent years. The number of Internet users has increased six-fold since 2000, and proportionally it is now close to the EU average. In 2007 the percentage of people who used the Internet in the last 3 months was 55% in Latvia, and 57% in EU27 (Eurostat, 2007). The level of ICT skills in Latvia is rather low – almost 70% of employees have no ICT literacy or not enough (Judrups, 2006). However, the situation is much better among young people. The Internet connection speed to foreign networks has increased sixty-fold in the same period. School ICT infrastructure experienced rapid growth in the period 1997-2003, but has stopped since. This type of investment will return with the recent ratification of a new programme – "ICT for Education Quality" (IKTIK).

Higher education institutions are leaders in eLearning development and take up. They also show remarkable co-operation for increasing their access to European funding. Most of them are using Learning Management Systems, as well as other ICT support for education, such as Powerpoint presentations in lectures and communication by e-mail with students. Specifically, the Distance Education Study Centre of Riga Technical University has been very active in the field and has received international recognition. Its co-operation project with the municipality of Livani has been one of the most successful. Within the project, the Distance Education Study Centre educated more than 800 Livani inhabitants using a blended learning model, and has created a Livani knowledge repository and ICT development strategy for Livani. Since 1998, when the project started, several new municipalities have become involved in the project.

In general education, positive developments include the introduction of the compulsory subject 'Informatics', an ECDL certified programme in all schools, and legislation that allows most of the information on grades and notes to be stored exclusively online. The most visible programme in general education is eTwinning. However, only 144 schools are registered in the network and 20 involved in eTwinning projects. Most teachers received ICT training in the period 1997-2003, but it was aimed at raising ICT literacy, and little attention was paid to using ICT in teaching. The IKTIK programme outlines now a plan to increase the ICT skills of teachers in order to utilise the infrastructure and increase education quality. The programme aims to introduce new ICT technologies and training in 5% of schools by 2008, in order to identify best practices that can be used nationwide. However, although in most schools there are enthusiastic teachers who want to make the most of these opportunities, some teachers are threatening to resign from their jobs if they are forced to deal with computers.

Although many companies are familiar with eLearning, most only provide this kind of training to employees with high salary levels. The percentage of companies using eLearning is higher than the EU average (in 2007, 34% for Latvia, 23% for EU-27 according to Eurostat), but the percentage of employees receiving eLearning training is lower than the average. The percentage of individuals who used the Internet, in a three month period in 2006, for educational courses related specifically to employment opportunities in Latvia was only 5.8% versus 12.6% – the EU25 average. The same holds true for any workplace training. According to Eurostat only 11% of employees in Latvia participated in continuous vocational training courses in 2005 – the lowest result in EU-27 (excluding Finland, Ireland, Italy, and Slovenia). Extensive research on workplace training practices is needed to give better grounds for further suggestions in this field. In the field of Lifelong Learning, informal learning

is still by far the most popular means of learning. This is also related to the fact that 60% of employers still believe that the employees alone are responsible for their education (LIKTA, 2005).

In the period 1997-2003, eLearning in formal education was mostly supported and funded through a co-operation project between the Ministry of Education and Science and the University of Latvia. In 2003-2006 there were no national programmes for eLearning, and the new IKTIK programme was approved only at the end of 2006. Since then, it has been the main support mechanism for eLearning on the political level. Especially since the accession to the EU, a major part of funding for eLearning has been received through European Funds. All in all, Information Technology expenditure in Latvia is less than the EU average – 2.3% of the GDP compared to 2.7% in the EU27 in 2006 (Eurostat, 2007).

Economic and policy factors have influenced eLearning development in Latvia the most. Latvia used to be the poorest country in the EU, and this is the main reason why ICT penetration rate was very low – people could not afford many of the new technologies. And similarly, the rapid growth of the economy has also influenced very rapid growth in ICT penetration rates and accessibility, which has led to higher eLearning take up. However, policy factors have not been consistent over time, changing from a time of rapid eLearning developments in formal education in 1997-2003 to recession in 2003-2006, and now fostering the growth of ICT penetration rates and ICT skills with a new policy.

Future eLearning development in Latvia will depend heavily on the division of responsibilities and co-operation between the Ministry of Education and Science and the Secretariat of Special Assignments Minister for Electronic Government Affairs. These two bodies have to make sure that eLearning is introduced coherently into the education system, and infrastructure developments in eLearning, eHealth, and eGovernment are co-ordinated. One of the main tasks of the Ministry of Education will be teacher training. Although many teachers have received ICT literacy training, most have not been taught to use ICT in the teaching process. The Secretariat will have to ensure that the necessary infrastructure is in place and corresponds to the needs of teachers and learners. In more general terms, the Secretariat has to increase the accessibility of ICT for the general public as well. One of the biggest challenges will be effective eLearning development co-ordination, as this has already been mentioned as a significant drawback in eLearning development in the past. There is also the question of whether the Government in Latvia will be able to commit to long-term decisions to support eLearning, especially when it is remembered that, up until now, Latvian governments have had short life-spans of just over a year.

An important problem in the R&D sphere will be the development of cheaper and more accessible software and hardware. Therefore, initiatives such as MIT Media Lab's One Laptop per Child project and open-source software developments need extra attention. More specific to Latvia, eLearning can significantly improve inclusion, and, as a result, the development of assistive technologies for the inhabitants of Latvia is an important R&D challenge. As a new economy, Latvia also has to find ways to support new companies which are willing to do R&D but may still be in a phase where they lack sufficient resources and stability.

INTRODUCTION

General data

Latvia is the central of the three Baltic States situated in North-East Europe on the Baltic Sea. With 2.3 million inhabitants, Latvia is smaller than some major European cities in terms of population. The inhabited land area is 65 thousand km^2, a population density of 36 people per km^2. Most of the population is concentrated around the capital, Riga.

The Republic of Latvia was founded in 1918. It has been continuously recognised as a state by many countries since 1920, despite occupations by the Soviet Union (1940-1941, 1945-1991) and Nazi Germany (1941-1945). On 21 August 1991, Latvia declared *de facto* restoration of its independence. Latvia's government operates on three levels: central, subject to approval by the *Saeima*, the Parliament; regional, consisting of 26 counties and 7 municipalities of the larger cities; and local.

With Gross Domestic Product (GDP) per capita measured in Purchasing Power Parity at 52% of the EU25 level, Latvia is still one of the poorest countries in the EU. In 2006, only in Poland was below this level at 51% (Eurostat, 2007). The 2005 average household income per person in Latvia 2005 was LVL 110.30 (EUR 157.57). In cities, this was LVL 121.66 (EUR 173.80) but only LVL 86.36 (EUR 123.37) in rural areas (Central Statistical Bureau of Latvia (CSB), 2006). Since 2000 Latvia has been experiencing an economic boom, and in 2005 GDP growth was 10.2%. This is predicted to rise to between 11% and 12% in 2006 (Ertuganova, 2006). However, the economic boom comes with a rapid increase in Current Account deficit – in September 2006 this was 17.9% of GDP, although predicted to be 11-13% (LETA, 2006). In 2004 inflation increased to 7.3%, remaining at 7% in 2005, as shown in:
Table 1. It is expected to decrease gradually, but will still exceed 5% in 2006 (CSB, 2006). In September 2006, Mercer Human Resource Consulting predicted a 6.8% real wage increase in Latvia in 2007, the highest increase among 60 countries studied (LETA, 2006). This has increased the suspicion of risk of economic overheating in Latvia, as well as postponement of introduction of the euro, which was due in 2008. Together with the increase in inflation, the unemployment rate has decreased. This is mainly due to the low unemployment rate in Riga and the surrounding region, as well as the western part of Latvia. Several regions in eastern Latvia had an unemployment rate of over 25% in 2004 (CSB, 2006). The situation is depicted in Figure 1.

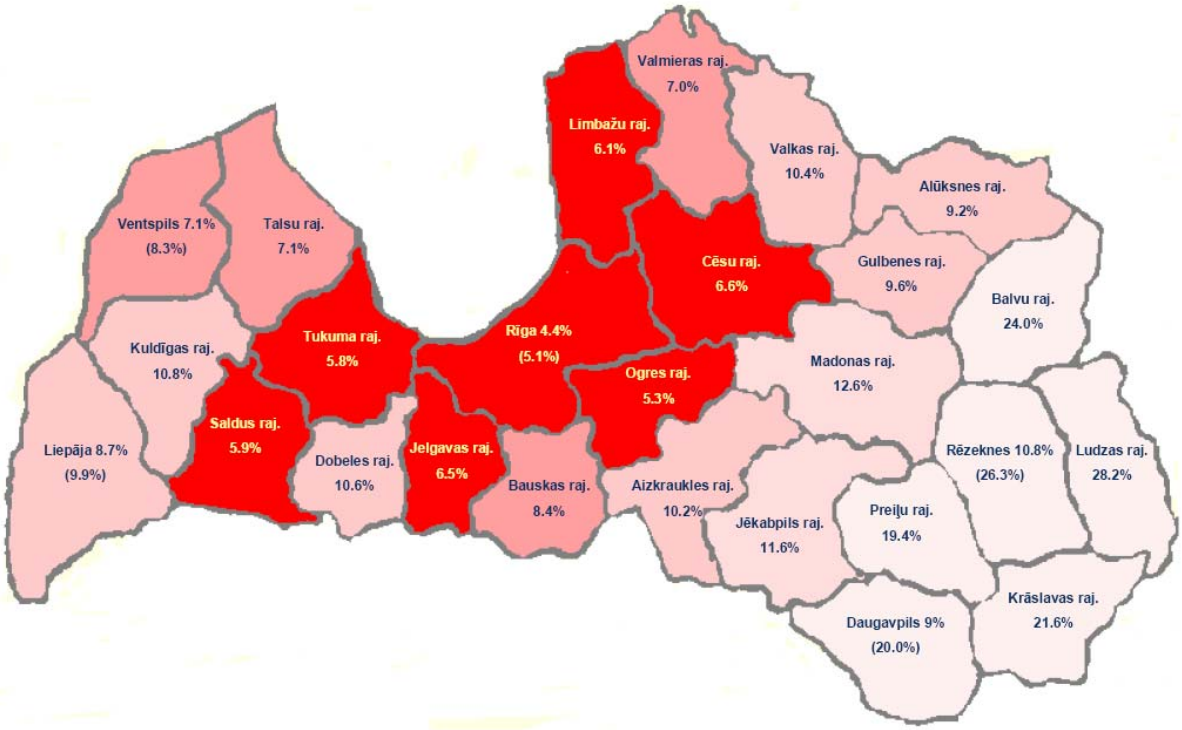
Table 1. GDP growth, inflation, and unemployment in Latvia, %

	2001	2002	2003	2004	2005
GDP growth	8.0	6.5	7.3	8.5	10.2
Inflation	3.2	1.4	3.6	7.3	7.0
Unemployment	7.7	8.5	8.6	8.5	7.4

Source: CSB, 2006.

Figure 1. Unemployment rate in the regions as at June 2005.

Key: Unemployment level lower in darker-shaded regions.



Source: CSB, 2006.

As Table 2 shows, most of the added value in the Latvian economy is created by services. 5.2% of total added value is in the education sphere, and this proportion has not changed much over the years – it has been in the 4.9% - 5.6% range ever since 1995 (CSB, 2006).

Table 2. Breakdown of added value in Latvia, 2004.

TOTAL %	100.0
Agriculture, hunting and forestry (A)	4.0
Fishing (B)	0.1
Mining and quarrying (C)	0.3
Manufacturing (D)	13.4
Electricity, gas and water supply (E)	3.1
Construction (F)	5.8
Services (G-O)	73.3
Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods (G)	18.3
Hotels and restaurants (H)	1.5
Transport, storage and communication (I)	15.6
Financial intermediation (J)	4.9
Real estate, renting and business activities (K)	13.3
Public administration and defence; compulsory social security (L)	7.8
Education (M)	5.2
Health and social work (N)	2.7
Other community, social and personal service activities (O)	4.0

Source: CSB, 2005.

Population developments

Latvia is one of the few countries whose population has decreased compared to a century ago. It has been affected significantly by the two World Wars, deportations, and emigration. Even today, the demographic situation in Latvia remains very poor, with no sign of improvement apart from 2003-4, when the decrease in population improved slightly to 12-13 thousand, or 0.5-0.6% of the whole population (CSB, 2005). Population decline in recent years is mainly caused by the death rate exceeding the birth rate. The permanent migration balance is still negative (about 1 thousand), but significantly smaller than in previous years, although these statistics do not show worker migration to other EU countries.

Table 3 shows that the ethnic composition of the population in Latvia is highly diverse. This is mainly a result of the Soviet occupation, when many Latvians emigrated or were deported to Siberia and other parts of the Soviet Union. Meanwhile about 1.5 million people immigrated to Latvia from other Soviet republics, with approximately half of these people settling permanently. When Latvia regained its independence, a principle of inherited citizenship was applied – all those who had been citizens of the Republic of Latvia in 1940, before the Soviet occupation, automatically regained Latvian citizenship, which was bestowed automatically on all direct descendants of those citizens. Hence, Latvia has many non-citizens, although the situation is improving as many of these choose to naturalise, so that over the period 1995-2005 the non-citizen part of the population decreased from 29% to 19% (CSB, 2006).

Table 3. Legal status of different ethnic groups at the beginning of 2005.

Ethnic group	Latvian Citizens	Non-citizens	Foreign nationals	Total	Ethnic group as a percentage of total population	Percentage of citizens in ethnic group
Latvians	1 349 539	2 120	1 033	1 352 692	58.9%	99.8%
Russians	346 746	288 207	21 084	656 037	28.6%	52.9%
Belarussians	28 551	56 829	2 024	87 404	3.8%	32.7%
Ukrainians	13 812	40 952	3 813	58 577	2.6%	23.6%
Poles	40 642	14 885	556	56 083	2.4%	72.5%
Lithuanians	17 655	12 263	1 571	31 489	1.4%	56.1%
Jews	6 418	2 796	360	9 574	0.4%	67.0%
Estonians	1 522	658	349	2 529	0.1%	60.2%
Others	21 919	14 159	5 599	41 677	1.8%	52.6%
TOTAL	1 826 804	432 869	36 389	2 296 062	100.0%	79.6%

Source: Latvian Institute, 2005.

Nothing suggests that Latvia's minorities experience lower living conditions. For example, the composition of the employed and the unemployed shows no major ethnic differences. It is also possible to study in minority languages in elementary schools. In minority secondary schools, 60% of subjects are taught in Latvian and 40% in the minority language.

At the beginning of 2005, 68% of the population was living in cities (CSB, 2005). The main population concentration was in Riga and the surrounding area. As Table 4 shows, the capital is substantially bigger than any other city in Latvia, so that much activity is concentrated in Riga.

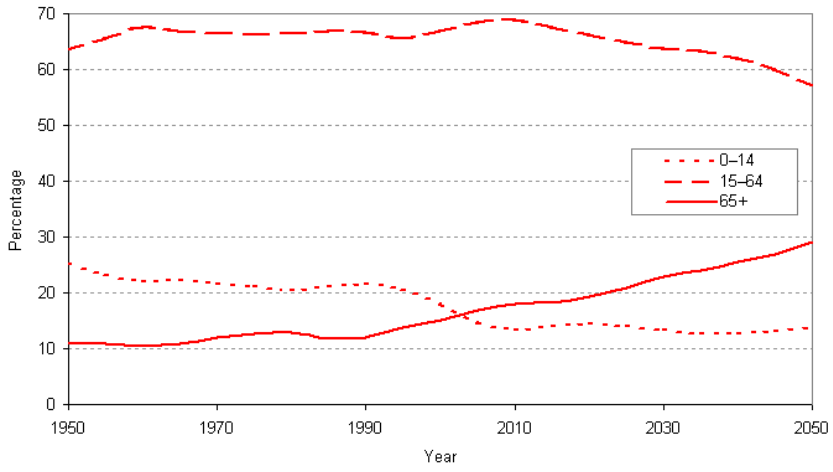
Table 4. Population of cities in Latvia, 2004 (thousands).

Rīga	735	Ventspils	44
Daugavpils	111	Rēzekne	37
Liepāja	86	Valmiera	28
Jelgava	66	Jēkabpils	27
Jūrmala	55	Ogre	26

Source: Latvian Institute, 2005.

One of the biggest problems facing Latvia is the decreasing number of people of working age. According to CSB figures, in 2005 63.9% of the population was of working age (15-61 for men, 15-59 for women), with 14.8% below and 21.3% above working age. As Figure 2 shows, demographic pressure is increasing and is projected to increase even more in the future. This is mainly due to short life expectancy, especially for Latvian males. According to the project "Healthy Ageing 2006" males at the age of 50 have the shortest life expectancy in the EU – only 21.4 years. The life expectancy at birth in Latvia in 2005 was 71.05 years – only 65.78 years for males and 76.6 for females. This places Latvia in the 91st place among 192 countries, and in last place among EU countries (World Factbook, 2005).

Figure 2: Percentage of the population aged 0-14, 15-64, 65+ in Latvia, 1950-2050 (projected)



Source: United Nations, 2005.

Ageing is not the only problem in Latvia at the moment. A hot topic for debate is migration – many workers from Latvia are leaving for a better life in other EU countries, especially Ireland. In 2005, according to CSB, 1886 persons arrived in Latvia for permanent stay (up by 13.3% compared to 2004), while 2450 persons left for permanent stay in other countries (a decrease of 10.7%, compared to 2004). However, following Latvia's accession to the EU, many people are leaving to work in other EU countries. Data suggests that approximately 50 000 workers from Latvia, or 5% of the total workforce, are working in other EU countries (Indāns, 2006). In contrast with emigration to other countries, statistically little migration takes place within Latvia. According to CSB, since 1999 the percentage of permanent residents of rural areas has fluctuated around 32%, compared with 30.7% after collapse of the Soviet Union.

Major education indicators

The formal education system until recently was mainly inherited from Soviet times, with strong traditions of teaching theory, mathematics, and natural sciences. At the moment, general education is undergoing State reform, with more attention paid to practical aspects. Elementary education has

never been a problem in Latvia, so that the literacy rate among people aged 15 and older is approximately 99.8% (UNESCO Institute for Statistics, 2003).

Lately, negative trends have been in evidence as to what pupils choose to do after finishing their basic education – in 2004, 5% of school leavers decided not to carry on with their studies, while another 5% decided to take up studies in evening secondary schools. Of the remainder, 60% continued in general secondary education, while 30% chose vocational secondary education (CSB, 2006).

In academic year 2004/2005, Latvia had 383 full-time secondary schools and 33 evening secondary schools, with enrolment in these institutions standing at 70 684. Of these, 57 701 were studying in full-time schools, while 12 983 were studying in evening schools. In the same period, 15 918 received a certificate of secondary education, while 586 finished school without certification. More information is available in Table 7.

At the beginning of the 2004/2005 academic year, 130 706 students were studying in 56 higher education institutions in Latvia. The majority of students – 54.5% – had chosen to study Social Sciences, Commerce, and Law. In the same period, 23.5% of all students in higher education were studying in grant-assisted places, i.e. they did not have to pay the tuition fee. Table 5 shows how Latvia is performing compared to one of the benchmarks of Education and Training 2010 – in three years, the number of graduates in mathematics, science, and technology rose to 13%, a 6.5% increase over the 2001 figure. Although this even slightly surpasses the benchmark, roughly a 1.6% annual increase, the total percentage still lags far behind the average percentage of EU25 mathematics, science, and technology graduates, and needs much more effort.

As regards early school leavers, Table 5 shows an ambiguous situation – in 2005 the number had decreased significantly; however, predicted results for 2006 show a drastic increase – to 19%. This number is troublesome, but needs confirmation for credible analysis. This might be a problem that education specialists in the country will have to address in 2007. Latvia is performing well in raising the upper-secondary completion rate, which has increased by 7.2%, only 5% lower than the 2010 benchmark. Interestingly, Latvia is lagging behind the average NMS-10 result, which already surpasses the benchmark. Although adult participation in Lifelong Learning is increasing, Latvia will need to put in much more effort to reach the benchmark of 12.5%.

Table 5. Education and Training Benchmarks 2010.

Benchmark area	**Target 2010**	**Latvia 2001**	**Latvia 2005**	**NMS-10**	**EU25**	**EU-15**
Share of early school leavers (18-24)	No more than 10%	19.5% (2002)	11.9% (2006 - 19%(p))	7.5%	15.1%	17%
Upper-secondary completion rate (20-24)	At least 85%	71.7%	79.9%	89.3%	74.2%	74.6%
Graduates in mathematics, science, and technology (of all graduates)	Increase of at least 15%	12.2%	13% (2004)	16%	23.6%	25.4%
Adult participation in Lifelong Learning	At least 12.5%	7.3% (2002)	7.9%	5.3	10.2%	11.2%

Source: Eurostat, 2007.

Unfortunately, the results of the Programme for International Student Assessment research in 2006 are not yet available. Therefore, for the last benchmark – low achievers in reading literacy among 15-year-olds – we have to use data from 2003. As Figure 3 shows, Latvia's result is slightly better than the EU average. According to the same working document, this is mainly due to progress achieved during 2000-2003 – the percentage of low achievers decreased by a stunning 40.2%, the best result in the EU.

Figure 3. Low achievers in reading literacy (2003)

(Percentage of pupils with reading literacy proficiency level 1 and lower in the Programme for International Student Assessment reading literacy scale)

Source: Commission staff working document "Progress Towards Lisbon Objectives in Education and Training." 16 May 2006. Brussels.

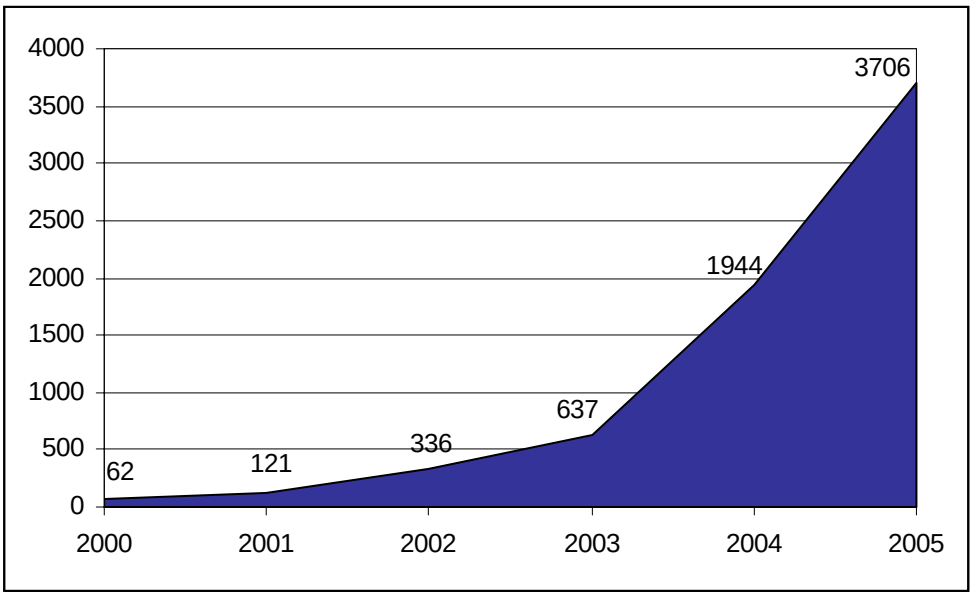
According to research by the Latvian Information and Telecommunication Technology Association (LIKTA), 60% of employers support the view that employees are responsible for their own self-development and professional education (LIKTA, 2005). This might be one reason why informal learning (self-education) is rather popular in Latvia. According to a CSB report, more than half the population in Latvia in the 15-74 age group are engaged in learning, while a quarter of the population are engaged solely in informal learning. More than 80% of those engaged in learning are involved in informal learning (CSB, 2004). Many companies use workplace training, including eLearning, but most of this is targeted at high-salary employees, so the percentage of eLearning use among employees is low. (Eurostat, 2005).

General ICT use indicators

The level of Information and Communication Technology (ICT) infrastructure in Latvia stands well below the EU average. In 2005, 31% of households had Internet access. This, although twice the 2004 level, is still significantly less than the 48% EU average (Eurostat, 2006). Of all enterprises with 10 or more employees and with Internet access, 64% have a broadband Internet connection, while 48% of all enterprises with more than 10 employees have broadband connection. For comparison, the average levels in the EU are 69% and 63% respectively (Eurostat, 2006).

Internet service provision in Latvia has experienced rapid growth over recent years – turnover in the Internet Service Provider (ISP) sphere in 2005 has increased to EUR 23.6 million, compared to EUR 7.5 million in 2000. The number of broadband connections has almost doubled since the beginning of 2004 – from 66 700 to 115 000. The total international Internet bandwidth capacity in Latvia has experienced a dramatic increase since 2000 – from just 62 Megabits per second to 3706 Megabits per second in 2005 (see Figure 4, Latvian Internet Association (LIA), 2005).

Figure 4. Total International ISP Capacity, Megabits per second

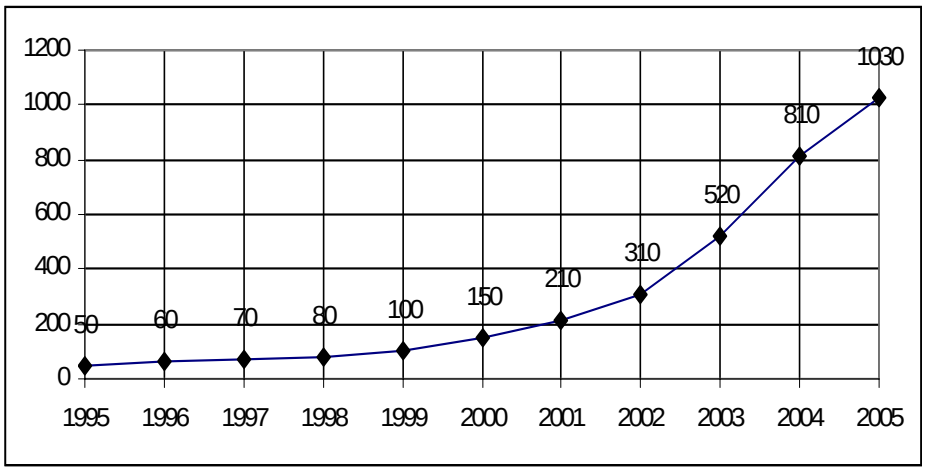


Source: LIA, 2006.

The ISP business is growing and more people are beginning to use the Internet, with the increase in numbers of Internet users as dramatic as that in ISP capacity. Figure 5 shows development trends in Internet user numbers – the increase since 1999 has been dramatic.

At the beginning of 2004, a quarter of all households had a computer, while 15% of all households had an Internet connection. At the same time, every third person declared that they were using the Internet at home. Half of the people were using it at the workplace, 21% at an educational institution, while 35% said they had used the Internet somewhere else as well (CSB, 2006).

Figure 5. Internet users, thousands

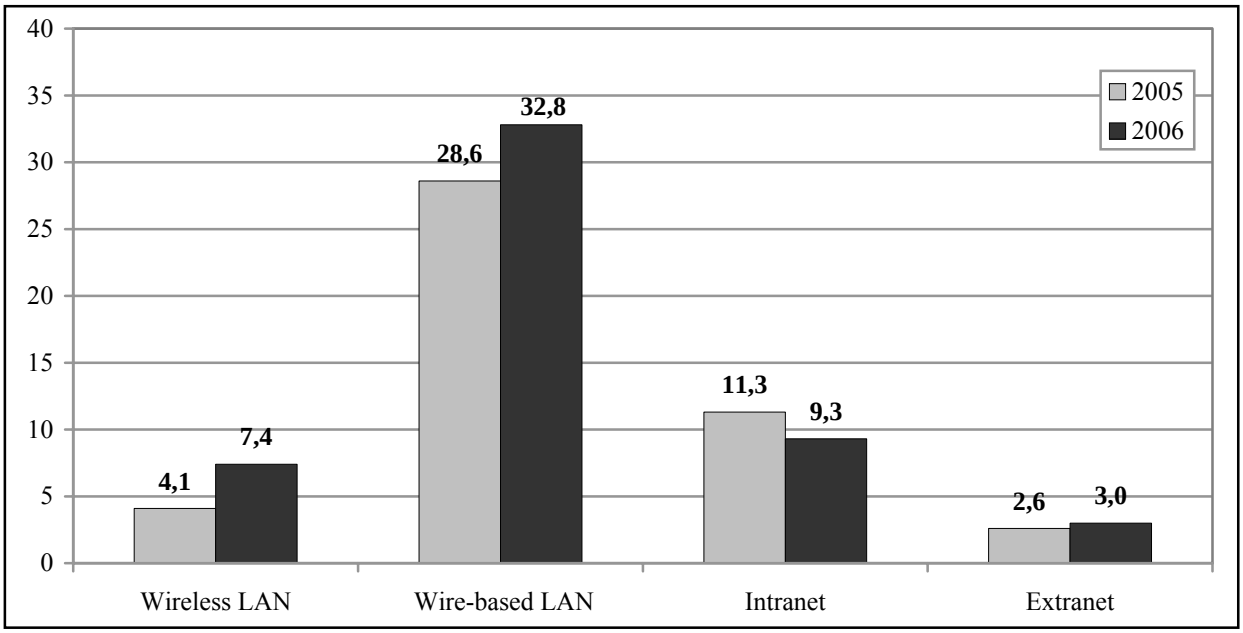


Source: LIA, 2006.

Although no statistical data are available about wireless networks, empirical knowledge indicates that their popularity is rapidly increasing. Although the situation differs significantly between cities - especially Riga - and rural areas, at the moment wireless network is available in most universities and many hotels for free, as well as in cafés for a certain fee. We can also observe that Wireless Local Area Network applications are becoming more popular in enterprises, although the same CSB data shows that it decreased from 2003 to 2004, i.e. growth is not steady. Interestingly, the use of Intranet in enterprises is decreasing. Although these statistics do not imply a causal relationship, the decrease could be explained by the increase of professional and secure services, such as e-mail applications,

file-sharing servers, and even online office suites, such as Zoho Office Suite[13]. The statistical data collection also shows an increase in the use of off-site data backup from 15.4% to 18.6% among companies with an Internet connection (CSB, 2007). This indicates that outsourcing in the ICT sphere is becoming more popular, although no information is available on how many companies buy services that replicate the features of Intranet.

Figure 6. Use of Information Technologies in Enterprises, %



Source: Ieva Vanaga, Publisher-in-Chief. Collection of statistical data "The Information Society in Latvia." Riga: 2006.

The number of mobile phones corresponds to average EU numbers, but coverage of fixed lines is only one-third of the EU average and only 92.8% of it is digital (Lukina, 2005). And, as it is mostly not digitalised in rural areas, where Digital Subscriber Line would be the easiest and cheapest broadband Internet solution, this further widens the gap between cities and regions. Nevertheless, LIA information shows that the number of broadband Internet connections is increasing, estimated at 115 000 at the beginning of 2006 compared to 66,700 at the beginning of 2004 (LIA, 2005). According to Eurostat data, in July 2006 the broadband penetration rate was 155,738 or, expressed as a percentage, 6.8% in Latvia and 14.8% in the EU25. Surprisingly, Latvia is not even catching up with the EU25, as the increase in broadband penetration rate in Latvia was just 3.1% from July 2005 to July 2006, against 4.2% in the EU25 (Eurostat, 2007).

In 2005 test broadcasting of earth digital television was launched, and digital broadcasting is planned only by 2011 (eSecretariat, 2006).

Although the ICT infrastructure in Latvia is still underdeveloped compared to the average EU level, it is experiencing rapid growth. And as to the topic itself, eLearning in Latvia at the moment places few demands on the ICT infrastructure, in that it often does not require broadband connections or modern computers. But the rapid growth of infrastructure will ensure that inhabitants of Latvia are able to use the full potential of eLearning when more up-to-date services become available.

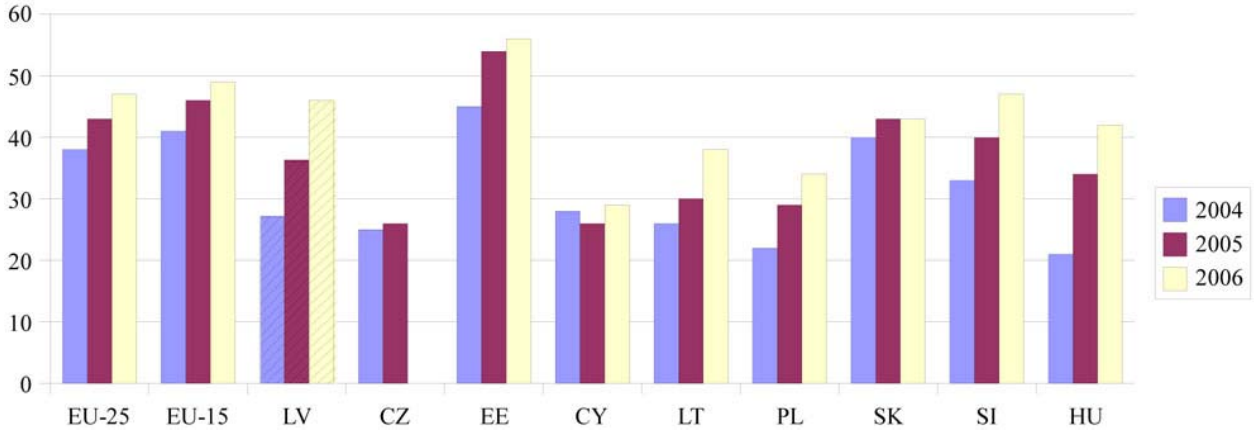
A main concern regarding infrastructure in Latvia is the very high telecommunications costs. This is mainly due to the biggest telecommunications company in Latvia, Lattelecom. In 2003, the agreement between the Republic of Latvia and Lattelecom about its monopoly in the telecommunications market ended (Public Utilities Commission, 2004). Since then, new actors have entered the market, but

[13] http://www.zoho.com/

communications costs remain disproportionately high. For example, in 2004 Latvia spent 2.8% of its GDP on communications, compared to an average of 1.6% in the EU25 (Eurostat, 2007). Lattelecom's State-regulated tariffs are supposed to be close to Lattelecom costs. However, for some reason telecommunications costs remain much higher in Latvia than in the rest of the EU. Although local calls cost almost the same as in the EU, national calls were 35% more expensive in Latvia than on average in the EU25 in 2005. International calls to the USA were 2.8 times more expensive in Latvia. (Eurostat, 2007)

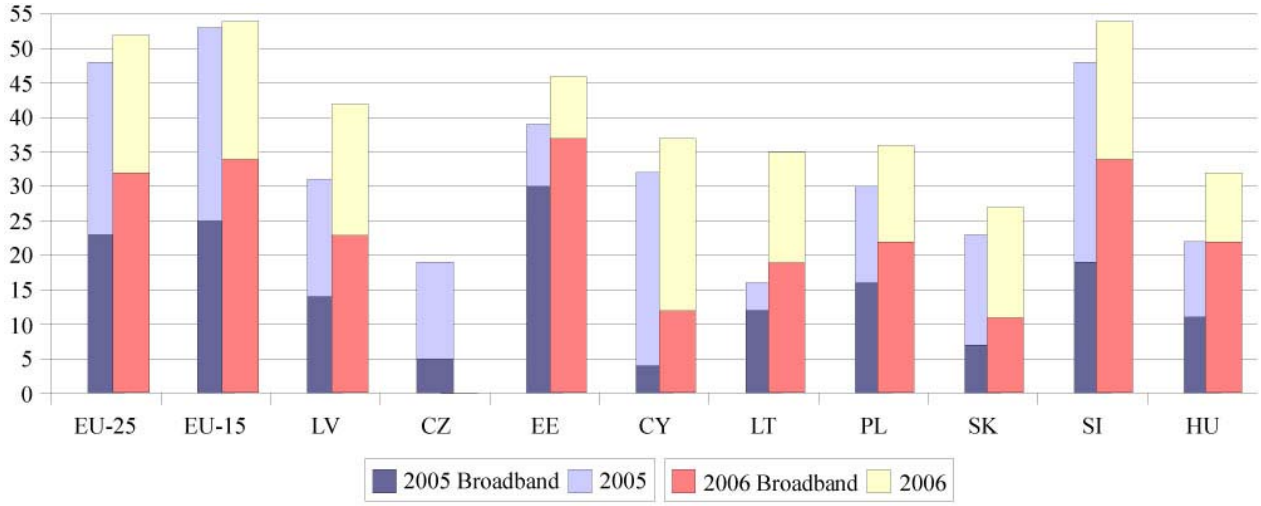
Figure 7 and Figure 8 show general Internet use statistics in Latvia compared to EU averages and other NMS (Malta excluded). According to Figure 7, the number of regular Internet users in Latvia is increasing considerably faster than on average in the EU. In 2006, almost half the people in Latvia used Internet at least once a week, which is very close to the EU average. Latvia still has about 10% fewer households with Internet access than on the EU average. However, rapid development is taking place in this field as well. Figure 8 also shows a positive tendency, in that most new Internet connections in households are broadband, with Latvia placed slightly better than most NMS.

Figure 7. Percentage of individuals using the Internet at least once a week.



Source: Ieva Vanaga, Publisher-in-Chief. Collection of statistical data " The Information Society in Latvia." Riga:2006. (Original data from Eurostat)

Figure 8. Households with Internet access, %



Source: Ieva Vanaga, Publisher-in-Chief. Collection of statistical data "The Information Society in Latvia." Riga:2006. (Original data from Eurostat)

I. THE CURRENT EDUCATIONAL SYSTEM AS THE E-LEARNING ARENA

I.1. Current education and training system in Latvia

Information on the education and training system in Latvia is largely based on the Eurydice Information Database on Education Systems in Europe report on the Education System in Latvia (2004/2005).

Education has always been an important part of life in Latvia. Even under the Soviet occupation, when much of it was politicised, a good grounding for scientific education was developed. After Latvia regained independence, the Law on Education was one of the first to be passed in 1991. The *Satversme* – the constitution of Latvia – states that everyone has the right to education. By law, basic education is compulsory, at least until the age of 18.

The current legislative base for education consists of four laws – the Law on Education, the Law on General Education, the Law on Professional Education, and the Law on Higher Education Establishments. The goal of the Education Law is to enable every resident of Latvia to develop their mental and physical potential, and to become an independent member of the democratic state and society of Latvia.

Formal education includes pre-school, basic, secondary, and higher education levels. Higher and secondary education levels differentiate between general, vocational, and academic education. The Ministry of Education and Science (MES) accredits institutions providing education for these levels, and students receive a state-recognised certificate upon completion. Non-formal education means education gained outside formal education and organized according to individual requirements and interests.

A synoptic model and a table of education levels and links between them appear in Annex.

I.1.1. Pre-school education

Pre-school education corresponds with International Standard Classification of Education 0 (ISCED0). It is optional for children from 1-4, and in recent years mandatory for children from 5-6. The main goal is to prepare children for basic education institutions and develop their personalities. The pre-school schooling educational programme addresses issues such development of personality and creativity, and social, physical, and intellectual skills. Other goals include adaptation to school life and practice of the state language.

I.1.2. Basic education

Basic education in Latvia is compulsory, and is organised in nine grades. The age for studying in a basic education institution is usually from 7-16, but may vary by a year according to medical recommendations and parents' wishes. Basic education is usually provided by public schools. Private schools usually receive funding for teachers' salaries, and also, in case of a special agreement with the local authority, some funding based on the number of pupils.

Over the last few years, many discussions have taken place about new reform of basic education. Implementation of this reform began in 2005. The goal is to improve the system developed in Soviet times, when pupils mainly gained theoretical and factual knowledge, but very little in the way of practical skills. This resulted in difficulty linking education to work. Many new subject standards are developed to ensure a logical link between subjects and core skill acquisition. Implementation began on 1 September 2005, when grades 1, 4, and 7 started using the new standards. The reform will be finished in school year 2007/2008, when all pupils in basic education will study according to the new standard. This is already used in all classes in subjects such as sports, crafts, visual arts, music, and foreign languages.

The reform also considered the rapid development of ICT and its introduction in our lives. Hence the number of ICT subject lessons – Informatics – has increased. During their basic education, pupils will learn to use ICT in grades 5, 6, and 7, instead of having Informatics only in grade 7. More emphasis will be put on science – the number of Natural Science lessons is increasing from four in grades 1-4 to a total of twelve in grades 1-6.

It is increasingly hard to maintain all educational provision in rural areas due to adverse demographic conditions. As Table 6 shows, enrolment in grade 1 is decreasing every year, due to the simple fact that the number of children of this age is decreasing.

Table 6. School attendance: number of pupils at start of school year,

	2001/02	2002/03	2003/04
Classes 1-4	113923	103359	92420
In 1st class	24724	22427	20521
Classes 5-6	70236	66428	62430
Classes 7-9	106596	108178	103952

Source: Ministry of Education and Science, 2005.

I.1.3. General and vocational secondary education

I.1.3.1. General secondary education

The National Standard for General Secondary Education determines the goals common to all general secondary education curricula. Among goals related to knowledge, skills, personality, and critical thought, one of the most interesting is to develop the ability to study independently and improve knowledge as well as create motivation for Lifelong Learning and a purposeful career.

Three different types of education institutions offer general secondary education: secondary schools, gymnasiums/grammar schools, and evening secondary schools. These provide education for grades 10-12, and may be combined with grades 1-9 or 7-9. Secondary education is no longer mandatory (as was the case in the Soviet era), but discussions on reintroducing it have arisen again.

General secondary schools may offer programmes from the following four educational area types:

- general educational programmes with no emphasis on any particular subject group;
- humanities and social programmes with emphasis on languages and social sciences;
- mathematics, natural sciences, and technology;
- practice- and skills-oriented subjects, such as music, sport, economics, which do not lead to a certificate of professional education.

Secondary education is free of charge in Latvia, although private schools also offer secondary education for a tuition fee. Operation of general secondary education instances is mostly regulated by local authorities under MES supervision. More detailed information about the current status of general secondary education appears in Table 7.

Table 7. Information on schools providing general secondary education, 2004/2005, absolute numbers

Number of institutions, total	416
Full-time schools	383
Evening schools	33
Enrolment* (classes 10-12), total:	70684
Enrolment: Full day schools	57701
Enrolment: Evening schools	12983
Dropouts in full-time schools	2911*
Pupils repeating the year in full-time schools	185
Certificated 12th class graduates	15918
Uncertificated 12th class graduates	586
Number of teachers	6317
Pupil-teacher ratio	10.8:1

* in academic year 2003/2004
Source: "The Education System in Latvia (2004/2005)," *The information database on education systems in Europe*, Eurydice, 2006.

I.1.3.2. Vocational secondary education

The main two aims that differentiate vocational secondary education from general secondary education are to prepare students for working in a certain profession, promoting their development as open, responsible and creative people; to motivate students for professional development and further education, and enable them to prepare to continue education at the higher professional level.

Different programmes are available in vocational education, and also different institutions. The two different types of institutions are:

- Vocational schools (*arodskola*) offering partial secondary education, whose diplomas are not sufficient to continue education at the higher education instance.
- Vocational secondary schools (*profesionālā vidusskola / amatniecības vidusskola*), which offer certificates that entitle graduates to continue studies in higher education institutions.

Studies in vocational education can vary from 3 to 4 years.

Fields of study in vocational education institutions according to the National Classification of Education may cover general education; humanities and art; social sciences, business and law; physical sciences and mathematics; engineering and manufacturing; agriculture; health and welfare; services.

General statistics on vocational education are summarised in Table 8.

Table 8. General information on vocational and secondary vocational schools, 2004/2005, absolute numbers

Number of institutions, total	103
Private institutions	10
Enrolment	44651
Dropouts	6974*
Graduates	11434
Teaching staff	4775
Pupil-teacher ratio	9.3:1

* in academic year 2003/2004
Source: "The Education System in Latvia (2004/2005)," *The information database on education systems in Europe*, Eurydice, 2006.

I.1.4. Tertiary education

The Law on Higher Education Institutions defines relations between the State and higher education institutions as well as regulating their opening, closing and reorganisation, institutional governance, and staff selection. Altogether, 57 higher education institutions were registered in Latvia for the academic year 2005/2006; of these, 36 are public, and 21 are private (CSB, 2006).

Three types of higher education institution exist in Latvia – university type institutions, non-university type institutions, and colleges. University type institutions can provide both academic and professional degrees, while non-university type institutions provide only a professional degree. Colleges may form part of university type institutions or remain independent. The constitution of a higher education institution (developed and approved by representatives of academic staff, students, and other groups of employees) is the main legal act regulating its activities. The *Saeima* (Parliament) approves constitutions of university-type institutions, while the Cabinet of Ministers approves those of non-university-type institutions. The MES approves regulations of colleges.

Public and private higher education instances in Latvia undergo the same accreditation process. A private institution that prepares professionals, which the State considers necessary may receive financial support from the State budget. Higher education institutions offer the following forms of studies: full-time, part-time, and distance studies. Four higher education institutions provide accredited web-based distance study programmes.

At the moment, Latvian universities are adapting two-cycle higher education consisting of undergraduate and post-graduate, in line with the Bologna Declaration. The two cycles model "3+2" corresponds with three years of bachelor studies and two years of master's studies. This is being implemented in order to decrease expenses, increase comparability and intensity of studies, as well as to promote faster integration in the labour market.

In the academic year 2004/2005, of all students in higher education overall 23.5% were studying in grant-assisted places, i.e. their tuition fee was paid for them. Tuition fees vary considerably from one institution to another. Full-time students may apply for a student loan, which covers living costs, as well as a study loan for tuition fees. Part-time students may only apply for a loan for the tuition fee.

I.1.4.1. Professional tertiary education

Professional tertiary education exists on two levels. First-level professional higher education is mainly aimed at preparing students for a particular profession, as well as to motivate them for further studies. Second-level professional higher education aims at preparing professionals highly competitive in the international labour market and necessary for the national interest. This level also provides the skills necessary to create and improve systems, products and technologies; it also prepares students for research, pedagogical, and creative work. Both levels are comparable to a bachelor's degree.

I.1.4.2. Academic tertiary education

The strategic objective of academic higher education is to enable acquisition of theoretical knowledge and research skills, preparing for independent scientific research in the chosen field. The main aim of Bachelor study programmes is to provide students with a scientific background for professional activities. Studies should favour development of scientific analytical capability and skills to solve problems independently. The aim of master's study programmes is to prepare students for independent scientific research; the main task is to promote use of theoretical knowledge and research skills.

I.1.4.3. Postgraduate education

The objective of doctoral studies is to obtain an internationally recognized doctoral degree in a branch of science and to acquire the principles of research organisation and management. Doctoral students must carry out well-documented studies of practical application of the latest research methods in the corresponding branch; study current IT methods, research planning, data processing and presentation;

comprehensively study theoretical disciplines of the corresponding branch; master lecturing and project management skills by participating in Bachelor's and Master's programmes as well as implementing research projects; report at international seminars, conferences, and schools; complete in-service training in other universities by publishing joint results; independently present research results and submit them for publication in research editions.

I.1.4.4. Statistics

Table 9 and Table 10 show general statistics on higher education in Latvia. As is evident from Table 10, by far the most popular sphere is social sciences, business, and law. Indeed, for some years many in Latvia have been concerned that the higher education system is seriously lacking students and graduates in scientific programmes such as natural sciences, mathematics, engineering, and technology. The low number of doctoral graduates is also worrying. Although the total number of doctoral students is 1428, only 85 doctoral students graduated in academic year 2004/2005 (MES, 2005).

Table 9. General statistics on higher education institutions in Latvia, 2004/2005

Total Number of New enrolments	**42157**
Total Number of Graduates	**23852**
Language of instruction:	
Latvian	114481
Russian	13666
English	1672

Source: "The Education System in Latvia (2004/2005)," *The information database on education systems in Europe*, Eurydice, 2006.

Table 10. Enrolment in different spheres of study, 2004/2005

Enrolment, total	**130706**	**100%**
Teacher education and education sciences	17739	13,57%
Humanities and art	8664	6,63%
Social sciences, business, and law	71272	54,53%
Natural sciences and mathematics	6853	5,24%
Engineering and technology	12352	9,45%
Agriculture	1903	1,46%
Health and welfare	6188	4,73%
Services	5735	4,39%

Source: "The Education System in Latvia (2004/2005)," *The information database on education systems in Europe*, Eurydice, 2006.

I.1.5. Training system

The training system in Latvia is still developing, with informal learning clearly still much more popular. As Table 11 shows, slightly more than half the population aged 15-74 engaged in learning activity. This includes formal, non-formal, and informal learning. According to the same source, in the last twelve months 307 000 people engaged in formal education, 218 000 in non-formal education (taught activities), while an absolute majority of all learners, 798 000 people, took part in informal learning (Behmane, 2004).

Table 11. Population participating in Lifelong Learning activity in the past 12 months. (aged 15-74 years; thousand)

	Population	*females*	*males*
Population, total	1816.3	969.1	847.2
Participated in learning activities	913.5	502.5	411.0
Did not participate in learning activities	902.8	466.6	436.2

Source: Baranda Behmane, Publisher-in-Chief. Statistical data collection "Aspects of Lifelong Learning in Latvia." CSB. Riga: 2004.

There is no separate law on adult education in Latvia; the legal basis is the Education Law and the Concept of Adult Education of Latvia defining target groups of adult education – the unemployed, young people, individuals with special needs, women, retirees, families, and professionals of various occupations.

The two main institutions responsible for adult education are the MES and the Ministry of Welfare. The MES manages formal education, while the Ministry of Welfare manages training for the unemployed and jobseekers. Both ministries share responsibility for providing career information, guidance, and counselling services. Regional municipalities are responsible for organising adult education within their territory. Guidance and counselling services are also provided by the State Professional Career Counselling Agency operating under supervision of the Ministry of Welfare, while the National Resource Centre for Vocational Guidance operates under MES supervision.

The State Professional Career Counselling Agency provides guidance and counselling services for private individuals – mainly pupils in compulsory education, students in vocational and higher education, the unemployed, and those in employment who want another qualification. The National Resource Centre for Vocational Guidance provides a regular information exchange with vocational guidance institutions and other National Resource Centres for Vocational Guidance in Europe about the education system, vocational qualifications, and the labour market in Latvia.

The State Employment Agency is responsible for training the unemployed. It works under supervision of the Ministry of Welfare. It has 27 branches all over Latvia, and it enables the unemployed and jobseekers to study in one of the 44 educational institutions that have signed an agreement with the State Employment Agency. These include several that provide computer- and web-based education, as well as digital literacy training. (State Employment Agency, 2006)

NGOs also provide much for eLearning in Latvia. In this sphere, LIKTA has their biggest project, Latvia@World, where the unemployed can acquire ICT skills and knowledge training. Additionally, some funding for ICT accessibility and eLearning projects comes from the NGO sector. In 1999-2001, the George Soros Foundation in Latvia supported creation and development of 50 PIAPs, and the North-East Latvian PIAPs Support Centre. It now also gives some support to eLearning projects.

Evening schools offering basic and general secondary education provide general adult education for unqualified young people and adults. Some evening schools have started to provide general education and correspondence courses for adults only.

Various adult education programmes are offered by:

- private education institutions;
- adult training centres established by municipalities at regional level;
- professional associations, for example, the Latvian Chamber of Crafts, the Latvian Union of Doctors;
- ministries and organisations under their authority, such as the MES Teacher Training Centre, the Ministry of Welfare's Medical Professional Education Centre;
- further education centres at higher education institutions;
- folk schools and other institutions providing interest-related education; folk schools operate mostly in rural regions with the goal of providing rural residents with a well-rounded education; they try to continue the traditions established in the period of the first Republic, i.e. the development of civic education.

Table 12 shows the general adult education situation in Latvia – a great many people are studying Latvian, usually with the National Agency of Latvian Language Training. But training in the use of ICT also attracts a considerable number, with almost 10 000 trainees, although this still leaves

considerable space for improvement. Organisations providing such training are discussed more thoroughly in Chapter II.

According to Ministry of Welfare data, the number of accredited adult education programmes has increased from 90 in 2003 to 99 in 2004.

Table 12. Adult education – number of bodies involved, programmes offered, and trainees 2004/2005.

	Number of institutions engaged in adult training	Number of programmes	Number of trainees
Further education of teachers	36	678	20284
Humanities, art, and religion	137	757	34805
Of these, languages:	*118*	*624*	*30968*
Social sciences, business, law	145	1674	59806
Natural sciences, mathematics	81	399	10555
Of these, computer training:	*78*	*363*	*9696*
Engineering science, technologies	37	198	7919
Agriculture	35	302	12855
Health care and social work	51	537	53903
Services	129	452	36313
Of these, transport services:	*90*	*339*	*33033*
Regional development and environment	15	34	1060
Security services	12	71	2190
Safety and protection at work	38	204	7942
Other programme groups	44	425	25239

Source: CSB, 2006.

As Table 13 shows, the percentage of people engaged in learning is highly correlated with net salary. This is a normal situation, as knowledge workers tend to receive higher salaries, but also need to acquire much more new information. However, it is a staggering fact that among people with salaries higher than LVL 500 (EUR 715) the percentage of participants in taught activities is more than three times higher than among the lower-paid.

Table 13. Population participating in Lifelong Learning activities by previous month's net salary in main job, %

	Total	*participated in regular education*	*participated in taught activities*	*participated in informal learning*
Under LVL 55,00	100	5.8	12.1	38.5
LVL 55,01 - 80,00	100	6.0	12.0	41.8
LVL 80,01 - 100,00	100	10.7	14.5	45.0
LVL 100,01 - 150,00	100	12,4	20.1	51.8
LVL 150,01 - 200,00	100	12.4	23.3	50.3
LVL 200,01 - 500,00	100	14.0	29.9	58.4
LVL 500,01 - 1000,00	100	15.3	87.2	65.8
LVL 1000,01 and over	100	...	...	54.6

Source: Baranda Behmane, Publisher-in-Chief. Statistical data collection "Aspects of Lifelong Learning in Latvia." CSB. Riga: 2004.

Apart from differences in participation level in Lifelong Learning displayed in these tables, a difference also exists in participation among different ethnic groups. Table 14 shows these differences explicitly. Although one explanation for this might be the language issue for Russian-speakers, most

probably this does not play a big role, as many possibilities are available to participate in Lifelong Learning in Russian. A more plausible explanation is that, for historical reasons, Russian-speakers, forming the majority of non-Latvian ethnicities, are older people, who are generally more reluctant to participate in educational activities. For example, deriving from the CSB data, the proportion of Russians to Latvians in Riga for people aged 15-39 is 1.02; while for 40-64 year olds it is 1.25.

Table 14. Population participating in Lifelong Learning activities by ethnicity, thousands / %

	Population	Of which					
		participated in regular education		participated in taught activities		participated in informal learning	
Total	1816.3	307.3	17%	218.8	12%	798.4	44%
Latvians	1069.2	212	20%	149.8	14%	542	51%
Russians	558.3	74.9	13%	55.9	10%	192.4	34%
Belarusians	70.8	4.5	6%	5.3	7%	19.2	27%
Ukrainians	44.3	6.3	14%	4.5	10%	19.6	44%
Poles	34.5	5.2	15%	1.8	5%	10.9	32%
other ethnicities	39.2	4.4	11%	1.5	4%	14.3	36%

Source: Baranda Behmane, Publisher-in-Chief. Statistical data collection "Aspects of Lifelong Learning in Latvia." CSB. Riga: 2004.

I.2. The place of eLearning in the educational system

I.2.1. Higher education institutions

At the moment, the absolute leaders of eLearning use and development in Latvia are higher education institutions. Particularly strong in this sphere are Riga Technical University (RTU), the University of Latvia (LU), and the School of Business Administration *Turība*, as well as Vidzeme University College (ViA) and Liepaja Academy of Pedagogy. Moreover, many smaller higher education institutions use ICT in education and Learning Management Systems (LMS). Computers in higher education are becoming increasingly available, as appears from Table 15.

Additionally, four higher education institutions offer accredited web-based distance education programmes as a means for distance education. These institutions are Hagen Distance Learning University, Riga Study Centre, *Turība*, ViA, and the Business Management College. Details of these programmes are discussed in chapter II.5.3 on page 34.

Higher education institutions are also leaders in Research and Development (R&D) linked directly to eLearning. Most universities develop their own eLearning content and web-based courses, while some are also involved in larger-scale projects. For example, *Turība* developed its own LMS; however, at the moment this is outdated, and they are researching options to develop or acquire a new system. At the moment, two major R&D projects are supported by the European Regional Development Fund (ERDF). Liepaja Academy of Pedagogy is working on innovative solutions for programme engineering games to develop knowledge society skills. RTU, and more precisely, their Distance Education Study Centre (DESC), is working on research into mLearning (mobile learning) possibilities in Latvia. RTU DESC has already developed many high-quality projects described in the second chapter; it is also included in the EU 6th Framework Programme Network of Excellence Kaleidoscope.

eLearning development has also brought some higher education institutions closer, enabling co-operation. Results of such co-operation were highly visible at the end of 2006 – seven higher education institutions – RTU, LU, the Latvian University of Agriculture, Ventspils University College, Riga Technical College, Daugavpils University, and Rezekne Higher Education Institution – received European Social Fund (ESF) support for 27 projects related to improvements in infrastructure and quality of studies. These projects will mainly introduce modern technologies along with approaches to learning using these technologies, allowing students to take full advantage of eLearning. The total budget of the 27 projects is LVL 4.37 million (EUR 6.24 million), with 75% ESF financed, and the remaining 25% by the Latvian government.

Table 15. Number of computers and Internet-connected computers in higher education institutions and colleges.

	2003/04	2004/05	2005/06
Number of computers	**10 893**	**11 993**	**12 524**
for education	6 307	7 737	8 066
for administration	3 572	3 087	3 187
Number of Internet-connected computers	**9 888**	**11 031**	**11 671**
for education	5 683	7 141	7 522
for administration	3 313	2 823	2 990
Number of computers per 100 full time students	**7.5**	**9.7**	**10.7**
Number of Internet-connected computers per 100 full time students	**6.8**	**8.9**	**10.0**

Source: Ieva Vanaga, Publisher-in-Chief. Collection of statistical data "The Information Society in Latvia." Riga: 2006.

I.2.2. Primary and secondary education

eLearning in schools is much less developed, and in official curricula ends with the Informatics programme aimed at developing digital literacy and PC skills. 144 schools are also registered for the eTwinning programme, which is a framework for schools to collaborate on the Internet with partner schools in other European countries (eTwinning, 2006). Of these schools, 20 are involved in such projects. Some schools have enthusiastic teachers that use ICT not only in Informatics, but also in other programmes, but the number of such teachers is limited due to lack of resources and skills. Statistics show that many teachers are still unwilling to use ICT in their teaching. On the other hand, the Internet has become an everyday tool for most pupils – much of the time is spent for entertainment, but learning also forms an important part in pupil use of computers and the Internet. Table 16 shows that 61.2% of all pupils actually use the Internet at least once a month to learn school material, with about 42.8% using it at least once a week for this purpose.

Table 16. Indicators of computer and Internet usage among pupils (primary and secondary education) in Latvia, % of all pupils

	Use computer at home	Use computer at school	Use computer at other places	Use Word processing tools	Use the computer to help you learn school material	Use the computer for programming	Use educational software such as Mathematics programs	Use the Internet to look up information about people, things, or ideas	Use the Internet to collaborate with a group or team	Use a computer for electronic communication	Play games on a computer	Use the Internet to download software (including games)	Use drawing, painting or graphics programs on a computer
Almost every day	27.88	3.23	6.25	5.57	4.21	5.14	2.61	8.46	5.60	13.99	18.57	9.23	6.95
A few times each week	12.60	28.37	20.45	24.96	18.78	9.64	10.42	26.43	15.09	23.86	28.69	16.93	20.05
Between x 1 weekly & x 1 monthly	4.57	23.56	22.44	23.00	19.58	11.76	14.63	22.18	14.94	17.10	15.11	14.38	22.46
Less than x 1 monthly	2.13	20.20	26.18	15.18	18.60	13.91	17.84	18.67	14.93	12.66	18.22	14.92	25.22
Never	36.22	14.53	12.94	24.91	32.24	52.68	47.94	18.33	42.86	25.91	13.67	37.57	18.99
Missing (no answer)	16.61	10.10	11.75	6.38	6.58	6.87	6.56	5.92	6.58	6.48	5.75	6.98	6.33

Source: Programme for International Student Assessment 2003 database, 2006.

I.2.3. eLearning in the workplace and lifelong learning

According to highly positive Eurostat data about eLearning in Latvian enterprises, eLearning in workplace training in Latvia substantially exceeds the level of eLearning in workplace training in Europe. Approximately 29% of all enterprises used eLearning in workplace training in 2005 – slightly less than in 2004. By comparison, the average EU figure was 21%. As much as 55% of all large enterprises used it, while a considerable part – 29% of Small and Medium Size Enterprises - also used

it as a tool for training. However, the same Eurostat data show that only 6.0% of employees used the Internet for educational courses related to employment opportunities; the corresponding EU average was 10.6%.

A good example of eLearning used in the workplace might be a course provided by the Baltic Computer Academy (BDA) to the Treasury of the Republic of Latvia. In this course, trainees learn basic use of computers, which they do from their workplace. The Treasury covers half the tuition fee, which is a good incentive for their employees, who can also plan their own time. Educators in the BDA also provide on-line assistance. This way the groups can be bigger, scattered around Latvia, and, especially with the support of their employer, workers can access an affordable ICT literacy course.

I.3. ICT skills and attitudes towards ICT use

Many people in Latvia have only recently started using the Internet regularly. In 2006, 46% of people in Latvia used the Internet on average at least once a week, close to the EU25 average of 47%. However, just two years earlier, the proportion was 27% (compared to 38% in the EU25). This means that most people might still not be comfortable with and used to the Internet, although the situation is clearly improving rapidly.

Even those with a high educational level tend to be reluctant to use the computer and the Internet. Research in 2005 showed that about a quarter of teachers are reluctant to use ICT in education because they fear to look clumsy in the eyes of pupils (Latvijas Fakti, 2005). On the other hand, according to a MES survey in November 2001, pupils in grades 5-12 show a very positive attitude towards more in-depth learning of ICT (MES, 2001). More than 95% of these pupils agreed that the number of ICT-related issues should be increased (LIIS, 2002). Although many publications suggest that those on low incomes and older people have negative opinions about ICT, these comments are based on personal experience and not specific statistics.

I.4. Summary

All in all, Latvia is clearly approaching the end of the transition from the Soviet education system to a system appropriate for modern society. Both basic and secondary education are undergoing content reform, which aims at more practical and analytical education. This is also meant to allow much better use of ICT and eLearning. Unfortunately, during the transition period in higher education, the very strong base of mathematics, science, and technology studies was also damaged, and at the moment Latvia is having to struggle to reach the Education and Training 2010 benchmarks. However, higher education institutions are very active in eLearning development, of which most appears first in mathematics, science, and technology faculties, which promises to improve the situation. Most higher education institutions already have an LMS and provide some web-based courses. Four institutions even provide accredited web-based distance education programmes in undergraduate studies. Higher education institutions are one of the biggest beneficiaries of European Funds for improving ICT infrastructure and eLearning. Some institutions show very good results in eLearning development. For example, we have already seen that RTU DESC was a part of the EU 6th Framework Programme Network of Excellence Kaleidoscope.

Compared to the general picture in society, the situation with eLearning in formal education is very good. Young people are already used to computers in their everyday life, though many older people have never used a computer or the Internet. The situation is worsened by the fact that many employers do not pay enough attention to the education of their workers. As a consequence, the training system in Latvia is not very well developed, while informal learning is by far the most popular means of adult education. Eurostat gives highly positive data about eLearning in Latvian enterprises, according to which eLearning in workplace training in Latvia substantially exceeds the level of eLearning in workplace training in Europe. Approximately 29% of all enterprises used eLearning in workplace training in 2005.

II. OVERVIEW OF E-LEARNING IN LATVIA

II.1. Institutional structures and resources for eLearning

The Cabinet of Ministers approved the first programme seriously concerned with eLearning – ICT for the Quality of Education (IKTIK) – only on 20 October 2006. Consequently, results are not yet available. Additionally, specific division of responsibilities is also not yet visible. The main actors in this sphere can still be easily recognised, and they will be described later in this section. No formal monitoring specific to eLearning is taking place in Latvia either. Although eLearning courses in formal education are assessed along with other courses, the main problem is lack of optional certification in non-formal education. In 2001, the MES in co-operation with experts from universities published a book "Lifelong Learning Quality Assessment Handbook" (Juris Dzelme, *et al*.). This book unites the modern philosophy of higher education quality with ICT solutions and more effective decision-making, but the content of the book has not yet been put into practice due to lack of initiative. (Kapenieks, 2005)

II.1.1. Ministry of Education and Science

The main institution concerned with eLearning on the governmental level in Latvia is the MES, responsible for developing eLearning and the eTwinning programme. The MES is responsible for developing such policy documents as the Lifelong Learning Strategy and eLearning Strategy, as well as their Action Plans. It is also responsible for introducing eLearning and the eTwinning programme in elementary and secondary schools in Latvia. However, this does not seem to be a priority: eLearning does not have a co-ordinator, i.e. there is no-one to promote development of the eLearning concept. The MES consists of departments responsible for general, vocational, and higher education among other. If an issue regarding eLearning at one of these levels of education arose, the appropriate department would react.

The most beneficial MES decision for eLearning development was to create the LIIS project in 1997. In co-operation with LU, the MES initiated this project, which has thus been providing schools with the necessary technologies and Internet connections, as well as developing online study materials (mainly digitalised textbooks) and eServices for school administrations. An Ernst&Young audit of this project revealed that the biggest problem had been lack of good governance or co-ordination by the MES (Ernst&Young, 2006). This once again demonstrates that eLearning has not been a MES priority. At this time, LIIS is being substituted by the IKTIK programme.

The MES is a governmental institution, so it is financed by the State. Projects concerned with IT infrastructure in educational institutions are often supported by European Structural Funds, e.g. the ERDF and ESF. Schools and projects sometimes receive private support as well.

According to the "eLatvia 2005-2008" programme, the total funding necessary for eLearning for the period is LVL 17.44m (EUR 24.91m), 77% of it for MES activities and projects (eSecretariat, 2005). However, funding for LIIS has been reduced, and the amount invested in eLearning is smaller than outlined in the programme.

II.1.2. The Secretariat of Special Assignments Minister for Electronic Government Affairs

Another body at government level concerned with eLearning issues is the Secretariat of Special Assignments Minister for Electronic Government Affairs (eSecretariat), whose job it is to ensure digital literacy among the general public. The main task of the Secretariat is to develop and introduce eGovernment services. One of the objectives of this aim is to raise digital literacy, which substantially contributes to the development of eLearning. The eSecretariat has also prepared the "eLatvia 2005-2008" programme, as well as Information Society Development Guidelines (ISDG). eLearning has only recently appeared on the agenda of the eSecretariat – at the end of 2006 it finished working on

the new IKTIK programme, which delegates part of the responsibility for eLearning to the eSecretariat. Like the MES, the eSecretariat is financed by the State, and European Structural Funds.

II.1.3. European funds

European Funds are the biggest source of finance for eLearning development in Latvia. Projects related to eLearning are often supported by the ERDF or the ESF. They have been the source of resources for projects for almost all target audiences. Many formal education institutions have modernised their equipment, thus introducing aspects of eLearning only due to available support. European Funds have also financed R&D projects in RTU DESC and Liepaja Academy of Pedagogy, as well as some projects organised by NGOs. These projects will be described in the next chapter.

II.1.4. Elementary and secondary education

eLearning is not yet very popular in elementary and secondary schools in Latvia, mostly because of lack of facilities and teachers' own education in this sphere. Elementary and Secondary schools play an essential role in ensuring digital literacy among young people. The mandatory "Informatics" programme has been introduced in both elementary and secondary schools. In secondary schools, the programme is in line with European Computer Driving Licence (ECDL) standards. In this programme, students learn how to use computers, the Internet, and the most common programmes such as Word and Excel.

The use of eLearning itself is highly dependent on initiatives of schools themselves. So far, 144 schools in Latvia have joined the eTwinning network, while the 20 ongoing projects are financed by the European Commission (eTwinning, 2006). Sometimes teachers also encourage use of ICT in the learning process, e.g. to use the Internet to search information on a subject, or to use LIIS resources.

II.1.5. Higher education

eLearning is most widely used in higher education instances, both private and State. Here we can divide eLearning activities into several parts: web-based courses for full-time students of the institution, web-based courses for others, distance studies, ICT as an addition to traditional education, and ICT in self-studies. Web-based courses and ICT use in lectures provided for students are either included in the study fee or financed by the State (when a student is studying in a grant-assisted place). Those who want to enrol in web-based courses or distance education usually have to pay a fee, so that the education is financed by its participants. At the moment, ICT-supported and web-based courses are used in many higher education institutions in Latvia, such as LU, RTU, Latvia University of Agriculture, ViA, Ventspils University College, Liepaja Academy of Pedagogy, Daugavpils University, and others (Kapenieks, 2005). At this point, hardly any student can imagine doing research without the help of Google and Wikipedia. These phenomena that appeared relatively recently have completely changed the way we find information.

Four higher education institutions offer accredited web-based distance learning programmes – Hagen Distance Learning University Riga Study Centre, *Turība*, ViA, and Business Management College, with annual fees ranging from EUR 825 to EUR 950 (Latvijas Avīze, 2006). Most higher education institutions in Latvia use ICT as a support for their full-time students, and have not introduced eLearning distance education courses.

II.1.6. Distance Education Study Centre of Riga Technical University

On 27 May 1997, the DESC of RTU was founded within the framework of the *Pologne Hongrie Assistance à la Reconstruction des Economies* (Poland and Hungary Assistance for Economic Restructuring Programme (PHARE)) "Multi-country Co-operation in Distance Learning" project. DESC was founded as a structural unit of RTU. Although DESC is a part of RTU, it will be described separately, because it is highly proactive in the eLearning field. The main goals of DESC are to develop eLearning programmes as well as to deliver them with the help of RTU staff and other professors as needed. Each year DESC trains about 800 people, who obtain an RTU certificate at the

end of their studies. This is also considered a good practice case by the eUSER Study, and forms part of the EU 6th Framework Programme Network of Excellence Kaleidoscope.

During the seven years of its existence, DESC at RTU has participated in more than 20 international eLearning and open distance learning development projects. Its activities in the area of adult education include developing different CD-ROM courses, participating in regional development projects aimed at human resource development and skills training. DESC uses the Blackboard virtual learning environment and sets of video, audio, and interactive technologies are widely used. (Kapenieks, 2006)

II.1.7. Regional and local governments

Local and regional governments have become active in Information Society issues only in the past few years. Previously there were few projects in co-operation with local government. The most effective has been in Livani district, where in 1998 in co-operation with the municipality, RTU DESC launched a web-based course with several face-to-face lectures "Business Planning for Open Markets" (Kapenieks, 2006). This is still organised annually in Livani, as well as three other districts. Several new courses are being introduced as well, and altogether more than 800 people in the Livani area have trained within this programme. In recent years, local and regional governments have become more active in this sphere, mainly due to the funding available from European Structural Funds. The "E-Vidzeme" Project has to be mentioned as the biggest project thus far. Its budget exceeds LVL 0.8m (EUR 1.1m) and is made up of funding from the ERDF, as well as State and municipal budgets. Two municipalities – Ventspils and Riga – have developed distance learning courses to improve the ICT literacy of their inhabitants. Both municipalities offer ICT literacy courses online, teaching the basics of Microsoft Word, Excel, PowerPoint, Outlook, and use of the Internet.

II.1.8. Private actors

Experts suggest that many multinational companies with local offices in Latvia use their own eLearning materials, ranging from information materials in digital form to computer-based courses, although these are mostly developed outside Latvia (Vitins, 2006). Although the main reasons why employers choose not to use eLearning instead of on-site training have not been established by objective research, reasons given include the high cost and lack of human face-to-face interaction, which is often an important part of the training process.

Those companies that want to develop their own computer-based courses can buy ready-developed frameworks that have to be filled with content. Some universities use Blackboard[14] or WebCT[15] technologies, but it is also possible to use programmes developed in Latvia. The best-known is E-Teacher Pro, a computer-based education information system developed by SIA Insolentia. This is a tool for computer-based course development, organising and controlling use of the courses, testing and analysing the results of users, as well as assessing the impact of courses. It also provides a localised solution. Apart from English, this programme is also available in Latvian and Russian.

Some training companies also provide eLearning solutions to their clients. For example, the "BUTS" learning centre provides web-based courses on labour protection, fire safety in the workplace, and project management, and they are about to develop new courses. Some other companies provide web-based courses like this, but overall these are not very popular yet.

Some companies also provide ICT training both online and offline. This is mainly aimed at companies that want to improve employee ICT skills. It is possible to obtain an ECDL certificate along with many other certificates acknowledging skills for different programmes and systems. The biggest provider of these courses is the Baltic Computer Academy (BDA), which provides both online and on-site trainings.

14 http://www.blackboard.com/
15 http://www.webct.com/

Of all the private sector, private higher education institutions are the most active actors in eLearning. However, their characteristics are very similar to public ones. Hence they will be described and analysed together with other higher education instances.

No research has been conducted as to how much private actors spend for eLearning applications. For a general picture, Latvia is spending 1.9% (against the EU25 average of 3.0%) of its GDP on IT and 5.7% (the highest proportion among EU Member States) on telecommunications (Eurostat, 2006). The high proportion of GDP spent on telecommunications is mainly due to high telecommunications costs – for example, the cost of Internet use in Latvia in 2004 was 70% more than in Lithuania, which had the next highest price among NMS (World Bank, 2004). Given the low wage rate, the real price is very high, even though the price has decreased due to market developments in recent years.

II.1.9. Non-governmental sector

Some actors from the non-governmental sector are active in the sphere of eLearning. These NGOs usually provide some service, such as ICT literacy training or Internet access points.

In 1999-2001 the George Soros Foundation in Latvia supported creation and development of 50 PIAPs, as well as the North-East Latvian PIAPs Support Centre, which is now a resource and training facility for PIAPs. During recent years, the George Soros Foundation in Latvia has supported occasional eLearning initiatives of other organisations, such as the “eLearning Tool on Anti-Discrimination Legislation for the Judiciary". These activities were funded by the Foundation itself.

The Latvian Information and Telecommunications Technology Association (LIKTA) is a professional association, founded in 1998, that unites over 60 important ICT production and service providers and educational institutions, as well as over 150 individual professional members of the ICT industry sector in Latvia, namely in computer hardware and software, electronics, and telecommunications infrastructure and service providers. LIKTA member organisations employ over 15 000 people. LIKTA has taken the initiative of licensing and setting up the ECDL certification program in Latvia as well as the development of applied informatics courses for schools, compatible with ECDL requirements. By the end of 2002, about 900 interested people were involved in the certification process and 26 ECDL Examination Centres were in operation throughout the country. Moreover, secondary school curricula have been upgraded to provide all students with full ECDL skills upon graduation. LIKTA is also organising the Latvia@World project. LIKTA members are often solicited to provide their expert opinion on matters of national importance and to become members of committees where the ICT industry point of view is required. LIKTA projects use funding from various sources, mainly from the private sector and the European Community. LIKTA has official charity status; thus, private entities that finance its projects can receive an income-tax discount up to 85% for businesses and 25% for individuals (LIKTA, 2006).

The Latvian Adult Education Association is a non-governmental, non-profit organisation, which unites adult education providers in Latvia, both individuals and organisations. It was founded on 14 December 1993 with the support of the MES and the Institute for International Cooperation of the German Adult Education Association. The organisation’s aim is to promote development of non-formal adult education systems and to participate in Lifelong Learning policy-making, thereby promoting development of a civic, democratic, and open society in Latvia. The Latvian Adult Education Association does not work specifically with eLearning in Latvia, but is involved in consultation with the State with Lifelong Learning and vocational education policies.

II.1.10. The State Employment Agency

The State Employment Agency is financed from the State Budget, and receives additional income from services, gifts and donations, as well as from other resources in accordance with regulatory enactments. The State Employment Agency falls under the supervision of the Ministry of Welfare. It has 27 branches throughout Latvia, and provides the unemployed and jobseekers with an opportunity

to study in one of the 44 educational institutions with which it has signed an agreement. These include several providing computer-based and blended courses. (State Employment Agency, 2006)

II.1.11. Summary table

Name	Task area	Scope
Ministry of Education and Science	Education legislation and policies	National
Secretariat of Special Assignments Minister for Electronic Government Affairs	ICT policies, ICT infrastructure	National
European Funds	EU policy implementation through project funding	National
Primary and secondary education	ICT literacy, sometimes ICT-supported education	Local
Higher education institutions	Web-based courses and programmes, ICT-supported traditional education, eLearning R&D	National
Local and regional governments	ICT infrastructure, support for schools, public Internet access, sometimes ICT literacy and web-based courses (Ventspils and Riga)	Local / regional
Private companies	eLearning platform development (SIA Insolentia, *Turība*), ICT literacy, web-based courses, and ICT supported training courses (SIA "BUTS", BDA)	Local / regional / national
Latvian Information and Telecommunication Technology Association	ICT literacy, ICT promotion, policy recommendations	National
Latvian Adult Education Association	Lifelong Learning	National

Source: produced by author.

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

II.2.1. Policies and strategies

II.2.1.1. ICT for quality of education (IKTIK), programme 2007-2013

Lately, eLearning policies in Latvia are becoming much more solid, and the IKTIK programme is the first "eLearning" programme in Latvia. The Cabinet of Ministers approved the programme on 20 October 2006.

Its long-term aims are:

- widespread use of information and communication technologies and services to increase the quality of education;
- radical improvements in learner knowledge and skills in using information and communication technologies, tools, and services.

To achieve these goals, the programme outlines several important points that need to be achieved:

- high levels of information and computer literacy;
- broad use of ICT in teaching, creating electronic teaching materials, improving the content of education programmes to enhance the quality and attractiveness of the content of education, creating and using different services to raise the quality of education;
- augmented teacher and education worker ICT knowledge and skills, thus increasing the qualifications and effectiveness of teachers and lecturers;

- effective education information systems, thus ensuring accessibility of digital learning materials and increasing the efficiency of education system governance;
- task-adequate, cost-efficient, safe, and reliable ICT infrastructure at all levels of educational institutions and education boards.

The programme outlines some of the most important problems thus far – too little attention has focused on eLearning for professional institutions, socially disadvantaged groups, and adult education in general. The programme also states a lack of digital learning materials in spheres other than informatics and mathematics, and interactive materials are still very rare. Synchronisation of different programmes is also essential, e.g. in summer 2006, 101 schools that were to teach Informatics had only outdated computers.

The programme also presents several interesting ideas about its implementation. For example, it states that the eSecretariat should prepare annual reports, as well as annual Action Plans, so that all new developments are taken into consideration. The programme itself will be split into two parts – by 2008, implementation of basic requirements, as well as different pilot projects (up to 5% of schools should be involved). After 2008, the most effective pilot projects will be more widely implemented, while work will carry on towards realising aims. It is also planned to use as much outsourcing as possible, so that many Private-Public Partnership projects can be expected. The programme also highlights the possibility for students to use computer- and web-based courses developed and operated in other universities, both inside and outside Latvia. For specific milestones outlined in the programme, see Annex.

II.2.1.2. Education development guidelines

On 27 September 2006 the Cabinet of Ministers approved Education Development Guidelines for 2007-2013. The document also provides a definition for eStudies: "a deliberately organised educational course where use is made of digital technologies, such as telecommunications and computer networks, multimedia CD-ROMs, radio and TV broadcasting, audio and video recordings, interactive TV, and others." However, this term is not used elsewhere in the document.

Although eLearning and, more precisely, ICT use in education forms part of these guidelines, no special attention is paid to these topics. The information part of the document includes a section on plans and results achieved in developing ICT infrastructure and skills in schools. It outlines several problems, e.g. only 31% of all schools have adequate (>512 Kbps) Internet connections, and 19% of schools still have dial-up connections; on average there are 16.46 pupils per computer used in education. However, no specific solutions are given to resolve these problems. The document also does not outline resources necessary for further development and maintenance of ICT in schools. It does assign almost LVL 17 million (EUR 24 million) annually for maintenance and modernisation of schools, but the majority of these funds are most probably assigned for renovation of buildings, as this is a big problem as well. Otherwise the programme also makes several general statements that educational materials specific to ICT-based learning should be developed, that all teachers must have necessary ICT skills, and that society should be encouraged and motivated to use ICT advancement in everyday life.

All in all, this document has not considered eLearning to be a priority and many possibilities provided by the new technologies are left unexplored.

II.2.1.3. eLatvia 2005-2008

The "eLatvia 2005-2008" programme was approved on 15 February 2005. It covers eGovernment, eLearning, eBusiness, eHealth, eAccessibility, the spread of broadband Internet connections, and safety on the Internet. It was developed in accordance with the Lisbon Strategy, such European Union programmes as "eEurope 2002", "eEurope 2005", as well as the priorities mentioned in the "eEurope+ 2003" initiative. It follows up the National "Informatics" Programme and the Social Economic Programme "eLatvia 2000".

The programme states that the main aim in the eLearning sphere in Latvia is to provide an education appropriate to the knowledge economy by ensuring the necessary knowledge and skills and by providing easier access to knowledge and educational processes. The activities fostering eLearning within this programme amount to LVL 17.44 million (EUR 24.8 million) over four years in monetary terms.

Other sections relevant to eLearning are:

- Broadband Connections and Free Access to eServices: ensuring access to eServices,
- Safety: ensuring legitimacy and protection to users and providers of eServices.

According to the programme, further development of eLearning in Latvia should aim at creating modern educational programmes and materials, and training teachers to work with them. Latvia has to ensure access to different study-programmes and educational institutions to all target groups through various channels. Infrastructure has to be developed to the average EU level, e.g. 24 computers per 100 students in 2008, which at the moment seems improbable.

Latvia needs more Science and Technology students in order to advance the knowledge-based economy – the programme includes activities to solve this problem. And in order to decrease the knowledge gap, basic digital literacy training will be provided to a broad range of citizens.

II.2.1.4. Information society development guidelines

On 16 March 2006, the eSecretariat presented the ISDG to the State Secretary Session. The Cabinet of Ministers approved it on 19 July 2006 (State Chancellery, 2006). It is based on such policies as the World Summit of the Information Society Geneva and Tunis declarations, as well as the EU Lisbon Strategy and the initiative "i2010 – a European Information Society for growth and employment", and the European Community programmes eInclusion and eAccessibility. The ISDG schedules achieving the average EU level of eService provision and ICT development by 2009 and continuing linear growth until 2013.

Table 17. ISDG objectives

Indicator	2005	2009	2013
Individuals using the Internet on a regular basis	36%	50%	75%
Including rural areas	15%	40%	70%
Household percentage with an Internet connection	15%	40%	70%
Percentage of employees using computers and Internet	16%	35%	60%
ICT sector share in GDP	6%	8%	10%
Percentage of enterprises using eGovernment services	3%	20%	40%
Percentage of citizens using distance learning	8.7%	17%	25%
Percentage of citizens using eHealth services	0.1%	1%	5%
Enterprise turnover from Internet sales	0.46%	8%	20%
Individuals shopping on the Internet	3%	20%	40%

Source: "Informācijas sabiedrības attīstības pamatnostādnes 2006. - 2013. gadam (project)," *the Secretariat of Special Assignments Minister for Electronic Government Affairs*, Riga: 2006.

II.2.1.5. Lifelong learning strategy

The Lifelong Learning Strategy is yet to be created, but its creation is included as a project in the Latvian National Development Plan and in the National Programme "Lifelong Learning Strategy: Development and Implementation". This is a co-operation project between the MES and the Vocational Education Development Agency. According to the National Programme, the Lifelong Learning Strategy will be created under the Lisbon Strategy. Apart from development of the Lifelong Learning Strategy and Action Plan, the National Programme also includes creation of Lifelong Learning support systems for successful implementation of the Strategy in six regions of Latvia. The

total budget of the National Programme is LVL 665 000 (EUR 946 000), out of which 25% is financed by the State and 75% by ESF.

II.2.1.6. Other policies concerned with eLearning and ICT development:

The Latvian National Lisbon Programme 2005-2008:

- Promotes ICT accessibility, usage and education.
- Endorses further introduction of broadband Internet connections, especially in the regions.
- Endorses the need to improve the Lifelong Learning system in Latvia.

The National Programme "Growth and Development of the Infrastructure Basis for eGovernment":

- Endorses ICT infrastructure development in governmental institutions, municipalities, schools, libraries, and archives.
- Endorses ICT skills-related training for civil servants and residents of Latvia.
- Plans ICT provision for 100% of schools and 80% of municipalities.
- Indicates the need for 976 new Internet connections to be created and 3896 computer units bought for public institutions, and 2447 employees from public institutions to be trained in ICT skills.

The Latvian National Development Plan 2007-2013 (project):

- Acknowledges that eContent in Latvia should be further developed and made more accessible, and that ICT skills training in vocational and higher education should be improved.
- Acknowledges the need for a recognition mechanism for informal education.
- Acknowledges the need for a strategy for Lifelong Learning in Latvia.
- Acknowledges the need for modern ICT introduction at all levels of education.
- Draws attention to the need to provide easy access to broadband Internet connections and promote ICT use in education, business, and households.

II.2.1.7. Assessment of policies

Since eLearning is still a very young concept in Latvia, it lacks an elaborate policy and research basis. The main reasons for the Latvian government to pay attention to eLearning are EU directives and policy documents. Hence it also tries to fulfil the basic requirements set forth by these documents. Before the IKTIK programme, eLearning policies were poorly prepared and not really implemented. Therefore it is hard to predict how the new programme will work in reality.

One factor to take into account is some research initiated by the government, namely the MES and the Secretariat of Special Assignments Minister for Electronic Government Affairs. One example was ICT Development in Education (2004-2005), conducted by "Latvijas Fakti" and financed by Microsoft Latvia. The results of this research showed that computers in schools are ageing and that teachers are often still afraid to use ICT in teaching. Often it is also impossible to use ICT in teaching due to insufficient availability of technologies (all or most computers are in a computer classroom, which is constantly busy). All in all, the research showed that much room still exists for eLearning improvements in Latvian schools, both in terms of infrastructure and the necessary skills for teachers.

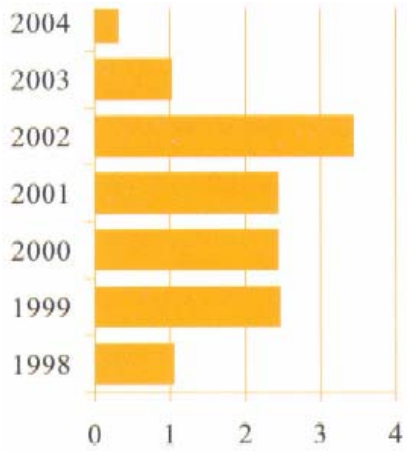
II.2.2. Projects

II.2.2.1. Latvian education informatisation system

On 13 June 1997, the MES and LU signed an agreement, "On the Latvian Education Informatisation System (LIIS)". This has thus been the main player in providing computers and Internet connections to Latvian schools, developing digitalised online text materials, training ICT skills to teachers, and providing an eService to schools. LIIS was financed by the MES. Since 1997 the MES has invested approximately LVL 13m (EUR 18.5m) in the project, but in recent years funding has gravitated

towards zero – in 2004 it was LVL 421 966 (EUR 600 400) (Ministry of Finance, 2004), while in 2006 planned expenditure dropped to LVL 176 891 (EUR 251 700) (Ministry of Finance, 2005). See Figure 9 for evolution of the State budget for LIIS.

Figure 9. State budget for LIIS, millions of lats



Source: Agnis Andzans, *et al*., "LIIS projects Latvijas skolu informatizācijai," *E-Pasaule*, Riga: 2004.

LIIS has done much to introduce eLearning in Latvian schools – by 2004, more than 27 000 teachers were trained in systematic courses for ICT literacy, while several Regional Computer Centres had been created, where the best-informed teachers can help their colleagues. LIIS has created 105 000 pages of on-line study-materials available for free on the LIIS web page, which has more than 1 500 daily visitors. LIIS also publishes annually a CD for schools with the most up-to-date study-materials. In 1998 Latvian schools had on average two computers per 100 students, while in 2003 the figure was already six. Every school now has at least one computer class, while 60% of schools have broadband Internet connections. (Andzans, 2004)

All in all, LIIS has by general agreement been a highly successful project, at least while it was receiving sufficient resources. Much of this success could be because LU – a university – undertook its development, and LU as a university had the necessary expertise and personnel to deliver good results. However, it can be argued that LIIS was biased towards informatics and mathematics in developing its digital content, and that it paid very little attention to learning design; but project aims were different. The Ernst & Young audit also states that centralised purchase of computers proved to be more efficient, and that better co-ordination from MES would have been beneficial. The audit also states that in general, LIIS has been a successful project (Ernst & Young, 2006). See Annex for a detailed LIIS timeline.

At the moment LIIS has ceased to exist, mainly due to co-operation problems between MES and LU. The IKTIK programme is replacing LIIS functions, but the fact that LIIS had already stopped functioning at its full capacity for a few years without an immediate replacement will leave a significant influence in the future. As an example, during the last years of its existence the LIIS budget was smaller than the depreciation costs of all computers in schools, i.e. the work invested in computer introduction in schools slid backwards.

II.2.2.2. Latvia@World

The project Latvia@World, initiated by LIKTA, has enjoyed good support from commercial institutions – in particular Microsoft Latvia with a total grant of over LVL 89 000 (EUR 126 000) in 2006 (Nagla, 2006), as well as "Latvijas Mobilais Telefons SIA" and Hansabank (Latvija@Pasaule, 2006). It is one of nine projects organised in the framework of the European Community's EQUAL initiative in Latvia. The total budget of the project is LVL 579 362 (EUR 824 363) (Jakobsone, 2006). The objective of the project is to teach the necessary basic skills needed in the Information Society to those that have not yet used a computer or the Internet. The aim of the project is to improve working

skills – allowing return to the labour market and opening it to those with difficulties entering it. (Latvija@Pasaule, 2005)

In November 2005 the first training for the unemployed took place in Valmiera and Preili districts. In January 2006 training also started in Kraslava and Ventspils districts, and more training is planned in Daugavpils, Ludza, and Talsi districts. This digital literacy training for the unemployed is free of charge, and the teaching languages are both Latvian and Russian. Training is organised in small groups, while each participant receives a certificate for completing the course, and can apply for more advanced digital literacy courses, also provided for free. LIKTA has created several (altogether 30) Internet Access Points in these districts, where everyone who has completed the course can use the Internet free of charge (Jakobsone, 2006).

II.2.2.3. Public Internet Access Points

A study carried out in 1999 by the George Soros Foundation in Latvia showed that access to the Internet was still very limited in Latvia. In many areas it was technically impossible to provide good services, and these were expensive. Therefore the Foundation decided to initiate a project to increase accessibility to PIAPs. Following the first open competition in 1999, a total of 27 municipal agencies and libraries received support. At the end of 2000, 23 more initiatives were supported. The expansionary part of the project ended in 2001, and since then the Gulbene library has been the home of the PIAP Support Centre for Northern-Eastern Latvia, which has become the resource and training centre for future PIAP activities. The George Soros Foundation in Latvia has invested a total of LVL 172 756 (EUR 245 811) in this project. Statistics for 2001 show that the number of Internet users has increased in Latvia: according to Latvian Internet Association data, Internet penetration in the economically active population has doubled compared to 1999.

II.2.2.4. eVidzeme

In 2005, the Vidzeme Development Agency together with the Central Finance and Contract Agency and the eSecretariat signed an agreement on implementing an eVidzeme project in the region – Valmiera, Valka, Cesis, Madona, Gulbene, and Aluksne districts.

The main aim of the project is to ensure equal and high-quality access to the Internet to all inhabitants of the region. The plan is to either create or improve Internet connections in 129 educational institutions and 133 public libraries in the region. During the project, teachers and library staff will have a chance to learn how to use the Internet, as well as how to teach others to use it. The total eVidzeme budget is LVL 0.83m (EUR 1.18m), which consists of ERDF, State, and local government funding. The project duration is three years, from 2005 – 2007.

In the meantime, the ERDF also approved an application from five other municipalities, but eVidzeme is a shining example of how to create collaborative and mutually beneficial projects.

II.2.2.5. Improving eLearning accessibility to foster a knowledge-based economy in Latvia

This EU-financed project was organised in 2005 by six higher education institutions in Latvia (RTU, Riga Higher Education Institution, Ventspils University College, ViA, the Latvian University of Agriculture, Liepaja Academy of Pedagogy). The project aim is to enable economic development, substantially increasing distance-learning quality in higher education institutions in Latvia. Within the project, its organisers wanted to develop co-operation between two networks: the recently established Latvian Higher Education Institution Network and the EU-supported eCompetence network "EU[eComp]Int".

The general aim of the project was to develop a unifying next-generation eStudies strategy to ensure high-quality and effective collaboration in the educational sphere based on technologies both in Latvian and Lithuanian higher education institutions, as well as to improve the quality and accessibility of distance learning to respond to knowledge society challenges. The project partners

agreed on a three-year action plan, suggesting 40 projects to implement. These fall into the following categories:

- eLearning research projects (3 projects),
- doctoral programme development projects in the sphere of eLearning research (2 projects),
- study programme development projects (11 projects),
- course development projects (14 projects),
- innovative technology introduction projects (8 projects),
- course organising projects (2 projects).

II.2.2.6. RTU DESC projects

DESC has been one of the most important actors in R&D of eLearning in Latvia, including eLearning content. DESC also offers a web-based course on "Distance learning and eLearning methodology and technology", which is very useful in preparing multipliers of eLearning. The aim of this course is to give enough information and skills to trainees, enabling them to develop computer-based courses on their own. The course delivers distance learning and eLearning principles and systems, distance learning course planning and development processes, different kinds of distance learning materials along with their structure and development specifics, a study support system, and the specifics of distance learning and eLearning implementation.

DESC is also working towards providing services in Latvian regions. An excellent example is the co-operation project with Livani, launched in 1998. To start with, DESC provided a blended course on "Business Planning for Open Markets". Courses were organised to include three to four face-to-face seminars (about 6-8 hours), with 20 hours of estimated individual work on-line; study aids include an interactive multimedia CD-ROM and a printed workbook. Fifteen participants enrolled in the "Business Planning for Open Markets" course in 1998, and twelve of them completed the course, producing a self-designed business plan. Four business plans were actually implemented, making the businesses concerned stronger and more competitive. Course participants were viewed as better credit risks by financial institutions: they revealed that they had had to visit a bank only three times as compared to eight times as was necessary for non-participants. This course is now available in three other districts as well, and in the near future the plan is to make it easily accessible nationwide (Kapenieks, 2006). In Livani district, several new courses were introduced, such as Technical Communication, eBusiness, and Innovation Management. Over 800 people have attended these courses over the years. DESC also developed a Knowledge Repository and a long-term strategy of community development in a knowledge society.

At the moment, DESC is conducting research on mLearning possibilities in Latvia. The project is financed by the ERDF. The total project budget is LVL 200 000 (EUR 286 000), and 75% is financed by ERDF. DESC's work on mLearning includes development of mLearning evaluation software, EDUSA, which promises to deliver a new way to evaluate mLearning and computer-based courses. The basic idea is to measure "eGestures", with the programme distinguishing four main eGestures, which show that the user is either browsing information, discovering, learning, or has logged off. It is measured by the time the user takes in between scrolling the screen. This approach should provide much more accurate and timely feedback about the presentation methods and information used, thus allowing early changes to improve the experience for future users (Strazds, 2006).

II.2.2.7. ESF-supported projects

The information for this subsection is taken from the Vocational Education Development Agency – the institution co-ordinating ESF support. Since ESF started operating in Latvia in 2004, it has supported many eLearning projects. The first of these were in action "3.3.7. Integrating youth with special needs into the education system", which several projects attempted to do through ICT-supported learning. In action "Improvement and implementation of study programmes in natural science and engineering" most projects dealt with infrastructure issues in schools and higher education

institutions, which allows effective use of eLearning. However, the two most important projects in this action were, first, development at RTU, Daugavpils University, and Liepaja Academy of Pedagogy of masters and doctoral programmes in eLearning technologies under the Lisbon programme, and, second, creation of an online learning platform for the RTU engineering programme. A round of technological improvements in vocational education institutions came at the end of 2004 in the action "Improvement and implementation of study programmes in initial vocational education and training in economically relevant branches".

Projects submitted in 2005/2006 have even more eLearning attributes to them. In action "3.2.4.2. Enhancement of economically relevant continuing training opportunities", out of 38 approved projects, 10 were developing computer-based and ICT-supported courses for Continuous Vocational Training. The fields of courses were as diverse as work safety, ICT literacy, building engineering, woodworking, and computer design. Out of a total ESF contribution to this activity (LVL 1.02 million, EUR 1.46 million), eLearning projects received a total of LVL 352.5 thousand (EUR 503.5 thousand). In the next action "3.2.5.2. Support to the competence-building of academic staff and teachers", many projects aimed to resolve one of the biggest problems with eLearning implementation in Latvia – lack of teacher skills in using ICT in teaching. Out of a total of 98 projects with LVL 2.15 million (EUR 3.07 million) ESF funding, 23 projects directly focused on raising ICT skills, and in most cases ICT skills in a pedagogical sense. The total budget of the 23 projects was LVL 475 thousand (EUR 680 thousand).

Support in action "3.2.3.2. Improvement and implementation of study programmes in natural science and engineering" in 2006 was given to seven higher education institutions – Daugavpils University, RTU, Riga Higher Education Institution, Ventspils University College, ViA, Latvia University of Agriculture, Liepaja Academy of Pedagogy. All projects involved modernisation of technology, therefore contributing to eLearning opportunities. The total ESF budget of this call was LVL 3.28 million (EUR 4.68 million). Contracts for the projects were signed in October and November 2006, and at the moment they are all being carried out. The same situation applies to projects approved in action "Improvement and implementation of study programmes in initial vocational education and training in economically relevant branches". Among these projects, two were distinctively eLearning-oriented. Vangaži Vocational School applied for support for development and implementation of a computer for the vocational education programme "Locksmith's Workshop" that would be used for theoretical input. Priekuli State Agriculture Technical School is also developing a computer programme as an aid to learning in the "Auto-transportation" education programme. These two projects suggest that vocational schools are also starting to use ESF resources to develop eLearning approaches in education.

These are the projects in the field of education supported by ESF and co-ordinated by the MES and Vocational Education Development Agency. Actions co-ordinated by the Latvian Ministry of Welfare will be discussed in chapter II.5.9, p.37.

II.3. The legal framework supporting eLearning

No legal framework for eLearning exists. The term "distance learning" is defined in the Law on Education, but this is as far as it goes.

According to the eLearning Strategy project (Kapenieks, 2005), Intellectual Property Rights in Latvia are not appropriate for the current and future situation. The current principles of Intellectual Property Rights were developed in the industrial society and do not reflect the current situation. Hence, this might be one of the greatest obstacles for successful eLearning development. Atis Kapenieks suggested in the eLearning Strategy project to create a group of representatives of organisations concerned with eLearning to find a solution that would reconcile both the interest of the author in receiving recognition and feedback from users and the author's commercial interests.

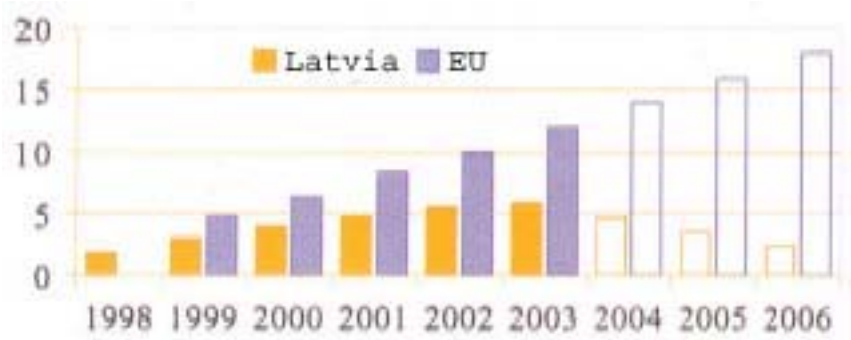
The main legal constraint for eLearning development is lack of quality assessment procedures in non-formal education, which usually also includes eLearning. If an eLearning programme is not accredited as an official higher education programme, then no possibility exists to assess its quality within the national legislative system. This decreases the competitive capacity of organisations providing eLearning in Latvia compared to organisations in countries where this assessment is possible. (Kapenieks, 2005)

Lately, government has also started taking steps to promote eLearning. At the end of 2006, legislative acts and rules regulating report systems were amended to allow fully electronic record-keeping. This means that teachers can now use solely digital applications, such as eClass, to keep their pupils' grades and notes. This is a small, but very encouraging step (Vilisters, 2006).

II.4. Dedicated ICT infrastructures and applications

Although every elementary and secondary school does have a computer classroom and an Internet connection, the ICT infrastructure in schools is unsatisfactory and is becoming out-of-date. Latvia has four times fewer modern computers per 100 students than the average EU level. What is more, since 2003 the number of computers becoming outdated exceeds the supply of new computers (Andzans, 2004). See Figure 10 for the evolution of computer penetration in Latvian schools and predictions for coming years.

Figure 10. Number of computers per 100 pupils



Source: Andzans, Agnis, *et al.,* "LIIS projects Latvijas skolu informatizācijai," *E-Pasaule*, Riga: 2004.

People can access the Internet in all public libraries, as well as in some municipal buildings. This year more than 1500 computers, 200 local networks, and 190 broadband Internet connections will be acquired for public libraries and municipalities in co-operation with the ERDF and the State Agency "Culture information systems". The Agency will also organise training in computer basics for approximately 600 library workers. This ensures that 97% of all public libraries will then have an Internet connection, which should help to decrease the information gap in regions (Culture information systems, 2006). Commercial Internet access points are available in regional centres. By 2008 projects supported by the ERDF will have set up more commercial and public Internet access points in distant regions as well. Some 370 public Internet access points will be set up, thus making the Internet more accessible to all.

Two well-known LMS are used in Latvia – WebCT at LU, and Blackboard at RTU and some other institutions. RTU is working towards a goal that most institutions in Latvia work on the same platform, so that it is as easy as possible to share content and other resources. Universities that co-operate with RTU include ViA, Daugavpils University, Liepaja Academy of Pedagogy, and others. In the meantime, *Turība* developed its own LMS. It is not very sophisticated and has not been changed for several years, so at the moment *Turība* is also considering options as to how to move ahead and what LMS to choose.

II.5. eLearning services

II.5.1. Elementary and secondary schools

2004 saw the introduction of a new elementary school programme in Informatics, as well as a new secondary school Informatics programme according to ECDL requirements. Thus, from 2008 school graduates will have gained sufficient ICT literacy (eSecretariat, 2006).

At a certain level, eLearning techniques, such as Powerpoint presentations, and homework involving research on the Internet are used in general school education as well, not only in digital literacy programmes. This is due to the work of LIIS, which provided schools with eLearning materials, both on CD-ROMs and on-line, as well as infrastructure necessary for ICT use in the classroom. The popularity of LIIS can be easily shown by the number of daily visitors to the LIIS website: 1 500. Most materials available on the LIIS website are not interactive, but consist rather of digitalised traditional text materials. Some interactive materials are available; these are not used during lessons, but can attract students' interest and encourage extra-curricular research in some educational spheres. No learning management systems are used in general education, but with LIIS-introduced school management programmes teachers tend to use computers for administration purposes more often. This tendency suggests that in time some communication between pupils and teachers might move to the digital environment (Andzans, 2004).

Another aspect of eLearning in schools in Latvia is the eTwinning programme. Although only 20 projects are carried out in Latvian schools, 144 schools have joined the network and are looking for partners and projects to join. In most of the ongoing eTwinning projects in Latvia, ICT is not used for actual learning, rather communication with partner school(s) (eTwinning, 2006).

To ease administration procedures for teachers and keep parents updated, SIA Digitālās ekonomikas attīstības centrs (Digital Economy Development Centre Ltd.) developed the "eClass" project (see the next section for more).

II.5.2. eClass (E-Klase)

eClass is a private initiative by "Digital Economy Development Centre Ltd." (DEAC) for the public benefit. It provides administrative solutions for teachers and schools – administrative software that allows all journals to be kept in digital format as well as to extract all necessary information and statistics from these data, so that the project decreases teacher workload. It is available to all schools free of charge, and approximately 300 schools are already using it. Parents can choose to receive news about their children via Short Message Service (SMS) (each sms costs 0.10-0.15 LVL (0.14-0.21 EUR)) or see the information online (eClass, 2006). However, some teachers are still reluctant to change paper journals to digital ones, which constitutes the biggest resistance to eClass.

Apart from digital journals, eClass also enables parents to follow their children's education. They can check their children's marks and notes from teachers on the Internet, and can also receive news about their children via SMS, which is, at the moment, the only source of income for DEAC, making it a very good example of a socially beneficial and profitable project. However, as eClass is becoming more and more popular, DEAC is looking for options to involve the government and municipalities in the project by supporting it financially, thus reducing the part paid by parents for receiving SMS. Hence this might become an interesting Public-Private Partnership example, initiated by the private sector and only afterwards accepted by the public sector.

II.5.3. Higher education institutions

eLearning in Latvia tends to be more developed in higher education institutions than in other spheres of life. For example, both professors and students more often prepare their presentations in PowerPoint and much of the information for studies is searched for on the Internet. Many higher education institutions also provide web-based courses to their students, and sometimes even examinations are

conducted on-line, but this is done only for small courses, as it is hard to ensure the authenticity of work. For example, at the Stockholm School of Economics in Riga some of the online English courses require only an on-line exam. However, although these courses are mandatory, they do not qualify for credit points, and no special means are used to ensure authenticity. More often still, the final examination is conducted on-site. No statistics are available about use of eLearning in higher education on a national level.

Higher education institutions also provide Lifelong Learning possibilities to those already working – they can choose courses they are interested in, and learn on their own from study materials provided on CDs and on-line. Often, several face-to-face meetings with lecturers are also organised, and examinations take place on the premises of the institution providing the course. Several higher education institutions need to be emphasised in regard to eLearning services, and these will be described in the following paragraphs.

In 2005, LU used 411 different web-based courses, and more than 10 000 students were registered in their LMS. In the past three years since its establishment, 276 courses have been financed and developed at the LU eUniversity; 68 of these were developed in 2005. LU eUniversity uses the WebCT platform, and most courses are interactive, i.e. involve communication with lecturers and students. However, LU does not provide accredited eLearning study programmes, only web-based courses to existing LU students.

RTU uses some 250 web-based courses and 5 500 students are registered on the Blackboard platform, installed in December 2002. Web-based courses at RTU are highly interactive. Although RTU does not provide accredited web-based distance study programmes, Hagen Distance Learning University Riga Study Centre is based on RTU premises, so they work in close co-operation. RTU DESC is also working on a project on mLearning, similar to those provided by Hagen Distance Learning University in Germany. Hagen Distance Learning University Riga Study Centre provides studies in German in the faculties of Cultural and Social Sciences, Mathematics, Informatics, Economics, Electrical Engineering, and Law. On graduation in programmes in these faculties, students receive a German certificate of higher education. It also provides one programme specifically designed for Latvia and in Latvian – Business Organisation and Administration. This is a MES-accredited study programme and on graduation students receive a State-recognised certificate of higher education in Latvia. All examinations take place on RTU premises.

Another higher education institution that provides MES-accredited web-based distance study programmes is *Turība*. It provides first-level undergraduate programmes in Finance and Accounting, and Marketing Management. After completing one of these programmes, students can continue their education in a second level undergraduate programme – Business Administration. *Turība* also offers specific courses and groups of courses. All studies are provided for a fee. *Turība* has developed its own LMS and is not using any of the well-known platforms like RTU and LU. All examinations take place on *Turība* premises.

The Business Management College also provides two accredited eLearning programmes – Office Work Organisation and Management (*Iestāžu darba organizācija un vadība*) and Commerce – but here web-based solutions are used to a smaller extent compared to other higher education institutions. At the start of their studies, students receive a book containing all necessary course material, tasks, problems, and self-evaluation questions. Students meet once or twice a month, and use the College server to do tasks online, as well as to communicate with other students and lecturers through a forum and e-mails. The College does not have a dedicated LMS. All examinations are conducted on College premises.

ViA is the most recent higher education institution to start providing accredited web-based distance education courses. Their course is the first distance education programme in Latvia to use Skype as the communication gateway. Even seminars and consultations with lecturers take place in real-time Skype conference calls. ViA offers an undergraduate professional IT engineer programme. IT students in

Latvia usually start working very early, which was the main reason for creating the programme. At the moment ViA has ESF support for the project (LVL 187 774, EUR 268 248), and the annual fee for students is LVL 600 (EUR 857). 16 students are taking the programme now. In this project, ViA is assisted by RTU, which has more experience with web-based distance education.

Other higher education institutions, such as Daugavpils University, Ventspils University College, Liepaja Academy of Pedagogy, Stockholm School of Economics in Riga, provide web-based courses to their students. Unfortunately, no statistics are available about use of these courses in Latvia.

II.5.4. Workplace training

Eurostat data suggest that in 2006, 60% of large companies in Latvia used eLearning for training purposes, as well as 33% of Small and Medium Size Enterprises. These are very good results even compared to average EU25 statistics, which are 42% and 20% respectively. However, only a small percentage of employees are using eLearning for workplace training. The percentage of individuals who used the Internet, in a three-month period in 2006, for educational courses related specifically to employment opportunities in Latvia was only 5.8% against the EU25 average of 12.6% (Eurostat, 2007). It is known that multinational companies prepare their computer-based courses in order to ensure a common ground of training in different countries, but otherwise no information is available about what means of eLearning these enterprises are actually using.

According to a survey on ICT use in the workplace, 70% of employees either have no or insufficient computer-related skills. In companies with at least one computer, 48% of employees must be able to work with computers, and for 20% it would be recommended. In this situation, it is surprising that 60% of employers still believe employees should take care of their education and training solely by themselves. According to the survey, 87% of companies do not use eLearning, which contradicts Eurostat data that 29% of companies are already using eLearning in workplace training. While 34% of companies stated that they might be interested in using eLearning, 44% still do not know what eLearning is. Out of the companies surveyed, 3% revealed a negative experience with eLearning (Judrups, 2005).

II.5.5. Assessment and accreditation of eLearning in Latvia

Currently, no regulations exist on evaluation specific to eLearning programmes, apart from accreditation of study programmes. Thus, evaluation and control of eLearning by official State institutions is the same as for any other course, i.e. details specific to eLearning are often overlooked. Interviews with experts in the field of eLearning show that local eLearning projects thus tend not always to deliver the best value. However, the quality aspect is good when eLearning projects are developed in collaboration with international partners. This holds true for eLearning projects carried out as a part of a grant scheme, since rules for those are usually explicitly and clearly set forth. The biggest supporters for eLearning in Latvia are the ERDF and ESF. Both these schemes require detailed applications and reports, which also partly ensures quality, as grants are allocated for applications of high quality, while results have to be close to those described in the application.

Some projects are certified internationally. The biggest of these is the “Informatics” secondary school subject, developed according to ECDL requirements. Some private institutions provide web-based, blended, and ICT-supported courses certified by internationally recognised companies, such as Microsoft. One such example is BDA, the biggest computer-training centre in the Baltic States, which provides courses certified by Microsoft, IBM, Lotus, and others. BDA also provides an ECDL course.

II.5.6. The role of community programmes in providing services

The European Community, and especially the Structural Funds, plays a major role in financing eLearning and ICT infrastructure development projects. For example, RTU founded its DESC within the framework of the PHARE “Multi-Country Co-operation in Distance Education” project. Infrastructure projects usually receive most of their funding from either the ERDF or ESF. Several

eInclusion and eAccessibility projects have been financed by the European Community initiative EQUAL. A detailed list of eLearning projects supported by the ESF appears on page 31.

New research was conducted by the European Commission that might influence the way services are delivered to eLearning users. This research states that open-source is almost always a cheaper option than proprietary software. The European Commission has taken several steps towards encouraging development of open-source software. It has granted EUR 3 million to a project called Software Quality Observatory for Open Source Software, which is to test the quality of open-source software. It has also extended its open-source web portal, the Open Source Observatory, and it suggests using the free office suite Open Office, which has the full feature set and is very stable (Thurston, 2007). Another article also reports that the EC has found that open-source software makes economic sense and its use could reach 4% of GDP by 2010. Such developments will certainly influence the future of eLearning, and with concentrated efforts to test and increase quality of open-source software, it could change the landscape of, for example, LMS and Content Management Systems completely (Claburn, 2007). For Latvia and for Europe in general this means more accessible tools of higher quality for computer- and web-based content delivery.

II.5.7. Differences among eLearning services

eLearning for under-18s usually occurs at school or in school projects. Thus under-18s usually experience eLearning in the form of eTwinning, or digitalised text material and interactive games on the LIIS website. As for courses that aim to improve digital literacy, which also include Informatics, it is much the same for all, as the basics of ICT remain the same for all. Those over 18 usually prefer courses developed and provided by higher education institutions and private actors, which are usually paid services.

A comparison of differences between ICT-supported education provided by State higher education institutions and private ones, suggests no essential differences. Private actors providing training are often more profit-oriented and follow market trends, so that the biggest difference between the first and the latter is that the latter concentrate on services that might attract a wide range of customers, while higher education institutions often create ICT-supported and web-based courses for their full-time students only.

II.5.8. IPR and Open Source learning content

As mentioned earlier, Intellectual Property Rights (IPR) in Latvia are inappropriate for the current and future situation, as the legislation was created for the industrial society. But apart from legislative issues, the grey market is a problematic practical issue. No research has been conducted to ascertain the impact of grey market production in eLearning, but due to lower prices and availability off-line, many people choose illegally produced and distributed CD-ROMs of self-study software, mainly for language study.

As regards Open Source Learning, LIIS is the main provider of free educational materials and has also launched a portal to promote use of Open Source Code programmes (LIIS, 2006). Latvians are also slowly taking up other open source learning possibilities, e.g. as at September 2006, slightly over 5 000 entries in Wikipedia were in Latvian (Wikipedia, 2006). As mentioned in subsection II.4, DESC with some other institutions is working to find ways to co-operate more effectively in terms of content. DESC has also used the opportunity that MIT is offering their courses as open-source content, and DESC has translated some of these courses into Latvian.

II.5.9. eAccessibility and eInclusion

eAccessibility has been an issue for a very long time. Both the State and non-governmental organisations have worked to provide easy access to the Internet throughout Latvia. Hence, the Internet is at some level available in most of Latvia, although the percentage of households with

Internet access is still low. Many public access points have been set up, while all libraries and municipalities provide this service.

In a society such as Latvia, debates on eAccessibility and eInclusion should also include the question of languages. Surprisingly, the biggest problem might be lack of English knowledge, as this limits a great number of international sources of information and eLearning possibilities. As regards Russian-speakers, in the eLearning context this is a minor problem – for informal and non-formal learning, a supply of eLearning applications exists domestically, with an even greater choice of eLearning applications developed in Russia. However, no surveys have been made as to how many people use this opportunity. Language problems for people without knowledge of Latvian might arise only if they want to acquire MES-accredited eLearning education, which is, at the moment, possible only in a few Latvian-only programmes. However, even these programmes are mainly aimed at younger people, most of whom know Latvian.

Several eInclusion projects have taken place in Latvia, such as "New Vocational Education and eLearning programme development and Implementation in Riga and the Regions" by BUTS Ltd., "Training in ICT Literacy for the Unemployed in Latvia" by LIKTA, and "ADIS – Integration of Disabled Adults in the Labour Market through Distance Learning" by the Social Integration Centre.

Several projects are ongoing. Some are organised by the Social Integration Centre, e.g. eLearning distance education courses on "Computer usage for people with disabilities" and Business Administration for people with disabilities. The Social Integration Centre will also be offering an educational course "Secretariat and Office Management", as well as a first-level higher vocational education programme in Commerce. All these programmes will be using ICT in order to facilitate study. These programmes are financed by the ERDF (Social Integration Centre, 2007). In the framework of the project "Stimulating Employment among the Disabled", the Social Integration Centre has also created voice synthesis software for Latvian. This is a big step forward to help people with sight problems integrate normally into the labour market (Delfi, 2006).

Datorzinību Centrs Plc. has developed another interesting service that should be a good asset for eInclusion. From now on, refugees that come to Latvia will be educated about Latvian norms, culture, and history using a computer-based course. The course is easy to set up on the Internet or on-site, and is easy to update. At the moment the course is available in Latvian and English (LETA, 2007).

II.6. Specific issues and solutions

Three major problems arise with existing eLearning services:

- Those who most need eLearning cannot afford it.
- Educators do not feel comfortable and confident enough to use ICT in teaching.
- Many people lack the (English) language skills required.

It is true that web-based courses could be used highly effectively in Latvian regions to provide training to the unemployed, who would not have to travel all the way to regional centres or Riga. But the truth is that most computer-based courses in Latvia are fee-based, thus unavailable to the unemployed. And another problem is that only 6% of the unemployed at the beginning of 2004 were using the Internet regularly (CSB, 2006). This means that web-based courses for the unemployed require both a study fee and extra costs for Internet access. To cope with these problems, many public Internet access points have been created in the regions, and sometimes local governments and the State Employment Agency cover the study fee for the unemployed wishing to take up an eLearning course, either computer-based, blended, or ICT-supported.

Unfortunately, most teachers - especially in primary and secondary education - have not yet accepted the idea of using ICT in education. Many even refuse to use tools that are designed to make their lives easier, e.g. eClass. Due to this prejudice against ICT, as well as lack of skills in using ICT in

education, many teachers prefer to stick to their old teaching methods. At the moment the situation is not getting better, because the new IKTIK programme is not yet functional, and most training provided by LIIS stopped with the project itself. However, with the new IKTIK programme, we can expect that finally ICT use in teaching will be addressed in teacher training and education, although this is not the case at the moment.

In 1997, MES in co-operation with LU recognised that ICT would have an impact on future teaching and launched the LIIS project. Since then, more than 27 000 teachers have been trained to use ICT. But this training was mostly aimed at digital literacy skills and not for using ICT in teaching, so that ICT has little impact on teaching methods. Learning, on the other hand, has experienced some changes, mainly because of such study materials as on the LIIS website and such search engines as Google, so that students more often search for information needed for schools projects on the Internet.

Insufficient English language knowledge is also slowing development of eLearning in Latvia. According to the population census in 2000 (CSB, 2000), only about 340 000 people knew English. This is problematic, as most software used in Latvia is in English. To tackle this problem, many programmes have been translated; unfortunately, due to all the new vocabulary the meanings of ICT terms are often still unclear, especially for people with little or no digital literacy. Surprisingly, in this situation the Russian-speaking population is in a better position, as their language has adapted for ICT and computer use earlier and more thoroughly.

eLearning development has not managed to change much about our ethics and norms on- or off-line. The biggest effect of ICT in learning might be that teachers and lecturers are starting to recognise the vast amount of information available to students, and the temptation of students to present this information as their own. Hence, especially in universities, more sophisticated tools are used to spot plagiarism in student work.

II.7. Acceptance and use of eLearning services

With no surveys on this issue, it is hard to estimate the match between supply of and demand for eLearning services in Latvia. This creates difficulties for potential eLearning providers, since it is hard to estimate actual demand for such services and they cannot count on support from the State in this process.

The general public in Latvia is not informed about and thus is not aware of eLearning as an alternative means of education as well as of the particular courses available. Moreover, as mentioned previously, many people are reluctant to accept the idea of learning on the Internet, for both emotional and technical factors. One emotional factor might be that people see face-to-face human interaction as an essential part of the study process, and feel that eLearning in some way diminishes this factor. A technical factor is lack of ICT skills. Use of eLearning in traditional education depends mainly on the attitudes of educators themselves. And the spectrum of attitudes is very broad. According to Janis Kagis, who is working on the eClass project, and thus is working closely with many teachers, almost every school has a few teachers that are very excited about using eLearning and computer-aided administration processes; however, many teachers have also threatened to quit their jobs if they are made to use computers for administration.

Another issue that has to be considered is the negative attitude towards eLearning and ICT in general from an element of society. According to Dr. Atis Kapenieks “It takes more time than expected to disseminate the experience in other regions of the country. The main obstacles are the local traditions of adults.” (Kapenieks, 2006). This means that people are not used to learning outside the formal education system themselves, and their employers are not helping to change this – as already mentioned, most employers do not consider themselves responsible for employee training and learning.

II.8. Impacts of eLearning developments

eLearning in Latvia is at the beginning of its evolution and has not changed or affected much. Most changes relevant to eLearning are policy-forced, instead of demand-based, meaning that changes are made to create space and facilitate the growth of eLearning, and not because eLearning is growing rapidly at the moment and reaching technological and infrastructural limits. Thus it is also too early to speak about the benefits or influence of the expansion of eLearning, which are yet to come. The main ICT and eLearning influence thus far has been introduction of the mandatory subject of Informatics, i.e. ICT literacy. Higher education institutions are free to apply and most do apply eLearning in various forms, including ICT literacy courses, PowerPoint presentations during lectures, exclusively on-line courses, and others.

The younger segment of the population – pupils and students – is well aware of eLearning possibilities. Table 18 shows that computer-based learning is almost as popular for informal learning as are printed materials among those participating in regular education. In this case even age does not matter, as the same proportion stays valid for older participants in regular education. However, only a small proportion of older people are taking part in regular education.

Table 18: Pupils and students participating in formal and informal learning

	Participated in regular education	*By informal learning methods*[1]			
		self study by using printed material	*computer-based learning including use of Internet*	*study by using educational broadcasting, audio-video cassettes*	*visiting libraries, training centres*
Total	**307.3**	**193.7**	**172.7**	**85.6**	**150.6**
By sex:					
males	135.7	83.1	82.7	32.0	54.7
females	171.6	110.6	90.0	53.6	95.9
By age group:					
15 - 24	247.1	149.6	137.5	69.0	115.9
25 - 34	37.2	25.6	20.5	8.5	20.1
35 - 44	17.6	13.8	11.2	6.0	11.1
45 - 54	4.4	4.0	2.8	1.4	2.8
55 - 64	0.3	-	-	-	-
65 - 74	0.7	0.7	0.7	0.7	0.7

Source: "Aspects of Lifelong Learning in Latvia, Statistical Data Collection." CSB. 2004.

However, together with new education content reform, eLearning, or more precisely, ICT-enhanced learning and the available European structural funds, this is going to change. Introduction of new technologies in basic and secondary education is ongoing, especially in science lessons. The old Soviet era teaching materials in physics and chemistry are being exchanged for much more up-to-date technologies and presentation materials to increase pupils' interest in these subjects.

In the private sphere, due to lack of control of eLearning quality on the governmental level, some courses tend not to deliver the highest possible quality. However, most eLearning users are satisfied with the results. Probably the best example of individual benefits and a small scale advance towards Lisbon goals is the example of co-operation between RTU DESC and Livani district, where more than 800 people participated in courses organised by RTU DESC to help them compete in the labour market or even start their own businesses. The courses were computer-based with several face-to-face meetings. Those who finished these courses also revealed that financial institutions saw them as better credit risks – they could obtain loans much more easily. Unfortunately, eLearning is not yet taking place in such volume in most cities to substantially contribute to the Lisbon objectives at the moment, but it surely has great potential.

III. ASSESSMENT OF E-LEARNING: CURRENT STATE AND DEVELOPMENTS

III.1. Current main achievements and shortcomings

This chapter summarises the current state and trends of eLearning developments in Latvia, based on eLearning functions – how many areas do they cover, eLearning content – how "deep" they are, eLearning interactivity, use in different target groups.

III.1.1. eLearning functions

III.1.1.1. Achievements

- Undoubtedly the sphere where eLearning is most developed is higher education. Most higher education institutions provide ICT-supported education and web-based courses to their students, and some of them, e.g. *Turība* and RTU, also provide web-based courses to the public. Four higher education institutions also facilitate higher education by means of web-based distance education. Higher education institutions also work on the eLearning development even further – an action plan exists for co-operation among a group of higher education institutions.

- eLearning has partly entered basic education. Much of the content taught in schools is available digitally on the LIIS server. Since its establishment in 1997, LIIS has trained more than 70% of teachers for ICT, digitalised study materials, developed educational and school management systems, and introduced new infrastructure in schools. Unfortunately, LIIS was in effect terminated without an immediate replacement.

- A compulsory Informatics programme that addresses the requirements of ECDL standards has been introduced in general education, so that all secondary school graduates are certified for digital literacy. This is achieved through general education reform that will conclude in 2008.

- Several examples exist of good local practice, such as free web-based courses for inhabitants of Ventspils and Riga. The best of these would probably be the project carried out in Livani, where the municipality together with RTU DESC have educated more than 800 people in blended and computer-based courses and also developed a Knowledge Repository and a long-term strategy of community development in a knowledge society.

- eLearning is becoming increasingly popular in informal learning – people taking part in regular educational activities used computers and printed material in approximately equal amounts for their informal learning.

- Many schools are integrating the digital register of pupils' grades and notes into their everyday life. More and more teachers are starting to use it, therefore making their own lives easier, and allowing positive side–effects, such as continuous information flow to parents, and instant access to statistical data for policy makers.

III.1.1.2. Shortcomings

- Although LIIS has given the tools to teachers to use ICT and eLearning in general education, this still occurs very rarely. Although teachers have received ICT training, their skills and knowledge are insufficient to use ICT as a tool in teaching. Research has revealed that approximately a quarter of teachers are reluctant to use ICT in education due to the very fact that they fear to look clumsy in the eyes of pupils.

- eLearning in the workplace is not used very well. Although Eurostat data suggest that 29% of companies use eLearning in workplace training, only 6.0% of employees (10.6% in the EU) have used the Internet for educational or training purposes. Another survey suggests that a much smaller number of companies (16%) even know about eLearning, so this sphere remains unclear.

- Although the State Employment Agency makes eLearning available to the unemployed, eLearning in this sphere is not fully used, as few unemployed use computers or the Internet at all.

III.1.2. eLearning content

III.1.2.1. Achievements

- Higher education institutions have developed very good web-based courses. The diversity of offered content is increasing, but it is mostly available to students only or, in the case of *Turība*, for a fee.

- Hagen Distance Learning University Riga Study Centre provides deeper and more diversified content, as it is possible to study in one of their faculties – Cultural and Social Sciences, Mathematics, Informatics, Economics, Electrical Engineering, and Law.

- LIIS has digitalised much of the school curriculum, so that 20% of all content can be taught with the help of computers and materials developed by LIIS.

- Companies can develop computer-based courses according to their own needs, i.e. with as much and as specific information as they want, as well as in the language they prefer, e.g. Insolentia Ltd. provides the computer-based course development tool E-Teacher Pro.

- Due to such services as Google and Wikipedia, it is much easier to find content that learners need, especially if they know foreign languages. However, such services also help with content in Latvian, e.g. Wikipedia's Latvian section is constantly growing.

III.1.2.2. Shortcomings

- Very few teachers in general education are ready to fully use the capabilities of LIIS products, as their level of skills and knowledge is insufficient. Thus, while materials are available, they are often ignored.

- In basic and secondary education within the LIIS project, content development has been somewhat biased towards informatics and mathematics so that many other subjects have not been covered so thoroughly. In addition, although LIIS has digitalised much learning material, most of this has not made use of eLearning possibilities and is not attractive to the learner.

III.1.3. Interactivity

III.1.3.1. Achievements

- Many higher education institutions have developed or acquired good LMS and students and professors have e-mails on their school's server, so communication has partly moved to the digital environment. LU and some faculties in RTU are particularly good at interactivity.

- Some companies in Latvia (e.g. Insolentia Ltd.) provide eLearning solutions with a degree of artificial intelligence, which could be considered a type of automated interactivity.

- Modern and relatively cheap technologies are entering the education market. A good example is the new web-based distance education programme of ViA, where lectures and consultations are taking place in a real-time Voice over Internet Protocol (VoiP) Skype conference call.

III.1.3.2. Shortcomings

- Many teachers in general education are still reluctant to use computers and the Internet, hence communication with them is impossible by electronic means, although it would be convenient for many pupils.

III.1.4. Different target groups

III.1.4.1. Achievements

- Due to recent reform, all pupils now receive compulsory ICT education (Informatics) corresponding to ECDL standards.

- Specific courses for people with disabilities have been created within the ADIS project, and the issue is being continuously tackled by the Social Integration Centre, especially with the new project "Stimulating Employment among the Disabled".

- Both infrastructure (PIAPs, public libraries, computers in municipalities) and content have targeted the unemployed in several projects.

- eLearning is becoming popular in various spheres, e.g. it will be used as an educational course for refugees in Latvia about the country's norms, history, and culture. This shows how widely applicable eLearning is.

- Younger people feel comfortable with new technologies. This can be seen in the statistics, which show that younger people use computers and the Internet much more often than older ones.

III.1.4.2. Shortcomings

- A strong correlation exists between age and decrease in use of computers and the Internet. Less than 10% of people over 55 use the Internet regularly. Only 4% of those over 65 have ever used it.

- Internet use is very low among the unemployed and economically inactive – only 5-6% of them use it more than once a week.
- People with low and sometimes even average income cannot afford a computer and an Internet connection at home, so that their use of eLearning is somewhat limited.

III.1.5. The costs involved

III.1.5.1. Achievements

- Free Internet and computer access is becoming available in more places – schools, libraries, municipalities, and PIAPs.

- Some municipalities (Ventspils and Riga) provide free eLearning courses to their inhabitants.

III.1.5.2. Shortcomings

- In Latvia, Internet access costs are among the highest in the EU, with Internet connection especially expensive for people in rural areas. Positive tendencies are evident with increasing competition after de-monopolising Lattelecom in 2003 and entry of a third mobile operator in 2005.

- Most eLearning applications are available only for a limited part of the population (e.g., students of a certain institution), or they are subject to a fee.

- People in rural areas have to travel to regional centres or even Riga for examinations, which might add up to a considerable cost for those on low incomes. This is becoming increasingly important with high inflation.

- The average income of a family in Latvia is still too low to easily afford a computer and an Internet connection.

III.2. Factors behind existing developments

This chapter summarises the major factors affecting the evolution of eLearning.

III.2.1. Economic factors

At the beginning of the 1990s Latvia lost a great part of its infrastructure. Much of it was moved to Russia or simply became useless without the customer base that it had in Soviet times. Thus after regaining independence Latvia had to invest in order to reach the previous level of capital, instead of thinking about modernising it. This is one reason why ICT is not on such a high level as on average in the EU. And for this reason, the market for ICT products is rather small; therefore the costs are high in nominal terms, and even higher in real terms.

Recent macroeconomic developments have influenced the availability of ICT. In recent years, Latvia has experienced dramatic GDP growth, as well as very high inflation. For some households this means more income and therefore more possibilities to acquire new technologies. For others it only means higher prices and hence less money for ICT. Nevertheless, the first group actively contributes to the fact that ICT is becoming an everyday component of informal learning.

On the microeconomic level, many differences distinguish Latvia from the EU – for example, people in Latvia spend a much bigger proportion of their income on food. This is also understandable – with the average income per person in a household at EUR 144.04, not much is left after buying essential goods. With Latvian income and European prices for technologies, it is hard to expect high computer and Internet penetration rates. This largely explains why relatively few families have broadband connections at home.

Unfortunately, one factor that positively influences computer-based learning is illegal software. Although no statistics about this problem are available, many households use illegal software to drive down the costs of a computer. This allows more households to have computers and, consequently, more people to use computer-based learning; however, it is a problem that needs to be dealt with.

III.2.2. Policy factors

Although a project for eLearning development strategy was prepared, it was never officially accepted. The most relevant policy document until December 2006 was eLatvia 2005-2008. This contains a section about eLearning, which suggests that during these four years LVL 17.44m should be invested in the development of eLearning. At the moment, the situation is better, because finally in December 2006 a new programme on ICT in education – IKTIK – was accepted. But no one at the Ministry of Education and Science (MES) is designated as responsible for eLearning in general; hence the policy documents have also not been regularly reviewed and no reminders given. eLearning as such is also not included in Latvian legislation – only distance education is defined. All in all, eLearning seems not to be a priority of policy makers in Latvia, which means that eLearning is developing on its own without any specified direction. This was also visible in the regrettable termination of LIIS.

A very good political decision, however, was to introduce a mandatory programme in basic and secondary education. This is Informatics, which ensures that those studying in schools now will

definitely be ICT-literate. This can also be seen in young people's attitudes towards ICT – they feel comfortable with it and use it often. However, a big downside of lack of political co-ordination in eLearning is that the general public does not know what eLearning is. Many people stress that one of the biggest problems thus far has been lack of information and lack of understanding of what eLearning is.

On the other hand, the EU initiative to support eLearning greatly influences its development in Latvia, where the ERDF and ESF are undoubtedly the biggest sources of funding for eLearning projects. This has allowed development of eLearning in many higher education institutions, as well as a slightly faster introduction of eLearning in schools.

III.2.3. Legal factors

Legal factors have not affected eLearning development in Latvia. No strict regulations exist about eLearning, which allows people to experiment. One factor has affected administration of schools – from December 2006, the MES allowed only digital records of pupils' grades and other information to be kept, which will allow optimisation of administrative work in schools. This should encourage more teachers to get interested in the digital registry, thus making the whole system more useful and efficient.

III.2.4. Ethical factors

One ethical factor that has to be considered is that people often think of eLearning as just another way to become even more impersonal. In times when many young people spend most of the day at a computer, eLearning is sometimes condemned for trying to make them do this all day, without any face-to-face interaction whatsoever.

Another factor that has to be considered is the attitude of educators towards eLearning. Many believe that if they digitalise their course or teaching materials now, they will lose their course, as it will be available to all without their help. This sometimes burdens the opportunity for teachers to fully accept eLearning. Unfortunately, these two factors add up to the result that many educators are still unwilling to use eLearning, even in situations where it would clearly be beneficial.

On the other hand, some enthusiasts believe that education should be available to all. They see eLearning as one way towards this goal. This is why LIIS tried to develop a package of open-source office programmes in Latvian to decrease the costs of using a computer. This also led to good practices, such as DESC consulting other higher education institutions to help them develop their web-based and ICT-supported courses.

III.2.5. Technological factors

The rapid technological advancement taking place in the world has some implications for Latvia as well – technologies quickly go out-of-date, and infrastructure projects have to be running continuously, otherwise current progress will soon stop and even reverse. This is becoming a problem, because funding for LIIS has been cut while nothing else is yet in place. Thus, results achieved are fading gradually. Although this has led to a serious challenge to the need for frequent renewal of technologies in households and schools, rapid developments have also created great opportunities for informal eLearning.

III.2.6. Socio-cultural factors

Most teachers have been teaching since Soviet times, when programmes were much more centralised, and teaching styles were similar. It is often hard to adjust to changes taking place so rapidly. Thus, many teachers still accept only one kind of teaching – the teacher transferring knowledge to pupils. This is often a barrier for innovations such as ICT in the study process.

Older people are also very reluctant to try new technologies – usually it is not easily accessible to them at home, and it would take either extra effort or extra money to become familiar with them. And, as we can see in the statistics, only 54% of all employed people have ever used the Internet, which means that people are not accustomed to using it, so that in order to let them participate in eLearning, employers first have to make sure they know how to use a computer and the Internet.

Another factor that influences eLearning take up is the surprising fact that 60% of employers still believe that employees should take care of their training and education themselves. This leads to employers not giving any incentives to learn. At this time, when most debates are taking place about learning organisations, personal development, and technology-aided learning, this figure seems troubling. Moreover, it has surely led to a poor training system in Latvia, and also a poor realisation of eLearning opportunities in the workplace.

III.2.7. Regional factors

The economic situation differs greatly in regions. If Riga is very prosperous at the moment and is experiencing a high growth rate and, as some argue, economic overheating, then development in the eastern part of Latvia, Latgale, is much slower. The unemployment rate in several counties in Latgale exceeds 25%, while overall economic activity is very low. However, some municipalities in Latgale are much more active than those in other parts of Latvia, and they are supporting computer- and web-based courses for their inhabitants to overcome these obstacles. The best example is Livani district. Unfortunately, many rural areas have high Internet costs, so that distance to the closest town with PIAP does matter.

III.2.8. Demography

The situation with demography in Latvia is problematic – the birth rate has decreased, while the population is ageing. This means that the proportion of older people is increasing. As argued before, older people are more reluctant to take up eLearning or new technologies. Instead of eLearning, older members of the population have other needs that have to be respected, and hence fewer resources (both human and capital) are available for developing and using new technologies and eLearning.

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

III.3.1. Drivers

III.3.1.1. Enthusiastic innovators with money from Europe

Most probably the biggest and most important driving force for development of eLearning in Latvia is the fact that there are people who are interested in higher quality education, and who are able to innovate to reach their aim. And when these people and organisation are given resources (ERDF, ESF, Framework Programme 6 funding) to put their innovations and ideas to life, the results are extremely good. For example, RTU DESC changed the way many people look at learning and teaching in less than 10 years. And the same goes for other eLearning supporters, e.g. LU, Liepaja Academy of Pedagogy.

III.3.1.2. Booming economy and cheaper technologies

Although Latvia is still relatively poor compared to many other EU countries, at the moment its economy is booming. This means that more people can afford to buy ICT products, which, in turn, means that the market for them is expanding and competition increasing, thus decreasing prices. With increasing income and future income (and attractive lease options) prices of computers no longer seem so high. And, while telecommunication costs are still high, they are decreasing, which adds to the incentive for a home Internet connection - as indeed, more and more people are doing - which can be used for eLearning, either by applying for a distance education course at university, or by browsing Wikipedia and similar websites. It would be much more expensive for ViA to run its distance education programme through audio or video conferencing, if technologies such as Voice over Internet Protocol did not exist.

III.3.1.3. Learning to learn

One big group in society generally does not have big problems with up-taking eLearning. This is young people. The will to try out new things combined with opportunities given by LIIS and knowledge how to do it from Informatics lessons is the right combination to go with. Although many young people learn to use computers and ICT by the trial and error method, this combination ensures a somewhat similar and satisfactory ICT literacy level for all, including those that otherwise would not have the chance to learn to use ICT. All in all, the knowledge gained in the lessons later translates into effective informal learning.

III.3.1.4. Economies of scale leverage networking

One of the most valuable aspects of European Funds is that they almost always require networking with other organisations. This is good because it allows organisations to learn much more quickly. For example, it would have been much harder to create LMS and eLearning traditions that exist in most higher education institutions, if there was no one to ask for advice. On the other hand, networking is also good because it allows bigger projects to be undertaken. Good examples in Latvia include cooperation between higher education institutions, as well as the eVidzeme project.

III.3.1.5. Caring people with money from Europe

Fortunately there are people who really want to help those in need. And even more fortunate if they have resources to work with. Therefore, ethical considerations and European Fund money have been a driver for many people who would otherwise never experience working and taking care of themselves. The Social Integration Centre together with some NGOs and the support of European Funds have done much to encourage people with special needs to join society and the labour market as full-fledged members.

III.3.2. Barriers

III.3.2.1. No co-ordination in an ever-so-rapidly changing industry

eLearning in Latvia used to be far from a priority. For many years, no one in government took care of eLearning issues: this led to many problems. With technologies changing rapidly, an effective system needs continuous investment in new technology. This principle was disrupted when the MES decided to close LIIS without an immediate replacement, thus throwing ICT introduction in schools into stagnation: a huge barrier for eLearning development in schools. This may be the main reason why teachers remain reluctant to use ICT in education – there is no new content development, and no training. Thus, with some prejudice against new technologies and lack of confidence in their own skills, it is no surprise that many teachers choose not to use ICT in teaching. This situation should change with the new IKTIK programme.

III.3.2.2. People are not informed about eLearning

With the given lack of co-ordination in the eLearning sphere, along with a lack of incentives to educate employees, it is unsurprising that many people are unaware of the educational possibilities that a computer and the Internet (even in PIAP) can offer. At the moment there are many PIAPs in many towns in Latvia, with public computers accessible in libraries, schools, and municipalities. However, if people do not know about the possibilities it gives, they might never try out eLearning.

III.3.2.3. People do not sufficiently appreciate learning

A major problem for many is a negative attitude towards learning. For example, 60% of employers do not think they have to provide their employees training opportunities. As mentioned earlier, a person on a low salary is less likely to be learning. This is because that individual has to think how to earn money to get by, and the employer is not even considering sending this person to raise their qualifications. These are the main reasons why employees on a low salary cannot raise their qualifications and obtain a higher salary.

III.3.2.4. Senior citizens in regions do not have computers

A huge concentration of negative factors explains why seniors in regions do not use eLearning. First, older people are simply less interested in it, and it is harder for them to learn to use a new technology that they are seeing for the first time. Second, senior citizens tend not to have a high income, especially in the regions. Third, many younger people, who could teach them to work with a computer, are working or studying in cities far away. These are the main reasons why statistics show that the older a person is, the more likely it is that he or she has not used a computer. Actually, a very similar situation applies to the unemployed. First of all, a random unemployed person is much more likely to live in Latgale, where unemployment reaches up to 25%, not in Riga, with unemployment under 5%. This person is also very likely not to have enough money for a computer. These two factors seriously decrease the chances that that individual is a regular computer or Internet user.

IV. ANALYSIS OF POLICY OPTIONS

The purpose of this chapter is to establish the most important policy issues and options available to Latvia in fostering development of eLearning services. The focus will be on three political levels – local, national, and European, with the main focus on national issues, which will be discussed first. Policy suggestions will be sorted into the following groups: those related to the education and training system, institutional changes, legislation and regulations, fiscal issues, and infrastructure and technology of eLearning. We will also explore possible government action to promote development of eLearning.

IV.1. Main policy objectives in Latvia

On the national level, one of the most important policy objectives is to create an institutional structure to support development of eLearning. The most pressing problem is thus to divide tasks and responsibilities between the two main governmental bodies concerned with eLearning – a good task and responsibility division between the Ministry of Education and Science (MES) and the eSecretariat. The two main criteria for division of responsibility are that eLearning is introduced coherently in the education system, and consistently with the introduction of eHealth and eGovernment.

It is also important to create and understand the responsibilities of local and European actors. Although equipment purchases should be centralised to decrease costs, distribution should be entrusted to local government, thus benefiting from local knowledge and flexibility. Long-term projects, such as R&D and infrastructure projects, need stability; thus, many decisions in this regard can be delegated to European-level institutions.

Regarding the education and training system itself, the main objective is to train educators to a level at which they can create and deliver high-quality eLearning courses, both online and in class. The technical base in higher education institutions needs gradual improvement, while in general education significant investment is needed to reach at least the average EU level. EU averages per 100 students and Internet connection speed can be measurable objectives; however, introduction of other technologies, e.g. for physics and chemistry, is as important. Learning management and administration programmes should be implemented nationally, thus allowing cost-saving, as well as a standardised approach to online course development, knowledge sharing, and collection of relevant educational data.

Although not specific to eLearning, non-formal education needs a certification system that would allow course quality to be predicted in advance. eLearning should also be considered more in evaluating formal education, but this issue is not very pressing. Current Intellectual Property Rights (IPR) in Latvia were relevant in the industrial society, and need to be reconsidered and rewritten, taking into consideration the needs of all interested parties.

One issue hindering development of eLearning is the high communication cost level in Latvia. Considering the overall economic position of Latvia, this level should be decreased below the EU average. On a more general level, communications should become more available by introducing or supporting the introduction of better Internet connections in schools and PIAPs, as well as decreasing the cost of computers to individuals.

IV.2. Suggested policy measures

IV.2.1. Policy measures at national level

Late in 2006, the Cabinet of Ministers approved the new IKTIK programme. This sets aims and considers policy options regarding eLearning for 2007-2013. Experts interviewed agree it is a good programme that considers many aspects of eLearning. Other programmes and plans concerned with education have not incorporated eLearning very effectively, so this programme should be considered as the main policy tool to achieve education quality improvements through use of ICT. However, as a medium term planning document, it is rather general. Thus, this chapter will focus mainly on options and variations that might be included in Action Plans, as well as other points that might help to deliver the programme successfully.

IV.2.1.1. Institutional aspects of eLearning

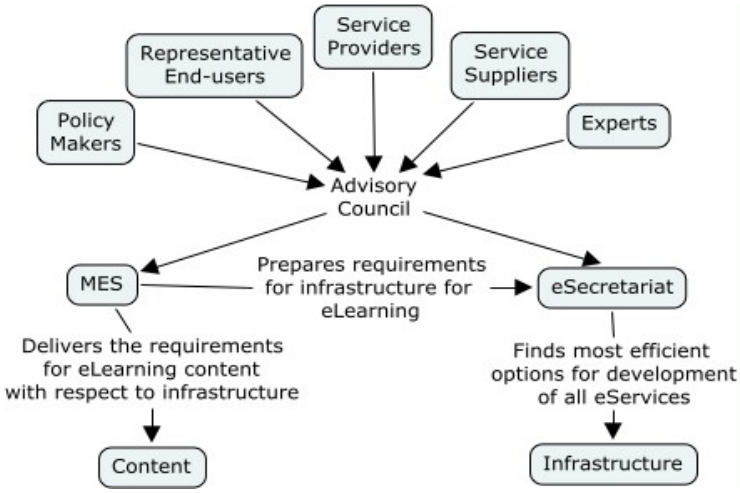
On the government level, the two main institutions responsible for development of eLearning, according to the IKTIK programme, are the MES and eSecretariat. And one of the most important questions not specifically addressed in the programme is division of responsibilities – which institution is responsible for which part of eLearning development. First of all, a crucial aspect in the success of IKTIK and eLearning in general, is the synchronisation of actions between these two institutions, e.g. it would not make sense to introduce the most recent technologies if no appropriate educational content was developed, and *vice versa*. And this might be a sore issue, given that one of the biggest problems in implementing the LIIS project was lack of co-ordination and governance from MES.

eLearning needs to be introduced coherently in the educational process, and the most appropriate institution to do this is the MES, which therefore should be the co-ordinating institution for eLearning. It is also clear that neither the MES nor the eSecretariat can employ all experts whose views on eLearning, as a rather specific subject, would be needed for successful implementation of eLearning policies. Therefore, a rational solution would be an Advisory Council that would meet on a regular basis. This would not require big changes either, as the MES already has an IT Council. It would mainly require better representation of the different actors, including companies and staff from schools and organisations providing adult education. An illustration of the suggested model is depicted in Figure 11. This model is developed as part of this report by the author and is a suggestion, not part of the IKTIK programme.

The biggest drawback of such councils is usually that their recommendations are simply not implemented due to lack of executive power. And it has also proved to be true that at the moment in the MES there is no-one to take political responsibility for development of eLearning, so that it is not effectively co-ordinated, as was also mentioned in the LIIS project audit. Therefore the MES IT department, which has been thus far responsible for IT issues in education, should be slightly reorganised – from a purely technical department, it should become one that affects educational policies and their implementation.

It is also well known that the infrastructure for different eServices may overlap, so that a sensible decision is to think of this infrastructure as a whole, instead of splitting it up for eGovernment, eHealth, eLearning, and so on. Therefore, the eSecretariat should be the institution deciding about introduction and development of infrastructure for eLearning, as well as other eServices. Thus the MES should decide on the prospects of eLearning – how it should be introduced and what content MES and other institutions will be ready to produce. The eSecretariat would then be responsible for addressing these needs and integrating them into an infrastructure of solutions for all eServices.

Figure 11. Proposed institutional structure



The main tasks of each of the bodies in this model are as outlined below. Only the most relevant tasks are mentioned.

MES:

- set a co-ordinator for eLearning policy developments and implementation;
- co-ordinate the work of the Advisory Council;
- prepare action plans for eLearning content development and needs for infrastructure development;
- ensure development of eLearning content.

Advisory Council:

- provides expertise in different eLearning spheres;
- gives feedback on policy implementation.

eSecretariat:

- considers and implements infrastructure that best fits the needs of all eServices.

Currently in the IKTIK programme, the co-ordinating functions are assigned to the eSecretariat, otherwise the model looks very similar. This seems reasonable from the point of view that the eSecretariat co-ordinates the eService overall. However, this might limit the integration of ICT and eLearning in the education process, which is managed by the MES.

IV.2.1.2. Education and training system

The division of learning into formal and non-formal education is highly appropriate for this chapter. Therefore these groups will be discussed separately.

Policy-wise, formal education is fairly well developed for eLearning implementation. At the moment no regulations deal specifically with eLearning, but that has not held back development of web-based distance education programmes and eLearning solutions in and out of class in higher education. Higher education institutions are very proactive in eLearning issues and are therefore leading development of eLearning. The IKTIK programme contains good suggestions for the higher education sphere - it states that more attention will be paid towards improving the technical base of higher education institutions, and that good educators should be prepared for information literacy. However, no radical change in the system itself is necessary.

Politically, the basic and secondary education system has already changed to be able to accommodate new learning possibilities offered by new technologies. Education content reform is being implemented at the moment, and soon all pupils will study in line with it. The reform shifts the focus from purely theoretical and factual knowledge to being able to find and process information, as well as how to use it in practice. The problem, as mentioned in Chapter III, is teacher skills and attitudes. Many teachers are still reluctant and even afraid to use ICT in teaching. The best way to deal with this is to show how ICT can help the learning process, and give teachers the skills to use ICT, both personally and in teaching.

First of all, it is necessary to make sure that new teachers are able to effectively use ICT. Therefore, more attention to eLearning must be paid in higher education programmes for teachers. Second, it is also important that those who are teaching now are able to use ICT in education. As mentioned in the report, most schools have some teachers enthusiastic about eLearning. It is very important that these people are thoroughly educated about eLearning. This would allow them to become advisors on eLearning issues to other teachers in their school, as well as to become multiplicators, delivering seminars or training on the issue in their school. This would facilitate much faster adoption of necessary skills, and the new multiplicators would be able to address the specific needs of their school much better than any other trainer. Another solution would be an eLearning resource centre on the Internet, allowing teachers to find information on how best to use ICT in their topic, as well as offer web-based training on eLearning uses.

An issue that should be addressed nationally is school learning and content management systems, as well as school administration programmes. The first would allow standardised content creation that would enable nationwide sharing of best practices, while the other – administration programmes – would decrease the time teachers and school staff would have to spend on administrative issues. It would also provide instant statistical information for policy makers on the national level. A huge step towards this was taken at the end of December 2006, when the regulations regarding administrative reports were amended to allow full digital record-keeping of pupil grades and notes.

As regards the non-formal education or training system, the market largely determines the supply. And demand is one of the biggest problems – many people, and especially employers, undervalue adult education. What the government can do is show an example and promote eLearning possibilities. A good example is the computer literacy training conducted by Baltic Computer Academy (BDA) for the Treasury, discussed on page 20. This training is conducted using a distance web-based approach, and therefore is cheaper (can accommodate a larger group, with no transportation costs to the venue) than usual and trainees can choose when and where to do it. In addition, the Treasury covers part of the fee, which makes it affordable for most of their employees. Although not directly linked to policy-making, good practices such as these should promote use of eLearning. The government should also create other incentives for employers to provide training to their workers, e.g. by subsidising part of their training.

One problem that has emerged for eLearning in the non-formal education and training context is inability to predict the quality of an eLearning course before deciding to take it. This problem may be tackled by introducing a certification system. This issue will be examined more closely in the next section.

IV.2.1.3. Legislation and regulations

The most important issues in eLearning in the field of legislation and regulations are certification of eLearning courses and IPR.

The first – certification of eLearning courses - includes both accreditation of academic study programmes and certification of individual courses. However, accreditation of eLearning in higher education is not a pressing issue, for example, web based distance education is considered a part of distance education in its classic sense, but this has not held off creation of web-based distance education programmes.

As regards certification of individual courses, this would be highly beneficial to all. First of all, it would increase control over the quality of eLearning courses. If an eLearning service provider wishes to issue state-approved certificates for trainees, the course would have to comply with certain standards. This would give a common base for customers to distinguish between different courses before deciding to start one. It would also lend credibility to certificates in the eyes of employers. This issue is not yet being addressed, but it is a good time to start doing so, as similar discussions are taking place about non-formal education certification for young people. A good option might be, as is planned with non-formal education for young people, to resolve this issue in co-operation with ICT sector professional organisations, to which much of the certification process might also be delegated. The quality criteria in eLearning should be on a par with other courses, so that such certification could raise overall quality in the country as a side effect.

As for course standards, several important points arise. One of these (for distance eLearning) is the availability of consultations, i.e. no matter what the planned level of interactivity, customers should always be able to receive consultations regarding content and use. Another point is important for all kinds of eLearning courses – to be classified as eLearning, course providers must justify how use of ICT increases course quality.

Another important issue is intellectual property rights. At the moment, Latvia still has IPR legislation that was created for the industrial society. Therefore, it needs not merely small updates regarding eLearning. Instead, a complex solution is required to make this legislation up-to-date for all spheres of life. The best option is to develop a new legislative base for IPR together with a group of experts and those concerned with IPR, i.e. authors. The new legislation should be able to address authors' interests to receive remuneration for their work, as well as allow effective use, distribution, and security of intellectual property. At the moment it is very hard to offer concrete solutions for this problem since new IPR legislation should address the needs of all stakeholders. Therefore, much more careful consultation with the parties is needed. A suggestion for the government would be to create a working group on this issue.

IV.2.1.4. Fiscal issues

It has proved true that many policies fail to deliver their goals due to the simple fact that they do not receive the necessary funding. The sources of funding for the IKTIK programme are planned to be European Funds, the State Budget, and private investment. The first and most important political decision should be to provide sufficient co-financing to and budget for administration of European Funds. Although an annual Action Plan for the programme has positive aspects, it means that the amount of funding will be debated every year. Although not a problem *per se*, the situation with LIIS proved that this might be dangerous for a long-term development. The responsible body for implementing the IKTIK programme should take this into consideration and lobby constantly for the necessary national funding.

Apart from trying to find enough money, the responsible institution should also look at how to decrease costs and attract private investment. One of the possibilities is to co-operate closely with universities, which are proving to be rather economical in the case of the LIIS project – with comparatively little funding the project achieved a great deal. It also would provide the best expertise, as universities are definitely the most advanced eLearning organisations in Latvia. Another way to decrease costs is, as also mentioned in the programme, to avoid buying the most recent technologies: for educational purposes, slightly older computers and technologies are usually perfectly usable. This also opens the possibility to attract donations of used computers and other tools from private companies. On a small scale this has been happening in Latvia, and is also working very well in other countries. During the LIIS programme, it became clear that centralised purchases are cheaper and more efficient than decentralised ones, so that subsidising municipalities to buy computers should be avoided, while centralised purchase of technologies should be preferred.

NGOs have been vital actors in supporting eLearning development, especially for disadvantaged sections of society. NGOs have been active both in developing infrastructure (PIAPs), as well as

delivering training. It is important that the government recognise these efforts, and react accordingly – by supporting them. Often NGOs also prove to be more cost-efficient. They know their particular sphere better than government officials and therefore their actions are highly valuable. Until recently the government has not strongly focused on eLearning, and no clear priorities were set as to what the government sees important to achieve. However, if the government set clear priorities and provided the necessary funding or part of it, a mutually beneficial relationship with the NGO sector could easily emerge.

IV.2.1.5. Infrastructure and technology

One of the problems holding back development of higher Internet penetration is the high level of Internet costs, indeed the cost of communication in general. In part, this problem is slowly disappearing by itself – with more competition in the market, the ex-monopoly Lattelecom has to decrease its costs. However, for example, national and international phone call costs are still very high in Latvia, which means that renting Lattelecom bandwidth for other telecommunication companies is also costly. Lattelecom tariffs are regulated by the Public Utilities Commission, which should conduct thorough research of the economic justification for Lattelecom costs.

Another point also described in the IKTIK programme is the quality of equipment and Internet connection in schools. As discussed earlier, the number of computers per 100 students in general education needs to be increased more than twice to reach the EU average, while only 31% of schools have Internet connection faster than 512 Kbps. This means that government still has to work hard to provide enough funding to improve the situation. To ensure this, the IKTIK programme should be promoted among school principals, who are directly interested in the programme being implemented and therefore can constantly remind the government of the importance of not reducing funding to introduce and renew ICT equipment.

LIKTA is also lobbying for an interesting political decision that would help to resolve some infrastructure issues. In the best case scenario, people have their own computers at home so that they can use eLearning whenever they want to. LIKTA is suggesting that people should not have to pay income tax on the money used to buy a computer, i.e. people would get tax rebates for their computers. This would reduce the costs of acquiring a computer for individuals, and help decrease the problem of too high computer prices for many people in Latvia. This is also a very good promotional tool, as described later in this chapter.

IV.2.2. Policy measures at local level

The importance of properly dividing responsibilities between the MES and the eSecretariat has already been discussed. Additionally, the division between national and local government is also very important.

It is clear that central government should deal with “big” infrastructure issues, such as ensuring that all regions have access to good quality telecommunications networks and broadband connections. As mentioned earlier, central government should also make centralised purchases of equipment for schools, as this makes economic sense. However, municipalities should have a fairly wide freedom of decision on infrastructure and distribution of equipment locally. One reason for this is local knowledge – central government will never know better than municipalities about the needs of local schools or libraries. Municipalities can better decide on a case-by-case basis where and how to make local Internet connections or how to distribute equipment provided by central government's centralised purchase. Another important point is that municipalities are in any case going to be the ones implementing and supporting all eLearning and infrastructure projects locally. Freedom in decisions would increase motivation and allow municipalities to search for extra possibilities to improve eLearning and to combine their resources effectively with resources provided by central government.

Another issue is eLearning content. At the moment, several municipalities, e.g. Ventspils and Riga, have developed web-based courses for their inhabitants. However, creating individual courses locally

makes little sense in such a small country as Latvia. Although municipalities could encourage development of computer-based courses locally, it is important that central government provides standards. These standards should be recommendatory, so as not to prohibit development of new approaches. However, it is important that educators are aware of them. Probably the main area for such standards would be web-based courses, which can easily be shared around the country; it would also be useful for materials prepared for traditional education, but supported by eLearning, e.g. classroom presentations. The IKTIK programme states that new technologies will be introduced in a small proportion of schools first, and only the best practices in other schools afterwards. This is a good opportunity to prepare recommendations for content based on best practices.

IV.2.3. Policy measures at European level

The support of European Funds has been crucial thus far for developing eLearning in Latvia. According to the IKTIK programme, it will become even more important with implementation of the programme. However, in the case of Latvia, European funding means not only project possibilities at the moment – it also provides stability. As mentioned before, the government is not strongly committed long-term to providing funding for eLearning development, while priorities set on the European level seem to be much more credible. Even if central government decides to decrease the amount available for eLearning, different actors can still approach European Funds.

European Funds have also been extremely important in the R&D aspect of eLearning in Latvia, and social contributions. These are still the main areas where support for individual organisations should be concentrated. While infrastructure issues can be resolved in co-operation with government, it is important to support those who are willing and able to innovate, and those who are willing to address social issues such as employment of the disabled. These should be the two main priorities of European funding.

Although European Funds are generally considered to be merely a source of financing, it is important to acknowledge their contribution in other fields. One of the main benefits is more opportunities for networking and sharing ideas, especially internationally. This should be acknowledged and reinforced by more active sharing of best practices of eLearning projects funded by European Funds. Sharing of best practices would give extra inspiration, as well as unofficial standards, for developers on a national level.

IV.2.4. Promotion of eLearning

Many experts have pointed out that lack of awareness of eLearning as such is one of the biggest problems for eLearning development in Latvia. After all, the best content and technologies are of little value if no one knows about them. That is why this chapter describes the pro-active role that government should take. Notably, this chapter is not divided into different political levels, as all of these can use the suggestions presented. That said, the main focus here is on central government.

One of the first suggestions, and one that is to a certain extent pursued in all NMS, is provision of free access to Internet and computers. This is ensured by development of, e.g., PIAPs, Internet access in libraries and schools. Often it empowers those in greatest need to participate in learning – e.g., the unemployed, the disabled. However, access to PIAPs without appropriate content would benefit little in terms of education, so that some eLearning content should be available for free to those who visit these PIAPs. This would also allow people to become familiar with eLearning as a concept. Courses for computer beginners should definitely be available for free, so that fewer obstacles exist to try them out.

The previous point does assume that all people do know about some benefits of using computers, and, probably, even eLearning. However, as has turned out in some surveys, many people do not know what it is. This is why some promotion is necessary, and the easiest group to promote to is employees of government institutions. As in the example of web-based ICT skills training delivered to the Treasury by BDA, the government should promote eLearning and give its employees some incentives

to use eLearning. This is already a considerable group of people, who could then spread information about eLearning possibilities by word of mouth.

It is also easier to start any of this if a computer and, preferably, an Internet connection, are available at home. And LIKTA has lobbied a very interesting suggestion to allow more people to buy computers – they have suggested allowing tax rebates to those that buy a computer, i.e. 25% of the price, reimbursed the following year. The government should be careful here to address the right group of people, so that a limitation should be placed on reimbursement as well, e.g. the maximum amount one can receive tax back for, is LVL 500 (EUR 714) so that it would be possible to get reimbursed LVL 125 (EUR 179). It should also be possible to receive reimbursement early, which would be an important point for people on low incomes, who need their money right away.

However, all of the previously mentioned ideas require a "big" decision from someone in authority. The key to popularity of eLearning lies in much easier things, e.g. free mLearning. Nowadays almost everybody owns a mobile phone. Most of these can be used to access the Internet and most have Java support. Both these characteristics would allow provision of simple mLearning applications that could be used in public transportation or in some other time-consuming situations. If these applications were advertised slightly, and if they were for free, they could easily be used as a simple introduction to both mLearning and eLearning. Even if each such mobile application use ends with a note that that is mLearning, this would promote awareness of the term and might encourage more serious use. Apart from mobile phone applications, another possibility seems very interesting – many people also have either a mp3 player or a mobile phone that can play mp3, while in many countries - though not yet in Latvia - podcasting has become very popular. At the moment many educational podcasts are available in several foreign languages, several of them already financed by European funds. Knowing that most people in Latvia do master at least one foreign language, these podcasts could be promoted as a means of mLearning. Meanwhile, new and localised podcasts in Latvian and probably Russian should be developed as well. This is not a very expensive process, so that with some government support, NGOs providing education could very well use this option.

All in all, businesses and NGOs are considered to be more flexible regarding changes and new technologies, so that it would be a wise decision of the government to define their aims, ensure funding, and leave implementation up to either businesses or NGOs. This also complies with the IKTIK programme, as it does stress that most tasks to move the programme forward should be outsourced.

V. MAJOR R&D CHALLENGES FOR E-LEARNING

This final chapter of this study assesses the most important future technical and non-technical R&D challenges specific to eLearning, so as to address the challenges and local/global needs identified in Chapter III. It also discusses business model options, as well as some privacy, identity, and security issues.

V.1. R&D in technologies

V.1.1. Hardware

Generally, when speaking about technological development in the ICT sphere, we mean faster processors, bigger file storage possibilities, memories with higher capacities, better performance, and improved mobility. All these points are important in technological advancement to increase ICT usage quality. However, these technologies do not need much extra attention, because many companies are already generating large profits, so we can be sure that R&D in the sphere will not stop. This point might create problems locally in Latvia – at the moment Latvia is ready to invest unprecedented amounts of money in ICT infrastructure and skill development in schools. Problems may arise if this policy changes and investments decrease – technological development will remain rapid so that technologies introduced now will be outdated in five years.

However, solutions are also emerging that are tackling financial problems, and which should be paid more attention. One of the best known is the MIT Media Lab initiative – One Laptop per Child (see laptop.org for more information), also known as the sub-$100 laptop. MIT Media Labs stresses that this is an educational, not a technological, project. The first prototypes of this computer are already being produced, and distribution will begin soon. According to their website (One Laptop per Child, 2006) Latvia is not one of the priority countries, but it is one of the countries that have expressed interest in the project. This project might be one of the most important contributions to eLearning development, as it becomes cheaper to equip each student with such a laptop than to create computer classes. Such a possibility should also help to deal with many problems, such as computer-addiction, as young people would learn at a very early age that a computer is actually a tool instead of a gaming machine – especially with this laptop developed specifically for educational purposes. However, this issue needs more research (Negroponte, 2005).

Other projects also aim at reducing costs of rapidly developing technologies. One possibility is to use the so-called thin client networks, which allows use of one computer between several users with individual monitors, keyboards, and mouses. One such project is Ndiyo's Nivo, which aims at "splitting the digital difference" (The Economist, 2006). R&D in these spheres that allow decrease in costs even when technological development is becoming more and more rapid, should be considered a priority, if we want to implement eInclusion and eAccess. Another point to mention about these technologies is that they are being developed to be economical not only in themselves, but also in their use. For example, MIT's laptop can also be charged by a manual handle attached to the laptop, while Nivo's thin client uses 20 times less energy than a standard desktop computer – these issues, although not directly linked to eLearning, will allow a durable and sustainable contribution to our learning and living with ICT. These are the most interesting R&D challenges that could significantly help to increase access to eLearning.

V.1.2. Software

The situation with software development is very similar to that of hardware development – commercial software is still highly profitable, so that few extra incentives are necessary for R&D in this sphere. However, lately many initiatives have been bringing software much closer to the ordinary person, who cannot afford to pay the price for computer software. Open-source programmes seem to have a very bright future, as they are becoming much more user-friendly than they used to be, and

more people are trying to use them, as they are available for free. This is reinforced by recent research by the European Commission, discussed in section II.5.6. In this section we take a look at three aspects of software development – open-source programmes, web 2.0 applications, and LMS and their contents.

Although Windows is still the most popular operating system in the computer industry, Linux is slowly creeping its way to the average user's PC. Similarly, and even faster, OpenOffice.org and NeoOffice are substituting Microsoft Office, which is still considered an industry standard. The substitution is taking place even faster in web browsing with FireFox and other open-source browsers. Although many people still prefer proprietary software due to the guarantees, open-source programmes are becoming more and more user-friendly and popular. Although for high-volume introduction of software proprietary solutions might still prove to be more efficient, it is necessary to support the development of competitive products, even if for the sole reason of decreasing prices. And simply introducing students, pupils, and others to the possibilities of other software programmes could do this.

Open-source software development is a community-driven process, and so are the popular web 2.0 and community applications, which are usually open-source applications. But they do require special attention from the viewpoint of eLearning. These are applications that try and change the focus of education from teaching to learning. For example, Wikipedia is an open-source encyclopaedia being constantly updated and developed by its users. It has become a huge knowledge management system, hardly imaginable before the development of open-source and web 2.0. One of the main challenges for R&D in Latvia would be to localise these programmes to be usable in Latvia.

Even solutions for LMS can be found among the list of programmes developed in open source. However, whether to take and localise an open-source programme, or to buy or order a ready-made solution, the main R&D challenge for eLearning in Latvia would be to develop and introduce a good Learning and Content Management System, so that it is easy for educators to create content, and it is interesting for learners to make use of this content. As cultural differences exist as to how people prefer to learn, this could be one of the most beneficial studies in order to provide content with the highest added value for inhabitants of Latvia.

A slightly different issue is artificial intelligence, probably a very important future characteristic of eLearning. Many programmes and algorithms are already developed today, but wide introduction in eLearning first requires much more work. Unfortunately, it is hard to predict when a breakthrough in this sphere could be expected – after all, a few decades ago people predicted that by now the computer would be able to emulate the human brain. This also raises some ethical issues and as research continues these discussions will definitely follow as well.

All in all, the main R&D challenges in the software field are developing accessible, adaptable software that could be used for eLearning. This will decrease costs of acquiring necessary equipment for learners and allow developers to improve software according to their needs. Another long-term R&D challenge is development of applicable artificial intelligence algorithms that can be used in eLearning solutions.

V.1.3. Communications

As mentioned in previous chapters, communication costs are a major problem in implementing eLearning in Latvia. Therefore, development of new means of telecommunication will be beneficial for eServices in Latvia. As usual, this involves not only cost reduction, as eLearning is mainly about improvements in accessibility, quality, and efficiency. Therefore, R&D in wireless communications is bringing eLearning step by step closer to one of its aims. For example, in the bigger cities, which in Latvia means Riga, Wireless Internet is already available in many public places such as cafés and hotels. The situation differs dramatically in rural areas and towns. That is why R&D in telecommunications is vital, for example in finding and pursuing possibilities to use Wireless Internet

more widely, to use 3G cost-efficiently. Availability of these technologies, and accessibility to all, is a crucial part of future developments in eLearning. Unfortunately, at the moment these technologies are available to customers in Riga – for those that can afford to pay for them.

However, advances in Voice over Internet Protocol, such as Skype, are contributing significantly to the accessibility part. International learning community building is becoming much easier and cheaper. Such technologies substantially decrease costs for individuals to communicate with and learn from other people abroad. For example, nowadays anyone can go to a library, and if it has at least one computer with a webcam and an adequate Internet connection, anyone can have a videoconference with almost anyone else in the world. Although this is already available, more research is needed on how effectively to use this technology in eLearning.

V.1.4. Assistive technologies

For some time, ICT-based learning has been considered an opportunity to provide a decent education to people with hearing, sight, or speech impairments or otherwise physically-challenged people. Most eLearning courses are already fairly friendly to people with hearing or speech problems, as most communication occurs in written form. Solutions for people with eyesight problems still need more research and development on improving text-to-speech and more importantly how best to describe audibly what other people see on the screen. Recent development of new speech synthesis software for the Latvian language is encouraging. Similarly, much more research is needed in speech-recognition to allow better access to all eLearning applications to those physically challenged.

V.2. R&D in eLearning: financing and business models

In Latvia, the most probable case for companies dealing with eLearning will be the approach used by businesses working with open-source software – most revenue will be generated by services. The main reason for this is that the market is too small to hope for large-scale sales of a standardised product. For example, in the case of eClass, all revenue at the moment is generated by SMS notifications to parents about grades and other news about their children in school, with DEAC providing an administration package to schools free-of-charge.

Another illustration – Insolentia Ltd. – might contradict the hypothesis expressed. They have developed a product, E-Teacher Pro, which is a Content Management System, as well as a client programme – LMS. Interviews with a representative of the company revealed that they might start providing a free-of-charge service to individuals, where everybody will be able to place their content, while others will be able to use the content. This is a strategy taken from open-source software businesses – to get many people to try the product, and then provide a product together with services individually to some customers that need more than is provided for free.

Another possible scenario for businesses is that companies currently providing on-site training are going to realise that they can cut costs by using eLearning. An illustration of this is the Baltic Computer Academy, which has provided ICT literacy training for some time now. Recently, they started providing this over the Internet. The benefits are clear: they can accommodate bigger groups, costs for room rental disappear, and their clients can work when they want. Therefore they can provide a cheaper service and compete with traditional training companies.

There are two main challenges here. One of them is Public-Private Partnership – how to create a synergy between the government vision of the direction of eLearning development and the actual execution of eLearning projects by companies. How much should be invested by the government and how to find mutually beneficial co-operation opportunities? Another problem is connected to R&D. Many companies are neglecting R&D because they cannot afford to invest money now for higher future profits due to cash flow problems and risks. In order for Latvia to really become an innovative knowledge economy, it is important to find the best way to support companies willing to do R&D.

V.3. R&D in privacy, identity, and security in eLearning

Privacy and security issues in eLearning are basically the same as in any other Internet-based business. The same caution should be applied as well. A problem that might arise is that eLearning companies in Latvia are rather small and cannot invest much in security solutions. On the other hand, their databases are small and therefore not that interesting for hackers. Additionally, the information in the databases is rather limited – usually down to name, address, and e-mail address. In the case of these small companies it would be important that banks handle all payments and credit card numbers so that this information is not in danger.

Developments about identity, or more precisely, verification of identity, in the future might be much more interesting. At the moment almost all eLearning courses that issue credible certificates require that at least the final exam is taken on-site, instead of the Internet. This could be changed by developments in identification systems, such as the electronic signature that started working in Latvia in September 2006, as well as wider availability of web-cameras, which should allow monitoring of the testee. At the moment this still poses considerable uncertainty, but systems to solve these issues can and should be developed.

One of the most important challenges at a time when more and more databases are being created, e.g. eClass pupil databases, is to develop safe, secure solutions to protect people's personal information from outside, i.e. denying access to anyone who is not authorised, and inside, i.e. allow individuals to see only information they are authorised to see.

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European Commission

EUR 23367 EN/2 – Joint Research Centre – Institute for Prospective Technological Studies

Title: The Development of eServices in an Enlarged EU: eLearning in Latvia

Author: Martins Kalis

Luxembourg: Office for Official Publications of the European Communities
2008
EUR – Scientific and Technical Research series – ISSN 1018-5593

Abstract

In 2005, IPTS launched a project which aimed to assess the developments in eGoverment, 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, Latvia.

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 eGoverment, 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.