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**Preparing Europe's digital future  
i2010 Mid-Term Review**

**Volume 3: ICT Country Profiles**

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## INTRODUCTION

This annex presents detailed results for 52 benchmarking indicators for which up-to-date data is available. Profiles are provided for each Member State plus Norway and Iceland.<sup>1</sup>

The indicators were defined by the Commission in co-operation with Member States and were set out in the i2010 Benchmarking Framework<sup>2</sup> endorsed by the i2010 High Level Group in April 2006. The main sources of data are the Community Surveys of Households and Individuals and of Enterprises undertaken by the National Statistical Offices and Eurostat<sup>3</sup>. These data are complemented by ad hoc studies undertaken by independent contractors notably for broadband coverage, online availability of public services and for eHealth. A full list of the indicators used, sources and notes is given after the tables. The figures for broadband penetration stem from the 13<sup>th</sup> Single Telecom Market Progress Report<sup>4</sup> and refer to January 2008, except Estonia, France, Lithuania, the Netherlands and Austria, which refer to October 2007.

Data reported in the country profiles come from statistical sources harmonised at EU level. Some indicators, in particular for those related to e-commerce and to e-business, have to be interpreted with care because of slight changes in the definitions that could have affected comparability over time. For example, for the indicator "% of enterprises receiving orders on the Internet", a threshold of 1% was applied in 2003, but it was removed from 2004 onward.

To introduce these profiles, table 1 gives a summary of the distribution of all indicators in the form of a boxplot. Each indicator has been recalculated as the (absolute) difference, positive or negative, relative to the EU average for that indicator. These are then ranked in order and the top and bottom of the range (known as outliers) are shown as lines and the central section of the range shown as a box.<sup>5</sup> For example, the box for Austria extends from -1.1% to +7.6% which means that half the indicators are within this range. The negative outliers are between -1.1% and -11.1% i.e. no indicator for Austria is more than 11.1 percentage points below the EU average. The positive outliers are between +7.6% and +48.6% of the EU average. The average for all indicators in Austria is +3.4 percentage points above the EU27 mean and the median value is +2.4.

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<sup>1</sup> Iceland and Norway are members of the European Economic Area and participate as such in the Eurostat surveys, but they are not considered in the country rankings.

<sup>2</sup> i2010 Benchmarking Framework:

[http://ec.europa.eu/information\\_society/europe/i2010/docs/benchmarking/060220\\_i2010\\_benchmarking\\_framework\\_nov\\_2006.doc](http://ec.europa.eu/information_society/europe/i2010/docs/benchmarking/060220_i2010_benchmarking_framework_nov_2006.doc)

<sup>3</sup> The data used in this version of the paper were extracted from the Eurostat database on 8.2.2008. Almost all Member States contributed to both surveys but there remain some outstanding returns.

<sup>4</sup> Progress Report on the Single European Electronic Communications Market 2007 (13th Report), COM(2008) 153,

[http://ec.europa.eu/information\\_society/policy/ecomms/library/communications\\_reports/annualreports/13th/index\\_en.htm](http://ec.europa.eu/information_society/policy/ecomms/library/communications_reports/annualreports/13th/index_en.htm)

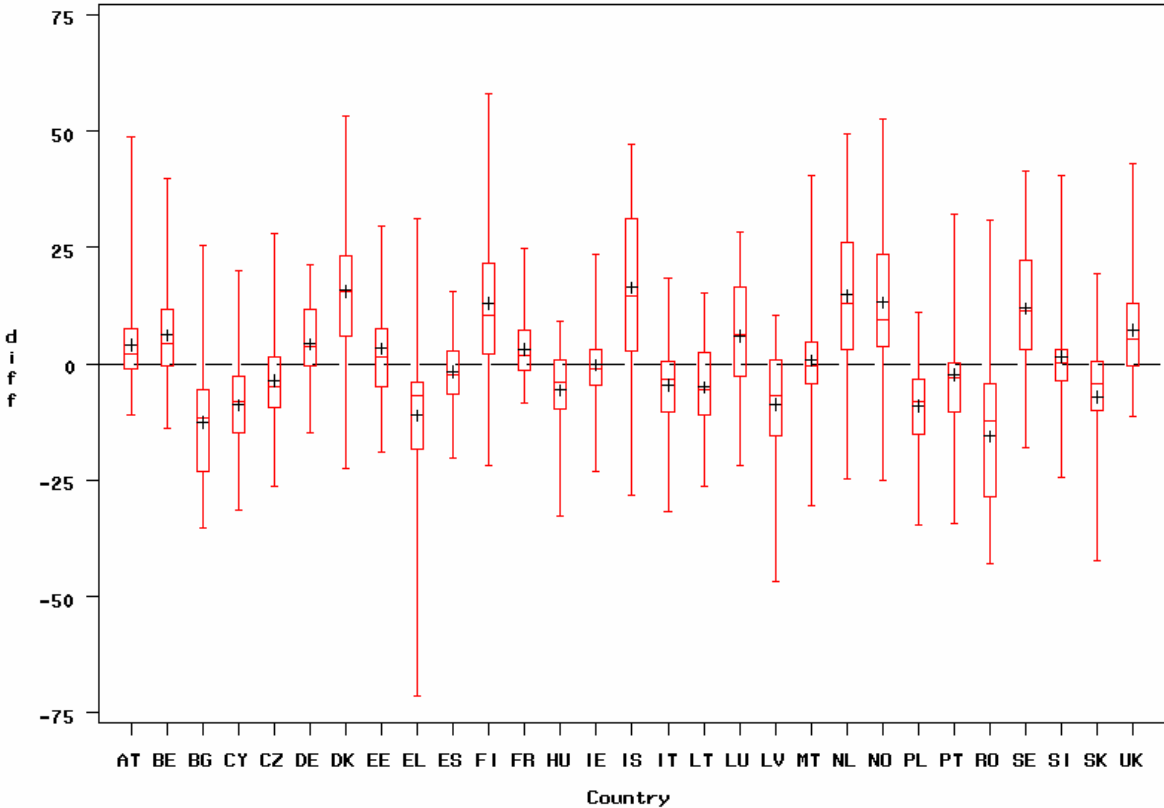
<sup>5</sup> More precisely, the box is bounded by the upper and lower quartile of the distribution i.e. the value above/below which 25% of the distribution is situated. The lines are bounded by the highest and lowest points of the distribution. Note the chart also shows the median value (as a line) and the average value (cross).

The boxplot chart reveals that all countries have strengths and weaknesses with indicators both above and below the EU average. However, all are not equal and information society development is not equal. Three groups of countries can be distinguished:

- The most advanced for which the box lies entirely above the line. These are Denmark, Finland, Iceland, Netherlands, Norway and Sweden. For these countries, the value of more than 75% of the indicators is greater than the EU average. Austria, Belgium, Germany, France, Luxembourg and the UK are nearly in this group, having a lower quartile only slightly below zero.
- The least developed for which the box lies entirely below the line: Bulgaria, Cyprus, Greece, Poland and Romania. For these countries, the value of more than 75% of the indicators is less than the EU average. Slovakia Hungary, Italy, Latvia are nearly in this group, having a lower quartile only slightly above zero.
- The remainder with values distributed above and below the EU average.

This shows that the pattern of information society development has remained largely unchanged over the past five years: more advanced in the Nordic countries plus Netherlands and the UK and lagging in many of the countries of Eastern and Central Europe and the Mediterranean.

**Table 1. All Indicators: differences with respect to EU average**



## 1. AUSTRIA

The information society at large - connectivity, ICT usage by households, enterprises and governments - is more developed than on average in the EU. However, Austria is not one of the frontrunners, except for eGovernment services, for which Austria has been leading developments in the EU consistently over the recent years.

### **Broadband**

Total DSL coverage has increased significantly in Austria and the penetration rate reached 19.0% in October 2007 (up from 17.4%), with a slowdown in its growth rate. 61.5% of broadband lines in Austria were based on DSL technology. Regular Internet use and households' broadband take-up reach average levels, while enterprises' take-up is lagging behind. Despite average broadband penetration and widespread Internet usage, Austrians consume far less audiovisual online content than the average European. This is partly related to limited access speeds, which have not improved over the past year.

### **Online Public Services**

Austria is the first Member State to achieve a 100% *fully online availability*, which means that for every service measured in this survey, each citizen or business has the possibility to access the service via a fully transactional electronic channel. Even with the introduction of a renewed method and 5<sup>th</sup> stage of *online sophistication* measurement, Austria achieved 99%. Further progress in sophistication can only be made on child allowances and public libraries. With this scoring, Austria remains at the top of the web-based benchmark on electronic public services for the second year.

In terms of take-up of on-line public services, the story is quite different. The results for citizens using eGovernment is average, and they are ranked 12<sup>th</sup>. For businesses usage the result is slightly better, reaching 10<sup>th</sup> position.

Austrian citizens no longer need to request certificates for birth or marriages. Due to the Central Register of Residents the authority that needs information now gets it automatically. At the same time they verify the accuracy of the data. However, each citizen has the right to check data about him/her, and update this if necessary by presenting the relevant documents.

### **ICTs in the Economy**

While Austria has a higher than average intensity in research in ICTs, the conditions are less favourable for ICT developments with respect to eSkills. Austrians generally have lower than average levels of ICT skills 38% of the population having 'low' Internet skills compared to the EU average of 29%, a proportion that has remained constant for the last three surveys. The proportion with 'high' levels of Internet skills has grown but is still slightly below the EU average. This has not, however, slowed down the adoption of ICTs by businesses: businesses in Austria have a rather high propensity to use ICTs and e-commerce.



## 2. BELGIUM

The information society is more developed in Belgium than on average in the EU. However, Belgium is not one of the frontrunners in the EU: although broadband markets are highly developed, eGovernment services and household Internet usage are above average but not among the most developed in the Union.

### Broadband

The pace of growth of take-up (about 3 percentage points) has stayed beneath the European average and behind numerous other fast-growing Member States, despite complete broadband coverage. However, Belgium does seem to have achieved an almost full transition from narrowband to broadband as 94% of Internet connected households now use a broadband connection and speeds on average are high.

With 25.6% broadband penetration and a 6th place (as of January 2008) in the EU ranking, Belgium is slowing down its performance in the European ranking of Internet usage where none of the indicators improve its positioning among the EU Member States.

### Online Public Services

Belgium has made good progress in 2007. The average *fully online availability* for all basic public services has grown by 10% compared to last year and is now at 60%. The level of *online sophistication* has also risen to a level of 80%. Belgium has shown a progressive year-on-year advancement from a position some 20% below EU27 average to now being a few percentage points above. It is also worth noting that four out of the nine relevant services reached the *pro-active* stage 5 of sophistication level, the EU27 average being 3 out of nine. But an area of concern is the fact that availability of services to citizens is less than half the average level for services to enterprises. Although availability and sophistication have improved, take-up by both businesses and citizens has actually decreased from 2006 figures by 8 and 7% respectively. Indeed Belgium is 24<sup>th</sup> in the rankings for usage by businesses.

2007 saw the upgrade of the Federal eGovernment portal, Belgium.be, in terms of content and functionalities. New projects were expected to produce first results in the course of the year: the ePolice office; the Be-Health platform; the Front-Office Employment and the electronic birth declaration. Other actions such as the e-ID cards for children under 12 (Kids-ID) and the e-ID knowledge management panel were also to be developed and implemented in 2007.

### ICTs in the Economy

The benefits of ICTs to the Belgian economy come both from a large and successful ICT sector and through the use and investment in ICTs by the wider economy. The ICT sector in Belgium is relatively large both in terms of value added and employment. The growth of the sector exceeded EU sector growth with an increase of 5.1% at constant prices. The wider business sector spends a higher than average amount on ICT R&D and 86% of Belgian businesses have broadband connections, the 7<sup>th</sup> highest figure in Europe. This translates into above average rates of e-commerce orders and a higher than average adoption of e-business applications.

In terms of skills, the Belgian population is generally close to the EU average but a higher proportion has low skill levels and the proportion with high Internet skills is particularly low. This latter figure is confirmed by the Labour Force Survey which showed that only 2.5% of persons employed had specialist ICT skills compared to 3.1% across the EU.

Belgium	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)	100	100	100	100		89	1
DSL coverage in rural areas (as % of total population)			100	100		72	1
Broadband penetration (as % of population)	12.0	15.5	19.2	22.8	25.6	20.0	6
DSL penetration (as % of population)	7.4	9.5	11.9	14.0	15.3	16.0	10
Predominant download speed	2-8 Mbps 2-8 Mbps						
% of households with an internet connection			50	54	60	54	8
Households with broadband as % of households with internet			81	89	94	77	1
% of enterprises with broadband access	49	70	78	84	86	77	7
<b>Internet Usage</b>							
% population who are regular internet users			53	58	63	51	8
Take up of internet services (as % of population)							
sending emails			49	54	60	48	8
looking for information about goods and services			43	51	55	47	8
Internet telephoning or videoconferencing				8	10	10	14
playing/downloading games and music			17	20	23	22	13
listening to the web radio/watching web tv				11	13	15	18
reading online newspapers/magazines			13	16	17	21	21
internet banking			23	28	35	25	8
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online	17	17		18	42	51	16
% basic public services for enterprises fully available online	63	63		88	88	72	5
% of population using e-Government services			18	30	23	30	17
of which for returning filled in forms			4	7	8	13	18
% of enterprises using e-Government services		60	61	59	51	65	24
of which for returning filled in forms	25	26	33	37	37	45	20
<b>e-Health</b>							
% of GPs with Broadband connection					80	48	5
% of GPs with secondary care connection					64	24	4
% of GPs using electronic networks for transfer of patient data					75	48	6
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises	7	6	9	8	11	11	7
% enterprises receiving internet orders	16	15	12	15	18	14	7
% enterprises purchasing on the internet		39	52	44	53	39	7
<b>e-business. % enterprises:</b>							
with integrated internal business processes	46	50	47	44	49	41	7
with integrated external business processes	12	14	14	17	18	14	7
using ERP systems					29	17	4
using analytical CRM					17	17	8
sending/receiving e-invoices					31	18	4
using digital signatures					27	16	5
using secure protocols for internet orders					6	5	10
using open sources operating systems					13	12	11
<b>Employment and Skills</b>							
% of the population with no internet skills				37	32	40	9
% of the population with low internet skills				39	40	29	
% of the population with medium internet skills				19	23	23	
% of the population with high internet skills				5	5	8	23
% of persons employed with ICT user skills.	17.2	17.9	18.9	18.5	18.5	18.2	17
% of persons employed with ICT specialist skills	2.1	2.7	2.5	2.6	2.5	3.1	23
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP	4.9	4.9				5.3	17
ICT sector share of total employment	3.6	3.5				3.8	14
ICT sector growth (constant prices).	0.8	5.1				4.6	8
ICT R&D expenditure by the business sector, as % of GDP	0.33	0.31				0.31	9
" " " " " " ,as % of total R&D expenditure	24.8	23.9				26.3	12
% of ICT exports on total exports	6.6	6.2	5.8	5.3			19



### 3. BULGARIA

The benchmarking results make it clear that the information society in Bulgaria is at a relatively early stage of development. However, there are some strengths and signs, such as the adoption of broadband by Internet users, that Bulgaria is leapfrogging outdated technologies to catch up with its new partners in the EU.

#### **Broadband**

Broadband penetration was 7.6% in January 2008, the lowest in the EU and far below the EU27 average of 20%. Of those households connected to the Internet, 81% have a broadband connection, which is above EU average and might indicate that Bulgaria will leapfrog narrowband Internet connections.

Internet service usage is rather low except for Internet telephony or Internet videoconferencing which 11% of the population use, placing Bulgaria above the EU average.

#### **Online Public Services**

Bulgaria, as a new Member States, is a newcomer to the eGovernment online survey and the September 2007 results provide a base-line measurement for eGovernment. Overall, the **fully-online availability** indicator for Bulgaria is 15%, 25% for services to citizens but 0% for services to businesses. A better indication of progress is given by the **online sophistication** indicator score of 67% compared to the European average of 76%. Even more encouraging is that three out of the nine relevant services achieved *the pro-active* stage 5 sophistication level.

Take-up is still very low. With only 6% of citizens having used on-line public services, Bulgaria sits close to the bottom of the table, in 26<sup>th</sup> place for citizens and 25<sup>th</sup> place for businesses.

eGovernment rests high in the list of priorities of the government. It is seen as an element of the transition from an industrial to an information society. It is a tool to increase the competitiveness of the Bulgarian economy and to improve the entire business climate. Bulgaria has benchmarked Austria in its efforts to raise the standard and level of eGovernment services provided to its increasingly e-savvy citizens.

#### **ICTs in the Economy**

Enterprise Internet connectivity is in general at the same low levels as households and Bulgarian enterprises are towards the bottom of the distribution for use of e-business applications and e-commerce.

In general there are relatively low levels of ICT skills in the population with 66% having no Internet skills compared to the EU average of 40%. However this figure has fallen considerably in Bulgaria since the 2006 survey.

Bulgaria	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)						89	
DSL coverage in rural areas (as % of total population)						72	
Broadband penetration (as % of population)				4.5	7.6	20.0	27
DSL penetration (as % of population)				1.2	2.1	16.0	26
Predominant download speed							
% of households with an internet connection				17	19	54	27
Households with broadband as % of households with internet				59	81	77	12
% of enterprises with broadband access		28	32	57	61	77	23
<b>Internet Usage</b>							
% population who are regular internet users				22	28	51	25
Take up of internet services (as % of population)							
sending emails				19	25	48	25
looking for information about goods and services				13	17	47	26
Internet telephoning or videoconferencing				7	11	10	12
playing/downloading games and music				12	16	22	23
listening to the web radio/watching web tv				11	10	15	21
reading online newspapers/magazines				11	10	21	26
internet banking				1	2	25	27
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online					25	51	21
% basic public services for enterprises fully available online					0	72	27
% of population using e-Government services				8	6	30	26
of which for returning filled in forms				2	3	13	26
% of enterprises using e-Government services		38	32	46	45	65	25
of which for returning filled in forms		9	11	23	29	45	24
<b>e-Health</b>							
% of GPs with Broadband connection					23	48	25
% of GPs with secondary care connection					8	24	22
% of GPS using electronic networks for transfer of patient data					17	48	19
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises		4		0	1	11	21
% enterprises receiving internet orders		3	3	4	2	14	26
% enterprises purchasing on the internet		7	7	6	5	39	26
<b>e-business. % enterprises:</b>							
with integrated internal business processes		6		6	17	41	24
with integrated external business processes		2		3	5	14	25
using ERP systems					8	17	24
using analytical CRM					9	17	24
sending/receiving e-invoices					9	18	23
using digital signatures					28	16	4
using secure protocols for internet orders					0	5	26
using open sources operating systems					8	12	23
<b>Employment and Skills</b>							
% of the population with no internet skills				72	66	40	26
% of the population with low internet skills				10	13	29	
% of the population with medium internet skills				13	15	23	
% of the population with high internet skills				5	7	8	20
% of persons employed with ICT user skills.	11.3	11.7	11.6	11.4	11.7	18.2	26
% of persons employed with ICT specialist skills	2.6	2.7	3.1	2.6	2.7	3.1	22
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP						5.3	
ICT sector share of total employment						3.8	
ICT sector growth (constant prices).						4.6	
ICT R&D expenditure by the business sector, as % of GDP						0.31	
" " " " " ,as % of total R&D expenditure						26.3	
% of ICT exports on total exports	2.0	1.8	2.0	2.0			27

## 4. CYPRUS

Cyprus is among the lowest placed in the ranking of most information society indicators but efforts in developing eGovernment services and a business environment relatively favourable to ICT investment, in particular with a good eSkill base, are laying the foundations for further development.

### **Broadband**

From a figure of only 2.5% in 2004, broadband penetration in Cyprus reached 13.8% by January 2008. From 2006 to 2007 Cyprus demonstrated a growth in take-up of 56% in general and a growth of 26% in broadband take-up by enterprises. Notwithstanding the rapidly increasing broadband penetration, these figures are still relatively low and below the EU average.

Usage of services is growing but is still low and below the EU average.

### **Online Public Services**

Cyprus has made solid gains each year for the last three measurements in online availability. This year it reached an overall *fully-online availability* figure of 45%; up from 35% last year. Cyprus progressively closes the gap with the EU27 average. The *online sophistication* of Cyprus, with the new method taken into account, is at 67%. Take-up is lower than the EU average, particularly by enterprises, where Cyprus is placed 23<sup>rd</sup> in the rankings, and is last place for the percentage of businesses using eGovernment for sending filled in forms.

The government is working on developing "Citizen Centric" web-enabled systems in order to provide high quality services to the citizens and businesses. Beyond 2007, priorities will include the creation of government-wide data warehouse, the completion of the rollout of the Office Automation System, the delivery of more eServices to the public and the promotion of e-Democracy and e-Participation projects.

### **ICTs in the Economy**

R&D expenditure on ICTs is low as a percentage of GDP but high as a proportion of total R&D expenditure. This indicates that overall R&D expenditure is low but the small amount undertaken is highly focussed on ICTs. But the dissemination of ICTs in the economy remains weak. Enterprise use of e-business and e-commerce services is generally low. There are relatively low levels of ICT skills in the population with 60% reporting having no Internet skills compared to the EU average for this of 40%. However this figure has fallen considerably in the course of the three household surveys undertaken.

Cyprus	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)	0		70	70		89	22
DSL coverage in rural areas (as % of total population)			0	0		72	22
Broadband penetration (as % of population)		2.5	6.3	8.9	13.8	20.0	21
DSL penetration (as % of population)		2.4	5.9	8.8	13.7	16.0	12
Predominant download speed					up to 512 Kbps- 512 Kbps- 1 Mbps		
% of households with an internet connection			32	37	39	54	22
Households with broadband as % of households with internet			14	34	52	77	25
% of enterprises with broadband access		35	40	55	69	77	21
<b>Internet Usage</b>							
% population who are regular internet users			26	29	35	51	23
Take up of internet services (as % of population)							
sending emails			23	25	30	48	24
looking for information about goods and services			24	27	32	47	22
Internet telephoning or videoconferencing			2	5	6	10	24
playing/downloading games and music			15	17	20	22	18
listening to the web radio/watching web tv			9	9	13	15	17
reading online newspapers/magazines			15	20	22	21	13
internet banking			6	6	12	25	20
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online		17		25	33	51	18
% basic public services for enterprises fully available online		38		50	63	72	17
% of population using e-Government services			11	13	20	30	18
of which for returning filled in forms			2	3	10	13	15
% of enterprises using e-Government services		35	40	44	54	65	23
of which for returning filled in forms		11	9	8	14	45	27
<b>e-Health</b>							
% of GPs with Broadband connection					32	48	24
% of GPs with secondary care connection					10	24	20
% of GPs using electronic networks for transfer of patient data					17	48	20
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises			0	2	1	11	20
% enterprises receiving internet orders		7	4	6	6	14	20
% enterprises purchasing on the internet		27	27	21	22	39	16
<b>e-business. % enterprises:</b>							
with integrated internal business processes		35	31	40	44	41	10
with integrated external business processes		15	5	10	6	14	23
using ERP systems					20	17	11
using analytical CRM					14	17	15
sending/receiving e-invoices					10	18	20
using digital signatures					4	16	26
using secure protocols for internet orders					3	5	14
using open sources operating systems					9	12	21
<b>Employment and Skills</b>							
% of the population with no internet skills			69	66	60	40	24
% of the population with low internet skills			20	20	25	29	
% of the population with medium internet skills			9	11	12	23	
% of the population with high internet skills			2	3	3	8	26
% of persons employed with ICT user skills.	18.5	17.7	17.7	18.9	19.5	18.2	12
% of persons employed with ICT specialist skills	2.6	2.6	2.4	2.6	2.9	3.1	15
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP						5.3	
ICT sector share of total employment						3.8	
ICT sector growth (constant prices).						4.6	
ICT R&D expenditure by the business sector, as % of GDP	0.03	0.03				0.31	22
" " " " " " ,as % of total R&D expenditure	35.1	41.7				26.3	4
% of ICT exports on total exports	2.5	5.3	7.9	5.7			18

## 5. THE CZECH REPUBLIC

The information society in the Czech Republic is still lagging behind in comparison to general developments in the EU, and for most of the benchmarking indicators it is below the EU average. However, there are signs that this may be evening out with strong progress in eGovernment, rapid adoption of broadband by Internet users, and a business environment relatively favourable to ICT investment, in particular with a good eSkill base.

### Broadband

Broadband penetration has increased from at 9.6% in October 2006 to 14.6% in December 2007, with more than half of users benefiting from technologies other than DSL.

The transition from narrowband to broadband connections in households is growing fast with a 41% increase from 2006 to 2007. A major driver in the broadband transition is the use of Internet telephony or videoconferencing which almost doubled from 2006 to 2007 and is well above EU average. The use of other online services is still relatively low and in general below EU average.

### Online Public Services

The Czech Republic has made a significant jump for *fully-online availability* to a 55% score in 2007. Spectacular progress has been made for services to businesses which are now the highest in the EU with Malta and Austria at 100%. Services to citizens, however, lag behind with one of the lowest figures for online availability at half the EU average. Online sophistication is slightly below the average, at 71%. Take-up of eGovernment by citizens is among the lowest in the EU, coming 23rd in the rankings. For businesses, the picture is better, their take-up being 8 points above the EU average.

Most public administration services are already available online in the form of providing information or downloadable forms. Therefore, in the coming period, the Government is going to place an emphasis primarily on the development of transaction services.

### ICTs in the Economy

As a percentage of GDP, the ICT sector comprises nearly 6% of the Czech economy, well above the EU average. This is not reflected in employment figures with only 4% of the workforce in ICTs which suggests high productivity in the sector. It is not reflected in a strong intensity in ICT research with low R&D expenditure, comprising 0.1% of GDP (EU average: 0.3%) and 13.9% of overall R&D.

Enterprises are significantly more advanced than citizens with over three quarters now having broadband connections, a rapid increase since last year. The proportion of enterprises carrying out e-Commerce is slightly below the EU average but use of most eBusiness applications is higher than average.

ICT skills in the population changed significantly between 2006 and 2007 with far fewer people reporting no or low levels of Internet skills and a threefold growth in high level skills to above the EU average.

Czech Republic	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)			75	81		89	20
DSL coverage in rural areas (as % of total population)						72	
Broadband penetration (as % of population)		2.2	6.4	10.6	14.6	20.0	19
DSL penetration (as % of population)		1.0	3.0	4.8	6.0	16.0	23
Predominant download speed							
% of households with an internet connection			19	29	35	54	24
Households with broadband as % of households with internet			27	57	80	77	13
% of enterprises with broadband access	20	38	52	69	77	77	14
<b>Internet Usage</b>							
% population who are regular internet users			26	36	42	51	20
Take up of internet services (as % of population)							
sending emails			27	37	42	48	18
looking for information about goods and services			20	32	37	47	18
Internet telephoning or videoconferencing			6	9	16	10	7
playing/downloading games and music			9	12	20	22	19
listening to the web radio/watching web tv			3	6	8	15	23
reading online newspapers/magazines			12	19	22	21	14
internet banking			5	10	12	25	24
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online		17		8	25	51	21
% basic public services for enterprises fully available online		50		63	100	72	1
% of population using e-Government services			5	17	16	30	23
of which for returning filled in forms			1	3	4	13	25
% of enterprises using e-Government services		75	79	76	73	65	15
of which for returning filled in forms	22	24	32	32	34	45	23
<b>e-Health</b>							
% of GPs with Broadband connection					39	48	17
% of GPs with secondary care connection					10	24	18
% of GPS using electronic networks for transfer of patient data					33	48	13
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises	6	6	8	7	9	11	10
% enterprises receiving internet orders	17	13	15	9	10	14	14
% enterprises purchasing on the internet	31	37	27	27	32	39	12
<b>e-business. % enterprises:</b>							
with integrated internal business processes			18	28	31	41	18
with integrated external business processes			4	10	8	14	21
using ERP systems					19	17	12
using analytical CRM					15	17	10
sending/receiving e-invoices					33	18	3
using digital signatures					24	16	7
using secure protocols for internet orders					3	5	15
using open sources operating systems					22	12	2
<b>Employment and Skills</b>							
% of the population with no internet skills				52	47	40	18
% of the population with low internet skills				30	25	29	
% of the population with medium internet skills				14	17	23	
% of the population with high internet skills				4	11	8	8
% of persons employed with ICT user skills.	15.6	16.5	16.9	17.4	17.9	18.2	18
% of persons employed with ICT specialist skills	3.8	3.9	3.9	4.1	4.4	3.1	2
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP	6.2	5.7				5.3	7
ICT sector share of total employment	3.9	4.0				3.8	10
ICT sector growth (constant prices).	2.0	1.7				4.6	17
ICT R&D expenditure by the business sector, as % of GDP	0.11	0.11				0.31	15
" " " " " ,as % of total R&D expenditure	14.4	13.9				26.3	20
% of ICT exports on total exports	10.8	12.2	12.1	13.6			7

## 6. DENMARK

Denmark is among the top nations in most i2010 indicators and is a clear leader in developing the information society. It is the leader for broadband connectivity and the volume of e-commerce. However, other countries have been catching up in areas such as eGovernment.

### **Broadband**

Denmark ranks first in the EU in terms of broadband penetration with a rate of 35.6% (as of January 2008). 89% of Internet connected households subscribe to broadband, up 11 percentage points over one year. Broadband take-up by enterprises is high and growth is stalling.

The use of online services is in general high in Denmark however; the use of Internet telephony or videoconferencing has decreased from 2006 to 2007.

### **Online Public Services**

Denmark's overall level of *online sophistication* is 80% and of *fully online availability* is 63%. Progress has however flattened from an upper quartile position in recent years to around the EU average for both services to citizens and to businesses. Take-up of eGovernment, however, is remarkable. Danish citizens are twice more likely to use eGovernment than the EU average placing Denmark third in the rankings. Results for their companies are even better with 88% eGovernment users, the 3<sup>rd</sup> highest in the EU.

Over the years, digitalisation has become a natural part of providing public services throughout the public sector, with large parts of the communication between citizens, businesses and the public sector being made electronically. In this context, the 2007-2010 Danish eGovernment strategy raises the level of ambition and sets new standards for the development of citizen services and cohesion across the public sector. The new strategy entails a better and more binding cooperation among all levels of government

### **ICTs in the Economy**

As well as being one of the leading countries in terms of use of ICTs, Denmark is one of the leaders in ICT-related investment in R&D which makes up more than half of one percent of GDP and nearly a third of all investment. Danish businesses are overall the most advanced Internet, e-commerce and e-business users in the EU.

High levels of use by citizens and businesses do not translate into high skill levels. Results from the 2007 Household Survey show that 12% of Danes have high level Internet skills. However, the Labour Force Survey shows the proportion of employees with ICT user skills and ICT specialist skills to be amongst the highest in Europe.

Denmark	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)	95	95	100	100		89	1
DSL coverage in rural areas (as % of total population)			100	100		72	1
Broadband penetration (as % of population)	13.5	19.2	24.7	31.9	35.6	20.0	1
DSL penetration (as % of population)	8.8	11.8	15.4	19.4	21.9	16.0	5
Predominant download speed							
512 Kbps- 1 Mbps 1-2 Mbps							
% of households with an internet connection			75	79	78	54	3
Households with broadband as % of households with internet			68	80	89	77	3
% of enterprises with broadband access	69	80	82	83	80	77	9
<b>Internet Usage</b>							
% population who are regular internet users			73	78	76	51	2
Take up of internet services (as % of population)							
sending emails			69	74	74	48	2
looking for information about goods and services			63	68	68	47	5
Internet telephoning or videoconferencing			9	13	11	10	13
playing/downloading games and music			21	26	33	22	5
listening to the web radio/watching web tv			19	27	34	15	2
reading online newspapers/magazines			38	46	47	21	3
internet banking			49	57	57	25	3
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online	55	33		42	50	51	14
% basic public services for enterprises fully available online	88	88		88	86	72	13
% of population using e-Government services				43	58	30	1
of which for returning filled in forms				17	33	13	2
% of enterprises using e-Government services	75	85	87	87	88	65	3
of which for returning filled in forms	35		56	55	61	45	6
<b>e-Health</b>							
% of GPs with Broadband connection					91	48	2
% of GPs with secondary care connection					77	24	2
% of GPS using electronic networks for transfer of patient data					98	48	1
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises	8	12		17	22	11	1
% enterprises receiving internet orders	13	27	35	35	33	14	1
% enterprises purchasing on the internet		58	64	59	59	39	3
<b>e-business. % enterprises:</b>							
with integrated internal business processes	35	36	62	63	62	41	2
with integrated external business processes	12	10	23	24	21	14	3
using ERP systems					34	17	1
using analytical CRM					17	17	7
sending/receiving e-invoices					37	18	1
using digital signatures					30	16	3
using secure protocols for internet orders					11	5	1
using open sources operating systems					9	12	20
<b>Employment and Skills</b>							
% of the population with no internet skills			19	14	18	40	2
% of the population with low internet skills			47	40	37	29	
% of the population with medium internet skills			27	33	34	23	
% of the population with high internet skills			7	13	12	8	6
% of persons employed with ICT user skills.	22.9	22.6	23.2	23.4	23.2	18.2	3
% of persons employed with ICT specialist skills	4.2	4.0	3.5	3.9	4.1	3.1	5
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP	5.3	5.2				5.3	11
ICT sector share of total employment	4.5	4.5				3.8	6
ICT sector growth (constant prices).	7.5	4.0				4.6	10
ICT R&D expenditure by the business sector, as % of GDP	0.58	0.51				0.31	3
" " " " " " ,as % of total R&D expenditure	32.4	30.0				26.3	9
% of ICT exports on total exports	5.5	5.4	7.2	6.0			17



## 7. ESTONIA

Estonia is well advanced in the information society, with many benchmarking indicators significantly above the EU average, notably in the area of broadband connectivity, households' Internet usage and eGovernment services. However, the take-up of ICTs by businesses does not keep pace with these positive developments.

### **Broadband**

Estonian households and enterprises have a higher level of broadband connectivity than the EU average – with a broadband penetration rate of 21.2% (as of October 2007), Estonia is not only showing the best performance of the Member States that joined the EU since May 2004, but is also still outperforming Greece, Portugal, Italy, Ireland, Spain and Austria – and growth is continuing. However, growth is lower than in other Member States causing Estonia to move a little down in the ranking. 90% of households are connected to the Internet via broadband which is the third highest share in the EU and platform competition provides alternative connections to DSL.

The use of Internet services is in general higher than EU average in particular in terms of online reading of newspapers/magazines.

### **Online Public Services**

With a level of *fully-online availability of 70%* and *sophistication at 87%*, is above the EU average for services to enterprises and to citizens. Although remarkable, these figures show that Estonia has slipped from being runner up in 2006 to 8<sup>th</sup> in 2007. However, it is worth noting that 6 out of the nine relevant services reached the fifth level of sophistication and were thus classified as proactive. This is twice the average.

Usage by citizens is on the EU average at 30%, whereas businesses' use of eGovernment is 11 points above the average with 76% of companies using eGovernment.

One of the objectives of the "Estonian Information Society Strategy 2013" is the development of citizen-centred, transparent and efficient public administration. According to this objective, the administration should function efficiently while collecting, using and managing data necessary for the provision of public goods in a common and systematic manner. In addition, public services for citizens and businesses must be fully available electronically, widely used and oriented on users' needs. By 2013, the strategy sets the objective of 80% of citizen satisfaction and 95% of business satisfaction when using eGovernment.

### **ICTs in the Economy**

In terms of broadband connectivity, Estonia is above the EU average and continues to show a remarkable performance. However, the proportion of enterprises involved in e-commerce is less than half the average and they are also below average in use of most e-business applications. Investment in ICT-related R&D more than doubled between 2003 and 2004 but this still left it well below the EU average. The economic strength of the Estonian economy lies in skills and it is 2nd highest in Europe in terms of the proportion of the population with high level Internet skills. The Labour Force Survey confirms that a higher than average proportion of persons employed have ICT user skills.

Estonia	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)			90	90		89	13
DSL coverage in rural areas (as % of total population)						72	
Broadband penetration (as % of population)		10.3	13.3	18.4	21.2	20.0	10
DSL penetration (as % of population)		4.8	6.2	8.9	9.7	16.0	17
Predominant download speed							
% of households with an internet connection			39	46	53	54	13
Households with broadband as % of households with internet			77	80	90	77	2
% of enterprises with broadband access		68	67	76	78	77	12
<b>Internet Usage</b>							
% population who are regular internet users			54	56	59	51	10
Take up of internet services (as % of population)							
sending emails			49	49	54	48	10
looking for information about goods and services			41	44	48	47	10
Internet telephoning or videoconferencing			10	14	16	10	6
playing/downloading games and music			24	28	29	22	6
listening to the web radio/watching web tv			15	17	21	15	7
reading online newspapers/magazines			46	50	50	21	1
internet banking			45	48	53	25	5
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online		36		64	58	51	9
% basic public services for enterprises fully available online		100		100	88	72	5
% of population using e-Government services			31	29	30	30	10
of which for returning filled in forms			17	17	20	13	5
% of enterprises using e-Government services		84	70	69	76	65	14
of which for returning filled in forms		54	50	54	58	45	10
<b>e-Health</b>							
% of GPs with Broadband connection					72	48	7
% of GPs with secondary care connection					38	24	7
% of GPS using electronic networks for transfer of patient data					43	48	11
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises		3	2			11	
% enterprises receiving internet orders		9	7	14	6	14	21
% enterprises purchasing on the internet		31	23	25	20	39	18
<b>e-business. % enterprises:</b>							
with integrated internal business processes		28	25	24	24	41	21
with integrated external business processes		5	4	9	11	14	19
using ERP systems					11	17	22
using analytical CRM					10	17	23
sending/receiving e-invoices					25	18	8
using digital signatures					9	16	22
using secure protocols for internet orders					2	5	22
using open sources operating systems					16	12	7
<b>Employment and Skills</b>							
% of the population with no internet skills			41	37	35	40	10
% of the population with low internet skills			18	17	17	29	
% of the population with medium internet skills			21	24	20	23	
% of the population with high internet skills			20	21	28	8	2
% of persons employed with ICT user skills.	17.0	17.2	19.4	17.8	19.7	18.2	10
% of persons employed with ICT specialist skills	2.3	2.4	2.6	2.5	2.7	3.1	20
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP						5.3	
ICT sector share of total employment						3.8	
ICT sector growth (constant prices).						4.6	
ICT R&D expenditure by the business sector, as % of GDP	0.05	0.12				0.31	13
" " " " " ,as % of total R&D expenditure	18.6	36.9				26.3	6
% of ICT exports on total exports	12.1	13.5	13.9	11.7			10

## 8. FINLAND

Finland is one of the best performing countries in Europe and leads the way in information society developments in all respects. It also has one of the most competitive and dynamic ICT sectors in the EU. However, there are signs that a sizeable group of companies are not using eBusiness tools at a level matching the overall development in Finland.

### **Broadband**

Finland moved up to second place in the EU ranking of broadband connectivity (34.6% in January 2008) and the growth rate remains high with a 7.5 percentage point increase in 2007. Growth in take-up of broadband among enterprises moved Finland up to first place from second last year. Currently, 91% of Finnish enterprises have a broadband connection and 87% of Internet connected households subscribe to broadband.

The high broadband take-up is clearly reflected in the use of Internet services where Finland is placed among the highest ranking countries on all measured services.

### **Online Public Services**

Finland's progress for *fully-online availability* has flattened in recent years after a period of rapid growth, although the overall indicator increased by 6 percentage points to reach 67% in 2007, placing Finland in the 13th position. Availability of services to enterprises at 50% is far below the EU average and has been declining of the course of the survey. On the other hand services to citizens are above average. Indeed, Finland is one of those rare countries where citizens are better served than businesses. *Online sophistication* was measured at 82%, slightly above average. It is encouraging to note that five out of the nine relevant services achieved the *pro-active* sophistication well above the average.

Finns have truly taken to eGovernment, with half of them having used it in the past year. A remarkable 94% of businesses have used eGovernment, of which 78% did so for sending filled forms. These very high figures mean Finland tops the league on both counts.

Finland's most recent eGovernment strategic priorities are laid down in the National Knowledge Society Strategy 2007-2015. By 2015, Finnish public services will be produced in a customer-oriented and economical manner as processes that cross the organisational lines within public administration and in cooperation with other parties. As much as possible, electronic services will be produced in a manner that, on the one hand, forecasts the needs of citizens and businesses, and on the other hand, uses existing information.

### **ICTs in the economy**

ICTs already make a major contribution to the Finnish economy. The sector itself represents 10% of the economy; ICT-related investment in R&D by the business sector makes up over 60% of all R&D and over 1.5% of GDP; enterprise connectivity to broadband is the highest in Europe at 91%; e-commerce contributes 15% of business turnover and use of eBusiness is advanced. Skill levels are high both in the workforce and throughout the population.

Finland	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)	88	89	90	92		89	11
DSL coverage in rural areas (as % of total population)			78	82		72	10
Broadband penetration (as % of population)	8.6	14.9	22.4	27.1	34.6	20.0	2
DSL penetration (as % of population)	6.3	11.2	17.7	22.1	25.6	16.0	1
Predominant download speed up to 512 Kbps 1-2 Mbps							
% of households with an internet connection			54	65	69	54	6
Households with broadband as % of households with internet			67	82	87	77	6
% of enterprises with broadband access	65	71	81	89	91	77	1
<b>Internet Usage</b>							
% population who are regular internet users			62	71	75	51	4
Take up of internet services (as % of population)							
sending emails			63	67	71	48	3
looking for information about goods and services			62	67	68	47	3
Internet telephoning or videoconferencing			10	14	18	10	5
playing/downloading games and music			22	33	34	22	3
listening to the web radio/watching web tv			17	20	24	15	5
reading online newspapers/magazines			41	46	50	21	2
internet banking			56	63	66	25	1
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online	50	60		60	80	51	6
% basic public services for enterprises fully available online	75	75		63	50	72	21
% of population using e-Government services			47	47	50	30	5
of which for returning filled in forms			11	15	17	13	10
% of enterprises using e-Government services	89	91	91	93	94	65	1
of which for returning filled in forms	55	61	71	78	78	45	1
<b>e-Health</b>							
% of GPs with Broadband connection					93	48	1
% of GPs with secondary care connection					82	24	1
% of GPs using electronic networks for transfer of patient data					91	48	2
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises	11	13	14	14	15	11	4
% enterprises receiving internet orders	14	19	18	12	13	14	11
% enterprises purchasing on the internet		71	75	56	55	39	6
<b>e-business. % enterprises:</b>							
with integrated internal business processes	63	61	60	50	53	41	5
with integrated external business processes	17	16	17	13	15	14	9
using ERP systems					18	17	14
using analytical CRM					26	17	3
sending/receiving e-invoices					27	18	5
using digital signatures					8	16	23
using secure protocols for internet orders					6	5	11
using open sources operating systems					18	12	4
<b>Employment and Skills</b>							
% of the population with no internet skills			30	23	21	40	3
% of the population with low internet skills			37	39	26	29	
% of the population with medium internet skills			25	28	25	23	
% of the population with high internet skills			8	10	29	8	1
% of persons employed with ICT user skills.	19.0	19.8	19.9	20.5	19.9	18.2	7
% of persons employed with ICT specialist skills	4.2	4.0	4.3	4.3	4.4	3.1	3
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP	10.9	10.3				5.3	1
ICT sector share of total employment	5.8	5.8				3.8	2
ICT sector growth (constant prices).	7.2	6.3				4.6	5
ICT R&D expenditure by the business sector, as % of GDP	1.48	1.52				0.31	1
" " " " " ,as % of total R&D expenditure	61.2	62.7				26.3	1
% of ICT exports on total exports	19.1	17.0	20.2	15.6			6

## 9. FRANCE

France is fairly advanced in information society, with many benchmarking indicators above the EU average, notably in the area of broadband take-up and usage of Internet by households. However, ICT usage by businesses and eSkills do not match the EU average.

### **Broadband**

The broadband market has continued to grow, with a penetration rate of 23.3% in October 2007, compared to 20.4% the year before. However, the growth rate started slightly declining last year, lowering France's ranking position. The use of broadband by enterprises is growing faster than in other Member States and France has moved from 5<sup>th</sup> to 3<sup>rd</sup> in 2007. DSL is by far the most used broadband platform.

Usage of online services has improved and is now at EU average.

### **Online Public Services**

France continues to achieve a higher level of *fully-online availability* than average, and has now reached a score of 70%, some 12% above average, and is in 10<sup>th</sup> position. A particular strength is in services to enterprises for which online availability is 5<sup>th</sup> highest in Europe. *Online sophistication* came is 87%, 6<sup>th</sup> overall. Four out of the nine relevant services reached the 5<sup>th</sup> level of sophistication, one more than the average. The results of usage are also above the EU average, both for citizens and for enterprises by 11 and 4 points respectively. In particular, it is worth noting the big increase of usage by citizens, 15 points up from 2006.

France's new approach to the eGovernment strategy is embodied in the ADELE Master Scheme for eGovernment (2006-2010). It includes an interoperability and security framework as well as exchange of administrative data schemes, integrates common eGovernment projects and extends the initial frame of the ADELE programme 2004-2007. The objective is to ensure a better management of public finances over a long term period as well as to simplify and render the French administration more efficient by 2010.

### **ICTs in the Economy**

France is generally close to the EU average for most indicators of ICTs in the economy. This is the case for ICT-related R&D, skills in the workforce and use of e-business applications. It moves away from the average for broadband connectivity of enterprises with the third highest figure in Europe. At the time of writing, no data was available on e-commerce.

France	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)	79	91	96	98		89	7
DSL coverage in rural areas (as % of total population)			88	96		72	5
Broadband penetration (as % of population)	6.1	11.2	16.4	20.4	23.3	20.0	9
DSL penetration (as % of population)	5.4	10.4	15.5	19.3	22.2	16.0	4
Predominant download speed up to 512 Kbps-512 Kbps-1 Mbps							
% of households with an internet connection				41	49	54	15
Households with broadband as % of households with internet				74	87	77	7
% of enterprises with broadband access	49			86	89	77	3
<b>Internet Usage</b>							
% population who are regular internet users				39	57	51	11
Take up of internet services (as % of population)							
sending emails				34	48	48	12
looking for information about goods and services				36	55	47	9
Internet telephoning or videoconferencing				5	9	10	16
playing/downloading games and music				9	22	22	15
listening to the web radio/watching web tv				10	17	15	11
reading online newspapers/magazines				9	18	21	19
internet banking				18	32	25	9
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online	33	42		58	58	51	9
% basic public services for enterprises fully available online	63	63		75	88	72	5
% of population using e-Government services				26	41	30	7
of which for returning filled in forms				12	18	13	8
% of enterprises using e-Government services				66	69	65	17
of which for returning filled in forms				51	59	45	9
<b>e-Health</b>							
% of GPs with Broadband connection					59	48	9
% of GPs with secondary care connection					17	24	12
% of GPs using electronic networks for transfer of patient data					48	48	8
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises						11	
% enterprises receiving internet orders						14	
% enterprises purchasing on the internet						39	
<b>e-business. % enterprises:</b>							
with integrated internal business processes				53	43	41	11
with integrated external business processes				16	11	14	18
using ERP systems					16	17	16
using analytical CRM					9	17	25
sending/receiving e-invoices					10	18	21
using digital signatures					15	16	15
using secure protocols for internet orders						5	
using open sources operating systems					12	12	13
<b>Employment and Skills</b>							
% of the population with no internet skills					36	40	12
% of the population with low internet skills					26	29	
% of the population with medium internet skills					27	23	
% of the population with high internet skills					12	8	7
% of persons employed with ICT user skills.	17.0	16.8	16.8	16.7	17.3	18.2	20
% of persons employed with ICT specialist skills	3.0	3.1	3.1	3.3	2.9	3.1	16
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP	5.6	5.5				5.3	8
ICT sector share of total employment	4.6	4.5				3.8	5
ICT sector growth (constant prices).						4.6	
ICT R&D expenditure by the business sector, as % of GDP	0.38	0.36				0.31	7
" " " " " " ,as % of total R&D expenditure	28.3	26.9				26.3	10
% of ICT exports on total exports	7.5	7.5	7.1	7.3			14

## 10. GERMANY

Germany is just outside the leading countries for information society development with most of benchmarking indicators having values above the EU average. Information society in Germany is driven by widespread and advanced usage of ICTs by businesses and intensive e-commerce activities. In comparison, factors such as broadband connectivity and related advanced services for households are closer to the EU average.

### **Broadband**

The broadband market has further improved compared to the previous year. In January 2008, broadband penetration rate was 23.8% (up from 18.1% a year earlier). However, compared to leading countries in Europe, weaknesses persist in terms of coverage of rural areas: in urban areas DSL coverage is 99% but in rural areas this figure is only 58.5%<sup>6</sup>. DSL is by far the dominant broadband technology in Germany.

German enterprises have also increasingly adopted broadband for connecting to the Internet. With take-up of 80%, German households and enterprises are now above EU average. Usage of online services has grown steadily and is now on close to the EU average but with a bias towards high usage of low bandwidth services like emails and net banking rather than download of music or TV services. This is also reflected in the below average number of households connected to the Internet with broadband rather than narrowband. However, this indicator has taken a major leap forward from 50% to 70%.

### **Online Public Services**

Germany has made remarkable progress in 2007. Germany's *fully-online availability* has made a very marked increase from 47% last year to 75% in 2007 to move Germany into 8<sup>th</sup> position. Both services to citizens and to businesses are in the top ten in the European ranking. Furthermore, five out of the nine relevant services have reached the fifth level of sophistication; again well above the EU average of 3 out of 9.

Take-up of eGovernment services has also progressed significantly in 2007. Among citizens it is well above the EU average at 43%, up from 32% in 2006. Use by enterprises has also risen significantly, but Germany is still below the EU average on this.

According to the national strategy, the eGovernment 2.0 programme, Internet shall become the major communication and distribution channel for public administration services. Secure Internet transactions in the area of electronic business and eGovernment will be realised and facilitated through the usage of e-Identification Cards. Certified portals will constitute a secure communication platform for citizens.

### **ICTs in the Economy**

The overall level of investment in R&D by the business sector in Germany is high but the proportion devoted to ICTs is comparatively low. However, German enterprises are above

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<sup>6</sup> "Broadband Coverage in Europe", 2007 Survey, Study by IDATE, p. 86.

average in use of e-Business applications and amongst the leaders in Europe for e-commerce particularly on the purchasing side. In terms of ICT skills, there has been a steady increase in the general population which is now close to the EU average. The Labour Force Survey confirms this, showing around average proportion of ICT users and specialists amongst employees.

Germany	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)	86	91	92	93		89	10
DSL coverage in rural areas (as % of total population)			55	59		72	15
Broadband penetration (as % of population)	5.7	8.4	12.8	18.1	23.8	20.0	8
DSL penetration (as % of population)	5.5	8.1	12.4	17.3	22.5	16.0	3
512 Kbps- 512 Kbps- 1 Mbps 1 Mbps							
<b>Predominant download speed</b>							
% of households with an internet connection			62	67	71	54	5
Households with broadband as % of households with internet			38	50	70	77	20
% of enterprises with broadband access	42	54	62	73	80	77	10
<b>Internet Usage</b>							
% population who are regular internet users			54	59	64	51	7
<b>Take up of internet services (as % of population)</b>							
sending emails				60	64	48	6
looking for information about goods and services				60	63	47	6
Internet telephoning or videoconferencing				10	13	10	8
playing/downloading games and music				18	21	22	16
listening to the web radio/watching web tv				12	15	15	14
reading online newspapers/magazines				19	21	21	16
internet banking				32	35	25	7
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online	17	27		27	64	51	8
% basic public services for enterprises fully available online	75	75		75	88	72	5
% of population using e-Government services				32	43	30	6
of which for returning filled in forms				9	17	13	9
% of enterprises using e-Government services	35	36	44	49	56	65	20
of which for returning filled in forms	14	17	24	37	43	45	17
<b>e-Health</b>							
% of GPs with Broadband connection					40	48	16
% of GPs with secondary care connection					9	24	21
% of GPs using electronic networks for transfer of patient data					66	48	7
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises		11	13	14	11	11	6
% enterprises receiving internet orders	8	16	17	19	25	14	4
% enterprises purchasing on the internet		51	54	54	60	39	2
<b>e-business. % enterprises:</b>							
with integrated internal business processes		38	43	44	52	41	6
with integrated external business processes		14	16	17	19	14	5
using ERP systems					24	17	8
using analytical CRM					30	17	1
sending/receiving e-invoices					19	18	11
using digital signatures					15	16	14
using secure protocols for internet orders					8	5	4
using open sources operating systems					17	12	6
<b>Employment and Skills</b>							
% of the population with no internet skills			36	29	26	40	6
% of the population with low internet skills			41	41	41	29	
% of the population with medium internet skills			20	25	27	23	
% of the population with high internet skills			4	5	6	8	21
% of persons employed with ICT user skills.	18.8	18.7	19.1	19.1	18.7	18.2	16
% of persons employed with ICT specialist skills	3.1	3.0	3.2	3.3	3.3	3.1	10
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP	5.3	5.4				5.3	9
ICT sector share of total employment	4.0	4.0				3.8	11
ICT sector growth (constant prices).	3.5	6.4				4.6	4
ICT R&D expenditure by the business sector, as % of GDP	0.39	0.40				0.31	6
" " " " " ,as % of total R&D expenditure	22.0	22.8				26.3	15
% of ICT exports on total exports	9.7	10.1	9.6	9.2			12



## 11. GREECE

Strong policy commitment, notably the National Digital Strategy (2006-2013), has led to a stable improvement of most benchmarking indicators. However, despite this, the information society in Greece is still lagging behind in comparison to general developments in the EU.

### **Broadband**

In January 2008, broadband penetration reached 9.1% after significant growth, even though this is still far below EU average (20%). Also broadband coverage remains one of the lowest in the EU. Narrowband is still the dominant form of connection, and low usage of online services reflects low Internet connectivity. The "National Digital Strategy (2006-2013)" has set ambitious objectives to stimulate the growth of broadband markets and align Greece to the EU average by 2010.

### **Online Public Services**

Greece has made significant advancement over the last year in *fully-online availability* and is steadily closing the gap with the EU average. The estimation of *online sophistication* results for Greece is 68%. These improvements have been equally balanced between services to citizens and to businesses though both remain below the EU average.

Take-up by citizens is still low. Although it grew by three points in 2007, Greece is ranked 26<sup>th</sup>. For companies the situation is totally different. Although no figures are available for 2007, during the last three years, usage by Greek firms was consistently above the EU average, 84% in 2006.

### **ICTs in the Economy**

Information on the impact of ICTs on the Greek economy is limited with no information available on size and growth of the ICT sector. There has been a steady improvement in the level of ICT skills in the population and in the proportion of ICT users in the workforce but both indicators remain below the EU average.

Greece	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)	2	9	12	18		89	25
DSL coverage in rural areas (as % of total population)			0	10		72	21
Broadband penetration (as % of population)	0.1	0.5	1.4	4.4	9.1	20.0	24
DSL penetration (as % of population)	0.1	0.4	1.4	4.4	9.1	16.0	19
Predominant download speed up to 512 Kbps- 512 Kbps- 1 Mbps							
% of households with an internet connection			22	23	25	54	25
Households with broadband as % of households with internet			3	17	29	77	27
% of enterprises with broadband access	13	21	44	58	72	77	19
<b>Internet Usage</b>							
% population who are regular internet users			18	23	28	51	26
Take up of internet services (as % of population)							
sending emails			14	17	21	48	26
looking for information about goods and services			17	23	28	47	23
Internet telephoning or videoconferencing			1	2	3	10	27
playing/downloading games and music			8	11	15	22	24
listening to the web radio/watching web tv			4	5	8	15	24
reading online newspapers/magazines			9	14	16	21	22
internet banking			1	2	4	25	25
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online	18	18		17	33	51	18
% basic public services for enterprises fully available online	50	50		50	63	72	17
% of population using e-Government services			7	9	12	30	25
of which for returning filled in forms			3	2	5	13	23
% of enterprises using e-Government services		77	81	84	82	65	8
of which for returning filled in forms	57	45	56	76	77	45	2
<b>e-Health</b>							
% of GPs with Broadband connection					44	48	15
% of GPs with secondary care connection					6	24	24
% of GPS using electronic networks for transfer of patient data					7	48	26
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises	1	2	2	3	2	11	16
% enterprises receiving internet orders	6	5	6	8	8	14	16
% enterprises purchasing on the internet		13	14	14	14	39	23
<b>e-business. % enterprises:</b>							
with integrated internal business processes	42	39	50	57		41	
with integrated external business processes	12	9	19	15		14	
using ERP systems					31	17	3
using analytical CRM					15	17	13
sending/receiving e-invoices					10	18	22
using digital signatures					6	16	24
using secure protocols for internet orders					2	5	17
using open sources operating systems					11	12	16
<b>Employment and Skills</b>							
% of the population with no internet skills			73	65	63	40	25
% of the population with low internet skills			20	23	22	29	
% of the population with medium internet skills			5	9	11	23	
% of the population with high internet skills			1	3	4	8	24
% of persons employed with ICT user skills.	11.7	12.1	12.1	13.0	12.7	18.2	24
% of persons employed with ICT specialist skills	2.2	2.4	2.2	2.1	2.2	3.1	26
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP	3.5	4.0				5.3	21
ICT sector share of total employment	1.7	1.7				3.8	20
ICT sector growth (constant prices).	5.3	19.8				4.6	1
ICT R&D expenditure by the business sector, as % of GDP	0.09	0.10				0.31	16
" " " " " ,as % of total R&D expenditure	50.7	54.5				26.3	3
% of ICT exports on total exports	1.3	1.4	1.1	2.5			26

## 12. HUNGARY

The information society in Hungary is still lagging behind in comparison with the general developments in the EU, with most of the benchmarking indicators below the EU average. However, there are signs that this may be evening out with strong progress in developing eGovernment services and increases in the number of regular Internet users. The national e-Inclusion programme launched in 2007 aims to raise awareness and skills in digital technologies and should further consolidate growth. The strength of the ICT sector and the good eSkill base in the country are also strategic assets for future development.

### **Broadband**

Broadband penetration increased to 14.2% by January 2008, but remains below the EU average of 20%. Households are increasingly connected to the Internet with broadband rather than narrowband and this indicator actually demonstrated a considerable growth from 2006 to 2007. 86% of connected households now have broadband which is well above EU average and ranks Hungary as number 10, three places up from last year. The broadband to narrowband ratio has always been high in Hungary indicating it has managed to leapfrog the older technology.

Usage of online services is growing at a pace generally faster than other Member States. In most indicators Hungary has improved its ranking, especially in Internet telephony/videoconferencing where Hungary has moved from 15 to 9.

### **Online Public Services**

For all services, the Hungarian *fully-online availability* rating caught up with the EU average between 2004 and 2006, but remains unchanged this year at 50% - now 8% below average. Services to citizens have remained close to the EU average but services to enterprises have not kept pace with improvements elsewhere and have fallen 35 percentage points below average. In terms of online sophistication, Hungary is eight points below the average. Only one service out of nine reaches the fifth level of sophistication.

Take-up by citizens and businesses has grown significantly in 2007, although it still remains below the EU average. What is interesting and encouraging is the number of business and citizens sending filled in forms electronically is equal to the EU average.

The Hungarian eGovernment strategy establishes that the Hungarian system of public administration, public services and the administration of justice should operate on the basis of modern principles, focusing upon the needs and requirements of citizens. This should result in better quality services and a more sensible use of available resources. Serving as both an example and a model, a modern system of public administration and government action could become a force promoting the modernisation of society and the fulfilment of democracy.

### **ICTs in the Economy**

Hungary has a relatively large ICT sector that contributes nearly a quarter of its exports but does not proportionally invest in ICT-related R&D, enterprise connectivity is low and the use

of e-business and e-commerce is generally low. The overall level of skills in the population and the workforce is close to the EU average.

Hungary	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)	58	70	85	89		89	15
DSL coverage in rural areas (as % of total population)			76	77		72	13
Broadband penetration (as % of population)	3.6	6.1	9.9	14.2		20.0	20
DSL penetration (as % of population)	2.4	4.1	6.1	7.5		16.0	20
Predominant download speed							
512 Kbps- 512 Kbps- 1 Mbps 1 Mbps							
% of households with an internet connection		22	32	38		54	23
Households with broadband as % of households with internet		49	68	86		77	8
% of enterprises with broadband access		48	61	70		77	20
<b>Internet Usage</b>							
% population who are regular internet users			34	42	49	51	16
Take up of internet services (as % of population)							
sending emails		31	37	47	48	48	14
looking for information about goods and services		25	35	43	43	47	14
Internet telephoning or videoconferencing		4	8	13	10	10	9
playing/downloading games and music		17	22	27	22	22	9
listening to the web radio/watching web tv		7	12	16	15	15	13
reading online newspapers/magazines		18	25	28	21	21	8
internet banking		6	8	12	25	25	23
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online	0	8		50	50	51	14
% basic public services for enterprises fully available online		25		50	50	72	21
% of population using e-Government services			18	17	25	30	14
of which for returning filled in forms			7	5	13	13	11
% of enterprises using e-Government services		35		45	55	65	21
of which for returning filled in forms		23		28	44	45	16
<b>e-Health</b>							
% of GPs with Broadband connection					36	48	20
% of GPs with secondary care connection					12	24	17
% of GPs using electronic networks for transfer of patient data					15	48	22
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises			3	7	6	11	12
% enterprises receiving internet orders		6	5	11	6	14	22
% enterprises purchasing on the internet		14	5	12	19	39	21
<b>e-business. % enterprises:</b>							
with integrated internal business processes		34		5	12	41	26
with integrated external business processes		5	1	5	6	14	22
using ERP systems					8	17	26
using analytical CRM					5	17	27
sending/receiving e-invoices					4	18	27
using digital signatures					13	16	17
using secure protocols for internet orders					1	5	23
using open sources operating systems					14	12	9
<b>Employment and Skills</b>							
% of the population with no internet skills			62	52	46	40	17
% of the population with low internet skills			19	23	22	29	
% of the population with medium internet skills			16	19	24	23	
% of the population with high internet skills			3	7	8	8	17
% of persons employed with ICT user skills.	19.5	19.9	20.0	20.1	19.8	18.2	9
% of persons employed with ICT specialist skills	3.2	2.9	2.6	2.9	2.7	3.1	19
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP	7.6	7.9				5.3	4
ICT sector share of total employment	5.4	5.3				3.8	3
ICT sector growth (constant prices).	5.9	8.6				4.6	2
ICT R&D expenditure by the business sector, as % of GDP	0.05	0.05				0.31	19
" " " " " , as % of total R&D expenditure	15.1	12.7				26.3	21
% of ICT exports on total exports	16.1	23.0	23.3	23.0			3

### 13. IRELAND

Ireland provides a mixed image of information society developments, among the frontrunners for e-commerce but a level of connectivity and usage of ICTs by citizens and businesses very close to the EU average.

#### **Broadband**

In 2007, broadband penetration reached 17.4% of the population, a large increase from 12.3% a year before, thereby catching up with the EU27 average of 20%.

The growth in broadband take-up has also boosted the ratio of broadband to narrowband. This figure doubled to a 54% but still narrowband is very widespread in Ireland. This is reflected in the usage of online services where Ireland is close to the EU average on low bandwidth consuming services like e-mail, Internet banking and search of information about goods and services. On the more bandwidth consuming services Ireland is placed among the lowest ranking countries.

#### **Online Public Services**

Ireland is around the EU27 average for *online sophistication* at 78%. On the other hand it shows an unchanged score of 50% for the *fully-online availability*. The online availability measurement for both services to enterprises and to citizens is below the EU average. Only one out of nine relevant services reaches the fifth level of sophistication.

Figures for take-up are much better. Usage by citizens has grown by six points from 2006 and is now two points above average. Use by companies is very high at 87%, over twenty points above the average. This places Ireland 2nd in the ranking, and it is 4th for businesses sending filled in forms electronically.

In Ireland, ICTs play a significant role in facilitating coordination and greater integration between agencies and in making it easier for business to be set up and to comply with associated compliance procedures. These arrangements between agencies involved, notably the Revenue Commissioners and the Companies Registration Office, ensure that, in most cases, a company may be established within a week.

#### **ICTs in the Economy**

As a proportion of GDP, Ireland has the second largest ICT sector in Europe and it contributes over a quarter of exports and investment in ICT research is high. Ireland's success attracting inward investment including some major ICT firms may explain this good performance.

ICT skill levels in the general population are not high with notably low, but improving proportions with medium and high Internet skills. Skill levels are also close to the EU average for the workforce. But this has not been an obstacle to a wide adoption of ICTs by businesses: Ireland is a leader for e-commerce and in use of certain e-business applications.

Ireland	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)	61	71	82	86		89	18
DSL coverage in rural areas (as % of total population)			57	64		72	14
Broadband penetration (as % of population)	0.8	3.4	6.7	12.3	17.4	20.0	13
DSL penetration (as % of population)	0.6	2.8	4.9	9.0	12.7	16.0	13
Predominant download speed 512 Kbps- 512 Kbps- 1 Mbps 1 Mbps							
% of households with an internet connection			47	50	57	54	11
Households with broadband as % of households with internet			16	26	54	77	24
% of enterprises with broadband access	19	32	48	61	68	77	22
<b>Internet Usage</b>							
% population who are regular internet users			31	44	51	51	14
Take up of internet services (as % of population)							
sending emails			31	45	48	48	13
looking for information about goods and services			29	42	44	47	13
Internet telephoning or videoconferencing			3	6	7	10	22
playing/downloading games and music			6	11	13	22	26
listening to the web radio/watching web tv			4	9	10	15	22
reading online newspapers/magazines			4	8	10	21	25
internet banking			13	21	24	25	13
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online	50	30		30	40	51	17
% basic public services for enterprises fully available online	63	75		75	63	72	17
% of population using e-Government services			18	26	32	30	9
of which for returning filled in forms			9	14	19	13	6
% of enterprises using e-Government services		69	76	84	89	65	2
of which for returning filled in forms	24	32	42	56	69	45	4
<b>e-Health</b>							
% of GPs with Broadband connection					44	48	14
% of GPs with secondary care connection					23	24	10
% of GPs using electronic networks for transfer of patient data					47	48	9
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises	17	18	20	17	19	11	3
% enterprises receiving internet orders	11	22	22	23	22	14	5
% enterprises purchasing on the internet		48	53	56	53	39	8
<b>e-business. % enterprises:</b>							
with integrated internal business processes	32	29	30	35	35	41	15
with integrated external business processes	17	14	13	14	14	14	10
using ERP systems					17	17	15
using analytical CRM					23	17	4
sending/receiving e-invoices					26	18	6
using digital signatures					15	16	16
using secure protocols for internet orders					8	5	5
using open sources operating systems					10	12	17
<b>Employment and Skills</b>							
% of the population with no internet skills			58	48	42	40	15
% of the population with low internet skills			37	42	42	29	
% of the population with medium internet skills			5	7	12	23	
% of the population with high internet skills			1	3	3	8	25
% of persons employed with ICT user skills.	18.0	19.4	18.8	18.9	18.9	18.2	15
% of persons employed with ICT specialist skills	2.9	2.8	2.6	2.5	2.4	3.1	25
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP	9.8	9.6				5.3	2
ICT sector share of total employment	6.2	6.2				3.8	1
ICT sector growth (constant prices).	-8.5	1.5				4.6	19
ICT R&D expenditure by the business sector, as % of GDP	0.44	0.44				0.31	5
" " " " " " ,as % of total R&D expenditure	57.0	57.1				26.3	2
% of ICT exports on total exports	28.3	27.6	27.3	26.2			2

## 14. ITALY

Italy presents a mixed picture on information society developments. Italy is amongst the leading countries in terms of quality and availability of e-Government services but still below EU average for fixed connectivity, digital skills of the population and use of Internet by households.

### **Broadband**

Broadband penetration increased in 2007, reaching 10.1 million broadband users with a penetration rate of 17.1% in January 2008, below the EU27 average of 20%. DSL still represents the most widely used technology for fixed broadband, although its coverage of rural areas is still limited to 50% of population. This rate is, however, expected to improve as programmes launched by the central government and the local/regional administrations start bearing fruit. Italy is not yet catching up in the use of online services, although the diffusion of mobile technologies is probably reducing this gap.

Complementing the fixed broadband market, the Italian mobile market is still the largest one in the EU and UMTS services have continued to grow, thanks to improved network coverage, the availability of enhanced terminals and the launch of mobile broadband services (HSDPA) and mobile TV (Italy has been one of the first Member States in launching commercial broadcasting services using the DVB-H standard).

### **Online Public Services**

Italy has made sound progress: it scores a high *overall sophistication* of 79% and a progression in *fully-online availability* of 70%, coming from 58% - a substantial move to 11th position and it is now above average both for citizen and enterprise services. Four out of five relevant services reach the 5<sup>th</sup> level of sophistication.

Take-up by citizens is still quite low and has hardly moved in the past years, at nearly half the EU average. However, it is very high for enterprises, at 84% nearly 20 points above the EU average.

The Italian eGovernment strategy focuses on the sharing of common and consistent objectives between all types of administrations (concept of 'cooperative governance'). The aim is to guarantee full administrative interoperability, pursuant to the principle according to which citizens should perceive the public administration as a single entity.

### **ICTs in the Economy**

The percentage of businesses with broadband access is around EU average. e-commerce revenues are 2% of turnover compared to the EU average of 11% and almost all e-business applications are applied less than on average in the EU, with the exception of e-invoicing and of integrated internal business processes, where Italy is among the top performers.

Despite robust growth in the percentage of the population with high and medium Internet skills, and the flattening out of growth in low skills, levels in the general population are below average and 58% of the population is estimated to have no Internet skills.

Italy	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)	82	85	87	89		89	16
DSL coverage in rural areas (as % of total population)			45	50		72	18
Broadband penetration (as % of population)	4.1	8.0	11.8	14.5	17.1	20.0	15
DSL penetration (as % of population)	3.7	7.5	11.2	13.9	16.5	16.0	9
Predominant download speed 512 Kbps- 512 Kbps- 1 Mbps 1 Mbps							
% of households with an internet connection			39	40	43	54	19
Households with broadband as % of households with internet			34	41	58	77	22
% of enterprises with broadband access	31	23	57	70	76	77	17
<b>Internet Usage</b>							
% population who are regular internet users			28	31	34	51	24
Take up of internet services (as % of population)							
sending emails			26	29	31	48	23
looking for information about goods and services			21	23	27	47	25
Internet telephoning or videoconferencing			2	3	6	10	25
playing/downloading games and music			10	11	14	22	25
listening to the web radio/watching web tv			5	5	8	15	25
reading online newspapers/magazines			13	13	17	21	20
internet banking			8	9	12	25	21
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online	25	27		36	58	51	9
% basic public services for enterprises fully available online	75	88		88	88	72	5
% of population using e-Government services			14	16	17	30	22
of which for returning filled in forms			4	5	5	13	22
% of enterprises using e-Government services		65	73	87	84	65	6
of which for returning filled in forms	35	35	29	49	35	45	22
<b>e-Health</b>							
% of GPs with Broadband connection					49	48	13
% of GPs with secondary care connection					15	24	14
% of GPs using electronic networks for transfer of patient data					16	48	21
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises	2	3	2	2	2	11	17
% enterprises receiving internet orders	2	9	3	3	4	14	23
% enterprises purchasing on the internet		14	19	27	29	39	13
<b>e-business. % enterprises:</b>							
with integrated internal business processes	12	33	48	46	53	41	4
with integrated external business processes					11	14	15
using ERP systems					14	17	18
using analytical CRM					15	17	11
sending/receiving e-invoices					34	18	2
using digital signatures					17	16	12
using secure protocols for internet orders					2	5	21
using open sources operating systems					12	12	14
<b>Employment and Skills</b>							
% of the population with no internet skills			65	63	58	40	23
% of the population with low internet skills			14	14	15	29	
% of the population with medium internet skills			15	16	18	23	
% of the population with high internet skills			6	7	9	8	11
% of persons employed with ICT user skills.	22.9	17.6	17.6	18.9	19.6	18.2	11
% of persons employed with ICT specialist skills	2.8	2.8	2.9	2.9	2.7	3.1	21
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP	5.4	5.4				5.3	10
ICT sector share of total employment	4.2	4.2				3.8	8
ICT sector growth (constant prices).	1.1	2.9				4.6	14
ICT R&D expenditure by the business sector, as % of GDP	0.13	0.13				0.31	12
" " " " " ,as % of total R&D expenditure	24.2	25.0				26.3	11
% of ICT exports on total exports	4.0	3.9	3.9	3.8			24



## 15. LATVIA

The information society in Latvia is still lagging behind in comparison with the general developments in the EU with most of the benchmarking indicators below the EU average. However, a good skill base and a wide dissemination of Internet usage in the population are laying the foundations for further development.

### Broadband

The number of broadband lines (excluding mobile) in Latvia grew by around 70% over a one year period to reach a penetration rate of 15% in January 2008 (compared to 10.5% a year before). However, Latvia's broadband penetration rate remained well below the EU average of 20%.

The usage of Internet services is, however, rather vibrant and in general at the EU average level in most instances. The use of Internet telephony/videoconferencing is at high level and growing fast. The take-up of broadband by enterprises has however not grown and Latvia falls further behind in this area.

### Online Public Services

Latvia has tripled its overall score for *fully-online availability*, moving from 10% last year to 30% with services to citizens and to enterprises each improving by a factor of three. This has significantly closed the gap with the EU27 average of 58%. *Sophistication* is now 54%. However, not one service of the nine relevant ones reaches the fifth level of sophistication.

Take-up is below the EU average, and in the case of citizens it has actually gone down 7 points from 2006. Enterprises' use has increased by five points in 2007, but is still 20 points below the average.

The overall objectives of Latvia's eGovernment programme are to implement information technology and optimise public administration processes. It aims to improve the quality of government services and reducing the administrative and financial burden for citizens and businesses and to develop a more open and democratic government.

### ICTs in the Economy

ICTs do not yet play an important part in the Latvian economy. On almost all indicators, the use and investment in ICTs is small. ICT-related R&D makes up only 0.03% of GDP and 4% of exports. Broadband connectivity of enterprises in Latvia is one of the lowest in Europe and e-commerce and use of e-business applications are not widespread. The only exception to this picture is a higher than average level of skills. This is true for the proportion of the population with high and medium Internet skills and the proportion of those employed who have specialist skills.

Latvia	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)				72		89	21
DSL coverage in rural areas (as % of total population)				37		72	19
Broadband penetration (as % of population)	2.4	5.7	10.5	15.0	20.0	20.0	18
DSL penetration (as % of population)	1.7	3.0	4.7	6.7	16.0	16.0	21
Predominant download speed	up to 512 Kbps 1-2 Mbps						
% of households with an internet connection		31	42	51	54	54	14
Households with broadband as % of households with internet		46	53	63	77	77	21
% of enterprises with broadband access	45	48	59	57	77	77	24
<b>Internet Usage</b>							
% population who are regular internet users		36	46	52	51	51	12
Take up of internet services (as % of population)							
sending emails		33	41	46	48	48	15
looking for information about goods and services		27	36	39	47	47	16
Internet telephoning or videoconferencing		8	14	18	10	10	4
playing/downloading games and music		21	24	27	22	22	8
listening to the web radio/watching web tv		11	17	20	15	15	8
reading online newspapers/magazines		24	27	18	21	21	18
internet banking		16	22	28	25	25	12
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online	0	8		8	25	51	21
% basic public services for enterprises fully available online		0		13	38	72	25
% of population using e-Government services			13	25	18	30	21
of which for returning filled in forms			5	6	6	13	21
% of enterprises using e-Government services		40	35	40	45	65	26
of which for returning filled in forms		15	15	21	26	45	25
<b>e-Health</b>							
% of GPs with Broadband connection					58	48	10
% of GPs with secondary care connection					0	24	27
% of GPs using electronic networks for transfer of patient data					1	48	27
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises			1	1	2	11	18
% enterprises receiving internet orders			2	3	4	14	24
% enterprises purchasing on the internet			7	13	14	39	24
<b>e-business. % enterprises:</b>							
with integrated internal business processes		15	17	15	13	41	25
with integrated external business processes		4	4	5	4	14	26
using ERP systems					5	17	27
using analytical CRM					10	17	22
sending/receiving e-invoices					25	18	7
using digital signatures					13	16	18
using secure protocols for internet orders					1	5	24
using open sources operating systems					11	12	15
<b>Employment and Skills</b>							
% of the population with no internet skills			54	48	41	40	13
% of the population with low internet skills			27	29	22	29	
% of the population with medium internet skills			15	17	26	23	
% of the population with high internet skills			3	6	11	8	9
% of persons employed with ICT user skills.	17.3	17.0	17.1	19.1	20.8	18.2	6
% of persons employed with ICT specialist skills	3.0	3.3	3.3	3.3	3.8	3.1	6
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP	7.4	7.2				5.3	5
ICT sector share of total employment	2.5	2.4				3.8	18
ICT sector growth (constant prices).	-10.6	3.1				4.6	12
ICT R&D expenditure by the business sector, as % of GDP	0.02	0.03				0.31	23
" " " " " ,as % of total R&D expenditure	13.0	16.0				26.3	17
% of ICT exports on total exports	2.6	3.1	3.4	4.1			23

## 16. LITHUANIA

Lithuania lags behind with many aspects of information society development, with most of the benchmarking indicators below the EU average. However, fast progression in Internet usage by households and intensive e-commerce activities are laying the foundations for further developments.

### Broadband

In October 2007, broadband penetration reached 13.7%, compared to 10.6% a year earlier, but still lags behind the EU27 average of 20%. Broadband services are provided through a number of alternative platforms. The mobile market is well developed in Lithuania and is expected to be a source for future growth in broadband connectivity and use of online services.

Overall growth in take-up of broadband and amongst enterprises is stalling, but households seem to be converting from narrowband faster with now 77% of connected households using broadband. This corresponds with the usage of online services where Lithuania is above EU average in services requiring higher bandwidth, and placed below EU average in the low bandwidth consuming services. As in the other Baltic countries Internet telephoning/videoconferencing is a major driver of growth.

### Online Public Services

The average score for all public services for *fully-online availability* is 35%, well below the average. Online availability of services both to citizens and to enterprises has remained constant over the past few years. *Online sophistication* is 12 points below the average. Two out of nine relevant services reach the fifth level of sophistication.

Take-up by citizens lies 12 points below the average, whereas for businesses it is 11 points above. What is significant is that 60% of companies have used eGovernment to send filled in forms, against an EU average of 45%.

The goals of Lithuania's eGovernment strategy are to improve transparency of the decision making process, efficiently deliver high-quality public services and provide information to the public, businesses and institutions by exploiting the possibilities offered by information technology.

### ICTs in the Economy

ICTs have a minimal impact on the Lithuanian economy. Investment in ICT-related R&D is very small as are exports of ICT products. Enterprise take-up of broadband has not grown, and is well below EU average. Use of ICT tools and online services among enterprises is low with the exception of selling online which is above average. But having a rather good level of digital literacy of the population and basic user skills in the workforce, Lithuania has a sound basis for future developments.

Lithuania	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)			82	83		89	19
DSL coverage in rural areas (as % of total population)			55	58		72	16
Broadband penetration (as % of population)		3.8	6.8	10.6	13.7	20.0	22
DSL penetration (as % of population)		1.5	3.1	5.2	6.4	16.0	22
Predominant download speed				up to 512 Kbps	up to 512 Kbps		
% of households with an internet connection			16	35	44	54	18
Households with broadband as % of households with internet			73	56	77	77	16
% of enterprises with broadband access		50	57	57	53	77	25
<b>Internet Usage</b>							
% population who are regular internet users			30	38	45	51	17
Take up of internet services (as % of population)							
sending emails			26	32	39	48	20
looking for information about goods and services			22	30	36	47	19
Internet telephoning or videoconferencing			4	11	19	10	3
playing/downloading games and music			17	24	27	22	7
listening to the web radio/watching web tv			11	17	20	15	9
reading online newspapers/magazines			24	30	32	21	7
internet banking			10	15	21	25	15
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online	0	25		25	25	51	21
% basic public services for enterprises fully available online		63		63	50	72	21
% of population using e-Government services			12	13	18	30	20
of which for returning filled in forms			6	6	11	13	14
% of enterprises using e-Government services		65	72	76	76	65	13
of which for returning filled in forms		30	52	56	60	45	8
<b>e-Health</b>							
% of GPs with Broadband connection					33	48	21
% of GPs with secondary care connection					7	24	23
% of GPS using electronic networks for transfer of patient data					27	48	15
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises		2	2	5	5	11	14
% enterprises receiving internet orders		5	6	15	15	14	9
% enterprises purchasing on the internet		13	15	22	21	39	17
<b>e-business. % enterprises:</b>							
with integrated internal business processes		19	18	19	23	41	23
with integrated external business processes		7	6	9	10	14	20
using ERP systems					9	17	23
using analytical CRM					9	17	26
sending/receiving e-invoices					15	18	15
using digital signatures					19	16	11
using secure protocols for internet orders					3	5	13
using open sources operating systems					24	12	1
<b>Employment and Skills</b>							
% of the population with no internet skills			62	55	49	40	19
% of the population with low internet skills			20	20	18	29	
% of the population with medium internet skills			13	16	20	23	
% of the population with high internet skills			4	9	13	8	4
% of persons employed with ICT user skills.	16.1	17.5	18.3	19.4	21.9	18.2	4
% of persons employed with ICT specialist skills	1.6	2.0	1.5	1.4	1.2	3.1	27
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP	5.6	5.1				5.3	15
ICT sector share of total employment	2.8	2.8				3.8	16
ICT sector growth (constant prices).	5.5	2.3				4.6	16
ICT R&D expenditure by the business sector, as % of GDP	0.02	0.04				0.31	21
" " " " " " ,as % of total R&D expenditure	12.6	22.9				26.3	14
% of ICT exports on total exports	4.6	5.3	4.8	4.4			21

## 17. LUXEMBOURG

Luxembourg is well advanced in the information society, with many benchmarking indicators significantly above the EU average, in particular in the area of broadband connectivity, households' Internet usage and eSkills endowments.

### **Broadband**

Luxembourg has considerably improved its broadband penetration since last year, reaching 25.4% in January 2008, above the EU27 average of 20%. Take-up of broadband by households and enterprises is growing and limiting the use of narrowband. Growth in the usage of online services is evident and Luxembourg is now first in Europe in Internet telephony/videoconferencing.

### **Online Public Services**

Although Luxemburg still scores below the EU27 average, its *fully-online availability* for all services has made significant progress from a score of 25% in 2006 to 40% in 2007. All this improvement has been in services to citizens.

These discreet results contrast with the figures for take-up. Both for citizens and businesses, Luxembourg is placed 4<sup>th</sup> in the EU rankings. When it comes to sending filled in forms electronically, the picture gets a bit confusing. 21% of Citizens do so, 8 points above the average. However, only 35% of businesses do so, ten points below the average.

Luxembourg's eGovernment Master Plan sets out the strategic objectives of “eGovernance”, which are **transparency**, citizen **inclusion and participation**; public sector **efficiency**, increased **competitiveness** of both the public and private sectors, as well as an increase of the general level of **knowledge** and know-how in Luxembourg. It also aligns the major eGovernment objectives with i2010.

### **ICTs in the Economy**

In the wider economy, enterprise use of broadband and of e-business and e-commerce tools is generally close to the EU average. In contrast, skill levels are high both in the general population in the workforce.

Luxembourg	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)	100	100	100	100		89	1
DSL coverage in rural areas (as % of total population)			100	100		72	1
Broadband penetration (as % of population)	3.5	8.1	15.5	21.5	25.4	20.0	7
DSL penetration (as % of population)	3.1	7.2	13.9	19.5	22.8	16.0	2
Predominant download speed 512 Kbps- 512 Kbps- 1 Mbps 1 Mbps							
% of households with an internet connection			65	70	75	54	4
Households with broadband as % of households with internet			52	63	77	77	14
% of enterprises with broadband access	39	48	64	76	81	77	8
<b>Internet Usage</b>							
% population who are regular internet users			63	65	72	51	5
Take up of internet services (as % of population)							
sending emails			63	65	71	48	4
looking for information about goods and services			61	64	68	47	4
Internet telephoning or videoconferencing			11	16	23	10	1
playing/downloading games and music			30	26	33	22	4
listening to the web radio/watching web tv			19	22	29	15	4
reading online newspapers/magazines			29	29	42	21	5
internet banking			37	41	46	25	6
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online	8	8		8	33	51	18
% basic public services for enterprises fully available online	25	38		50	50	72	21
% of population using e-Government services			46	46	52	30	4
of which for returning filled in forms			19	17	21	13	4
% of enterprises using e-Government services	65	71		83	85	65	4
of which for returning filled in forms	25	26		32	35	45	21
<b>e-Health</b>							
% of GPs with Broadband connection					62	48	8
% of GPs with secondary care connection					14	24	15
% of GPs using electronic networks for transfer of patient data					27	48	16
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises						11	
% enterprises receiving internet orders	9	11			11	14	12
% enterprises purchasing on the internet		33	40		34	39	11
<b>e-business. % enterprises:</b>							
with integrated internal business processes	40	36	45	40	60	41	3
with integrated external business processes	15	16	16	14	28	14	1
using ERP systems					18	17	13
using analytical CRM					13	17	18
sending/receiving e-invoices					23	18	10
using digital signatures					12	16	20
using secure protocols for internet orders					3	5	12
using open sources operating systems					13	12	12
<b>Employment and Skills</b>							
% of the population with no internet skills			29	28	21	40	4
% of the population with low internet skills			34	31	28	29	
% of the population with medium internet skills			28	31	37	23	
% of the population with high internet skills			9	10	14	8	3
% of persons employed with ICT user skills.	23.9	26.9	27.3	27.2	28.9	18.2	1
% of persons employed with ICT specialist skills	3.1	3.6	3.6	3.2	4.2	3.1	4
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP						5.3	
ICT sector share of total employment						3.8	
ICT sector growth (constant prices).						4.6	
ICT R&D expenditure by the business sector, as % of GDP		0.12				0.31	14
" " " " " " ,as % of total R&D expenditure	0.0	8.3				26.3	25
% of ICT exports on total exports	15.7	16.4	18.6	18.9			5

## 18. MALTA

Malta is well advanced in information society, with many benchmarking indicators significantly above the EU average.

### **Broadband**

Broadband penetration in Malta in January 2008 was at 16.9%, below the EU25 average of 20%. While in 2006 broadband growth stalled, 2007 saw a substantial increase. Download speeds are rather high in Malta and enterprises are demonstrating a strong growth in broadband take-up, moving Malta four steps up in the EU ranking.

### **Online Public Services**

Malta has continued to make very marked improvement and sits just behind Austria in second place in the overall country ranking for *online sophistication* (96%), and for *fully online availability* (95%). The main possibility for improvement is in achieving 5th stage sophistication on some services. Six out of the nine relevant services reach the fifth level of sophistication.

Only 25% of the population use the available online services, a figure below the EU average. Use by businesses is solidly above the EU average, and nearly half of them use eGovernment to send filled in forms electronically.

The Maltese vision for the implementation of eGovernment sets out that eGovernment services should be offered via multiple channels. In this respect, Government is working to offer a (limited) set of services on mobile telephone, via a call centre, through public Internet access points and front offices of Local Councils and Post Offices. The implementation of eGovernment services on digital TV will largely depend on the private sector development progress and its eventual take-up.

### **ICTs in the Economy**

Malta has the fourth highest percentage of enterprises connected to broadband of any EU Member State. High connectivity is reflected in the generally high levels of use of e-business applications. e-Commerce is less prevalent with the levels of Internet orders and purchases below the EU average. The importance of ICTs to the Maltese economy is underlined by the fact that it has the highest proportion of ICT exports to total exports in EU27.

Malta	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)	95	95	99	99		89	5
DSL coverage in rural areas (as % of total population)			0	0		72	22
Broadband penetration (as % of population)		9.4	12.7	12.5	16.9	20.0	16
DSL penetration (as % of population)		5.5	7.5	7.4	9.4	16.0	18
Predominant download speed				1-2 Mbps 2-8 Mbps			
% of households with an internet connection			41	53	54	54	12
Households with broadband as % of households with internet			56	77	82	77	11
% of enterprises with broadband access	62		78	83	89	77	4
<b>Internet Usage</b>							
% population who are regular internet users			34	36	43	51	19
Take up of internet services (as % of population)							
sending emails			32	31	40	48	19
looking for information about goods and services			27	26	34	47	20
Internet telephoning or videoconferencing			4	4	7	10	23
playing/downloading games and music			14	17	19	22	20
listening to the web radio/watching web tv			8	10	14	15	16
reading online newspapers/magazines			14	17	20	21	17
internet banking			16	16	22	25	14
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online	0	33		83	92	51	2
% basic public services for enterprises fully available online		50		63	100	72	1
% of population using e-Government services			19	17	25	30	15
of which for returning filled in forms			6	4	9	13	16
% of enterprises using e-Government services			68	67	77	65	12
of which for returning filled in forms	36		45	35	49	45	15
<b>e-Health</b>							
% of GPs with Broadband connection					51	48	12
% of GPs with secondary care connection					14	24	16
% of GPS using electronic networks for transfer of patient data					17	48	18
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises						11	
% enterprises receiving internet orders	21		14	12	13	14	10
% enterprises purchasing on the internet			47	35	36	39	10
<b>e-business. % enterprises:</b>							
with integrated internal business processes			43	47	46	41	9
with integrated external business processes			19	16	14	14	11
using ERP systems					24	17	9
using analytical CRM					22	17	5
sending/receiving e-invoices					24	18	9
using digital signatures					12	16	19
using secure protocols for internet orders					6	5	9
using open sources operating systems					8	12	25
<b>Employment and Skills</b>							
% of the population with no internet skills			58	59	53	40	21
% of the population with low internet skills			28	22	22	29	
% of the population with medium internet skills			12	15	19	23	
% of the population with high internet skills			2	4	5	8	22
% of persons employed with ICT user skills.	19.9	20.5	20.4	20.8	21.3	18.2	5
% of persons employed with ICT specialist skills	3.1	4.1	3.3	2.9	3.3	3.1	9
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP	9.1	8.2				5.3	3
ICT sector share of total employment	5.0	5.0				3.8	4
ICT sector growth (constant prices).	-0.1	-11.4				4.6	20
ICT R&D expenditure by the business sector, as % of GDP		0.04				0.31	20
" " " " " ,as % of total R&D expenditure		9.2				26.3	23
% of ICT exports on total exports	32.7	32.3	26.8	27.6			1



## 19. THE NETHERLANDS

The Netherlands is one of the best performing countries in Europe and leads the way in information society developments. The only exceptions are in the supply of eGovernment services.

### **Broadband**

The Netherlands is one of the world's leaders in the broadband ranking along with Denmark and Finland and now stands in third place with 34.2% (October 2007). Growth slowed down in 2007 with an increase on 2.4 percentage points between January and October 2007 compared to over 6 percentage points per year in the three preceding years. One possible explanation is that most (83%) households have an Internet connection and most of these (89%) have broadband.

Good connectivity translates into growth of use of advanced services. The Netherlands is first in Europe in online music and games and also for listening to web radio and watching web TV. The Netherlands also has improved in the use of Internet telephony/videoconferencing. In general, the Netherlands are well above EU average in usage of online services.

### **Online Public Services**

**Fully online availability** for The Netherlands yet again increased significantly in 2007, from 53% to 63%. **Sophistication** reaches 83%, well above the EU average. It is interesting to note that services for citizens score almost as high as services for businesses. Furthermore, five out of the nine relevant services reach the fifth level of sophistication.

55% of Dutch citizens have used eGovernment in 2007, placing the country 2<sup>nd</sup> in terms of take-up. It tops the table when it comes to sending filled in forms electronically. Take-up by businesses is also high, at 16 points above the average. They are 3<sup>rd</sup> in sending filled in forms electronically.

The Dutch Government wishes to take advantage of the opportunities offered by ICTs to improve the standard of service to the business community and the general public. Ultimately, that will mean that citizens may no longer be asked for information which is already available within the Government. The Dutch government acknowledges that ICTs are vital for reducing administrative burdens for citizens and companies. A large part of the administrative reduction comes within range by effective use of ICTs, e.g. by offering online services and reuse of information. The (virtual) infrastructure must be further developed for this reason.

### **ICTs in the Economy**

The Netherlands has reached one of the most advanced levels of development of information society without having a strong ICT sector or a high intensity in ICT research. Most other indicators show The Netherlands to be at the forefront of dissemination of ICTs in the economy, for example in use of e-business, in e-commerce and in the high level of ICT skills in the population and in the workforce.

Netherlands	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)	94	99	99	99		89	5
DSL coverage in rural areas (as % of total population)			99	99		72	4
Broadband penetration (as % of population)	11.7	18.9	25.2	31.8	34.2	20.0	3
DSL penetration (as % of population)	6.0	11.6	15.6	19.4	20.7	16.0	6
Predominant download speed				1-2 Mbps	1-2 Mbps		
% of households with an internet connection			78	80	83	54	1
Households with broadband as % of households with internet			69	82	89	77	4
% of enterprises with broadband access	37	54	71	82	87	77	6
<b>Internet Usage</b>							
% population who are regular internet users			74	76	81	51	1
Take up of internet services (as % of population)							
sending emails			73	76	79	48	1
looking for information about goods and services			70	73	76	47	1
Internet telephoning or videoconferencing			5	10	21	10	2
playing/downloading games and music			37	42	45	22	1
listening to the web radio/watching web tv			20	28	35	15	1
reading online newspapers/magazines			29	36	40	21	6
internet banking			50	59	65	25	2
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online	18	18		36	55	51	13
% basic public services for enterprises fully available online	38	50		75	75	72	14
% of population using e-Government services			46	52	55	30	2
of which for returning filled in forms			20	30	33	13	1
% of enterprises using e-Government services	41	47	57	70	81	65	9
of which for returning filled in forms	23	27	44	61	73	45	3
<b>e-Health</b>							
% of GPs with Broadband connection					82	48	4
% of GPs with secondary care connection					73	24	3
% of GPs using electronic networks for transfer of patient data					91	48	2
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises						11	
% enterprises receiving internet orders	17	19	21	28	27	14	2
% enterprises purchasing on the internet		29	35	45	41	39	9
<b>e-business. % enterprises:</b>							
with integrated internal business processes	60	59	61	62	63	41	1
with integrated external business processes	17	20	18	18	17	14	8
using ERP systems					24	17	10
using analytical CRM					14	17	14
sending/receiving e-invoices					11	18	19
using digital signatures					34	16	2
using secure protocols for internet orders					7	5	7
using open sources operating systems					9	12	19
<b>Employment and Skills</b>							
% of the population with no internet skills			21	18	16	40	1
% of the population with low internet skills			49	44	39	29	
% of the population with medium internet skills			25	29	33	23	
% of the population with high internet skills			6	9	12	8	5
% of persons employed with ICT user skills.	22.5	20.5	19.6	20.0	19.9	18.2	8
% of persons employed with ICT specialist skills	4.5	4.2	4.3	3.9	3.8	3.1	7
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP	5.2	5.2				5.3	13
ICT sector share of total employment	3.9	3.8				3.8	12
ICT sector growth (constant prices).	0.5	3.0				4.6	13
ICT R&D expenditure by the business sector, as % of GDP	0.37	0.32				0.31	8
" " " " " ,as % of total R&D expenditure	36.7	31.6				26.3	7
% of ICT exports on total exports	17.0	18.2	20.0	19.0			4

## 20. POLAND

The information society in Poland is still only developing slowly and for all benchmarking indicators Poland is close to the bottom of the EU ranking.

### **Broadband**

Broadband penetration in Poland, at 8.4% in January 2008, was the second lowest in EU27 and far below the average of 20%. Growth in 2007 was relatively slow with an annual increase of 3.2 percentage points. Coverage remains low. However, the number of households with a connection to the Internet is 41%, and of those the majority, 77%, are connected with broadband, which is consistent with the situation in most of the new Member States. Usage of online services is however growing only slowly.

### **Online Public Services**

For all online services, Poland's "*fully-available online*" indicator rose from 20% in 2006 to 25% in 2007. All progress was for services to citizens. In terms of online sophistication, Poland is also well below the EU average at 53%. None of the nine relevant services reach the fifth level of sophistication.

Take-up of eGovernment by citizens is half of the EU average, and only four percent use it to send filled in forms electronically. For businesses take-up is higher, at just one point below the EU average. However, they are well above the average when it comes to sending filled in forms electronically.

The activities planned for 2008-2013 aim to launch further services for citizens and enterprises and linking up the different public administration systems. The remodelling of the national data registers is also underway in order to simplify the administrative procedures for enterprises and citizens and create conditions for the development of integrated public services, mortgage register and other records (in line with *one-stop-shop system*).

### **ICTs in the Economy**

ICTs have a minimal impact on the Polish economy. Investment in R&D is very small as are exports of ICT products. In comparison to the low level of take-up of ICT in Poland, enterprise use of some e-business applications and e-commerce is relatively high.

Poland	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)		55	62	67		89	23
DSL coverage in rural areas (as % of total population)			52	55		72	17
Broadband penetration (as % of population)		1.4	2.7	5.2	8.4	20.0	26
DSL penetration (as % of population)		1.1	1.9	3.9	5.6	16.0	24
512 Kbps- up to 512 1 Mbps Kbps							
Predominant download speed							
% of households with an internet connection			30	36	41	54	20
Households with broadband as % of households with internet			51	60	72	77	19
% of enterprises with broadband access		28	43	46	53	77	26
<b>Internet Usage</b>							
% population who are regular internet users			29	34	39	51	21
Take up of internet services (as % of population)							
sending emails			24	27	32	48	22
looking for information about goods and services			18	25	27	47	24
Internet telephoning or videoconferencing			5	8	10	10	15
playing/downloading games and music			12	16	17	22	21
listening to the web radio/watching web tv			6	10	13	15	19
reading online newspapers/magazines			13	16	15	21	24
internet banking			6	9	13	25	19
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online				8	17	51	25
% basic public services for enterprises fully available online		25		38	38	72	25
% of population using e-Government services			13		15	30	24
of which for returning filled in forms			3		4	13	24
% of enterprises using e-Government services		74	64	61	64	65	18
of which for returning filled in forms		68	60	56	56	45	11
<b>e-Health</b>							
% of GPs with Broadband connection					32	48	22
% of GPs with secondary care connection					10	24	19
% of GPs using electronic networks for transfer of patient data					29	48	14
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises		3	4	6	6	11	13
% enterprises receiving internet orders		4	4	7	9	14	15
% enterprises purchasing on the internet		10	17	23	22	39	15
<b>e-business. % enterprises:</b>							
with integrated internal business processes		15	18	19	27	41	20
with integrated external business processes		10	6	5	6	14	24
using ERP systems					13	17	20
using analytical CRM					12	17	20
sending/receiving e-invoices					8	18	25
using digital signatures					17	16	13
using secure protocols for internet orders					2	5	16
using open sources operating systems					20	12	3
<b>Employment and Skills</b>							
% of the population with no internet skills			59	54	50	40	20
% of the population with low internet skills			22	22	24	29	
% of the population with medium internet skills			14	17	19	23	
% of the population with high internet skills			4	7	7	8	18
% of persons employed with ICT user skills.	14.6	15.1	14.8	15.0	14.9	18.2	23
% of persons employed with ICT specialist skills	2.7	2.8	2.7	2.8	2.9	3.1	14
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP	4.8	4.8				5.3	18
ICT sector share of total employment	2.2	2.2				3.8	19
ICT sector growth (constant prices).	4.2	8.3				4.6	3
ICT R&D expenditure by the business sector, as % of GDP	0.02	0.02				0.31	25
" " " " " " ,as % of total R&D expenditure	12.8	11.6				26.3	22
% of ICT exports on total exports	4.3	4.1	4.2	5.1			20

## 21. PORTUGAL

Portugal is fairly advanced in the information society with many benchmarking indicators above the EU average. A strong policy commitment to the information society has led to outstanding developments in eGovernment services and a wide availability of broadband networks as well as to a good relative position in eBusiness indicators.

### **Broadband**

Although fixed broadband penetration grew to 16.1% (January 2008), it was still below the EU average (20%). In fact, the Portuguese fixed broadband market has one of the lowest growth rates in the EU, but there are signs of a very dynamic mobile broadband penetration. Also predominant download speeds are among the highest in the EU. The distribution of lines per technology remained constant: DSL constitutes the highest percentage of broadband lines (62.6%), although cable (36.8%) is still a significant means of access.

Usage on online services is in general below the EU average and in 2007 the growth is somewhat mixed, but in general rather slow.

### **Online Public Services**

Overall, the “*fully available online*” indicator for Portugal has leapfrogged from 60% in 2006 to 90% in 2007 with most of this improvement due to a doubling of the score for citizen services. Services for enterprises reached 100% putting Portugal equal first in the EU. Portugal has also scored very highly in the online sophistication indicator and is 4<sup>th</sup> in the ranking. Five out of the nine relevant services reach the fifth level of sophistication.

Usage of eGovernment by citizens is still low, and has grown slowly over the years. Progress on specific applications has been reported, such as more than 60% of income tax declarations being filled in online in 2007. Businesses are good users of eGovernment, more so than the EU average. They are also fourth in terms of sending filled in forms electronically.

The Portuguese Government aims to achieve a modern and efficient public administration by defining a number of policy priorities, such as increasing the use of open source software by public sector bodies, generalising the use of Voice over Internet Protocol (VoIP) telephony, providing ICT training to every civil servant, and creating a central e-procurement website. The goal is that all ‘basic’ public services should be available online and free-of-charge by 2009.

### **ICTs in the Economy**

ICTs do not play a major role in the Portuguese economy. Investment in R&D is very small as are exports of ICT products. Enterprise take-up of broadband has grown but remains well below EU average though use of ICT tools and online services among enterprises has progressed but more than by citizens.

Portugal	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)	84	92	93	94		89	9
DSL coverage in rural areas (as % of total population)			79	84		72	8
Broadband penetration (as % of population)	4.8	8.1	11.6	13.9	16.1	20.0	17
DSL penetration (as % of population)	1.8	4.0	6.7	8.8	10.2	16.0	16
Predominant download speed				1-2 Mbps 2-8 Mbps			
% of households with an internet connection			31	35	40	54	21
Households with broadband as % of households with internet			63	68	77	77	17
% of enterprises with broadband access	31	49	63	66	76	77	15
<b>Internet Usage</b>							
% population who are regular internet users			28	31	35	51	22
Take up of internet services (as % of population)							
sending emails			26	29	33	48	21
looking for information about goods and services			26	30	33	47	21
Internet telephoning or videoconferencing			3	6	9	10	18
playing/downloading games and music			14	16	21	22	17
listening to the web radio/watching web tv			9	11	14	15	15
reading online newspapers/magazines			16	16	15	21	23
internet banking			8	10	12	25	22
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online	18	25		42	83	51	5
% basic public services for enterprises fully available online	63	63		88	100	72	1
% of population using e-Government services			14	17	19	30	19
of which for returning filled in forms			9	11	13	13	13
% of enterprises using e-Government services		57	58	60	72	65	16
of which for returning filled in forms	43	50	52	54	66	45	5
<b>e-Health</b>							
% of GPs with Broadband connection					32	48	22
% of GPs with secondary care connection					21	24	11
% of GPS using electronic networks for transfer of patient data					13	48	23
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises	2	5		8	7	11	11
% enterprises receiving internet orders	2	6	6	5	7	14	18
% enterprises purchasing on the internet		16	19	20	20	39	19
<b>e-business. % enterprises:</b>							
with integrated internal business processes	21	33	37	28	37	41	14
with integrated external business processes					26	14	2
using ERP systems					27	17	7
using analytical CRM					15	17	12
sending/receiving e-invoices					14	18	18
using digital signatures					6	16	25
using secure protocols for internet orders					2	5	20
using open sources operating systems					10	12	18
<b>Employment and Skills</b>							
% of the population with no internet skills			63	61	57	40	22
% of the population with low internet skills			20	22	16	29	
% of the population with medium internet skills			13	13	19	23	
% of the population with high internet skills			4	4	8	8	16
% of persons employed with ICT user skills.	12.1	13.4	12.4	12.2	11.7	18.2	25
% of persons employed with ICT specialist skills	2.2	2.1	2.2	2.7	2.8	3.1	18
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP	4.6	4.6				5.3	19
ICT sector share of total employment	1.6	1.7				3.8	21
ICT sector growth (constant prices).	0.1	1.5				4.6	18
ICT R&D expenditure by the business sector, as % of GDP	0.05	0.06				0.31	18
" " " " " ,as % of total R&D expenditure	21.1	21.9				26.3	16
% of ICT exports on total exports	7.2	6.9	7.4	7.9			13

## 22. ROMANIA

The information society is at a very early stage of development in Romania which is close to the bottom of the EU rankings for nearly all benchmarking indicators: connectivity, ICT usage by households, enterprise and government.

### **Broadband**

Despite the rapidly increasing broadband take-up (by almost 100% in 2007), broadband penetration in Romania is 9.8% (January 2008) which is 5th lowest in the EU27.

The low xDSL penetration ratio means numerous broadband platforms are being deployed and this gives hope for platform competition as a future driver of broadband growth.

The low take-up of broadband is reflected in usage of online services for which Romania is one of the lowest ranking countries.

### **Online Public Services**

Measured for the first time in 2007, 35% of the services in Romania are *fully available online*, with a very large difference between services for businesses and services for citizens. The *online sophistication* indicator scores 57%, and two out of nine relevant services reach the fifth level of sophistication.

Take-up of eGovernment is very low, particularly for citizens: only 5% have used eGovernment in 2007. Businesses fare better, but are still more than twenty points below the EU average.

eGovernment has been actively promoted in the last years in Romania, being considered the best way of organising public management in order to increase efficiency, transparency, accessibility and responsiveness to citizens, while reducing bureaucracy and corruption.

### **ICTs in the Economy**

ICTs still play a limited role in the Romanian economy. Enterprise connectivity to broadband was 37% in December 2007, one of the lowest figures in Europe and less than half the EU average. Low connectivity results in low levels of e-commerce and low use of e-business applications. The level of digital literacy and eSkills is also the lowest of the EU.

Romania	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)						89	
DSL coverage in rural areas (as % of total population)						72	
Broadband penetration (as % of population)				5.0	9.8	20.0	23
DSL penetration (as % of population)				0.5	1.7	16.0	27
Predominant download speed							
% of households with an internet connection				14	22	54	26
Households with broadband as % of households with internet				37	36	77	26
% of enterprises with broadband access		7		31	37	77	27
<b>Internet Usage</b>							
% population who are regular internet users				18	22	51	27
Take up of internet services (as % of population)							
sending emails				16	20	48	27
looking for information about goods and services				10	12	47	27
Internet telephoning or videoconferencing				2	4	10	26
playing/downloading games and music				11	12	22	27
listening to the web radio/watching web tv				4	6	15	27
reading online newspapers/magazines				7	9	21	27
internet banking				1	2	25	26
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online					8	51	27
% basic public services for enterprises fully available online					75	72	14
% of population using e-Government services				3	5	30	27
of which for returning filled in forms				1	2	13	27
% of enterprises using e-Government services		31		39	42	65	27
of which for returning filled in forms		12		13	20	45	26
<b>e-Health</b>							
% of GPs with Broadband connection					5	48	27
% of GPs with secondary care connection					1	24	26
% of GPS using electronic networks for transfer of patient data					11	48	24
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises				1	2	11	19
% enterprises receiving internet orders		2		2	3	14	25
% enterprises purchasing on the internet		2		6	9	39	25
<b>e-business. % enterprises:</b>							
with integrated internal business processes				18	23	41	22
with integrated external business processes				10	13	14	12
using ERP systems					15	17	17
using analytical CRM					14	17	16
sending/receiving e-invoices					15	18	14
using digital signatures					20	16	10
using secure protocols for internet orders					1	5	25
using open sources operating systems					8	12	24
<b>Employment and Skills</b>							
% of the population with no internet skills				76	71	40	27
% of the population with low internet skills				14	16	29	
% of the population with medium internet skills				7	10	23	
% of the population with high internet skills				2	2	8	27
% of persons employed with ICT user skills.			8.4	8.7	9.6	18.2	27
% of persons employed with ICT specialist skills			2.4	2.4	2.5	3.1	24
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP						5.3	
ICT sector share of total employment						3.8	
ICT sector growth (constant prices).						4.6	
ICT R&D expenditure by the business sector, as % of GDP						0.31	
" " " " " " ,as % of total R&D expenditure						26.3	
% of ICT exports on total exports	4.9	4.6	5.4	6.6			16



## 23. SLOVAKIA

The information society in Slovakia is still lagging behind in comparison to general developments in the EU with most of the benchmarking indicators below the EU average. However, Slovakia has strategic advantages for future developments: a strong ICT sector, a general high level of adoption of Internet by the population, and one of the fastest growth rates of regular Internet use. The slow development of broadband, however, remains a constraint.

### **Broadband**

Broadband penetration is at 8.8% (January 2008) only; the third lowest in EU27. Growth in 2007 was slow, reflecting low coverage. However, the source used here does not include mobile broadband and other sources suggest this may be significant in Slovakia. 46% of households are actually connected to the Internet and 57% of them through broadband. Enterprise broadband connectivity is at EU average. Usage of Internet services is rather high, especially usage of Internet telephoning/videoconferencing which is growing rapidly as in many of the other new Member States.

### **Online Public Services**

Slovakia scores 35% for *fully-online availability*, a substantial improvement from 2006. However, there is a large gap between full availability for citizens and for businesses. *Online sophistication* is nearly twenty points below the EU average, and again there is considerable difference between citizens and businesses.

Take-up by citizens is down by eight points from 2006, and at 24% it is below average. However, Slovakian businesses come fifth in the rankings.

Slovakia's "National Lisbon Strategy" stresses the role of eGovernment for increasing the country's competitiveness. The primary objective of computerising the public administration was to provide more effective services for citizens and the private sector; on the other hand, the time saved is invested in other productive activities.

### **ICTs in the Economy**

Slovakia benefits from a strong ICT sector and a particularly high number of specialist skills in the workforce even if research intensity in ICTs remains below the EU average. However ICTs do not yet have a great impact on the Slovakian economy: enterprises have a below average take-up rate for broadband and their use of e-business applications and e-commerce is correspondingly low. Basic ICT skills in the general population are also around the EU average.

Slovakia	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)	18	44	61	66		89	24
DSL coverage in rural areas (as % of total population)			25	30		72	20
Broadband penetration (as % of population)		1.0	2.6	5.2	8.8	20.0	25
DSL penetration (as % of population)		0.7	1.9	3.4	5.2	16.0	25
Predominant download speed					up to 512 Kbps		
% of households with an internet connection			23	27	46	54	16
Households with broadband as % of households with internet			31	43	57	77	23
% of enterprises with broadband access		25	48	61	76	77	16
<b>Internet Usage</b>							
% population who are regular internet users			43	43	51	51	13
Take up of internet services (as % of population)							
sending emails			42	42	50	48	11
looking for information about goods and services			30	33	39	47	17
Internet telephoning or videoconferencing			4	7	12	10	10
playing/downloading games and music			16	18	23	22	14
listening to the web radio/watching web tv			6	8	11	15	20
reading online newspapers/magazines			23	25	25	21	9
internet banking			10	13	15	25	18
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online		8		8	17	51	25
% basic public services for enterprises fully available online		25		38	63	72	17
% of population using e-Government services			27	32	24	30	16
of which for returning filled in forms			7	7	8	13	19
% of enterprises using e-Government services		47	57	77	85	65	5
of which for returning filled in forms		18	16	45	56	45	12
<b>e-Health</b>							
% of GPs with Broadband connection					15	48	26
% of GPs with secondary care connection					5	24	25
% of GPs using electronic networks for transfer of patient data					8	48	25
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises			0	0	3	11	15
% enterprises receiving internet orders		7	7		7	14	19
% enterprises purchasing on the internet		16	22		19	39	20
<b>e-business. % enterprises:</b>							
with integrated internal business processes		21	26	22	39	41	12
with integrated external business processes		7	9	10	13	14	13
using ERP systems					13	17	19
using analytical CRM					11	17	21
sending/receiving e-invoices					14	18	17
using digital signatures					21	16	9
using secure protocols for internet orders					2	5	18
using open sources operating systems					16	12	8
<b>Employment and Skills</b>							
% of the population with no internet skills			43	42	36	40	11
% of the population with low internet skills			39	34	34	29	
% of the population with medium internet skills			15	19	23	23	
% of the population with high internet skills			3	5	7	8	19
% of persons employed with ICT user skills.	15.0	15.7	15.4	15.4	15.5	18.2	22
% of persons employed with ICT specialist skills	2.7	3.0	3.2	3.3	3.6	3.1	8
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP	5.1	5.1				5.3	16
ICT sector share of total employment	4.0	4.1				3.8	9
ICT sector growth (constant prices).	5.8	6.2				4.6	6
ICT R&D expenditure by the business sector, as % of GDP	0.03	0.02				0.31	24
" " " " " " ,as % of total R&D expenditure	7.9	8.6				26.3	24
% of ICT exports on total exports	4.7	6.6	9.4	12.6			9

## 24. SLOVENIA

Slovenia is well advanced in the information society: many benchmarking indicators are significantly above the EU average, with a leading position for eGovernment services and significant increases in the last three years in ICT investment by firms.

### **Broadband**

Broadband penetration stands at 17.3% (January 2008), which is below the EU27 average of 20%. Growth in take-up is very much at the level of the EU average both among households and enterprises. The same can be said about the growth in the usage of online services perhaps with the exception of usage of online radio and TV, which grew rather fast from 2006 to 2007, and constitutes a good example that Slovenians are attracted to higher bandwidth consuming services.

### **Online Public Services**

90% of the basic public services in Slovenia have *full-online availability*, a remarkable increase compared to 2006, and a substantial increase for the second year. Availability of services to citizens is the 2<sup>nd</sup> highest in Europe and for services to enterprises it is the 5<sup>th</sup> highest. *Online sophistication* is now close to 100%. Seven out of nine services reach the fifth level of sophistication. What is remarkable in Slovenia's case is that citizens are better served than businesses.

### **ICTs in the Economy**

The economic picture is similar to the overall patterns noted above: slightly above average with some particular strengths but also weaknesses. Slovenia is generally above average in use of e-business applications and is in the top ten countries for e-commerce turnover. Broadband connectivity among enterprises is slightly better than the EU average. Skill levels both in the general population and the workforce are close to the EU average.

Slovenia	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)			55	88		89	17
DSL coverage in rural areas (as % of total population)			27	79		72	12
Broadband penetration (as % of population)	5.9	9.8	14.0	17.3	20.0	14	14
DSL penetration (as % of population)	3.8	6.5	9.7	12.3	16.0	14	14
Predominant download speed	512 Kbps- 512 Kbps- 1 Mbps 1 Mbps						
% of households with an internet connection			48	54	58	54	10
Households with broadband as % of households with internet			40	62	76	77	18
% of enterprises with broadband access	62	74	75	79	77	11	11
<b>Internet Usage</b>							
% population who are regular internet users			40	47	49	51	15
Take up of internet services (as % of population)							
sending emails			36	42	44	48	16
looking for information about goods and services			36	42	47	47	12
Internet telephoning or videoconferencing				4	9	10	17
playing/downloading games and music			24	21	25	22	12
listening to the web radio/watching web tv			10	15	23	15	6
reading online newspapers/magazines			20	24	23	21	12
internet banking			12	16	19	25	16
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online	50		58	92	51	2	2
% basic public services for enterprises fully available online	38		75	88	72	5	5
% of population using e-Government services		19	30	30	30	11	11
of which for returning filled in forms			6	6	13	20	20
% of enterprises using e-Government services	47	72	75	83	65	7	7
of which for returning filled in forms	36	45	49	61	45	7	7
<b>e-Health</b>							
% of GPs with Broadband connection					54	48	11
% of GPs with secondary care connection					17	24	13
% of GPS using electronic networks for transfer of patient data					23	48	17
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises				9	9	11	8
% enterprises receiving internet orders	11	9	12	10	14	13	13
% enterprises purchasing on the internet	26	26	22	24	39	14	14
<b>e-business. % enterprises:</b>							
with integrated internal business processes	21	20	20	33	41	17	17
with integrated external business processes	6	9	7	12	14	14	14
using ERP systems					28	17	6
using analytical CRM					14	17	17
sending/receiving e-invoices					7	18	26
using digital signatures					50	16	1
using secure protocols for internet orders					7	5	8
using open sources operating systems					13	12	10
<b>Employment and Skills</b>							
% of the population with no internet skills				46	41	40	14
% of the population with low internet skills			30	27	25	29	
% of the population with medium internet skills			17	19	23	23	
% of the population with high internet skills				8	10	8	10
% of persons employed with ICT user skills.	20.0	19.6	19.6	19.2	19.1	18.2	14
% of persons employed with ICT specialist skills	2.6	2.6	2.8	3.0	3.1	3.1	12
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP	5.2	5.2				5.3	12
ICT sector share of total employment	3.6	3.6				3.8	13
ICT sector growth (constant prices).	6.9	5.3				4.6	7
ICT R&D expenditure by the business sector, as % of GDP	0.16	0.15				0.31	11
" " " " " ,as % of total R&D expenditure	19.2	15.8				26.3	18
% of ICT exports on total exports	4.4	4.2	3.7	3.6			25

## 25. SPAIN

Spain is fairly advanced in the information society, with many benchmarking indicators above the EU average, notably in the area of eGovernment services and availability of broadband networks. However general ICT usage by businesses and households is still below the EU average and progress is slow.

### **Broadband**

The number of broadband lines has continued to grow during the last year though at a slower pace than the EU average: broadband penetration increased from 15.2% in December 2006 to 18.3% in January 2008, but this is below the EU27 average (20%). Almost four out of five broadband lines are DSL and the other main technology platform used is cable. While households are connected to the Internet on a lower level than the rest of the EU, Spanish enterprises enjoy a high level of broadband connections, second in the EU. Usage on online services is very much at the level of the EU average. Online gaming, music and newspapers are among the most popular activities.

### **Online Public Services**

Spain performed above the EU27 average in almost all areas measured in the 2007 survey of online services, a considerable advance after a period of limited progress. Overall, the **fully-online availability** score is 70%, a significant step up compared to last year's 55%. **Sophistication** of online services is also above the EU average.

In terms of take-up, however, Spain's performance is still slightly below the average with no noticeable growth over the past years.

Reaching a fully developed eGovernment is among the key objectives of Plan Avanza, Spain's Information Society Strategy. The Spanish government has opted for of a user-centric eGovernment that also overcomes the most serious problems faced by eServices that are offered by Spanish administrations: their uneven development and quality as well as their lack of integration when these services are offered by different administrations or departments.

### **ICTs in the Economy**

The indicators reveal an economy that is generally lagging behind in use of ICTs, with low take-up of e-commerce or use of e-business applications. Broadband connectivity of enterprises is, however, 90% which is the second highest proportion in Europe. ICT skills in the Spanish population and the workforce are similar to the EU average.

Spain	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)	85	87	89	90		89	13
DSL coverage in rural areas (as % of total population)			82	86		72	7
Broadband penetration (as % of population)	5.3	8.0	11.7	15.2	18.3	20.0	12
DSL penetration (as % of population)	4.0	6.1	9.1	12.0	14.4	16.0	11
Predominant download speed	512 Kbps- 512 Kbps- 1 Mbps 1 Mbps						
% of households with an internet connection			36	39	45	54	17
Households with broadband as % of households with internet			58	75	88	77	5
% of enterprises with broadband access	51	72	76	87	90	77	2
<b>Internet Usage</b>							
% population who are regular internet users			35	39	44	51	18
Take up of internet services (as % of population)							
sending emails			34	37	42	48	17
looking for information about goods and services			33	38	42	47	15
Internet telephoning or videoconferencing			4	6	8	10	21
playing/downloading games and music			20	23	25	22	11
listening to the web radio/watching web tv			24		17	15	12
reading online newspapers/magazines					24	21	10
internet banking			14	15	16	25	17
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online	33	33		33	58	51	9
% basic public services for enterprises fully available online	75	88		88	88	72	5
% of population using e-Government services				25	26	30	13
of which for returning filled in forms			6	7	8	13	17
% of enterprises using e-Government services	44	50	55	58	58	65	19
of which for returning filled in forms	26	32	35	38	38	45	19
<b>e-Health</b>							
% of GPs with Broadband connection					36	48	19
% of GPs with secondary care connection					30	24	9
% of GPs using electronic networks for transfer of patient data					37	48	12
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises	2	3	3	7	9	11	9
% enterprises receiving internet orders	1	2	2	8	8	14	17
% enterprises purchasing on the internet		9	10	16	18	39	22
<b>e-business. % enterprises:</b>							
with integrated internal business processes	36	13	26	33	30	41	19
with integrated external business processes	8	5	8	13	11	14	16
using ERP systems					13	17	21
using analytical CRM					15	17	9
sending/receiving e-invoices					9	18	24
using digital signatures					26	16	6
using secure protocols for internet orders					2	5	19
using open sources operating systems					7	12	27
<b>Employment and Skills</b>							
% of the population with no internet skills				49	44	40	16
% of the population with low internet skills				27	23	29	
% of the population with medium internet skills				20	25	23	
% of the population with high internet skills				4	8	8	12
% of persons employed with ICT user skills.	15.3	15.7	15.6	15.5	15.8	18.2	21
% of persons employed with ICT specialist skills	2.4	2.7	2.6	2.7	2.9	3.1	17
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP	4.1	4.0				5.3	20
ICT sector share of total employment	2.5	2.5				3.8	17
ICT sector growth (constant prices).	2.7	2.8				4.6	15
ICT R&D expenditure by the business sector, as % of GDP	0.08	0.08				0.31	17
" " " " " " ,as % of total R&D expenditure	14.3	14.3				26.3	19
% of ICT exports on total exports	5.0	4.6	4.6	4.4			22

## 26. SWEDEN

Sweden is among the top nations for information society development and is firmly within the group of leading countries in European Union. It also has a competitive and dynamic ICT sector.

### **Broadband**

In January 2008, Swedish broadband penetration in terms of lines per 100 inhabitants was 31.2%, the fourth highest figure in the EU. Broadband connectivity of enterprises showed no growth, which is similar to the other Nordic countries, perhaps indicating it has reached a level of saturation. This might also explain the lack of growth in the usage of online services. From 2006 to 2007 usage actually declined in the low bandwidth consuming services like emails, search for goods and services, but a small growth was reported in high bandwidth consuming services like online TV, radio, games and music.

### **Online Public Services**

75% of the services to citizens and to businesses in Sweden are *fully available online*. Sweden's advancement over recent years has been minimal and it has dropped from its leading position in earlier years. This decline appears to be due to a fall in the availability of services to enterprises. *Online sophistication* of public services scores 87%. Four of the nine relevant services reach the fifth level of sophistication. Take-up in Sweden is in line with the results above. Usage by citizens and businesses is firmly above the average, including the sending of filled in forms electronically.

The goal of the Swedish Government is to establish a Public Administration which is open the 24 hours. An important aim is also to strengthen democracy by enhanced transparency and citizen participation in the policy-making and decision-making processes. Also, a multi-channel approach should be offered, and websites must have a design and a language that ensures access for everyone.

### **ICT in the Economy**

Sweden has a large ICT sector and is one of the leading countries for use of ICT in the economy. The importance of ICT to business is underlined by the high proportion of ICT specialists in the work force and by the very high levels of expenditure on R&D, the second highest in Europe as a percentage of GDP. Enterprise broadband connectivity rate is nearly 90% and Sweden is one of Europe's leaders in e-commerce. It is also above average in use of nearly all e-business applications. Against this background, it is perhaps surprising that the level of Internet skills in the general population is not higher. There are less than average numbers with no Internet skills but an excess of people with low skills and only average numbers with medium and high skills.





## 27. UNITED KINGDOM

The United Kingdom is one of the best performing countries in Europe, with most of the benchmarking indicators above the EU average. Progress is also very fast in areas where the UK has a relative comparative advantage, namely the supply of eGovernment services and the use of Internet by households.

### **Broadband**

The UK broadband market has seen another year of solid growth. The total number of fixed broadband lines increased to approximately 14.5 million in July 2007, and by January 2008, broadband penetration was 25.7%, position 5 among the EU27. Although growth in 2007 was impressive, it was less than in 2006 but it remains above the EU average.

The same might be said for growth in the usage of online services which is rather limited. In general, usage is above EU average except for Internet telephony/videoconferencing where the rapid growth in usage in some new Member States has pushed the UK down below the average.

### **Online Public Services**

Overall, 89% of the basic public services in the UK are *fully available online*, which is a marked improvement over 2006 particularly in services to enterprises. *Online sophistication* of public services scores 90% targetisation. Four of the nine relevant services reach the fifth level of sophistication, one more than the EU average. Take-up by citizens is slightly above the EU average. Businesses, however, lag behind in using eGovernment: 54% do so, against a 65% EU average.

The UK government strategy is about better using technology to deliver public services and policy outcomes that have an impact on citizens' daily lives: through greater choice and personalisation, delivering better public services, such as health, education and pensions; benefiting communities by reducing burdens on front line staff and giving them the tools to help break cycles of crime and deprivation; and improving the economy through better regulation and leaner government.

### **ICTs in the Economy**

The economic aspects of information society are not quite as well developed as broadband and public services. Investment in ICT research is below the EU average. The UK also generally lags behind in use of e-business applications. e-commerce, however, is a strength and the UK is the second highest country for e-commerce turnover. There are slightly higher levels of ICT skills in the work force but the population skill levels are close to the EU average.

United Kingdom	2003	2004	2005	2006	2007	EU27	rank
<b>Broadband</b>							
Total DSL coverage (as % of total population)	85	95	99	99		89	4
DSL coverage in rural areas (as % of total population)			95	95		72	6
Broadband penetration (as % of population)	5.3	10.2	16.5	21.7	25.7	20.0	5
DSL penetration (as % of population)	3.0	7.0	12.1	16.6	20.1	16.0	7
Predominant download speed				1-2 Mbps	1-2 Mbps		
% of households with an internet connection			60	63	67	54	7
Households with broadband as % of households with internet			52	70	85	77	9
% of enterprises with broadband access	27	50	65	77	78	77	13
<b>Internet Usage</b>							
% population who are regular internet users			54	57	65	51	6
Take up of internet services (as % of population)							
sending emails			57	53	61	48	7
looking for information about goods and services			57	55	62	47	7
Internet telephoning or videoconferencing			5	7	8	10	20
playing/downloading games and music			23	24	26	22	10
listening to the web radio/watching web tv			15	15	18	15	10
reading online newspapers/magazines			24	23	22	21	15
internet banking			27	28	32	25	10
<b>eGovernment Indicators</b>							
% basic public services for citizens fully available online	55	60		80	91	51	4
% basic public services for enterprises fully available online	43	57		57	88	72	5
% of population using e-Government services			24		38	30	8
of which for returning filled in forms			5		18	13	7
% of enterprises using e-Government services		34	39	52	54	65	22
of which for returning filled in forms	7	12	19	38	40	45	18
<b>e-Health</b>							
% of GPs with Broadband connection					73	48	6
% of GPs with secondary care connection					52	24	5
% of GPs using electronic networks for transfer of patient data					91	48	4
<b>e-Commerce</b>							
e-commerce as % of total turnover of enterprises	12	14	16	17	19	11	2
% enterprises receiving internet orders	9	13	15	19	17	14	8
% enterprises purchasing on the internet		45	54	62	59	39	4
<b>e-business. % enterprises:</b>							
with integrated internal business processes		34	10	15	34	41	16
with integrated external business processes		10	9	11	19	14	4
using ERP systems					8	17	25
using analytical CRM					13	17	19
sending/receiving e-invoices					15	18	16
using digital signatures					0	16	27
using secure protocols for internet orders					9	5	3
using open sources operating systems					7	12	26
<b>Employment and Skills</b>							
% of the population with no internet skills				39	29	40	7
% of the population with low internet skills				38	41	29	
% of the population with medium internet skills				18	22	23	
% of the population with high internet skills			7	5	8	8	13
% of persons employed with ICT user skills.	24.3	24.1	24.6	24.7	24.9	18.2	2
% of persons employed with ICT specialist skills	3.2	3.2	3.2	3.2	3.2	3.1	11
<b>Indicators on growth of ICT sector and R&amp;D</b>							
ICT sector share of total GDP	6.8	6.7				5.3	6
ICT sector share of total employment	4.8	4.5				3.8	7
ICT sector growth (constant prices).	4.6	4.6				4.6	9
ICT R&D expenditure by the business sector, as % of GDP	0.30	0.25				0.31	10
" " " " " " ,as % of total R&D expenditure	26.7	23.4				26.3	13
% of ICT exports on total exports	11.8	8.0	10.1	13.5			8

## 28. ICELAND

In most connectivity and citizen use indicators, Iceland is the most advanced country in Europe. However, the development of eGovernment services does not match the overall development of information society in the country.

### Broadband

Information on Iceland is limited as it is not covered by several of the main sources used in these country profiles. Results that are available show nearly all Icelandic households have a computer and access to the Internet. In 2007, 89% of the households had a computer and 84% of the households had access to the Internet and of those 91% had a broadband connection, meaning narrowband has almost become obsolete. Usage of online services is very high and they lead Europe in use of many of these services.

### Online Public Services

Iceland has achieved an overall 68% *online sophistication*, with 50% *fully-online availability*, remaining in 2nd quartile position. Compared to other indicators these are amongst the lowest levels achieved and availability is below the EU27 average for services to citizens and to businesses. Four out of the nine relevant services reach the fifth level of sophistication. However, usage by citizens is very high, almost twice the EU average. There is no data on take-up by enterprises for 2007, but it is worth recalling that in 2006 an impressive 95% of firms used eGovernment, 81% of them for sending filled in forms.

### ICTs in the Economy

Limited economic information is available for Iceland and the indicators that are measured confirm the generally strong information society development. Enterprise broadband connectivity is very high and skills levels in the general population are high with over half having either high or medium skill levels.

Iceland	2003	2004	2005	2006	2007	EU27
<b>Broadband</b>						
Total DSL coverage (as % of total population)	90	92	92	92		89
DSL coverage in rural areas (as % of total population)			79	79		72
Broadband penetration (as % of population)						20.0
DSL penetration (as % of population)						16.0
Predominant download speed					512 Kbps- 1 Mbps	
% of households with an internet connection			84	83	84	54
Households with broadband as % of households with internet			75	87	91	77
% of enterprises with broadband access	20			95		77
<b>Internet Usage</b>						
% population who are regular internet users			81	84	86	51
Take up of internet services (as % of population)						
sending emails			75	77	80	48
looking for information about goods and services			73	76	78	47
Internet telephoning or videoconferencing			14	18	22	10
playing/downloading games and music			29	34	36	22
listening to the web radio/watching web tv			31	43	48	15
reading online newspapers/magazines			65	67	67	21
internet banking			61	67	72	25
<b>eGovernment Indicators</b>						
% basic public services for citizens fully available online	18	36		36	42	51
% basic public services for enterprises fully available online	43	71		63	63	72
% of population using e-Government services			55	61	59	30
of which for returning filled in forms			20	27	19	13
% of enterprises using e-Government services	97			95		65
of which for returning filled in forms	63			81		45
<b>e-Health</b>						
% of GPs with Broadband connection					86	48
% of GPs with secondary care connection					50	24
% of GPs using electronic networks for transfer of patient data					60	48
<b>e-Commerce</b>						
e-commerce as % of total turnover of enterprises	6			8		11
% enterprises receiving internet orders	6			29		14
% enterprises purchasing on the internet				60		39
<b>e-business. % enterprises:</b>						
with integrated internal business processes	31			41		41
with integrated external business processes	9			10		14
using ERP systems						17
using analytical CRM						17
sending/receiving e-invoices						18
using digital signatures						16
using secure protocols for internet orders						5
using open sources operating systems						12
<b>Employment and Skills</b>						
% of the population with no internet skills			17	13	12	40
% of the population with low internet skills			37	35	31	29
% of the population with medium internet skills			32	36	37	23
% of the population with high internet skills			13	16	20	8
% of persons employed with ICT user skills.						18.2
% of persons employed with ICT specialist skills						3.1
<b>Indicators on growth of ICT sector and R&amp;D</b>						
ICT sector share of total GDP						5.3
ICT sector share of total employment						3.8
ICT sector growth (constant prices).						4.6
ICT R&D expenditure by the business sector, as % of GDP						0.31
" " " " " ,as % of total R&D expenditure						26.3
% of ICT exports on total exports						

## 29. NORWAY

Norway is placed among the top nations for information society development and is firmly within the group of leading countries in Europe, in particular for broadband connectivity and usage of Internet by citizens.

### **Broadband**

Norway is one of the most advanced countries for Internet connectivity and 86% of households connected have broadband. Its status as one of the world's leading Internet countries is reflected in high figures for regular use of the more advanced content. Although not included in the EU rankings presented here, Norway would be in the top four for all but one of the activities questioned in the Community ICT survey of households.

### **Online Public Services**

Following a strong increase in 2006, the “*fully available online*” indicator for Norway increased moderately in 2007, suggesting that fewer new initiatives have been implemented on the level of online public service delivery. Norway drops one place in the overall ranking and now stands in 6th position. Services to enterprises are a particular weakness. *Online sophistication* for Norway, based is 10% above the average. Four out of the nine relevant services reach the fifth level of sophistication.

Norwegian citizens are the most avid eGovernment users, at twice the EU average they come top of the league. 26% of them used it to send filled in forms, again twice the EU average. Scores for businesses are solid, but not as remarkable: 71% of them have used eGovernment in 2007, above the average but down three points from 2006.

The Norwegian government's aims for eGovernment are two-fold. On the one hand the users should be offered an open, accessible and consistent public sector featuring integrated and fully digital services. On the other hand resources should be freed up and used more effectively through ICT in order to strengthen public welfare provisions, while reducing administrative burdens.

### **ICTs in the Economy**

Limited economic information is available for Norway and the indicators that are measured confirm the generally strong information society development. Enterprises have a steadily growing and high broadband connectivity rate and lead Europe in e-commerce and use of many e-business applications. ICT skills in the general population are high.

Norway	2003	2004	2005	2006	2007	EU27
<b>Broadband</b>						
Total DSL coverage (as % of total population)	68	82	88	91		89
DSL coverage in rural areas (as % of total population)			83	86		72
Broadband penetration (as % of population)	6.2		18.1	24.3	29.1	20.0
DSL penetration (as % of population)	4.7		14.7	19.4	22.2	16.0
Predominant download speed 1-2 Mbps						
% of households with an internet connection			64	69	78	54
Households with broadband as % of households with internet			65	83	86	77
% of enterprises with broadband access	47	60	78	86	85	77
<b>Internet Usage</b>						
% population who are regular internet users			74	77	81	51
Take up of internet services (as % of population)						
sending emails			68	72	76	48
looking for information about goods and services			67	74	76	47
Internet telephoning or videoconferencing			8	13	12	10
playing/downloading games and music			26	37	35	22
listening to the web radio/watching web tv			24	34	37	15
reading online newspapers/magazines			60	65		21
internet banking			62	67	71	25
<b>eGovernment Indicators</b>						
% basic public services for citizens fully available online	40	40		60	80	51
% basic public services for enterprises fully available online	57	75		88	75	72
% of population using e-Government services			52	57	60	30
of which for returning filled in forms			21	28	26	13
% of enterprises using e-Government services	65	69	84	74	71	65
of which for returning filled in forms	23	40	59	62	61	45
<b>e-Health</b>						
% of GPs with Broadband connection						48
% of GPs with secondary care connection					76	24
% of GPs using electronic networks for transfer of patient data						48
<b>e-Commerce</b>						
e-commerce as % of total turnover of enterprises	6	8	15	14	18	11
% enterprises receiving internet orders	12	20	20	25	31	14
% enterprises purchasing on the internet		47	57	66	66	39
<b>e-business. % enterprises:</b>						
with integrated internal business processes	31	30	34	34	37	41
with integrated external business processes	10	12	13	15	18	14
using ERP systems					12	17
using analytical CRM					18	17
sending/receiving e-invoices					29	18
using digital signatures					9	16
using secure protocols for internet orders					13	5
using open sources operating systems					7	12
<b>Employment and Skills</b>						
% of the population with no internet skills			23	20	15	40
% of the population with low internet skills			39	35	38	29
% of the population with medium internet skills			28	30	32	23
% of the population with high internet skills			9	14	14	8
% of persons employed with ICT user skills.						18.2
% of persons employed with ICT specialist skills						3.1
<b>Indicators on growth of ICT sector and R&amp;D</b>						
ICT sector share of total GDP						5.3
ICT sector share of total employment						3.8
ICT sector growth (constant prices).						4.6
ICT R&D expenditure by the business sector, as % of GDP						0.31
" " " " " ,as % of total R&D expenditure						26.3
% of ICT exports on total exports						

## DEFINITIONS AND SOURCES

### Broadband

**Total DSL coverage (as % of total population)** - Source: European Commission, Broadband coverage in Europe (January 2007). Estimations for the EU include IS and NO.

**DSL coverage in rural areas (as % of total population)** - Source: European Commission, Broadband coverage in Europe (January 2007). Estimations for the EU include IS and NO.

**Broadband penetration:** number of total subscriptions to broadband connections (households, enterprises, public sector) by platform (DSL, all others) divided by the number of inhabitants. 3G subscriptions are not included in the total. Source: Communications Committee (COCOM) (1 January 2008). FR, NL, AT, EE, LT: data as at 1 October 2007. NO at 1<sup>st</sup> July 2007. For 2003 and 2005, data is at 31<sup>st</sup> December for all the countries except for NO (1<sup>st</sup> July). Note that COCOM data does not include mobile broadband connections.

**Predominant speed** – Source: European Commission, Broadband coverage in Europe (31<sup>st</sup> December 2006).

**% of households with an Internet connection** - Source: Eurostat survey on ICT use by households

**% of households having broadband as % of all households having access to the Internet** - Source: Eurostat survey on ICT use by households

**% of enterprises with broadband access** – Non-financial enterprises only. Source: Eurostat survey on ICT use by enterprises.

**Number of 3G subscribers per 100 inhabitants** - Source: European Commission, Broadband coverage in Europe (January 2007).

### Internet usage

**% of population who are regular Internet users** - Regular use is at least once per week. Source: Eurostat survey on ICT use by households.

**% of population using the Internet for specific activities** - Activities: sending emails, looking for information about goods and services, Internet phoning/videoconferencing, etc. Eurostat survey on ICT use by households.

### Places of Access

**% of individuals who have accessed the Internet in the last three months, by place of access** (multiple answers allowed) – At home, at work, at educational place and PIAP. Source: Eurostat survey on ICT use by households.

## **eGovernment indicators**

**% of basic services fully available online (for households and enterprises)** - A public service is considered fully online when the publicly accessible website offers the possibility to completely treat the public service via the website, including decision and delivery. No other formal procedure is necessary for the applicant via "paperwork". Source: *The User Challenge. Benchmarking the Supply of Online Public Services*, European Commission. Data for September 2007

**% of population using eGovernment services (in the last three months)** – Source: Eurostat survey on ICT use by households.

**% of population using eGovernment services for sending filled forms (in the last three months)** – Source: Eurostat survey on ICT use by households.

**% of enterprises using eGovernment services (in the last year)** – Non financial enterprises. Source: Eurostat survey on ICT use by enterprises.

**% of enterprises using eGovernment services for sending filled forms (in the last year)** – Non financial enterprises. Source: Eurostat survey on ICT use by enterprises.

## **e-Health**

**%GPs with Broadband connection** – Source: *ICT use among General Practitioners in Europe* European Commission 2008

**%GPs with secondary care connection** – Source: *ICT use among General Practitioners in Europe* European Commission 2008

**%GPs electronically transferring patient data** – Source: *ICT use among General Practitioners in Europe* European Commission 2008

## **e-Commerce**

*All the data presented in this section refer to the total of non financial enterprises.*

**e-Commerce as % of total turnover of enterprises** - Non financial enterprises. Turnover on the Internet or via other external computer mediated network as % of the total turnover of enterprises. Source: Eurostat survey on the ICT use by enterprises.

**% of enterprises receiving orders/purchasing on the Internet** - Non financial enterprises. % of enterprises receiving orders/purchasing on the Internet. Source: Eurostat survey on the ICT use by enterprises.

## **e-Business**

*All the data presented in this section refer to the total of non financial enterprises.*

**% of enterprises with integrated internal business processes** – % of enterprises having software applications for managing orders linked to other internal IT application. Source: Eurostat survey on ICT use by enterprises. Source: Eurostat survey on ICT use by enterprises.



**% of enterprises with integrated external business processes** – Non financial enterprises. % of enterprises having software applications for managing orders linked to IT systems of customers/suppliers. Source: Eurostat survey on ICT use by enterprises.

**% of enterprises using ERP systems** - % of enterprises having use of, in January 2007, an Enterprise Resource Planning (ERP) software package to share information on sales and purchases with other internal functional areas (for example, finance, planning, marketing, etc. ERP consists of one or of a set of software applications that integrate information and processes across the several business functions of the enterprise. Source: Eurostat survey on ICT use by enterprises.

**% of enterprises using analytical CRM** - % of enterprises having use of, in January 2007, any software application for making analysis of the information about clients for marketing purposes (this is commonly referred to as Customer Relationship Management, e.g. to set prices, make sales promotion, choose distribution channels, etc.). Source: Eurostat survey on ICT use by enterprises.

**% of enterprises sending/receiving e-invoices** - % of enterprises, in January 2007, sending/receiving e-invoices in a digital format which allows its automatic processing. Source: Eurostat survey on ICT use by enterprises.

**% of enterprises using digital signature** - % of enterprises, in January 2007, using a digital signature in any message sent, i.e. using encryption methods that assure the authenticity and integrity of the message (uniquely linked to and capable of identifying the signatory and

where any subsequent change to the message is detectable). Source: Eurostat survey on ICT use by enterprises.

**% of enterprises using secure protocols for Internet orders** - % of enterprises, in January 2007, using a secure protocol, such as SSL and TLS, for the reception of orders via Internet, in January 2007. Source: Eurostat survey on ICT use by enterprises.

**% of enterprises using open source operating systems**- % of enterprises, in January using third party free or open source operating systems, such as Linux (i.e. with its source code available, no copyright cost, and the possibility to modify and/or (re)distribute it) Source: Eurostat survey on ICT use by enterprises.

### **Employment and Skills**

**% of population with no/low/medium/high Internet skills** - Based on the answer to the following question: which of the following Internet related activities have you already carried out? [Copying or moving a file or folder / Using copy and paste tools to duplicate or move information within a document / Using basic arithmetic formulas in a spreadsheet / Compressing (or zipping) files / Connecting and installing new devices, e.g. a printer or a modem / Writing a computer program using a specialised programming language / Connecting computers to a local area network / Detect and solve computer problems (e.g. computer runs slowly)]

No Internet skills (none of the above) Note: ranking for this indicator is inverted (lowest =1)

Low Internet skills (1 or 2 activities)

Medium Internet skills (3 or 4 activities)

High Internet skills (5 or 6 activities)

Source: Eurostat survey on ICT use by households.

**% of persons employed with ICT user skills** - Based on the OECD definition of ICT user (basic + advanced) skills. Source: Eurostat Labour Force Survey

**% of persons employed with ICT specialist skills** - Based on the OECD definition of ICT specialist skills. Source: Eurostat Labour Force Survey.

*ICT specialists*: they have the ability to develop, operate and maintain ICT systems. ICTs constitute the main part of their job – they develop and put in place the ICT tools for others.

*Advanced users*: competent users of advanced, and often sector-specific, software tools. ICTs are not the main job but a tool.

*Basic users*: competent users of generic tools (*e.g.* Word, Excel, Outlook, PowerPoint) needed for the information society, eGovernment and working life. Here too, ICTs are a tool, not the main job.

### **Indicators on the growth of ICT sector and R&D**

**Growth of the value added by the ICT producing sector, in real terms (at constant prices)** – ICT sector including Postal services. EU-25 instead of EU-27 (not available) Source: own estimation from the EU KLEMS database.

**ICT sector share on total employment and value added** – ICT sector including Postal services. EU-25 instead of EU-27 (not available) Source: own estimation from the EU KLEMS database.

**Share of ICT R&D performed by the business sector as % of GDP and as % of total business expenditure in R&D.** – EU-25 instead of EU-27 (not available). Source: IPTS (European Commission) – Redict project.

**% of ICT exports on total exports**: data for Imports and Exports of goods are from the COMEXT database; data for services are from Balance of Payments statistics. Share of all Exports and Imports is calculated comparing the previously mentioned data with data from National Accounts Exports and Imports. Source: Eurostat.