SIBIS
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Statistical Indicators Benchmarking the Information Society

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eEurope Benchmarking: Key Figures for NAS 10 Countries

by

DATABANK CONSULTING

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Introduction

What SIBIS is about

Statistical Indicators Benchmarking the Information Society (SIBIS) is an Information Society Technology (IST) Programme project that has produced new methods and data that will contribute to the European effort to measure and benchmark the Information Society, and to monitor the effectiveness of policies aimed at supporting its development. As the Information Society extends to all aspects of social and economic life, indicators are needed to track not only the technological infrastructure development, but also the impacts on individuals, organisations, industries, and economies.

SIBIS has approached the task of developing and testing such indicators in a systematic manner. It started with a comprehensive assessment of the state-of-the-art in Information Society benchmarking, undertaking extensive reviews of National Statistic Offices across all member states. In addition to indicators which have been used for actual benchmarking purposes, SIBIS collected and analysed other indicators utilised in small-scale and non-representative studies as well as other ones that have been proposed but not yet tested or applied in practice.
From reviewing the corpus of indicator literature, a core set of "SIBIS" indicators were then developed, with the emphasis on those aspects of the Information Society that have been the focus of attention in the eEurope context. These indicators were tested and applied in benchmarking surveys in all 15 EU Member States , in the US, Switzerland and the EU accession countries (i.e. the Newly Associated States – NAS) Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

eEurope + 2003

At the European Ministerial Conference held in Warsaw on 11-12 May 2000, Central and Eastern European Countries recognised the strategic goal set by the EU 15 in the Lisbon summit held in March 2000: Europe to become " the most competitive and dynamic knowledge-based economy in the world". In order to achieve this objective, Candidate Countries agreed to embrace the challenge set by the EU-15 with eEurope and decided to launch an "eEurope-like Action Plan" as a compliment to the EU political commitments.
The eEurope+ Action Plan, presented by the Heads of State and Government of the Candidate Countries at the Göteborg European Summit on June 16 2001, mirrors the priority objectives and targets of eEurope but provides for actions which tackle specific situations. It sets out a roadmap to accelerate reforms and modernisation of the economies of the Candidate Countries, encourages capacity and institution building and aims at improving overall competitiveness.
To facilitate comparison and exchange of information amongst Candidate Countries and with the other EU15 countries, actions are clustered around the same three main objectives identified in eEurope: A cheaper, faster, secure Internet; Investing in people and skills; Stimulate the use of the Internet. It has also been agreed to use the same indicators selected by EU15 for eEurope in order to monitor and benchmark the progress of the Information Society.
However, when the eEurope initiative was launched in the EU, the telecommunication sector had been liberalised, the 1998 telecoms acquis was already transposed and implemented and nearly all households had telephone lines. As this is not the case in the NAS, the eEurope+ Action Plan includes an additional section "Accelerate the putting in place of the basic building blocks of the Information Society" addressing these three elements.
In June 2002, a progress report was issued by with the aim to assess the progress in the implementation of the eEurope+ Action Plan.

SIBIS's contribution to the benchmarking exercise within eEurope+

The approach to benchmarking, which is being undertaken within the eEurope and eEurope+ initiatives, bears many similarities to the current approach taken by the SIBIS project. Through SIBIS, the indicators that have been developed to track telecommunications and access have a strong focus on the Internet and broadband.

This report directly contributes to the eEurope+ benchmarking exercise as it presents data corresponding to and/or complementing the indicators requested for benchmarking eEurope+. Its structure allows a comparison with the result from the EU15 benchmarking exercise, which was also carried out in SIBIS and presented in Deliverable 4.3.3 *eEurope 2005 Key Figures for Benchmarking EU 15.*

Structure of the report

The report is set out according to five broad areas: Internet indicators, modern online public services (comprising e-Government, e-Learning and e-Health services), e-Commerce, security & trust and broadband.
This report provides,

- a set of indicators measuring the various aspects of the Information Society in the NAS. For each area, the report also shows how SIBIS indicators interrelate with the indicators proposed in eEurope+ and in eEurope 2005
- a comparison of the relative position of the NAS in the various areas
- conclusions about the progress of the Information Society in the NAS Where relevant, a comparison with the results of eEurope+ Progress Report has been provided

http://www.europa.eu.int/information_society/topics/international/regulatory/eeuropeplus/index_en.htm)

- an overview of the various national contexts, as for implementation and progress of the Information Society (in Annex)

The Survey

The SIBIS General Population Survey, (GPS) was conducted in January 2003 in the 10 Newly Associated States, Bulgaria, Czech Republic, Estonia, Hungary, Lithuania Latvia, Poland, Romania, Slovenia and Slovakia, using personal aided personal interviews (PAPI). Throughout the study the set of these countries is called NAS or Newly Associated States. The survey was coordinated and executed by NFP AISA Czech Republic, Prague. The population for this study is all persons aged 15 years and older. The interviews were 10,379 - roughly 1000 per country.

In order to produce comparable results, the research has used uniform questionnaire and sampling methods. The interviews focused on:

- Availability, up-to-dateness, capacity, and reliability of info-communication infrastructure;
- Knowledge and attitudes (opinions, fears and doubts) related to ICT usage;
- Participation in and readiness to use the services of various ICT application fields such as e-Learning, e-Work, e-Commerce, e-Health, and e-Government.

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. The database of the survey contains about 160 variables. In Hungary the inquiry was performed by

Median Ltd. and the research tasks were performed by the Budapest University of Economic Sciences and Public Administration, Department of Sociology and Social Policy.

There were three main adjustments necessary in order to provide reliable data:
• Adjustment of unweighted sample structure to the official statistic
• Adjustment of weighted sample structure to the NAS-10 countries population.
• Transformation from household sample to person sample in Poland and Slovenia

The outcome of the SIBIS Project is a series of studies by country and by ICT application fields. In order to create a background to the analysis of survey results and to interpret the data correctly, researchers in all participating countries have studied the legal, political, institutional and business background of ICT diffusion. With this additional information the SIBIS database is suitable to make a comparison among Central European countries on the efficiency of their ICT related policies. This application possibility of the survey results is important because it corresponds to the evaluation aims of the e-Europe programme of the EU and its national counterparts in the accessing countries.

Acknowledgments

For the preparation of the overview presented in Annex, each NAS partner has taken up the task to implement the needed research and to develop and elaborate the reporting on their single National Context. Databank Consulting has coordinated and supervised the work

1. Summary of the results

The 10 NAS countries surveyed by SIBIS are engaged in the development of the Information Society in order to accelerate their social and economic growth, but they have to overcome at least three main barriers. They are the gap in the development of information infrastructures, the gap in digital literacy and the gap in the development of the electronic market and electronic services. Joining the European Union is likely to help to alleviate the first two problems, while the third one is more difficult to solve, because it is related with the competitiveness of enterprises and the development of a true market economy. The picture is not homogeneous across the 10 NAS: some countries are already close to EU-15 levels in ICT diffusion (Estonia, Slovenia), while in others the mentioned gaps are particularly severe (Romania).

This is the overview resulting from the benchmarking analysis of key eEurope indicators in NAS countries carried out in this report, which is broadly coherent with the eEurope+ 2003 Progress report conclusions. The SIBIS study however provides not only more recent data (collected in 2003, on year after the Progress report data), showing progress made, but also much more articulated information about diffusion and online services usage patterns, giving important insight into the process of development of the Information Society in accession countries.

Overall, for most indicators of Internet and ICT diffusion on the population the average NAS-10 value is approximately half of the corresponding one for EU-15 countries. Average Internet diffusion in the NAS 10 population is 26% (of which 21% regular, that is active in the last four weeks) while it is 54% for the EU 15 (of which 46% regular). In other words, one Western European out of two uses the Internet, while only one Eastern European out of four does. However, there are remarkable differences between countries, coherent with the economic and social development context of each country. Slovenia and Estonia clearly emerge as aligned with mid-ranking EU-15 countries in terms of access and intensity of Internet usage. At the other extreme, Bulgaria and Romania suffer from a severe gap in information networks diffusion. The other countries are positioned somewhere in a middle ground between these extremes, with Poland pending towards the low values and Czech towards the high values.

The analysis shows that structural factors of telecom networks insufficient diffusion and access costs weigh strongly as barriers. According to the eEurope+ Progress report, on average 77% of households in the candidate countries had a fixed telephone service in 2001, compared to 86% in the EU-15. Moreover, in many countries the modernisation of the telephone network is not completed yet, and especially in rural areas old analogue exchanges and lack of bandwidth reduce drastically the quality of Internet dial-up connections. Only 3% of at-home Internet users' connections are broadband (it is 7% in the EU). This creates a barrier to the uptake of the Internet. On the other hand, migration paths to higher speed connections are correlated with online tenure as in the EU-15. Some countries are likely to leapfrog the midband access stage (ISDN) passing directly from narrowband dial-up to broadband. This could be an opportunity to accelerate the diffusion of more advanced digital services.

The process of accession in the Union should bring benefits from this point of view. The alignment of the regulatory framework in the telecom sector is almost complete: liberalisation is expected to bring benefits in terms of lower tariffs and better conditions, such as the introduction of flat rate unlimited access formulas. The increase of foreign capital flows, consolidation and rationalisation should contribute to increase investments in information networks. Governments appear to value Internet development as a priority, and some funds will be available through the 6th Framework Plan and other initiatives connected with the eEurope+ Plan to sustain networks development in peripheral areas and upgrade to broadband. Public initiatives such as PIAPS already play a positive role especially promoting affordable access.

However, there is also a great gap in awareness and understanding of the potential of the Internet to be overcome. Approximately 15% of the NAS population claims to have never heard of the Internet, many more in Bulgaria and Romania. The Digital Divide Index shows a deep gap for the population with lower education and lower income (but the gender gap is les significant than in the EU). The Digital Literacy Index, which is based on a self-evaluation of main digital skills, scores 0.35 in the NAS-10 countries, much lower than the 0.8 measured for the EU-15, not to speak of a US score as high as 1.5 (on a scale from 0 to 3).

The young generation does feel more comfortable with the Net. NAS Internet users under 24 are three times more likely to have a range of skills compatible with the goals of the IS. It is worthwhile noticing that the EU-15 young present the same Digital Literacy score as the general population of the US today, while the NAS-10 young are where the EU general population is today. This promises well for the future growth of digital skills. Unfortunately, since demographic trends are similar to Western Europe, the young are not so numerous to be able to change the balance in the near term. The Net must conquer a greater share of the 24 to 50 years old population to become a real factor in social and economic development, from the minority phenomenon it is now.

After the home, the workplace is the most important place for Internet access and usage. SIBIS+ elaboration showed how students and employed/self-employed people in the NAS countries are more likely than the average population to use the Internet, as it happens in the EU 15. This confirms that the diffusion of Internet in the workplace is a very important channel to increase digital literacy: on the other hand it also proves that the unemployed run the risk to miss the chance to increase their ICT skills and therefore to increase their relative disadvantage in the labour market.

The greater gap with the EU emerges in the usage of more advanced interactive services, such as e-Commerce, e-Learning and e-Government. Only 5% of the NAS population buys online, versus the 20% of the EU 15 population. A similar percentage has been recently involved in e-Learning, a factor of three lower than the EU 15. The diffusion of these services is correlated with intensity of usage and online tenure, which are generally lower in NAS countries because of the later start of development of the Internet market. But there is also a gap in the overall development of the market economy infrastructures, particularly of the retail and distribution sector, and a history of fraud and lack of transparency for mail order purchases in many countries. The experience of the EU countries shows that it takes time for the development of a supply and delivery system suitable for e-Commerce and able to deliver real benefits to customers.

Concerns over data security and privacy protection are compounding the low inclination towards online shopping. Overall, 24% of NAS Internet users are very concerned about security and 39% are somewhat concerned, a level comparable to that of the EU 15 (respectively 26% and 47%). The countries leading in Internet culture seem to show a higher level of awareness of the problem, but many other factors can influence these perceptions.

There is certainly a need for the NAS countries to step up efforts to build trust and confidence in market mechanisms and online interactions, either commercial or not. This means to develop a favourable regulatory framework and boost the creation of those complex social infrastructures and behaviours sustaining the growth of the civil society. Online data security and privacy protection issues are a part of this more general context and should not be considered as a technical problem only. The transposition of the e-Commerce Acquis, the EU regulatory framework, which is just starting, could create more favourable conditions by strengthening trust and confidence in electronic markets.

Positive elements concern the less commercially oriented interactive services. There is a favourable attitude towards using Internet for e-Government, with peaks in Romania and Slovenia, similar to the EU one. A third of Internet users search for health-related information online, a value quite close to the EU-15 one. However, the compounding effects of low Internet diffusion reduce the diffusion of this activity amongst the general NAS population overall to 7%. An elaboration by socio-demographic factors paints an interesting picture: the profile of the most prevalent e-Health user is female, young, with no specific illness, and highly educated. Clearly, the main motivation of this activity seems to be the increasing attention to wellness and fitness. These cultural trends seem to be converging across Europe, following globalisation and the mass media influence. It is possible that the accession countries will adopt Internet into their life styles faster than into their commercial and institutional environments.

In this context, the public sector could play an important role to drive demand for interactive services and accelerate the development of the Information Society. NAS countries are revising their government strategies and structures to enter into the Union and are in a position to exploit ICTs to support change. The European Conference on e-Government held at Como, Italy in July 2003 showcased several good practice e-Government implementations from NAS countries. Governments are developing multi-channel, citizen-centered (or company centered) services to meet new needs and achieve greater efficiency. Similarly, the efforts to equip schools and universities with ICTs may help considerably to reduce the digital literacy gap. The European Union can also play a positive role by sustaining and complementing the efforts of NAS countries government in the development of the Information Society.

2. Internet Indicators

2.1. Citizens' access to and use of the Internet

2.1.1. EU policy goals and definitions

In the area of telecommunications and access, the eEurope 2005 goals set in Seville in April 2002 represent a shift from a quantitative set of goals, to a more qualitative one. The focus of the earlier eEurope 2002 Action Plan was on extending Internet connectivity across Europe. eEurope 2005 focuses on translating this into improved economic productivity and better, more accessible and sustainable services for all European citizens, underpinned by secure, widely available broadband infrastructure. This was decided assuming that the problem of basic access is by now solved in most of Europe.

According to the eEurope+ Progress report, on average 77% of households in the candidate countries had a fixed telephone service in 2001, compared to 86% in the EU-15. Moreover, in many countries the modernisation of the telephone network is not completed yet, and especially in rural areas old analogue exchanges and lack of bandwidth reduce drastically the quality of Internet dial-up connections. This creates a barrier to the uptake of the Internet. Candidate countries therefore are still facing the problem to develop an affordable and reliable communications infrastructure, and to stimulate basic Internet use, through the liberalization of the communications sector. The eEurope+ plan is based on the eEurope 2002 structure and targets several indicators of access and usage, referred to households as well as individuals, monitoring the development of infrastructures.

SIBIS+ survey in the candidate countries measured a number of indicators which correspond broadly to the eEurope+ benchmarks, but focused on the diffusion in the population (rather than households penetration). An overview of these data follows.

Table 2.1 Internet access: eEurope+, eEurope2005 and SIBIS's indicators

e-Europe+ benchmarking indicators	SIBIS indicators
Cheaper, Faster Internet **1. Percentage of population who regularly use the Internet** **Definition:** all forms of use to be included, no matter where. Population >15. Regularly to be defined at least weekly. **Source**: Sample survey/Eurobarometer **Frequency**: 6 months **Supplementary indicators**: (i) Total number connected to be sub-divided by place of access: home, work, school, Public Internet Access Points (PIAP), cyber café, mobile, other (ii) frequency of use: survey respondents to be asked how often they use the Internet (monthly, weekly, daily). (iii) Social data: age, gender, income and occupation of respondent (iv) Type of use, e.g. e-mail, shopping, information search. (v) International comparisons, if possible, USA, Japan, other OECD on comparable basis **2. Percentage of households with Internet access at home** **Source**: Sample survey/Eurobarometer **Frequency**: 6 months	**Internet access indicators:** • Percentage of individuals with Internet connections at home • Percentage of individuals regularly using the Internet • Internet usage by place of access • Use of Public Internet Access Points (PIAPS) **Definition:** Population ≥16. Regular access defined as in last 4 weeks; occasional last 12 months. Use to include all locations and methods of access. **Source:** SIBIS+ GPS **Collection Date:** GPS: January 2003 for NAS 10: BG, CZ, EE, HU, LV, LT, PL, RO, SK, SI **Supplementary Indicators on Internet usage** • Intensity of online usage • Internet drop-outs • Users according to online tenure • Internet snapshot: relative positioning of NAS-10 countries • Barriers to Internet usage in NAS countries • Digital Divide in NAS countries elaborated by socio-economic factors

Source: eEurope+ & SIBIS.

e-Europe 2005 benchmarking indicators
Policy indicators: A.1 Percentage of households/individuals having access to the Internet at home A.2 Percentage of individuals regularly using the Internet **Definition:** Population ≥16-74 Regularly defined as at least weekly. Use to include all locations and methods of access. **Source:** Eurostat/NSI ICT household survey, data to be collected on a comparable basis **Frequency:** Annual, first deliverables 2003, second October 2004, third October 2005, with as reference period 3rd quarter 2003/4/5 **Supplementary indicators:** A.3. No. of individuals with access to the Internet broken down by device for accessing via digital TV, mobile device (include all forms of mobile access; handheld computer, mobile phone, identifying 3G (UMTS). A4. No. of individuals with access to the Internet broken down by place of access (home, workplace, school, university, Internet cafe, PIAP etc). A.5. Percentage of households connected in Objective 1 regions.

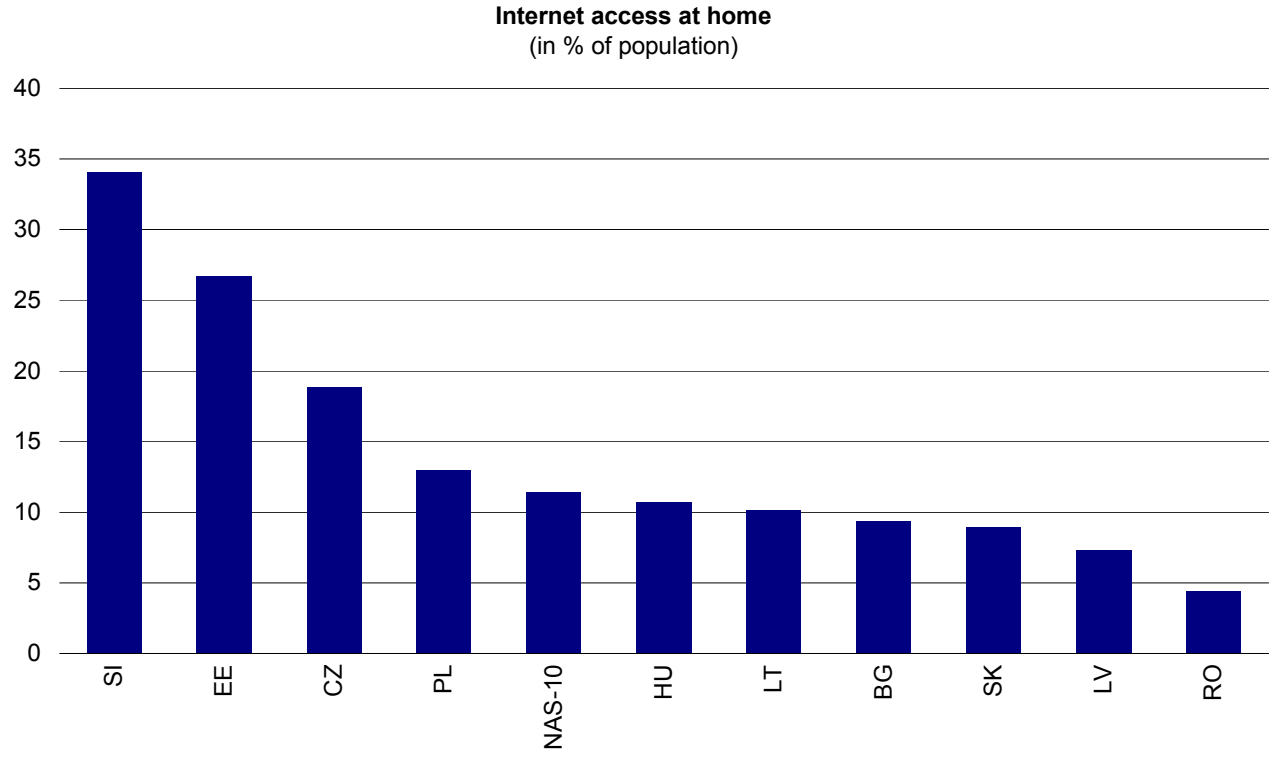
Source: eEurope 2005 & SIBIS.

2.1.2. Results from SIBIS

2.1.2.1. Percentage of individuals with Internet connections at home

According to the SIBIS survey, Internet users in 2002 in the EU15 countries were 54% of the population (of which 46% regular, in the last 4 weeks); in the 10 NAS countries surveyed they were 26% of the population in 2003 (21% regular), but with strong differences dividing the various Eastern European countries. In other words, one Western European out of two uses the Internet, while only one Eastern European out of four does. The inadequacy of the network as well as the levels of access and usage costs represent constraining factors. The eEurope+ Progress report notices that average costs of off-peak access are similar to EU levels, while peak costs change considerably by country and tend to be much higher.
There is a correlation between higher costs and lower regular Internet usage levels by country. For example, Latvia has very high Internet access costs and quite low Internet usage levels compared to the NAS average. The reason for this is related to the monopolistic position of Lattelekom on the fixed telephone network up to the end of 2002. Also, most citizens who do not use the Internet, when asked about the reason why frequently cite: "Because of the price". But when the same respondents were asked how much the Internet costs, they were usually unsure: this means that the perception of high costs is a barrier at least as much as their actual level. Within the Czech Republic specifically, but probably across the NAS generally, public opinion about the price of Internet access is that it is expensive. Therefore more consistent pricing regimes and greater education of users and potential users is required.

Figure 2.1 Percentage of individuals with Internet connections at home by country
Question: Do you have access to the Internet in your home?



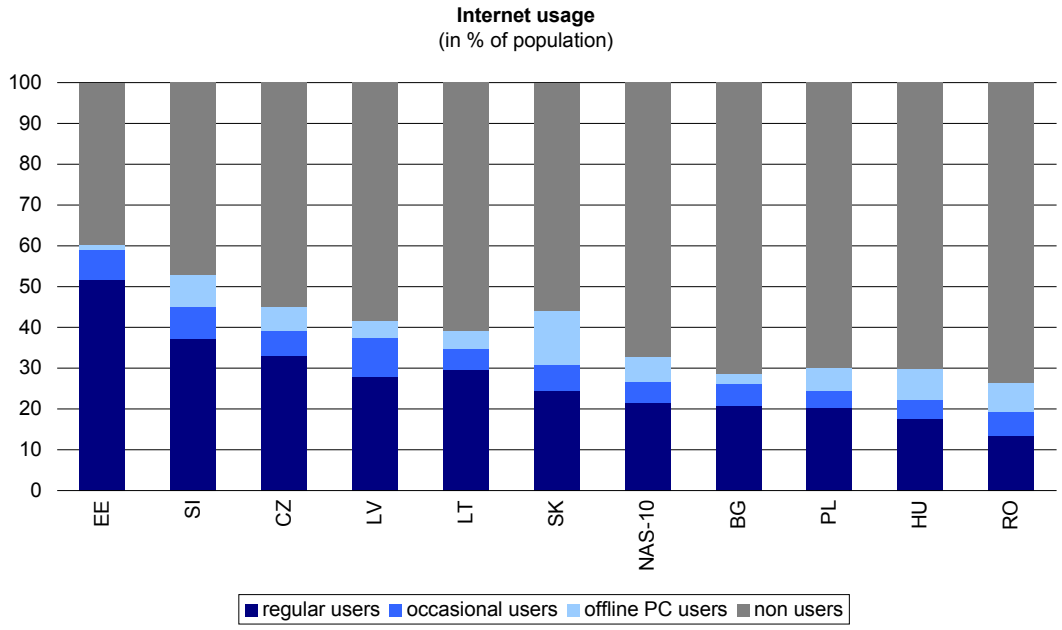
Base: all respondents weighted
Source: SIBIS GPS-NAS 003

The SIBIS indicator does not measure the percentage of households with Internet access, but the percentage of Internet users on the population with connections from the home. The ranking of countries based on this indicator shows Slovenia and Estonia as the most advanced, followed by Czech. Romania and Latvia bring up the rear, while the other countries are more or less close to the general average. This ranking will be reflected in most of the SIBIS+ indicators and provides an adequate picture of the status of Internet development in the Eastern European countries. However, only Estonia and Slovenia prove quite close to present EU averages. All the other countries present a heavy gap vs the EU, in terms of Internet diffusion.
Another important factor is awareness: on average 15% of the population in the NAS countries admitted to “have never heard of the Internet”. Bulgaria (with 27%), Lithuania, Romania and Slovakia have the highest shares of the population ignoring the Net; Estonia, Slovenia and Latvia the lowest. For Latvia, this seems to confirm that price is the real barrier rather than awareness.
SIBIS results indicate that people in the age groups “up to 24” and “25 to 49” years old show higher adoption rates of both high speed and low speed at-home Internet connections, similarly to the EU15 patterns, even if the absolute numbers of users in the East are much lower than in the West. The young are also more interested to migrate to higher speed connections and to download digital media. Unfortunately, the demographics of Eastern Europe are similar to Western Europe, with a high share of the population over 60 (about one quarter of the population), and relatively few young, so Internet growth rates cannot depend simply on the new generations.

2.1.2.2. Percentage of individuals regularly using the Internet

The SIBIS survey analysed the share of users according to the frequency of Internet use. The definition of regular user is less strict than the one proposed by the EU benchmarks (last four weeks instead of the last week). This SIBIS indicator distinguished between 'regular', 'occasional', ' offline PC users' and 'non-users', in percentage on the total population.

Figure 2.2 **SIBIS respondents according to frequency of Internet use**
Questions: Have you used the Internet at least once in the last four weeks at home, at school, or work or in any other place?
Have you used the Internet in the last twelve months at least once?



Base: all respondents weighted
Source: SIBIS GPS-NAS 2003

Average regular users in the surveyed NAS countries are about half as many as in the EU15. Examining the share of respondents according to frequency of Internet access, the SIBIS+ results shows that different patterns of Internet usage emerge in the different NAS. A common pattern is that out of all the Internet users, access is predominately regular - at least once in the last four weeks. Generally, it is much more rare that Internet users access it only occasionally (e.g. once in the last twelve months). Even so, there are still two thirds of NAS citizens who do not access the Internet at all. This is particularly true in Bulgaria, Poland, Hungary, and Romania where over 70% citizens do not access the Internet from any location.

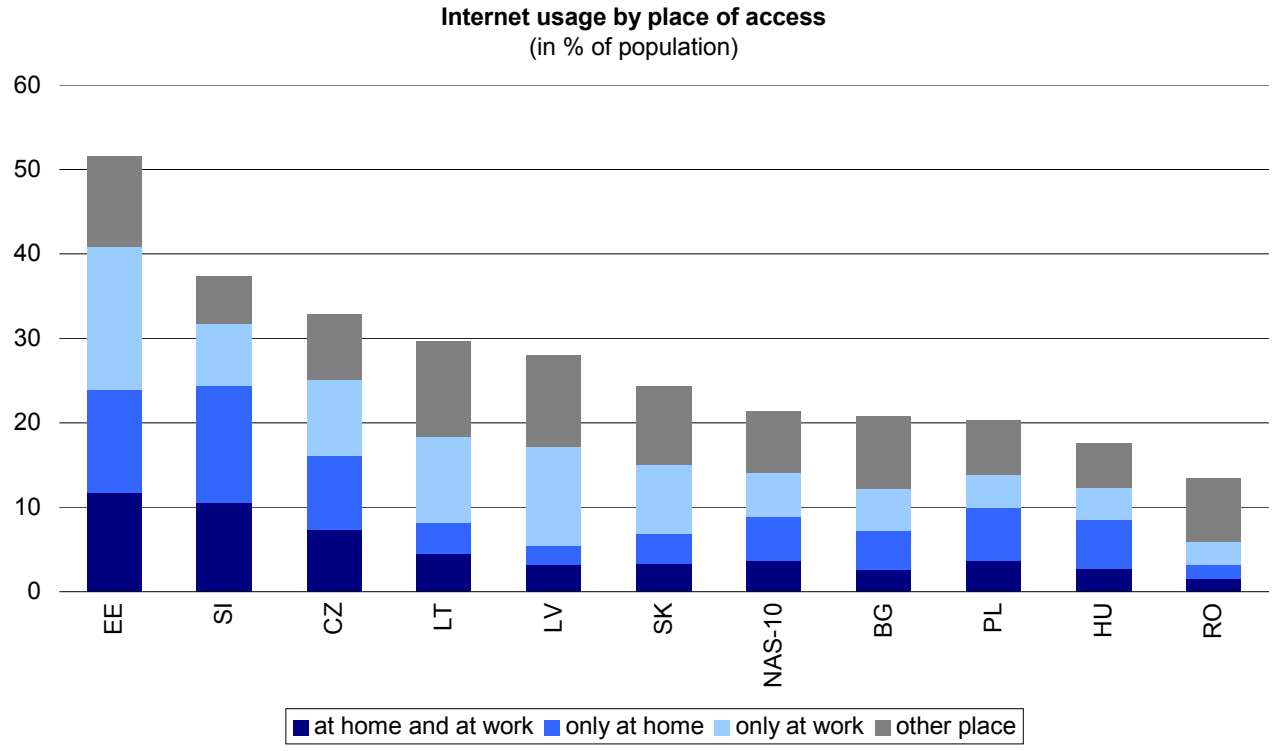
It is unsurprising that regular access is correlated to Internet access costs. The possible exception are Latvia and Lithuania whose costs are significantly more than their peers (calculated by a standard basket of goods), but still achieve a mid-ranking position. Romania is interesting in that it has a low Internet access costs but has low overall access. However, the Internet access cost is not low enough when compared to the level of wages within the country. For example, in many countries, competition in the telecom market started at the beginning of 2003. This deregulation will hopefully lead to price reductions, but it is clear that this process will take some time. Also, one of the major obstacles to Internet usage is the lack of e-services, which prevents the higher usage of the Internet, and the lack of ICT skills among older and less educated population, which decreases the motivation for the access to the Internet.

2.1.2.3. Internet usage by place of access

Different Internet access locations can lead to different online activities. The SIBIS+ indicator splits the percentage of individuals in the population using the Internet (in the last four weeks) by type of access location.

Generally, countries with a high penetration of at-home and at-work Internet users are those countries with a more experienced Internet population. This situation tends to reflect a high availability of the Internet both at work and at home. In all EU15 countries, home plus work represent the most frequent access locations by far. Interestingly enough, in the NAS countries there is instead a relatively high percentage of users accessing from “somewhere else” (7% of the population) compared to the home+work users (9% in total). This pattern is similar in all NAS countries with the exception of Slovenia and Estonia, who instead follow the EU pattern with a higher percentage of home and/or work users. This clearly reflects the inadequate development of infrastructures or cost/skills problems for home/work access in some countries, especially Bulgaria and Romania.

Figure 2.3 Internet Usage by place of access
Question: have you used the Internet at least once in the last four weeks, at home, at school, at work or at any other place?



Base: all respondents weighted
Source: SIBIS GPS-NAS 2003 (Regular users n=2,852)

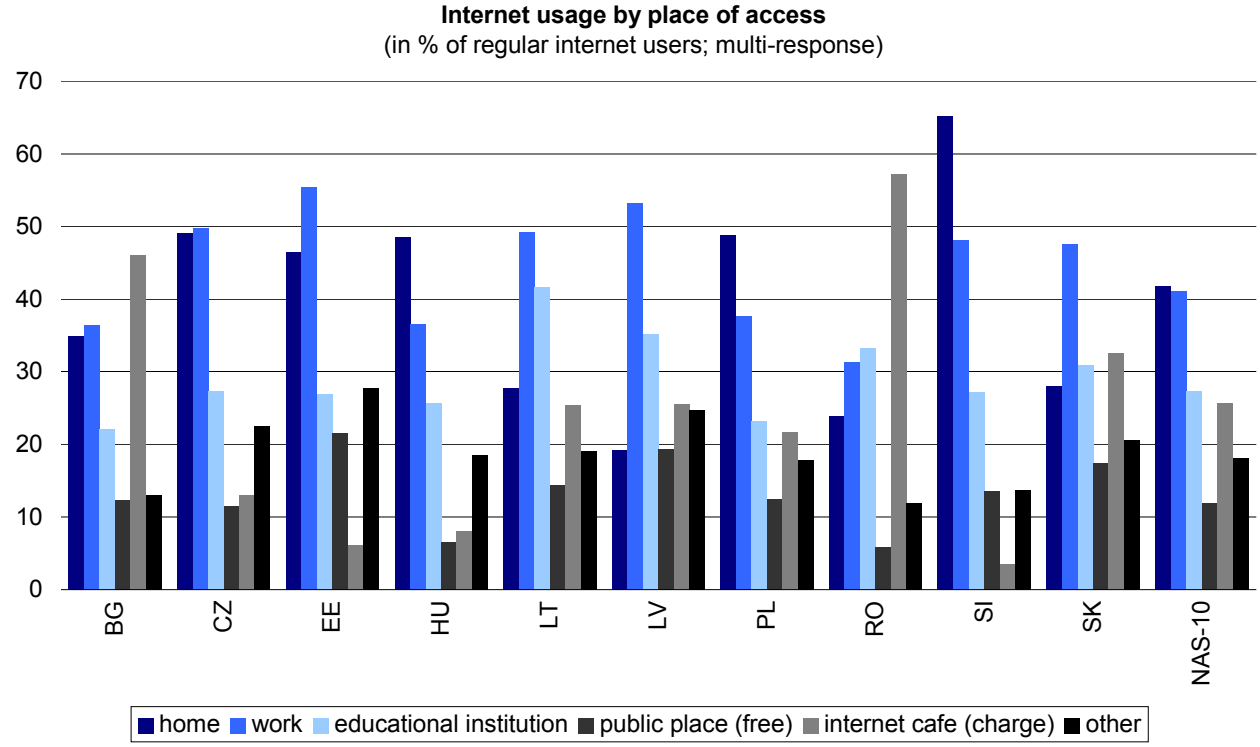
Another SIBIS+ indicator segments more precisely regular users (in the last four weeks) by category of access location, dividing PIAPS, schools and others. The SIBIS+ list is partially different from that proposed by Europe benchmarks. Educational institutions were not split into schools and universities but counted together. With Public Internet Access Points, SIBIS separated free PIAPs from commercial PIAPs. SIBIS also includes an 'other category' for alternative access points (e.g. a friend's house).

The results shown in the following figure illustrate the different levels of access by country between educational institutions, public place (PIAP) and Internet cafes. PIAPs are a key feature of eEurope 2005 and eEurope+ 2003, since their role is expected to complement individual home/work access especially in local communities/municipalities. From SIBIS work it appears that PIAPs are an important vehicle for promoting the Internet and its use. In Hungary and Bulgaria and Poland for example, PIAPs (provided through access in schools) are an important vehicle for promoting increased access. Many citizens also prefer Internet cafes as they enable greater control of the charge and use of the Internet for the limited period they need.

Successful schemes are the likes of the Interkl@sa Programme in Poland. Between January 1998 and December 2001 nearly 6,000 ICT workrooms were established at schools under the programme of the Ministry of National Education, all equipped with a total of 75,000 computers. Since September 2000, ICT workrooms have appeared in almost all lower secondary schools. Slovenia has a governmental program called ‘e-točke’ (‘e-points’, which refers to PIAPs), where the intent is to provide the access to the Internet to the broader public in schools, public libraries, or other locations. To date 241 ‘e-points’ have been registered. Romania has an interesting profile in that users tend to overwhelmingly prefer charged Internet cafes, probably as a result of the quality of infrastructure in such establishments.

For many NAS it would be especially interesting to look at regional data and the level of use and provision of PIAPs in rural areas. In Latvia, for example, this would be important due to the lack of fixed network lines in many rural regions. Similarly, there are still many rural areas of Europe not covered by broadband and it may be that the provision of PIAPs in these areas has a bigger impact – here PIAPs should be organised around institutions where there will be significant opportunity economies - within schools, public libraries and local government offices. If the size and locality of PIAP usage is examined in the Czech Republic, it is possible to observe that in small localities PIAP usage is less than in greater localities. 48% of respondents do not use PIAPs in localities of more than 100,000 residents, and this rises to more than 71% in localities of less than 1,000 residents.

Figure 2.4 **Regular Internet users: type of access location**
Question: Internet time spent…at home; workplace; at school, university or other educational institution; at a public place where Internet access is free; at an Internet café or other place where you have to pay; at another place not mentioned yet.



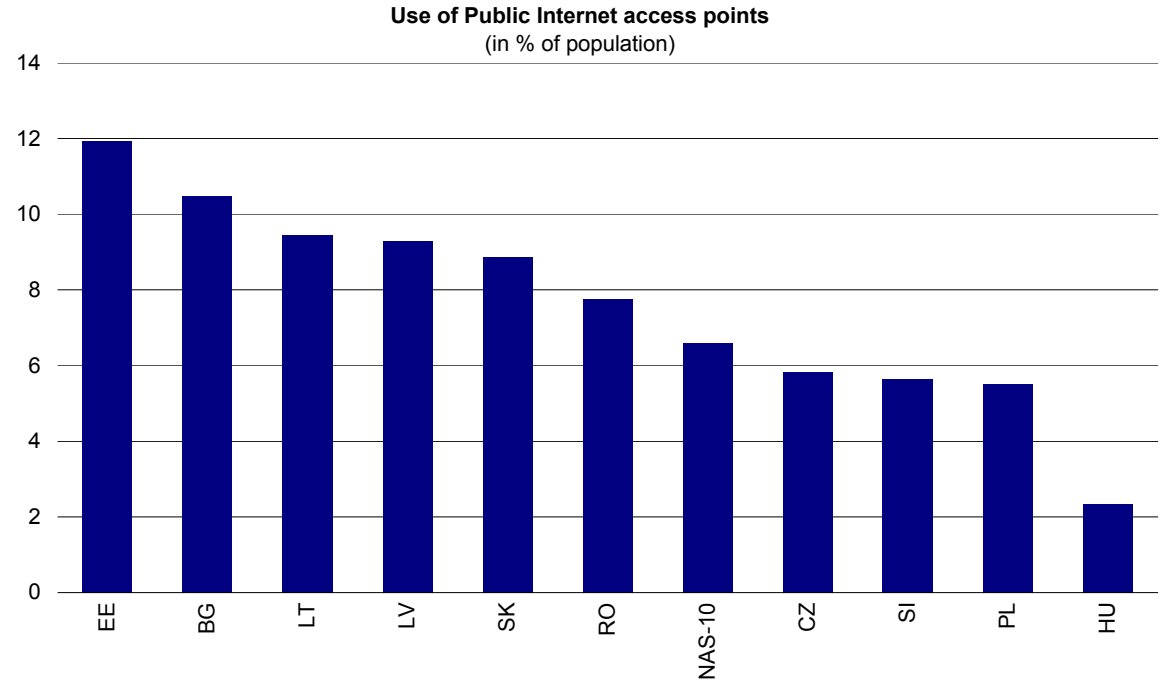
Base regular Internet users ('regular' = at least once in the last four weeks)
Source: SIBIS 2003, NAS-GPS.

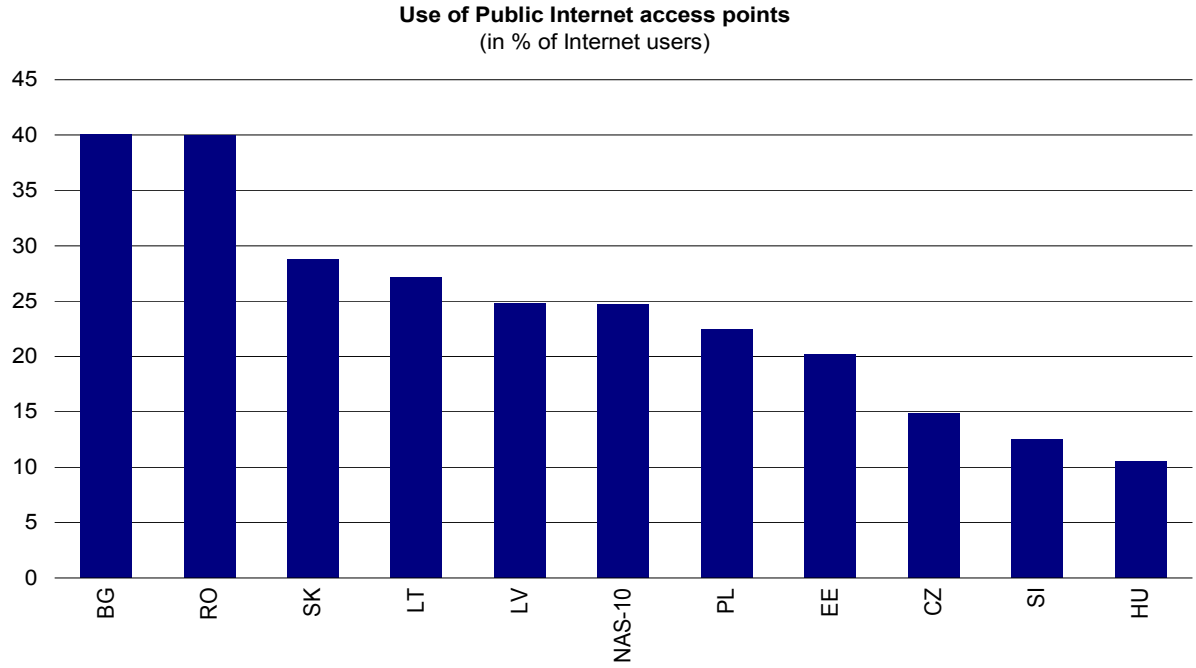
2.1.2.4. Use of Public Internet Access Points

PIAPs, while an important function in increasing access and reducing social exclusion may not prove to be the Golden Fleece – although as figures show below, they are important in the NAS. Different Internet access locations have been shown to lead to different on-line activities with advantages and disadvantages when compared to at home access. Being able to access information in the privacy of one's home may lead to confidential or sensitive information being sought; for example, personal health or financial information is less likely to be sought from a library or other public facility. Admittedly though, there may be certain circumstances where higher bandwidths are required, and here a higher bandwidth PIAP facility may be appropriate.

Figure 2.5 Use of Public Internet Access Points

Share of users per location is obtained from the question A9: 'How much time do you spend in a typical week on using the Internet…[item] d) at a public place where Internet access is free





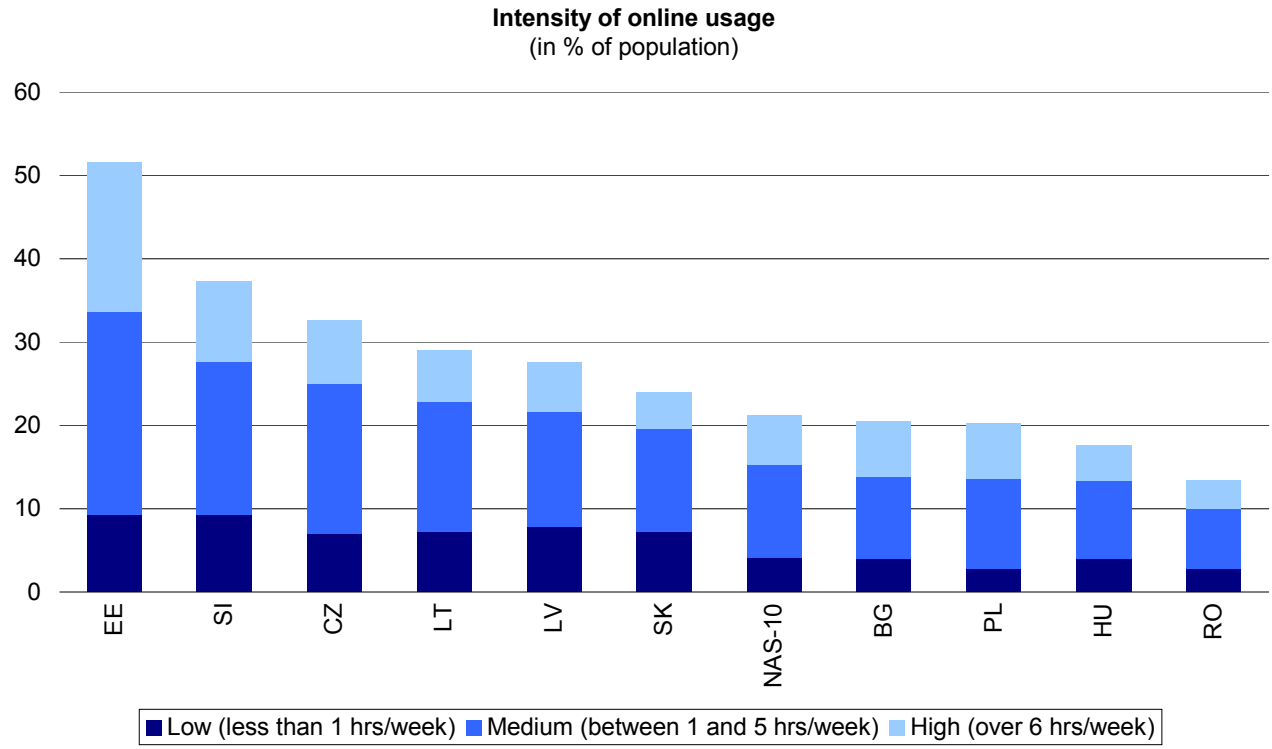
Base regular Internet users ('regular' = at least once in the last four weeks)
Source: SIBIS 2003, NAS-GPS.

2.1.2.5. Intensity of online usage

Examining intensity of usage across the NAS, classified as low, medium, and high according to the weekly average time online users spent from any location reveals that the majority of users fall into the medium category, with only Estonia displaying a significant proportion of high users. On average across the usage patterns the NAS has a similar profile to the EU15, except for being a factor of 2 behind. Intensity of usage is correlated to online tenure, as there seems to be an individual learning curve which leads to increased usage with time. Or perhaps as sociologists say, people need time to "domesticate" technologies and incorporate them in their lives. Across all of Europe, users in more mature online countries spend longer sessions using the Internet (and use more interactive services). An additional important factor is that unmetered at-home connection rates, which facilitate longer time and more sophisticated use of the Internet, are not currently available in all European markets, even less so in NAS countries.

On a methodological note, given that people younger than 16 years old, according to European law, cannot be included in telephone surveys, they are misrepresented when asking about time spent using the Internet at schools. This may explain why the response rate for Internet users in educational locations was quite low. This fact needs to be considered and weighted.

Figure 2.6 **Intensity of online usage**
Question: How much time do you spend in a typical week using the Internet ?



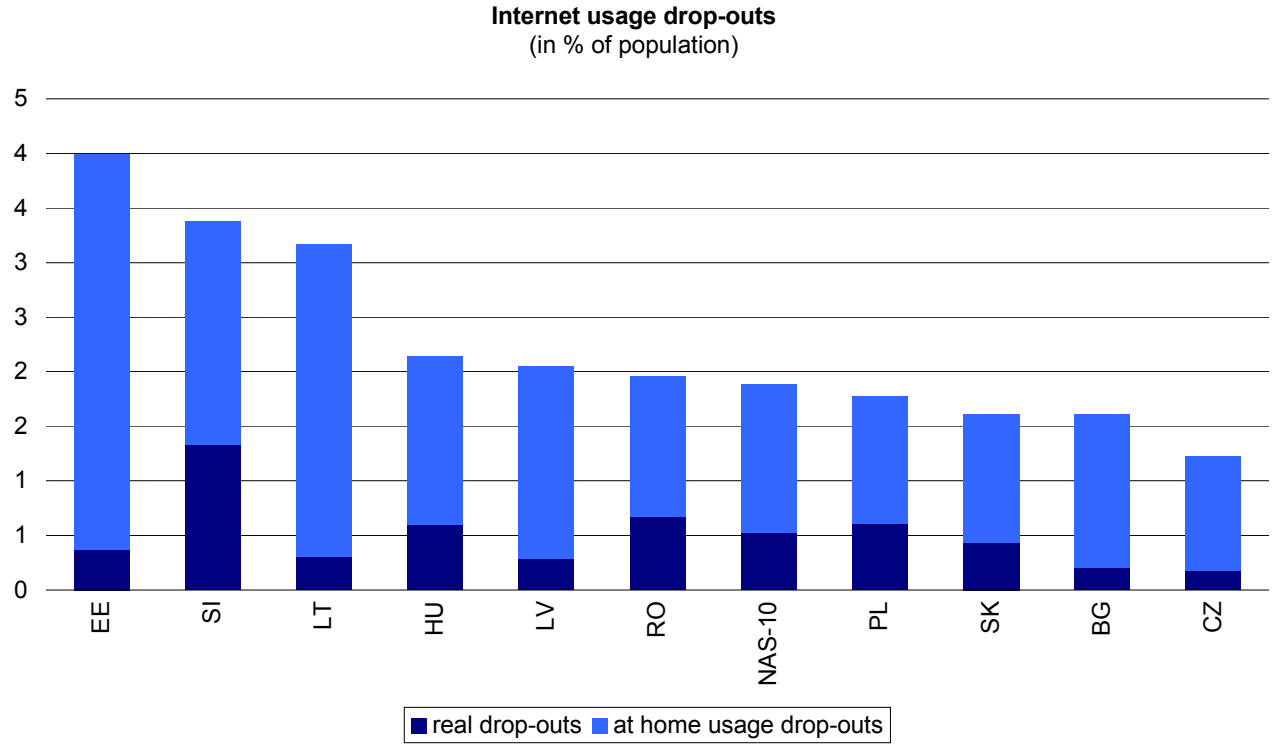
Base: all respondents weighted
Source: SIBIS 2003, NAS-GPS

The results of the time/usage patterns are undoubtedly linked to infrastructure reliability, FRIACO (Flat Rate Internet Access Costs) packages, broadband connections (those with Broadband are more likely to participate in more multimedia/large down load activities).

SIBIS has shown that the regulatory environment within the telecommunications sector is a crucial factor in effecting time usage patterns. The new EU regulatory framework for electronic communications contains a provision for national regulators to require incumbents to meet reasonable requests for access to network elements where denial of access would hinder the emergence of a sustainable competitive market at the retail level. This provision could easily be used by regulators keen to see the introduction of FRIACO in countries where incumbents are not currently offering retail flat-rate packages.

2.1.2.6. Share of Internet dropouts

Figure 2.7 Share of respondents who previously had an Internet connection at home
Did you once have Internet access in your home?
Real drop-outs = giving up on the Internet
At home usage drop-outs = replacing the home access with another access from elsewhere



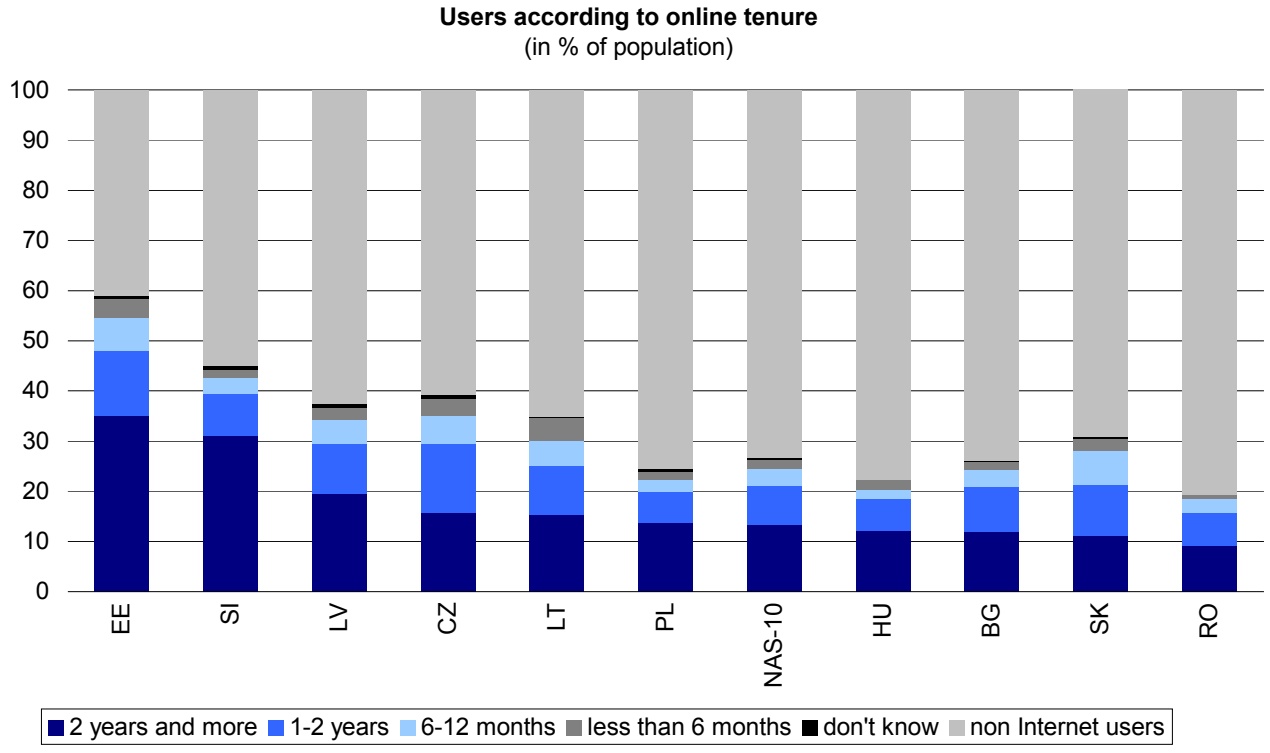
Base: All respondents, weighted
Source: SIBIS, GPS-NAS 2003

This indicator looks at the percentage of people in the NAS who used to have Internet access at home and have now stopped their connections, either to drop out of the Internet (real drop-outs) or to replace the connection with one from elsewhere. There could be a number of reasons for this, for example, cost, reliability of the connection, 'Internet fatigue', or faster access at work. It could also be the case that the respondent falls in a transition phase and has cancelled a narrowband connection, and is waiting for a faster one to be installed. The highest number of Internet dropouts is found in Estonia and Slovenia – the most mature countries in terms of Internet access.

This trend is consistent with the findings of SIBIS in the EU-15, however, the Czech Republic bucks this trend; this is considered as a result of the evolution of the Internet into the Czech society – initially the Internet required software, hardware and financial requirements that were mainly confined to Internet users who were professionally involved in IT or very motivated users.
Presently, the Internet is more accessible and there are greater possibilities of accessing it (diminishing exclusivity, and increasing cultural interest in maintaining access), hence drop outs within the near and midterm will be lower than their NAS peers. Slovenia is noticeable with its significant presence of real drop outs. One possible explanation for this might be the low educational level of the real drop-outs resulting in the prejudice 'Internet is not something for me' and 'Internet requires advanced computer skills', coupled with the high costs of the access (for 'at home-drop outs'), and the lack of e-services. In comparison with the EU15 the number of drop outs is only differentiated by 0.7%, suggesting that the churn rate is quite significant in the NAS 10 – as the sector is less mature.

2.1.2.7. Users according to online tenure

Figure 2.8 On-line tenure by country
Question: When did you use the Internet for the first time?



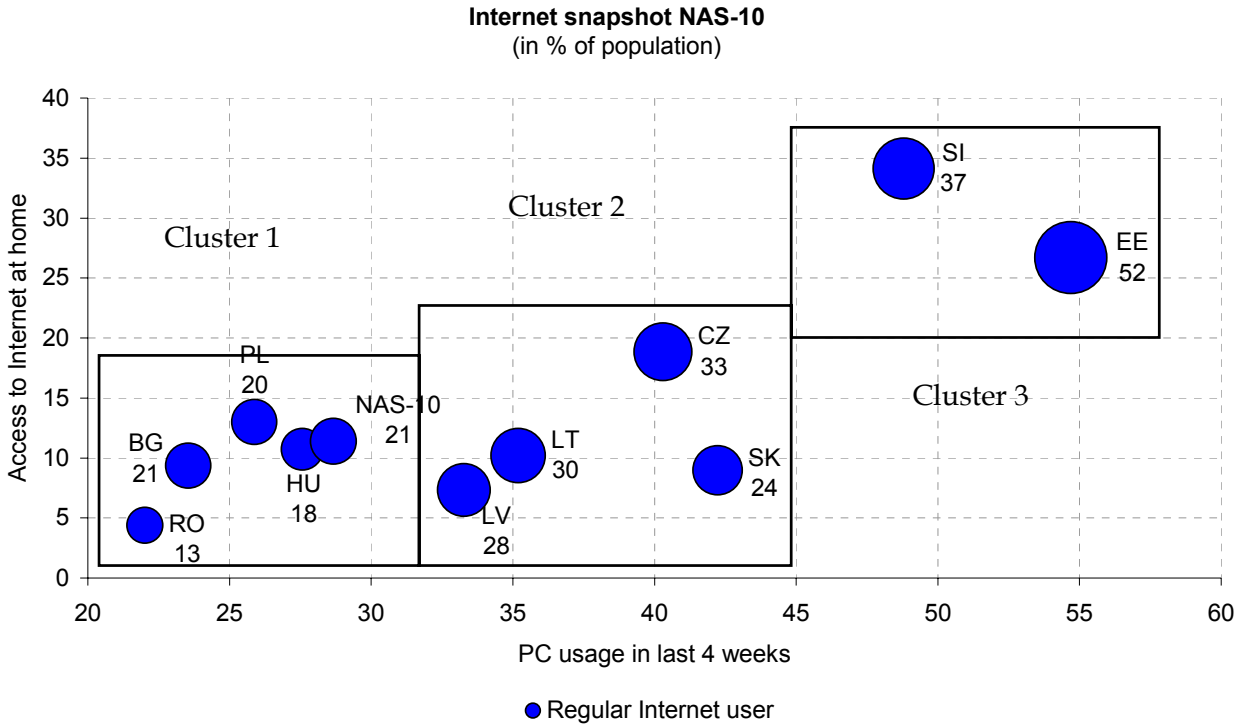
Base: Respondents who accessed the Internet at least once in the last 12 months, weighted
Source: SIBIS NAS-GPS 2003

Online tenure is a new indicator formulated by SIBIS+ which measures the share of users according to length of time since the first use of the Internet**.** The SIBIS+ survey classifies tenure into three bands; less than six months since first Internet use, more than six months but less than two years, and more than two years.

According to the SIBIS results, 'on-line tenure' is highest in Estonia and Slovenia, with limited differential between other NAS's. Even though these countries are considered to be at the lagging edge of Internet experience when compared to the EU15, an undesirable trend is that new uptake is relatively limited, highlighting a slight but increasing gap between the EU15 and NAS in terms of tenure – although Slovakia, Romania, and Bulgaria are bucking the trend. There are also other issues of culture and language, perhaps highlighting a critical mass of Internet users with English language skills.

2.1.2.8. Internet snapshot of NAS-10 countries

Figure 2.9 **Internet snapshot: relative positioning of NAS-10 countries**
(Compound indicator)



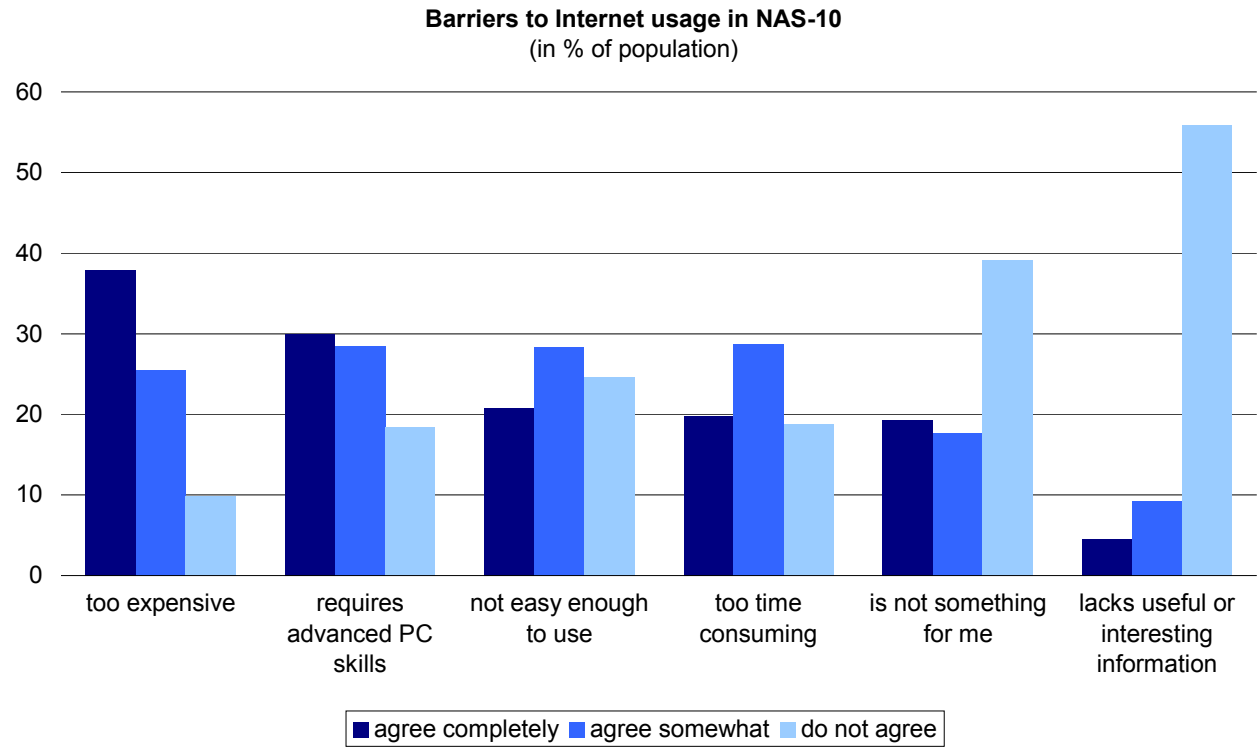
Calculation: Technopolis multivariate analysis of SIBIS NAS-GPS 2003
Source: SIBIS NAS-GPS 2003

The Internet snapshot above explores Internet access and usage (for both narrowband and broadband connections). The data shows that access to and use of PCs and the Internet is typically three times as prevalent in the 'cluster 3' defined countries as in the 'cluster 1' defined countries. The three variables which form this snapshot (percentage using a PC in the previous 4 weeks, percentage with access to the Internet at home, and percentage using the Internet in the last 4 weeks (active users) appears to offer a useful compound indicator on the pervasiveness of the Internet. Thus, Cluster 3, which includes more mature Internet markets such as Slovenia and Estonia, present a more dynamic trend than the other two clusters of less developed Internet markets.
Additional analysis indicates that most respondents who have used a PC in the last four weeks also have an at-home Internet connection and are active at-home users, since they have also

accessed the Internet in the last four weeks. On the contrary, in Cluster 2, PC usage is at a much higher level than Internet usage within the last four weeks. This factor implies that in Cluster 2 countries many PC users do not access the Internet, in the same time period, from anywhere. Here users may be accessing the Internet from work, PIAPs (Public Internet Access Points), or a friend's house, etc. Similarly, Cluster 1 are not frequent PC users, but access the Internet as frequently as those in cluster 2, suggesting alternate means of access – PIAP access free or otherwise.

2.1.2.9. Barriers to Internet Usage

Figure 2.10 **Perceived lack of compatibility between the Internet and the self**
Question: Tell me with which of these statements you agree



Base : respondents who have heard of the Internet
Source: SIBIS, NAS-GPS 2003

Within the NAS the overwhelming finding is that cost, lack of skill (whether that be actual or perceived) are important impediments to increased access. Other non trivial issues are that it is time consuming and it is not something for the user – probably as a result of poor national/language/regional content. The former will be broken down in time through improved infrastructure, and the latter when more government, public and private services go online. This, to some degree, goes against the perception that over half of those interviewed believed that it offered something interesting. Here, further breakdown across socio-economic divides would shed light on who hold these perceptions, and whether they are related to any social group.

Further analysis by country reveals that Latvia and Lithuania believe there to be significant barriers, especially as regards access costs and the need for advanced skills. Whilst these to two issues where a consistent theme across all the countries, Bulgaria, Poland, and Slovenia expressed more positive profiles.

2.1.2.10. Digital Divides and associated Socio-economic factors

SIBIS's general population survey confirmed that most of the socio-economically related exclusion determinants are relevant, and to a great deal apply to the Information Society, and that the digital divides identified in earlier surveys still persist. Thus higher education achievements and higher income levels are positively correlated with higher levels of access to and usage of Information Society products and services. Unfortunately a longitudinal perspective cannot be produced by the SIBIS+ project, due to limited data, but nonetheless the results are extremely interesting.

The four specified and monitored groups are:

- women;
- people of more senior age (55 and older);
- people with relatively low education levels (identified by a proxy, which is based on the age at which full time education has been terminated, the at risk group is comprised of those who finished formal education at an age of 15 and below);
- people with relatively low income levels, measured in relative terms as being in the lowest quartile of the survey respondents income levels.

The participation in the Information Society of each of the above group is captured in the way that conveys inclusiveness (or otherwise), since each index value describes the percentage of Internet and computer users (both general 'users' and 'at home users') among the risk group as a percentage of users in total population. It is possible then to monitor each '*at risk*' group at the NAS level and across associated states, but also to arrive at an indication of overall inclusion/exclusion, through using the aggregated, compounded values. Admittedly, this picture is based on four determinants only – gender, age, education and income – but while it is being recognised that a position of disadvantage can be traced to other determinants, the above ones are arguably more suitable for cross-country comparisons.

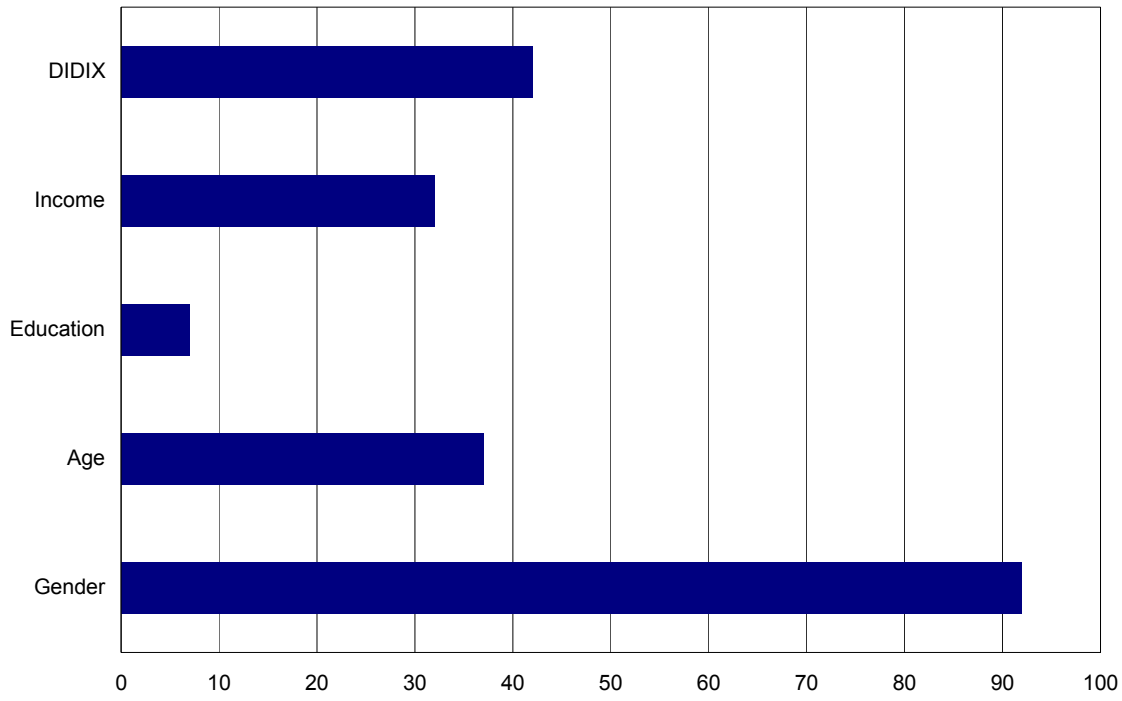
The index compares the average diffusion of the Internet in a specific socio-economic group, compared to the average diffusion in the total population in the country, and measures the gap. The lower the index value, the more severe the divide, with parity resulting in a value of 100.

As there is a lack of historical data on this indicator, it is perhaps most fruitful to compare the NAS 10 and EU15. The compound DIDIX in the NAS countries scores 42, while in the EU15 it is 53 for the year 2002. But this results from very different levels depending on the socio-economic factor considered. The gender divide is the lowest and is closing fast in the West, scoring 87. For the NAS countries it is even better, at 92, which means that in those countries women participation to the Internet is more balanced with men than in the West.

The deepest divide in both areas is due to education: 27 in the EU15, and as low as 7 in the Eastern countries. This could depend on the early stage of Internet diffusion in the NAS countries, attracting the most cultured part of the population before expanding to the mass market.

The income and age divides are relevant in both areas, but stronger in the East: the income divide is 44 in the EU15 and 32 in the NAS, while the age divide is 53 in the West and 37 in the East.

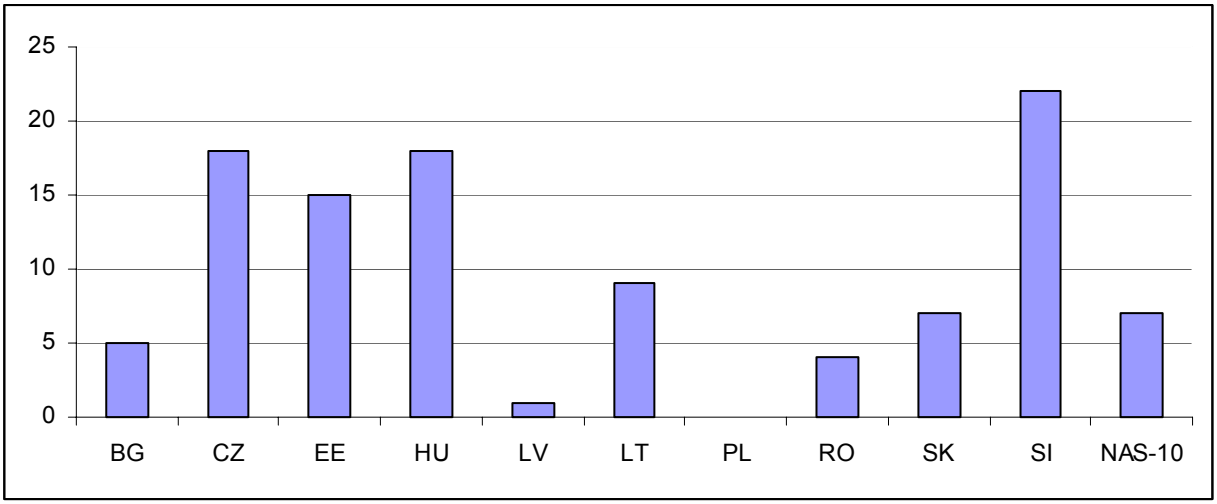
Figure 2.11 Digital divide Index (DIDIX) for 'at risk groups' in the NAS countries



Base: all respondents, weighted
Source: compound indicator SIBIS GPS-NAS 2003

As there is such a significant digital divide for education it is worth examining it more closely. Countries values differ considerably. Slovenia index is at the same level as Denmark's: the Czech Republic, Hungary, Estonia have values close to the EU average. The NAS 10 average is brought down by Bulgaria, Lithuania, and Poland. In Bulgaria, financial resources, in general, in the educational system are insufficient to equip schools with sufficient computers as well as developing the educational programmes. In Poland for example, there are few programmes directed to special social groups - aimed at Internet access increase. In addition less educated people usually live in rural areas where there are fewer possibilities to access the Internet and connections tend to be more expensive.
Overall, while it is clear that education is the most important factor affecting a meaningful usage of the Internet – which today is still a predominantly literate and text-based communication medium - the index level may be influenced by other factors, such as the low relative dimension of the less-educated group in some countries for example.

Figure 2.12 Digital divide Index (DIDIX) for education by NAS country



Note: The values for the indices are for the [ratio of users] of ' low education level group' i.e. people who finished formal education at an age of 15 and/or below.
Source: SIBIS 2003, GPS.

2.1.3. Conclusions

The benchmarking exercise based on SIBIS+ indicators revealed some interesting dynamics within the NAS 10 countries. Average Internet diffusion in the NAS 10 population is lower than diffusion in the EU15 countries by approximately a factor of 2, at 26% vs 54%. In other words, one Western European out of two uses the Internet, while only one Eastern European out of four does. However, there are remarkable differences between countries, coherent with the economic and social development context of each country. Slovenia and Estonia clearly emerge as aligned with mid-ranking EU-15 countries in terms of access and intensity of Internet usage. At the other extreme, Bulgaria and Romania also clearly suffer from a severe gap in information networks diffusion. The other countries are positioned somewhere in a middle ground between these extremes, with Poland pending towards the low values and Czech towards the high values.

The analysis shows clearly that structural factors of telecom networks basic diffusion and access costs weigh strongly as barriers. The process of accession in the Union should bring benefits from this point of view. The alignment of the regulatory framework in the telecom sector is almost complete: liberalisation is expected to bring benefits in terms of lower tariffs and better conditions, such as the introduction of flat rate unlimited access formulas. The increase of foreign capital flows, consolidation and rationalisation should contribute to increase investments in information networks. Governments appear to value Internet development as a priority, and some funds will be available through the 6th Framework Plan and other initiatives connected with the eEurope+ Plan to sustain networks development in peripheral areas and upgrade to broadband. Public initiatives such as PIAPS already play a positive role especially promoting demand growth.

However, there is also a great gap in awareness and understanding of the potential of the Internet to be overcome. Approximately 15% of the NAS population claims to have never heard of the Internet, many more in Bulgaria and Romania. The Digital Divide Index shows a deep gap for the population with lower education and lower income. The young generations do show a greater appreciation of the Net, but since demographic trends are similar to Western Europe, they are not so numerous to be able to change the balance in the near term. The net must conquer agreater share of the 24 to 50 years old population to become a real factor in social and economic development, from the minority phenomenon it is now.

2.2. Working in the knowledge-based economy

2.2.1. EU policy goals and definitions

The eEurope 2005 Action Plan, whilst outlining a number of areas that need to be addressed, such as e-confidence, e-Commerce tax, and privacy, the main policy thrust is of "raising productivity and growth through investment in information and communication technologies" (eEurope Action Plan 2005, p14). Hence, to chart the progression to a more e-enabled economy, five statistical indicators have been identified by the Commission, which is unsurprisingly more developed than the eEurope 2003 Action Plan. Within eEurope+ 2003 the focus is on much broader cross industry issues, such as stimulating co- and self-regulation through dialogue with relevant business groups. The Action Plan also supports the encouragement of SMEs to participate, through the exchange of best practices etc. – promoted by the "Go Digital" initiative.

The results of SIBIS+ for the NAS go a little way in benchmarking their progress, in terms of access and intensity of use. Here, the main policy indicator proposed by the eEurope 2005 for enterprise access captures the diffusion of ICTs through measuring "the percentage of persons' employed using computers connected to the Internet in their normal work routine". This appears quite an elementary indicator; however, in some job roles using a PC, and whether this activity constitutes being part of the *normal work routine* may be a particularly difficult phenomenon to establish. To overcome this issue SIBIS collected data on the ability of a person to access an Internet connected PC at work, whether they be in paid employment or otherwise. This data was then elaborated against how long the user spent using the Internet at work, ranging from no time, to one, two… up to twenty hours per week.

Table 2.2 Working in the Knowledge-based economy: eEurope+, eEurope2005 and SIBIS's indicators

e-Europe+ benchmarking indicators	SIBIS indicator
• Percentage of workforce using telework **Definition**: current survey definition: .telework occurs when paid workers carry out all, or part, of their work away from their normal places of activity, usually from home, using information and communication technologies.. The definition may be revisited to include wider forms of telework. **Source**: Sample survey/Eurobarometer **Frequency:** annual **Supplementary indicators:** (i) data to be disaggregated by gender and by kind of job (sector/level) (ii) Percentage of the workforce covered by telework framework agreements	• Persons employed using computers connected to the Internet at work **Definition**: Respondents using the Internet from work by employment status. Cross analysed against respondents who have accessed the Internet in the last 4 weeks, by time spent (no time, < 1hr., 1-5hrs., 6-10hrs, 11-20hrs., >20hrs.) **Source:** SIBIS+ GPS **Collection Date:** GPS: January 2003 for NAS 10: BG, CZ, EE, HU, LV, LT, PL, RO, SK, SI **Supplementary Indicators;** Intensity of Internet usage at the workplace

Source: eEurope+ & SIBIS+.

e-Europe 2005 benchmarking indicators
Enterprises access to and use of the Internet **Policy indicators:** B.1 Percentage of persons employed using computers connected to the Internet in their normal work routine **Definition:** Broken down by enterprise size (10-49; 50-249; 250+) and activity (NACE section D, F, G, H, I, J, K, 92.1, 92.2) **Sources:** Eurostat/NSI ICT enterprise survey **Frequency:** Annual **Supplementary statistical indicators:** B.2 Percentage of enterprises having access to the Internet B.3 Percentage of enterprises having a website/homepage B.4 Percentage of enterprises using Intranet/ Extranet B.5 Percentage of enterprises with persons employed working part of their time away from enterprise premises and accessing the enterprise's IT systems from there.

Source: eEurope 2005 & SIBIS+.

2.2.2. Results from SIBIS

2.2.2.1. Persons employed using computers connected to the Internet at work

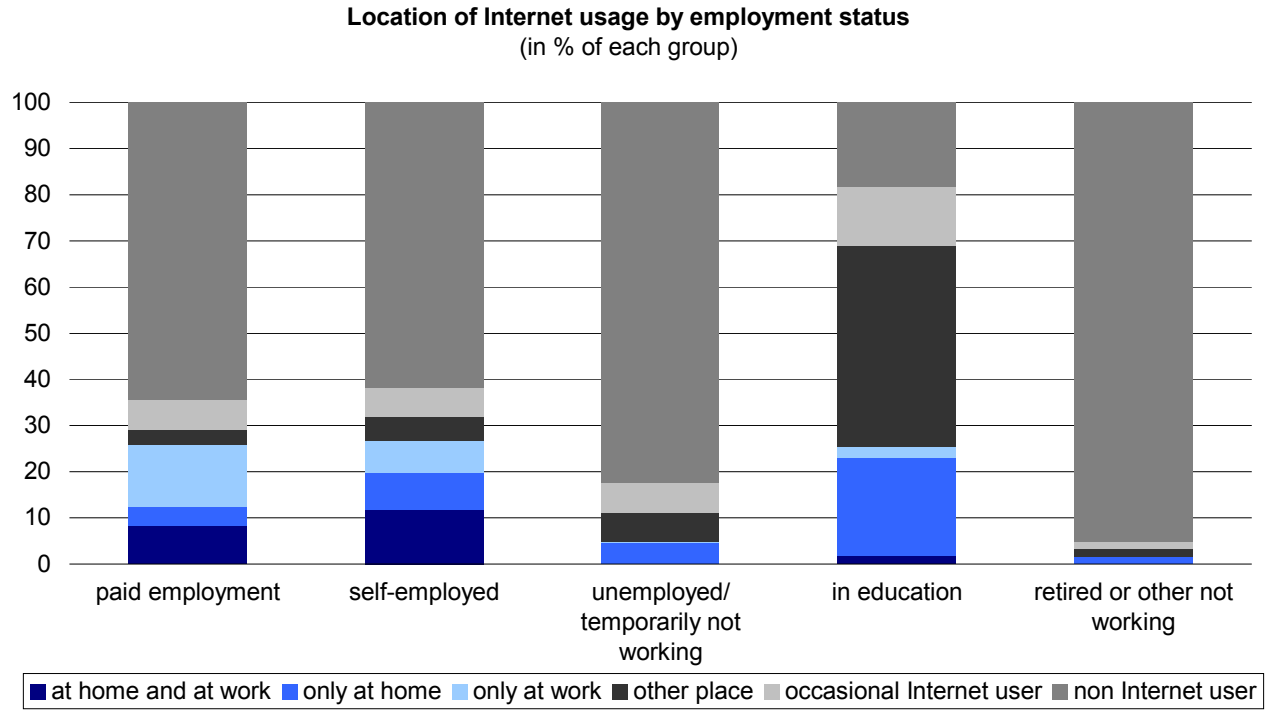
The eEurope+ benchmarking indicators do not focus very much on Internet usage at work, listing only a general indicator on the percentage of teleworkers. According to SIBIS+, the share of home-based teleworkers in NAS countries is lower than 2%. Total teleworkers (including home-based, mobile or SOHO-based self-employed teleworkers) are 5.4% of the NAS employed population, vs 13% of the EU-15 employed population.

SIBIS+ collected data on the indicator suggested by eEurope 2005, which is the percentage of the employed population using computers for their normal work routine. SIBIS's indicator actually addresses all the possible situations of the active population, that is present employment, unemployment, retirement and education.

The percentage of non-Internet users is lowest for those in education, followed by those employed: it is understandingly much higher for retired or unemployed persons. After the home, the workplace is the most important place of usage of the Internet.

Within paid employment the majority of users access the Internet only at work, however a significant 65% do not access the Internet at all (but this must be compared with the 73% of the general population who are not Internet users in NAS countries). In practice, employed people are more likely than the average population to use the Internet. This is comparable with the self-employed profile. The number of unemployed and retired citizens who do not access the Internet from any place could give cause for concern – reaching levels of 8-in-10 and 9-in-10 respectively. In education citizens have the most diverse Internet access profile, significantly accessing the Internet from home and other place.
Examining the NAS country profiles reveals that Estonia has an encouraging profile, being above the EU15 and well above the NAS 10 average. Also, Slovenia, the Czech Republic, Latvia and Lithuania have comparable profiles to lower quartile of the EU15.

Figure 2.13 Respondents using the Internet from work by employment status in NAS-10



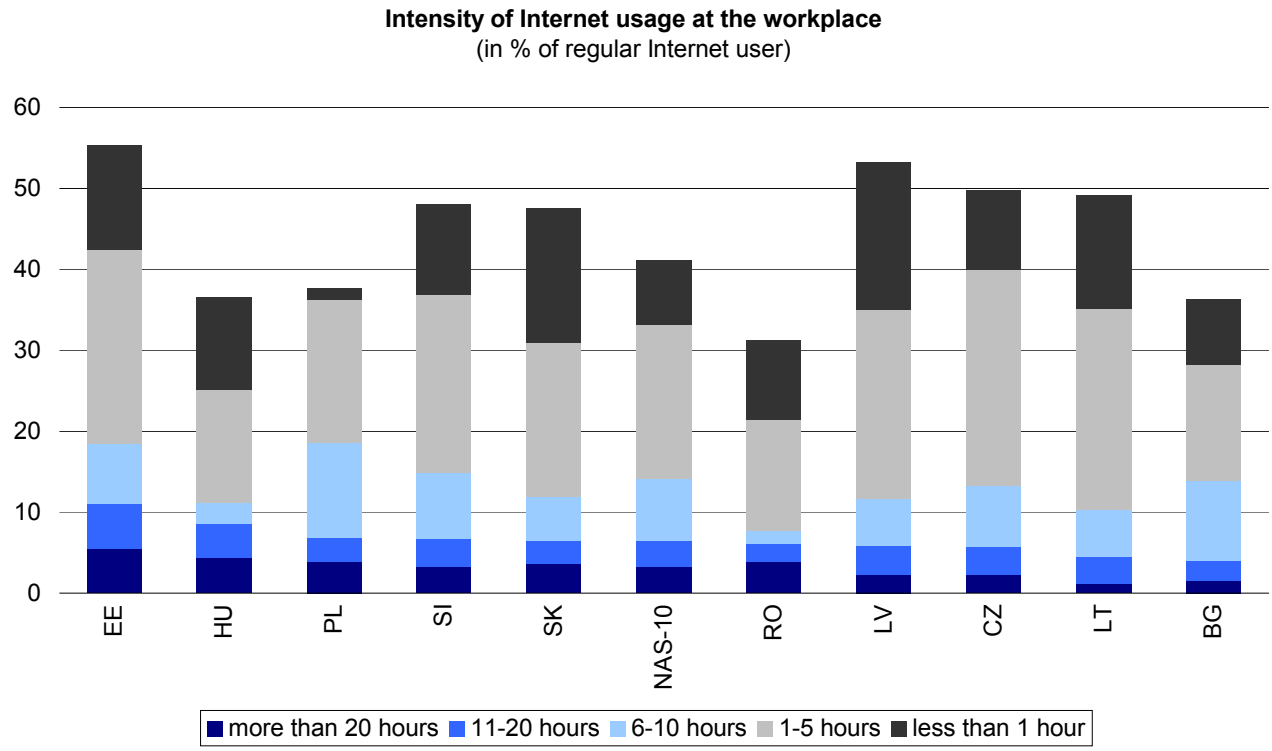
Base: respondents using the Internet from work by employment status. Weighted results, NAS 10 weighted
Source: SIBIS NAS-GPS, 2003

As the preceding chart does not entirely consider those utilising the Internet in their normal work routine, further elaboration was required. This was undertaken by ascertaining, through asking respondents to state in an average week, how often they used the Internet at work. Estonia clearly leads in terms of intensity across the four categories. Conversely, Slovakia and Latvia have an inverse profile, with a greater proportion of low and medium intensity users. Bulgaria and Romania appear to have a lower overall intensity of usage, although this may not be related to cost – but a compound issue based upon reliability, low BB uptake, content etc. Industrial structure is also a compounding issue.

The industrial structure, of Bulgaria for example, comprises 93% of enterprises which are SME (SMEs in Bulgaria are those with less then 100 employees) in type. The majority of them are micro (less then 10 employees) and small (less then 50 employees), which generally have not enough facilities (hardware and software) to develop the e-business activities. The picture of those using the Internet is also differentiated across the different sectors (the IT sector, for example, is very well developed in Bulgaria, with more then 1000 enterprises, and therefore this picture is consistent across the economic landscape).

Overall there appears to be a similar profile exhibited by the NAS as that exhibited by the EU15, which is encouraging and shows that current policies do not appear to be disadvantaging any particular location/employment group (when compared to the EU15).

Figure 2.14 Average weekly time spent accessing the Internet at work by country
Question: How much time do you spend in a typical week on using the Internet at work?



Base: respondents who have accessed the Internet in the last four weeks at work (N=3,025). NAS-10 results weighted by population (N=2,825).
Source: SIBIS, NAS-GPS 2003

2.2.3. Conclusions

After the home, the workplace is the most important place for Internet access and usage. SIBIS+ elaboration showed how students and employed/self-employed people in the NAS countries are more likely than the average population to use the Internet, as it happens in the EU 15. The intensity of usage at work by country confirms the general considerations about the different levels of development of the Internet, with Estonia and Slovenia leading in terms of greater time spent on the Net. This confirms that the diffusion of Internet in the workplace is a very important channel to increase digital literacy: on the other hand it also proves that the unemployed run the risk to miss the chance to increase their ICT skills and therefore to increase their relative disadvantage in the labour market.

3. Modern Online Public services

3.1. e-Government

3.1.1. EU policy goals and definitions

Under the *e*Europe 2002 Action Plan, Member States agreed to provide all basic services online by the end of 2002. In a similar vein, eEurope+ 2003 has similar goals, including an e-market for public e-procurement to be established a year later - by the end of 2003. The transition towards e-Government poses major challenges to NAS Administrations which need to adapt themselves and will be forced to introduce innovative ways of working, including partnerships with the private sector. Actions targets comprised in eEurope+ 2003 include: essential pubic data on line, generalised electronic access to main public services, simplified on line procedures, open source software in the public sector, electronic signature, public e-procurement and Internet access in public places.

The aim of the Commission in the eEurope 2005 Action plan is for all Member States to have interactive basic public services by the end of 2004, where relevant. The Commission and Member States have agreed on a list of public services for which this interactivity and interoperability are desirable. Other goals are that all citizens should have easy access to PIAPs in their communes/municipalities, the aim to have broadband connections for all public administrations by 2005. By the end of 2003 the Commission plans to issue an agreed interoperability framework to support delivery of pan-European e-Government services to citizens and enterprises.

Concerning e-Government, the Commission defined a policy indicator in the eEurope 2005 programme that is a continuation of the policy indicator that was already defined in the eEurope 2002 programme[1]. The policy indicator, the supplementary statistical indicators and the additional indicators, as proposed by the Commission are summarised in the table below.

As the eEurope policy indicator concentrates on the supply-side of e-Government, which looks at availability and level of sophistication of online services, the SIBIS indicators complements this by addressing the demand-side of e-Government, not only usage (which is still low in many countries given the early stage of development) but also perceptions and barriers to utilisation.

The SIBIS indicators measure acceptance and adoption of e-Government by its intended users, so they closely match the eEurope 2005 initiative to assess the feasibility of including impact indicators in the benchmarking exercise.

[1] The methodology used for collecting information on availability will be the same as that used for eEurope 2002.

Table 3.1 E-Government: eEurope+, eEurope2005 and SIBIS's indicators

e-Europe+ benchmarking indicators	SIBIS indicators
Government online • Percentage of basic public services available on-line **Definition**: basic services to be defined by the eGovernment working group **Source**: Study in co-operation with Member States **Frequency:** . 6 months • Public use of government on-line services - for information/ for submission of forms **Definition**: to be defined by the eGovernment working group **Source** - Study in co-operation with Member States **Frequency** - 6 months • Percentage of public procurement which can be carried out on-line **Definition**: Advisory Committee on Public Procurement **Source**: Study in co-operation with Member States **Frequency**: 6 months	**E-Government indicator:** • Preferred Way of Interacting with Government Services **Definition**: Citizen's preference to interact with government via online services or via the traditional way (face-to-face, phone) for 7 basic government services for citizens. **Source:** SIBIS+ GPS **Collection Date:** GPS: January 2003 for NAS 10: BG, CZ, EE, HU, LV, LT, PL, RO, SK, SI **Other SIBIS indicators** • Awareness of Availability of online Government Services • Use of Online Government Services

Source: eEurope+ and SIBIS

e-Europe 2005 benchmarking indicators
Policy indicator: D.1 No. of basic public services fully available on-line **Definition:** 20 basic services as approved by the Internal Market/Consumers/Tourism Council of 12 March 2001 for the first eEurope benchmarking exercise. **Source:** Commission study in co-operation with Member States **Frequency:** Annual, first deliverables October 2003, second October 2004, third October 2005, with as reference period 1st quarter 2003/4/5 **Supplementary statistical indicators:** D.2 Percentage of individuals using the Internet for interacting with public authorities broken down by purpose (purposes: obtaining information, obtaining forms, returning filled in forms) D.3 Percentage of enterprises using the Internet for interacting with public authorities broken down by purpose (purposes: obtaining information, obtaining forms, returning filled in forms) **Additional indicators to be the subject of pilot studies with a view to examination of their feasibility at the mid-term review or earlier if possible:** D.4 No. of available basic public on-line services with integrated digital back office processes D.5 Public procurement processes that are fully carried out online (electronically integrated) in % (by value) of overall public procurement D.6 Percentage of public authorities using open source software

Source: eEurope 2005 and SIBIS

3.1.2. Results from SIBIS

The realisation of e-Government depends on two complementary aspects. First, the vision of e-Government dictates the types of services that must be available online and the level of sophistication they must achieve. Second, the adoption of e-Government by its intended users requires that users accept it, and has benefits over traditional means or such services will not be successful. Ideally, development is based on a thorough understanding of how users perceive e-Government, how well they can complete expected transactions, and what barriers stand in the way of successful adoption. The knowledge gained by studying both sides of e-Government—vision, acceptance and adoption—provides a necessary foundation for its successful implementation.

Within SIBIS, citizens' preferences for, access to, usage of, and attitude toward e-Government are examined.

3.1.2.1. Preferred Way of Interacting with Government Services

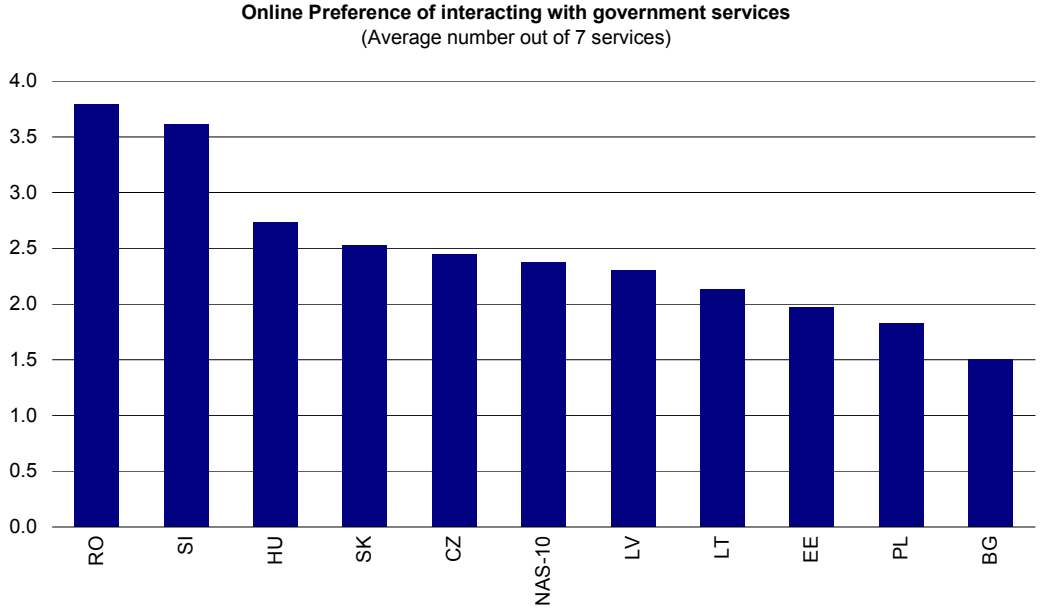
As the policy indicator proposed by eEurope 2005 measures the availability, in terms of level of sophistication of online services, the SIBIS indicator measures the preferences of citizens to use those services. This indicator provides some interesting information of the willingness of people to use online services.

SIBIS distinguishes seven basic services for citizens:

- Search for books in public libraries
- Request for personal documents
- Search for job
- Income tax declaration
- Change of address
- Declaration to the police
- Car registration.

The cultural variety of the NAS may combine with other factors to influence the interest in e-Government of citizens in each of them. Many externalities may vary from one country to the next, influencing the preference of respondents for e-Government, which it was not possible to investigate through the survey. For this reason, differences in the preferred way of interacting with government that are seen across the NAS cannot be explained. The limited scope of the questions presented to the respondents in the survey makes it difficult to speculate about what influences the preference for e-Government across the NAS. However, the results suggest that further study may prove fruitful in understanding why citizens may prefer or not using e-Government.

Figure 3.1 **Preferred way of interacting with government services by NAS country**
Aggregated indicator. Score range: 1 (low preference) to 5 (very high preference)
Question: Here is a list of activities that require citizens to get in touch with public administration. For each activity, please answer whether you would prefer to use the Internet or prefer to use the traditional way, that is face-to-face, by postal mail, fax or phone….



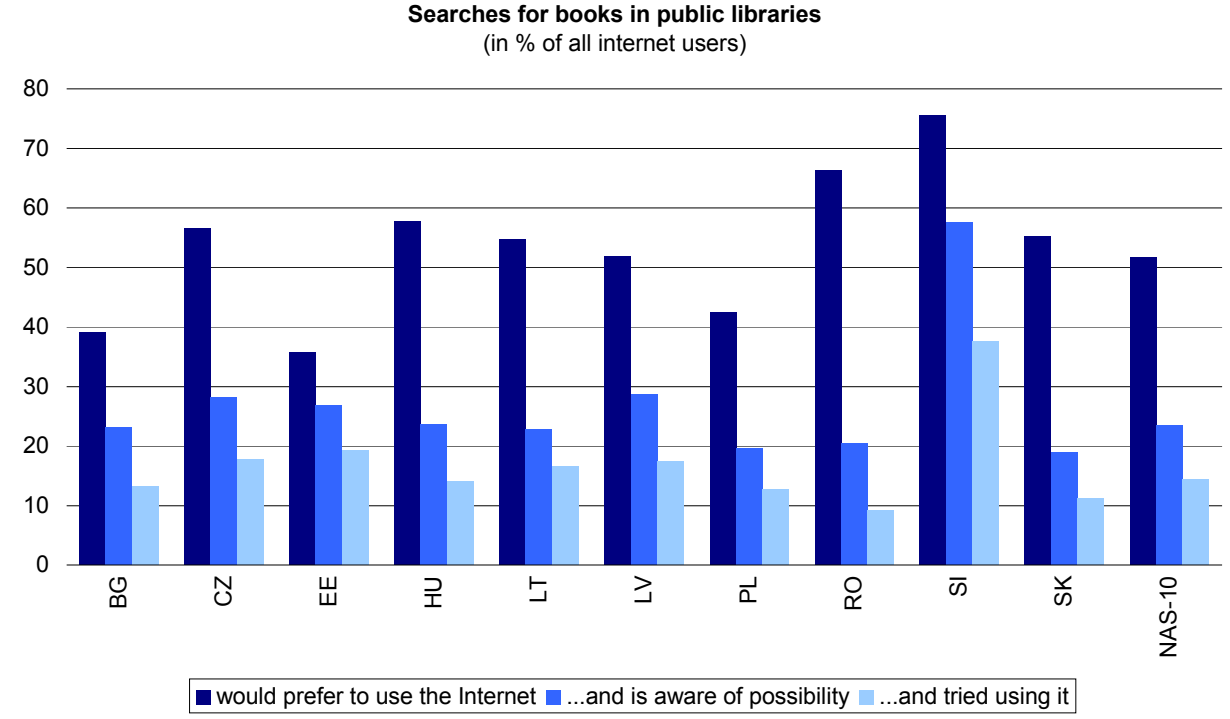
Base: All regular Internet users, averaged across 7 services. Source: SIBIS+, NAS-GPS 2003.

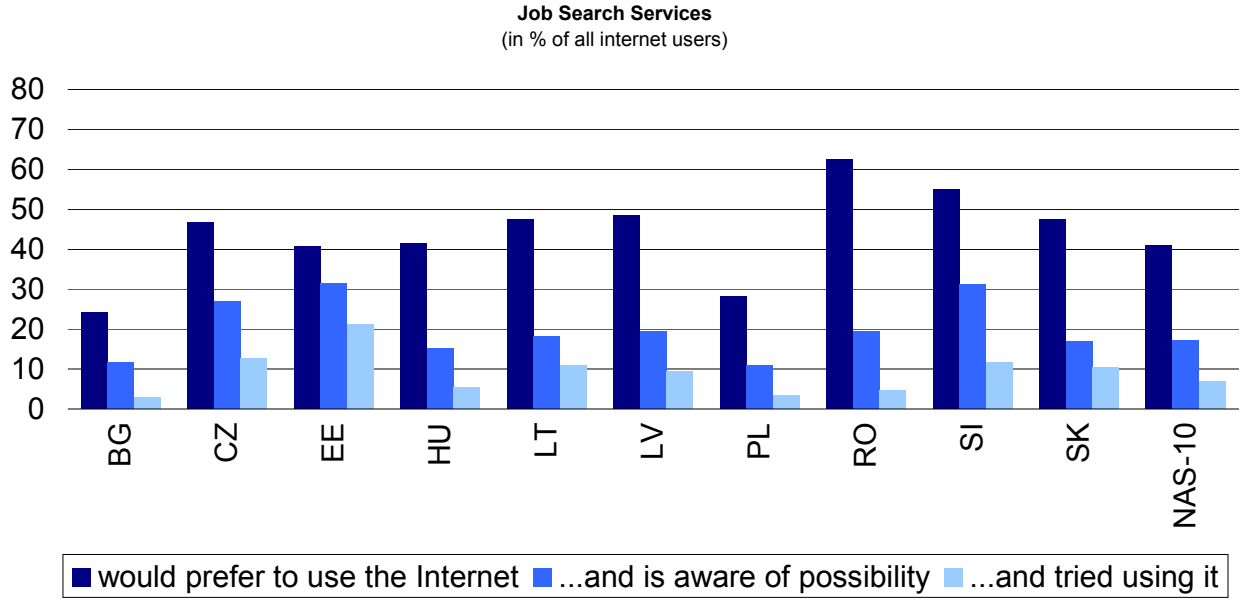
The preference for using the Internet to access e-Government services scores 2.4 in the NAS 10 countries (on a scale of 1 to 5) vs 2.9 in the EU-15 countries. This is not an enthusiastic support for online public services, considering that the question was asked only to Internet users, and that traditional ways score higher (around 3): it does show though that there is a generally favourable attitude also in the candidate countries towards the new channel of interaction with the public administration. Overall, respondents from Romania and Slovenia show a greater and consistent preference for interacting with the government using the Internet, with an index score close to Finland's and Austria's ones, the highest in the EU.
The preference for online or traditional access to government services varies across the services of interest, with a similar pattern between the EU 15 and the NAS countries. SIBIS discovered that citizens are interested in some aspect of e-Government, showing a significant preference for some e-Government services over their traditional counterparts. Preference was not uniform, however. Thus, for example, the online search for books available in public libraries, which requires minimal information about the user, rates a high preference. The use of job search services can also be carried out by revealing minimal information about the user and tends to be rated fairly highly by respondents.

Continuing the progression from relatively anonymous services to ones that require a great deal of personal information, the announcement of a change of address gives relatively little information about an individual although this is more than for the two other services listed up to now. Least preferred is the declaration to police (with less than 20% preferring to use the service and only 1% using such a service), which potentially requires that a great deal of private information be divulged. Among respondents who indicated a preference for online government services, citizens were not always aware of which government services were available online. The general pattern appears to be that citizens were well aware of e-Government services requiring little or no personal information while they were not sure of whether those requiring a great deal of personal information were available to them, including income tax declaration, which was not the case with the EU15.

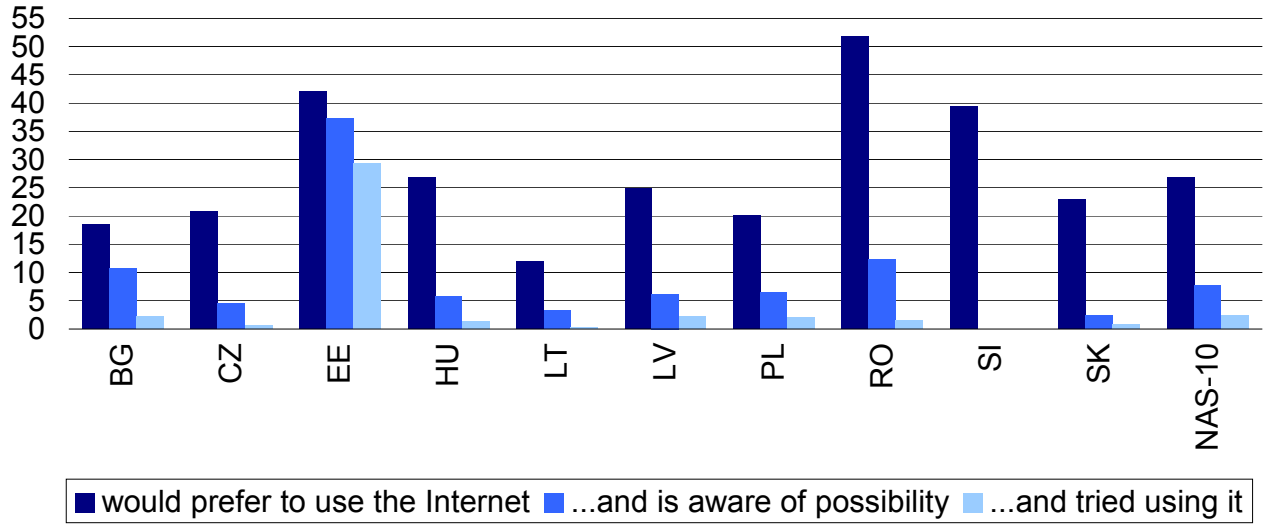
Figure 3.2 Preference, awareness and willingness to use e-Government services (percentage of Internet users)

Questions: Here is a list of activities that require citizens to get in touch with public administration. For each activity, please answer whether you would prefer to use the Internet or prefer to use the traditional way, that is face-to-face, by postal mail, fax or phone…. Is it available on the Internet in your area? People who said to prefer to use the Internet for this service where asked. Have you ever tried using the Internet for this?

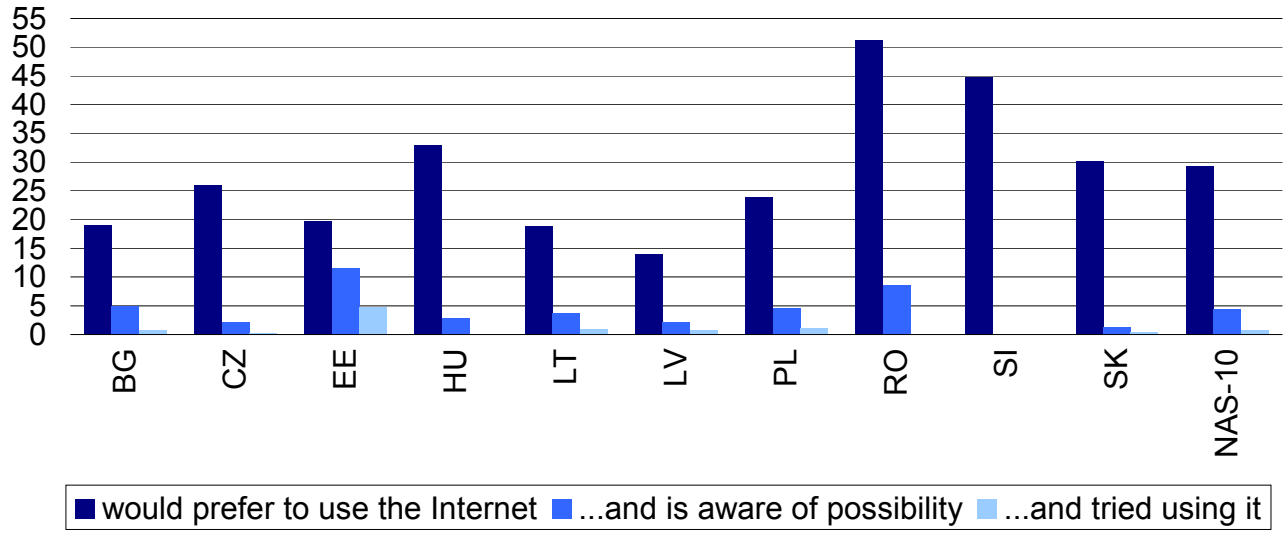




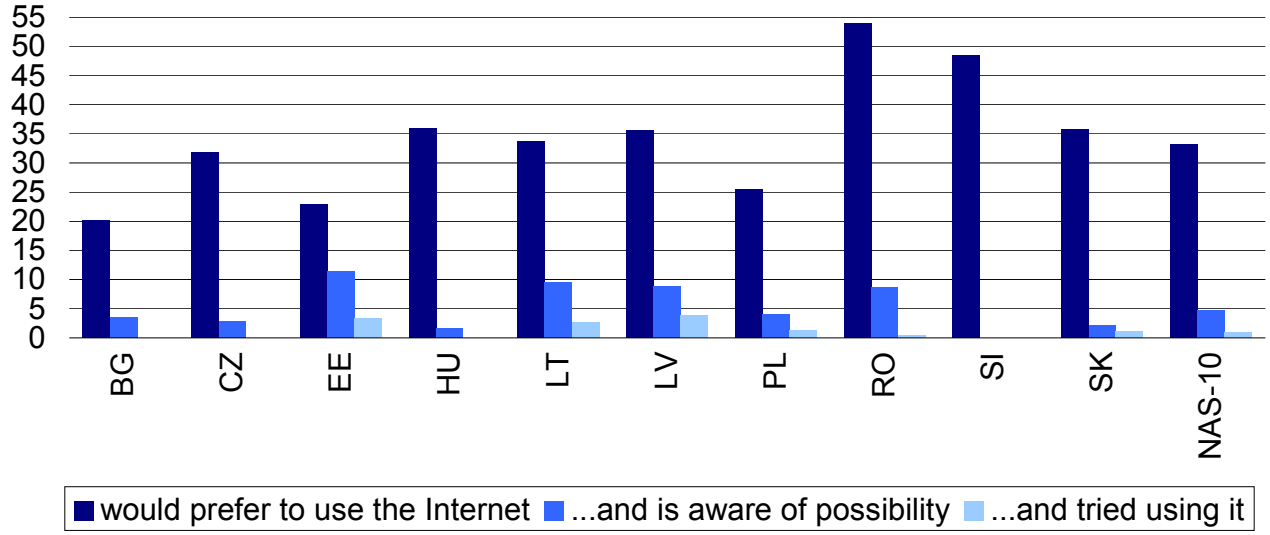
Tax declaration/ filling the income tax return
(in % of all internet users)



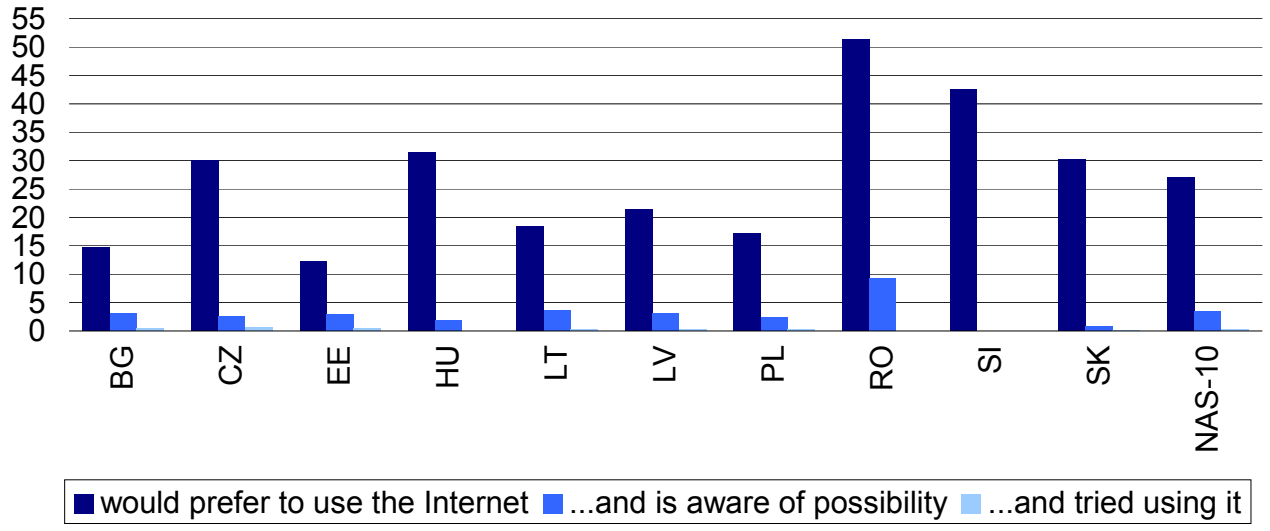
Request for passport, drivers license, birth certificates or other documents
(in % of all internet users)

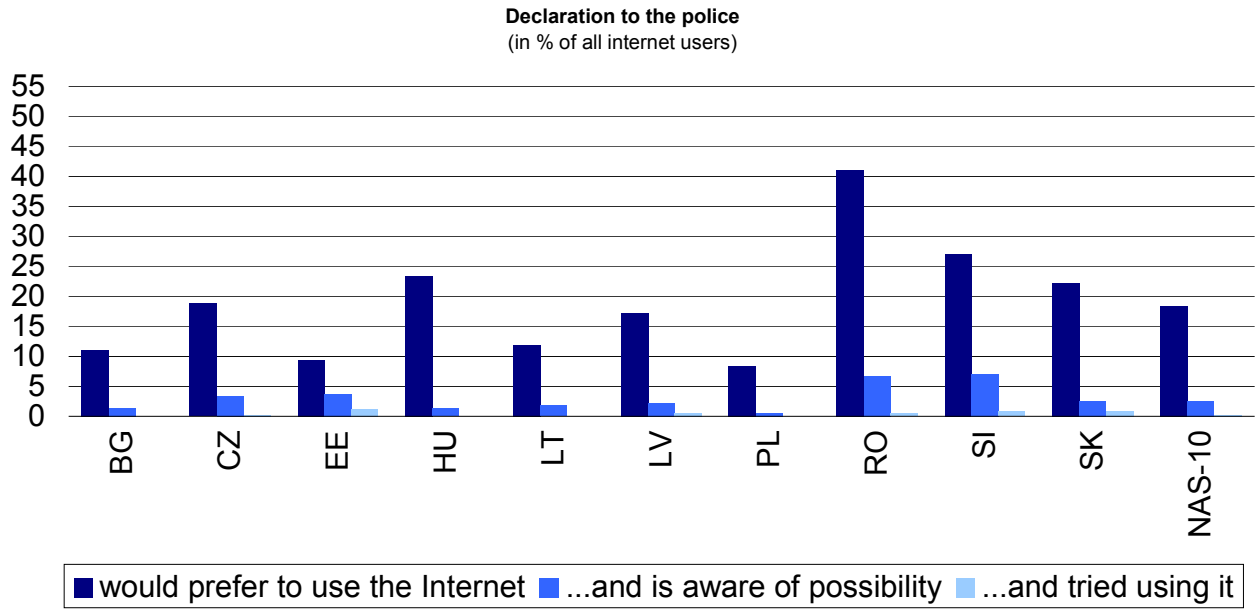


Announcement of change of address
(in % of all internet users)



Car registration
(in % of all internet users)





Base: All regular Internet users, weighted by NAS-10 population
Source: SIBIS, NAS-GPS 2003

3.1.3. Conclusions

SIBIS+ indicators gave a well needed demand-side perspective of e-Government, including the preferences, awareness and attitude of citizens towards e-Government. The results show that overall, services which do not require users to reveal a great deal of personal information about themselves are more popular, consequently there are issues related to online public services such as change of address, car registration, personal documents and declarations to the police – especially the latter. Whilst these issues may not be insurmountable, it will be undoubtedly sometime before users migrate to less traditional interaction.

The preference for using the Internet to access e-Government services scores 2.4 in the NAS 10 countries (on a scale of 1 to 5) vs 2.9 in the EU-15 countries. This is not an enthusiastic support for online public services, considering that the question was asked only to Internet users, and that traditional ways score higher (around 3): it does show though that there is a generally favourable attitude also in the candidate countries towards the new channel of interaction with the public administration. Overall, respondents from Romania and Slovenia show a greater and consistent preference for interacting with the government using the Internet, with an index score close to Finland's and Austria's ones, the highest in the EU.

Within the NAS-10, there were constant issues of awareness, especially for services other than job searches, tax declaration, and public libraries. This is interesting information for policy makers, as it does not make sense to develop and invest in innovative electronic government service if there is little awareness of it.

3.2. e-Learning

3.2.1. EU policy goals and definitions

EU policy goals in the area of e-Learning are defined along two different lines;

- e-Learning in the education system,
- e-Learning for work and skills.

In eEurope 2005 the 'program for e-Learning' is one of the five proposed actions in the e-Learning section. The focus in this action is the implementation of the objectives of the e-Learning Action Plan[2]. The EC "will also publish an analysis of the European market for e-Learning, including the private sector. It will review the market situation and analyse legal, economic and social issues with a view to identifying obstacles to the development of the e-Learning market in Europe and where necessary make proposals to remedy them" (eEurope 2005, p. 7).
A central element of the e-Learning action plan is to develop systems to train students and pupils as well as adults to become digitally literate. Similarly, eEurope+ activities have identified 4 priority lines of action: improvement of infrastructures and equipment, a training drive at all levels, and the development of content and quality services. This is dovetailed by the goals of the action “participation for all in the knowledge based economy”. E-Europe+ actions here include European youth into the digital age, design for all standards for accessibility of information, and legislation to ensure conformity with the accessibility principle. Timelines for these activities run until the end of 2003.

A natural benchmark indicator in this area is the actual level of digital literacy in the population. This could be seen as an indication of the population's readiness to use the digital literacy skills, or in general terms measurement of outcome of the systems to train the population in becoming digitally literate. No such indicator has been proposed by the EC, but in the SIBIS project a number of indicators and an index of Digital Literacy have been developed, in accordance with the understanding of the e-Learning Action Plan and the e-Learning summit[3]. The SIBIS index of Digital Literacy measures the status of digital literacy in the population as confidence in communicate via the Internet, download and install software, search wanted information at the Internet and to question the information from the Internet[4].

[2] COM(2001)172 final: The e-Learning Action Plan, Designing tomorrow's education
[3] Ibid and European Commission (2001): Digital Literacy workshop. A discussion paper from the e-Learning summit on digital literacy. Brussels 10-11 May 2001
[4] Note: The index differ from most Eurostat/NSI surveys in focussing on competence level (in accordance to self evaluation), while others often focus on actual use within a certain period of time.

Table 3.2 E-Learning: eEurope+, eEurope2005 and SIBIS's indicators

e-Europe+ benchmarking indicators	SIBIS indicators
• **Number of computers per 100 pupils in primary/secondary/ tertiary levels** **Definition**: include only computers used for teaching purposes **Source**: Sample survey/Eurobarometer . Member States **Frequency**: annual **Supplementary Indicator:** • Hours of computer use per pupil per week • **Number of computers connected to the Internet per 100 pupils in primary/secondary/ tertiary levels** **Definition**: include only computers used for teaching purposes **Source**: Sample survey/Eurobarometer . Member States **Frequency**: annual **Supplementary Indicator:** • Hours of Internet use per pupil per week • **Percentage of teachers using the Internet for non-computing teaching on a regular basis** **Definition**: regular to be taken as using the Internet on a weekly basis **Source**: Sample survey/Eurobarometer **Frequency**: annual	**e-Learning indicators**: • General population Digital Literacy • Young population Digital Literacy **Definition**: Expressed as confidence in one's ability to communicate via the Internet, download and install software, search wanted information online, question the information from the Internet. Represented through a COQS aggregated index. **Source**: SIBIS+ GPS **Collection Date:** GPS: January 2003 for NAS 10: BG, CZ, EE, HU, LV, LT, PL, RO, SK, SI **e-Learning indicators for work and skills** • Percentage of employed population using e-Learning • Percentage of employed population engaged in some kind of self-directed learning related to work, in the last four weeks **Source:** GPS – NAS10

Source: eEurope+ & SIBIS

e-Europe 2005 benchmarking indicators
Policy indicator: E.1 Number of pupils per country with Internet connection (broadband/non-broadband) **Definition:** Only computers used for teaching purposes to be included **Source**: Commission study **Frequency**: Annual, with as reference period 3rd quarter 2003/4/5 **Supplementary statistical indicators**: E.2 Percentage of individuals having used the Internet in relation to training and educational purposes - broken down by: formalised educational activities (school, university etc.); post-educational courses; other courses related specifically to employment opportunities E.3 Percentage of enterprises using e-Learning applications for training and education of employees

Source: eEurope 2005 & SIBIS

3.2.2. Results from SIBIS

3.2.2.1. e-Learning and digital literacy: general population

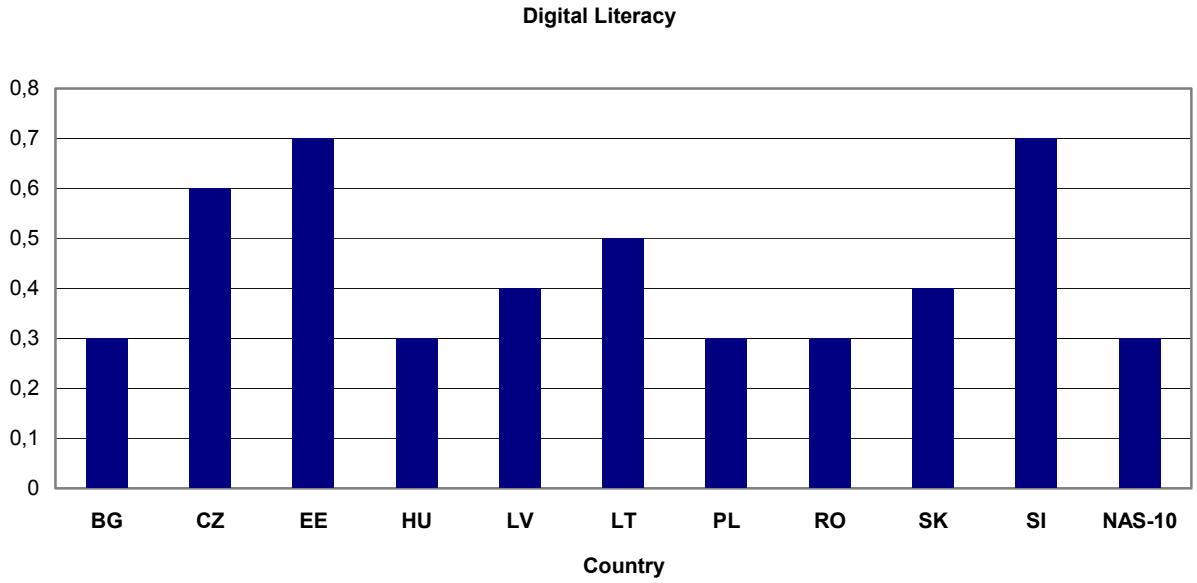
In the knowledge-based society, being able to communicate and work digitally is as basic as the ability to read and write. All groups of society, regardless of age, gender, educational background, etc., must have the opportunity to take part in the societal processes of living, working, and learning to avoid any kind of social exclusion or biases in the labour market. Digital Literacy is focused on communicative digital skills, manifest in the confidence in using the Internet for certain functions and having a minimum of tools for assessing the value of information provided on the Internet.

Digital literacy is based on a self-evaluation of four skills: communicating with others via the Internet, obtaining (or downloading) and installing software on a computer, questioning a source of information from the Internet and searching for the required information on the Internet.

The SIBIS index of Digital Literacy (COQS index) measures the status of digital literacy among the NAS's population as their confidence in carrying out those activities[5]. The COQS index measures on a scale from 0 to 3 the level of digital literacy; 0 corresponds to not being 'very confident' in any of the four skills and 3 to being 'very confident' in all the four skills.

[5] The index differ from most Eurostat/NSI surveys in focussing on competence level (in accordance to self evaluation), while others often focus on actual use within a certain period of time.

Figure 3.3 Digital Literacy in the NAS-10 countries
Question: How confident would you feel in: (a) using a search engine to find information on the Internet, (b) identifying the source of information provided on the Internet, (c) using e-mail to communicate with others, (d) using Internet chat-rooms to contact other people, (f) creating a personal web/Internet page, (g) downloading and installing software onto a computer

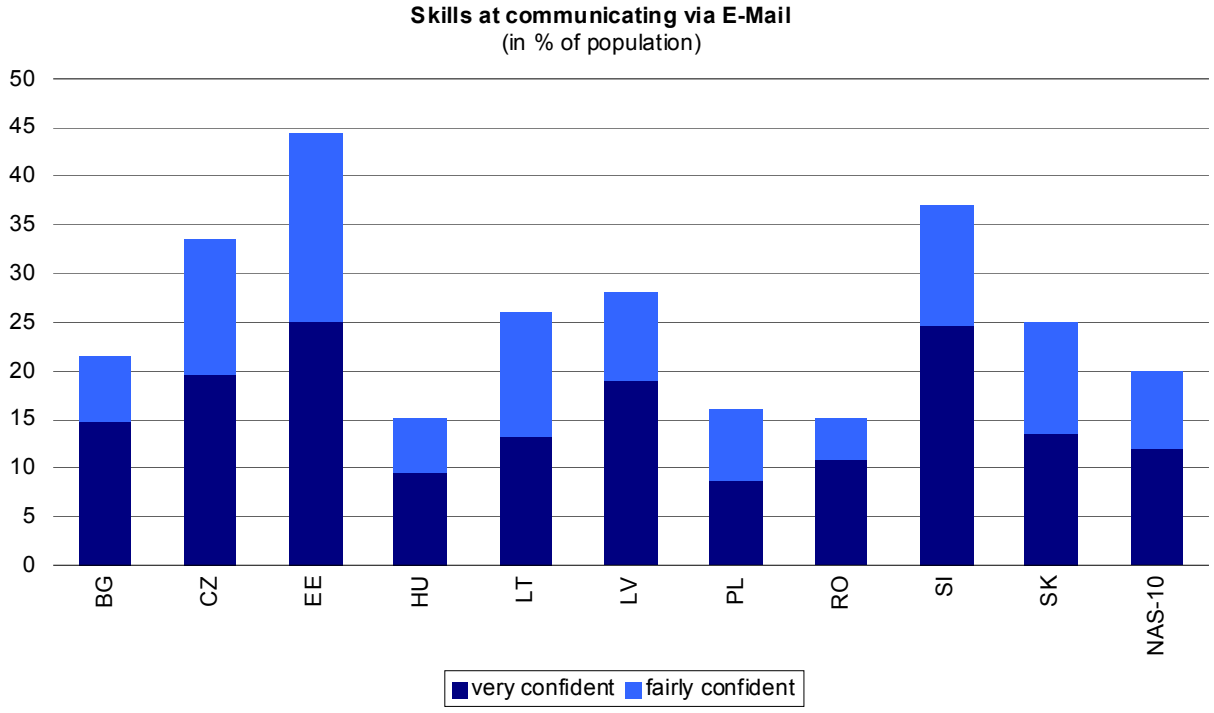


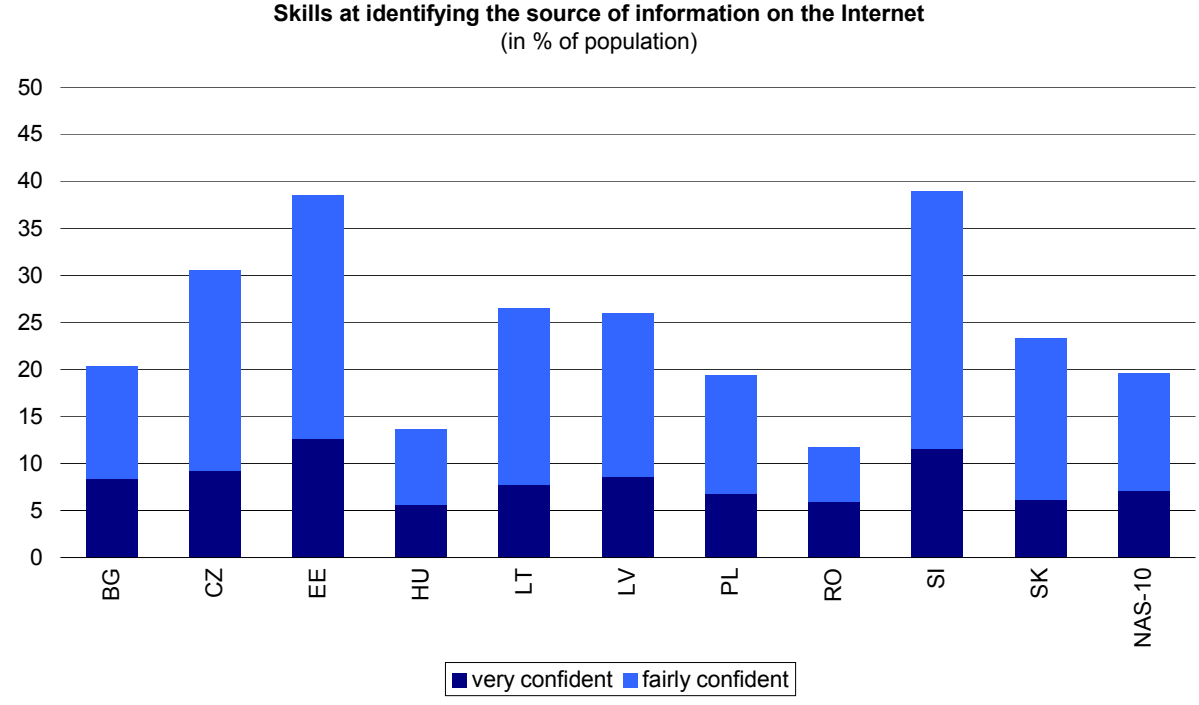
Digital literacy - average national index value total population

Base: total population (N=10,379)
Source: SIBIS+ 2003, GPS

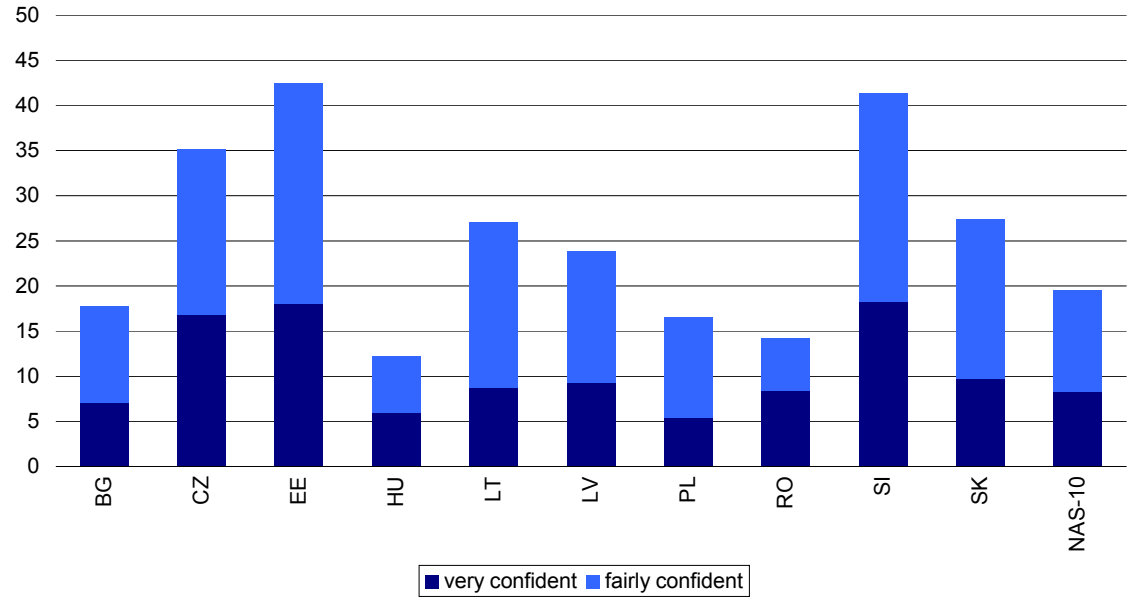
The Digital Literacy Index overall score is 0.35 in the NAS-10 countries, much lower than the 0.8 measured for the EU-15, not to speak of a US score as high as 1.5. The level of Digital Literacy varies strongly within the EU, with the NAS-10 countries in general showing the lowest level. Only Estonia and Slovenia's scores are slightly higher than the Southern European ones, confirming their leadership position in the Internet culture in Central Europe. The Czech Republic and Lithuania also show scores higher than the NAS average, while the Hungarian index is surprisingly low.

Figure 3.4 **Digital Literacy by NAS country – segmented by activity.**
Question: How confident would you feel in: (a) using a search engine to find information on the Internet, (b) identifying the source of information provided on the Internet, (c) using e-mail to communicate with others, (d) using Internet chat-rooms to contact other people, (f) creating a personal web/Internet page, (g) downloading and installing software onto a computer

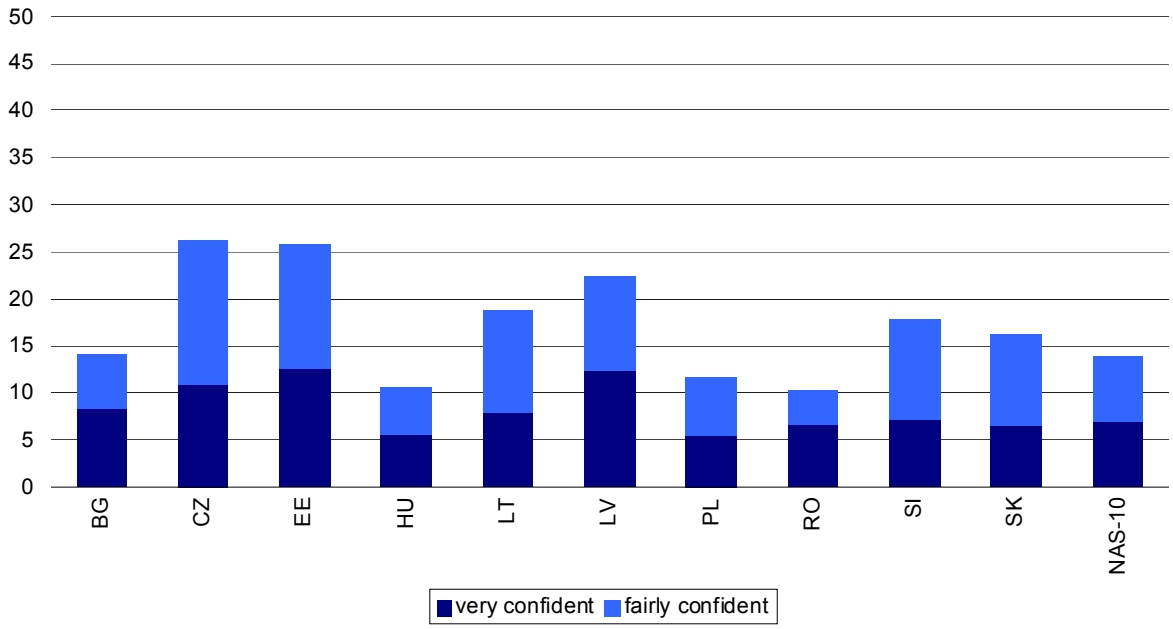




Skills at searching information through Internet search engines
(in % of population)



Skills at using Internet chat rooms
(in % of population)



Base: total population (N=10,379)
Source: SIBIS+ 2003, GPS

The overall Index hides different levels of literacy depending on the type of skills. E-mailing and searching information are by far the skills where confidence is higher, although there are significant differences between member states, especially exhibited by Hungary, Poland, and Romania. Within the Romanian educational system, for example, limited access to IT technology, and only 1% of high schools and universities having their own websites are compounding factors. Consistent high achievers are Estonia, Slovenia, and the Czech Republic. Also, chat rooms appear to be a significant part of the portfolio of the NAS Internet users' skills, whereas using Internet telephones and personal Internet pages are less diffused – with only 1-in-20 who consider themselves proficient in such activities.

3.2.2.2. Young population digital literacy

The elaboration of the Digital Literacy Index for the younger population (up to 24 years old) is particularly illuminating, because the scores are much higher, confirming that new generations have a much easier approach to digital skills. It is worthwhile noticing that the EU-15 young present the same Digital Literacy score as the general population of the US today, while the NAS-10 young are where the EU general population is today. This promises well for the future growth of digital skills. Moreover, according to SIBIS elaborations, the relative differences between the COQS index scores among the youth and the rest of the population tend to be much higher in countries with a low general level of digital literacy, than in countries with a high level. This indicates that digital literacy level tend to equalise as a country's use of the Internet develops.

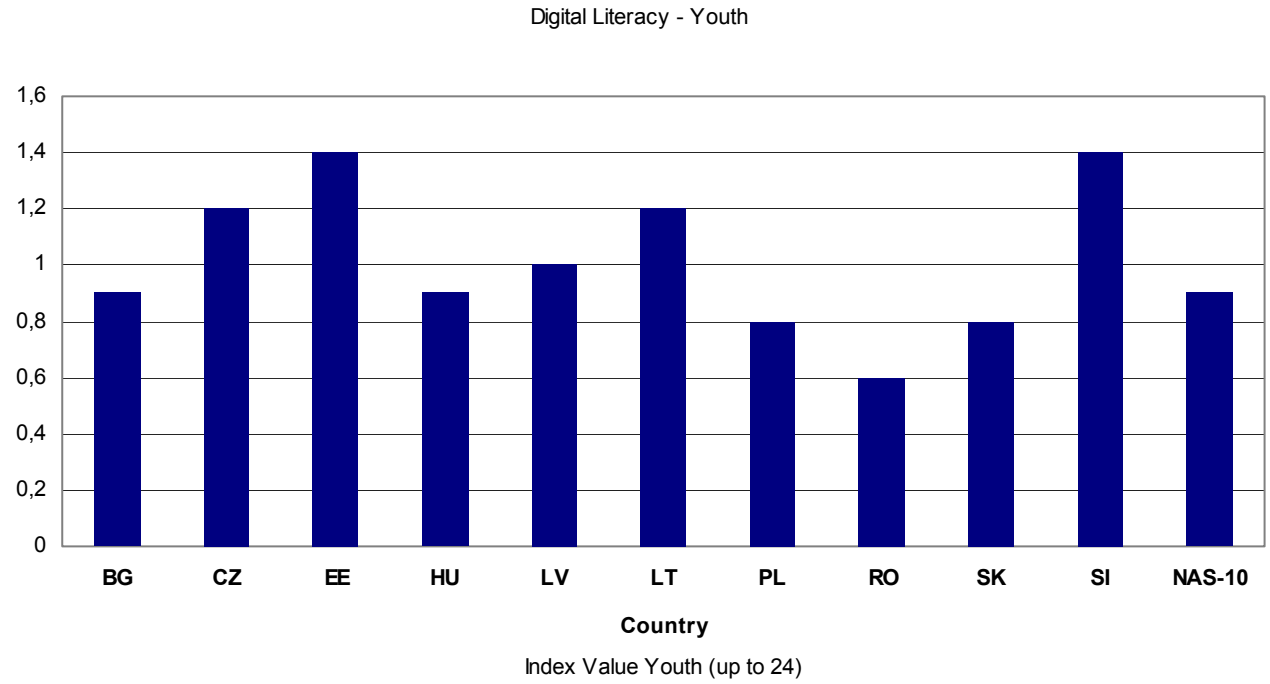
Table 3.3 Benchmarking Digital Literacy in the EU, NAS 10 and USA

Digital Literacy	EU 15	NAS 10	USA
General Population	0.8	0.3	1.5
Youth 15-24 yrs	1.5	0.9	2.1

Source: SIBIS GPS 2002 - 2003

The variations by country in the young generation correspond by and large to the ranking resulting from the general population index, with some exceptions, notably Hungary which scores relatively better.

Figure 3.5 Youth level of digital literacy. Value at the COQS-index among the youth (up to 24)
Question: How confident would you feel in: using a search engine; find information on the Internet; sources of information; using e-mail; using Internet chat-rooms to contact other people, (f) creating a personal web/Internet page, (g) downloading and installing software onto a computer



Base: All respondents N=3,507 (filtered for up to 24 N=2036)
Source: SIBIS+ 2003, GPS

3.2.3. Results from SIBIS in e-Learning for work and skills

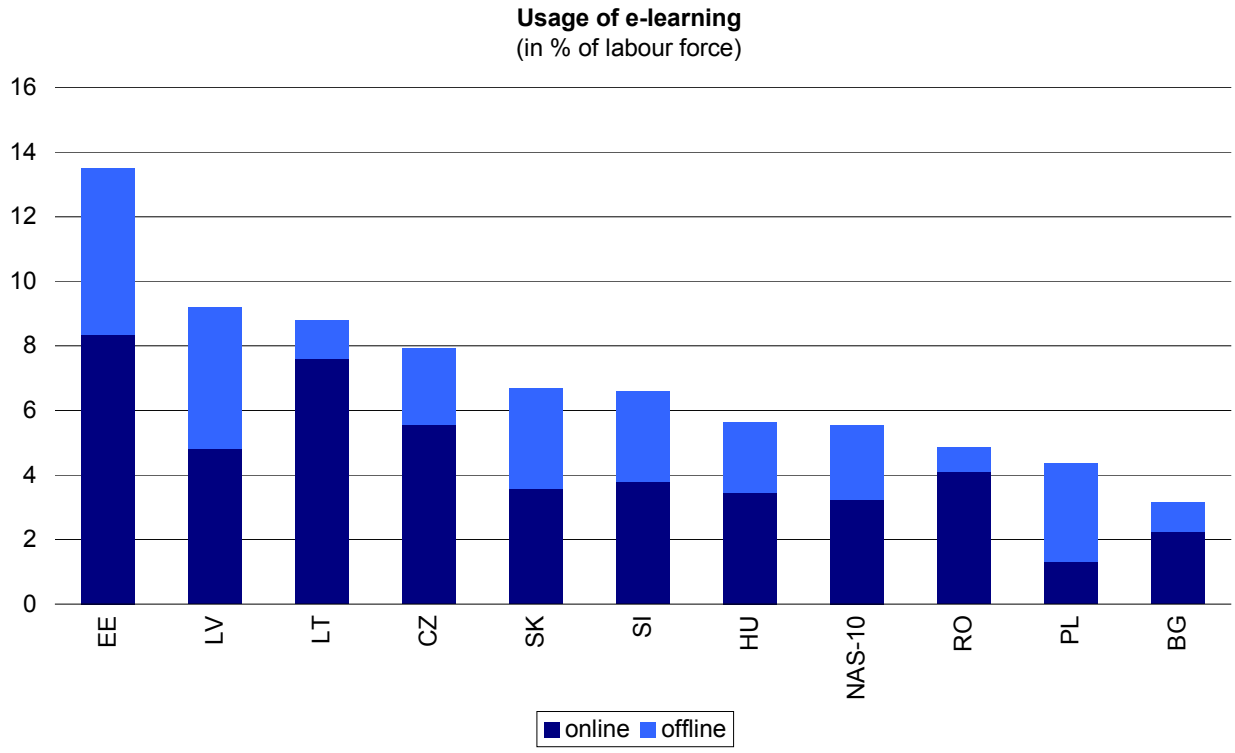
SIBIS has developed indicators which provide data and results for the indicators suggested by eEurope 2005 on life long learning and the usage of e-Learning diffusion in the employed population. This can be differentiated according to the employed status of the interviewed person.

A further indicator "Self-directed training" ("Engagement in some kind of self-directed learning related to your work, in the last four weeks") was developed by SIBIS and data on this obtained allowing for a differentiation by status (e.g. labour force, employee, unemployed). This indicator provides some interesting information on and insights into the preparedness and willingness of individuals for life-long-learning. It also is in line with the EC objective to give the labour force the chance to become digitally literate through life long learning, and to increase IT training places and courses and promote gender equality.

3.2.3.1. e-Learning at work

e-Learning can play a decisive role in delivering learning systems which meet the demands of today's workers -- and unemployed. SIBIS+ distinguished between two broad groups of e-Learning technologies: offline e-Learning (comprising multi-media learning material such as computer programmes on diskettes, video tapes 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). On average 5% (3% online & 2% offline) of the NAS 10 countries employed population use e-Learning tools, a factor of three behind the EU15. Estonia comes very close to the EU15 average, and Latvia, Lithuania the Czech Republic, Slovakia and Slovenia surpass the tail end of the EU15, which is extremely encouraging.

Figure 3.6 Use of e-Learning in the NAS-10 countries
Question: Did you use, in the course of your training and learning in the last four weeks, electronic learning materials such as learning programmes on CD-ROM, in company-internal computer systems or on the Internet? (1) yes (2) no (3) DK
What did you use? Did you use (a) CD-ROMs or other so-called offline media such as diskettes, audio or video tapes etc.? (b) online learning materials provided on the internal computer system of your organisation or through the Internet? FOR EACH (1) yes (2) no (3) DK



Base: labour force (N,4,621) Weighted. NAS 10 average weighted by NAS 10 population
Source: SIBIS, NAS-GPS 2003

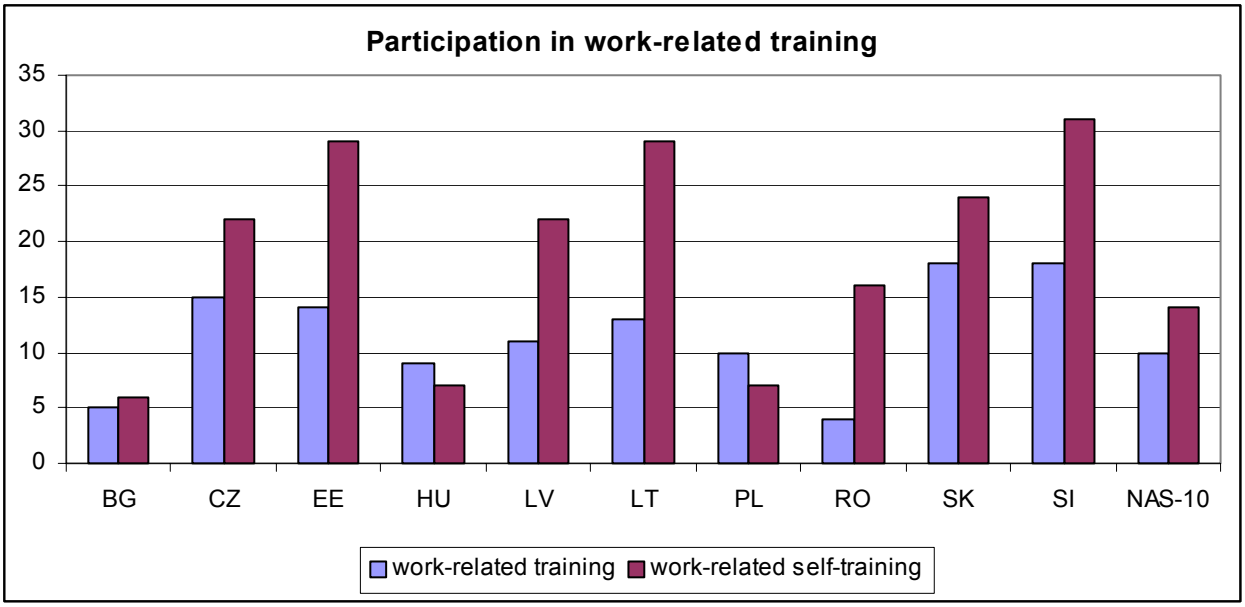
3.2.3.2. e-Learning and participation in work-related training courses

Acquisition of skills increasingly takes place throughout the working life. Therefore "Participation of individuals in work-related training courses" is the SIBIS indicator used to shed some light on the training activities by companies. According to SIBIS+, about 10% of the NAS 10 countries labour population participated in work-related training activities in the last four weeks, and 14% engaged in self-directed learning. In both cases the percentage is less than half the corresponding EU-15 levels which were already considered unsatisfying in terms of life-long learning development. As in the EU, variations between countries are rather striking. The NAS countries with the highest levels of training are aligned with the average EU level. Greece and Portugal present very low levels similar to some NAS countries.

The SIBIS data also suggests that the skills gap between the current workforce and the unemployed is going to widen because of the extent to which persons in employment are engaged in company-provided training, learning by doing and also self-directed learning. It seems that the training provided by the state to the unemployed cannot make up for the provision of learning opportunities companies supply to the employees.

When combining the results of this indicator with the one on e-Learning for the EC countries it becomes apparent that there is a strong relationship between these two indicators: the higher the participation in work-related training courses, the higher the use of e-Learning tools.

Figure 3.7 Participation in work-related training in the last four weeks in the NAS-10 countries
Question: Did you participate in some kind of work-related training in the last four weeks? Did you engage in some kind of self-directed work-related learning in the last four weeks?



Base: labour force (N,4,621) Weighted. NAS 10 average weighted by NAS 10 population
Source: SIBIS, NAS-GPS 2003

3.2.4. Conclusions

The Digital Literacy Index, which is based on a self-evaluation of main digital skills, scores 0.35 in the NAS-10 countries, much lower than the 0.8 measured for the EU-15, not to speak of a US score as high as 1.5 (on a scale from 0 to 3). Within the NAS-10 countries, as in the EU-15, the driving force of the Information Society are the youth. Utilising the findings of the Digital Literacy index, revealed that users under 24 are three times more likely to have a range of skills compatible with the goals of the IS. It is worthwhile noticing that the EU-15 young present the same Digital Literacy score as the general population of the US today, while the NAS-10 young are where the EU general population is today. This promises well for the future growth of digital skills.

Unsurprisingly there was significant correlation between those countries with good digital literacy at the youth and general population levels, although across the NAS-10 there was as much as a threefold variation in the leading and lagging countries. The level of digital literacy within the NAS-10's youth is on average a factor of two behind, whereas for the general population this rises to a threefold differential.

For e-Learning, the NAS-10 have come someway, championed by Estonia, but more needs to be done especially for those at the lagging end of the e-Learning spectrum. Here it may be that policy is probably best advised to take a two pronged complementary approach; increasing motivation and incentives not only at the enterprise side, but also at the demand side, highlighting the benefits of e-Learning activities/solutions. Self-directed learning is presently slightly more present than company-provided training in the NAS countries. This could ensure an improved re-skilling of the workforce for the knowledge society.

3.3. e-Health

3.3.1. EU policy goals and definitions

Health care systems within the accession countries are under ever increasing pressure, as a result of developments in medical technologies, increased expectations (through improved general knowledge of health issues), an increasingly ageing population and the burden of increasing healthcare budgets. Here, ICTs are expected to open up new opportunities by reducing administrative costs, delivering health care services at a distance etc., one of the main goals of the eEurope 2005 Action Plan. Other important actions contributing to eEurope 2005, are the improvements in telematics in the community pharmaceutical regulatory system. Both citizens and health care providers are increasingly using ICTs and online services. Take-up by general practitioners is of particular interest as they are the cornerstones of most health services. Online health services for citizens are also mushrooming, from information on healthy living and illness prevention to electronic health cards. This is the backdrop to the eEurope 2005 benchmarks on citizens and general practitioners (see below).

These activities are endorsed by eEurope+ 2003, which identifies three areas of specific activities within the candidate countries: a health telematics infrastructure, including regional networks, for primary and secondary healthcare providers; implementation of the core quality criteria for health websites; and, establish links with EU Public Health Networks. All of which have target end dates of the end of 2003.

Table 3.4 E-Health: eEurope+, eEurope2005 and SIBIS's indicators

e-Europe+ benchmarking indicators	SIBIS+ indicators
• Percentage of health professionals with Internet access • **Definition**: number of Primary Care Physicians (PCPs) with Internet access in consulting room/office **Source**: Sample survey/Eurobarometer **Frequency:** annual **Supplementary indicators**: • Percentage of PCPs using the Internet to communicate with: ➢ pharmacies ➢ Secondary care (administration) ➢ Secondary care (clinical) ➢ patients • Use of different categories of web content by health professionals **Definition**: use for information on evidence based medicine, pharma info, disease information etc. **Source:** Sample survey/Eurobarometer **Frequency:** annual	**e-Health indicators:** • Percentage of population (aged 15 and over) using the Internet to search for health-related information • Percentage of population searching for health-related information segmented by socio-economic factors **Definition**: To include any health-related information. Frequency: whether done in defined reference periods - last 4 weeks, last 12 months. Demographic and socio-economic data: health status, age, gender, household type, age finishing education, income, employment status, occupational group. Differentiated by reasons for searching - to be better informed on own general health, to seek second opinion on own or other's medical diagnosis, to support role as carer. **Source:** GPS NAS 10 **Collection Date:** GPS: January 2003

Source: eEurope+ & SIBIS.

e-Europe 2005 benchmarking indicators
Policy indicators: F.1 Percentage of Population (aged 16 and over) using the Internet to seek health information whether or not for themselves or others. Health information to include injury, disease and nutrition. (F.2[6] Percentage of general practitioners using electronic patient records) **Definition:** Health information to include injury, disease and nutrition. Frequency: daily, weekly, monthly, rarely, never, Demographic data: age, gender, Breakdown between general searches and those for named practitioner online. If named practitioner, purpose of communication: make appointment, request prescription, or seek medical advice **Source:** New survey, Eurostat/NIS household survey **Frequency**: Annual

Source: eEurope 2005 & SIBIS

3.3.2. Results from SIBIS

Overall, the indicator developed within SIBIS+ were found to work well. It could be operationalised for purposes of the SIBIS general population survey and yielded good quality data. The main results for this indicator are summarised below.

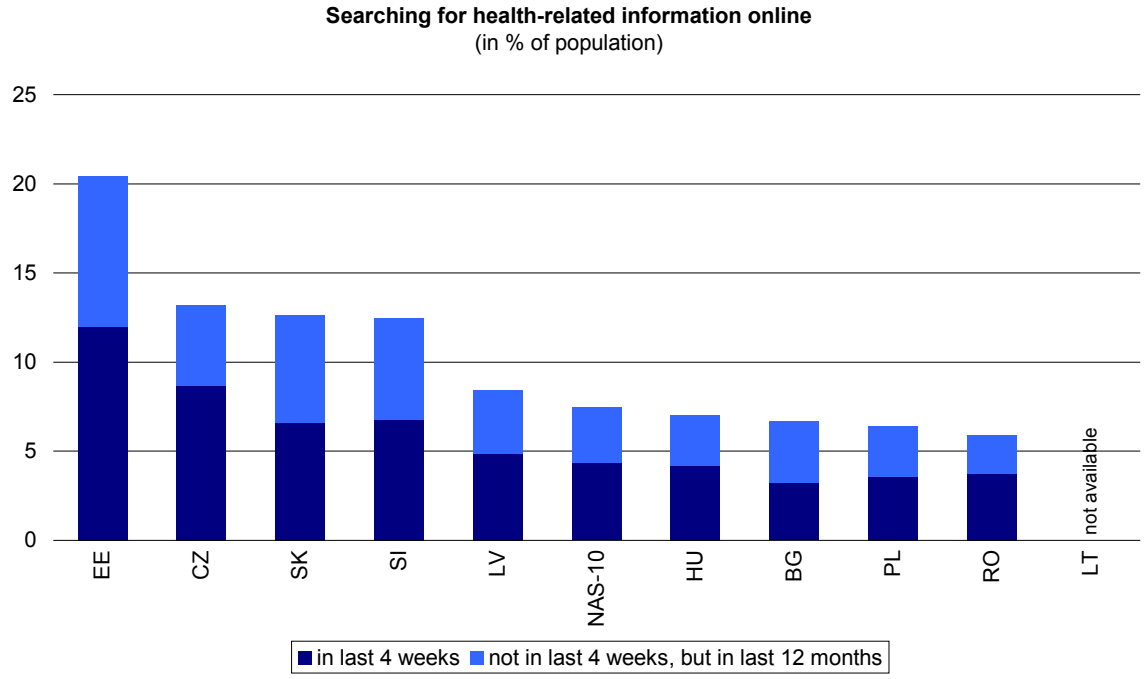
3.3.2.1. Searching for health-related information on the Internet

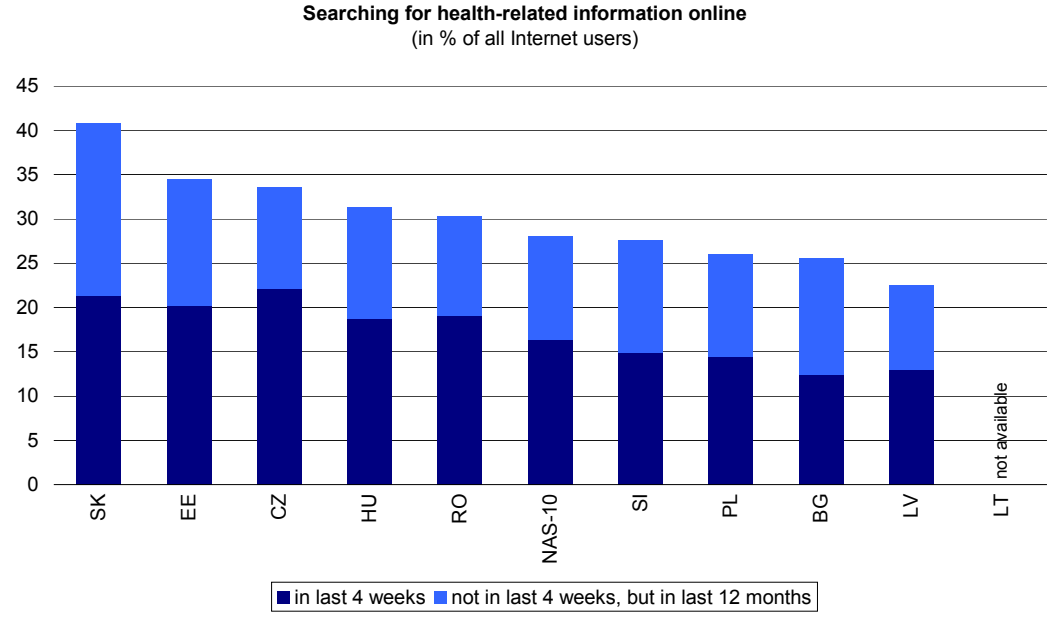
Amongst those aged 15 years and over in the NAS countries, approximately 7% searched for health related information, compared to 20% in the EU 15 countries. Estonia took a significant lead over the rest of the NAS countries, achieving a comparable level to France and Greece. For the Czech Republic, Slovakia and Slovenia the use of this medium for health related information search is significant.
As a percentage of Internet users, e-Health users are about 28% in candidate countries, vs 36% in the EU. Looking only at regular users (in the last four weeks) the frequency of e-Health searching is very similar in the NAS-10 as in the EU-15. Although the percentage of Slovenian population searching for health-related information is above NAS average (due to the relatively high Internet penetration), the percentage of Internet users doing so is behind NAS average. The latter percentage is probably the result of persistent lack of e-Health services in Slovenia, found also in RIS surveys.

This illustrates that there is significant demand for such services, and is an encouraging trend for the diffusion of e-Health related activities. Whilst there are significant reasons why citizens do and do not access e-Health information (general state of health of the population, healthcare provision and access, etc.) it is undoubtedly related to the provision of the national language [through impartial information providers].

[6] The SIBIS indicator testing and data gathering focused on eHealth activity by the general public. Data on eHealth activity by general practitioners (including electronic patient records) from Eurobarometer (Flash EB 104 and Flash EB 126) was presented and discussed in the SIBIS eHealth report (WP5.1, Topic Report 9) and is not considered further here.

Figure 3.8 Citizens searching for health related information on the Internet
Questions: "..For your private purposes, have you used it [the Internet] in the last 12 months…to search for any health-related information"? Have you done so in the last 4 weeks"?





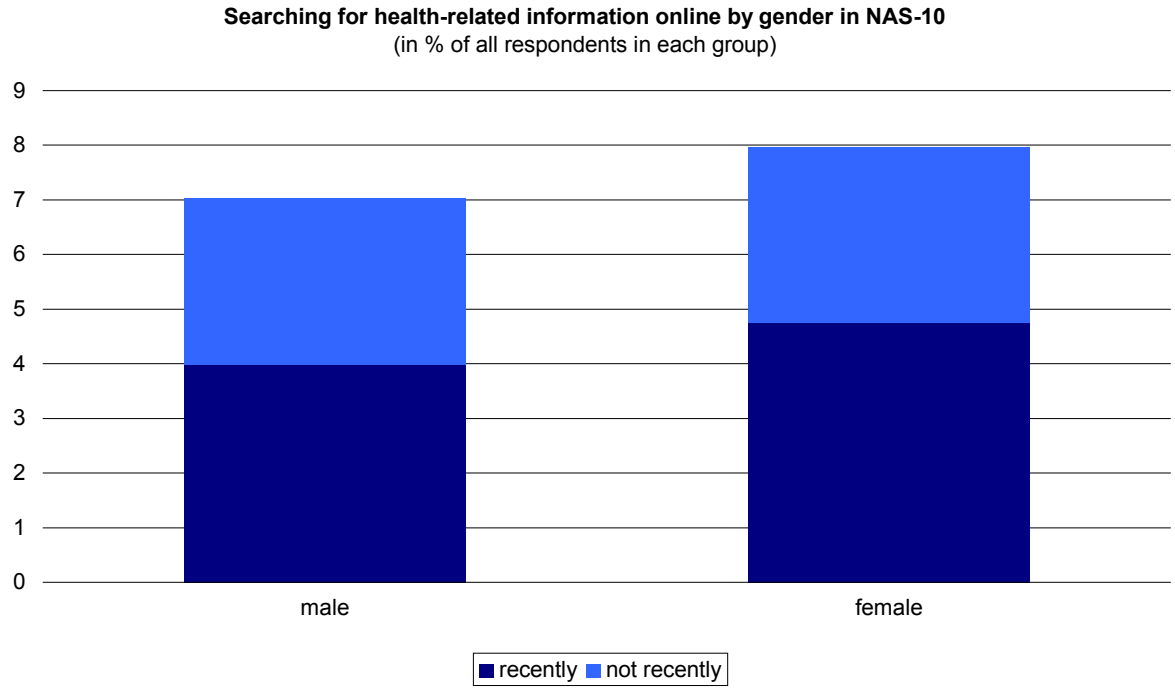
Bases: "Population": all respondents (N=10,379), weighted; NAS 10 weighted by NAS 10 population (N=10,371)
"Internet users": all Internet users (N=3,700), weighted; NAS-10 weighted by NAS-10 population (N=3,507)
Source: SIBIS, NAS-GPS, 2003

When comparing the two differing weightings there is only a slight non-conformity in the pattern, which on he whole demonstrates that there is no cultural aversion to such activities. The exception to this may be Latvia, but without further analysis it will not be possible to ascertain whether this is attributed to the provision of general health service within that country.

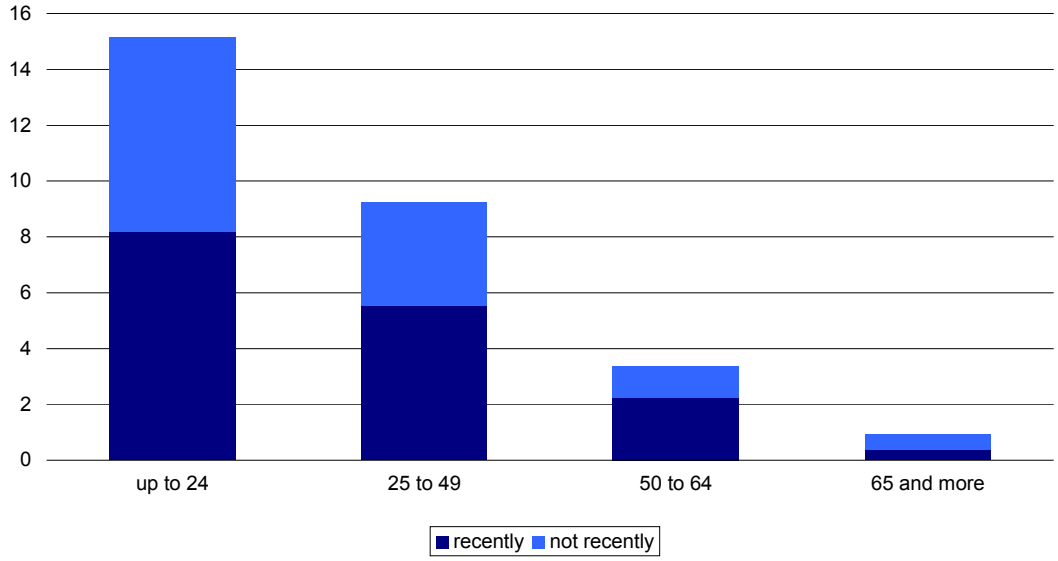
3.3.2.2. Socio-demographic factors affecting e-Health

The Internet and the access that it provides to health-related information may be exacerbating existing socio-demographic "divides" in relation to health matters. Once people have access to the Internet there appear to be relatively few differences across demographic and socio-economic groups in terms of prevalence of seeking health-related information on the Internet. However, differences across groups in relation to Internet access and usage in the first place lead to significant differentials at the population level. If access to more information about health matters is judged to be a good thing, then older people and people in less favourable socio-economic circumstances are currently at a significant disadvantage.

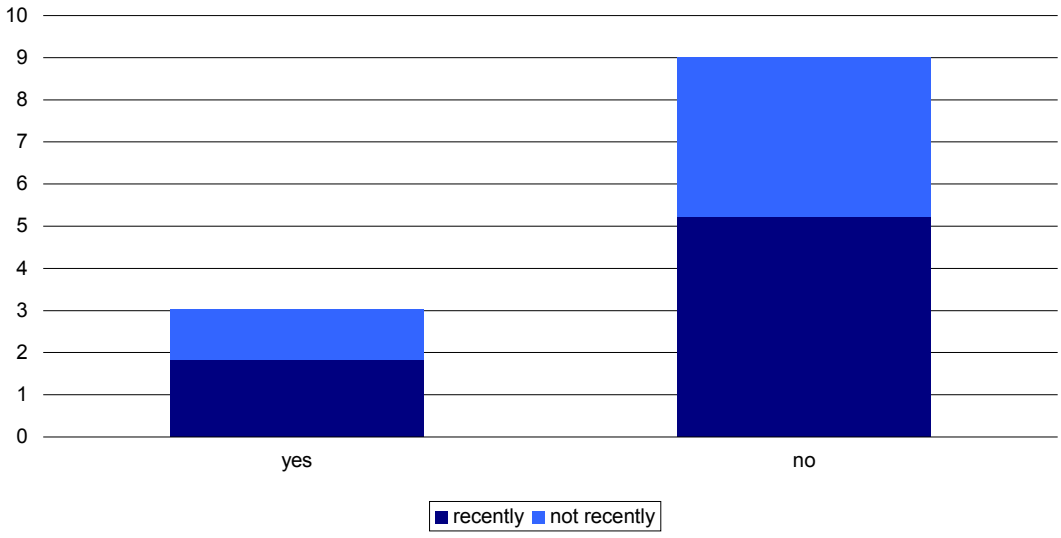
Figure 3.9 Online searching for health-related information by demographic and socio-economic groups
(% searching for any health-related information in last 12 months)



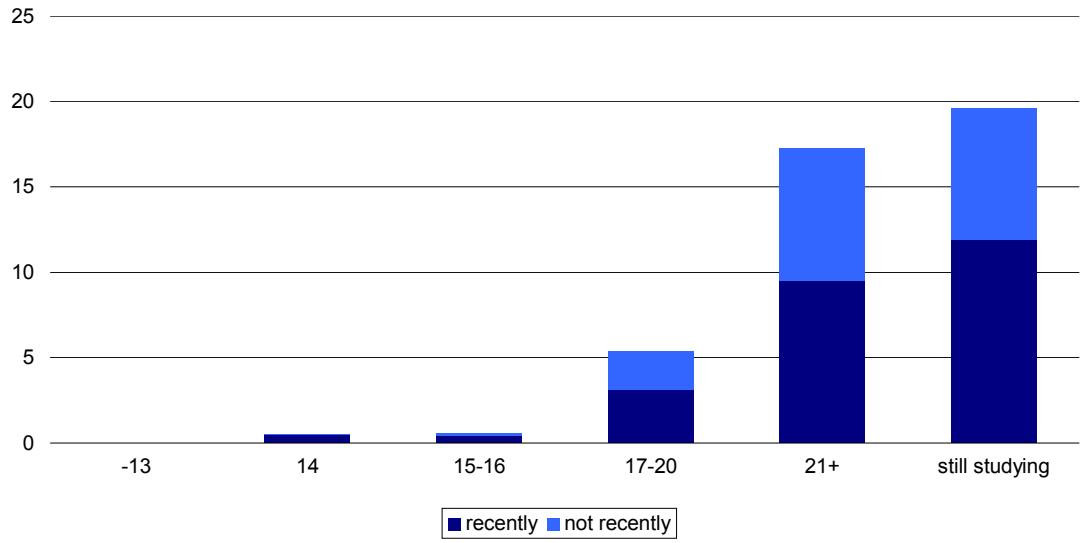
Searching for health-related information online by age in NAS-10
(in % of all respondents in each group)



Searching for health-related information online by existence of longstanding illness in NAS-10
(in % of all respondents in each group)



Searching for health-related information online by terminal education age in NAS-10
(in % of all respondents in each group)



Bases: "Population": all respondents (N=10,379), weighted; NAS 10 weighted by NAS 10 population (N=10,371)
"Internet users": all Internet users (N=3,700), weighted; NAS-10 weighted by NAS-10 population (N=3,507)
Source: SIBIS, NAS-GPS, 2003

Gender
In relation to gender across the population, female citizens users were more likely (8%) to report online health-information searching than were male Internet users (7%). Admittedly, this represents only a slight differential, but at the Internet user level, it is probable that a significant number of female Internet users search and access such information.

Age
In relation to age, younger citizens (those aged 24 and under) were more likely (15%) than other age-groups (varying from 1% to 9%) to report this form of e-Health activity. Not so far behind were lower middle aged citizens (25-49 years - 9%), especially when examining recent users (a differential of only 3%). Higher middle aged citizens and those of 65 years and over used e-Health much less – probably as a consequence of low PC skill and Internet penetration in those age groups.

Health Status
In relation to health status, Internet users who reported having a long-standing illness or disability were less likely to report this form of eHealth activity than those who did not, when analysed on an Internet user level. At the population level, people with a long-standing illness/disability were less likely (3%) to use the Internet for this purpose than were those who did not have such a condition (9%). Looking up health information on the Net could be more influenced by the desire to achieve fitness and wellness than to an effective illness.

Education
Segmenting users by education termination date allows significant insight into how social factors culminate in e-exclusion. The people who terminate education early are more likely to come from non-professional and lower income families. Examining usage across education reveals lower access levels to the Internet for those terminating education below 20 years of age. After the age of 21 (those with tertiary education) the use of e-Health tools significantly increases – and is only marginally differentiated from those still in education. Further breakdown by household income, and occupational status would reveal further interesting facets on the effects of socio-economic exclusion.

3.3.3. Conclusions

The online searching of health-related information in the NAS-10 countries is practised by almost a third of Internet users, a frequency quiet close to the EU-15 one. However, the compounding effects of low Internet diffusion reduce the diffusion of this activity amongst the general population overall (7%). An elaboration by socio-demographic factors paints an interesting picture: the profile of the most prevalent user is female, young, with no specific illness, and highly educated. Clearly, the main motivation of this activity seems to be the increasing attention to wellness and fitness, and the desire to know more about it. A life style phenomenon, possibly. Other surveys have shown that information for example on nutrition is among the most searched items.
The profile of the average user does vary from country to country, nevertheless online searching for health information is clearly becoming a significant element of health related activities, which needs to be given due attention by public health policy makers.

The proposed attention given to both the general public and general practitioners in the eEurope 2005 benchmarking is a positive development. However, there are some aspects of both areas that might benefit from some reflection and re-consideration.
Firstly, there is a need to ensure that a suitably differentiated picture of e-Health activity is generated for the public. This would enable the searching for information on healthy lifestyles, particular illnesses, treatments and medications; as well as the provision of more practical information about health services (availability, opening hours and so on) and on ordering/purchasing medication.
Secondly, specific attention has to be given to online interaction between the citizen's own doctor/clinic. This may include; the ability to log on to their web site; provide an online consultation about a medical condition; receive test results via e-mail; request prescription renewal via e-mail; and receive prescription renewal via e-mail.
Thirdly, assessment of the types and quality of web sites visited, and ability of users to assess that quality is an important area to monitor. This may include: the types of web site(s) visited (official health service, professional association, own "traditional" doctor or clinic, other commercial health care provider, pharmaceutical company, self-help group, etc. It may also include quality of sites visited (self-evaluated, whether accredited and/or had quality mark, etc.), and knowledge about quality criteria.
Fourthly, the ability to assess cross-border activity[7] appears to be important. The extent of searching for services in other countries (by reason for such searching - service not available in own country or has long waiting lists, is of poor quality or of higher cost in own country), with a view to possibly travelling to avail of such services and the extent of online consultation with service providers in other countries is a significant issues, and is an important contribution of the IS.

[7] This is potentially an important topic in the context of the internal market for health services

4. A dynamic e-business environment

4.1. e-Commerce

4.1.1. EU policy goals and definitions

In 2001 the European Competitiveness Report and Communication on the e-economy outlined how the Commission should work with Member States to support e-business in Europe. The vision was to improve the competitiveness of European enterprises through raising productivity and growth through; investment in information and communication technologies, human resource (through e-skills) and new business models (through e-Commerce), and providing a private and secure e-business environment. Within the NAS the focus, whilst embracing these issues, is more acute around business-to-business trading activities. The proposed indicators for benchmarking eEurope+ are, in facts, the percentage of companies that buy and sell over the Internet. This captures the structuring of those economies, geared towards inward investment and European orientated trading.

To enable this within Europe generally, the eEurope 2005 Action Plan proposes several actions, most notably, a European support network – focussed on strengthening SME adoption of e-business through the promotion of good practice, and standards. The Commission also proposed the fostering and support of public-private partnerships and the co-operation of stakeholders with a view to developing European-wide e-skill definitions. Other actions include the development of interoperability (security between transactions & cross border activities), trust and confidence (dispute resolution) and cyber-identity (authentication etc.). This leads to the collection of five indicators, predominately focussed on the purchasing or selling of products online, but with one indicator which considers Internet purchasing for private use.

Within the SIBIS+ survey, data on buying and selling over the Internet was confined to the policy indicator G2, although SIBIS provided further analysis by segmenting users by socio-economic divides.

Table 4.1 E-Commerce: eEurope+, eEurope2005 and SIBIS's indicators

e-Europe+ benchmarking indicators	SIBIS indicators
• Percentage of companies that buy and sell over the Internet **Definition:** Indicators in this area to be redefined with reference to the EUROSTAT survey of e-Commerce. **Source**: Eurostat, if needed special survey (e.g. Eurobarometer) **Frequency**: annual **Supplementary indicators:** (i) Broken down by size and sector (ii) % of turnover from e-Commerce (iii) Sales should include those to business partners (B2B) and private customers (B2C).	• Percentage of individuals ordering goods or services on the Internet • E-Commerce users segmented by socio-demographic factors **Definition**: Percentage of individuals who have ordered goods or services online in the last 4 weeks (regular) or 12 months (occasional), segmented by sex, age, terminal education age • Effects of security concerns on e-Commerce behaviour **Definition**: percentage of Internet users concerned about security, prevented from ordering online because of security concerns **Source:** SIBIS+ GPS NAS **Collection Date:** GPS: January 2003 for NAS 10

Source: eEurope+ & SIBIS.

e-Europe 2005 benchmarking indicators (Status: 30 August 2002)
Policy indicator: G.1 Percentage of enterprises' total turnover from e-Commerce. **Definition:** e-Commerce as defined by OECD including both broad and narrow definition. On-line buying and selling to include both via the Internet and EDI. Sales should include those to business partners (B2B) and private customers (B2C) but only enterprises buying/selling more than 1%online to be included. Except for G.2, tables should be broken down by enterprise size by No. of employees (10-49, 50-249); 250+) and activity (NACE sections D, F, G, H, I, K, 92.1, 92.2) **Source**: Eurostat/NSI enterprise survey **Frequency**: Annual. **Supplementary statistical indicators:** G.2 Percentage of individuals having ordered/bought goods or services for private use over the Internet in the last 3 months G.3 Percentage of enterprises having received orders via Internet G.4 Percentage of enterprises having received on-line payments for Internet sales G.5 Percentage of enterprises having purchased online

Source: eEurope 2005 & SIBIS.

4.1.2. Results from SIBIS

4.1.2.1. Individuals buying on the Internet in the NAS-10 countries

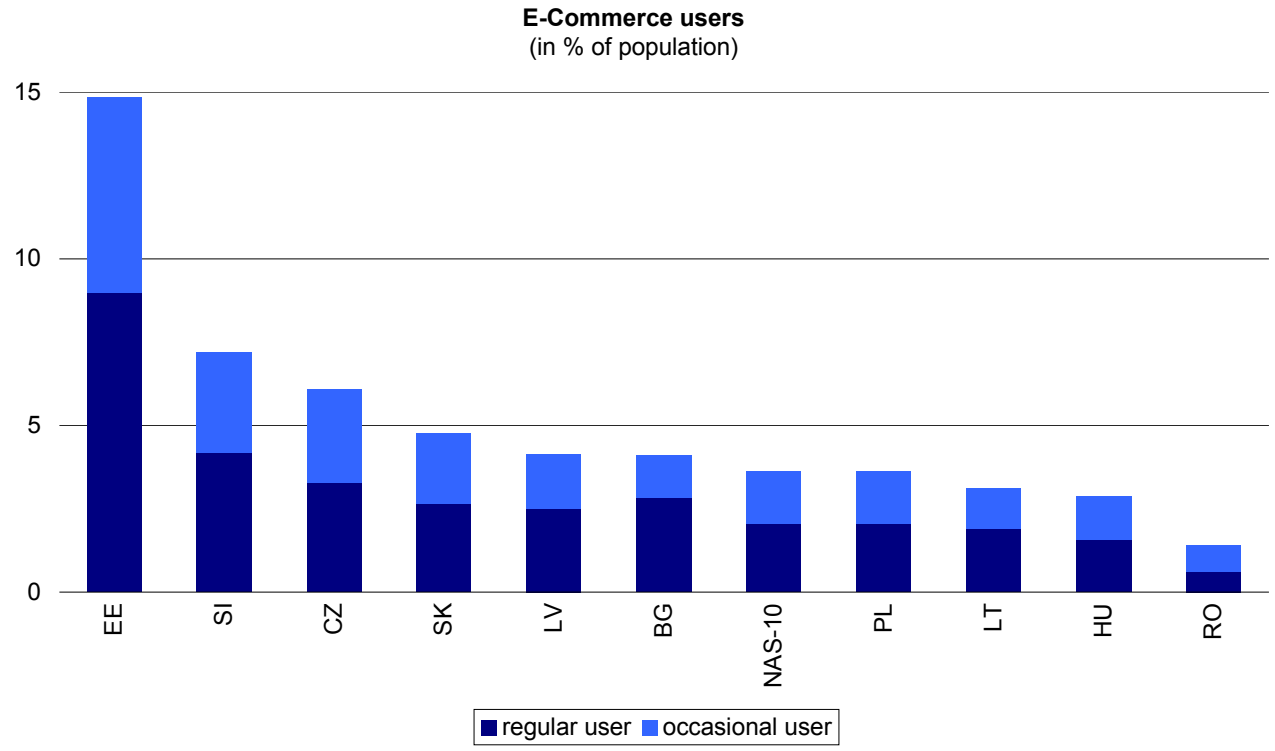
Individuals' consumer behaviour is a crucial technological pull factor for increased investment in ICT technologies (for those sectors and selling to the public). Ascertaining purchasing behaviour revealed that in the NAS approximately 1-in-25 orders products or services online. This compares to 1-in-5 within the EU. Estonia's performance is outstanding, achieving a position just below that of the EU15 average. Similarly, Slovenia and the Czech Republic achieve a position comparable with lagging EU15 nations.

This limited diffusion of e-Commerce cannot be simply explained by limited tenure or even security concerns, which as the subsequent sections will reveal, is not an overwhelming issue. Other factors such as delivery and prior mail order experience, credit card use, foreign currency cost transactions, etc., will come into play – although analysis of this type is beyond the scope of SIBIS. There is certainly a gap in the overall development of the market economy infrastructures, particularly of the retail and distribution sector. The experience of EU countries shows that it takes time for the development of a supply and delivery system suitable for e-Commerce and able to deliver real benefits to customers.

The eEurope+ 2003 Progress report remarks also that the transposition of the eCommerce acquis, that is the adoption of the EU regulatory framework in the candidate countries, is much less advanced than for the Telecoms Acquis. This is due in part to the fact that some of the acquis is more recent or requires other legislative changes, for example in the areas of encryption and data protection. Transposition of the directives concerning the legal protection of services, misleading advertising and consumer credit for example has not started yet in many countries. To some extent, this is also due to the lower development of some of these market sectors. But it is expected that a more articulated regulatory framework should be able to boost trust and confidence in candidate countries consumers, and the development of e-Commerce as well.

The low use of e-Commerce in Poland, for example, may be a result of previous experience with mail orders. In the early 90s it was believed inadequacies in the legal structure resulted in abuses by retailers: products were not good quality, they did not the catalogue's description etc. Hence a legacy of suspicion remains in Poland when it comes to purchasing outside retail outlets.

Figure 4.1 Individuals buying on the Internet
Question: In the last 12 months have you used the Internet, for private purposes, to order a product or service?

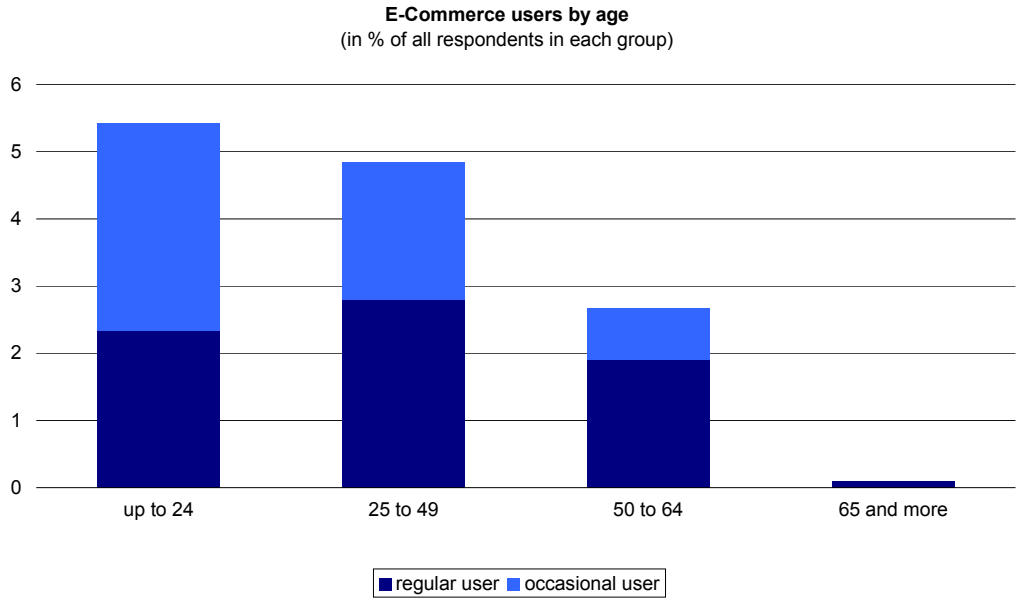


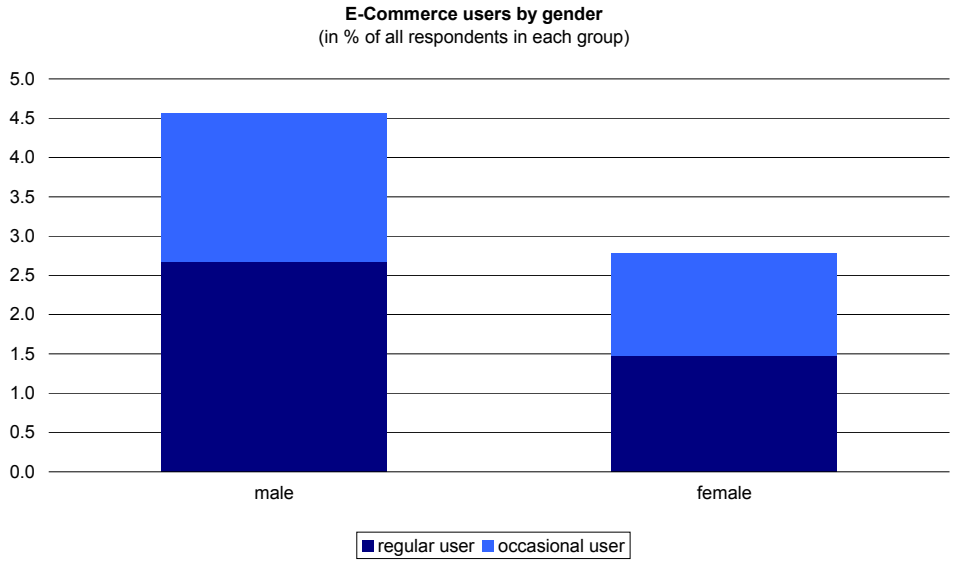
Base: all Internet users (N=3,700), weighted – NAS-10 weighted by NAS population (N=3,507)
Source: SIBIS, NAS-GPS 2003

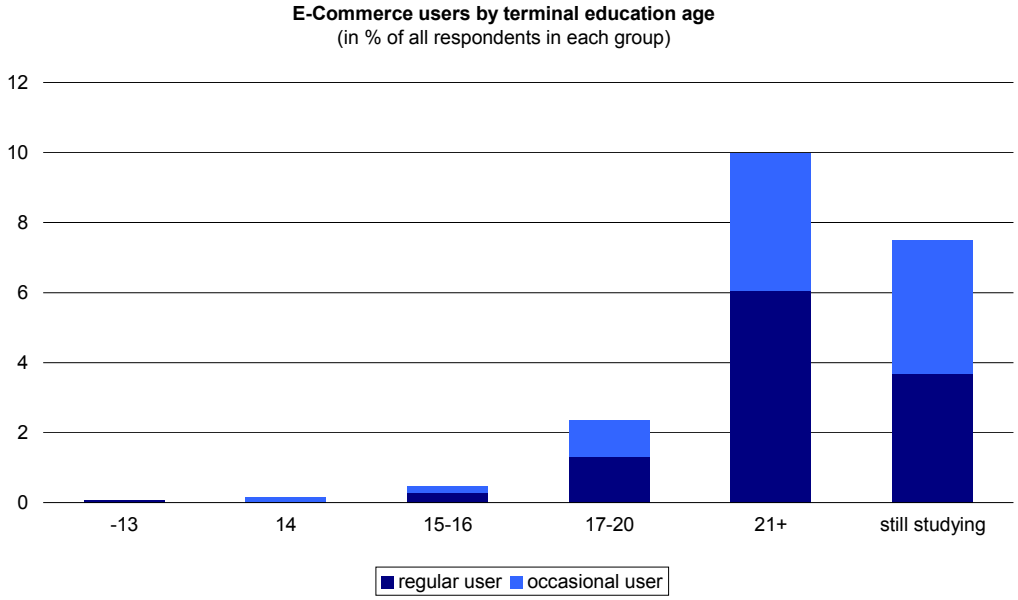
4.1.2.2. E-Commerce users segmented by socio-demographic factors

Segmenting the e-Commerce user across social divides provides interesting information on the pervasiveness of such activities across taxonomies within communities. SIBIS observed that key socio-demographic characteristics differentiate the e-Commerce buyer from the average Internet user, producing an effect known as the "digital divide". Examining the most salient features of socio-economic and demographic profiles of e-Commerce buyers revealed a limited age (except for the over 65s) and gender gap; but notable educational status gap. Therefore, within the NAS e-Commerce users are more likely to be males with tertiary education aged between 21 and 49. This is consistent with the finding of SIBIS for the EU15.

Figure 4.2 **e-Commerce Users segmented by socio-demographic factors in NAS-10 countries**
Data elaborated from Internet users who have ordered goods or services over the Internet in the last 12 months







Base: all Internet users (N=3,700), weighted – NAS-10 weighted by NAS population (N=3,507)
Source: SIBIS, NAS-GPS 2003

On a country level the up to 24 years age are championing e-Commerce, especially in Estonia, Slovenia, Slovakia and Latvia. In terms of experience those with more than 2 years Internet experience are more than twice as likely to buy online, especially in Estonia and Slovenia.

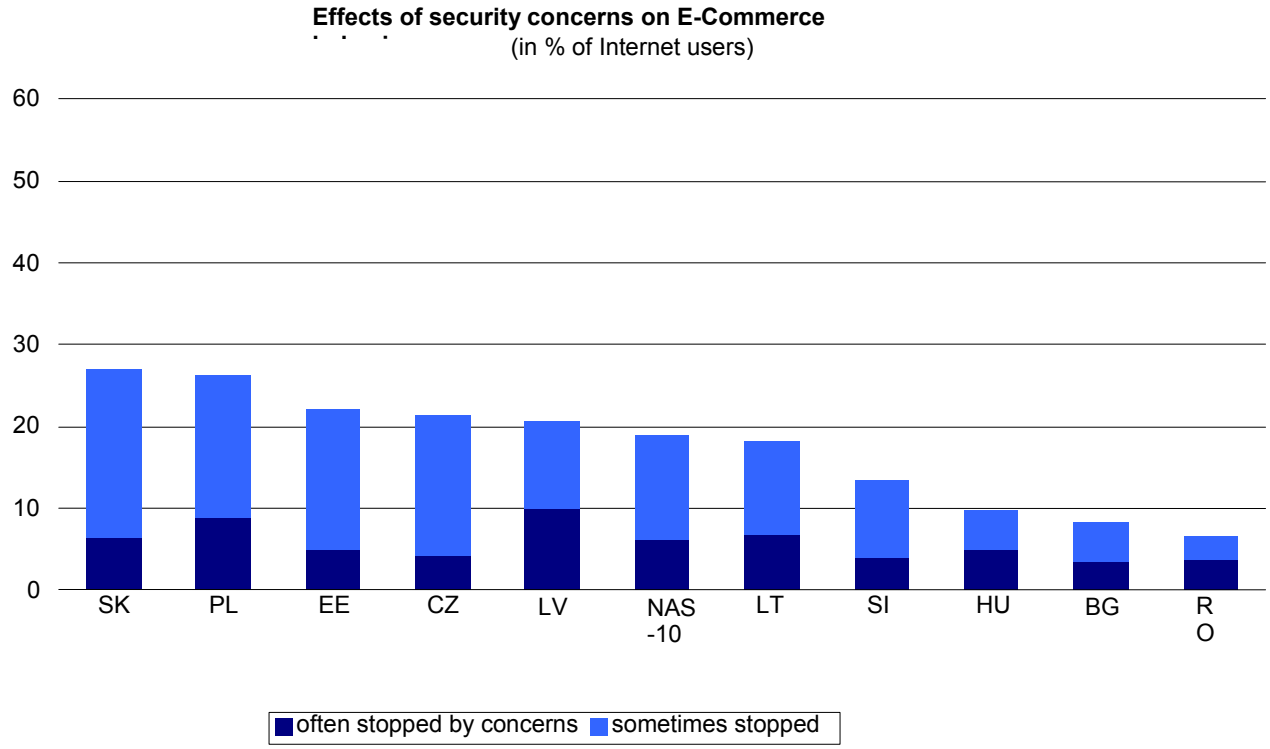
There are provisos to formulating such generalisations though, the extent to which economic-demographic exclusion determines online buying activity is in reality difficult to determine. Access to the Internet at work and the type of goods and services currently being sourced online are currently youth orientated with a potential bias towards consumables (DVDs/CDs/books/etc.). It is also possible that a greater exposure to undertaking online activities/transactions at work, and/or the self-confidence to deal with security and privacy-related fears are important components. It is probable that buyers' also display a slightly more interactive use on the PC than the general user, especially since e-Commerce is in its early phase of development within the NAS. This would suggest that buyers are more sophisticated than general Internet users.

4.1.2.3. Security concerns affecting e-Commerce

Increasing trust and confidence means also to address security concerns of e-Commerce users. This indicator was not specifically covered in the eEurope 2005, and only implicitly mentioned in eEurope+ benchmark of individuals experiencing Internet security problems. SIBIS+ investigated specifically the effect of security concerns on e-shopping.
SIBIS+ found that approximately 1-in-5 five Internet users are often stopped by security concerns, from shopping online. When weighted by regular Internet users (those with the confidence and ability to negotiate and consider security concerns) this figure falls to just over 1-in-10, which is significantly less than their EU 15 counterparts.

This may be a result of a number of factors, such as maturity and experience of a number of online purchases – as SIBIS is not able to ascertain the frequency and amount of online transactions. However, it is not even possible to tentatively confirm such a theory as Estonia and Slovakia, whilst having the highest e-Commerce use do not have the highest security concerns. Hence, it may be better to conclude that security concerns are probably a relevant barrier against e-Commerce for a specific segment of the public, and more so in certain countries, rather than a universal problem. SIBIS elaborations point out that these "over-cautious" users cannot be identified by age, sex or professional status (even if younger users do tend to be less worried) – although more frequent users, on aggregate, do tend to see security problems as manageable.

Figure 4.3 **Effects of Security Concerns on e-Commerce behaviour by country**
Question: Are security concerns preventing you from buying online?



Base: respondents who are very or somewhat concerned about security concerns on web sites, weighted.
Source: SIBIS, NAS-GPS 2003

4.1.3. Conclusions

Whilst there are some NAS countries with over 1-in-6 Internet users purchasing over the Internet, overall consumer e-Commerce within the NAS-10 is lagging behind the EU-15's 20%, at only 5%. There are many reasons why this is the case, some historic (related to prior home purchasing negative experiences), some cultural or socio-economic, and some related to demographics. There is certainly a gap in the overall development of the market economy infrastructures, particularly of the retail and distribution sector. The experience of EU countries shows that it takes time for the development of a supply and delivery system suitable for e-Commerce and able to deliver real benefits to customers. E-shoppers in NAS countries are more likely to be living in larger cities, be male, aged around 24, with tertiary education, and with between 1/2 years Internet usage experience or more. This is clearly the first (and most eager) users segment.

The NAS-10's profile of limited online tenure, and concerns over security are compounding the low inclination towards online shopping. The transposition of the e-Commerce Acquis, the EU regulatory framework, which is just starting, could create more favourable conditions by strengthening trust and confidence in electronic markets.

5. A secure Information Infrastructure

5.1. Security and trust

5.1.1. EU policy goals and definitions

The EU has recently launched a comprehensive strategy based on the Communications on network security, cyber crime and the current and forthcoming data protection directive regarding electronic communications. Based on the 28 January Resolution 2002, a number of initiatives (e.g. the establishment of a cyber security task force, awareness campaigns, promotion of good practices, and improved exchange of information mechanisms) should be completed by the end of 2002. This is an important step towards a secure information infrastructure in Europe[8].

Similarly, the eEurope+ 2003 Action plan has identified building confidence in e-Commerce as being one of the greatest challenges within the NAS. States are keenly aware that the protection of networks, the attainment of increased trust and confidence of consumers, and the further development of and use of smart cards needs to be addressed in concert with the roll out of the infrastructure. Actions include industry led security certifications, public/private co-operation on the dependability of information infrastructures, the training of law enforcement/judiciary staff, and smart card interoperability etc.

By contrast eEurope 2005 propose three actions, i.e. the creation of a Cyber Security Task Force (CSTF) by mid 2003, the achievement of a 'culture of security' in the design and implementation of information and communication products by the end of 2005 and the establishment of a secure communication environment for the exchange of classified government information[9].

SIBIS+ indicators on "Security and Trust" only slightly cover part of the eEurope benchmarking indicators on a "secure information infrastructure". The eEurope benchmarking indicators focus on Internet users' experience and usage regarding ICT-security, whereas SIBIS+ only covers concerns of usage.

[8] eEurope 2005: An information society for all, pp. 15-16
[9] Ibid

Table 5.1 Security and Trust: eEurope+, eEurope2005 and SIBIS's indicators

eEurope+ benchmarking indicators	SIBIS indicators
• Percentage of Internet-using public that have experienced security problems **Definition** - Security problems defined as credit card fraud, virus attacks etc. **Source** - Sample survey/Eurobarometer **Frequency** . 6 months	• Percentage of regular Internet users concerned about data security • Percentage of regular Internet users concerned about privacy and confidentiality **Definition:** Share of individuals having used the Internet in the last 4 weeks, who claim to be very concerned, somewhat concerned, or not concerned about data security or privacy / confidentiality • Percentage of the population willing to report security or privacy violations **Definition:** Share of individuals claming to be willing or not willing to report violations to their data security, privacy or confidentiality to a third party, either anonymously or not **Source:** SIBIS+ GPS **Collection Date:** GPS: January 2003 for NAS 10

Source: eEurope+ and SIBIS

eEurope 2005 benchmarking indicators
Policy indicators I. 1 Percentage of individuals with Internet access having encountered security problems I. 2 Percentage of enterprises with Internet access having encountered security problems **Definition:** Security problems defined for individuals as credit card fraud, computer viruses and abuse of personal information; and for enterprises, broken down by enterprise size (10-49; 50-249; 250+), as computer viruses, unauthorised access to systems or data and blackmail/threats against the enterprise data or software that have occurred in the last 12 months. **Source**: Eurostat /NSI ICT household/enterprise survey **Frequency**: Annual, first deliverables 2003, second October 2004, third October 2005, with as reference period 3rd quarter 2003/4/5 Supplementary indicators: I.3 Percentage of individuals having taken ICT security precautions within the last three months. I.4 Percentage of enterprises having taken ICT precautions within the last three months. I.5 Percentage of individuals and enterprises that have installed security devices on their PCs and updated them within the last three months.

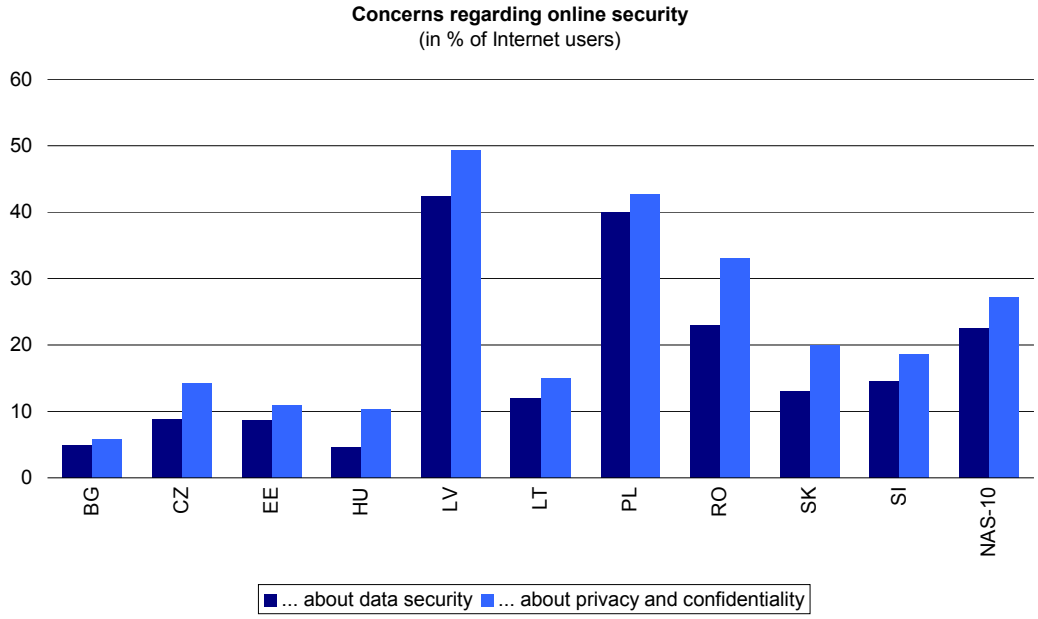
Source: eEurope 2005 and SIBIS

5.1.2. Results from SIBIS

5.1.2.1. Internet users concerns about data security, privacy and confidentiality

A contribution to understanding security problems and their impact on the way individuals perceive the Internet is the indicator on concerns regarding on-line security, developed and tested in SIBIS. The population survey considered this indicator, tackling the issue of citizens' concerns over security, privacy and confidentiality. The figure below shows the percentage of concerned individuals in the NAS-10 countries, as a percentage of regular Internet users. It appears that overall, security concerns are a significant component of the Internet users' environment, especially for citizens in Latvia, Poland, and Romania. Overall, 24% of NAS Internet users are very concerned about security and 39% are somewhat concerned, a level comparable to that of the EU 15 (respectively 26% and 47%).

Figure 5.1 Concerns About Data Security and Privacy per country
Question: "How concerned are you about …
… data security on the Internet, i.e. the loss or manipulation of your data?
… privacy and confidentiality on the Internet, i.e. personal information about you being misused by third parties?

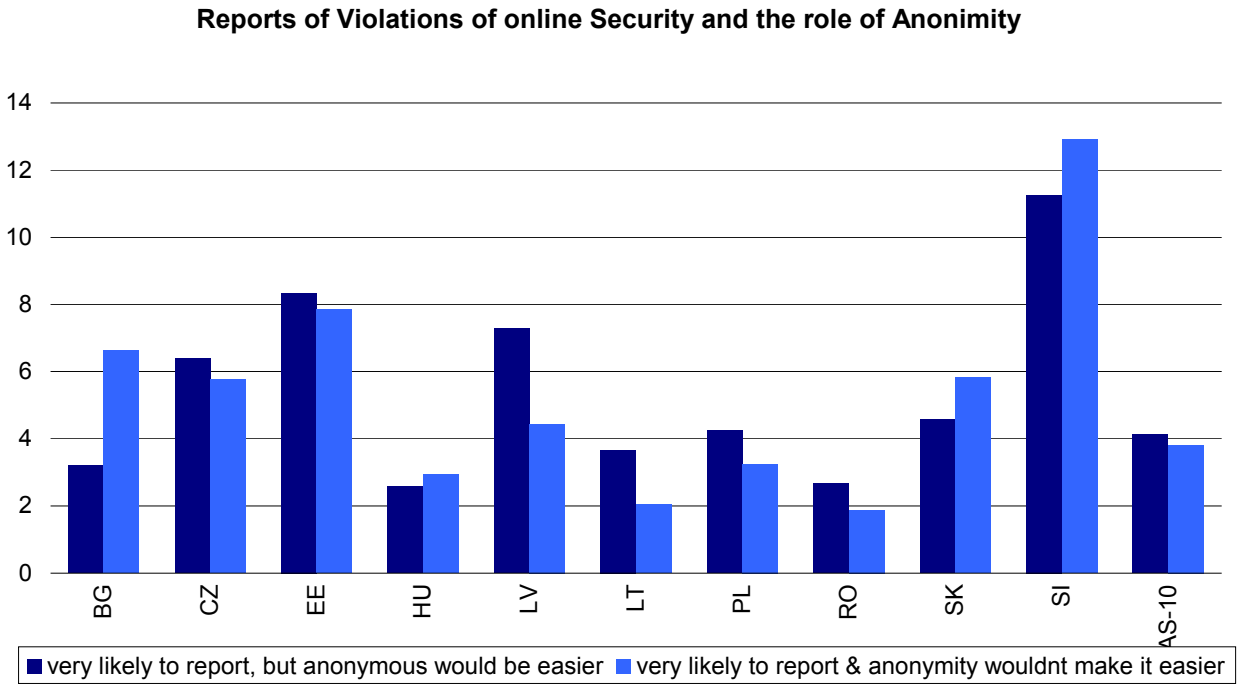


Percentage of all regular Internet users (weighted; N = 3,507)
Source: SIBIS, NAS-GPS 2003

5.1.2.2. Percentage of the population willing to report security or privacy violations

The eEurope 2005 Action plan foresees the creation of a European Security Agency. The SIBIS survey measured the willingness of the population in the NAS-10 countries to report violations, investigating also the role of anonymity as a possible facilitating factor. Approximately 8% of the population claimed to be willing to report data protection, privacy or confidentiality violations, divided almost equally between those believing that anonymity would make it easier, and those indifferent to it. Another 8% declares that they would "maybe" report such violations. Considering that in the NAS countries there is a very high percentage of non-Internet users (about 77%) these percentages seem to show a certain awareness of the problem. The countries leading in Internet culture (Slovenia especially, but Estonia too), show higher positive answer rates on this item too.

Figure 5.2 Reports of Violations of online Security in the NAS countries
Questions: Would you report a violation of your online security, privacy and confidentiality to a third independent party, for example a public agency created for this task? Would it be easier to do so anonymously?



Base: all respondents weighted
Source: SIBIS, NAS-GPS 2003

5.1.3. Conclusions

The awareness of the potential relevance of privacy and data protection problems on the Internet is relatively diffused in the NAS countries, even considering the high share of the population who's never heard of the Internet. Overall, 24% of NAS Internet users are very concerned about security and 39% are somewhat concerned, a level comparable to that of the EU 15 (respectively 26% and 47%). A small but significant portion of the population (16%) declares to be more or less willing to report possible security and privacy violations. The countries leading in Internet culture seem to show a higher level of awareness of the problem, but many other factors can influence these perceptions.
As observed in the chapter concerning e-Commerce, there is certainly a need for the NAS countries to step up efforts to build trust and confidence in market mechanisms and in online interactions, either commercial or not. This means to develop a favourable regulatory framework and support the creation of those complex social infrastructures and behaviours sustaining the growth of the civil society. Online data security and privacy protection issues are a part of this more general context and should not be considered as a technical problem only.

6. Broadband

6.1. Broadband and access

6.1.1. EU policy goals and definitions

The diffusion of broadband networks and services is a key objective of the eEurope 2005 plan. Broadband is the linchpin of eEurope goals. It is the enabler for the provision of more interactive services, across the four domains of, e-Government, e-Learning, e-Health, and e-business, and as such is considered to have a significant economic impact. In driving the diffusion of broadband, the Commission recommends that Member States and Newly Associated States should increase competition in the local loop, driving prices lower and generating innovation. Also, the Commission states that other policy activities are required, especially concerning increasing uptake in less favoured regions. The ability of public authorities to offer content on different technological platforms is seen as an important driver, and therefore the development of multi-platform content will be promoted by the demonstration of research projects.

The eEurope+ Action Plan does not highlight broadband diffusion at the same level of priority, rather stressing the affordability and availability of networks. However, the need to keep pace with the technological evolution of the Internet will insure that higher-speed connections as well as updated access formulas (such as flat rate DSL) rank as priorities in infrastructure developments plans.

Under the scope of SIBIS several indicators tracked the penetration and use of broadband (BB) technologies among the NAS 10 countries in order to provide much needed visibility on the present state of development of broadband.

Table 6.1 Broadband for all: eEurope+, eEurope2005 and SIBIS's indicators

e-Europe + benchmarking indicators	SIBIS indicators
Cheaper, Faster Internet Supplementary indicators: • Percentage of households with high speed access at home (high speed defined as ADSL, cable, satellite, fixed-wireless, UMTS) • Number of computers with high speed connections to the Internet per 100 pupils in primary/ secondary/ tertiary levels **Definition**: high speed defined as ADSL, cable, satellite, fixed-wireless, UMTS (in future); only computers used for teaching purposes to be included **Source**: Sample survey/Eurobarometer . Member States **Frequency**: annual	**Broadband access indicators:** • Percentage of population with broadband access at home **Definition:** Percentage of the population with segmented by type of Internet access: dial-up with modem (narrowband), ISDN (midband); or xDSL/,cable modem (broadband) and other (satellite). • Share of users with Internet access at home and broadband connections **Definition:** Percentage of Internet users with home connections who have broadband access • Migration to fast connections: Snapshot **Definition:** compound indicator developed by SIBIS contrasting broadband access presence and online tenure **Source:** SIBIS+ GPS **Collection date:** January 2003 for NAS 10

Source: eEurope+ & SIBIS

e-Europe 2005 benchmarking indicators
Policy indicators J. 1 Percentage of enterprises with broadband access J. 2 Percentage of households with broadband access: J. 3 Percentage of public administrations with broadband access (to be defined). **Definition:** Broadband defined as high speed e.g. ADSL, cable, satellite, fixed-wireless, LAN and UMTS (in the future). Tables to be broken down by type of entity. **Source:** Commission study/ Eurostat /NSI ICT household/enterprise survey **Frequency:** Annual, first deliverables 2003, second October 2004, third October 2005, with as reference period 3rd quarter 2003/4/5 **Supplementary indicators: Not covered under the scope of SIBIS.** J.4 Difference between availability and take-up of high-speed Internet access. J.5 Broken down by type of access J.6 Percentage of households equipped with home networking connections (to be included when available)

Source: eEurope 2005 & SIBIS

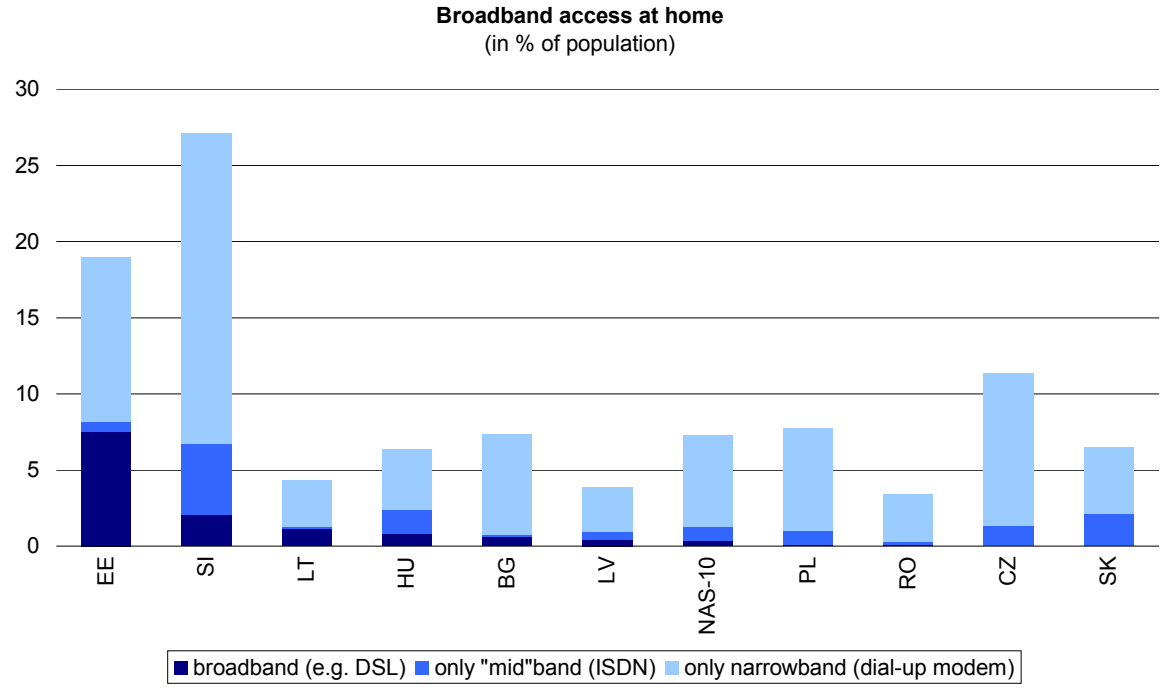
6.1.2. Results from SIBIS

6.1.2.1. Broadband access at home in NAS 10 countries

The average percentage of broadband users from home on the population is barely 0.4% in the NAS-10 countries, vs 7% in the EU 15 countries. Only Estonia reaches the EU average, with more than 1-in-20 Estonians being connected to the Internet this way. Midband connections are prevalent in Slovenia, Hungary and Slovakia. For all countries narrowband dial-up is by far the prevalent access mode. The Czech Republic and Slovakia have almost no broadband users – this is because ADSL was being rolled out during the SIBIS+ survey.

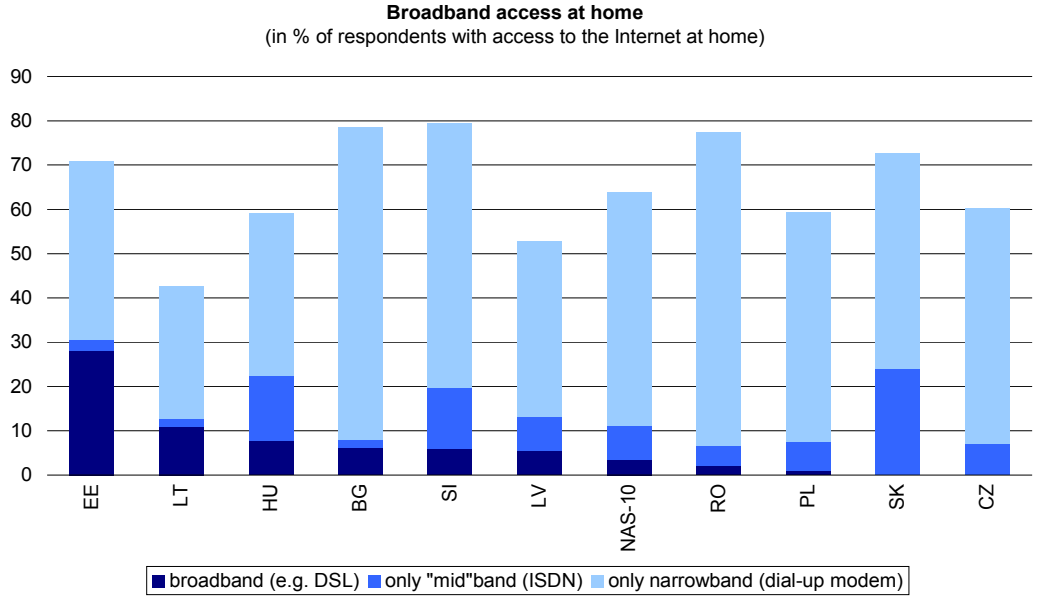
SIBIS elaborated also broadband penetration as a share of Internet users from home, which is naturally higher. The average penetration in the 10 countries rises to 3%, with a peak of 28% in Estonia, and high levels in Lithuania and Hungary. Narrowband modem dial-up remains the preferred access technology, with on average 5 fold more users connecting this way. It is likely that users in the NAS 10 countries will leapfrog the midband stage (ISDN and the like) to pass directly to broadband from simple dial-up. There are signs of BB connections increase. For example, in Poland the number of broadband connections has increased constantly. Forecasts for the year 2005 suggest broadband connection will be 600,000, a six fold rise.

Figure 6.1 **Percentage of the population with broadband access at home in the NAS-10 countries**
Question: Will read to you a number of methods to access the Internet. Which of these do you use at home? MULTIPLE ANSWERS
(1) Dial-up with modem; (2) Cable Modem; (3) Leased line; (4) xDSL; (5) ISDN; (6) T1 or T3 line [TRANSLATOR: Digital Multiplex connection]; (7) Internet access via satellite; (8) Other not mentioned (e.g. mobile); (9) DK



Base: all respondents, weighted by NAS population
Source: SIBIS+ GPS 2003 NAS 10

Figure 6.2 **Share of Internet users with home connections by type of access in the NAS-10 countries**
Question: Will read to you a number of methods to access the Internet. Which of these do you use at home? MULTIPLE ANSWERS
(1) Dial-up with modem; (2) Cable Modem; (3) Leased line; (4) xDSL; (5) ISDN; (6) T1 or T3 line [TRANSLATOR: Digital Multiplex connection]; (7) Internet access via satellite; (8) Other not mentioned (e.g. mobile); (9) DK



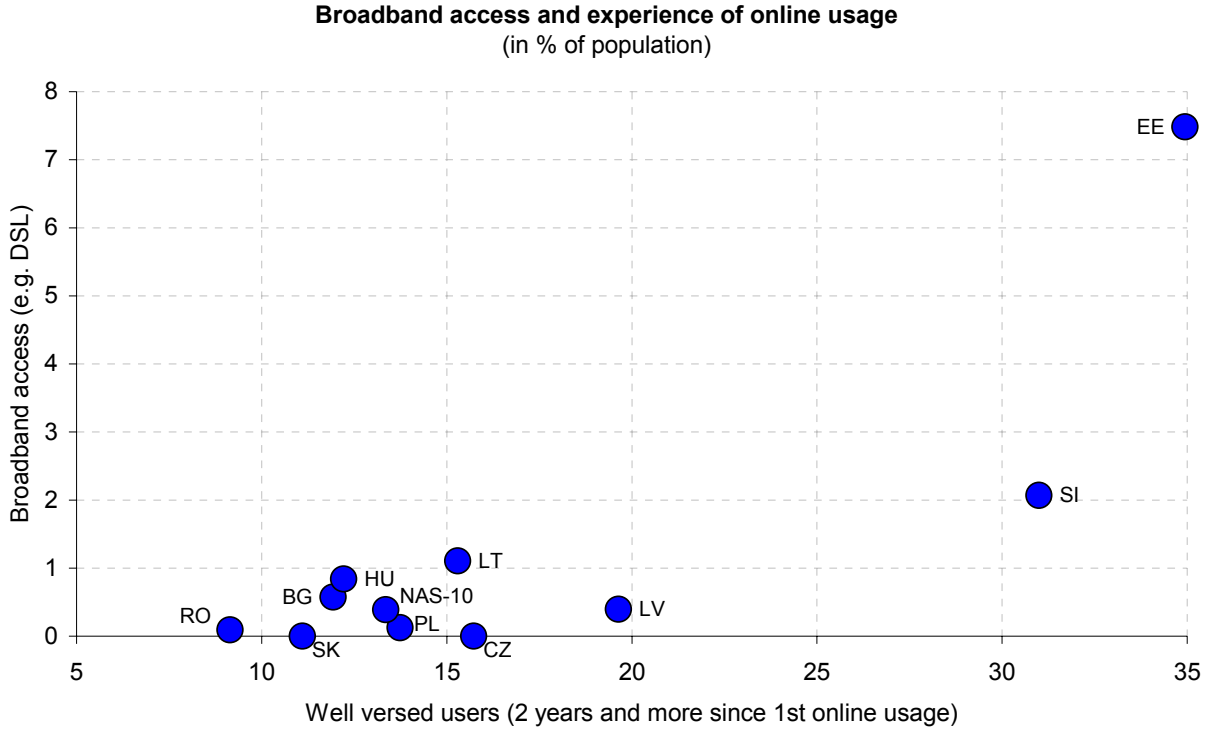
Base: respondents with Internet access from home, weighted .
Source: SIBIS + GPS 2003 NAS 10

6.1.2.2. Migration to faster Internet connections in the NAS 10 countries

Understanding the migration path from dial-up connection to broadband access is important if measures to encourage its adoption are to be better formulated. Based on the experience of the US and Nordic markets, it has been noted that once the majority of a total population has Internet access, there is a migration of users with tenure, commonly defined as those with more than 2 years of Internet experience, to faster connections. Long experienced narrowband users migrate to broadband because of the better quality access and the faster and persistent connections associated with it. Likewise, the closer the narrowband and broadband gap is in relation to connection prices, the more likely users are to migrate from narrowband.

According to these results SIBIS developed a compound indicator in order to explore the relationship between being an active online user, with a high tenure (e.g. 2 years+ using the Internet) and having migrated to a faster connection than narrowband. The results of this compound indicator are presented below. The Migration snapshot confirms the correlation between diffusion of broadband access and high tenure.

Figure 6.3 Migrators Snapshot in NAS-10 countries
(At home active users with two years plus tenure who have migrated to faster connections than narrowband)



Source: Technopolis multivariate analysis of SIBIS+ GPS 2003

Most of the NAS countries cluster in the lower border of the picture, and lag behind the EU countries. The exception is Estonia which belongs to a cluster of mid-level diffusion of broadband, together with Austria, Switzerland, the UK and Germany. Slovenia is positioned at the upper end of the cluster of lower broadband penetration EU countries with Italy, Ireland, and others, but still in front of most of the other candidate countries.

These results confirm what has been witnessed throughout the benchmarking assessment, for Estonia and to some degree Slovenia, confirm that a high presence of longer tenure users is linked with higher broadband diffusion.

In comparison to the EU15, there is still some way to go for the bulk of the NAS, not only in terms of broadband penetration but in terms of longer online tenure, which concerns only about 13% of Internet users in the NAS 10. As the Internet users population grows in experience and tenure, it is likely that the demand for higher speed connections will increase fast.

6.1.3. Conclusions

SIBIS found that in the Newly Associated States, approximately 3% of at-home Internet users' connections are broadband. While behind the EU15, which had over 7%, there are individual NAS that seem to have equally high levels of broadband penetration.
More generally though, the NAS-10 do appear to be following the typical migration path, as that exhibited by the EU-15 – although someway behind. It is important to highlight that this situation can be reversed quite quickly, given that in some countries broadband penetration has increased dramatically. This is considered in part to be through the introduction of more favourable ADSL connection packages. Conversely to the EU15, growth in broadband is not being driven by younger users – although younger users are driving Internet growth but generally through a dial up connection. It may be that this growth is driven by certain socio-economic or geographic (those living within cities) areas. Further analysis across socio-economic and regional divides would prove interesting.