



# SIBIS

Latvia

*Country Report No.5*

No.5

## Preface

This report represents an important deliverable of the project 'Statistical Indicators Benchmarking the Information Society' (SIBIS), running from January 2001 to September 2003 and funded by the European Commission under the 'Information Society Technology' Programme. The overall goal of SIBIS is to develop and pilot indicators for monitoring progress towards the Information Society, taking account of the 'e-Europe action lines'. On this basis SIBIS focuses on nine topics of interest, i.e. Telecommunications and Access, Internet for R&D, Security and Trust, Education, Work-Employment and Skills, Social Inclusion, e-Commerce, e-Government and e-Health. This report is part of an extension of the SIBIS project 'SIBIS+: Statistical Indicators for Benchmarking the Information Society in the NAS: The eEurope+ Indicators'. The objective of SIBIS+ is to geographically expand the SIBIS activities from the EU Member States to the Newly Associated States.

Within this part of the SIBIS+ project a General Population Survey (GPS) was conducted in January 2003 on five of the nine topics: Telecommunications and Access, Social Inclusion, Education, Work-Employment and Skills and e-Government. Although limited in their scope, some questions have been asked for two other topics, Security and Trust and e-Commerce, as well. This report analyses the outcomes with respect to Latvia comparing it to the other NAS but also EU-15 countries, Switzerland and the US for which the same survey was already carried out in 2002. The document has two main objectives, namely to be a support tool for views shared by experts in the area and, at the same time, to define indicators for quantifying some of the most critical indicators related to the five topics.

The report is organised in ten chapters. The first three chapters are designed to give the reader an idea of the main outcomes (Executive Summary) and the context (introduction to the country and the topics). The core of the report is the analysis of indicators, provided in Chapters 4-9. Those chapters focus on an analysis of ICT infrastructure and security issues, e-society and social inclusion, the e-economy, e-education, e-work and e-government. Important findings are presented in the body of the document and additional data is shown in the annex.

The intended audience are policy makers and statistical offices at all levels (national, and supranational), industry leaders and researchers in the domains and those involved and interested in benchmarking the domains throughout Europe and the world. Those institutions should consider the questions and the subsequent indicators developed by SIBIS as an input for their yearly surveys. The project includes a series of workshops with such institutions in the countries represented by the SIBIS consortium. The report should also be of interest to the European Commission (in particular DG INFSO) and to government officials dealing with information society programs.

Within SIBIS+, another report (WP2) for each of the five topics has been developed during 2002/2003. This report was aimed at setting the scene on the topics, identifying existing indicators for the several topics that already exist in Latvia and defining the gaps in the statistical coverage.

SIBIS is led by Empirica (Germany), and includes the following project partners: RAND Europe (The Netherlands), Technopolis Ltd. (United Kingdom), Databank Consulting (Italy), Danish Technological Institute (Denmark), Work Research Centre Ltd. (Ireland), Fachhochschule Solothurn Nordwestschweiz (Switzerland), University of Ljubljana (Slovenia), ASM Market Research and Analysis Centre (Poland), Budapest University of Economic Sciences and Public Administration (Hungary), Faculty of Management of the Comenius University Bratislava (Slovakia), "Dunarea de Jos" University (Romania), Institute of Economics at the Bulgarian Academy of Sciences (Bulgaria), Estonian Institute of Economics at Tallinn Technical University (Estonia), Social Policy Unit (Sozialinnen Politicus Group) (Lithuania), Computer Science Institute (Latvia), SC&C Ltd. Statistical Consultations and Computing (Czech Republic).

Computer Science Institute (CScl) is an independent software engineering and consulting company. Employing a team of 50 people it specialises in information system analysis of both public and private establishments, consulting, system design, development and maintenance. CScl has experience in the development of some state significance registers (Latvia's population register, Latvia's motor vehicle register) and information systems of different kind.

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## 1. Executive Summary

### 1.1. General Information about the country

The Republic of Latvia is situated in the north-east part of Europe on the shore of the Baltic Sea and borders with the two other Baltic States – Estonia and Lithuania, as well as Russia and Belarus. The territory covers 64,689 km<sup>2</sup>. Latvia's capital city is Riga, where about one third of the country's inhabitants reside. The total number of inhabitants is 2.356 million. 70% are urban and 30% are rural residents. The ethnic composition includes Latvians (56.5%), Russians (30.4%), Belarusians, Ukrainians, Poles (9.7%) and other groups (3.4%). Economically active inhabitants: 1 193 000. GDP per capita in PPS in 2002 was 32.18 and GDP growth (2001-2002) 4.97%. Unemployment rate in 2001 was 12.8% and in 2002 12.9%. Labour Productivity (GDP in PPS per person employed relative to EU-15) in 2002 was 32.58. Latvia ratings are as follows: rank according to 'Information and Communication Index' in 2001 - 50 of 75 countries; rank according to 'Global IT IQ ranking' in 2002 - 14 of 100 countries; rank according to 'Networked Readiness Index 2001-2002' - 39 of 75 countries; rank according to 'Growth Competitiveness Ranking' in 2001 - 47 and in 2002 - 44; rank according to 'Microeconomic Competitiveness Ranking' in 2001 - 41 and in 2002 - 45; rank according to 'E-Government index' in 2001 - 41 of 133 countries.

The study of five topics relevant for the development of Information Society, undertaken in WP2, shows that many activities in this direction take place in Latvia. These activities, however, are not sufficiently reflected in the national statistics. Topics more or less covered by statistical indicators in official national statistics are Telecommunications & Access and e-Learning. Up to now the Central Statistical Bureau of Republic of Latvia has collected the data on computer/Internet usage in enterprises, but the ICT usage in households was not in the scope of interests. Data on e-Learning by part is available due to the development of state significance project directed to the provision of schools and higher education institutions with ICTs. Data on other topics – 'Social inclusion (digital)', 'Work-employment and skills' and 'e-Government' up to now in the official statistics were not collected. By part these data is available from other sources. Thus the statistics on Information Society issues in Latvia cannot be regarded as satisfactory. The corresponding gap in Information Society statistics in Latvia is filled by SIBIS due to its extension to NAS countries. Indicators proposed and piloted by SIBIS cover to some extent the topics of interest and, therefore, add a value to better understanding the present state-of-the-art of the Information Society in Latvia.

### 1.2. ICT Infrastructure and Security

The level of development of ICT infrastructure is of crucial importance for other areas of Information Society. Altogether the situation regarding ICT infrastructure in Latvia cannot be considered as satisfactory when compared with other NAS-10 and EU-15 countries. The reflection of ICT infrastructure in national statistics is also unsatisfactory. In the official national statistics the computer/Internet usage in enterprises is more or less reflected, yet data on household's connectivity to the Internet and security issues are absent. The gap in T&A statistics is filled by SIBIS. According to the GPS survey, household's access to the Internet is very low among NAS-10 countries. In Latvia, this is probably due to the high Internet access price determined by Lattelekom monopoly on fixed telecom network up to the end of 2002. The share of subscriber's lines switched on to the analogue network is also still high (31.3%), creating a barrier for broadband connection; broadband is available mainly in the largest cities. Due to the lack of fixed network lines in many places, there is little hope that in the nearest years the services of fixed telephony will be available for many inhabitants of rural regions. For such people, the alternative is a connection by radio-link, mobile phone or Public Internet Access Point (PIAP). The liberalisation of fixed telecom market, which

started in 2003, should lead to price reduction; it should be expected that this process might take some time. The low household's access to the Internet also determines a low Internet usage at home. Citizens prefer to use the Internet in other places, such as workstations. The overall Internet usage in Latvia is slightly higher than the average usage in NAS-10, but considerably below the EU-15 average. Just like in the majority of other countries, in Latvia the medium Internet usage intensity (between 1 and 5 hrs/week) dominates. The Internet usage drop-outs (2%) are nearly the same as NAS-10 average but lower than EU-15 average (2.8%). User's experience regarding online usage is better than NAS-10 average but below the EU-15 average. The mobile phone ownership increases from year to year; at the beginning of 2003 a little more than 50% of inhabitants were mobile owners. That is below the NAS-10 average level (55%) as well as the average level of EU-15 (71%). The investigation of the Internet usage through mobiles is a future task.

Concerns of regular Internet user's regarding online security are close to EU-15 average. Like in other countries, concerns regarding privacy and confidentiality are slightly higher than they are regarding data security. The high level of online security concerns (concerns have more than 70% of regular users) is likely to be caused by an Internet user's negative experience. Actions leading to an increased level of awareness of issues regarding data protection and privacy could reduce these concerns.

### 1.3. e-Society and Social Inclusion

Official national statistics do not cover the topic of digital inclusion. SIBIS results show that the meaning of Internet in a user's life in Latvia, according to their assessment, is nearly as high as it is in UK. Without the Internet, 28% of users will feel socially excluded. That is more than EU-15 average (20%) but a little bit below the NAS-10 average (31%). At the same time, 48% of occasional and non-internet users agree to the statement that 'Internet is not something for me'. That is a slightly more than NAS-10 average (46%) but lower than EU-15 average (57%). The point-of-view that Internet usage requires advanced computer skills has almost 85% of occasional and non-internet users, what is more than NAS-10 average (69%) as well as EU-15 average (58%). The Internet usage by respondents with disabilities (12%) is nearly two times higher than NAS-10 average (6.53%) but more than two times lower than EU-15 average (28.5%). Seemingly, policy makers in Latvia are not familiar with the Web Accessibility Initiative and no activities in this field take place in Latvia. The assessment of digital divide of different risk groups on the basis of digital divide index, proposed by SIBIS, shows that in Latvia, the digital exclusion is lower than NAS-10 average but higher than EU-15 average. The most threatened risk group regarding digital exclusion is that of people with poor education (education termination age 15 and lower). In Latvia the education's gap<sup>1</sup> of this risk group is very high - nearly the same as NAS-10 average but considerably higher than that of EU-15 average.

### 1.4. e-Education and Life-long-learning

The activities in this area of Information Society are promising due to the development of a state significance project 'Latvian education informatisation system' (Latvian abbreviation LIIS) since 1997. Within LIIS schools<sup>2</sup> and higher education institutions in Latvia are provided with computers and the Internet connection. The corresponding statistical data is annually published by LIIS development group ([www.liis.lv](http://www.liis.lv)). In 2002 (March) permanent connection with a speed more than 128kbit/s was in 36% of schools and dial-up connection – in 97% of

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<sup>1</sup> The education's gap is a parameter, developed within SIBIS and showing the difference between the average ICT usage in society as a whole and its usage in the respective risk group.

<sup>2</sup> State financed schools

schools. But only 75% of schools reported the real use of Internet (caused by high price of Internet usage - mainly phone costs). The training of teachers takes place in 40 regional LIIS support centres. Up to the end of 2002, 66% of teachers have got the digital literacy skills. LIIS contributes also in e-Learning and distance learning due to the development of digital teaching aids accessible through the Internet. Other possibilities of eLearning and distance learning are organised by both - the Ministry of Education and Science and local governments. The activities described contribute to the development of digital literacy of population investigated by SIBIS. The results obtained are as follows: 31% of population feels confident or partly confident at communicating via the Internet<sup>3</sup>. Such statistics are higher than NAS-10 average (21%), but below the EU-15 average (47%). 13% of Latvian labour force has been involved in work-related training provided either by their company or by other organisations. That is better than NAS-10 average (10%) but below the level of NAS leaders Slovenia and Slovakia (18%) and considerably behind the level of leading countries Sweden and Netherlands (30%) and the US (37%). Equally to Estonia, 29% of Latvian labour force takes part in self-directed learning, that is only a little bit below the level of NAS-10 leader Slovakia (31%) and EU-15 average (32%) but considerably below the level of leading country Germany (52%). One must conclude that among NAS countries, the Latvian labour force is well motivated on self-directed learning. 9% of Latvian labour force uses e-Learning, though the share of online learning is only 5%. That is better than NAS-10 average (5% of both the offline and online e-Learning), but behind the EU-15 average 15% and considerably behind the level of EU leader Finland 19%.

### 1.5. e-Economy and e-Commerce

The development of e-Commerce in Latvia is based on the concept of e-Commerce developed by Ministry of Economics; e-Commerce is in its initial stage. Up to now, no data on e-Commerce were available in the official national statistics. SIBIS results show that only 10% of Latvian population has ordered a product or service online in the last 12 month. That is better than NAS-10 average (5%), but considerably below the EU-15 average (25%) as well as a level of the leading country Denmark (52%). The share of regular e-Commerce users<sup>4</sup> (2.49%) is a little bit higher than the share of occasional users (1.63%). That is a little bit better than NAS-10 average (2.05% and 1.59% respectively), but considerably below the EU-15 average (11.36% and 8.38% respectively) as well as the level of the US (28% and 8.4% respectively). Similar to other countries, the most active age group using e-Commerce is between 25 and 49. Each e-Commerce user's age group (in percent of citizens in the respective age group) in Latvia is smaller than the corresponding group in the neighbouring country Estonia and considerably smaller than the respective age group in EU-15. The survey results also show that at least two years experience is required to become more adept in e-Commerce. The share of Internet users who were stopped from buying online due to security concerns in Latvia, like in other NAS countries, is considerably lower than that of EU-15.

### 1.6. e-Work

The issues concerning this topic are not reflected in the official national statistics. The SIBIS results regarding e-Work are as follows: 3% percent of the Latvian working population is teleworking from home<sup>5</sup> presently, at least part of their working time. This statistic nearly coincides with NAS-10 average, but is less than EU-15 average (7%). The degree of interest

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<sup>3</sup> Confidence regarding e-mail usage, Internet chats and creation of personal web page.

<sup>4</sup> SIBIS classifies e-Commerce users into regular users (transaction is carried out in the last 4 weeks) and occasional users (transaction is carried out in the last 12 month).

<sup>5</sup> Except self-employed freelancers in SOHOs.

in telework is considerable. 60% of the workforce has interest in at least one type of telework and 38% (10% very interested and 28% somewhat interested) in permanent telework; however, that is less than NAS-10 average 63% and 44% respectively. EU-15 average figures are as follows: interest in at least one type of telework has 66% and in permanent telework 40% of workforce. Under the assumption that they would have to spend at least one full working day per week teleworking from home, 13% of Latvian workers regard their job as feasible for telework. This is a little bit below the NAS-10 average of 14% and considerably below the EU-15 average of 31%. One must conclude that the principal interest expressed in telework is to a considerable extent not being translated into the actual telework practice yet, although jobs are regarded as being feasible for telework. In Latvia 2.38% of the workforce can be considered as 'mobile teleworkers' and that is a little bit above the NAS-9 (data for Lithuania are not available) average 1.24%, but below the level of NAS leader Estonia 3.91% and EU-15 average 4.03%. The largest number of mobile teleworkers in Europe is in Switzerland 7.61%. In Latvia the tele-cooperation (business contacts via e-mail, video-conferencing or electronic data transfer) is used by 20% of employees, that is more than NAS-10 average but considerably below the level of leading country, Denmark 56%. Latvia with 1.5% of self-employed teleworkers in SOHOs is a little bit behind the NAS-10 average and considerably behind the leading country Austria with 5.7% of self-employed teleworkers.

### **1.7. e-Government**

The development of e-Government in Latvia is based on the concept of e-Government accepted by the Cabinet of Ministers on August 20, 2002. Many activities related to e-Government take place in Latvia but they are not properly reflected in the official national statistics. SIBIS results show that from seven governmental services to citizens only for two – book search in libraries (51%) and job search (48%), the majority of Internet users in Latvia, prefer to interact with government online. For the other five - announcement of change of address, tax declaration, car registration, declaration to the police and request of personal documents the majority of Internet users prefer to use the traditional way of interaction. Like online preferences 55% of users consider that library book search is available on the Internet and 40% consider that job search also is available on the Internet in their place of residence. At least once the book-search in libraries has been tried by 61% and job search by 47% of Internet users. The less popular online services everywhere in Europe are the declaration to the police, the car registration and the request of personal documents, though there are differences among countries.

### **1.8. Conclusions**

The conclusions drawn from SIBIS GPS results and national statistics along six topics relevant for Information Society are as follows:

The area of Telecommunications & Access is the weakest link in the IS development in Latvia. Household's access to the Internet is very low even among NAS-10 countries. This makes a barrier for wide usage of Internet in other areas of Information Society. Still large is the share of fixed telephone lines switched on to the analogue network. This makes a barrier for wide penetration of broadband. The investigation of Internet usage through other devices apart from PC is a future task. Internet user's concerns regarding online security are high nearly the same as EU-15 average.

The area of e-Society and Social Inclusion is not reflected in the national statistics at all. The digital exclusion is lower than NAS-10 average but higher than EU-15 average. The most threatened risk group regarding digital exclusion is that of people with poor education (education termination age 15 and lower).

The area of e-Education and Life-long-learning is promising due to the development of state significance project aimed on provision of schools with PCs and the Internet connection. Up

to the end of 2002, 66% of teachers were trained and has received the ICT skills. Life-long-learning and distance learning possibilities as well as digital literacy skills of population are better than NAS-10 average but below the EU-15 average.

The e-Commerce in Latvia is developed on the basis of the national conception of e-Commerce and is in its initial stage. The most active age group using e-Commerce is that aged between 25 and 49. The e-Commerce usage is slightly better than NAS-10 average, but considerably below the EU-15 average. The share of Internet users who were stopped from buying online due to security concerns is considerably below the EU-15 average.

The area of e-Work is not reflected in the national statistics at all. 3% percent of the Latvian working population is teleworking from home and that coincides with NAS-10 average, but is less than EU-15 average. The degree of interest in telework is higher than the actual telework practice. The tele-cooperation of employees is a little bit better than NAS-10 average. The share of self-employed teleworkers in SOHOs is a little bit lower than NAS-10 average but considerably behind the leading country Austria.

The e-Government in Latvia is developed on the basis of the national conception of e-Government. Many activities in this area take place, but are not properly reflected in the national statistics. Only for two services – book search in libraries and job search the majority of Internet users prefer to interact with government online. One must conclude that it is necessary to increase the awareness of e-Government possibilities by population.

## 2. Introduction

### 2.1. Background

Statistical Indicators Benchmarking the Information Society (SIBIS) is a project funded under the 'Information Society Programme' of the European Commission (IST-2000-26276). SIBIS, which runs from January 2001 to September 2003, has taken up the challenge of developing innovative information society indicators to take account of the rapidly changing nature of modern societies and to enable the benchmarking of progress in European Union (EU) Member States. The indicators have been tested and piloted in a representative survey held in 2002 in all EU Member States, Switzerland and the United States. As a result, nine Topic Reports assessing the current state of the European information society and benchmarking individual countries have been published in 2003. The topics covered by SIBIS include: *telecommunications and access, Internet for research and development, security and trust, education, work- employment and skills, social inclusion, e-Commerce, e-Government and e-Health.*

In 2003 the SIBIS project has been extended with the SIBIS+ initiative. The objective of SIBIS+ is to geographically expand the SIBIS activities from the EU Member States to the following Newly Associated States (NAS): Slovenia, Poland, Slovakia, Hungary, Czech Republic, Bulgaria, Romania, Estonia, Lithuania and Latvia. This parallels the extension of eEurope to eEurope+, an Action Plan by and for the candidate countries.

This report analyses the results of the surveys conducted in the ten NAS countries in 2003. In order to produce comparable results, the survey questions have been extracted from the surveys conducted in the EU member states in 2002.

### 2.2. Country and Topic Areas

Taking into account the enlargement of the European Union, the accessing countries must accept the EU priorities. First of all this corresponds to the development of an Information Society as a part of the Lisbon strategy to make the European Union the most competitive and dynamic knowledge-based economy with improved employment and social cohesion by 2010. The necessity for developing the Information Society was recognised by the Latvian government at the end of nineties; this process is predominantly governed by the set of important documents [9, 8-11]. Nevertheless, it should be noted that the development of the Information Society in Latvia is not a continuous process because of frequent changes of governments. Furthermore, the study of five topics relevant for the development of Information Society undertaken in WP2 showed that many activities in this area take place in Latvia but these activities are not sufficiently reflected in the national statistics. The coverage of the topics of interest by corresponding IS indicators also is poor.

SIBIS - Statistical Indicators Benchmarking the Information Society is an Information Society Technology (IST) Programme project aimed at producing of new methods and data that will contribute to the European effort to measure and benchmark the Information Society. Many organisations, including the governmental have interest in this in order to monitor the effectiveness of policies with regard to the development of Information Society. It should be emphasised that data is needed on not only technological infrastructure development, but also on how the IS affects individuals, groups, firms, industries and economies. SIBIS's focus is on indicator development and testing, producing the new indicators, which better suite the needs of Information Society statistics. This can help in better understanding of what aspects of the Information Society should be benchmarked and how best to do this. In order to produce new and more innovative approaches to benchmarking, SIBIS commenced with a comprehensive assessment of the state-of-the-art in Information Society benchmarking, undertaking extensive reviews of National Statistic Offices across EU member states. Afterwards these activities were extended also to NAS countries.

In framework of SIBIS, a review of policy documents on the development of IS in each country was carried out. This to have an idea on IS development activities in the respective country. The review of policy documents was followed by an inventory of indicators used by National Statistic Offices for benchmarking purposes of IS issues. The review of national data sources on IS statistics was carried out as well to have an idea on the existing IS statistics in the country before the SIBIS. SIBIS activities in NAS countries include the General Population Survey (GPS) on six topics important for the Information Society. These are:

1. ICT infrastructure and security,
2. e-Society and Social Inclusion,
3. e-Education and Life-long-learning,
4. e-Economy and e-Commerce,
5. e-Work,
6. e-Government.

SIBIS GPS in NAS-10 was carried out on the basis of an original survey questionnaire piloted earlier in EU member states. The GPS in EU member states included nine topics. Apart from topics mentioned above the 'Internet for research and development' and 'e-Health' also were considered (Security and trust was considered as an independent topic). Besides Switzerland and the US also were included in the survey as advanced IS countries, which are in a competition with EU. It should be noted that in EU member states apart from GPS one more survey - the Decision-Maker Survey (DMS) also was carried out. The focus in this survey was on IS issues in enterprises. DMS was undertaken in seven EU member states as well as Switzerland and the US.

It should be noted that SIBIS GPS results in NAS-10 cover only six topics of interest for IS and the focus there is on individuals and households. Therefore, several topics important for IS, such as eHealth, and many other issues of Information Society, such as G2G, G2B, IS activities in enterprises, etc., have not been statistically investigated by SIBIS+. Due to the insufficient coverage of these and other issues by national statistics, or the lack of the corresponding statistics, the gaps in the benchmarking of IS in Latvia still exist. The elimination of these gaps is the future task. Despite the existing gaps, SIBIS shed light on several very important IS topics, which were not sufficiently covered by the national statistics; consequently adding value to the IS statistics in Latvia. On the one hand, the knowledge of SIBIS results should be interesting for policy makers in the area of Information Society development in Latvia especially due to the presentation of country comparison. On the other hand, these results could be useful to the EC for planning of policy on the IS development in Latvia.

### **2.3. Overview of the Report**

The report consists of a Preface, Executive Summary, Introduction, seven Chapters, Conclusions, References and two Annexes. In the Preface, objectives of SIBIS project are given and its extension to NAS countries described. In the Executive Summary, the country report is considered in a concentrated manner. It represents a self-contained and complete mini-report. The Introduction contains the background for SIBIS investigations, the description of Country and Topic areas and the overview of the report. The main body of the report is composed from seven chapters and conclusions. In chapter 3 the General Information about the Country is evaluated. The following six chapters contain the topic analysis. In chapter 4 the ICT infrastructure and security, in chapter 5 the e-Society and Social Inclusion, in chapter 6 the e-Education and Life-long-learning, in chapter 7 the e-Economy and e-Commerce, in chapter 8 the e-Work and in chapter 9 the e-Government are considered. In Conclusions the main conclusions drawn from the analysis of topic reports are given. Finally, in the Annex A, some additional material is presented and in the Annex B, the survey methodology is described.

### 3. General Information about Latvia

The Republic of Latvia<sup>6</sup> is an independent democratic republic, which was proclaimed on 18 November 1918. The soviet army occupied Latvia on 17 June 1940. On 5 August 1940 Latvia was incorporated in the Union of Soviet Socialist Republics (USSR). Latvia regained its independence on 21 August 1991 as the result of the so-called 'singing revolution'.



Latvia is situated in the north-east part of Europe on the shore of the Baltic Sea and borders with the two other Baltic States – Estonia and Lithuania, as well as Russia and Belarus. The territory covers 64,689 km<sup>2</sup>, the length of its border on land is 1 862 km and its sea boarder is 494 km long.

Latvia's capital city is Riga, where about one third of the country's inhabitants reside. The total number of inhabitants is 2.356 million. 70% are urban and 30% are rural residents. State language is Latvian.

National currency: Lat (Ls/LVL) = 100 santimes; 1 USD = ca 0,606 LVL

Ethnic composition:

Titular nations: Latvians (56.5%) and Livonians (0.008% - 199 persons);

Other ethnic groups: Russians (30.4%), Belarusians, Ukrainians, Poles (9.7%) and other groups (3.4%)

Economically active inhabitants: 1 193 000.

The main indicators characterising the country are given in Table 1, Table 2 and table 3.

Table 1 General indicators on Latvia

	2000	2001	2002
Inflation rate in %		2.5	2
GDP per capita in PPS			32.18 <sup>7</sup>
GDP growth in %			4.97
Unemployment rate in %		12.8 <sup>8</sup>	12.9
Labour Productivity (GDP in PPS per person employed relative to EU-15)			32.58
Population in 1000s.	2417		

Explanations: <http://europa.eu.int/comm/eurostat/newcronos/info/notmeth/en/theme1/strind/ecobac.htm>

Source : EUROSTAT

<sup>6</sup> [www.mk.gov.lv](http://www.mk.gov.lv)

<sup>7</sup> With respect to EU-15 assumed as 100

<sup>8</sup> According [23] the unemployment rate in 2001 was 7.6%

Table 2 Latvia's ratings

Index	Rank		Source
	2001	2002	
<b>Information Society Index</b>	No data	No data	IDC
<b>Information and Communication Index</b>	50 of 75 countries	---	WEF
<b>Technological Achievement Index</b>	No data	No data	UNDP
<b>Global IT IQ ranking</b>	---	14 of 100 countries	Brainbench
<b>E-readiness ranking</b>	No data	No data	Economist Intelligence Unit in co-operation with IBM
<b>Network Readiness Index</b>	39 of 75 countries (score:3.78 out of 10)	---	Center for International Development, Harvard University
<b>Growth Competitiveness Ranking</b>	47	44	WEF
<b>Microeconomic Competitiveness Ranking</b>	41	45	WEF
<b>E-Government index</b>	41 of 133 countries (score: 1.88; max USA-3.11))	---	Benchmarking E-Government: A Global Perspective. Assessing the Progress of the UN Member States
<b>Web presence measure</b>	(score: 3; max USA – 4)	---	Benchmarking E-Government: A Global Perspective. Assessing the Progress of the UN Member States

Table 3 Networked Readiness Index 2001-2002

Item	Score	Ranking
<b>Networked Readiness Index</b>	<b>3.78</b>	<b>39</b>
<i>Network Use component index</i>	3.26	38
<i>Enabling Factors component index</i>	4.31	37
Network Access	4.53	40
<i>Information infrastructure</i>	4.96	43
<i>Hardware, Software, and Support</i>	4.09	42
Network Policy	4.43	41
<i>Business and Economic Environment</i>	4.22	38
<i>ICT Policy</i>	4.63	50
Networked Society	4.57	37
<i>Networked Learning</i>	4.23	34
<i>ICT Opportunities</i>	3.70	51
<i>Social Capital</i>	5.77	26
Networked Economy	3.70	39
<i>e-Commerce</i>	3.34	43
<i>e-Government</i>	3.73	37
<i>General Infrastructure</i>	4.04	40

Source: Center of International Development at Harvard University, Authors: G. S. Kirkman, C. A. Osorio, J. D. Sachs

## 4. ICT Infrastructure and Security

### 4.1. Telecommunications and Access

The area of Telecommunications and Access is extremely important from the point of view of development of Information Society. It forms the backbone for other areas of interest such as public services, e-Business and e-Commerce, e-Learning, etc. Different aspects of T&A in detail are considered, for example in [13]. The monitoring of progress in the area of T&A is an important element in the Information Society statistics as well as the SIBIS project. The inventory of national data sources regarding T&A undertaken in WP2 showed an insufficient coverage of the topic by T&A indicators and availability of the corresponding data. The indicators used only partly reflect the needs of IS statistics. Some of T&A issues are covered by the corresponding indicators, some are not at all. Up to now the Central Statistical Bureau of the Republic of Latvia ([www.csb.lv](http://www.csb.lv)) has collected data on Internet connectivity and usage mostly in enterprises whereas the information on household's connectivity was out of the scope of interests (cf. however with [5]). In this respect the GPS carried out in NAS within the SIBIS project should be only appreciated because its results will fill the respective gap in the T&A statistics in Latvia.

Despite the existing barriers to the Internet penetration in Latvia (insufficiently developed telecom infrastructure, high Internet access costs, etc.) its popularity increases each year. An example for this statement serves the time series of Internet hosts per hundred inhabitants as shown in Figure 1.

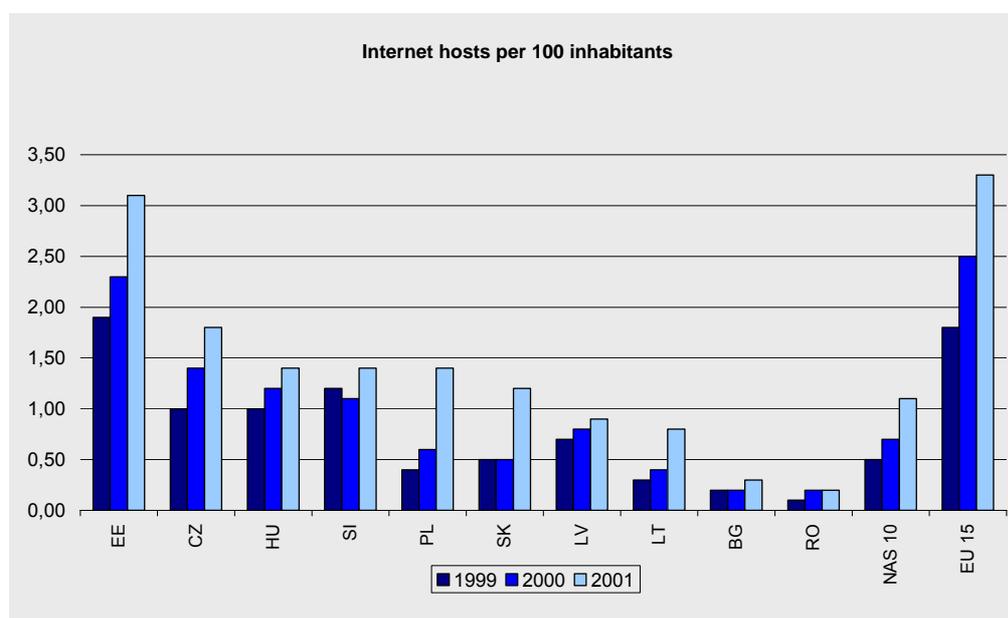


Figure 1 - Internet hosts per 100 inhabitants  
Source: RIPE NCC, population data is for 2001, source ITU

It is seen that in 2001 this indicator in Latvia 0.9 is a little bit lower than the average figures for NAS-10 1.1 but approximately 3 times lower than in NAS-10 leader Estonia 3.1 and EU-15 average 3.3.

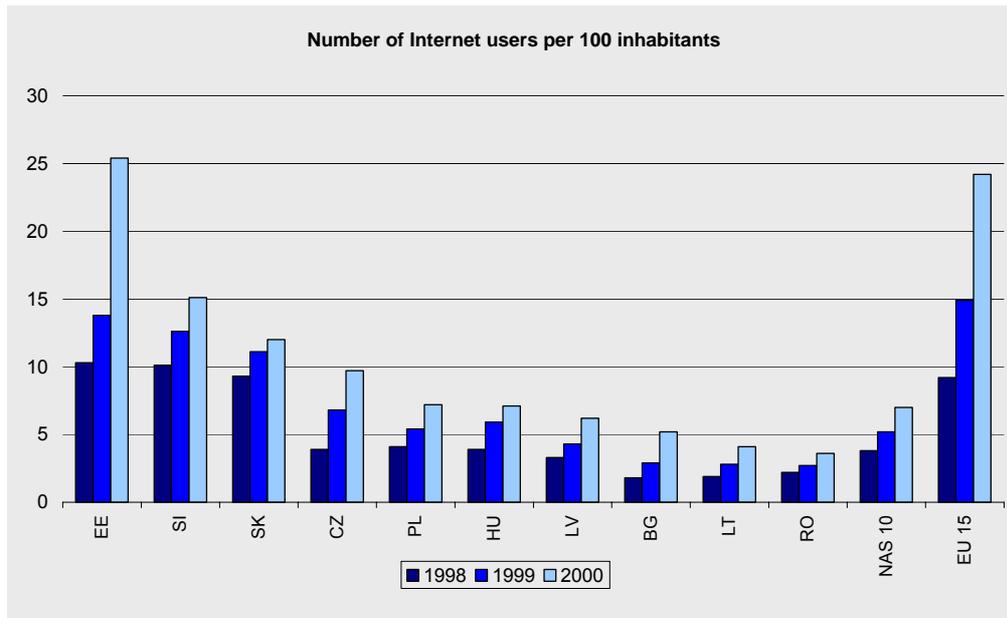


Figure 2 - Number of Internet users per 100 inhabitants  
Source: ITU; ISPO 2000 results for Bulgaria and Slovenia

Time series of Internet usage in NAS-10 are given in Figure 2 and the latest data from SIBIS GPS in Figure 3.

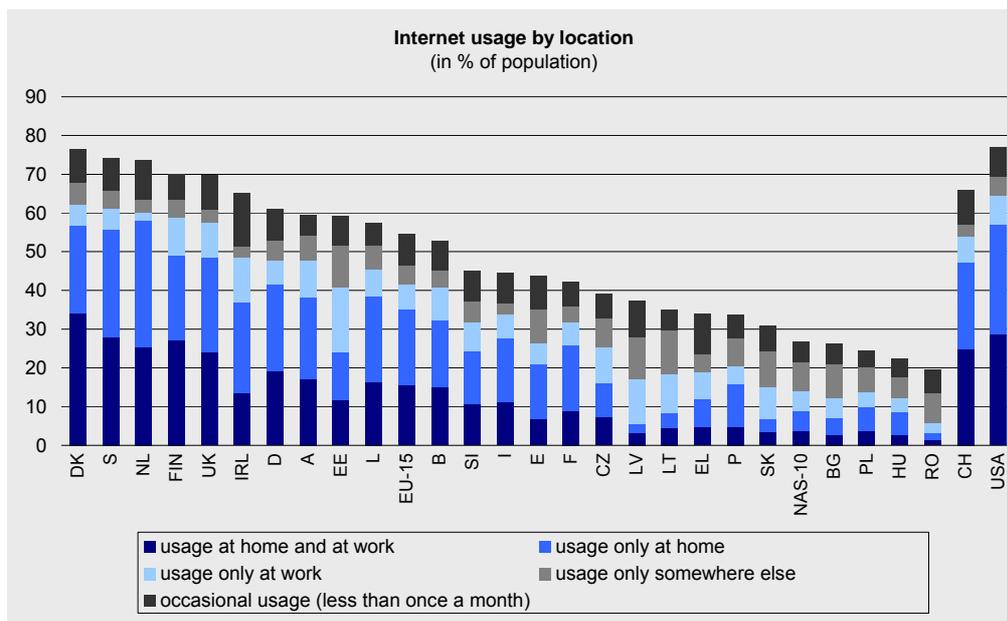


Figure 3 - Internet usage by location (NAS-10, EU-15, CH, USA)  
Base: All respondents, weighted column percentages  
Question: A9  
Source: SIBIS 2002, GPS, SIBIS 2003, GPS-NAS

A comparison of charts in Figure 2 and Figure 3 respectively shows a rapid increase of Internet usage from the end of 2000 to the beginning of 2003.

SIBIS results also show the place from which people access the Internet. In Latvia the share of respondents, using the Internet at work and at home and only at home, is very low 5.4%. It is less than the NAS-10 average 8.9% and strongly behind the EU-15 average - 35.3% as well as the level of leader the US 57%. Only Romania has worse figures (3.2%). As expected, the share of other types of usage is higher. The reason for this could be the high access price (at home access must be paid by respondent himself). Therefore, the users in

Latvia prefer to access the Internet from work and other places. At the same time more than 60% of respondents do not use the Internet at all. Amongst the share of users in some groups (users at work and at home, only at work and only at home) approximately 18% is significantly lower than in the leading country - US, where more than 60% of population use the Internet regularly. It should be noticed that the total Internet usage in Latvia 37% is a touch higher than the NAS-10 average 27%, but lower than in the neighbouring country Estonia 59%, where the usage is about equal to EU-15 average 54%.

Interesting conclusions can be drawn from the indicators presented in [5] where the data on 2001 are given (see pp. 17-20). Among NAS countries in 2001 the lowest Households access to the Internet was in Latvia. This conclusion is confirmed also by SIBIS GPS results showing the situation at the beginning of 2003 (Figure 4).

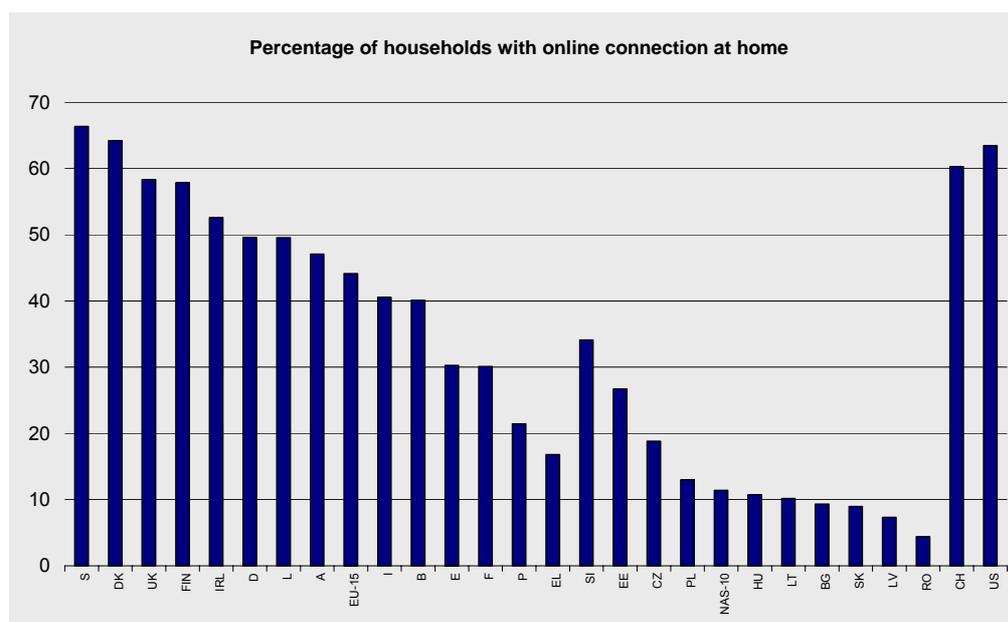


Figure 4 - Percentage of households with Internet connection at home

Base: All respondents, weighted column percentages

Question: A5b

Source: SIBIS 2002, GPS, SIBIS 2003, GPS-NAS

In Latvia the household's access to the Internet (7%) is lower than NAS-10 average (11%), strongly lower than EU-15 average (44%) and far behind the level of leading country Netherlands (72%). The worse figure has only Romania (4%).

At the same time Internet access costs in Latvia are the highest [5]. Two compound indicators<sup>9</sup> 'Regular usage vs. costs' and 'Internet penetration vs. costs' show the general trend - the lower the access costs, the higher the Internet penetration in households and its usage. In this respect, Latvia exhibits extremely high Internet access costs and, as a consequence, a low usage. Therefore, one can conclude that the extremely high Internet access costs in Latvia (when compared with the average salary of employees which in 2001 was  $\approx$  280 EUR [20]) make a barrier for the wide Internet penetration and usage in households. This statement is enhanced also by other facts. Firstly, there is a correlation between the Number of PC's per 100 inhabitants and the Internet usage (see p. 20 in [5]). In Latvia this proportion is poor, which suggests that a lot of computers are not connected to the

<sup>9</sup> Indicators piloted through the SIBIS survey are a useful means for the development of compound indicators, i.e. a combination of different yet related indicators. Such combinations are helpful to scale measures in order to facilitate comparisons otherwise difficult to perform. Through weighted averaging, compound indicators take care of differences in size, units, etc. putting the information in a uniform and 'unitless' footing. Hence, a compound indicator can be a practical instrument to compare different European states with regard to their performance in the Information Society.

Internet. Secondly, the total number of telephone subscriber's lines in the public telecommunication network has decreased from 735 thousand in 2000 to 722 thousand in 2001 [20]. This indicates that people are not satisfied with the service of fixed telephone network. Two reasons may explain this: either high service price or the preference of mobile telephony.

From the previous analysis the question arises on the reasons behind such high Internet access costs in Latvia. More likely this is due to the Latt Telekom monopoly on a fixed public telephone network (supervision, development and maintenance). Fortunately the duration of Latt Telekom monopoly was reduced by the parliament on November 1, 2001. According to law 'On telecommunications' the liberalization of fixed network could start in January 2003, when for other players it was allowed to take part in business of fixed telephony. Nevertheless, it is clear that the full liberalization of the telecommunication market and the corresponding price reduction will take some time.

The average data on Internet connection at home according to age groups and type of connection in NAS-10<sup>10</sup> (Annex A, Figure 32) shows that the narrow band dial-up connection dominates and the share of broadband connection is very low. According to [20] in Latvia at the end of 2001, 496,000 telephone subscriber's lines (68.7%) were switched on to the digital network and 226,000 subscriber's lines (31.3 %) - were switched to the analogue network. There are rural regions where the share of digital lines is significantly lower than the average figures. This makes a barrier for the wide penetration of broadband connection especially in rural regions. It is available mainly in the largest cities. There is a little hope that in the nearest years the services of fixed telephone network will be available for many inhabitants of rural regions. This is due to the lack of telephone lines of fixed network in many places. For those people, the alternative is the Internet connection through satellite (expensive), radio-link (expensive for individual use but acceptable for collective use), mobile phone or PIAP. The last three possibilities are most probable.

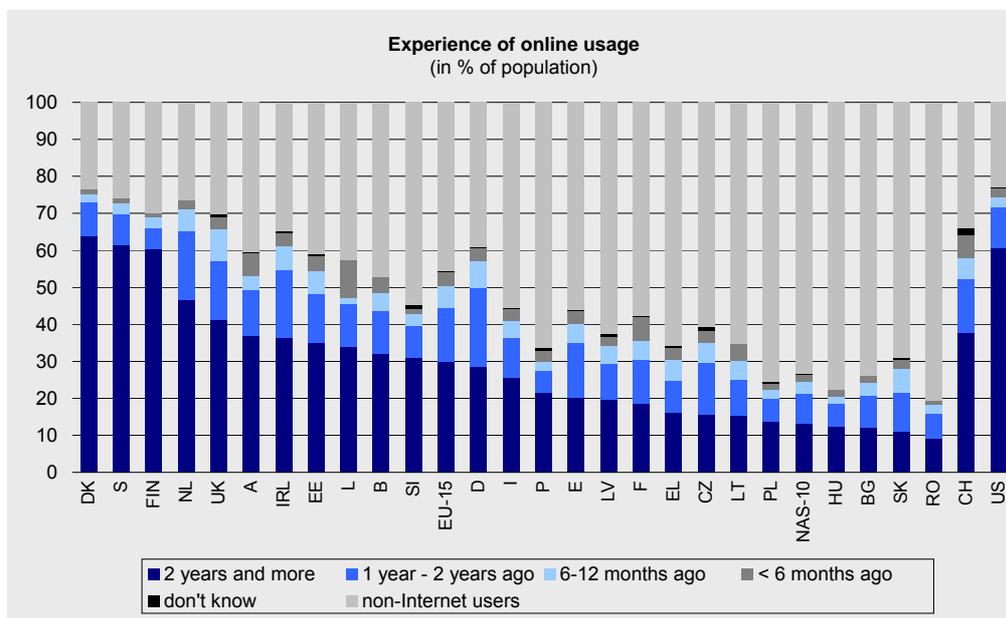


Figure 5 - Experience of online usage (in % of population)

Base: All respondents, weighted column percentages

Question: A10

Source: SIBIS 2002, GPS, SIBIS 2003, GPS-NAS

<sup>10</sup> It is impossible to give this distribution for a single country due to the small size of the survey sample.

Online tenure is a new indicator measuring the share of users according to length of time since first use of the Internet. The SIBIS survey classifies tenure into four bands; less than six months since first Internet usage, more than six months but less than one year, more than one year but less than two years, and more than two years.

The experience of online usage (online tenure) in Latvia (Figure 5) is a little bit higher than the average figures for NAS-10 but lower than in EU-15 and US.

Approximately 19% of population have been using the Internet more than 2 years (Figure 5), which means that they were Internet users also at the beginning of 2001. This contradicts the data presented in Figure 2, which states that at the end of 2000 in Latvia there were only about 7% Internet users. For EU-15 this discrepancy is not so large (30%) and (24%) respectively.

The online tenure is an important indicator, because it reflects how experienced users are with the Internet. The more effective Internet usage in different areas will be with higher online experience. It is also more likely that the more experienced users are, the more willing they are to migrate to a broadband connection.

Intensity of online usage is shown in Figure 6.

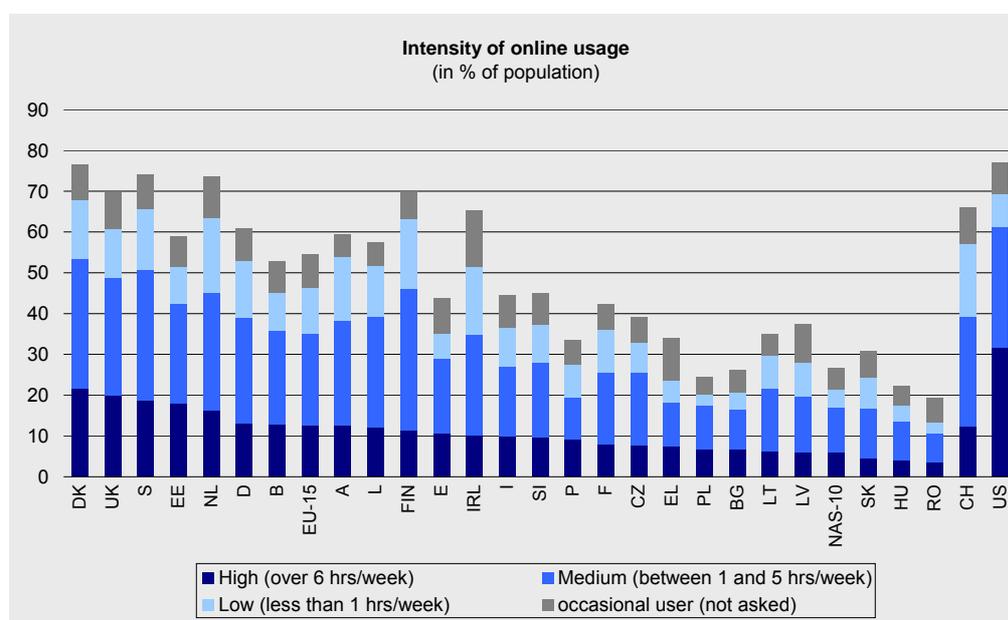


Figure 6 - Intensity of online usage (in % of population)

Base: All respondents, weighted column percentages

Question: A9

Source: SIBIS 2002, GPS, SIBIS 2003, GPS-NAS

When compared with other NAS countries, Latvia shows a relatively large share of occasional Internet users (9.4%). This suggests that people want to use the Internet, but cannot afford to do this at home. The comparison also shows that in Latvia, the medium usage intensity dominates, like in all other countries. In each position the Internet usage in Latvia is slightly higher than the average usage in NAS-10 but lower than in NAS-10 leader Estonia, where it is even a little bit higher than the average usage in EU-15. Altogether, in each position of Internet usage Latvia is strongly behind the leading countries, US and Denmark, and much work should be done to lessen this gap.

A comparison of data on Figure 6 and Figure 7 respectively shows that in general there is a correlation between the Internet usage and e-mail usage – the higher the Internet usage the higher also the e-mail usage.

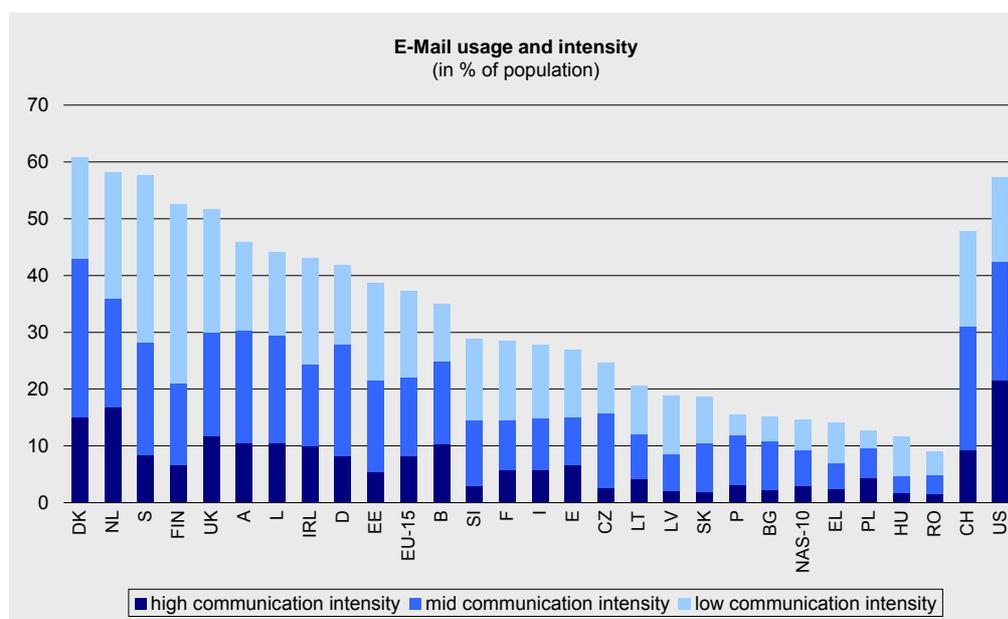


Figure 7 - E-mail usage and intensity (in % of population)

Base: All respondents, weighted column percentages

Question: A4a

Source: SIBIS 2002, GPS, SIBIS 2003, GPS-NAS

The SIBIS survey classifies e-mail usage intensity into three bands; high intensity (communication with 75% and more of friends and relatives), medium (between 25% and 75%) and low (less than 25%). The high communication intensity via e-mail particularly high is in the US (21.5) and Netherlands (16.9) though the overall usage is the highest in Denmark 60.86 (Figure 7). In Latvia the overall e-mail usage 18.87 is a little bit higher than the average usage in NAS-10 14.59 but a little bit lower than in the neighbouring country Lithuania 20.7. The high communication intensity via e-mail in Latvia 2.04 is low, even lower than NAS-10 average 2.93. It should be noticed that in majority of countries the medium communication intensity via e-mail dominates. Latvia belongs to the group of countries where dominates the low communication intensity. Perhaps the relatively low e-mail usage intensity in Latvia is caused by the low connectivity of households to the Internet. The share of citizens who do not use e-mail at all is relatively high - about 80%. This is twice as high as in leading countries Denmark and US where only about 40% of citizens do not use the e-mail.

Due to the rapid growth of the mobile phone ownership in NAS, Slovenia already in 2001 has reached the average EU-15 level (Annex A, Figure 34) but in 2003 three NAS-10 countries Slovenia, Czech Republic and Estonia exceeded the average EU-15 level (Figure 8). While at the beginning of 2003 approximately 70% of EU-15 citizens were mobile owners, in Latvia the number of mobile owners was considerably lower (about 50%).

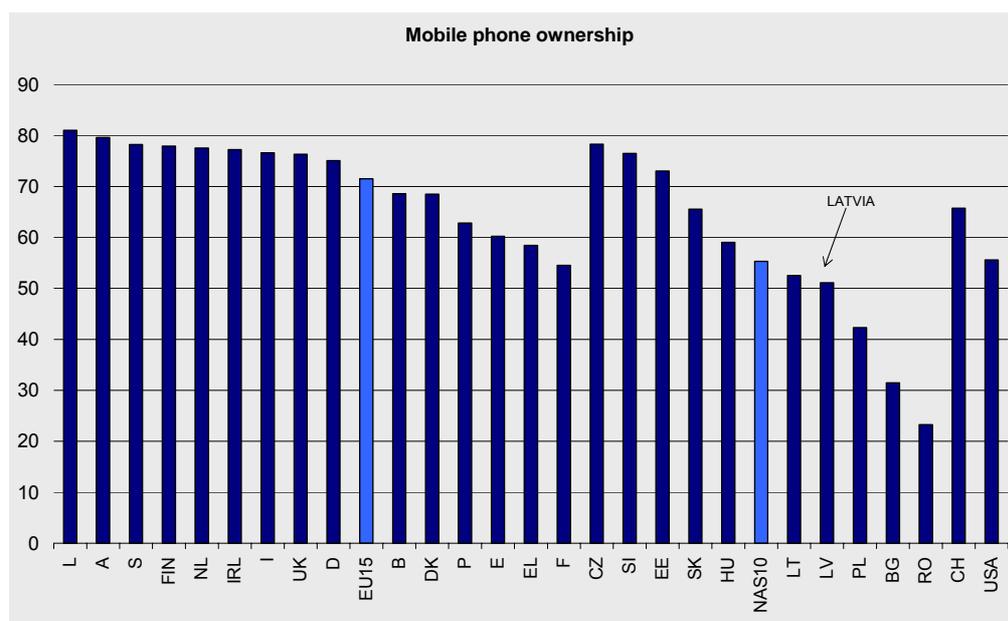


Figure 8 - Mobile phone ownership

Base: All respondents, weighted column percentages

Question: A19c

Source: SIBIS 2002, GPS, SIBIS 2003, GPS-NAS

The distribution of mobile owners according to age groups in NAS (Appendix A, Figure 35) shows an interesting relationship - decrease of mobile ownership with increasing age. In this respect it should be interesting to investigate the income for these age groups. It should be expected that the income of the younger respondents would be lower but the motivation to own a mobile would be higher when compared with the older respondents.

SMS use according to age groups in NAS-10 (Appendix A, Figure 35) shows a strong correlation between mobile phone ownership and SMS use – the higher the mobile phone ownership the higher the SMS use. The percentage of mobile phone owners using SMS service is rather high especially in the youngest age group (aged up to 24). The reason for this could be the SMS service price, which is lower when compared to that of voice telephony.

Data on SMS usage by friends and family members vs. mobile ownership in NAS-10 and EU-15 are shown in Figure 9. Three stand-alone countries and four clusters can be selected. Stand-alone countries are those of low degree of mobile ownership – Romania, Bulgaria and Poland. The smallest cluster consists of NAS countries with mobile ownership between 40% and 50% - Hungary, Lithuania and Latvia. Next cluster is build up from 5 countries – three NAS countries (Slovenia, Estonia and Slovakia) and surprisingly such countries as France and the US. The remaining two clusters contain only EU-15 countries with one exception – Czech Republic. The snapshot reflects the obvious trend - the higher the mobile owner percentage, the higher the probability that respondent's friends and family members also are mobile owners.

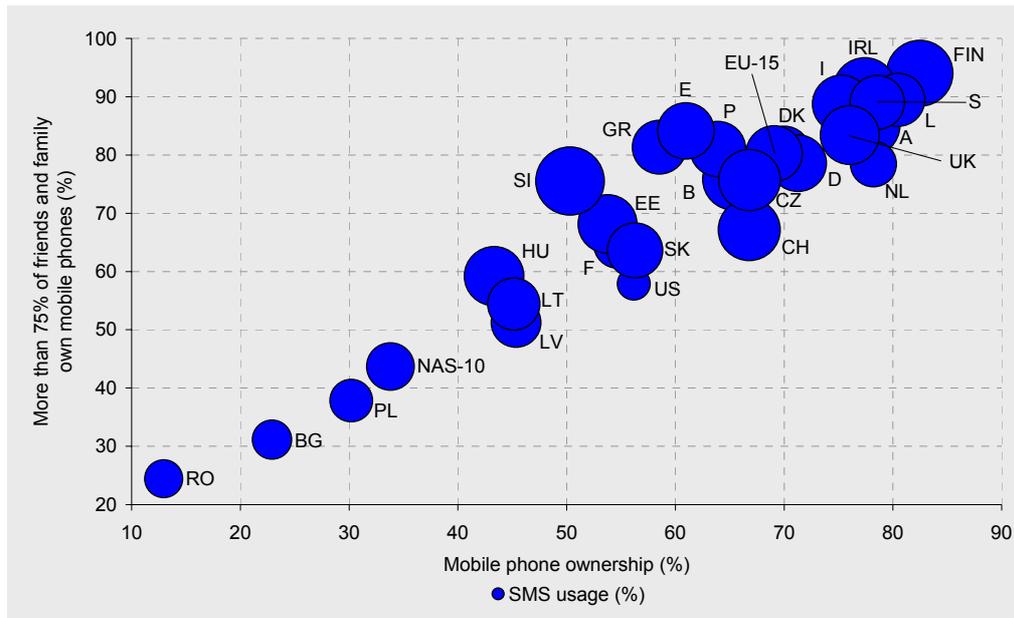


Figure 9 - Mobile Snapshot

Base: All respondents, weighted column percentages

Questions: A19c, A20, A27

Source: SIBIS 2002, GPS, SIBIS 2003, GPS-NAS

## 4.2. Security

A secure Internet is the necessary precondition for a successful development of the Information Society. As everywhere in the world, Latvian Internet users are faced with security problems and many of them already have a bad experience in this respect. We are not going to analyse all aspects of the security breaches here. This is done, e.g., in [14]. The most frequent cases are the damages caused by virus attacks and the credit card abuse. For users it is important to be aware of the threats caused by security breaches and to take the preventive measures against online malicious activities. Violations of online security are a serious barrier also in the way of development of e-Commerce [14].

Taking into account the dynamically changing nature of security breaches (for example, new viruses appear all the time) it is important to keep the situation in the area permanently under control. This manifests the necessity of data collection on security violations. Such information helps to take sufficiently effective preventive measures against security violations and as a consequence facilitates the development of consumer's trust to online services. In reality the formation of consumer's trust is a complicated task<sup>11</sup> requiring a set of complex measures.

Up to now, the official statistical institutions in Latvia did not collect data on topic Security and Trust. Therefore, the SIBIS GPS results will shed some light on the situation in the field.

The GPS results show that in most countries concerns regarding online security (Figure 10) are high. This relate to both the information privacy and confidentiality and data security, though the concerns regarding privacy and confidentiality everywhere (except Sweden) are slightly higher than concerns regarding data security. Although the Internet usage in Latvia is relatively low, Latvia can be attributed to NAS countries with one of the highest level of security concerns, which is nearly equal to EU-15 average. This could be related to the bad experience of Internet users regarding security problems in Latvia. Therefore the security

<sup>11</sup> See for example [14]

strengthening measures are necessary in order to increase the consumer's trust to the Internet use.

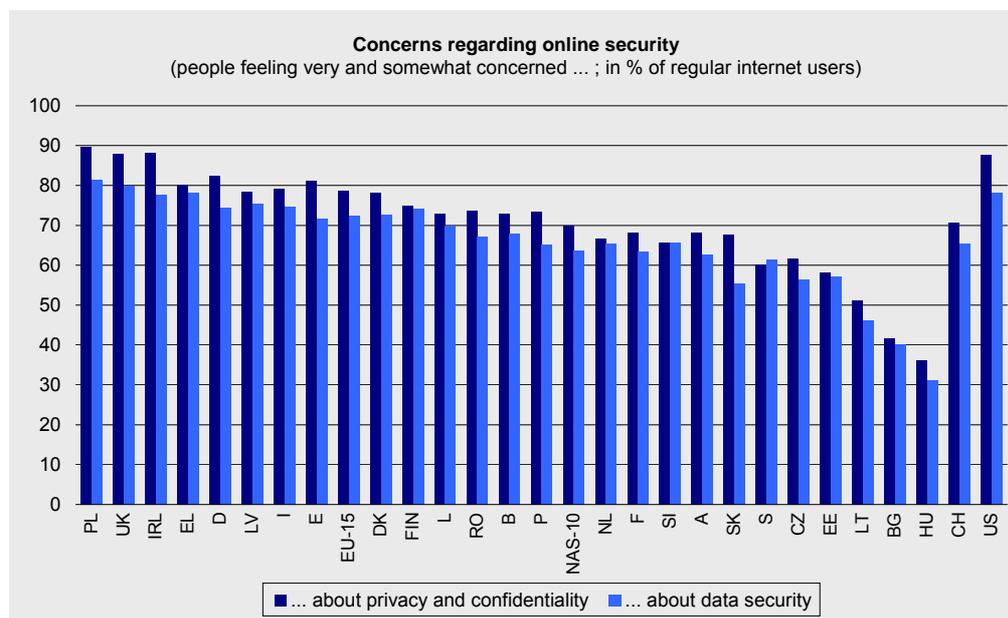


Figure 10 - Concerns regarding online security  
Base: Regular Internet users, weighted column percentages  
Questions: J1a, J1b  
Source: SIBIS 2002, GPS, SIBIS 2003, GPS-NAS

The correlation between online shopping usage and security concerns in NAS-10, EU-15, Switzerland and US is reflected in Figure 11. Security concerns have a significant impact on online shopping behaviour. Two clusters can be selected. One is formed by NAS-10 countries and characterises with relatively low level of security concerns and low level of online shopping usage. Second is rather diffuse and is formed by remaining countries. It is seen that the security concerns in NAS-10 countries are lower than those in EU-15 and the online shopping usage is below the EU-15 average, although, among the EU-15 there exist countries (Portugal, Belgium, Spain, Greece and Italy) where the online shopping usage is nearly the same as in NAS-10. Altogether, the online shopping in NAS-10 is less popular than in EU-15, Switzerland and the US. This may be caused by lower experience of online shopping and less possibilities for e-Commerce in NAS countries. Among other NAS-10 countries, Latvia stands out with the highest level of security concerns and low level of online shopping.

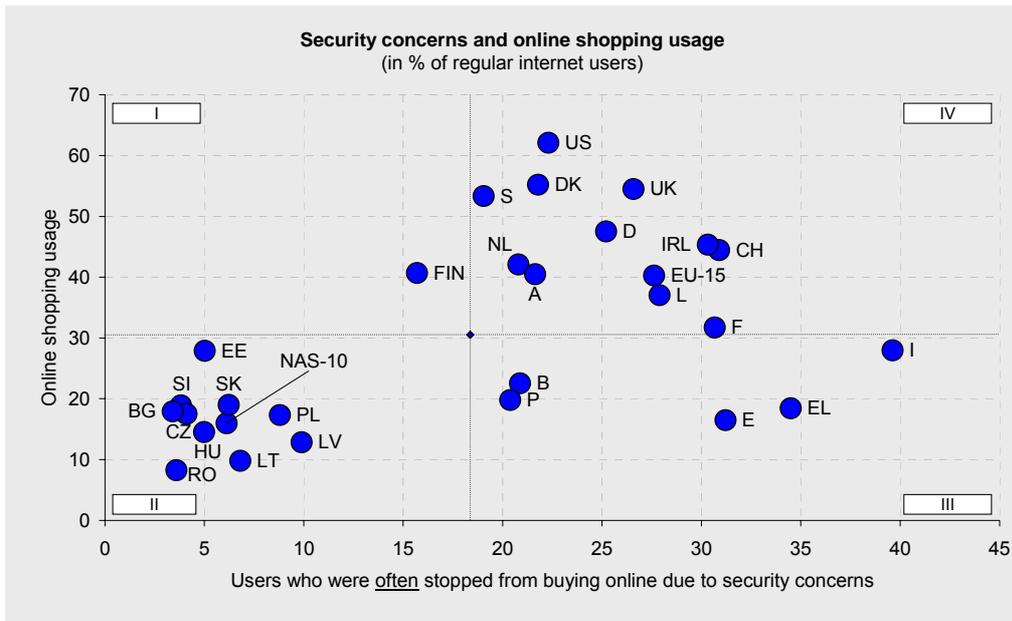


Figure 11 - Security concerns and online shopping usage  
 Base: Regular Internet users, weighted column percentages  
 Questions: J2, B1  
 Source: SIBIS 2002, GPS, SIBIS 2003, GPS-NAS

## 5. e-Society and Social Inclusion

In the process of the formation of an Information Society, a new type of social inclusion so called digital inclusion, info-inclusion or e-inclusion (all three terms are identical) becomes important. In what follows we will concentrate our attention exactly on this new type of social inclusion (apart from more traditional social inclusion). With penetration of ICTs in an individual's and society life, it is very important to avoid the situation when these new and very powerful technologies facilitate the appearance of this new type of social exclusion – digital exclusion, respectively, the appearance of individuals and groups that tend to be at risk from being excluded due to the development of ICTs. In this respect the social inclusion is a rather complicated problem [17] and as a phenomenon, it must be investigated on the statistical base. Taking into account that this is a relatively new phenomenon the question arises what indicators must be used to characterise the digital inclusion (exclusion). The SIBIS project answers this question to some extent offering indicators appropriate for benchmarking the topic Social inclusion. These indicators were translated into survey questionnaire and piloted in the SIBIS GPS carried out in EU-15, Switzerland, US as well as NAS-10. A detailed description of the topic, where all aspects of the problem are taken into account, is possible only on the basis of an increased number of indicators [17]. In this report we shall limit our analyses to considering the indicators used in SIBIS GPS. It should be noted also that there is some coverage of topics such as: Social inclusion, Work-employment and skills and e-Education. It means that the same indicators can be used to characterise some issues of these topics. In Latvia's national statistics the set of indicators attributed to the topic Social inclusion is rather poor. Therefore, the SIBIS GPS results will add some new knowledge to the topic Social inclusion in Latvia.

Respondent's assessment of life without Internet across EU-15, Switzerland, US and NAS-10 countries is given in Figure 12. As can be seen the importance of the Internet in respondent's life in NAS-10 is even higher than in EU-15 and Switzerland. In all countries the share of respondents feeling completely excluded in the absence of Internet is lower than the share of those who feel only partly excluded. In Latvia, the number of respondents feeling completely and partly excluded (28%) is slightly below the NAS-10 average (31%) but higher than EU-15 average (20%).

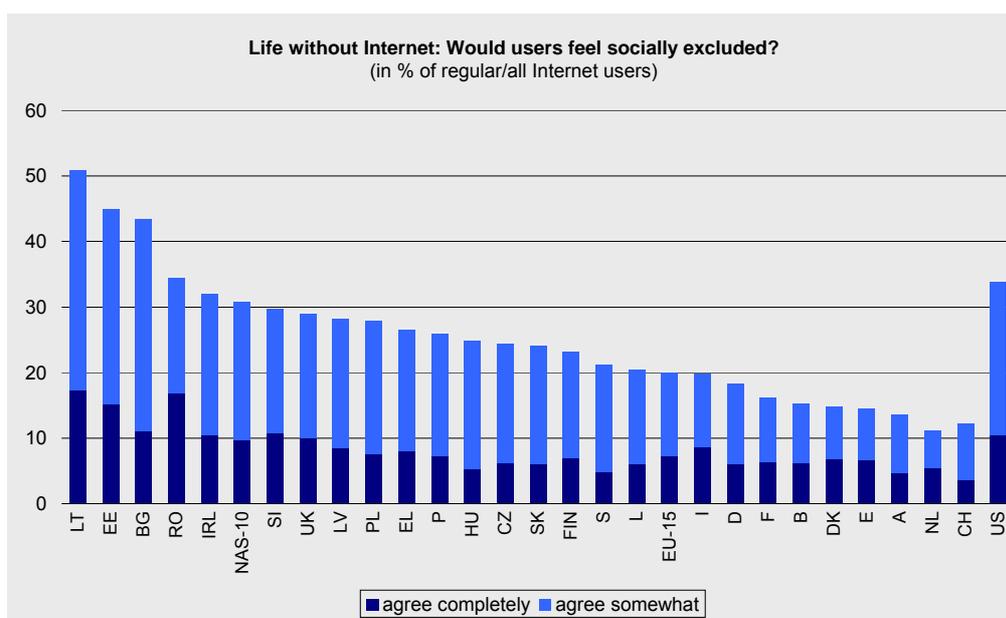


Figure 12 - Life without Internet: Would users feel socially excluded?

Base: Regular Internet users, weighted column percentages

Question: B5

Source: SIBIS 2002, GPS, SIBIS 2003, GPS-NAS

In order to promote the digital inclusion, it is very important to remove the barriers standing in the way of Internet usage. These barriers can be grouped in socio-economic determinants, for example, employment status, income level and presence of disability, and skill possession, such as - ICT skills. SIBIS GPS results regarding some of such barriers are shown in Figure 13, Figure 14 and Figure - 15 respectively.

From Figure 13 it follows that many Latvian respondents (84.6% of occasional and non-internet users) completely or somewhat agree to the statement that the Internet usage requires advanced computer skills. In general in NAS-10 (68.9%) such meaning is more expressed than in EU-15 (57.8%). More likely wide offering of ICT training possibilities to the public could decrease this proportion and facilitate the digital inclusion.

The share of respondents in Latvia who completely or somewhat agree to the statement that 'the Internet is not something for me' (48.27% of occasional and non-internet users) is a little bit higher than NAS-10 average (43.65%) but lower than EU-15 average (57.75%). Almost in all countries, the share of respondents who completely agree to this statement is higher than the share of those who only partly agree (except Slovakia, Lithuania and Poland). Regarding this group of respondents, the general problem is how to change their mind to the opposite – otherwise, they will stay socially excluded.

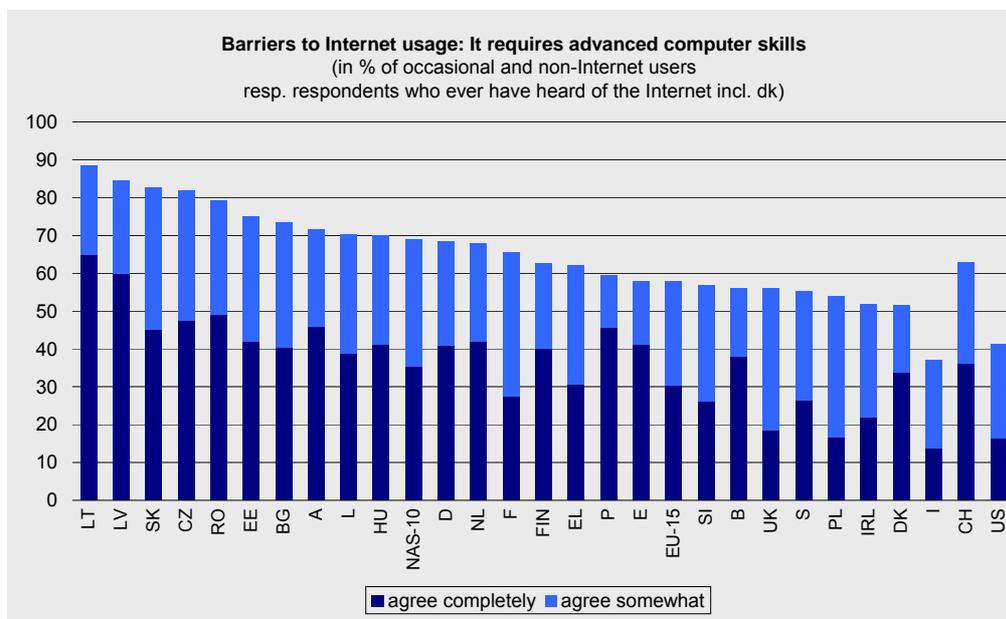


Figure 13 - Barriers to Internet usage: It requires advanced computer skills

Base: Respondents, that have not used Internet in the last 4 weeks, weighted column percentages

Question: A18a

Source: SIBIS 2002, GPS, SIBIS 2003, GPS-NAS

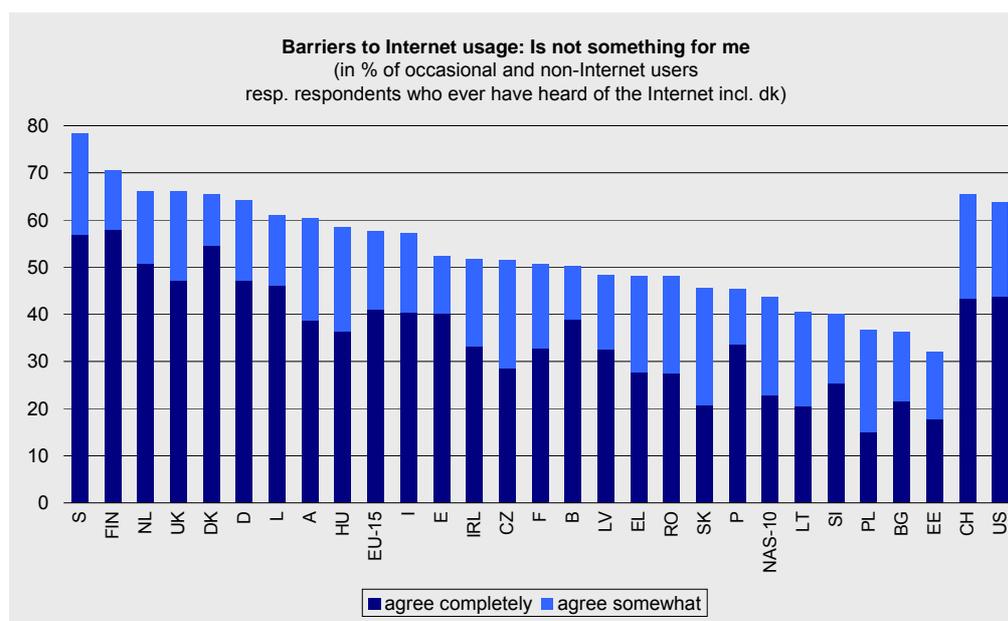


Figure 14 - Barriers to Internet usage: Is not something for me

Base: Respondents, that have not used Internet in the last 4 weeks, weighted column percentages

Question: A18f

Source: SIBIS 2002, GPS, SIBIS 2003, GPS-NAS

One of the increased risk groups regarding the digital exclusion is people with disabilities and long standing illnesses. When considering this group of respondents regarding Internet usage in last four weeks the general trend across NAS-10, EU-15, Switzerland and the US is seen (Figure - 15) – Internet usage in this group is considerably lower than in the group of respondents with no health limiting conditions. In Latvia the Internet usage in last four weeks by respondents with disabilities 12.05% is nearly two times higher than NAS-10 average (6.53%) but more than two times lower than EU-15 average 28.5%. Except Estonia in all other NAS countries the usage in this group of respondents is below the EU-15 average. It seems that no activities take place in Latvia regarding the Web Accessibility Initiative (WAI), which is a strategy and commitment by the World Wide Web Consortium (W3C)<sup>12</sup> aimed at achieving the Web's full potential, particularly by promoting a high degree of its usability for people with disabilities. It might be assumed that the policy makers in Latvia are not familiar with this initiative.

<sup>12</sup> The mission of W3C is to "lead the Web to its full potential [that] includes promoting a high degree of usability for people with disabilities", <http://www.w3.org/WAI/about.html>.

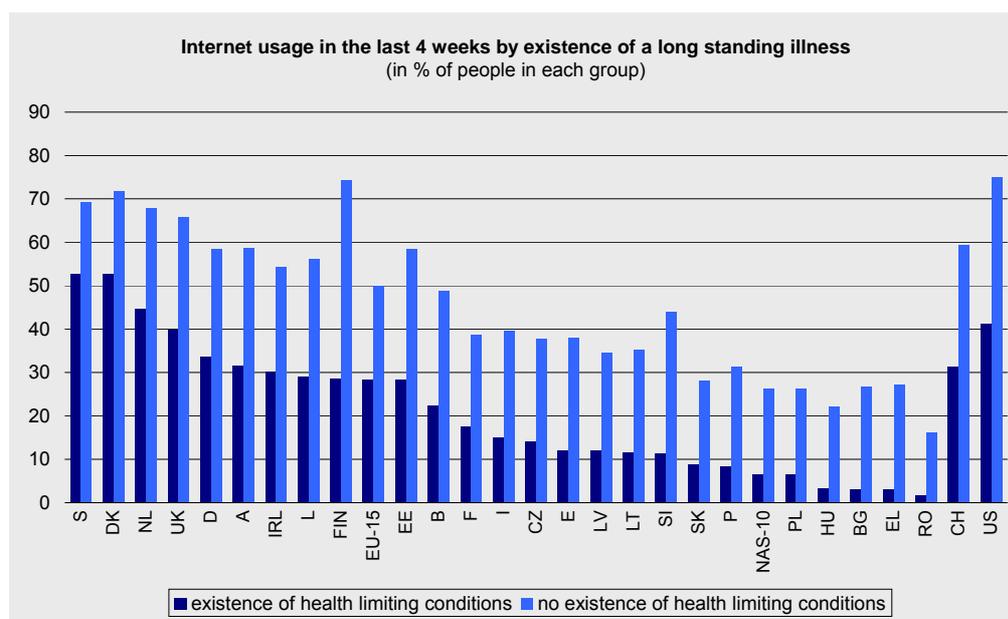


Figure - 15 Internet usage in the last 4 weeks by existence of a long-standing illness

Base: Regular Internet users, weighted column percentages

Questions: Z14, A7

Sources: SIBIS 2002, GPS, SIBIS 2003, GPS-NAS

The events facilitating the digital exclusion are the Internet usage dropouts. In Latvia the total Internet usage drop-outs 2.07% is a little bit higher than NAS-10 average 1.89% but lower than EU-15 average 2.84% (Annex A, Figure 33). In this respect, the situation is not critical. In general, it is important to find out the reasons why this happens. In Latvia most likely this is due to the high Internet access costs.

In the process of development of Information Society, a new phenomenon so called 'digital divide' attracts the attention. It can be characterised as an appearance of a gap between citizens from different socio-economic backgrounds with regard to their opportunities and abilities to access and use information and communication technologies. This, therefore, forms a barrier for participation in the Information Society. In [6] the digital divide index (DDIX) was suggested as a quantitative measure for the digital divide and the methodology of its measurement was offered<sup>13</sup>. DDIX is a compound index calculated as a mean of four other indices.

<sup>13</sup> For understanding the details regarding DDIX it can be recommended to read [6]

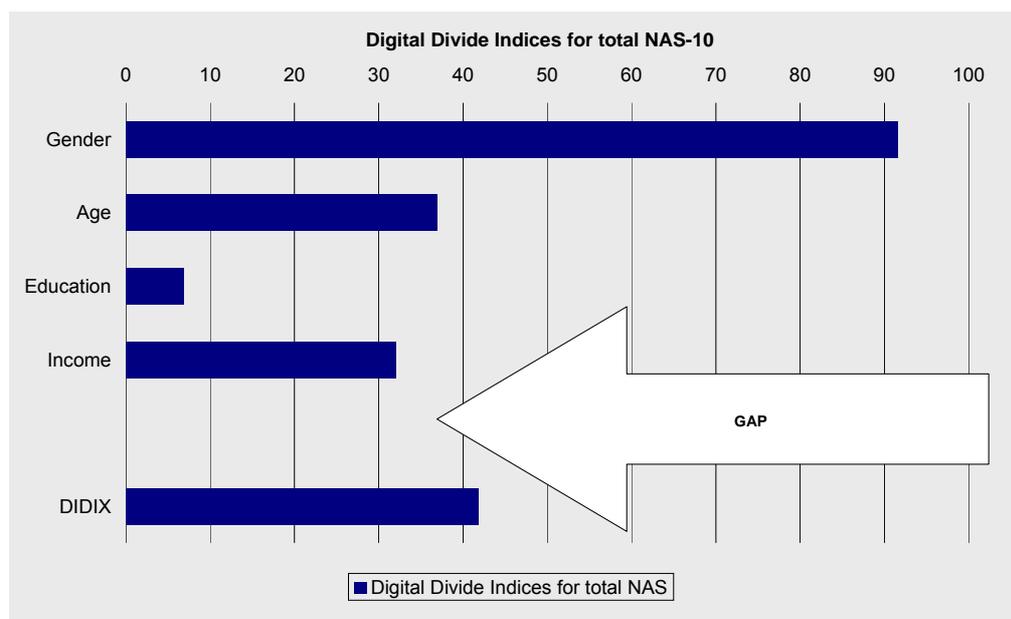


Figure 16 - Digital Divide Index for total NAS-10

Base: NAS all respondents, weighted column percentages

Questions: IN1, IN3, Z19, Z21

Source: SIBIS 2003, GPS-NAS

In Figure 16 for total NAS-10, these indices for selected risk groups, determined by gender, age, education and income as well as the compound DDIX is shown. Each index describes the percentage of Internet and computer users (total users and 'at home') at risk group as a ratio of the percentage of the users in the total population.

It is seen that the most threatened risk group is that of people with poor education (education termination age 15 and lower). Only some 7% of respondents in this group are using computers and/or the Internet when compared to the average percentage of total users assumed as a 100%. It means that the digital gap of this risk group is 93%.

The higher is the DDIX, the higher is the participation of all in the Information Society. The digital divide index across EU-15 and NAS-10 is shown in Figure 17.

For NAS-10 the time series data of DDIX is not available but EU-15 results show that DDIX does not continuously increase with time. In Latvia the digital divide index (about 40%) is lower than NAS-10 average (about 42%) and EU-15 average (about 53%).

The education divide index across EU-15 and NAS-10 is shown in the figure below. The risk group considered was respondents with education termination age 15 and lower. The index is calculated as a sum of four other indices characterising the risk group – 'Percentage of computer users', 'Percentage of computer users at home', 'Percentage of Internet users', 'Percentage of Internet users at home', with appropriate weights [6]. The higher is the Education divide index; the lower is the digital exclusion of members of risk group under consideration.

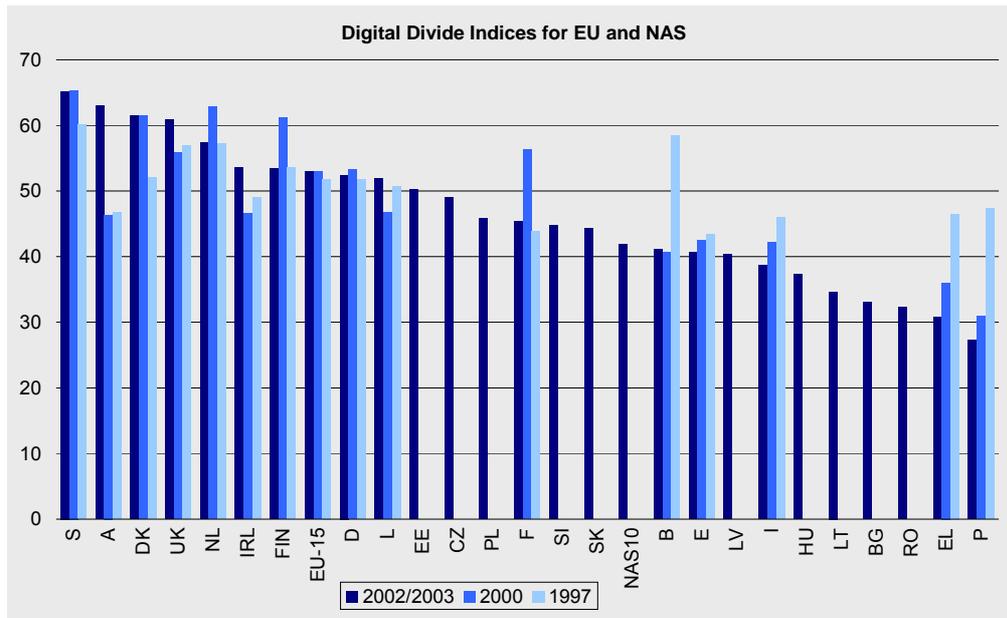


Figure 17 - Digital Divide Indices for EU-15 and NAS-10  
 Bases: 1997, 2000: weighted by standard Eurobarometer country and EU-15 weights; 2002, 2003, all respondents, weighted percentages  
 Questions: 2002, 2003: IN1, IN3, Z19, Z21  
 Sources: 1997: Eurobarometer 47.0, Jan-Feb 1997; 2000: Eurobarometer 54, Oct-Nov 2000; 2002: SIBIS 2002, 2003: SIBIS 2003, GPS-NAS

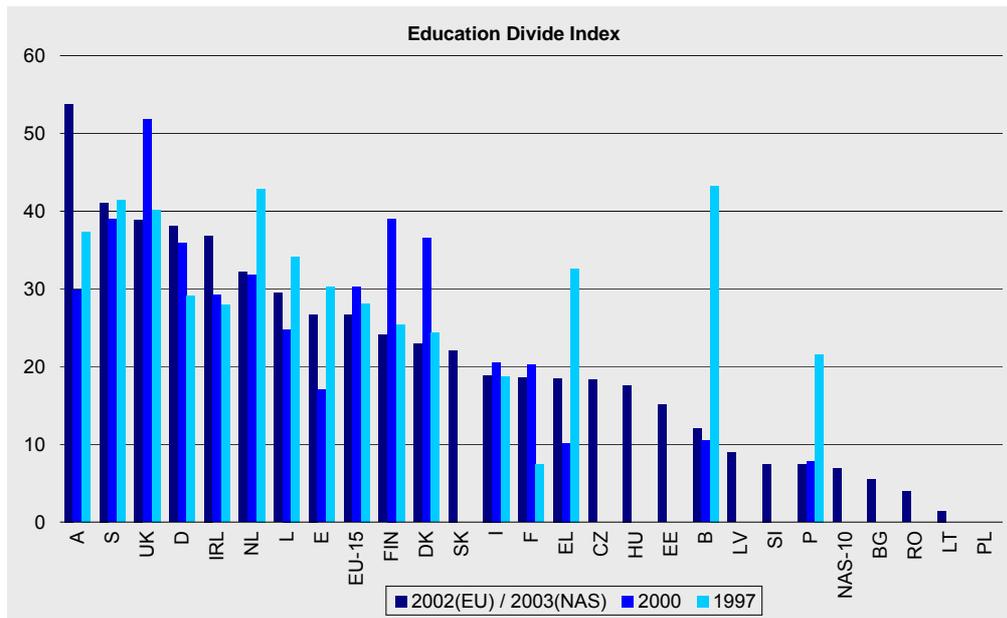


Figure 18 - Education divide index  
 Bases: 1997, 2000: weighted by standard Eurobarometer country and EU-15 weights; 2002, 2003, all respondents, weighted percentages  
 Questions: 2002, 2003: IN1, IN3, Z19, Z21  
 Sources: 1997: Eurobarometer 47.0, Jan-Feb 1997; 2000: Eurobarometer 54, Oct-Nov 2000; 2002: SIBIS 2002, 2003: SIBIS 2003, GPS-NAS

For NAS-10 the time series data on Education divide index is not available, but EU-15 results show that this index does not continuously increase with time. In Latvia the education divide index 9% is a little bit higher than NAS-10 average 7% but considerably lower than EU-15 average 37%.

## 6. e-Education and Life-long-learning

In the process of the formation of the Information Society the education's concept undergoes significant changes. The education is redefined as lifelong learning in the IS. The main issues regarding ICT usage in education according [15] are: the Life long learning, e-Learning, ICT infrastructure of the educational system, materials and sources – content, digital literacy, training of teachers – teachers qualifications, integration of ICT in curricula, flexible educational institutions and virtual mobility, networking between educational institutions and public/private collaboration, evaluation and research. In this report we shall consider some aspects of education in the IS which are reflected in the national statistics and SIBIS GPS results.

Since 1997 a state significance project 'Latvian education informatisation system' (Latvian abbreviation: LIIS) is running in Latvia. It is supervised by the University of Latvia and covers the whole grid of ICT applications in education: development of ICT infrastructure in State financed schools and higher education institutions, development of education's digital content, development of education's management system, development of user's training system, development of information services, development of e-Learning and distance learning.

Within the framework of the LIIS project, schools everywhere in Latvia are equipped with computers and are provided with Internet connection. The development of ICT infrastructure in schools is characterised by the infrastructure indicators given in Table 4.

Table 4 ICT infrastructure indicators

Indicator	Year					
	1997	1998	1999	2000	2001	2002
Pupils per computer	67.3	49.5	39.3	32.3	26.3	25
Internet connectivity of schools	9%	21%	35%	97%	97%	97%
Real use of Internet					67%	75%

Source: Website of LIIS project [www.liis.lv](http://www.liis.lv).

Internet connectivity data of Latvian schools (March 2002) are as follows: permanent connection with speed more than 128kbit/s has 36% of schools, dial-up connection - 97% of schools. But only 75 % of schools have reported a real use of Internet (usage is limited due to high price - mainly phone costs).

Within LIIS up to the end of 2002 22,306 teachers were trained and 66% of all teachers got the basic computer literacy skills. About 190 informatics' teachers were trained at an advanced level (computer lab maintenance, MS Windows NT administration, database development, MS Visual Basic). In all, about 300 tutors-trainers were trained till the end of 2001.

The development of distance learning infrastructure in Latvia occurs according to concept of distance learning accepted by the Cabinet of Ministers and with a support of PHARE program. The distance learning centres are organised at several leading higher education institutions including the University of Latvia as well as some other places.

Lifelong learning is regarded as formal and informal education within and outside the educational system throughout life, though primarily with focus on the period individuals are or potentially are engaged in the labour market. The adult's education in Latvia is organised by both the Ministry of Education and Science and local governments. In each administrative district, the adult's education centres are organised. In these centres the retraining of unemployed people takes place. Besides the different courses on ICT usage are available at different institutions and companies. There exists the possibility to acquire the different ICT related certificates. The possibilities offered allow in principal the change of status from unemployed to the employed. It should be noted that lifelong learning possibilities are not

uniformly spread over the territory of Latvia; there are districts especially in rural regions where these possibilities are not available.

In the IS a new term – digital literacy, is used to characterise a citizen’s ability to communicate digitally, install software, identify information sources and find wanted information on the Internet. Digital Literacy indicates the readiness of the population to use the Internet for work and as active participant in the IS.

The activities mentioned above should result in the possession of the corresponding ICT skills (digital literacy) by Latvian inhabitants. Some SIBIS GPS results regarding skill’s possession are presented below.

The Internet is built to communicate. The ability to communicate with others via the Internet is a basic skill in Information Society. 31% of the Latvian population regard them selves as very or fairly confident in communicating with others via the Internet, using at least e-mail, chat rooms or personal web pages (Figure 19). This is below the EU-15 average level 47% and considerably below the US level of 72% but above the NAS-10 average 21%.

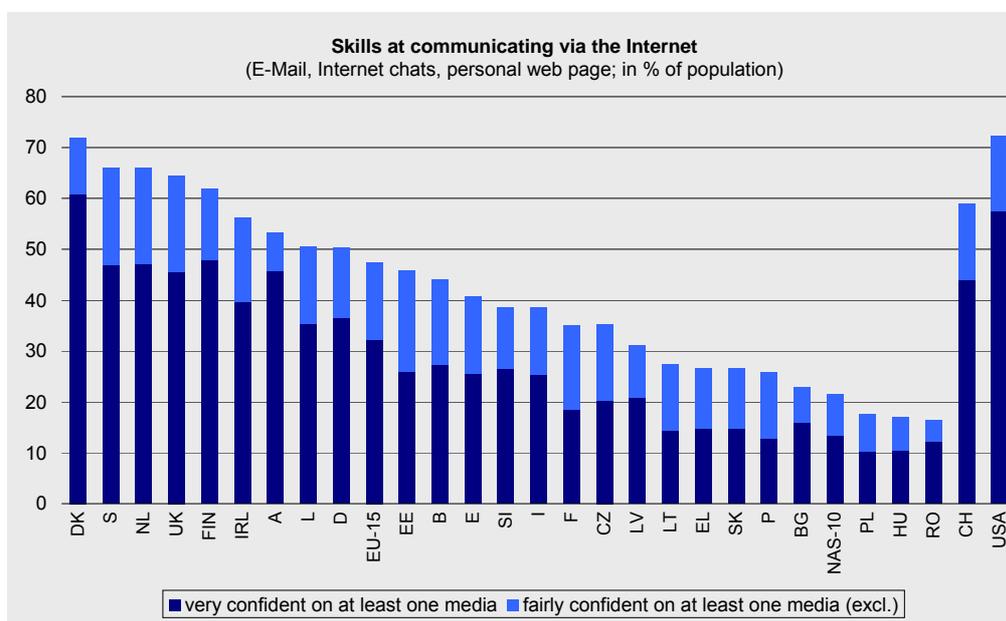


Figure 19 - Skills at communicating via the Internet  
Base: All respondents, weighted column percentages  
Questions: D1c, D1d, D1f  
Source: SIBIS 2002, GPS, SIBIS 2003, GPS-NAS

Other SIBIS GPS results regarding a citizen’s possession of skills like ‘Skills at searching information through Internet search engines’, ‘Skills at identifying the source of information on the Internet’ and ‘Confidence in obtaining and installing digital tools’ are displayed in Annex A (see Figure 36, Figure 37 and Figure 38 with corresponding comments).

Data regarding the participation of labour force in lifelong learning (Figure 20) is based on a SIBIS questionnaire module, which asks respondents whether they have participated in training in the preceding four weeks. The module focuses on work-related training only, and was put to workers with a contract of employment as well as to the self-employed and the unemployed.

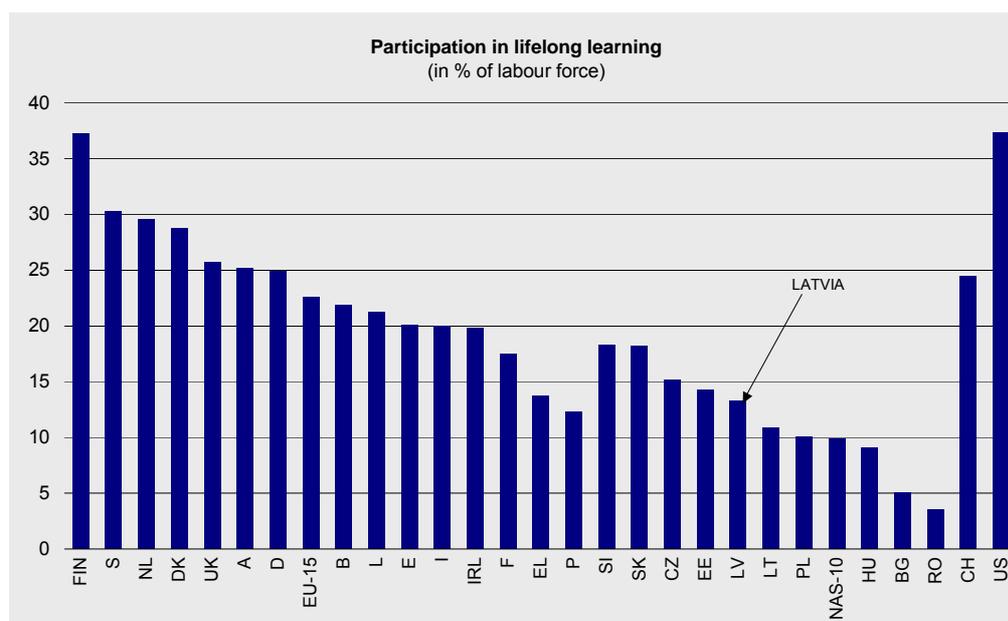


Figure 20 - Participation in lifelong learning  
 Base: Labour force, weighted column percentages  
 Questions: C2, C9b  
 Sources: SIBIS GPS 2002, SIBIS GPS-NAS 2003

In Latvia 13% of the labour force was involved in work-related training provided either by their company or by some other organisation. That is better than NAS-10 average (10%) but below the level of NAS leaders Slovenia and Slovakia (18%) and considerably behind the leading countries Sweden and Netherlands (30%) and the US (37%).

Self-directed learning is an important means to acquire work-related skills, very often even better than a formal training courses provided by other organisations. In most countries, a significantly higher share of employees engages itself in work-related self-directed learning than in training provided by outside organisations (Figure 21).

In Latvia as in Estonia, 29% of labour force takes part in self-directed learning which is only a little bit below the level of NAS-10 leader Slovakia (31%) and EU-15 average (32%) but considerably below the level of leading country Denmark (52%). One may conclude that among NAS countries, the Latvian labour force is well motivated on self-directed learning.

E-Learning can play a decisive role in delivering learning systems which meet the demands of today's workers and the unemployed. SIBIS distinguishes between two broad groups of e-Learning technologies: offline e-Learning (comprising multi-media learning material such as computer programmes on diskettes, videotapes and CD-ROMs) and online e-Learning (learning content being provided online through the Internet or the computer network of the employing organisation or school/university). The share of the labour force that uses e-Learning is 15% on average in the EU-15 and 5% in the NAS-10. In Latvia this figure is 9% and that is considerably below the level of EU leader Finland 19% but above the NAS-10 average, though the share of online learning is not very high only 5% (Annex A, Figure 39).

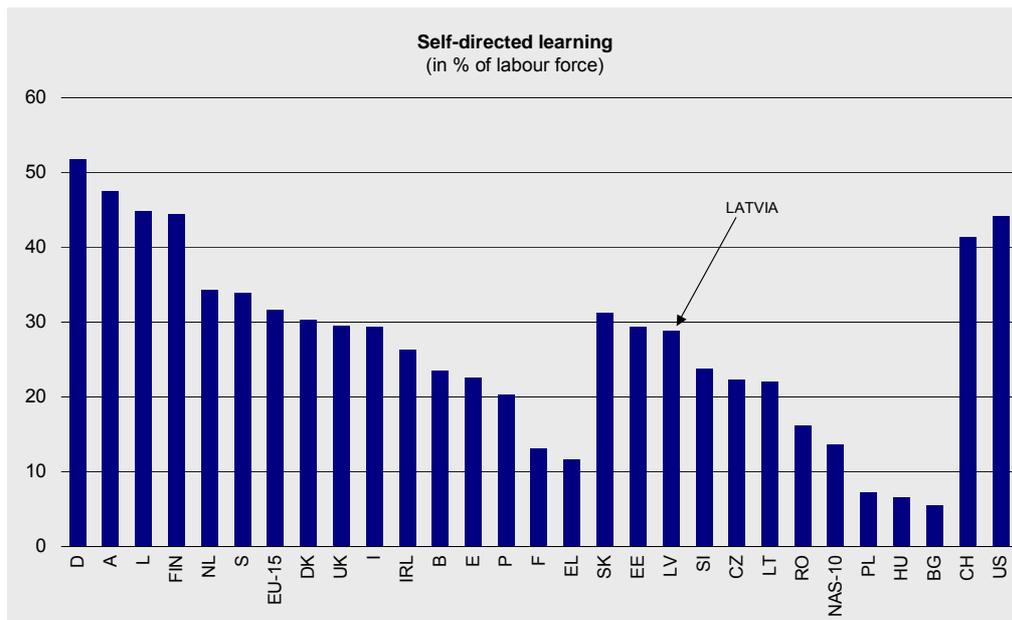


Figure 21 - Self-directed learning

Base: Labour force, weighted column percentages

Questions: C14a, C14b

Sources: SIBIS GPS 2002, SIBIS GPS-NAS 2003

## 7. e-Economy and e-Commerce

E-Commerce is a complex phenomenon, which can be considered to be a wide process of the digitalisation of the economy as a whole in the Information Society. A detailed description of e-Commerce is given, for example, in [18]. The development of e-Commerce in Latvia takes place according to conception of e-Commerce [9] developed by the Ministry of Economics and accepted by the Cabinet of Ministers on March 13, 2001. E-Commerce in Latvia is in its initial stage. In this report we shall limit our analysis to some basic aspects of e-Commerce reflected in SIBIS GPS survey.

In SIBIS GPS the respondent's participation in interactive e-Commerce in the last 12 months was investigated (Figure 22). The results show that the percentage of Latvian population, having ordered a product or service online, is very low 10%, though this is better than NAS-10 average 5% but considerably below EU-15 average 25%. Among NAS-10 the leader is Estonia with 40%, which is even better than EU-15 average but below the level of leading country Denmark (52%).

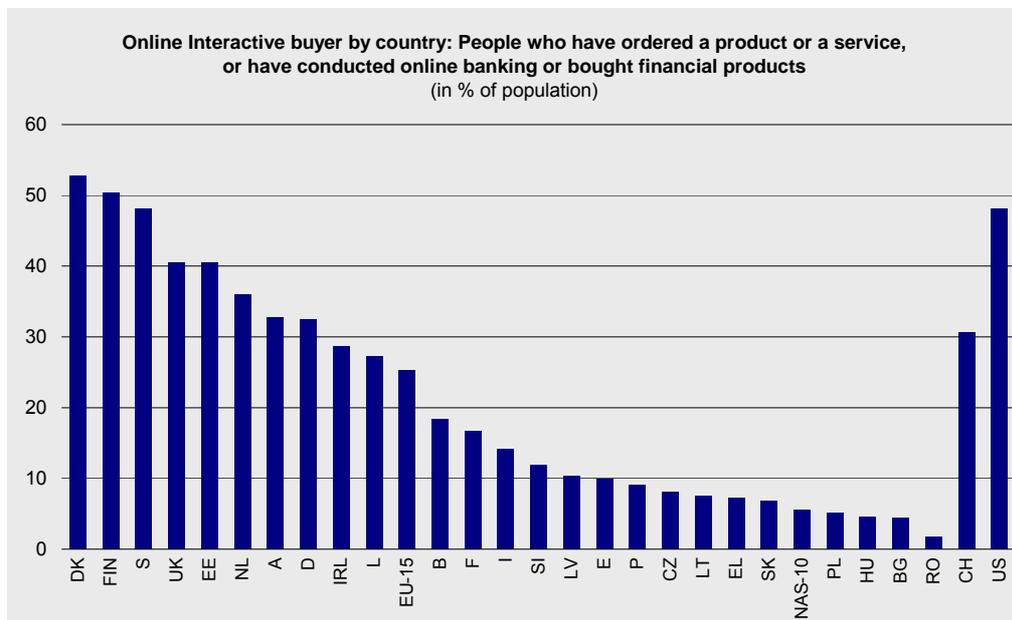


Figure 22 - Online Interactive buyer by country  
Base: All respondents, weighted column percentages  
Questions: IN1, B1  
Source: SIBIS 2002, GPS, SIBIS 2003, GPS-NAS

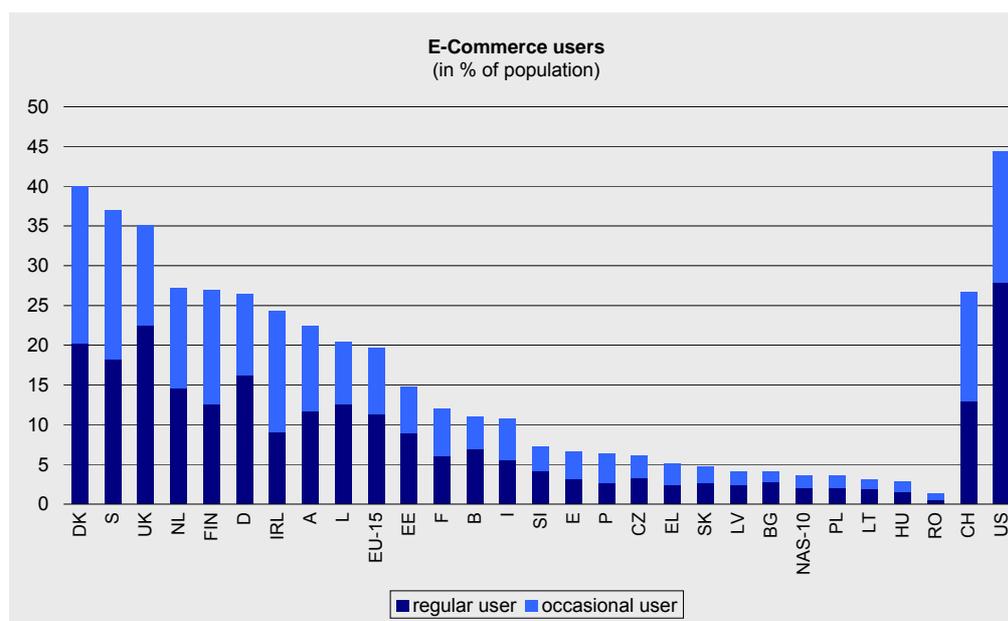


Figure 23 - E-Commerce users

Base: All respondents, weighted column percentages

Questions: B1, B2

Source: SIBIS 2002, GPS, SIBIS 2003, GPS-NAS

SIBIS classifies e-Commerce users as regular users (transaction is carried out in the last 4 weeks) and occasional users (transaction is carried out in the last 12 month). The share of regular Latvian e-Commerce users 2.49% is a little bit higher than the share of occasional users 1.63% (Figure 23). This is slightly better than NAS-10 average (2.05% and 1.59% respectively), but considerably behind the EU-15 average (11.36% and 8.38% respectively) as well as US level (28% and 8.4% respectively).

The investigation of e-Commerce usage by age across EU-15, Switzerland and US and NAS-10 (Appendix A, Figure 40) shows that the most active age group using e-Commerce everywhere is that of the age between 25 and 49. It represents a driving force of e-Commerce users across the EU-15 and NAS-10. In Latvia people aged 65 and over do not use e-Commerce.

The length of online usage and experience, or online tenure, seems to be important for the development of e-Commerce. The survey results show (Appendix A, Figure 41) that at least two years experience is required to be a more adept e-Commerce user. In EU Member States the overall e-Commerce tenure is higher than in NAS-10 countries but the differences are also more expressed. Latvia as majority of NAS has limited online tenure. Among NAS-10, only Estonia and Slovenia have encouraging e-Commerce profiles, though the gap to US's leading position is sufficiently large.

## 8. e-Work

The concept of work in Information Society undergoes significant changes because new ways of working arise. A significantly new phenomenon is the telework – work with an electronic transfer of work results. A detailed description of new ways of working in Information Society can be found, for example, in [16]. In this report we shall consider some aspects of telework and mobile telework investigated within SIBIS GPS.

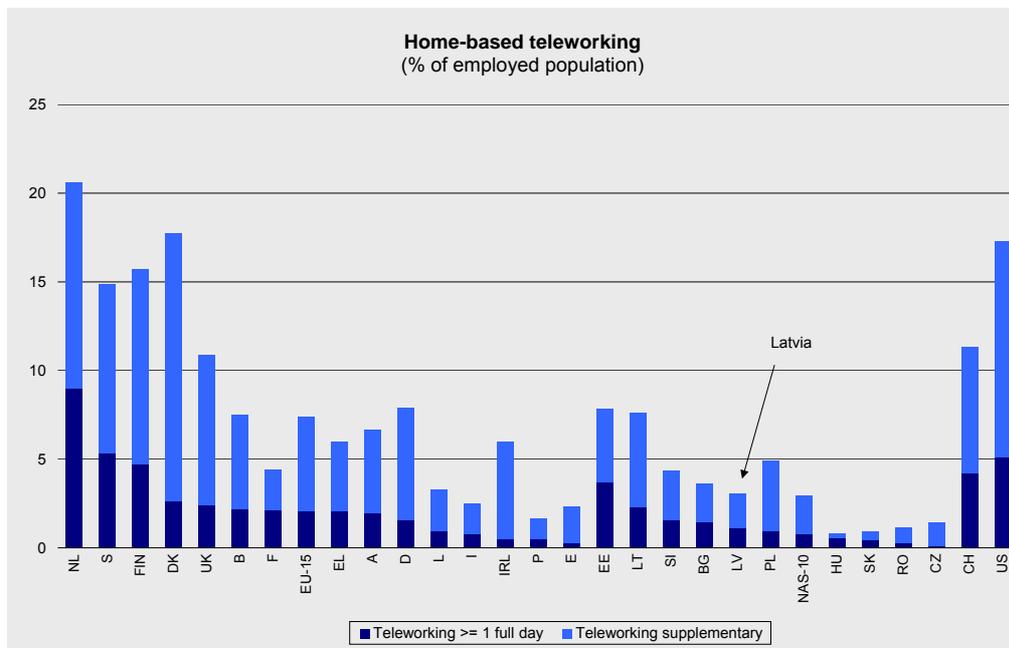


Figure 24 - Home-based teleworking

Base: All persons employed, weighted column percentages

Questions: E1, E3, E4

Sources: SIBIS GPS 2002, SIBIS GPS-NAS 2003

Seven percent of the EU-15 and nearly three percent of NAS-10 working population are presently teleworking from home, at least part of their working time (Figure 24). Nevertheless, considerable differences exist among countries. The Netherlands and the Scandinavian countries are well ahead if compared to other countries. The telework under consideration includes all types of home-based telework with the exception of self-employed freelancers in SOHOs. Figures for permanent or alternating home-based teleworking (spending all or at least one working day per week at home, respectively) are much smaller than figures for total home-based teleworking. This is because most teleworkers still spend the majority of their working hours at a central office. Among NAS-10, Estonia (7.83%) and Lithuania (7.65%) have a share of home-based teleworkers, which is above the EU average (7.37%). Latvian data in this respect (3.06%) practically coincides with NAS-10 average (2.97%).

SIBIS classifies the telework in permanent telework, where practically all working time is spent at home, alternating telework with at least one working day spent at home per week and centre-based telework (meaning workplaces provided by the employer in an office facility close to the employee's residence). The degree of interest in telework is considerable. More than 60% of the EU-15 and NAS-10 workforce have interest in at least one type of telework (Figure 25) and there are no big differences between EU-15 and NAS-10 countries. The interest in permanent telework expressed 40 % (18% very interested and 22% somewhat interested) of the EU-15 and 45% (15% very interested and 30% somewhat interested) of NAS-10 workforce (Appendix A, Figure 42). Regarding interest in telework, the Latvian figures are as follows: 60% of workforce has interest in at least one type of telework and 38% (10% very interested and 28% somewhat interested) in permanent telework.

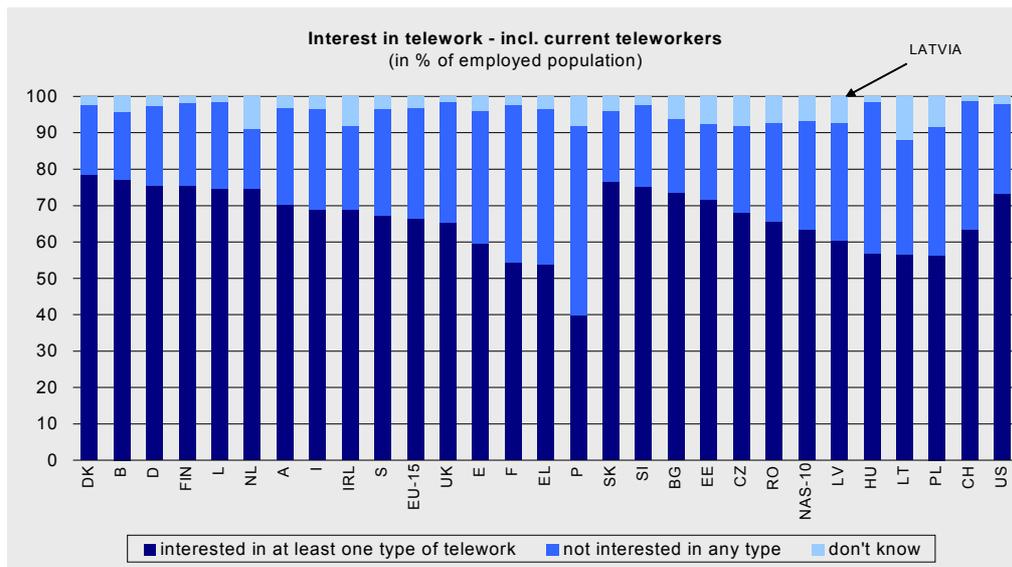


Figure 25 - Interest in telework

Base: All persons employed, weighted column percentages

Question: E8

Sources: SIBIS GPS 2002, SIBIS GPS-NAS 2003

The question of interest is job's feasibility for teleworking. 13% of Latvian workers consider their job as feasible for alternating telework (Appendix A, Figure 43). This is a little bit below the NAS-10 average 14% and considerably below the EU-15 average 31%. The best figure in EU-15 has Netherlands 41%. The comparison with data on real telework usage (Figure 24) indicates that the principal interest expressed in telework is to a considerable extent not being translated into actual telework practice yet although jobs are regarded as being feasible for telework. Reasons quoted for jobs not being feasible for telework include the need for face-to-face contacts with others, access to machines or other things, which cannot be accessed from home, and companies or superiors not approving of telework.

SIBIS defines mobile teleworkers as workers who spend 10 hours per week or more away from their home and their main place of work, e.g. on business trips, travelling or on customer's premises, and make use of online connections while doing so. In Latvia 2.38% of workforce can be considered as 'mobile teleworkers' (Figure 26) and that is a little bit above NAS-9 (data for Lithuania are not available) average 1.24%, but below the level of NAS leader Estonia 3.91% and EU-15 average 4.03%. The largest number of mobile teleworkers in Europe is in Switzerland 7.61%. The main purposes of mobile teleworkers to use online connections appear to be sending and reading e-mail, but there are also those, who browse the Internet and connect to their company's internal computer system.

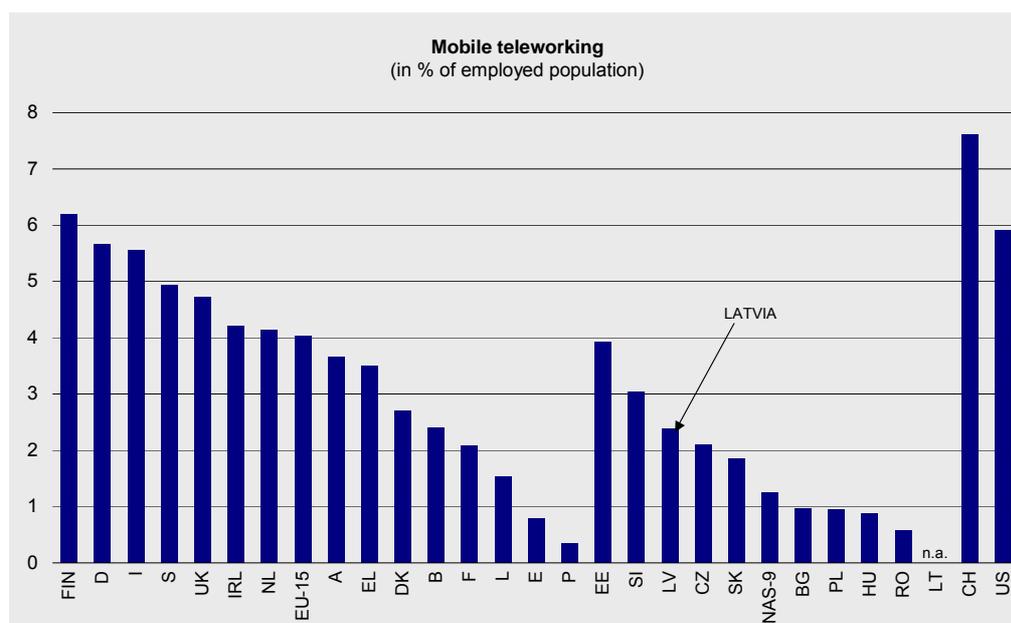


Figure 26 - Mobile teleworking

Base: All persons employed, weighted column percentages

Questions: F1, F2

Source: SIBIS GPS 2002, SIBIS GPS-NAS 2003

The tele-cooperation, i.e. the use of information and communication technologies for collaboration across establishment borders, boosts worker's productivity because it allows flexible configurations of human capital without actually moving people from one place to the other. Tele-cooperation was operationalised for the SIBIS GPS as communicating with external business contacts via e-mail, video-conferencing or electronic data transfer. It is already widely used in Europe with an average of almost 38% of EU-15 and 16% of NAS-10 workers practising it (Figure 27). In Latvia the tele-cooperation is used by 20% of employees, which is more than NAS-10 average but considerably below the level of leading country, Denmark 56%.

The self-employed teleworkers very often work from a home base using ICTs for tele-cooperation with clients, collaborators and suppliers. Many of such home workplaces have been turned into what is called SOHOs (small office - home office), i.e. ICT-enhanced workplaces for self-employed teleworkers. 3.4% of EU-15 and 1.7% of NAS-10 employment is by self-employed teleworkers in SOHOs (Appendix A, Figure 44). Latvia in this respect stands with 1.5% of self-employed teleworkers slightly below the NAS-10 average level but considerably behind the leading country Austria with 5.7%.

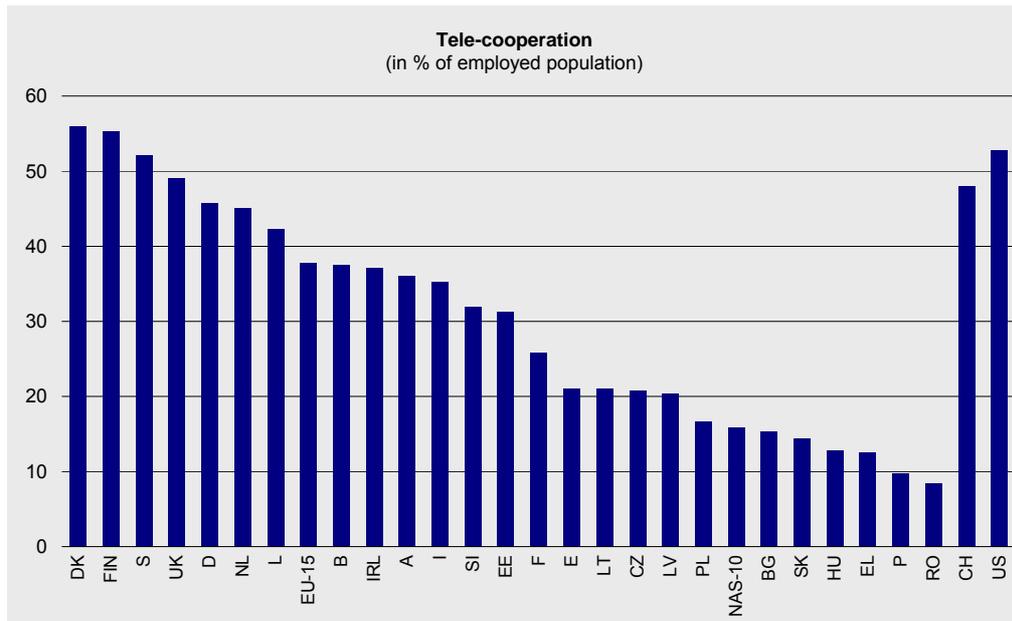


Figure 27 - Tele-cooperation

Base: All persons employed, weighted column percentages

Questions: A1, G1

Source: SIBIS GPS 2002, SIBIS GPS-NAS 2003

## 9. e-Government

The development of e-Government in Latvia is based on the conception of e-Government [8] developed by the Ministry of Justice. E-Government plays an important function in mediating government actions.

The United Nations e-Government index defines country's e-Government environment and shows the measure of on-line development. UN index is a compound index consisting of Infrastructure Measure (PC amount in households, Internet hosts in country, percentage of Mobile phone owners, etc.) and Human Capital Measure (Human development Index, Information Access Index). Latvia's e-Government index (1.88) (Figure 28) is higher than the global one (1.62) and higher than the NAS-10 average (1.81), but lower than that of leading NAS countries Czech Republic, Estonia and Poland and considerably lower than that of world's leader, US (3.11).

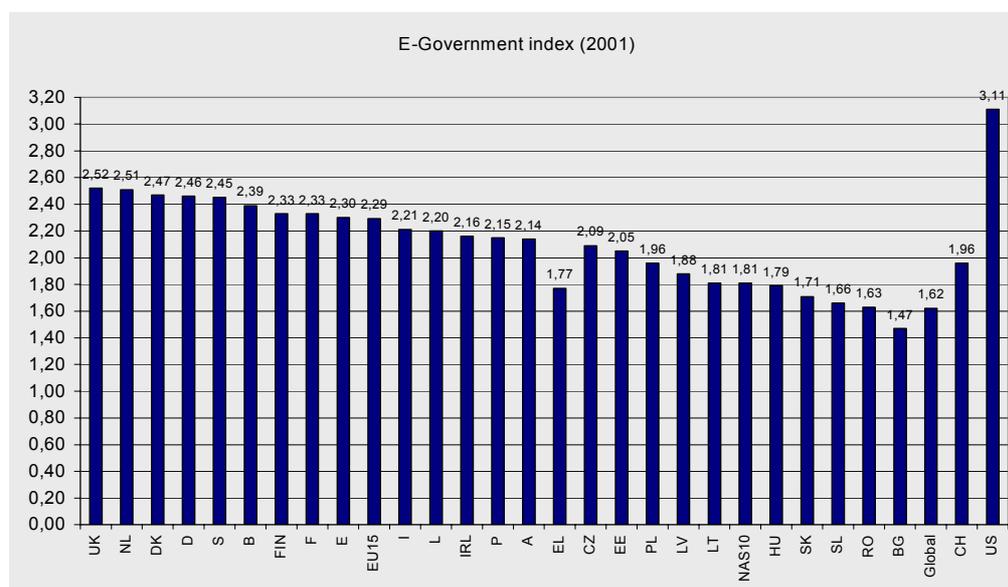


Figure 28 - E-Government index (2001)

Source: United Nations – DPEPA. *Benchmarking E-government: A Global Perspective*

Within SIBIS GPS a more detailed investigation of e-Government was carried out in comparison to that of UN. The Internet users and all respondents attitude to availability/usage of seven G2C services - library book search, job search, announcement of change of address, tax declaration, car registration, declaration to the police and request of personal documents were studied. The survey results are illustrated below. First of all the user's preference regarding interaction with government was investigated – do they prefer the online or traditional way of interaction, second, if they prefer to use the Internet, the (awareness of) availability of this online service in the region where they live has been questioned and after answering that this online service was available, the last question asked if they ever used this online service.

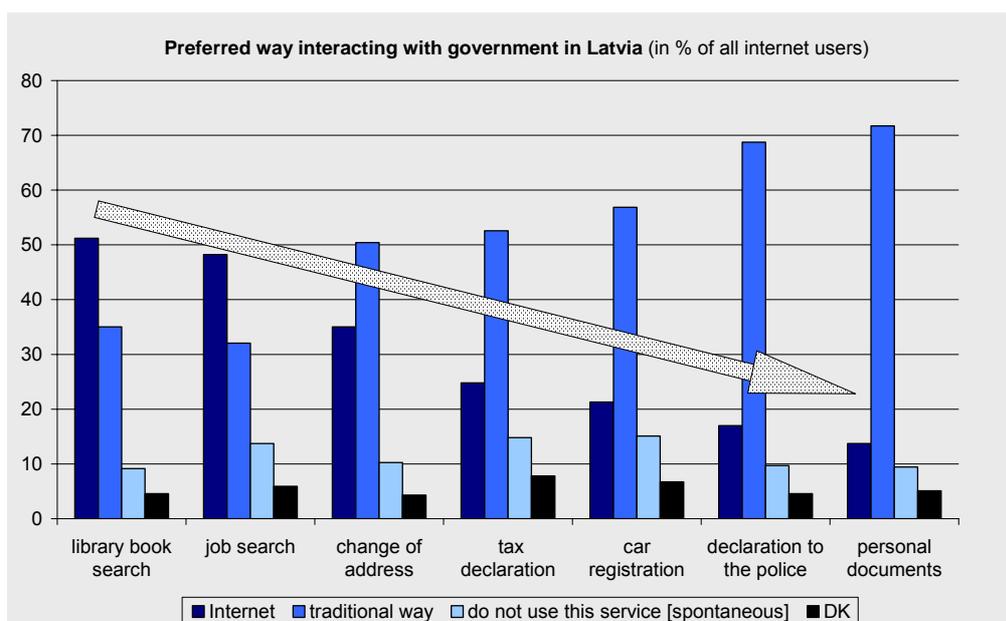


Figure 29 - Preferred way interacting with government in Latvia (in % of regular Internet users)

Base: Latvia's Internet users, weighted column percentages

Questions: A7, A8, K1

Source: SIBIS 2003, GPS-NAS

It is seen that only for two services - book search in libraries (51%) and job search (48%) the majority of users prefer to use the Internet. Within the remaining five, the majority prefers to use the traditional way of communication. The inquiry of all respondents (not only regular Internet users) qualitatively does not change this picture.

Country comparison of these two e-Government services across EU-15, NAS-10, Switzerland and US is given below.

Latvian data regarding book search in public libraries (Figure 30) in three positions of interest (preference/availability/usage of the service) is slightly better than NAS-10 average but considerably below the NAS-10 leader Slovenia that has very good figures. In this position Slovenia can be attributed to the world's leading countries, together with Denmark, US and some others. Only in three countries - Poland, Bulgaria and Estonia the majority of regular users do not prefer to use the Internet for library book-search.

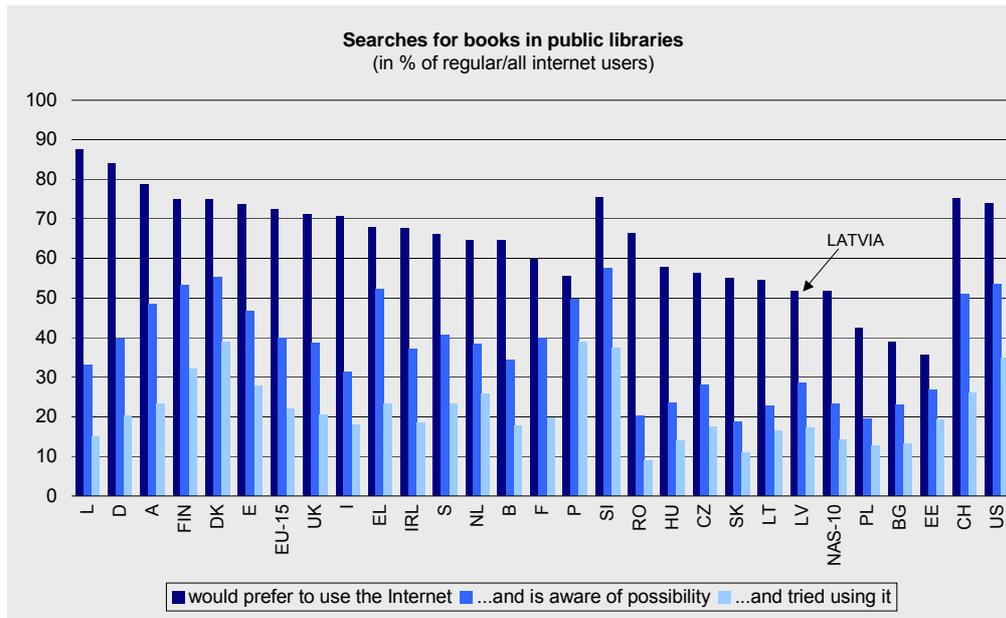


Figure 30 - Searches for books in public libraries  
 Base: Regular/all Internet users, weighted column percentages  
 Questions: A7, A8, K1, K2, K3  
 Source: SIBIS 2002, GPS, SIBIS 2003, GPS-NAS

The data on job search services regarding the preference to use the online service shows that NAS countries can be among the leaders (see data on Romania in Figure 31). The data on availability and usage of the service is not so impressive. Latvian data in the last two positions is better than NAS-10 average, but behind the level of NAS-10 leader Estonia where the usage is even better than EU-15 average.

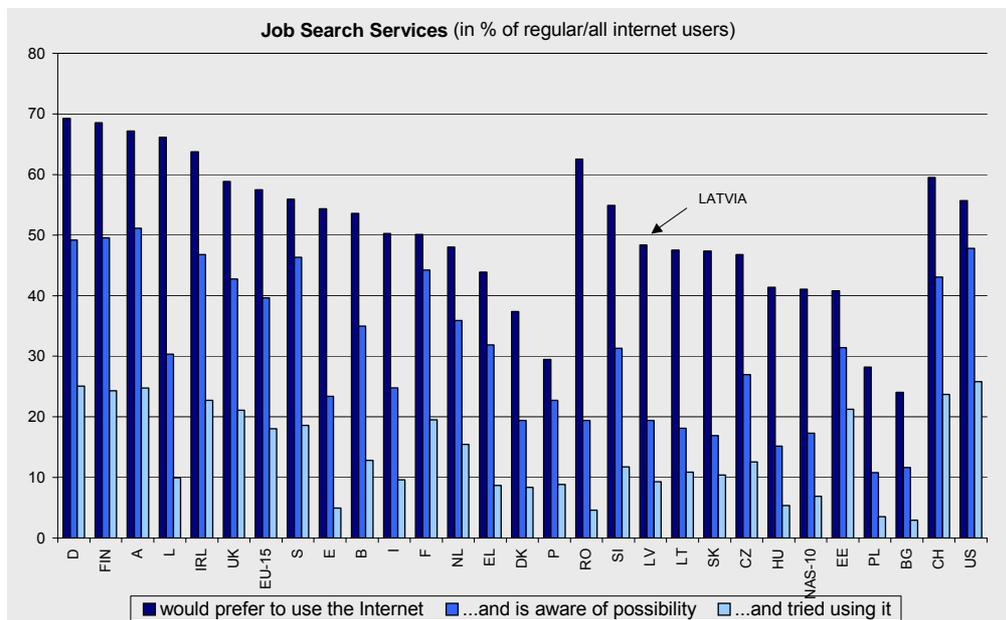


Figure 31 - Job search services  
 Base: Regular/all Internet users, weighted column percentages  
 Questions: A7, A8, K1, K2, K3  
 Sources: SIBIS 2002, GPS, SIBIS 2003, GPS-NAS

For the remaining five G2C services only in very few countries more than 50% of Internet users prefer to interact with government electronically, but Latvia is not among them.

## 10. Conclusions

The study of five topics relevant for the development of Information Society undertaken in WP2 shows that many activities in this direction take place in Latvia but these activities are not sufficiently reflected in the national statistics. Topics more or less covered by statistical indicators in official national statistics are T&A and e-Learning. By part, the data on these and other topics is available from other sources. One must conclude that up to now in Latvia the statistics on Information Society issues are unsatisfactory. At the same time it should be noted that the 2003 action plan of Central Statistical Bureau includes the chapter 'Statistics on Information Society processes' [12] and that it is a significant step forward in the IS statistics when compared to the present state-of-the-art in the field. The corresponding data will become publicly available in 2004. Unfortunately the plan is not free from some shortcomings. It seems that the number of indicators proposed for benchmarking of Information Society issues in that plan is not sufficient and the coverage of some relevant topics by corresponding indicators still will stay poor. First of all, this concerns such topics as 'Social inclusion', 'Work, employment and skills'. In this respect the indicators proposed and piloted by SIBIS better suit the needs of Information Society statistics because of better coverage of the topics of interest and more extended reflection of different aspects of these topics. The conclusions drawn from SIBIS GPS results and national statistics along six topics characterising the Information Society are as follows.

The level of development of ICT infrastructure is of crucial importance for other areas of Information Society. When compared to other NAS-10 and EU-15 countries, the situation regarding ICT infrastructure in Latvia cannot be considered as satisfactory. Household's access to the Internet is very low even among NAS-10 countries. This makes a barrier for wide usage of Internet in other areas of Information Society. The share of subscriber's lines switched on to the analogue network is also still high. This makes a barrier for broadband connection and limits the usage of some advanced Internet based applications. Broadband is available mainly in the largest cities. There is the lack of fixed network lines in many places in rural regions. This makes a barrier for the Internet penetration. The alternative solution could be the Internet by radio-link, mobile phone or PIAP. One must conclude that the area of T&A is the weakest link in the IS development. The liberalisation of fixed telecom market, started in 2003, should be regarded as a positive momentum in the way of ICT development. Due to insufficient reflection of the topic in the official national statistics, the gaps in T&A statistics still exist. The elimination of these gaps as well as the investigation of Internet usage through other devices, apart from PCs, is a future task. The Internet user's concerns regarding online security are high. The actions leading to an increased level of awareness of issues surrounding data protection and privacy could reduce these concerns.

The investigation of the topic e-Society and Social Inclusion shows that the digital exclusion in Latvia is lower than NAS-10 average but higher than EU-15 average. The most threatened risk group regarding digital exclusion is that of people with poor education (education termination age 15 and lower). The Internet usage by people with disabilities and long standing illnesses in Latvia is nearly two times higher than NAS-10 average but more than two times lower than EU-15 average. It seems that the policy makers are not familiar with the Web Accessibility Initiative and no activities in this field take place in Latvia.

The area of e-Education and Life-long-learning is promising due to the development of state significance project aimed on provision of schools with PCs and the Internet connection. Up to the end of 2002, 66% of teachers were trained and got the digital literacy skills. The digital literacy skills of population are better than NAS-10 average but below the EU-15 average. The participation of labour force in lifelong learning and self-directed learning is better than NAS-10 average but below the EU-15 average. Among NAS countries the Latvian labour force is well motivated on self-directed learning.

The e-Commerce in Latvia is developed on the basis of the national concept of e-Commerce and is in its initial stage. The most active age group using e-Commerce is that aged between

25 and 49. The e-Commerce usage by Internet users is a little bit better than NAS-10 average, but considerably below the EU-15 average. The share of Internet users who was stopped from buying online due to security concerns is considerably below the EU-15 average.

The area of e-Work is not reflected in the national statistics at all. 3% percent of the Latvian working population is teleworking from home and that coincides with NAS-10 average, but is less than EU-15 average. The degree of interest in telework is higher than the actual telework practice. The tele-cooperation of employees is a little bit better than NAS-10 average. The share of self-employed teleworkers in SOHOs is a little bit lower than NAS-10 average but considerably behind the leading country Austria.

The e-Government in Latvia is developed on the basis of the national concept of e-Government. Many activities in this area exist, but are not properly reflected in the national statistics. Only for two government to citizens services – book search in libraries and job search the majority of Internet users prefer to interact with government online. One must conclude that it is necessary to increase the awareness of e-Government possibilities by population.

## 11. Glossary

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DDIX	Digital Divide Index
DMS	Decision Maker Survey
EC	European Commission
G2B	Government to Business
G2C	Government to Citizens
G2G	Government to Government
GDP	Gross Domestic Product
GPS	General Population Survey
ICT	Information and Communication Technology
IS	Information Society
IST	Information Society Technology
ITU	International Telecommunication Union
LIIS	Latvian Education Informatisation System (Latvian abbreviation)
PC	Personal Computer
PIAP	Public Internet Access Point
PPS	Purchasing Power Standards
R&D	Research and Development
Ripe NCC	Réseaux IP Européens, Network Coordination Centre
SMS	Short Message Service
SOHO	Small Office Home Office
T&A	Telecommunications and Access
UNDP	United Nations Development Programme
W3C	World Wide Web Consortium
WAI	Web Accessibility Initiative
WEF	World Economic Forum

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23. The World Factbook 2002 – Latvia, CIA (<http://www.cia.gov/cia/publications/factbook/geos/lq.html>)

### 13. ANNEX A: Additional data and analyses

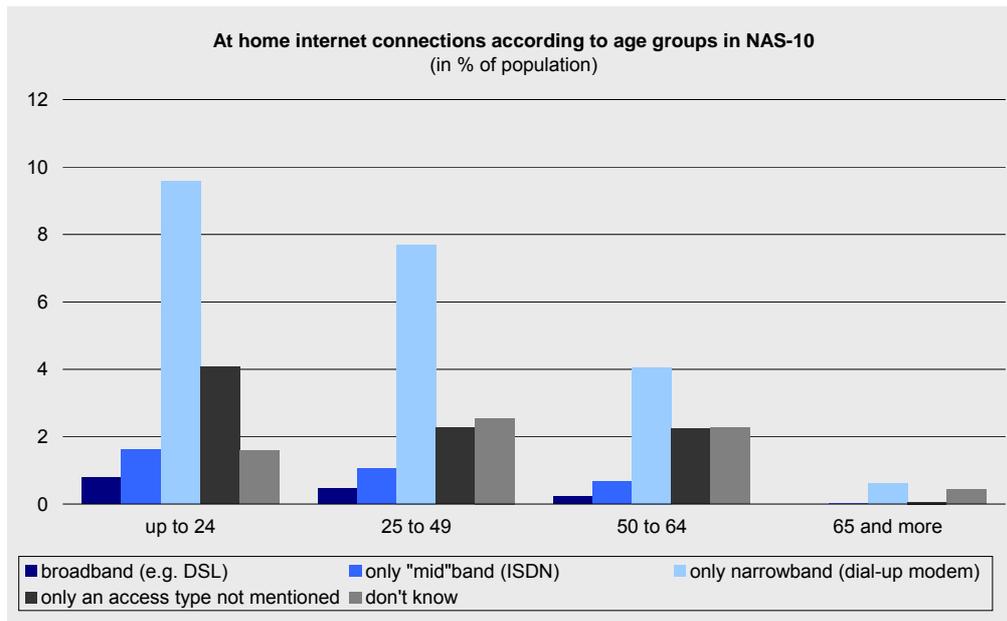


Figure 32 - At home Internet connection according to age groups in NAS-10 (in % of population)  
 Base: NAS all respondents, weighted column percentages  
 Questions: IN1, A11b  
 Source: SIBIS 2003, GPS-NAS

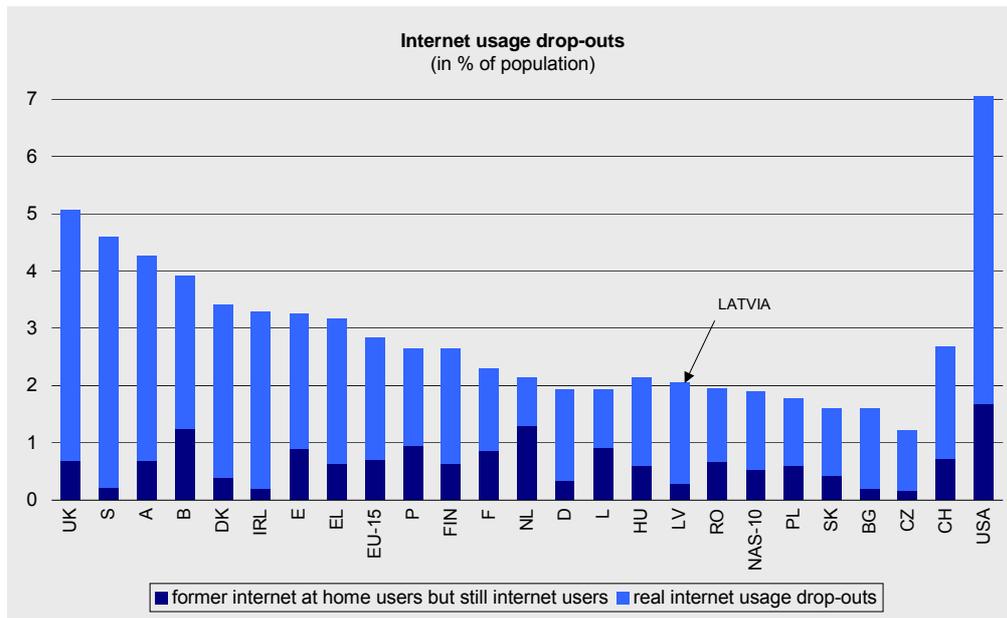


Figure 33 - Internet usage drop-outs  
 Base: All respondents, weighted column percentages  
 Question: A6  
 Sources: SIBIS 2002, GPS, SIBIS 2003, GPS-NAS

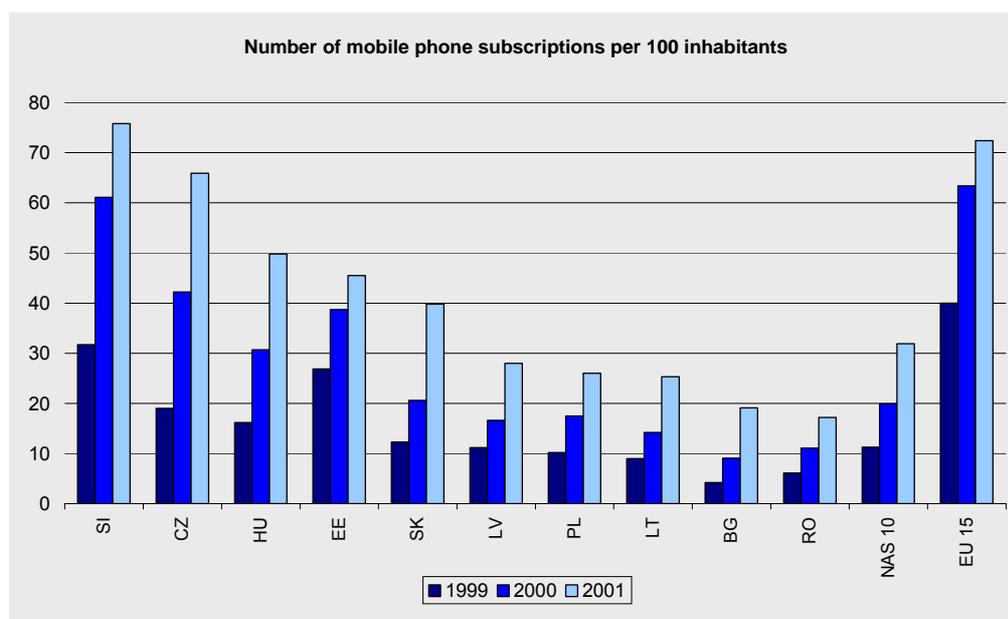


Figure 34 - Number of mobile phone subscriptions per 100 inhabitants  
Source: ITU

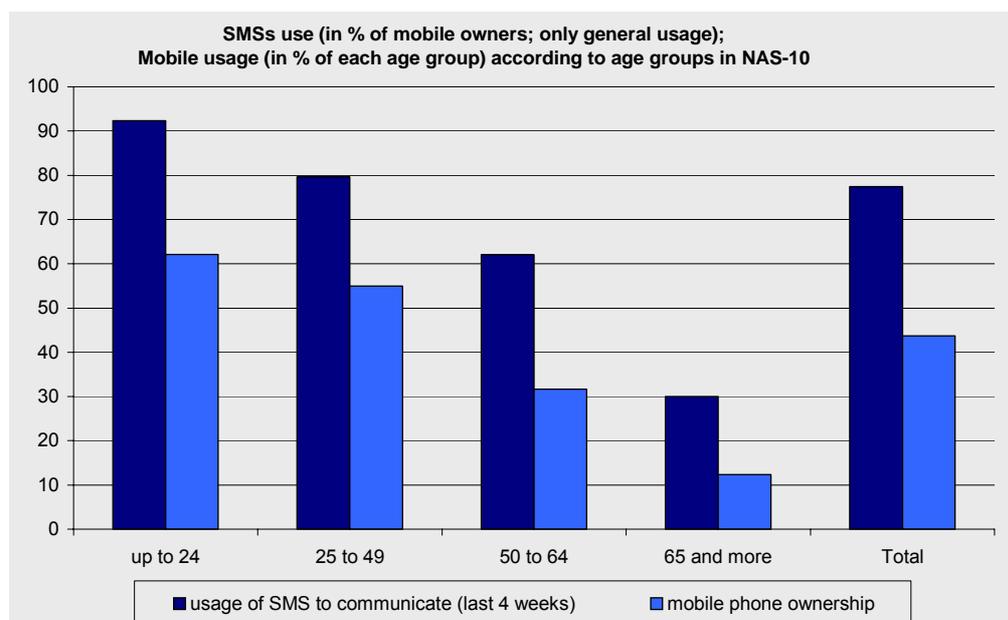


Figure 35 - SMS and mobile phone usage according to age groups in NAS-10  
Base: NAS all respondents, weighted column percentages  
Questions: A19c, A27  
Source: SIBIS 2003, GPS-NAS

In order to use the Internet effectively, one should be able to search and find the wanted and required information on the Internet. This is operationalised as confidence in using a search engine to find information. The share of fairly confident Latvian respondents (14.58%) is a little bit higher than the share of those feeling very confident (9.23%) (Figure 36). Altogether the confidence of Latvian respondents regarding the use of Internet search engines (23.81%) is a little bit higher than NAS-10 average 19.53% but lower than that of NAS-10 leader Estonia 42.45% and EU-15 average 43.78%.

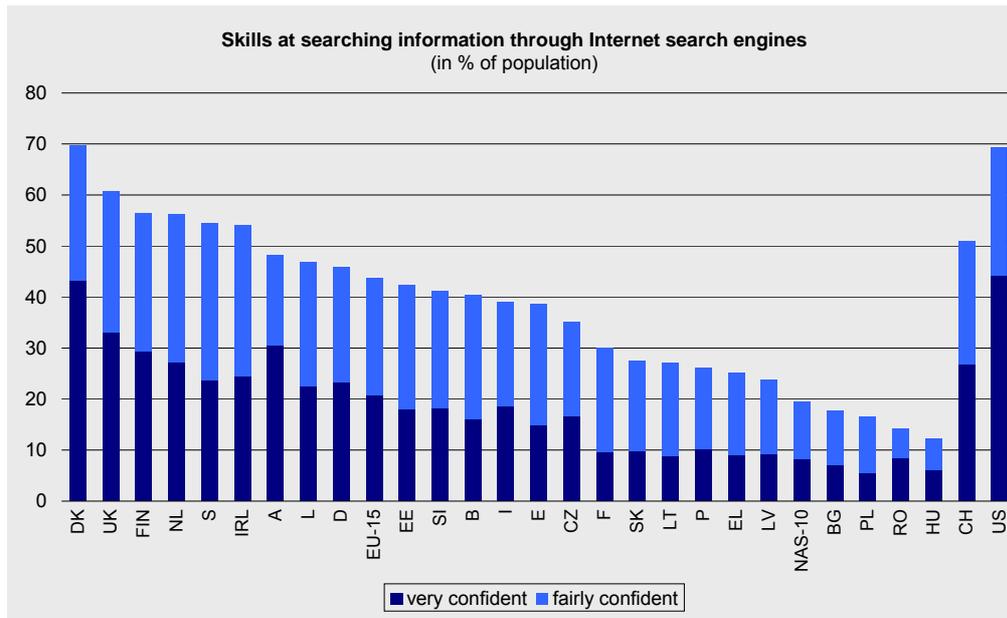


Figure 36 - Skills at searching information through Internet search engines  
 Base: All respondents, weighted column percentages  
 Question: D1a  
 Source: SIBIS 2002, GPS, SIBIS 2003, GPS-NAS

The skill to be critical to and select among huge amounts of information on the Internet is important in an individual as well as in a societal perspective. The first step is to identify the source of the information. The share of Latvian respondents feeling fairly confident at an identification of the source of information on the Internet 17.40% is nearly two times higher than the share of those feeling very confident 8.51% (Figure 37). Altogether the skills of very and fairly confident Latvian respondents 25.91% is a little bit higher than NAS-10 average 19.60% but lower than that of NAS leader Slovenia 38.94% and EU-15 average 39.69%.

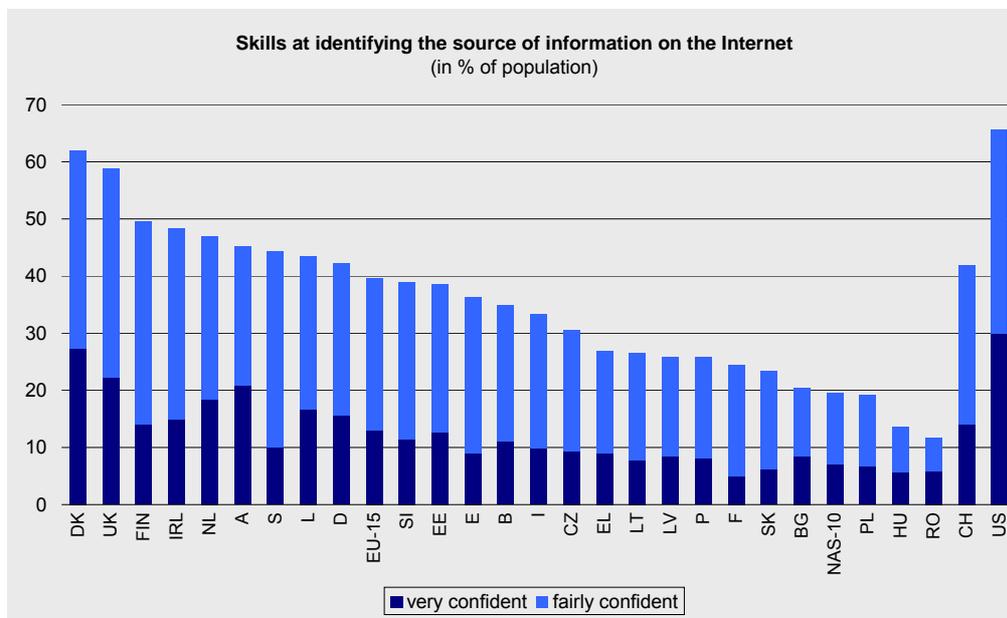


Figure 37 - Skills at identifying the source of information on the Internet  
 Base: All respondents, weighted column percentages  
 Question: D1b  
 Source: SIBIS 2002, GPS, SIBIS 2003, GPS-NAS

In the Information Society, the ability to update software will be important. Skill to find, download and install digital tools and programs enables the individual to develop a digital

toolbox for own purposes; either completely new programs or supplements to existing programs. The share of Latvian respondents feeling very confident in obtaining and installing digital tools 6.78% is almost equal to the share of those feeling fairly confident 6.53% (Figure 38). Altogether the skills of very and fairly confident Latvian respondents 13.32% is a little bit higher than NAS-10 average 10.33% but lower than that of NAS leader Slovenia 22.96% and EU-15 average 32.00%.

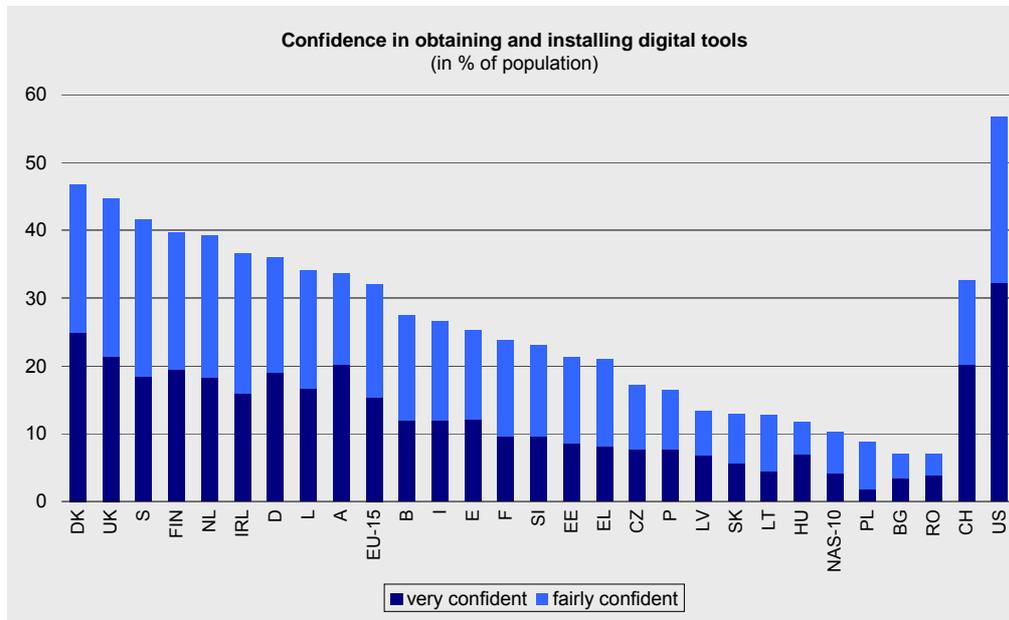


Figure 38 - Confidence in obtaining and installing digital tools  
 Base: All respondents, weighted column percentages  
 Question: D1g  
 Source: SIBIS 2002, GPS, SIBIS 2003, GPS-NAS

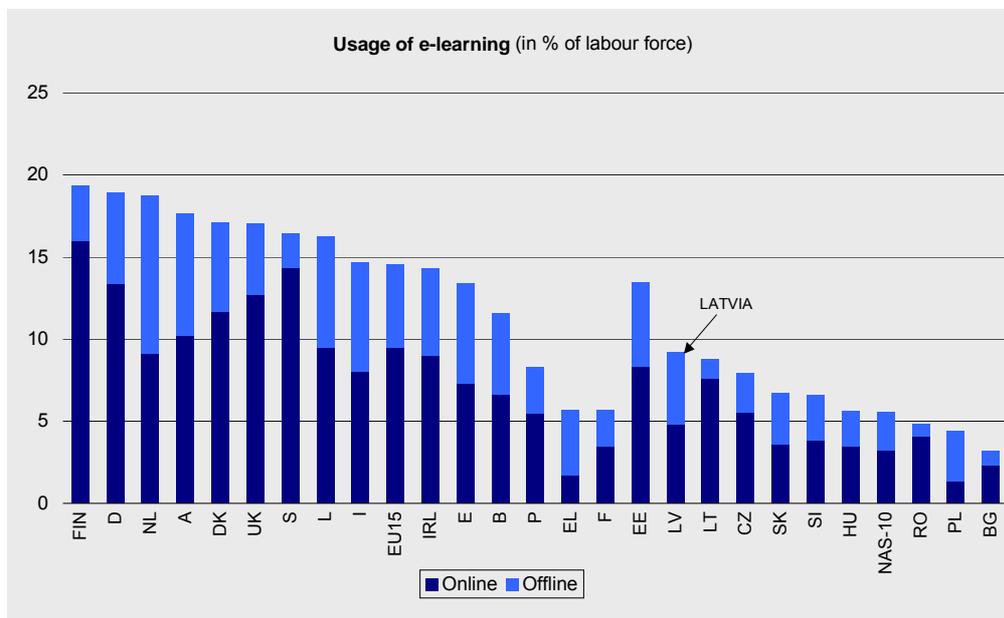


Figure 39 - Usage of e-Learning  
 Base: Labour force, weighted column percentages  
 Questions: C18a, C18b, C19a, C19b  
 Source: SIBIS GPS 2002, SIBIS GPS-NAS 2003

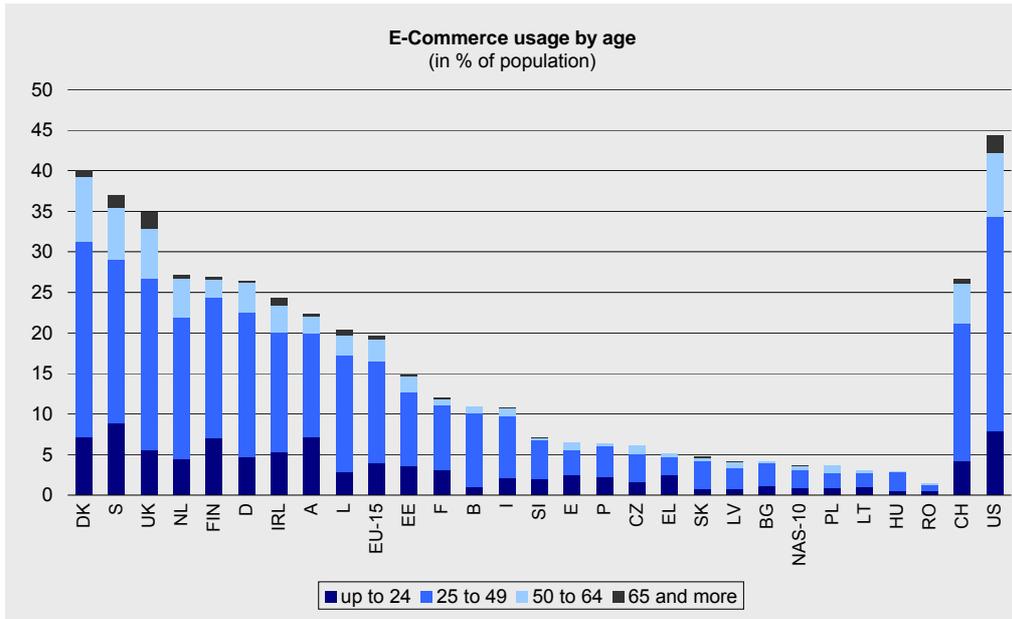


Figure 40 - E-Commerce usage by age  
 Base: All respondents, weighted column percentages  
 Questions: IN1, B1  
 Source: SIBIS 2002, GPS, SIBIS 2003, GPS-NAS

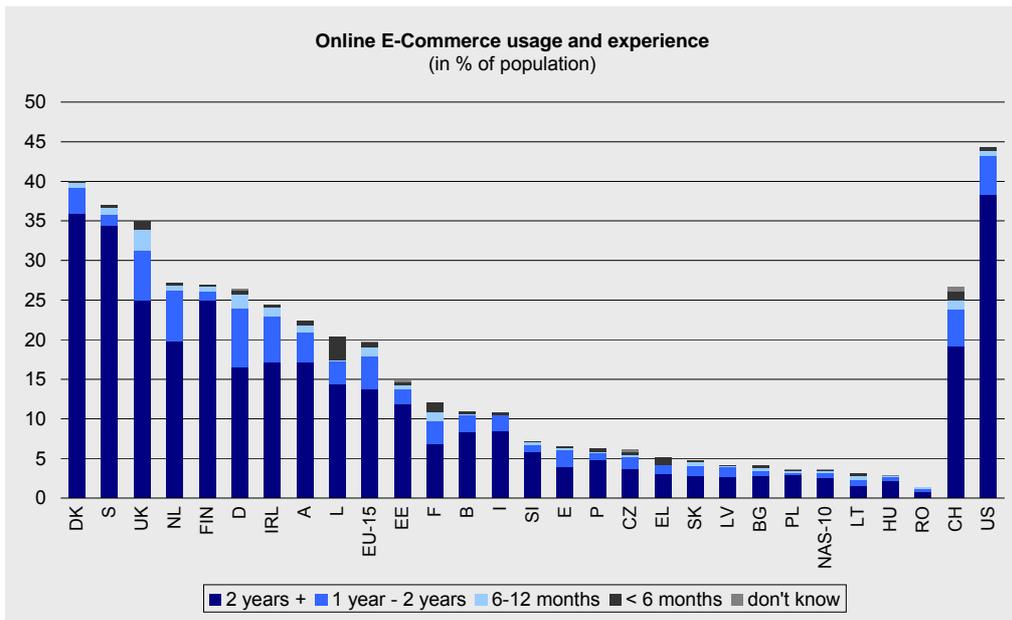


Figure 41 - Online e-Commerce usage and experience  
 Base: All respondents, weighted column percentages  
 Questions: B1, A10  
 Source: SIBIS 2002, GPS, SIBIS 2003, GPS-NAS

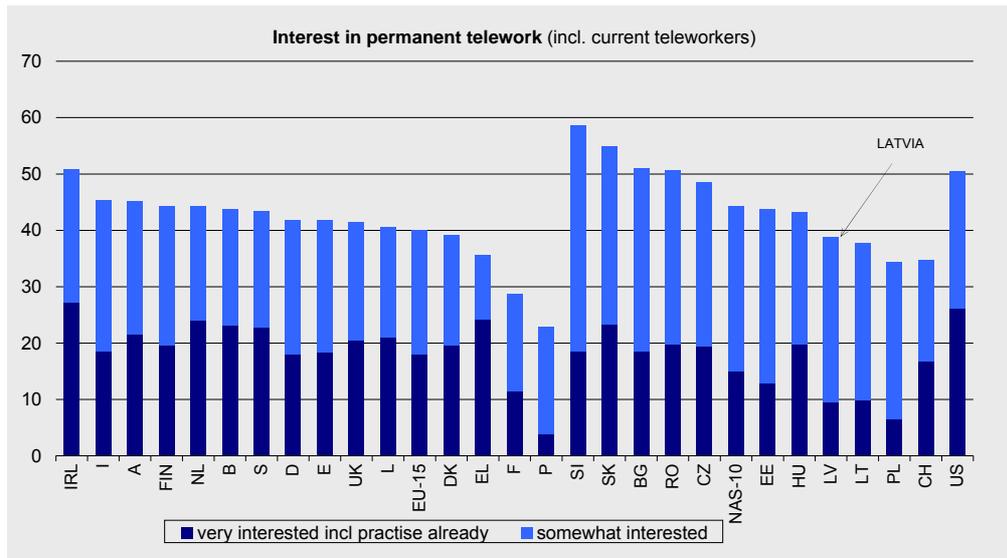


Figure 42 - Interest in permanent teleworking  
 Base: All persons employed, weighted column percentages  
 Question: E8  
 Sources: SIBIS GPS 2002, SIBIS GPS-NAS 2003

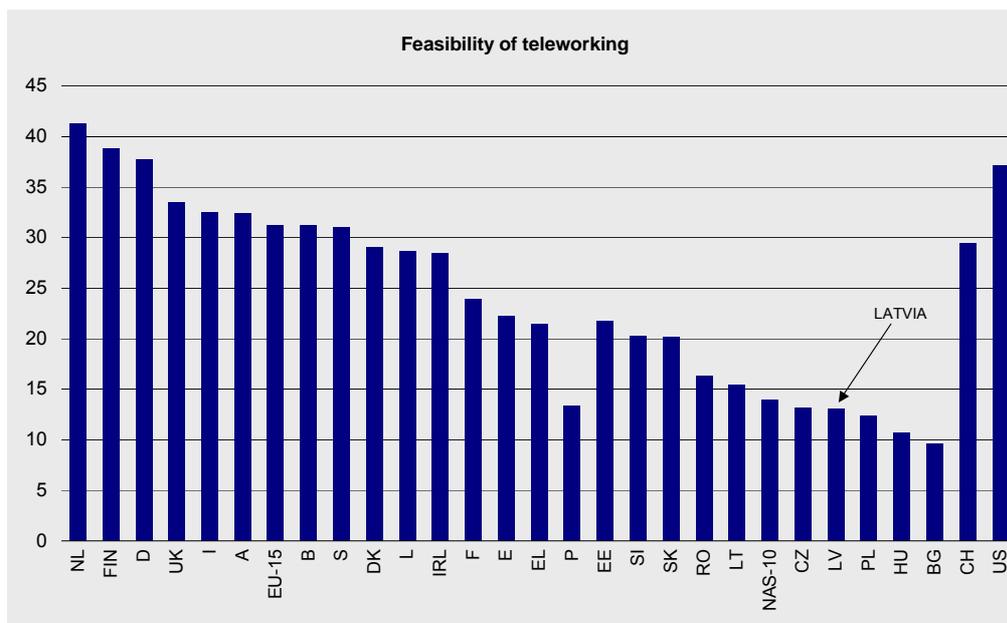


Figure 43 - Feasibility of teleworking  
 Base: All persons employed, weighted column percentages  
 Question: E9a  
 Source: SIBIS GPS 2002, SIBIS GPS-NAS 2003

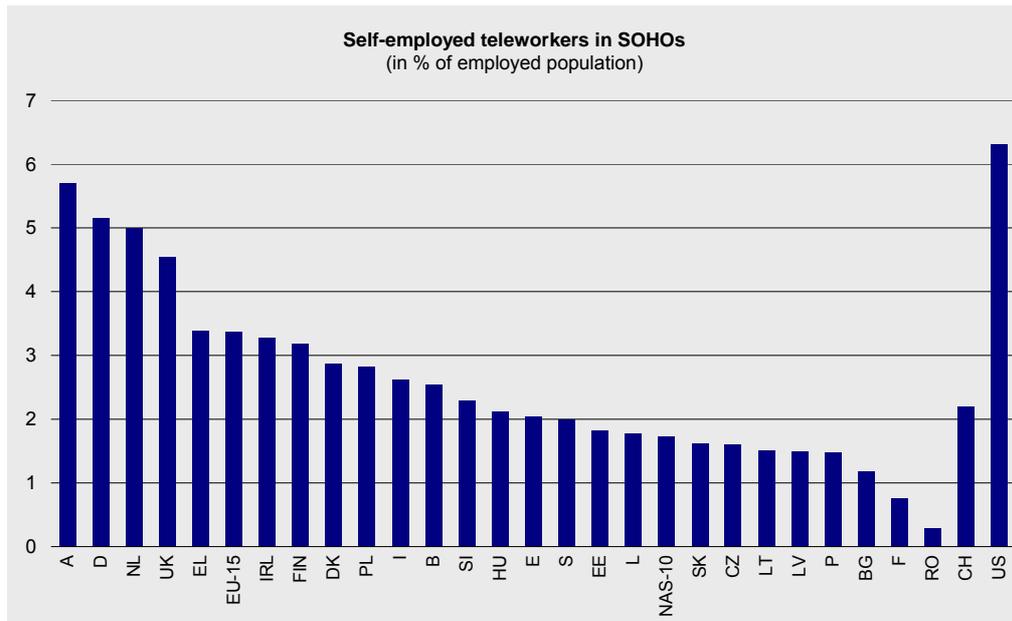


Figure 44 - Self-employed teleworkers in SOHOs  
 Base: All persons employed, weighted column percentages  
 Questions: IN2, IN4, IN21, A1, E1, G11, E3, E4  
 Sources: SIBIS GPS 2002, SIBIS GPS-NAS 2003

## 14. ANNEX B: Methodology

### 14.1. Methodology of the GPS 2002 survey

The survey was conducted in April-May 2002 (interviews were carried out between 4<sup>th</sup> April and 18<sup>th</sup> May) in all 15 EU Member States plus Switzerland and the US, using computer-aided telephone interviews. The survey was co-ordinated and executed by INRA Deutschland GmbH, Mölln. The population for this study is all persons aged 15 and over living in private households in the respective countries and speaking the respective national language(s). 11,832 interviews were successfully completed. The average interview length per country varied between 10 (Greece) and 20 minutes (Sweden).

Sampling: Target households were selected at random in all countries, either by random dialling techniques such as permutation of final digits or by drawing a random sample from official sources. Mostly a geographical stratification was implemented beforehand. For the selection of the target person common random keys were applied in all countries except for the UK where quota was used. In two cases (Spain, the US), screening had to be directed towards male respondents towards the very end of the field in order to gain gender representativeness.

There were three adjustments necessary in order to provide reliable data:

- Transformation from household sample to person sample. As only one person per household is interviewed, the described sample procedure provides a household sample, i.e. each household of the base population has the same likelihood of being in the sample but not each person. With the weighting stage of the transformation the equal likelihood of households is replaced mathematically by the equal likelihood of the individuals. To this end, each data set is multiplied by the amount of people in the household aged 15 or over. This number is subsequently divided by the average household size in order to obtain the actual case number.
- Adjustment of unweighted sample structure to the official statistic. Because random samples are not evenly distributed across all population strata, the distribution of unweighted samples regularly and systematically deviate from the population distribution from official statistics. Through the mathematical weighting the sample distribution was adjusted to the official statistics. The national weighting factor, which results from the iterative weighting, was included in the data material.
- Adjustment of weighted sample structure to the EU-15 Member States population. This weighting factor was necessary to calculate total figures according to the whole population of the European Union Member States. Furthermore it is useful to compare the EU with the US. Population sizes of each Member State are weighted to reduce the distortion based on the sample sizes in each country.

**NOTE:** The GPS 2002 questionnaire is available online and can be obtained from the SIBIS website: <http://www.sibis-eu.org/sibis/statistics/questionnaires.htm>.

#### Sample characteristics GPS 2002

	Total		EU-15	
	unweighted	weighted	unweighted	weighted
<b>Total sample</b>	<b>11832</b>	<b>11832</b>	<b>10306</b>	<b>10306</b>
Country				
B	585	585	-	-
DK	501	501	-	-
D	1001	1001	-	-
EL	505	505	-	-

E	1015	1015	-	-
F	1000	1000	-	-
IRL	500	500	-	-
I	1000	1000	-	-
L	500	500	-	-
NL	530	530	-	-
A	500	500	-	-
P	500	500	-	-
FIN	669	669	-	-
S	500	500	-	-
UK	1000	1000	-	-
EU-15	-	-	10306	10306
CH	522	522	-	-
US	1004	1004	-	-
Age groups				
Up to 24	1964	2019	1731	1651
25 to 49	5511	5309	4817	4593
50 to 64	2515	2495	2191	2209
65 and more	1833	2000	1558	1839
Don't know	9	9	9	14
Terminal education age				
Up to 13	695	717	693	728
14	715	742	701	881
15 to 16	1794	1750	1641	1820
17 to 20	3587	3515	2997	2937
21 and more	3266	3275	2743	2495
Still studying	1687	1751	1463	1372
Don't know	88	81	77	73
Internet usage				
Total Internet use	6905	6908	5828	5610
Regular use (last 4 weeks)	5944	5948	4985	4781
Occasional use (last 12 months)	961	960	843	830
Non Internet use	5550	5643	4655	4548
Employment status				
Paid employment	4966	4853	4291	4133
Self-employed	935	941	809	799
Unemployed/ temporarily not working	701	683	621	631
In education	1687	1751	1463	1372
Retired or other not working	3441	3510	3034	3292
Don't know	102	94	88	80
Longstanding illness				
Existence of health limiting conditions	1898	1885	1645	1610
No existence of health limiting conditions	9868	9858	8607	8606
Don't know	66	90	54	90
Mobile phone usage				
Mobile phone owner	8202	8192	7301	7121
Teleworking				

Home based teleworkers	217	233	168	172
eHealth usage				
Searched for health-related info online	2712	2728	2149	2041
Searched and found health-related info online	2578	2592	2038	1916

## 14.2. Methodology of the GPS-NAS 2003 survey

The survey was conducted in January 2003 (interviews were carried out between 1<sup>st</sup> January and 31<sup>st</sup> January) in the 10 Newly Associated States Bulgaria, Czech Republic, Estonia, Hungary, Lithuania, Latvia, Poland, Romania, Slovenia and Slovakia, using personal aided personal interviews (PAPI). The survey was co-ordinated and executed by NFO AISA Czech Republic, Prague. The population for this study is all persons aged 15 and over living in private households in the respective countries and speaking the respective national language(s). 10,379 interviews were successfully completed. The average interview length per country varied between 20 (Romania) and 40 minutes (Lithuania).

Sampling: Target households were selected at random in all countries, either by multistage stratified random-route sampling or by drawing a random sample from official sources. Mostly a geographical stratification was implemented beforehand. For the selection of the target person common random keys were applied in all countries, i.e. the next birthday method and the Kish method, except for Bulgaria where quota was used.

There were three adjustments necessary in order to provide reliable data:

- Transformation from household sample to person sample in Poland and Slovenia. As only one person per household is interviewed, the described sample procedure provides a household sample, i.e. each household of the base population has the same likelihood of being in the sample but not each person. With the weighting stage of the transformation the equal likelihood of households is replaced mathematically by the equal likelihood of the individuals. To this end, each data set is multiplied by the amount of people in the household aged 15 or over. This number is subsequently divided by the average household size in order to obtain the actual case number.
- Adjustment of unweighted sample structure to the official statistic. Because random samples are not evenly distributed across all population strata, the distribution of unweighted samples regularly and systematically deviate from the population distribution from official statistics. Through the mathematical weighting the sample distribution was adjusted to the official statistics. The national weighting factor, which results from the iterative weighting, was included in the data material.
- Adjustment of weighted sample structure to the NAS-10 countries population. This weighting factor was necessary to calculate total figures according to the whole population of the Newly Associated States. Furthermore it is useful to compare the NAS with the EU. Population sizes of each of the ten states are weighted to reduce the distortion based on the sample sizes in each country.

**NOTE: The GPS-NAS 2003 questionnaire is available online and can be obtained from the SIBIS website: <http://www.sibis-eu.org/sibis/statistics/questionnaires.htm>.**

### Sample characteristics GPS-NAS 2003

	Total		NAS-10
	unweighted	weighted	weighted
<b>Total sample</b>	10379	10371	10379
Country			
BG	104	1008	-
CZ	1096	1096	-

EE	1001	1001	-
HU	1000	1000	-
LT	1017	1017	-
LV	1006	994	-
PL	1000	1000	-
RO	1054	1054	-
SI	102	1002	-
SK	1199	1199	-
NAS-10	-	-	10379
Age groups			
Up to 24	2036	1825	1736
25 to 49	4473	4604	4593
50 to 64	2402	2202	2234
65 and more	1468	1740	1816
Long standing illness			
Existence of health limiting conditions	2272	2386	2555
No existence of health limiting conditions	7961	7836	7688
Don't know	146	149	137
Terminal education age			
Up to 13	374	433	575
14	658	682	855
15 to 16	1099	1151	1099
17 to 20	4784	4816	4869
21 and more	1823	1833	1719
Still studying	1407	1213	1057
Never went to school	59	59	68
Don't know	175	184	138
Employment status			
Paid employment	4038	3999	3354
Self-employed	608	622	690
Unemployed/ temporarily not working	1272	1303	1506
In education	1407	1213	1057
Retired or other not working	3052	3231	3764
Don't know	2	3	9
Internet usage			
Never heard of the Internet (incl. don't know)	1349	1437	1506
Ever heard of the Internet	9030	8935	8773
Total Internet use	3700	3507	2773
Regular use (last 4 weeks)	3025	2852	2215
Occasional use (last 12 months)	675	655	559
Non Internet use	6679	6864	7606
Mobile phone usage			
Mobile phone owner	5763	5635	4534
Telework			
Home based teleworkers	162	162	120