



COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 30.3.2007
SEC(2007) 395

Volume 3

COMMISSION STAFF WORKING DOCUMENT

Accompanying document to the

**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL
COMMITTEE AND THE COMMITTEE OF THE REGIONS**

i2010 - Annual Information Society Report 2007

{COM(2007) 146 final}

COMMISSION STAFF WORKING DOCUMENT
Volume 3

ICT Country Profiles

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INTRODUCTION

This Commission Staff Working Document is presented as background to the i2010 Annual Information Society Report for 2007 and contains profiles of each Member State and the other countries associated with the i2010 initiative. It complements the analysis and policy proposals of the i2010 Communication and the 2005 Annual Report for 2006. It provides a summary of the latest information society statistics with a view to assisting National policy makers and other stakeholders in monitoring development and identifying strengths and weaknesses. Statistical data is placed in context with a brief summary of ICT priorities in the National Reform Programmes submitted as part of the Lisbon Strategy¹. (See the i2010 Annual Information Society Report 2007 for a longer discussion of the contribution of ICT to the Lisbon Process).

The main sources of data are the Eurostat Community Surveys of Households and Individuals, and of Enterprises. These were carried out by National Statistical Institutes in the first quarter of 2006. Note that the EU at that time consisted of 25 Member States and reference to the EU in these tables is EU25. Where data is available for EU27 this is specified explicitly. The official statistics from Eurostat are complemented by reports from a series of studies financed by the MODINIS programme. All such reports are available from the i2010 website (<http://ec.europa.eu/i2010>). A full list of the indicators used and their sources is given below.

DEFINITION OF INDICATORS

EU25: Data for EU25 (all variables) refer to 2006 or last available year.

Broadband

Total DSL coverage: the percentage of the total population depending on a Local Exchange equipped with a DSLAM (Digital Subscriber Line Access Multiplexer). Source: *Broadband coverage in Europe* Commission Services², (December 2005).

DSL coverage in rural areas: in those areas with a population density lower than 100 inhabitants/km² - Source: *Broadband coverage in Europe* Commission Services², (December 2005).

Broadband penetration: total number of broadband subscriptions on 1 October 2006 by platform (DSL, all others) divided by the number of inhabitants. All subscriptions included whether to households, enterprises or public sector; 3G subscriptions are not included. Source: Communications Committee (COCOM) (October 2006).

Predominant speed – The most widely used download rate in each Member State. Source: *Broadband coverage in Europe* Commission Services², (December 2005).

¹ The European Council of March 2005 re-launched the Lisbon Strategy by focusing on jobs and growth in Europe. Member States outlined their contribution to the strategy with a summary of their economic reform efforts in National Reform Programmes (autumn 2005) which have been updated in Implementation Reports (autumn 2006) and Progress Reports (December 2006), (All are available from: http://ec.europa.eu/growthandjobs/index_en.htm)

² All Commission Services Reports are available from <http://ec.europa.eu/i2010>

Number of 3G subscribers per 100 inhabitants - Source: *Broadband coverage in Europe* Commission Services², (January 2006).

Households having broadband as % of all households having access to the Internet - Source: Eurostat, Community Survey of ICT use in households and by individuals, 2006³.

% of enterprises with broadband access - Source: Eurostat, Community Survey on the ICT use in enterprises³.

Households with digital Television (free and pay) as a percentage of all television households – Source: *Interactive content and convergence: Implications for the Information Society* Commission Services (2006).²

Music: number of single downloads per 100 inhabitants – Source: *Interactive content and convergence: Implications for the Information Society*, Commission Services, (2006).²

Internet usage

% of population who are regular Internet users - Regular use is at least once per week. Source: Eurostat, Community Survey of ICT use in households and by individuals, 2006.³

% of population using the Internet for specific activities - Activities: sending emails, looking for information about goods and services, Internet phoning/videoconferencing, etc. Source: Eurostat, Community Survey of ICT use in households and by individuals, 2006.³

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. As % of total population 16-74 years old. Source: Eurostat, Community Survey of ICT use in households and by individuals, 2006.³

eGovernment indicators

% of basic services fully available online (for households and enterprises) – 'Basic' covers the 20 public services most frequently used by households/citizens (12) and enterprises (8). A service is considered fully online when the publicly accessible website offers the possibility to completely treat the service via the website, including decision and delivery. No other formal procedure is necessary for the applicant via "paperwork". Source: *Online Availability of Public Services: How is Europe Progressing?* Commission Services (2006).²

% of population using eGovernment services (in the last three months) – Source: Eurostat, Community Survey of ICT use in households and by individuals, 2006.³

% of population using eGovernment services for sending filled forms (in the last three months) – Source: Eurostat, Community Survey of ICT use in households and by individuals, 2006.³

% of enterprises using eGovernment services (in the last year) – Source: Eurostat, Community Survey on the ICT use in enterprises, 2006.³

³ Eurostat surveys available from <http://ec.europa.eu/eurostat>

% of enterprises using eGovernment services for sending filled forms (in the last year) –
Source: Eurostat, Community Survey on the ICT use in enterprises, 2006.³

ICT in schools

Number of computers connected per 100 pupils -. Only includes computers at schools available to students for educational purposes. Source: *Benchmarking Access and Use of ICT in European Schools (Head teacher Survey)*, Commission Services, (2006).²

% of schools with broadband access - Source: *Benchmarking Access and Use of ICT in European Schools (Head teacher Survey)*, Commission Services, (2006).²

% of teachers having used the computer in class during the last 12 months - Source: *Benchmarking Access and Use of ICT in European Schools, (Classroom teacher Survey)*, Commission Services, (2006).²

eCommerce

eCommerce as % of total turnover of enterprises - Turnover on the Internet or via other external computer mediated network as % of the total turnover of enterprises. Source: Eurostat, Community Survey on the ICT use in enterprises, 2006.³

% of enterprises receiving orders/purchasing on the Internet - % of enterprises receiving orders/purchasing on the Internet. Source: Eurostat, Community Survey on the ICT use in enterprises, 2006.³

eBusiness

% 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 the ICT use by enterprises. Source: Eurostat, Community Survey on the ICT use in enterprises, 2006.³

% of enterprises with integrated external business processes – % of enterprises having software applications for managing orders linked to IT systems of customers/suppliers. Source: Eurostat, Community Survey on the ICT use in enterprises, 2006.³

% of enterprises with secure servers - % of enterprises using a secure protocol, such as SSL (Secure Socket Layer) and TLS (Transport Layer Security), for the reception of orders via Internet. Source: Eurostat, Community Survey on the ICT use in enterprises, 2006.³

% of enterprises using digital signature for authentication - % of enterprises using a digital signature in any message sent, i.e. using encryption methods that assure the authenticity and integrity of the message. Source: Eurostat, Community Survey on the ICT use in enterprises, 2006.³

Employment and Skills

% of employees using computers connected to the internet - in their normal work routine, at least once per week – Source: Eurostat, Community Survey on the ICT use in enterprises, 2006.³

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

% of persons employed with ICT specialist skills - Based on the OECD definition of ICT specialist skills. Source: Commission Services estimation from the Eurostat Labour Force Survey. Skill definitions used:

- *ICT specialists*: they have the ability to develop, operate and maintain ICT systems. ICT 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. ICT 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, ICT 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-15 instead of EU-25 (not available) Source: Commission Services estimation from the University of Groningen 60 industry database.

ICT sector share on total employment and value added – ICT sector including Postal services. EU-15 instead of EU-25 (not available) Source: Commission Services estimation from the University of Groningen 60 industry database.

Share of ICT related R&D performed by the business sector as % of GDP – DE: not including NACE 64.2 (electronic communication services). DK, FR, PL and UK: 2002 data. Source: Commission Services estimation from the Eurostat/OECD Survey on R&D.

1. AUSTRIA

ICT on the ground

Austria is close to the EU average for most i2010 indicators.

Broadband take-up among households has caught up, and is now around EU average as is the level of conversion from broadband to narrowband and rural broadband coverage is slightly higher than average. Usage of basic online services is above average with the exception of a very low take-up of multimedia services. Despite average broadband penetration and widespread Internet usage, Austrians consume far less audiovisual online content than the average European.

eGovernment is one of Austria's strengths and the number of public services fully online is very high with near full availability for enterprise services. Usage both among enterprises and citizens does not match supply levels. Broadband connections in schools are slightly above average and the number of connected computers available to students is well above average; teachers are very active users of ICT for teaching purposes.

ICT Skill levels, use of eBusiness and eCommerce applications and Austrian ICT share of GDP and employment is right around the European middle values. The only exception to this pattern is the relatively low use of eSignatures.

ICT policies in the National Reform Programme (NRP)

There are three priorities related to ICT: further roll out of eGovernment; promotion of eInclusion; and, improvement of broadband infrastructure and penetration. In addition, ICT were an integral part of the 2005 health care reform programme:

- *eGovernment*: In 2006, Austria rose from second to first place in the Commission's ranking of member states. Established structures were modified (e.g. IKT-Bund) and new coordination platforms created (e.g. Plattform Digitales Österreich).
- *eGovernment*: In this field, Austria has risen in 2006 from the second to first place in the Commission's ranking of member states. Established structures were modified (e.g. IKT-Bund) and new co-ordination platforms created (e.g. Plattform Digitales Österreich).
- *eInclusion*: Initiatives in this field include programmes for lifelong learning and funding for IT training for seniors.
- *Broadband*: Broadband uptake is supported within the "Breitbandinitiative" programme, which also funds broadband roll out in rural and sparsely populated areas. The focus at the national level is shifting away from infrastructure towards promotion of broadband usage and corresponding programmes are being planned.
- *eHealth*: The increased use of ICT in health care and health administration was an integral part of the 2005 health care reform programme; a key element was the distribution of an insurance card with an embedded chip. A research programme on assistive technologies to improve the quality of life for the elderly, the disabled and persons in need of care is in an advanced planning phase.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)	86.2	86.0	86.0		87.4	17
DSL coverage in rural areas (as % of total population)			67.0		65.9	13
Broadband penetration (as % of population)	6.9	9.4	12.4	15.8	15.7	11
DSL penetration (as % of population)	3.0	4.7	7.0	9.5	12.8	12
Predominant download speed			0.5-1Mbps			
Households having broadband (as % of those having access to the internet at home)	27.5	35.7	49.6	63.3	62.1	15
% of enterprises with broadband access	48.1	54.8	60.7	69.5	74.5	16
Number of 3G subscribers per 100 inhabitants			7.0		5.0	6
Digital Television in households			15.4		30.6	12
Music: number of single downloads per 100 inhabitants			16.9			9
Internet Usage						
% population who are regular internet users	36.3	46.1	48.5	55.0	46.7	12
Take up of internet services (as % of population)						
Sending emails	36.1	45.3	47.8	52.6	43.8	11
Looking for information about goods and services	26.7	35.7	41.5	47.4	42.9	11
Internet telephoning or videoconferencing	2.8	1.8	3.6	7.4	7.1	16
Playing/downloading games and music	11.9	9.9	13.7	15.4	18.2	22
Listening to the web radio/watching web tv	4.1	3.2	5.3	6.7	11.8	24
Reading online newspapers/magazines	16.1	16.1	20.8	26.4	19.0	11
Internet banking	12.5	18.3	22.0	27.2	22.0	12
Places of access						
% at home	30.4	37.2	41.0	46.8	42.6	11
% at work	19.3	24.4	24.7	29.2	23.0	9
% at educational place	4.9	5.3	4.9	6.4	8.0	21
% at PIAP	6.1	4.6	1.6	3.0	6.8	24
eGovernment Indicators						
% basic public services for citizens fully available online	54.5	60.0		70.0	36.8	3
% basic public services for enterprises fully available online	87.5	87.5		100.0	67.8	1
% of population using e-Government services	19.5	21.4	29.2	33.0	23.8	7
of which for returning filled in forms	5.4	8.1	12.3	12.1	8.1	9
% of enterprises using e-Government services	81.1	74.3	75.2	81.3	63.7	8
of which for returning filled in forms	42.3	46.5	41.5	53.7	44.8	11
ICT in schools						
Number of computers connected per 100 pupils				14.2	9.9	9
% of schools with broadband access				68.0	67.0	18
% of teachers having used the computer in class during the last 12 months				87.9	74.3	6
e-Commerce						
E-commerce as % of total turnover of enterprises	6.3	6.8	7.0	9.9	11.7	9
% enterprises receiving internet orders	9.0	14.5	13.0	17.6	13.9	9
% enterprises purchasing on the internet		38.4	38.9	51.5	37.9	9
e-business. % enterprises:						
with integrated internal business processes	33.6	32.8	35.1	37.1	37.3	12
with integrated external business processes	13.5	14.8	15.4	17.3	13.5	4
Security: % enterprises using Secure servers	30.4	26.1	27.2	43.2	41.0	9
% using digital signatures for authentication	3.0	2.7	5.8	9.1	14.3	22
Employment and Skills						
% employees using computers connected to the Internet	30.5	32.5	35.0	37.7	36.1	10
% of persons employed with ICT user skills.	13.3	19.6	17.9	18.3	18.5	17
% of persons employed with ICT specialist skills	3.8	2.9	3.0	3.0	3.1	12
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP	5.2				5.5	12
ICT sector share of total employment	3.7				4.0	14
ICT sector growth (constant prices).					3.6	
R&D expenditure in ICT by the business sector, as % of GDP					0.3	
=== as % of total R&D expenditure					25.7	

2. BELGIUM

ICT on the ground

Belgium has maintained its position as one of the best broadband-connected country in Europe, has not matched this with equally high levels of service, usage and skills.

Belgium has almost completed the transition from narrowband to broadband in households, and benefits from competition between infrastructure platforms. Its lead in connectivity is not reflected in high levels of use of online services which is only slightly above the EU average and take-up of other digital media is also slow. Digital television is rare and 3G virtually non-existent. On the positive side, the online music market is dynamic, sales comparably high and prices are low.

For eGovernment services, demand and supply show contrasting tendencies. Good progress has been made in services for enterprises, bringing Belgium up to the European top level, whereas citizen services are less developed. In contrast, use by citizens of available services seems good but enterprise use is below average. ICT-use in schools is about average but slightly below for use by teachers.

Skill levels are on EU average for user level skills but at the bottom end of the scale for ICT specialists. The share of R&D investment in ICT-related R&D is above average.

The use of online services in enterprises is more diverse. Belgian businesses show solid and progressing performance in some areas, like using fully integrated eBusiness systems. However Belgium continues to perform less well in other activities, especially those involving commercial transactions online.

ICT policies in the National Reform Programme

The NRP focuses on stimulating citizens' use of ICT through measures to enhance trust and security and to bridge the digital divide. Recent measures include:

- *eGovernment*: An eID card and corresponding infrastructure were introduced with standards for exchange of information between administrations. Businesses can now be registered electronically through notary offices.
- *eTrust*: An educational website on spam was launched and an online complaint desk for cyber crimes set up. Legislation to create a legal framework for trusted third party services was drafted and a national platform to resolve eCommerce disputes and an educational website are planned.
- *ICT-related R&D*: In the Brussels Region ICT is one of the three focal sectors for R&D support, the Walloon region launched a support programme for ICT in 2006 and Flanders continues support for its strategic research centre for broadband technologies and strives for international excellence in this field.
- *eInclusion*: Adopted measures include an information campaign and website to promote Internet use, a low-price "Internet for all"-package and a national action plan to bridge the digital divide.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)	100.0	100.0	100.0		87.4	1
DSL coverage in rural areas (as % of total population)			100.0		65.9	1
Broadband penetration (as % of population)	11.0	14.6	18.0	21.8	15.7	5
DSL penetration (as % of population)	6.6	9.0	11.2	13.6	12.8	9
Predominant download speed			2-8Mbps			
Households having broadband (as % of those having access to the internet at home)			80.9	89.0	62.1	1
% of enterprises with broadband access	49.4	69.9	77.9	84.5	74.5	7
Number of 3G subscribers per 100 inhabitants			0.1		5.0	17
Digital Television in households			7.3		30.6	18
Music: number of single downloads per 100 inhabitants			33.6			4
Internet Usage						
% population who are regular internet users			52.8	58.3	46.7	9
Take up of internet services (as % of population)						
Sending emails			48.7	54.4	43.8	9
Looking for information about goods and services			43.1	50.6	42.9	10
Internet telephoning or videoconferencing				7.9	7.1	14
Playing/downloading games and music			16.8	20.0	18.2	15
Listening to the web radio/watching web tv				10.9	11.8	15
Reading online newspapers/magazines			12.9	15.8	19.0	22
Internet banking			23.4	28.4	22.0	10
Places of access						
% at home			46.8	53.1	42.6	10
% at work			17.6	21.4	23.0	17
% at educational place			4.8	6.3	8.0	22
% at PIAP			3.0	3.0	6.8	25
eGovernment Indicators						
% basic public services for citizens fully available online	16.7	16.7		18.2	36.8	21
% basic public services for enterprises fully available online	62.5	62.5		87.5	67.8	3
% of population using e-Government services			18.2	30.2	23.8	11
of which for returning filled in forms			4.4	7.4	8.1	12
% of enterprises using e-Government services		60.0	61.5	59.3	63.7	20
of which for returning filled in forms	24.7	26.1	33.4	36.6	44.8	21
ICT in schools						
Number of computers connected per 100 pupils				7.7	9.9	17
% of schools with broadband access				74.0	67.0	15
% of teachers having used the computer in class during the last 12 months				69.0	74.3	18
e-Commerce						
E-commerce as % of total turnover of enterprises	7.0	6.5	8.8	7.9	11.7	13
% enterprises receiving internet orders	15.5	14.8	11.9	14.6	13.9	12
% enterprises purchasing on the internet		38.7	52.2	43.8	37.9	11
e-business. % enterprises:						
with integrated internal business processes	45.7	50.1	47.4	44.3	37.3	7
with integrated external business processes	12.0	13.8	14.5	17.3	13.5	3
Security: % enterprises using Secure servers	25.8	18.7	29.1	32.7	41.0	15
% using digital signatures for authentication	10.4	16.2	14.6	17.1	14.3	5
Employment and Skills						
% employees using computers connected to the Internet	38.7	43.2	45.0	41.1	36.1	8
% of persons employed with ICT user skills.	17.2	17.9	18.9	18.5	18.5	16
% of persons employed with ICT specialist skills	2.1	2.7	2.5	2.4	3.1	23
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP	6.7				5.5	6
ICT sector share of total employment	4.4				4.0	9
ICT sector growth (constant prices).	3.0				3.6	8
R&D expenditure in ICT by the business sector, as % of GDP	0.3				0.3	9
=== as % of total R&D expenditure	22.8				25.7	9

3. BULGARIA

ICT on the ground

Although data on Bulgaria is incomplete, it is clear that it is at a relatively early stage in the development of the information society. However, there are some strengths and signs that Bulgaria is leapfrogging outdated technologies to catch up with its new partners in the EU.

The percentage of population regularly using the Internet in Bulgaria is currently the second lowest in Europe. Current growth levels continue to be amongst the lowest, but prospects are good with the entry of new providers offering broadband through different technologies. Around two thirds of homes with Internet access have broadband, a figure close to the EU average. Usage of Internet services is low, except for online broadcasting, video and telephony services, where levels are closer to EU25 average.

Enterprise use of Internet services is in general at the same low levels as households. User ICT skills among employees and employee use of Internet is very low but the number of ICT specialist-level employees is close to the EU average, although a slight decrease in 2006.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)					87.4	
DSL coverage in rural areas (as % of total population)					65.9	
Broadband penetration (as % of population)					15.7	
DSL penetration (as % of population)					12.8	
Predominant download speed						
Households having broadband (as % of those having access to the internet at home)		38.8		59.4	62.1	19
% of enterprises with broadband access		28.4	32.4	56.5	74.5	25
Number of 3G subscribers per 100 inhabitants					5.0	
Digital Television in households					30.6	
Music: number of single downloads per 100 inhabitants						
Internet Usage						
% population who are regular internet users		13.5		21.8	46.7	28
Take up of internet services (as % of population)						
Sending emails		13.6		19.4	43.8	27
Looking for information about goods and services		8.0		13.5	42.9	28
Internet telephoning or videoconferencing		1.9		7.1	7.1	17
Playing/downloading games and music		8.0		11.7	18.2	24
Listening to the web radio/watching web tv		6.1		10.6	11.8	17
Reading online newspapers/magazines		7.4		11.5	19.0	25
Internet banking		0.6		1.3	22.0	28
Places of access						
% at home		6.6		13.6	42.6	28
% at work		6.3		10.1	23.0	28
% at educational place		2.3		3.0	8.0	29
% at PIAP		7.7		5.8	6.8	13
eGovernment Indicators						
% basic public services for citizens fully available online					36.8	
% basic public services for enterprises fully available online					67.8	
% of population using e-Government services		5.4		8.4	23.8	24
of which for returning filled in forms		2.6		2.4	8.1	23
% of enterprises using e-Government services		37.7	32.4	45.9	63.7	24
of which for returning filled in forms		8.7	10.8	22.9	44.8	25
ICT in schools						
Number of computers connected per 100 pupils					9.9	
% of schools with broadband access					67.0	
% of teachers having used the computer in class during the last 12 months					74.3	
e-Commerce						
E-commerce as % of total turnover of enterprises		3.6		0.1	11.7	23
% enterprises receiving internet orders		2.7	2.9	3.5	13.9	23
% enterprises purchasing on the internet		7.3	7.0	6.3	37.9	25
e-business. % enterprises:						
with integrated internal business processes		6.0		6.4	37.3	26
with integrated external business processes		2.1		2.7	13.5	25
Security: % enterprises using Secure servers		11.3	9.1	9.4	41.0	25
% using digital signatures for authentication		5.2	7.4	20.2	14.3	3
Employment and Skills						
% employees using computers connected to the Internet		8.8	9.1	14.5	36.1	27
% of persons employed with ICT user skills.	11.3	11.7	11.6	11.5	18.5	26
% of persons employed with ICT specialist skills	2.6	2.7	3.1	2.9	3.1	13
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP					5.5	
ICT sector share of total employment					4.0	
ICT sector growth (constant prices).					3.6	
R&D expenditure in ICT by the business sector, as % of GDP					0.3	
=== as % of total R&D expenditure					25.7	

4. CYPRUS

ICT on the ground

Cyprus has been one of the lowest placed in the ranking of most information society indicators but has recently had growth in connectivity which may be laying the foundations for further development.

Broadband connectivity is DSL-based and is among the lowest in Europe both for enterprises and citizens. However, citizen connectivity has more than doubled in the last year and there has also been an extension of enterprise connectivity and Cyprus is moving up the rankings. Use of services and media by citizen shows a similar development, with entertainment being slightly better performing than basic utility uses. The commercial content market online is undeveloped. 3G and digital TV were not developed at the time of measurement.

Online availability of public services lags behind the rest of the EU. The use of these services by businesses and citizens is also among the lowest in Europe, and especially low for enterprises. Schools have low broadband connectivity but computer use in class by teachers and the number of connected computers available to students is close to EU average. This suggests that in schools availability of broadband might be a more critical issue than the readiness to use ICT in general.

Basic ICT skill levels among employees in Cyprus are around average and slowly improving but expert level skills are among the lowest in Europe. Enterprise use of eBusiness and eCommerce-services is also generally low. However, Cyprus performs closer to EU average in the use of internal business integration systems.

ICT policies in the National Reform Programme

The Progress Report 2006 reports extensively on ICT programmes and notes visible progress in some areas.

- *Infrastructure:* Digital Terrestrial Television is being launched and projects for Fixed Wireless Access and Terrestrial Trunked Radio (TETRA) Networks are under way.
- *eGovernment:* A Government Portal opened in September 2006 and websites for all Ministries and other Offices have been created, 85% of which are available to the public. A web-enabled system for the social insurance has been upgraded.
- *Digital Literacy:* The ICT infrastructure in schools has been improved and teachers are being trained in ICT technologies. The educational curriculum is being reformed to include the use of ICT tools and civil servants are getting ICT training.

A review of the National Information Society Strategy is under way and a policy paper on Network and Information Security has already been prepared. An Action Plan for the deployment of eCommerce is being prepared with special regard to SMEs and recently entrepreneurship incubators were set up to support SMEs.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)			69.7		87.4	23
DSL coverage in rural areas (as % of total population)			0.0		65.9	22
Broadband penetration (as % of population)		0.9	3.9	7.4	15.7	22
DSL penetration (as % of population)		0.9	3.8	7.3	12.8	18
Predominant download speed			LE 512kbps			
Households having broadband (as % of those having access to the internet at home)		4.5	14.2	34.0	62.1	27
% of enterprises with broadband access		35.4	40.0	54.6	74.5	26
Number of 3G subscribers per 100 inhabitants			0.0		5.0	22
Digital Television in households					30.6	
Music: number of single downloads per 100 inhabitants			0.0			15
Internet Usage						
% population who are regular internet users		27.7	26.2	29.2	46.7	26
Take up of internet services (as % of population)						
Sending emails		24.1	23.3	24.6	43.8	26
Looking for information about goods and services		21.4	24.4	26.8	42.9	23
Internet telephoning or videoconferencing		2.8	2.3	4.6	7.1	24
Playing/downloading games and music		17.6	15.4	17.3	18.2	18
Listening to the web radio/watching web tv		11.5	8.7	9.0	11.8	22
Reading online newspapers/magazines		17.2	15.0	19.9	19.0	16
Internet banking		4.1	5.7	6.1	22.0	26
Places of access						
% at home		22.2	21.8	23.6	42.6	24
% at work		14.4	14.0	17.2	23.0	22
% at educational place		5.6	4.7	5.3	8.0	24
% at PIAP		6.6	2.5	3.2	6.8	23
eGovernment Indicators						
% basic public services for citizens fully available online		16.7		25.0	36.8	19
% basic public services for enterprises fully available online		37.5		50.0	67.8	21
% of population using e-Government services		10.8	11.4	12.7	23.8	22
of which for returning filled in forms		1.4	1.7	3.4	8.1	21
% of enterprises using e-Government services		35.3	39.5	44.3	63.7	26
of which for returning filled in forms		11.0	9.0	8.3	44.8	27
ICT in schools						
Number of computers connected per 100 pupils				8.9	9.9	11
% of schools with broadband access				31.0	67.0	25
% of teachers having used the computer in class during the last 12 months				75.0	74.3	12
e-Commerce						
E-commerce as % of total turnover of enterprises			0.2	1.6	11.7	21
% enterprises receiving internet orders		7.1	4.3	6.0	13.9	21
% enterprises purchasing on the internet		26.7	26.7	21.2	37.9	19
e-business. % enterprises:						
with integrated internal business processes		34.8	31.2	40.1	37.3	10
with integrated external business processes		14.9	4.8	10.0	13.5	16
Security: % enterprises using Secure servers		22.8	20.3	17.5	41.0	21
% using digital signatures for authentication		5.2	4.2	3.2	14.3	27
Employment and Skills						
% employees using computers connected to the Internet		32.5	30.8	30.6	36.1	17
% of persons employed with ICT user skills.	18.5	17.7	17.7	18.9	18.5	12
% of persons employed with ICT specialist skills	2.6	2.6	2.4	2.4	3.1	22
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP					5.5	
ICT sector share of total employment					4.0	
ICT sector growth (constant prices).					3.6	
R&D expenditure in ICT by the business sector, as % of GDP					0.3	
=== as % of total R&D expenditure					25.7	

5. THE CZECH REPUBLIC

ICT on the ground

The Czech Republic presents a somewhat divided image of development with above average enterprise connectivity but largely unconnected citizens. However, there are signs that this may be evening out with citizen connectivity growing more rapidly than in comparative countries and enterprise connectivity moving slightly down the rankings.

Broadband penetration in households is among the lowest in Europe but the Czech Republic did jump several places up in the ranking last year with a doubling of connections. The majority of the connections are non-DSL and growth in the different platforms roughly equal. A large element of growth is conversion from narrowband but the latter still makes up more than 40% of connections. If this high conversion rate continues, future broadband growth soon will depend on an increase of the low overall base of Internet users. Use of online services by citizens is low with the exception of Internet telephony and videoconferencing. Uncertainty over return on investment seems to be the main obstacle to the exploitation and development of audiovisual content online. 3G and Digital TV are beginning to be rolled out.

eGovernment services are less widely available than the EU average with citizen service levels particularly low. Nonetheless, citizens' demand for the basic services available has increased rapidly although still in the lower half of the scale. eGovernment services for enterprises has been given higher priority and availability is higher than for citizen services but still somewhat below EU average. Use of basic public services among enterprises is now well above EU average but use of advanced services is low. Despite low broadband connectivity in schools, use by teachers is good and in the EU top ten. The ratio of computers to pupils is below EU average.

ICT expert skills among employees are close to top European levels but basic ICT skills are somewhat lower than average. Enterprises are significantly more advanced with over half now having broadband connections. Enterprise use is higher than citizen use, and the proportion of enterprises carrying out eCommerce is only marginally less than the EU average. Use of other eBusiness-tools and integration is however low.

ICT policies in the National Reform Programme

- *Broadband:* Broadband and Public Internet Access Points are being set up with the support of EU structural funds. National funding includes 1% of the revenues from the privatisation of Cesky Telecom, the telecom incumbent.
- *eGovernment:* The Public Administration Portal was upgraded, an eHealth project in the Prague region has been launched, and the pilot project "Tax Portal", enabling online contacts with tax authorities became operational. Work on the electronic single economic register started. A new Act allowing electronic public procurement came into force. The legislative process on the act on data sharing between governmental entities stalled, delaying the development of a fully enabling legal environment for eGovernment.
- *eTrust:* A National Information Security Strategy was adopted in October 2005 and a corresponding implementation Plan submitted to the government, but not yet adopted.

- *Digital Literacy:* The National Computer Literacy Programme is being implemented: financial grants are offered to citizens following courses in the use of computers; schools and libraries are supplied with appropriate equipment.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)			75.0		87.4	22
DSL coverage in rural areas (as % of total population)					65.9	
Broadband penetration (as % of population)		1.7	5.5	9.6	15.7	18
DSL penetration (as % of population)		0.6	2.5	4.3	12.8	21
Predominant download speed						
Households having broadband (as % of those having access to the internet at home)	10.0	23.0	26.6	56.7	62.1	20
% of enterprises with broadband access	20.1	38.0	52.1	69.3	74.5	17
Number of 3G subscribers per 100 inhabitants			0.0		5.0	21
Digital Television in households			5.2		30.6	21
Music: number of single downloads per 100 inhabitants			0.0			15
Internet Usage						
% population who are regular internet users	19.9	24.5	25.7	35.8	46.7	22
Take up of internet services (as % of population)						
Sending emails	22.7	27.0	27.0	37.2	43.8	17
Looking for information about goods and services	15.3	17.3	19.7	31.7	42.9	20
Internet telephoning or videoconferencing	2.4	5.4	5.5	8.8	7.1	11
Playing/downloading games and music	8.6	9.1	8.9	12.5	18.2	23
Listening to the web radio/watching web tv	2.5	3.0	2.8	6.5	11.8	25
Reading online newspapers/magazines	8.9	10.1	11.6	19.0	19.0	17
Internet banking	3.4	4.9	5.2	9.7	22.0	22
Places of access						
% at home	17.0	19.9	19.7	30.9	42.6	19
% at work	12.5	14.2	14.0	19.8	23.0	18
% at educational place	7.1	7.6	6.9	8.6	8.0	15
% at PIAP	4.9	2.8	2.2	3.5	6.8	22
eGovernment Indicators						
% basic public services for citizens fully available online		16.7		8.3	36.8	23
% basic public services for enterprises fully available online		50.0		62.5	67.8	15
% of population using e-Government services		6.7	4.6	17.4	23.8	16
of which for returning filled in forms	0.4	1.4	1.4	3.0	8.1	22
% of enterprises using e-Government services		74.7	78.9	75.6	63.7	12
of which for returning filled in forms	21.8	23.7	31.6	32.4	44.8	22
ICT in schools						
Number of computers connected per 100 pupils				8.2	9.9	16
% of schools with broadband access				63.0	67.0	21
% of teachers having used the computer in class during the last 12 months				78.3	74.3	10
e-Commerce						
E-commerce as % of total turnover of enterprises	5.7	5.9	8.4	7.1	11.7	14
% enterprises receiving internet orders	17.4	13.2	15.4	9.0	13.9	17
% enterprises purchasing on the internet		31.2	37.4	26.9	37.9	13
e-business. % enterprises:						
with integrated internal business processes			18.4	27.5	37.3	18
with integrated external business processes			4.2	10.3	13.5	14
Security: % enterprises using Secure servers					41.0	
% using digital signatures for authentication			1.1	9.8	14.3	18
Employment and Skills						
% employees using computers connected to the Internet	19.3	23.0	26.4	28.6	36.1	18
% of persons employed with ICT user skills.	15.6	16.5	16.9	17.3	18.5	18
% of persons employed with ICT specialist skills	3.8	3.9	3.9	4.0	3.1	5
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP	9.8				5.5	3
ICT sector share of total employment	4.2				4.0	10
ICT sector growth (constant prices).	-0.2				3.6	17
R&D expenditure in ICT by the business sector, as % of GDP	0.1				0.3	12
=== as % of total R&D expenditure	14.2				25.7	14

6. GERMANY

ICT on the ground

Germany is a middle-of-the road performer on most information society indicators. Citizens and especially enterprises are active and often advanced users, but factors like slow conversion from dial-up to broadband limit an otherwise high-potential base of users.

Broadband take-up in Germany is around the EU25 average, both for households and enterprises and the market is largely DSL-based. Growth in broadband is good without being exceptional but half of Internet users still have narrowband connections and this must restrict advanced use in an otherwise active user base. Nevertheless, usage of online services is well above EU average but focussed on lower bandwidth and utility services. Media and content use have risen to average levels and the online music market is now the second largest in Europe. Commerce and financial use is doing especially well. Digital TV use is average, while 3G-take up is only beginning.

Formerly, availability of public services was higher than the EU average but progress has been slow and services to citizens now lag behind. Citizens use eGovernment services more than average but enterprise use of these services is low, strikingly so when compared to usage level of other types of electronic services. ICT use in schools is close to the European average but connectivity is low, towards the lower end of the EU ranking. The high levels of ICT used in teaching but low connectivity again suggest willingness to use outstrips infrastructure.

ICT skills levels in Germany are close to EU average. Overall, the share of R&D devoted to ICT is quite low, leaving the ICT-related R&D only at average EU levels. Enterprise use of ICT is where Germany performs best, especially for eCommerce activities. It is behind the top group of countries and last year showed signs of stagnation.

ICT policies in the National Reform Programme

The German NRP focuses on the furthering of eGovernment in order to cut red tape and to make Government more flexible. All NRP-programmes are being implemented.

- *iD 2010*: This programme, initiated in late 2006, combines measures to increase the innovative capacity and competitiveness of the German ICT sector with strategies for e-Government, e-Security, e-Inclusion and the promotion of ICT use in the population.
- *eGovernment*: The "Deutschland Online" action plan was passed in June 2006 to establish a integrated communications infrastructure to ensure the electronic information exchange between administrations at all levels of Government. The introduction of digital identity cards and digital signatures and the development of e-Identity concepts until 2008 have been announced.
- *ICT-related research*: The federal research programme IKT 2020, which is currently drawn up for implementation from March 2007, aims to further co-operative research among institutions and to better co-ordination in ICT research.

- *Security* related measures in iD 2010 include an implementation programme for the protection of critical IT infrastructure, "UP KRITIS", to be drafted in early 2007 and plans for an early warning system for ICT- related threats.
- *Regulation*: A law passed in December 2006, which exempts new markets – particularly for advanced broadband infrastructure like VDSL – for an unspecified period from regulation raised regulatory concerns.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)	86.1	90.7	92.0		87.4	10
DSL coverage in rural areas (as % of total population)			55.0		65.9	16
Broadband penetration (as % of population)	5.2	7.1	11.5	16.4	15.7	10
DSL penetration (as % of population)	5.1	7.0	11.1	15.7	12.8	7
Predominant download speed			0.5-1Mbps			
Households having broadband (as % of those having access to the internet at home)	17.3	30.0	37.7	50.0	62.1	23
% of enterprises with broadband access	41.9	53.6	62.4	73.1	74.5	14
Number of 3G subscribers per 100 inhabitants			2.4		5.0	10
Digital Television in households			28.9		30.6	7
Music: number of single downloads per 100 inhabitants			25.5			6
Internet Usage						
% population who are regular internet users	43.9	49.7	54.3	59.3	46.7	8
Take up of internet services (as % of population)						
Sending emails	44.3	50.8		60.2	43.8	8
Looking for information about goods and services	45.5	52.2		59.9	42.9	8
Internet telephoning or videoconferencing	1.3	2.4		10.4	7.1	9
Playing/downloading games and music	12.1	14.6		18.3	18.2	17
Listening to the web radio/watching web tv	4.4	7.7		11.8	11.8	14
Reading online newspapers/magazines	14.7	14.9		18.9	19.0	18
Internet banking	20.7	26.4		31.7	22.0	9
Places of access						
% at home	45.2	52.3	56.9	60.6	42.6	8
% at work	16.1	18.4	20.2	27.3	23.0	12
% at educational place	7.2	8.6	9.0	8.2	8.0	16
% at PIAP	10.8	16.2	5.4	6.3	6.8	12
eGovernment Indicators						
% basic public services for citizens fully available online	16.7	27.3		27.3	36.8	18
% basic public services for enterprises fully available online	75.0	75.0		75.0	67.8	10
% of population using e-Government services	26.3	33.4		32.3	23.8	8
of which for returning filled in forms	6.7	6.9		9.4	8.1	11
% of enterprises using e-Government services	35.4	36.3	43.6	49.0	63.7	23
of which for returning filled in forms	13.9	16.8	24.4	37.1	44.8	20
ICT in schools						
Number of computers connected per 100 pupils				7.7	9.9	17
% of schools with broadband access				63.0	67.0	21
% of teachers having used the computer in class during the last 12 months				78.0	74.3	11
e-Commerce						
E-commerce as % of total turnover of enterprises		11.3	13.0	13.9	11.7	7
% enterprises receiving internet orders	7.5	16.3	16.7	18.9	13.9	7
% enterprises purchasing on the internet		50.7	53.7	54.0	37.9	8
e-business. % enterprises:						
with integrated internal business processes		38.4	42.8	43.7	37.3	8
with integrated external business processes		13.9	16.3	16.8	13.5	5
Security: % enterprises using Secure servers	47.3	44.8	41.8	44.8	41.0	7
% using digital signatures for authentication	10.7	13.5	10.2	13.5	14.3	8
Employment and Skills						
% employees using computers connected to the Internet	29.3	29.0	39.8	39.1	36.1	9
% of persons employed with ICT user skills.	18.8	18.7	19.1	18.8	18.5	15
% of persons employed with ICT specialist skills	3.1	3.0	3.2	3.4	3.1	7
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP	5.2				5.5	13
ICT sector share of total employment	4.0				4.0	12
ICT sector growth (constant prices).	2.3				3.6	13
R&D expenditure in ICT by the business sector, as % of GDP	0.3				0.3	7
=== as % of total R&D expenditure	18.2				25.7	11

7. DENMARK

ICT on the ground

Denmark is among the top nations in most i2010 indicators and is a clear leader in developing the information society. However, other countries have been catching up in several areas.

There is continued rapid growth in broadband and Denmark is currently one of the most connected countries in the EU. One fifth of the households are still on narrowband which may limit future growth from conversions. DSL is less dominant than in the rest of the EU. Enterprise connectivity is not fully on par with household levels, but still solid. Danish citizens are also among the most active users in the EU of online services. Use of online media has grown from last year's EU average figures towards the leading group of nations. The commercial market for online content does not fully reflect the very high broadband penetration and high consumption of audiovisual online content.

eGovernment is on a high level both for supply and demand, but other countries have improved more during the last year, pushing Denmark out of the absolute top league of countries. The exception to this is enterprise usage, which remains very high. ICT-deployment in schools is the highest in the Europe, both in connectivity and usage.

The Danish work force is among the most skilled in Europe and is given freedom to use flexible work forms through ICT tools. Danish businesses are overall the most advanced Internet and eBusiness users in the EU, but growth is slowing. R&D-levels are in the top bracket but significantly behind Sweden and Finland. Focus on IT within R&D is among the highest in Europe.

ICT policies in the National Reform Programme

The Progress Report emphasises the need to move from basic to advanced use of ICT and stresses four areas of activities:

- *eGovernment*: the overriding goal is to ensure interoperability of ICT systems. An advanced Internet portal has been introduced as well as web-based guides for consumers. In government, a new model for the management of ICT is being introduced, common standards for data exchange and interfaces are being developed, and digitisation of working procedures continues. Municipal reform is conducted in connection to the reform of ICT systems.
- *ICT market*: the aim is to increase its efficiency through market mechanisms. The review of the EU regulatory framework for electronic communications will contribute to this and Denmark has conducted a survey of its own market players. Other measures include: modernisation of spectrum rules, the creation of a new national software knowledge centre and the establishment of framework conditions for digital TV and digital content.
- *eInclusion* is promoted through several initiatives: easier access to public digital services due to wider use of electronic signature, various eLearning projects, an awareness campaign on IT security, etc.

- *Innovation through ICT* is to be achieved through easier access to expert knowledge regarding eBusiness for enterprises, increased cooperation between enterprises and knowledge institutions through the Danish Regional ICT Initiative and increased efforts in ICT research.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)	95.0	100.0	100.0		87.4	1
DSL coverage in rural areas (as % of total population)			100.0		65.9	1
Broadband penetration (as % of population)	11.2	16.3	22.5	29.4	15.7	2
DSL penetration (as % of population)	7.8	11.0	14.2	18.1	12.8	3
Predominant download speed			0.5-1Mbps			
Households having broadband (as % of those having access to the internet at home)	39.1	51.6	68.3	80.3	62.1	6
% of enterprises with broadband access	69.0	79.8	82.5	82.7	74.5	8
Number of 3G subscribers per 100 inhabitants			28.4		5.0	1
Digital Television in households			18.6		30.6	11
Music: number of single downloads per 100 inhabitants			17.6			8
Internet Usage						
% population who are regular internet users	64.0	69.6	73.2	78.1	46.7	3
Take up of internet services (as % of population)						
Sending emails	60.8	64.8	69.3	74.2	43.8	3
Looking for information about goods and services	53.3	58.9	62.6	67.8	42.9	5
Internet telephoning or videoconferencing	3.9	5.7	8.8	13.1	7.1	7
Playing/downloading games and music	16.7	18.6	20.9	26.3	18.2	8
Listening to the web radio/watching web tv	12.0	16.1	19.1	27.0	11.8	5
Reading online newspapers/magazines	32.1	35.7	38.4	46.4	19.0	4
Internet banking	37.5	44.9	48.7	57.2	22.0	5
Places of access						
% at home	62.6	67.8	71.9	77.1	42.6	3
% at work	35.0	41.1	37.3	46.5	23.0	3
% at educational place	10.6	11.9	11.0	14.3	8.0	3
% at PIAP	9.9	13.0	5.7	8.8	6.8	8
eGovernment Indicators						
% basic public services for citizens fully available online	54.5	33.3		41.7	36.8	11
% basic public services for enterprises fully available online	87.5	87.5		87.5	67.8	3
% of population using e-Government services	40.1	43.8		43.2	23.8	6
of which for returning filled in forms	13.7	13.9		16.9	8.1	6
% of enterprises using e-Government services	74.7	84.6	86.9	87.3	63.7	3
of which for returning filled in forms	34.9		56.4	55.1	44.8	9
ICT in schools						
Number of computers connected per 100 pupils				26.3	9.9	1
% of schools with broadband access				95.0	67.0	1
% of teachers having used the computer in class during the last 12 months				94.6	74.3	2
e-Commerce						
E-commerce as % of total turnover of enterprises	7.5	12.2		17.5	11.7	1
% enterprises receiving internet orders	13.2	26.5	34.7	35.1	13.9	1
% enterprises purchasing on the internet		57.8	63.8	59.3	37.9	5
e-business. % enterprises:						
with integrated internal business processes	35.4	35.8	62.2	63.4	37.3	1
with integrated external business processes	11.8	10.5	22.6	24.0	13.5	1
Security: % enterprises using Secure servers	29.0	32.2	54.7	58.9	41.0	3
% using digital signatures for authentication	12.5		10.0	12.5	14.3	10
Employment and Skills						
% employees using computers connected to the Internet	55.8	53.4	54.0	61.4	36.1	1
% of persons employed with ICT user skills.	22.9	22.6	23.2	23.0	18.5	2
% of persons employed with ICT specialist skills	4.2	4.0	3.5	3.9	3.1	6
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP	4.8				5.5	16
ICT sector share of total employment	4.4				4.0	8
ICT sector growth (constant prices).	3.6				3.6	5
R&D expenditure in ICT by the business sector, as % of GDP	0.5				0.3	3
=== as % of total R&D expenditure	31.5				25.7	5

8. ESTONIA

ICT on the ground

Estonia has well advanced infrastructures and usage and in many respects is at the top level in the EU ranking. It does have some weaknesses but it is by far the most advanced of all new Member States from the enlargements of 2004 and 2007.

The number of households and enterprises with broadband access is above EU average and while others have overtaken it in the past year, its growth is still relatively high. The broadband-to-narrowband ratio is high with significant competition between alternative platforms. Use of Internet services among the citizens is above EU average, and for content, media, reading online newspapers and Internet phone services they are amongst the highest in Europe. The country's above average broadband penetration and the citizens' strong usage of audiovisual content online do not however seem to translate into a local commercial market for digital content – possibly due to the market's limited size. 3G and digital TV have not yet developed.

eGovernment has developed very quickly in Estonia, both in terms of supply and use. The government reached full saturation for enterprises with all services available for full transactions and is high for citizen services. On overall usage by citizens and enterprises, some countries have developed faster than Estonia during the last year, pushing its levels closer to the average. For advanced usage Estonian is still close to the top European league. Schools are top performing for broadband connectivity but the number of PCs per student and use of computers in class are lacking.

Skill levels have dropped from slightly above to slightly below EU average levels, perhaps reflecting work migration patterns. ICT-use among enterprises is behind citizen usage, and below EU average. However, there is now progress for enterprise use on several areas.

ICT policies in the National Reform Programme

The Estonian NRP singles out the formation of a knowledge society as one of its strategic goals. Special emphasis is put on the widespread attainment of ICT-skills and 2006 saw the successful implementation of measures in this and other fields:

- *ICT-Skills and eLearning*: the E-learning Development Plan for General Education 2006-2009 was approved and is being implemented. The objective is to strengthen ICT skills in general education and vocational training.
- *eGovernment*: Great attention is devoted to improving conditions for businesses through ICT: business registration and notary services are electronic. Citizens also profit from an expanding range of online government services: in 2006 Estonians could vote electronically for the first time in local elections, in 2007 electronic voting will be used for the general elections.
- The newly formulated *Estonian Information Society Development Plan 2007-2014* is focused on three goals: Economic growth should be ICT-driven, all citizens should have access to ICT and ICT should be used to increase the efficiency of the public sector.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)			90.0		87.4	13
DSL coverage in rural areas (as % of total population)					65.9	
Broadband penetration (as % of population)		8.6	12.1	17.2	15.7	9
DSL penetration (as % of population)		4.2	5.8	8.4	12.8	15
Predominant download speed						
Households having broadband (as % of those having access to the internet at home)		66.0	76.8	80.3	62.1	7
% of enterprises with broadband access		67.7	66.6	75.7	74.5	12
Number of 3G subscribers per 100 inhabitants			0.1		5.0	18
Digital Television in households			8.5		30.6	16
Music: number of single downloads per 100 inhabitants			0.0			15
Internet Usage						
% population who are regular internet users		44.7	53.6	56.3	46.7	11
Take up of internet services (as % of population)						
Sending emails		38.8	48.8	49.4	43.8	12
Looking for information about goods and services		32.3	41.1	44.3	42.9	12
Internet telephoning or videoconferencing			10.2	14.3	7.1	3
Playing/downloading games and music		19.6	24.5	27.9	18.2	6
Listening to the web radio/watching web tv		13.3	15.0	16.5	11.8	10
Reading online newspapers/magazines		37.9	45.6	50.3	19.0	3
Internet banking		35.0	44.6	48.2	22.0	7
Places of access						
% at home		32.2	40.3	46.0	42.6	12
% at work		20.5	19.7	27.6	23.0	11
% at educational place		12.4	7.5	11.3	8.0	9
% at PIAP		14.5	3.2	3.7	6.8	20
eGovernment Indicators						
% basic public services for citizens fully available online		36.4		63.6	36.8	4
% basic public services for enterprises fully available online		100.0		100.0	67.8	1
% of population using e-Government services		20.3	31.1	28.6	23.8	12
of which for returning filled in forms		13.1	16.6	17.1	8.1	5
% of enterprises using e-Government services		83.9	69.9	69.1	63.7	16
of which for returning filled in forms		54.3	49.9	54.4	44.8	10
ICT in schools						
Number of computers connected per 100 pupils				7.2	9.9	20
% of schools with broadband access				95.0	67.0	1
% of teachers having used the computer in class during the last 12 months				59.7	74.3	23
e-Commerce						
E-commerce as % of total turnover of enterprises		2.8	2.0		11.7	
% enterprises receiving internet orders		8.7	7.2	14.4	13.9	13
% enterprises purchasing on the internet		31.0	23.3	25.0	37.9	15
e-business. % enterprises:						
with integrated internal business processes		27.7	24.6	23.8	37.3	19
with integrated external business processes		4.9	4.5	8.9	13.5	19
Security: % enterprises using Secure servers		14.5	20.5	22.7	41.0	18
% using digital signatures for authentication		5.3	9.0	10.9	14.3	13
Employment and Skills						
% employees using computers connected to the Internet		26.9	38.4	33.3	36.1	15
% of persons employed with ICT user skills.	17.0	17.2	19.4	17.1	18.5	19
% of persons employed with ICT specialist skills	2.3	2.4	2.6	2.6	3.1	20
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP					5.5	
ICT sector share of total employment					4.0	
ICT sector growth (constant prices).					3.6	
R&D expenditure in ICT by the business sector, as % of GDP					0.3	
=== as % of total R&D expenditure					25.7	

9. IRELAND

ICT on the ground

Ireland provides a mixed image of its information society development, showing first-class commercial use despite a general low level of connectivity. It is in a small group of countries which use Internet well for business without having a highly developed citizen base.

The citizen and enterprise uptake of broadband used to be low, but is now improving but broadband take-up is still well below EU average and connectivity is still highly focussed on narrowband. Online service use among citizens in Ireland reflects the slow connection rates: Use of basic service is on average levels while use of more bandwidth-requiring services is low. Despite this, Irish citizens are very active consumers of online commercial music.

eGovernment availability is around the EU average and better for enterprise services. Citizen use has grown well, and for advanced services it is on a quite high level. Enterprise use is now close to the top five in Europe. Access to ICT in school is average, whereas actual use of ICT in class for teaching is good, although not up to the level of the very best countries.

User skill levels among employees are close to EU average, but lower than average for expert skills. R&D-spending in Ireland is low but it is very ICT-dominated: Ireland belongs to the upper European league of ICT-related R&D measured as a percentage of GDP, although still spending less than half of top-performers Finland and Sweden. Enterprise use of Internet services is good. General use of eBusiness tools is close to EU average, whereas the level of commercial transactions online is among the highest in Europe. Percentage of enterprise income coming from eCommerce is one of the highest in Europe and Irish companies are amongst the highest for online purchases as well as sales.

ICT policies in the National Reform Programme

The Progress Report gives account on a number of ICT measures being implemented and their results.

- *eInclusion*: Ireland implemented a set of measures supporting late adopters of ICT with a budget of €1.5 million. In 2005, 49 projects targeting older people and the disabled were conducted. In 2006, 76 projects were approved for funding under the Access, Skills and Content Initiative from a total fund of €1.45 million.
- *Digital Skills*: A joint Government/industry initiative to provide broadband Internet access to schools is being implemented.
- *eBusiness*: The implementation measures of the National eBusiness strategy were approved in April 2006.
- *Broadband penetration* rates almost doubled in 2005 thanks to increasing connectivity among households and SMEs. The policy in this area aims at increasing competition and freedom of choice for consumers by addressing market failures through regulatory and investments interventions. A regional programme that addresses infrastructure deficits by building high-speed open access networks is being implemented in co-operation with local and regional authorities: 27 Metropolitan Area Networks have been completed and 90

towns will be covered during the second phase. In addition, the "Group Broadband Scheme" targets small towns and rural communities of less than 1500 people. The Group Broadband Scheme is being superseded by the National Broadband Scheme which, when fully implemented, will ensure that all reasonable requests for broadband from houses and premises in rural areas are met.

Ireland was also preparing a Knowledge Society Action Plan to be published in mid-2007. This plan is in line with the i2010 strategy and aims at promoting the use of ICT by government, businesses, citizens and the non-profit sector.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)			82.3		87.4	20
DSL coverage in rural areas (as % of total population)			56.5		65.9	15
Broadband penetration (as % of population)	0.5	2.5	5.3	10.3	15.7	17
DSL penetration (as % of population)	0.3	2.1	4.1	7.6	12.8	17
Predominant download speed			0.5-1Mbps			
Households having broadband (as % of those having access to the internet at home)	1.7	7.3	15.7	26.2	62.1	28
% of enterprises with broadband access	18.9	31.5	47.6	60.7	74.5	21
Number of 3G subscribers per 100 inhabitants			5.9		5.0	8
Digital Television in households			54.8		30.6	2
Music: number of single downloads per 100 inhabitants			23.0			7
Internet Usage						
% population who are regular internet users	24.8	27.3	30.8	43.6	46.7	15
Take up of internet services (as % of population)						
Sending emails	25.1	27.3	31.0	44.7	43.8	13
Looking for information about goods and services	21.1	22.0	29.1	42.1	42.9	13
Internet telephoning or videoconferencing	2.1	2.0	2.9	5.8	7.1	21
Playing/downloading games and music	4.3	4.8	6.2	11.2	18.2	25
Listening to the web radio/watching web tv	2.5	2.6	4.0	9.1	11.8	21
Reading online newspapers/magazines	4.9	5.3	4.1	7.7	19.0	27
Internet banking	8.1	10.5	12.7	20.6	22.0	14
Places of access						
% at home	20.7	22.5	25.7	35.8	42.6	14
% at work	13.0	14.6	17.1	22.9	23.0	14
% at educational place	3.8	4.8	3.9	7.3	8.0	19
% at PIAP	3.4	2.7	2.9	3.6	6.8	21
eGovernment Indicators						
% basic public services for citizens fully available online	50.0	30.0		30.0	36.8	17
% basic public services for enterprises fully available online	62.5	75.0		75.0	67.8	10
% of population using e-Government services		14.1	17.6	25.7	23.8	13
of which for returning filled in forms	4.9	6.3	9.2	14.3	8.1	8
% of enterprises using e-Government services		69.3	76.1	84.4	63.7	6
of which for returning filled in forms	24.5	32.4	41.6	56.5	44.8	6
ICT in schools						
Number of computers connected per 100 pupils				8.7	9.9	13
% of schools with broadband access				66.0	67.0	20
% of teachers having used the computer in class during the last 12 months				81.7	74.3	8
e-Commerce						
E-commerce as % of total turnover of enterprises	16.6	18.3	20.2	16.7	11.7	4
% enterprises receiving internet orders	11.0	21.8	22.2	23.4	13.9	6
% enterprises purchasing on the internet		47.5	53.2	56.1	37.9	6
e-business. % enterprises:						
with integrated internal business processes	32.0	28.7	29.9	35.3	37.3	13
with integrated external business processes	16.7	13.8	13.2	14.4	13.5	9
Security: % enterprises using Secure servers	32.4	35.5	42.5	59.3	41.0	1
% using digital signatures for authentication		8.5	9.5	12.2	14.3	11
Employment and Skills						
% employees using computers connected to the Internet	24.1	31.1	34.6	36.6	36.1	11
% of persons employed with ICT user skills.	18.0	19.4	18.8	18.9	18.5	14
% of persons employed with ICT specialist skills	2.9	2.8	2.6	2.5	3.1	21
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP	12.4				5.5	1
ICT sector share of total employment	6.2				4.0	1
ICT sector growth (constant prices).	12.6				3.6	1
R&D expenditure in ICT by the business sector, as % of GDP	0.4				0.3	5
=== as % of total R&D expenditure	47.6				25.7	2

10. GREECE

ICT on the ground

Information society in Greece is still developing slowly and on most indicators Greece is close to the bottom of the EU ranking. There are signs of increasing gaps compared to other EU countries.

Broadband take-up is among the lowest of the measured countries, and the slight growth last year is not enough to compensate for an increasing gap. Narrowband is more common but still not widespread. Use of Internet among citizens is accordingly among the lowest in Europe in most regards, although not always as far behind average as connection levels. 3G and digital TV are still in infancy, and although still well behind average levels, they are the areas where Greece shows the best progress.

eGovernment service availability is below the European average and has not improved, leading to an even lower ranking than in earlier years. eGovernment use is very low among citizens. Broadband access in schools is by far the lowest in Europe, teachers use computers very little for teaching. The number of connected PCs in schools is very low.

ICT skill levels among employees in Greece are among the lowest in Europe.

ICT policies in the National Reform Programme

Acknowledging the gaps in information society, the Greek authorities made the Knowledge Society a priority in the 2005–2008 National Reform Programme. The implementation report marks progress towards the development of the knowledge society. While most of the announced measures are being implemented, many are still at a relatively early stage. Key measures in 2006 included:

- *New Digital Strategy*: A comprehensive strategy to spread the use of ICT and broadband - areas, where Greece lags behind was launched at the end of 2005. Its first results seem positive and include a narrowing of the broadband gap with the objectives of increasing take-up to achieve 7% of population by 2007 and the development of eGovernment services.
- *Regulation*: The transposition of the regulatory framework for electronic communications into national law has been completed, but secondary legislation still needs to be adopted.
- *Education*: Programmes to train all teachers in ICT and to establish distance learning programmes are under way.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)	2.0	9.0	12.0		87.4	27
DSL coverage in rural areas (as % of total population)			0.0		65.9	22
Broadband penetration (as % of population)	0.0	0.3	1.0	3.3	15.7	25
DSL penetration (as % of population)	0.0	0.3	1.0	3.3	12.8	24
Predominant download speed			LE 512kbps			
Households having broadband (as % of those having access to the internet at home)	3.6	1.4	2.9	16.6	62.1	29
% of enterprises with broadband access	13.0	20.6	44.3	57.7	74.5	23
Number of 3G subscribers per 100 inhabitants			1.0		5.0	16
Digital Television in households			10.8		30.6	15
Music: number of single downloads per 100 inhabitants			2.0			14
Internet Usage						
% population who are regular internet users	14.3	17.3	18.3	22.7	46.7	27
Take up of internet services (as % of population)						
Sending emails	12.4	15.4	13.9	16.9	43.8	28
Looking for information about goods and services	11.4	13.6	16.7	22.8	42.9	27
Internet telephoning or videoconferencing	1.1	1.1	0.7	1.8	7.1	29
Playing/downloading games and music	7.2	10.9	8.5	11.2	18.2	26
Listening to the web radio/watching web tv	3.0	4.3	3.8	5.4	11.8	26
Reading online newspapers/magazines	8.9	11.3	9.0	13.9	19.0	23
Internet banking	1.3	1.3	1.4	2.5	22.0	27
Places of access						
% at home	10.3	11.8	14.3	18.0	42.6	27
% at work	7.2	8.9	9.8	12.2	23.0	27
% at educational place	3.2	4.2	3.7	4.2	8.0	27
% at PIAP	3.3	2.7	2.6	4.3	6.8	19
eGovernment Indicators						
% basic public services for citizens fully available online	18.2	18.2		16.7	36.8	22
% basic public services for enterprises fully available online	50.0	50.0		50.0	67.8	21
% of population using e-Government services		8.0	7.1	8.6	23.8	23
of which for returning filled in forms	2.8	2.4	3.2	2.1	8.1	24
% of enterprises using e-Government services		77.2	81.3	84.5	63.7	5
of which for returning filled in forms	56.6	44.9	55.7	76.3	44.8	3
ICT in schools						
Number of computers connected per 100 pupils				5.9	9.9	22
% of schools with broadband access				13.0	67.0	27
% of teachers having used the computer in class during the last 12 months				35.6	74.3	26
e-Commerce						
E-commerce as % of total turnover of enterprises	0.9	1.6	2.1	2.8	11.7	19
% enterprises receiving internet orders	6.3	5.4	6.1	7.7	13.9	19
% enterprises purchasing on the internet		13.4	13.9	14.3	37.9	22
e-business. % enterprises:						
with integrated internal business processes	42.1	39.1	49.8	56.7	37.3	3
with integrated external business processes	12.4	9.0	19.2	15.4	13.5	7
Security: % enterprises using Secure servers	46.8	43.6	43.8	35.8	41.0	14
% using digital signatures for authentication	5.9	4.0	7.4	8.8	14.3	23
Employment and Skills						
% employees using computers connected to the Internet	28.4	21.2	25.8	25.6	36.1	22
% of persons employed with ICT user skills.	11.7	12.1	12.1	12.9	18.5	24
% of persons employed with ICT specialist skills	2.2	2.4	2.2	2.0	3.1	26
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP	3.4				5.5	19
ICT sector share of total employment	1.7				4.0	18
ICT sector growth (constant prices).	5.3				3.6	3
R&D expenditure in ICT by the business sector, as % of GDP					0.3	
=== as % of total R&D expenditure					25.7	

11. SPAIN

ICT on the ground

Spain in general performs slightly below European average, and is progressing slowly towards the information society. It is being outpaced in several areas but also has some strong points, notably in business connectivity and take-up.

Broadband is widely available and coverage of rural areas well above average but the number of households taking up broadband is slightly below EU average. DSL is the dominant platform. The proportion of narrowband users is quite low, and the rate for conversion into broadband is well above EU average. Citizen usage of online services is below the EU average but a little lower than might be expected from connectivity levels. The exception is in content use with high popularity of music and games downloads, nonetheless the market for digital content has not yet lived up to its potential. Growth in Spain is steady, but other countries are growing faster, lowering Spain's relative rank in several indicators. Spanish citizens are still among the most active users of Internet outside their own home or work place, especially at public access points. Spain does well in uptake of digital television and 3G though the latter is still in its infancy.

eGovernment is an area where Spain has performed well, but is now being outpaced: Supply of enterprise services is only just behind the leading countries, but supply of citizen services has now fallen below average. Usage of eGovernment services has also grown slower than in many other countries, and is now slightly below average. Schools are widely connected to broadband but the number of computers available to students and actual use for teaching are not on the same levels.

ICT skill levels among employees are below EU average. ICT-related R&D as a proportion of GDP is only a third of EU average and the share of ICT-related R&D is low. Enterprises are mostly connected and Spain is close to the top level on broadband take-up for enterprises. In eCommerce and eBusiness usage Spanish enterprises are below the EU25 average and particularly low for online commerce-related activities. However, growth in enterprise usage of ICT has improved Spain's general position.

ICT policies in the National Reform Programme

To spur developments in Information Society, Spain is implementing the "Plan Avanz@". The Progress Report highlights a number of actions:

- *eGovernment*: Programmes being implemented include one-stop shops for enterprises and citizens, the introduction of an electronic identity card and an "eHealth" programme for the National Health Care System.
- *Significant legislation* includes laws that enable public procurement of advanced technologies, issuing of electronic invoices by public administrations and the exchange of research personnel between Universities and industry over a five year period.
- *Digital skills* are fostered through the "organic law for education". Its actions include promoting Internet access in the classrooms and giving ICT training to up to 5 million pupils.

- *Broadband gap*: The Government aims to provide all population centres of more than 250 people with broadband access by the end of 2007 also through EU Structural Funds.
- *Innovation in the economy* is supported through funds from "Plan Avanz@" for ICT adoption by SMEs, evaluation and monitoring systems to support participation in the 7th Framework Programme for Research and funds for research and cooperation in research.
- *Coordination*: all actions foresee extensive coordination with the autonomous regions through a number of territorial agreements made with the respective administrations. A number of helpdesks provide assistance to enterprises and government bodies.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)	85.0	87.0	89.0		87.4	14
DSL coverage in rural areas (as % of total population)			82.0		65.9	8
Broadband penetration (as % of population)	4.6	7.0	10.5	13.9	15.7	12
DSL penetration (as % of population)	3.4	5.3	8.1	11.0	12.8	11
Predominant download speed			0.5-1Mbps			
Households having broadband (as % of those having access to the internet at home)		44.7	58.4	75.0	62.1	9
% of enterprises with broadband access	50.7	71.6	76.2	87.1	74.5	4
Number of 3G subscribers per 100 inhabitants			2.3		5.0	12
Digital Television in households			27.8		30.6	8
Music: number of single downloads per 100 inhabitants			7.0			11
Internet Usage						
% population who are regular internet users	29.5	31.4	35.1	39.5	46.7	18
Take up of internet services (as % of population)						
Sending emails	29.1	30.6	33.8	36.7	43.8	19
Looking for information about goods and services	30.0	29.7	33.1	37.9	42.9	15
Internet telephoning or videoconferencing	3.0	2.9	3.6	6.3	7.1	20
Playing/downloading games and music	17.5	19.4	20.4	23.0	18.2	12
Listening to the web radio/watching web tv			24.3		11.8	
Reading online newspapers/magazines	18.4	21.1			19.0	
Internet banking	9.9	12.0	13.6	15.1	22.0	18
Places of access						
% at home	22.0	25.6	28.2	32.6	42.6	16
% at work	15.5	17.9	20.3	22.0	23.0	15
% at educational place	7.2	7.6	8.3	7.0	8.0	20
% at PIAP	10.4	8.2	10.6	10.1	6.8	5
eGovernment Indicators						
% basic public services for citizens fully available online	33.3	33.3		33.3	36.8	16
% basic public services for enterprises fully available online	75.0	87.5		87.5	67.8	3
% of population using e-Government services				24.7	23.8	15
of which for returning filled in forms	5.7	6.7	6.0	7.0	8.1	14
% of enterprises using e-Government services	43.5	50.4	55.2	58.1	63.7	21
of which for returning filled in forms	25.5	32.3	34.7	38.0	44.8	18
ICT in schools						
Number of computers connected per 100 pupils				8.5	9.9	15
% of schools with broadband access				81.0	67.0	10
% of teachers having used the computer in class during the last 12 months				68.2	74.3	19
e-Commerce						
E-commerce as % of total turnover of enterprises	2.1	2.9	2.7	6.9	11.7	16
% enterprises receiving internet orders	0.8	1.7	2.0	8.0	13.9	18
% enterprises purchasing on the internet		8.9	9.9	16.1	37.9	21
e-business. % enterprises:						
with integrated internal business processes	36.0	13.5	25.5	32.0	37.3	15
with integrated external business processes	8.4	5.0	7.8	12.5	13.5	12
Security: % enterprises using Secure servers	20.2	46.2	32.9	40.7	41.0	11
% using digital signatures for authentication	20.9	24.6	19.2	10.6	14.3	15
Employment and Skills						
% employees using computers connected to the Internet	27.3	29.0	33.5	35.3	36.1	13
% of persons employed with ICT user skills.	15.3	15.7	15.6	15.7	18.5	21
% of persons employed with ICT specialist skills	2.4	2.7	2.6	2.7	3.1	16
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP	4.5				5.5	17
ICT sector share of total employment	2.3				4.0	17
ICT sector growth (constant prices).	3.3				3.6	7
R&D expenditure in ICT by the business sector, as % of GDP	0.1				0.3	13
=== as % of total R&D expenditure	14.1				25.7	15

12. FINLAND

ICT on the ground

Finland is among the top nations for most i2010 indicators and is among the leading information society countries in Europe.

In connectivity, Finland shows continued growth and is now among the top three EU countries. Reflecting an overall high Internet usage, conversion from slower lines is still continuing. DSL dominates the market. Notably, Finland sports Europe's highest usage of public access points, reflecting a trend that the countries with the most citizens online in general are also the most active users of public access points. Finnish citizens are active users of online services. Perhaps reflecting increased take-up of broadband, multimedia and content use has also increased and Finland now performs better here than in utility use. Very high broadband penetration furthermore supports a competitive market for online music with very high usage and very low prices – despite the market's limited size and the absence of a major music industry. Commercial music downloads have the highest measured level in Europe. Digital television is well developed, whereas 3G is still in infancy.

eGovernment service levels for enterprises have fallen significantly behind the best performing countries, but enterprise use is now the second highest in the EU. Both citizen service levels and use among citizens are high compared with other countries. ICT availability and use in schools are very good, without reaching the absolute top European league.

The Finnish work force is among the most skilled in Europe, both at user and expert level. Finland's investments in ICT-related R&D measured against GDP are unrivalled in Europe, and ICTs' share of overall R&D investments is also the highest. Enterprise connectivity is the second highest in Europe, and eBusiness and eCommerce use is good without being exceptional. Note that some of this year's business figures for Finland are not directly comparable to previous years' figures.

ICT policies in the National Reform Programme

ICT are an important part of the Finnish National Reform Programme, whose implementation in 2006 has born positive results:

- *Infrastructure:* Preparations for the digital switchover is in a very advanced stage and in 2007 Finland will fully switch to digital television. The broadband strategy has yielded results in the form of high penetration rates, intensive network competition, wide services availability and comparatively low prices
- *IT-Security:* An IT security strategy is being implemented with the objective to bolster confidence in electronic services among the citizens and businesses. The regulator's resources for promoting data security would be doubled in 2007.
- *Research and Skills:* In June 2006 a national strategy on technology clusters of excellence was adopted, with one cluster dedicated to ICT industries and services. To promote digital skills IT training for adults with basic-level education is organized within the "Noste" programme.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)	87.6	89.4	90.4		87.4	12
DSL coverage in rural areas (as % of total population)			78.0		65.9	11
Broadband penetration (as % of population)	6.4	12.4	20.3	26.0	15.7	3
DSL penetration (as % of population)	5.2	9.0	16.0	21.1	12.8	1
Predominant download speed			LE 512kbps			
Households having broadband (as % of those having access to the internet at home)	26.1	41.8	66.7	81.7	62.1	5
% of enterprises with broadband access	65.2	70.9	81.1	88.9	74.5	2
Number of 3G subscribers per 100 inhabitants			1.5		5.0	13
Digital Television in households			42.9		30.6	4
Music: number of single downloads per 100 inhabitants			48.4			1
Internet Usage						
% population who are regular internet users	58.1	63.2	62.2	71.2	46.7	6
Take up of internet services (as % of population)						
Sending emails	54.8	61.9	62.7	67.4	43.8	6
Looking for information about goods and services	53.1	58.8	62.5	67.2	42.9	6
Internet telephoning or videoconferencing	2.3	5.3	9.7	14.2	7.1	4
Playing/downloading games and music	25.0	37.9	22.2	33.5	18.2	5
Listening to the web radio/watching web tv	9.6	11.9	16.7	20.2	11.8	7
Reading online newspapers/magazines	32.2	36.6	40.8	46.3	19.0	5
Internet banking	43.4	50.3	56.3	62.6	22.0	3
Places of access						
% at home	45.0	49.3	56.3	65.5	42.6	6
% at work	35.2	37.3	37.8	38.6	23.0	5
% at educational place	15.8	15.8		18.0	8.0	2
% at PIAP	21.5	23.4		15.7	6.8	1
eGovernment Indicators						
% basic public services for citizens fully available online	50.0	60.0		60.0	36.8	6
% basic public services for enterprises fully available online	75.0	75.0		62.5	67.8	15
% of population using e-Government services	40.1	45.3	47.3	46.9	23.8	4
of which for returning filled in forms	8.8	9.9	11.2	14.9	8.1	7
% of enterprises using e-Government services	88.9	90.8	91.3	92.8	63.7	2
of which for returning filled in forms	55.0	60.9	71.5	77.9	44.8	2
ICT in schools						
Number of computers connected per 100 pupils				16.2	9.9	7
% of schools with broadband access				90.0	67.0	6
% of teachers having used the computer in class during the last 12 months				85.1	74.3	7
e-Commerce						
E-commerce as % of total turnover of enterprises	10.6	12.7	14.2	14.3	11.7	5
% enterprises receiving internet orders	13.7	19.3	18.4	12.3	13.9	14
% enterprises purchasing on the internet		70.8	75.4	55.8	37.9	7
e-business. % enterprises:						
with integrated internal business processes	63.0	60.7	59.6	50.5	37.3	5
with integrated external business processes	17.2	16.0	17.3	12.9	13.5	11
Security: % enterprises using Secure servers	36.9	40.9	34.5	43.4	41.0	8
% using digital signatures for authentication	2.9	2.5	4.4	6.4	14.3	26
Employment and Skills						
% employees using computers connected to the Internet	52.5	53.2	56.0	58.9	36.1	2
% of persons employed with ICT user skills.	19.0	19.8	19.9	20.5	18.5	4
% of persons employed with ICT specialist skills	4.2	4.0	4.3	4.3	3.1	3
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP	10.0				5.5	2
ICT sector share of total employment	5.4				4.0	3
ICT sector growth (constant prices).	2.6				3.6	11
R&D expenditure in ICT by the business sector, as % of GDP	1.6				0.3	1
=== as % of total R&D expenditure	64.3				25.7	1

13. FRANCE

ICT on the ground

France shows a mixed picture in information society development with strengths in business use and connectivity but weaknesses in usage among citizens, which lag a long way behind. Assessment is hindered by lack of data before 2006.

Broadband penetration has grown rapidly and coverage is widespread and this puts France just behind the group of highest-performing countries. Broadband is dominated by DSL. Actual usage is however below the EU average and less than might be expected from the high connectivity. The country's sizeable record industry has not been able to harness the above average broadband penetration for online sales. Online media usage, except online broadcasting, is currently among the lowest in Europe.

The proportion of basic public services available online is higher than the EU average but still well below the best performing countries. Enterprise use of eGovernment is close to average. Although schools have more broadband in schools than average, the availability of computers to students and use for teaching is not that well developed, although still close to mid-levels for Europe.

Skill levels in ICT among employees are somewhat below EU average. The share of ICT in R&D is fairly high, above 30%. Enterprise use of ICT is also good, French enterprises are using both eBusiness and eCommerce tools well above the average, and is currently the leading country in use of eSignatures by enterprises.

ICT policies in the National Reform Programme

ICT is considered to be a national policy priority. Measures taken have started to yield benefits, most visibly in the broadband market, where penetration is growing rapidly and prices are among the lowest in the EU. The 2006 Progress Report confirms the priorities of the NRP, specifically the ambitious targets for infrastructure development, as well as network security and the development of ICT-skills among young people.

- *ICT infrastructure:* coverage of mobile telephony, broadband and digital TV has spread thanks to regulatory and financial action as well as to a significant increase in competition.
- *Regional focus:* The Government has started to include ICT in plans for regional development to substantially increase the share of ICT-related expenditures in the forthcoming structural funds programmes.
- *ICT-Research:* Research investment by the Government has been raised considerably, particularly through the newly established Agency for Industrial Innovation and its ICT research projects.
- *Trust and security:* on the basis of a report by the Parliament, 12 recommendations are being implemented with concrete initiatives for spam and protection of minors.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)	79.3	90.8	96.4		87.4	7
DSL coverage in rural areas (as % of total population)			87.9		65.9	6
Broadband penetration (as % of population)	4.8	9.5	14.7	19.0	15.7	8
DSL penetration (as % of population)	4.3	8.8	13.9	17.9	12.8	4
Predominant download speed			LE 512kbps			
Households having broadband (as % of those having access to the internet at home)				73.9	62.1	10
% of enterprises with broadband access	49.1			86.5	74.5	5
Number of 3G subscribers per 100 inhabitants			2.4		5.0	11
Digital Television in households			34.7		30.6	6
Music: number of single downloads per 100 inhabitants			13.7			10
Internet Usage						
% population who are regular internet users				39.3	46.7	19
Take up of internet services (as % of population)						
Sending emails				34.2	43.8	20
Looking for information about goods and services				36.0	42.9	17
Internet telephoning or videoconferencing				4.9	7.1	23
Playing/downloading games and music				9.3	18.2	29
Listening to the web radio/watching web tv				10.3	11.8	18
Reading online newspapers/magazines				9.5	19.0	26
Internet banking				18.1	22.0	15
Places of access						
% at home				34.6	42.6	15
% at work				18.2	23.0	20
% at educational place				6.3	8.0	23
% at PIAP				4.6	6.8	18
eGovernment Indicators						
% basic public services for citizens fully available online	33.3	41.7		58.3	36.8	8
% basic public services for enterprises fully available online	62.5	62.5		75.0	67.8	10
% of population using e-Government services					23.8	
of which for returning filled in forms					8.1	
% of enterprises using e-Government services				65.8	63.7	17
of which for returning filled in forms				51.3	44.8	14
ICT in schools						
Number of computers connected per 100 pupils				8.9	9.9	11
% of schools with broadband access				75.0	67.0	13
% of teachers having used the computer in class during the last 12 months				65.5	74.3	21
e-Commerce						
E-commerce as % of total turnover of enterprises				16.7	11.7	3
% enterprises receiving internet orders				16.2	13.9	10
% enterprises purchasing on the internet				26.0	37.9	14
e-business. % enterprises:						
with integrated internal business processes				53.3	37.3	4
with integrated external business processes				16.2	13.5	6
Security: % enterprises using Secure servers				52.3	41.0	5
% using digital signatures for authentication				32.9	14.3	1
Employment and Skills						
% employees using computers connected to the Internet	26.8			33.5	36.1	14
% of persons employed with ICT user skills.	17.1	16.8	16.6	16.3	18.5	20
% of persons employed with ICT specialist skills	2.9	3.1	2.9	2.9	3.1	14
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP	5.6				5.5	10
ICT sector share of total employment	4.8				4.0	5
ICT sector growth (constant prices).	1.2				3.6	16
R&D expenditure in ICT by the business sector, as % of GDP	0.4				0.3	4
=== as % of total R&D expenditure	30.6				25.7	6

14. HUNGARY

ICT on the ground

Hungary performs in the middle low end for most aspects of information society development. In general, citizens are more active than enterprises, notably in media use which is far higher than might be expected from connectivity levels. The indicators suggest a country with advanced interest and user skills but hindered by lack of connectivity from fulfilling the industrial and social potential.

Broadband connectivity and Internet access are below average and growth rates have been insufficient to avoid Hungary being overtaken and falling down the ranking. The broadband to narrowband ratio is above average suggesting users are going directly to broadband. About two thirds of connections are DSL. Usage of advanced Internet services among citizens is higher than average, with the exception of banking, and quite significantly higher than what might be expected from connectivity rates. In the absence of high broadband penetration, the widespread consumption of audiovisual online content has not translated into a commercial market for online content. 3G and digital television are still in their infancy.

Availability of public online services for citizens is about average while service supply for enterprises is low. Usage of eGovernment services is below average for citizens and very low for enterprises. Hungary has a relatively high number of broadband connected schools, but the number of computers per pupils is low, and the actual use by teachers in class is amongst the lowest in Europe.

Enterprise connectivity is low and the use of eBusiness and online services is one of Hungary's weakest points. The performance in eCommerce is somewhat better, but still below average. This is despite Hungary having a fairly large ICT sector share of GDP and employment and solid basic skill ratios.

ICT policies in the National Reform Programme

ICT are one of the priorities in three microeconomic pillars of the Hungarian Progress Report 2006: R&D and innovation, business environment and infrastructure.

- *Fostering ICT use:* a number of projects have been set up to support business and household use of ICT. On-line access to government services, particularly in the field of taxation has been enhanced. One-stop shops for businesses and the healthcare administration are based on electronic means.
- *R&D:* Research in ICT is included in the programme, *Asboth Oszkar*, aimed at fostering advanced technologies.
- *Content:* The Digital National Library programme aims to digitise and make accessible national content resources.
- *Infrastructure:* Measures include projects in broadband, network security and interoperability. ICT in environmental protection is also highlighted.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)	58.0	70.0	85.0		87.4	18
DSL coverage in rural areas (as % of total population)			76.0		65.9	12
Broadband penetration (as % of population)		2.9	5.1	8.6	15.7	21
DSL penetration (as % of population)		1.9	3.3	5.3	12.8	19
Predominant download speed			0.5-1Mbps			
Households having broadband (as % of those having access to the internet at home)		40.9	49.5	68.2	62.1	13
% of enterprises with broadband access				61.3	74.5	19
Number of 3G subscribers per 100 inhabitants			0.0		5.0	20
Digital Television in households			8.4		30.6	17
Music: number of single downloads per 100 inhabitants			0.0			15
Internet Usage						
% population who are regular internet users		21.3	33.6	41.7	46.7	17
Take up of internet services (as % of population)						
Sending emails		20.4	31.4	36.9	43.8	18
Looking for information about goods and services		19.5	25.2	34.7	42.9	18
Internet telephoning or videoconferencing		2.1	4.1	7.8	7.1	15
Playing/downloading games and music		11.8	16.9	22.4	18.2	13
Listening to the web radio/watching web tv		3.3	7.2	12.1	11.8	13
Reading online newspapers/magazines		14.2	18.3	24.9	19.0	13
Internet banking		2.7	5.8	8.0	22.0	25
Places of access						
% at home		14.3	20.7	28.8	42.6	21
% at work		10.0	16.8	18.7	23.0	19
% at educational place		6.7	7.2	11.7	8.0	6
% at PIAP		9.7	5.7	6.8	6.8	10
eGovernment Indicators						
% basic public services for citizens fully available online		8.3		50.0	36.8	10
% basic public services for enterprises fully available online		25.0		50.0	67.8	21
% of population using e-Government services		16.1	17.9	16.8	23.8	17
of which for returning filled in forms		4.0	7.3	5.3	8.1	18
% of enterprises using e-Government services		34.7		44.9	63.7	25
of which for returning filled in forms		23.2		27.7	44.8	24
ICT in schools						
Number of computers connected per 100 pupils				8.6	9.9	14
% of schools with broadband access				77.0	67.0	11
% of teachers having used the computer in class during the last 12 months				42.8	74.3	25
e-Commerce						
E-commerce as % of total turnover of enterprises				7.0	11.7	15
% enterprises receiving internet orders		5.7		10.7	13.9	16
% enterprises purchasing on the internet		13.9		12.2	37.9	24
e-business. % enterprises:						
with integrated internal business processes		33.9		4.5	37.3	27
with integrated external business processes		5.2		5.4	13.5	22
Security: % enterprises using Secure servers		26.6		19.4	41.0	20
% using digital signatures for authentication		13.3		7.4	14.3	25
Employment and Skills						
% employees using computers connected to the Internet		26.3		20.6	36.1	25
% of persons employed with ICT user skills.	19.5	19.9	20.0	20.1	18.5	5
% of persons employed with ICT specialist skills	3.2	2.9	2.6	2.9	3.1	15
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP	6.4				5.5	7
ICT sector share of total employment	4.9				4.0	4
ICT sector growth (constant prices).	2.4				3.6	12
R&D expenditure in ICT by the business sector, as % of GDP	0.0				0.3	15
=== as % of total R&D expenditure	14.2				25.7	13

15. ITALY

ICT on the ground

Italy conveys a mixed picture of its Information Society development. It is the leading country in 3G and fibre development, scores well on a few other indicators, while it falls behind severely in citizen use of Internet services.

Broadband penetration is rising only slightly slower than EU average, leaving Italy as a somewhat sluggish middle-of-the-road performer for both enterprise and citizen connectivity. With no cable TV available, almost all subscriptions are DSL-based. However, Italy is a leading country in terms of 3G take-up and for fibre with 270,000 connections, more than a third of the EU total. The percentage of regular Internet users is falling severely behind EU average and similar negative gaps can be observed for the adoption of all the Internet services, regardless of their degree of complexity. While consumption of online content is low across the board, a thriving market for mobile content has developed, particularly for music downloads to handsets. In this regard, there might be signs of a country progressing towards convergence through mobile connectivity.

eGovernment supply in Italy is healthy, and for enterprises well above EU average. Use among enterprises is also good for basic services and above average for more advanced types of interactions. When it comes to citizen use, other countries have shown stronger growth, leaving Italian citizen use well below average. Use of ICT in education is mixed: While the number of connected PCs is low, the access to broadband and use in teaching is close to mid-level.

ICT skills among employees, both specialist and user skills, are close to EU average, but slightly lower for advanced skills. While the share of ICT-related investments in total R&D is just slightly behind EU average, overall investments is less than half of average. The picture for actual use of ICT in enterprises is more unclear, partly due to indicators which are not fully comparable with other countries.

ICT policies in the National Reform Programme

Italy has a new government and the NPR has been revised according to the new objectives: eGovernment, innovation, take-up by SMEs and digital divide.

- *Electronic communications:* In the area of broadband, Italy aims to reduce the digital divide through public investment in disadvantaged areas with the objective of bringing fixed and wireless connectivity to 80% of population in the South.
- *eGovernment:* Fiscal incentives have been introduced to stimulate ICT-uptake by enterprises. 134 regional and local projects have been co-financed to improve levels and quality of eGovernment services. A new service for "electronic tax returns" enables businesses to access the database operated by the income tax authorities for purposes connected with filing their tax returns. Similar activities can be carried out by citizens on the web.
- *R&D and innovation:* Specific measures are taken to stimulate investment by the ICT sector through the setup of technological districts and platforms.

- *Cultural heritage:* Actions are based on the use of innovative methods and technologies that are strategic for purposes of integrating and spreading knowledge; preservation and sustainable use and exploitation of the country's cultural resources; growth of businesses linked to creative industries.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)	82.0	85.0	87.0		87.4	16
DSL coverage in rural areas (as % of total population)			44.6		65.9	19
Broadband penetration (as % of population)	3.2	6.7	10.0	13.6	15.7	13
DSL penetration (as % of population)	2.8	6.2	9.4	13.1	12.8	10
Predominant download speed			0.5-1Mbps			
Households having broadband (as % of those having access to the internet at home)			33.6	40.5	62.1	25
% of enterprises with broadband access	31.2	23.3	56.7	69.6	74.5	15
Number of 3G subscribers per 100 inhabitants			15.3		5.0	2
Digital Television in households			38.7		30.6	5
Music: number of single downloads per 100 inhabitants			5.5			13
Internet Usage						
% population who are regular internet users	24.9	25.7	28.3	30.8	46.7	25
Take up of internet services (as % of population)						
Sending emails			26.5	29.1	43.8	23
Looking for information about goods and services			21.2	23.2	42.9	26
Internet telephoning or videoconferencing			2.2	3.3	7.1	27
Playing/downloading games and music			10.4	10.5	18.2	28
Listening to the web radio/watching web tv			4.6	5.3	11.8	27
Reading online newspapers/magazines			12.8	12.8	19.0	24
Internet banking			7.6	8.9	22.0	24
Places of access						
% at home	22.7	21.3	24.2	26.6	42.6	22
% at work	13.6	14.6	15.9	16.7	23.0	23
% at educational place	1.8	4.0	3.8	4.9	8.0	25
% at PIAP	0.7	6.0	3.7	4.9	6.8	16
eGovernment Indicators						
% basic public services for citizens fully available online	25.0	27.3		36.4	36.8	13
% basic public services for enterprises fully available online	75.0	87.5		87.5	67.8	3
% of population using e-Government services			14.1	16.1	23.8	20
of which for returning filled in forms			3.6	5.0	8.1	19
% of enterprises using e-Government services		65.0	72.6	86.5	63.7	4
of which for returning filled in forms	34.5	35.4	28.9	49.4	44.8	15
ICT in schools						
Number of computers connected per 100 pupils				6.5	9.9	21
% of schools with broadband access				69.0	67.0	17
% of teachers having used the computer in class during the last 12 months				72.4	74.3	14
e-Commerce						
E-commerce as % of total turnover of enterprises	1.9	3.4	2.1	2.0	11.7	20
% enterprises receiving internet orders	1.8	8.7	3.3	3.3	13.9	24
% enterprises purchasing on the internet		13.8	19.2	27.1	37.9	12
e-business. % enterprises:						
with integrated internal business processes	11.6	33.1	47.7	46.5	37.3	6
with integrated external business processes					13.5	
Security: % enterprises using Secure servers	34.7	54.7	30.3	39.3	41.0	13
% using digital signatures for authentication	4.3	10.5	8.8	11.5	14.3	12
Employment and Skills						
% employees using computers connected to the Internet	24.3	21.5	24.8	28.2	36.1	20
% of persons employed with ICT user skills.	22.9	17.6	17.6	19.0	18.5	11
% of persons employed with ICT specialist skills	2.8	2.8	2.9	2.7	3.1	18
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP	4.8				5.5	15
ICT sector share of total employment	3.6				4.0	15
ICT sector growth (constant prices).	1.3				3.6	15
R&D expenditure in ICT by the business sector, as % of GDP	0.1				0.3	11
=== as % of total R&D expenditure	22.9				25.7	8

16. LITHUANIA

ICT on the ground

Coming from a low-performance background, Lithuania has moved into being a mid-level performer in some regards, but is still in the low end in most indicators. Development does not seem to have continued at the same speed as earlier years. However, coming to ICT skills, overall increase of Internet take-up and use of media services, Lithuania is performing well.

Broadband take-up in the Lithuanian population is still slow. However, the broadband take-up has been complemented by increased narrowband take-up, an unusual development, although natural given the low overall connectivity. Overall connectivity growth is therefore better than only broadband figures show. Broadband is available through alternative access platforms, and DSL represents a little less than half of the market. Use of Internet and usage of online services are among the lowest in the EU for basic and utility services. However, media downloading, videoconferencing and reading are all areas where Lithuania performs well above average, an interesting split in usage that can be seen in a handful of countries with less mature overall development and most likely reflecting general societal circumstances. Despite the popularity of digital audiovisual content a sizable commercial market for online content has not developed so far – possibly due to the limited size of the market and the low broadband penetration.

The supply of public services fully online in Lithuania has fallen below EU average since last year; however their use by Lithuanian enterprises is still solid. Citizen use of eGovernment services is low, in accordance with the low connectivity rates. Use of ICT in schools is among the lowest in Europe.

Basic ICT skills in the work force are above EU average, but for specialist skills Lithuania has the lowest performance of the measured countries. Enterprise take-up of broadband has not grown, and is now below EU average. Use of ICT tools and online services among enterprises is mixed: While selling online is above average and eCommerce in general growing, the other eBusiness indicators show low performance with the exception of eSignature use.

ICT policies in the National Reform Programme

The Lithuanian Progress Report 2006 announced the implementation of several programmes in ICT:

- *Broadband:* Within the Rural Broadband Network of Information Technologies scheme the deployment of broadband has been supported and access has been provided for public authorities, hospitals, schools and museums as well as for citizens and businesses in rural areas.
- *eGovernment:* Within the eGovernment Implementation Plan twenty basic public services are being put online until 2008. The electronic tax declaration system for taxpayers has been implemented and ICT are also harnessed by the employment services. Additionally, an eGovernment portal is being developed. The legal framework for the use of electronic communications within the administration was also created.

- To promote *Digital Literacy*, the General Computer Literacy Programme and the Programme of Social Integration of the Disabled People have been implemented, while schools are being provided with computers.
- *ICT use* is being fostered through the programme "Development of Rural Internet Access Points." This Programme has been completed in 2006, but the Progress Report foresees its follow-up in the subsequent period 2006-2008.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)			82.2		87.4	21
DSL coverage in rural areas (as % of total population)			54.6		65.9	17
Broadband penetration (as % of population)		3.1	5.8	9.3	15.7	20
DSL penetration (as % of population)		1.2	2.5	4.6	12.8	20
Predominant download speed			LE 512kbps			
Households having broadband (as % of those having access to the internet at home)	27.5	31.7	73.4	56.2	62.1	21
% of enterprises with broadband access		50.1	57.5	57.1	74.5	24
Number of 3G subscribers per 100 inhabitants			0.0		5.0	22
Digital Television in households					30.6	
Music: number of single downloads per 100 inhabitants						
Internet Usage						
% population who are regular internet users	20.2	25.8	29.8	37.7	46.7	20
Take up of internet services (as % of population)						
Sending emails	17.0	22.6	25.6	32.4	43.8	21
Looking for information about goods and services	10.0	15.3	21.5	29.6	42.9	22
Internet telephoning or videoconferencing	1.1	1.9	4.4	11.3	7.1	8
Playing/downloading games and music	11.9	15.3	17.5	24.4	18.2	10
Listening to the web radio/watching web tv	6.8	8.3	10.9	16.9	11.8	9
Reading online newspapers/magazines	14.8	21.0	24.2	30.3	19.0	8
Internet banking	3.5	6.7	10.3	14.7	22.0	19
Places of access						
% at home	6.9	10.9	15.7	29.5	42.6	20
% at work	9.6	12.3	15.4	17.3	23.0	21
% at educational place	9.2	11.2	10.8	11.4	8.0	7
% at PIAP	6.2	11.2	5.8	6.7	6.8	11
eGovernment Indicators						
% basic public services for citizens fully available online		25.0		25.0	36.8	19
% basic public services for enterprises fully available online		62.5		62.5	67.8	15
% of population using e-Government services	6.7	9.8	12.1	12.7	23.8	21
of which for returning filled in forms	3.0	5.5	5.6	6.1	8.1	16
% of enterprises using e-Government services		64.7	71.8	76.1	63.7	11
of which for returning filled in forms		30.1	51.5	55.6	44.8	8
ICT in schools						
Number of computers connected per 100 pupils				5.2	9.9	26
% of schools with broadband access				33.0	67.0	24
% of teachers having used the computer in class during the last 12 months				59.3	74.3	24
e-Commerce						
E-commerce as % of total turnover of enterprises		1.8	2.3	5.1	11.7	18
% enterprises receiving internet orders		4.8	6.2	14.7	13.9	11
% enterprises purchasing on the internet		12.9	15.3	21.9	37.9	18
e-business. % enterprises:						
with integrated internal business processes		19.3	17.9	18.5	37.3	23
with integrated external business processes		6.6	6.2	9.1	13.5	18
Security: % enterprises using Secure servers		22.6	18.8	24.7	41.0	16
% using digital signatures for authentication		16.0	22.8	26.8	14.3	2
Employment and Skills						
% employees using computers connected to the Internet		17.8	20.2	23.4	36.1	24
% of persons employed with ICT user skills.	16.1	17.5	18.3	19.6	18.5	7
% of persons employed with ICT specialist skills	1.6	2.0	1.5	1.6	3.1	27
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP					5.5	
ICT sector share of total employment					4.0	
ICT sector growth (constant prices).					3.6	
R&D expenditure in ICT by the business sector, as % of GDP					0.3	
=== as % of total R&D expenditure					25.7	

17. LUXEMBOURG

ICT on the ground

Luxembourg scores very high on most i2010 household indicators, while enterprise level performance is more average and with less growth.

Broadband take-up was high and Luxembourg keeps its position somewhat below the group of best performers. With more than a third of all connected households still relying on slower connection types, Luxembourg seems to be in good position for further rapid growth in broadband. Broadband connections are largely DSL-based. Citizen use of the Internet in Luxembourg is generally high, without being exceptional. Internet telephony use is especially high. Luxembourg's Internet users are avid consumers of audiovisual digital content, but this popularity has not been harnessed commercially yet – possibly due to the market's limited size. 3G is present, and within the top ten countries of take-up.

Despite a very low supply of eGovernment services, use of these services among citizens is reported to be high. Business use is also reported high for basic eGovernment services, but low for advanced services. These scores might reflect the focus of the few services available, but still underline a need to improve supply levels. The number of connected computers in schools is high, but both actual teacher use and access to broadband is more average.

The work force is skilled in ICT, and performs above EU average both on user and expert skill levels. However, enterprise use of broadband is only close to the EU average and the growth among enterprises is slower. Enterprise use of eBusiness and eCommerce tools is not on level with general citizen usage, and in some cases now even below EU average.

ICT policies in the National Reform Programme

Luxembourg's NRP emphasises the promotion of Luxembourg as a location for eCommerce, the construction of advanced infrastructure and the promotion of ICT take-up among enterprises and individuals.

- *eTrust and eCommerce*: A public-private partnership was set up to issue advanced digital security certificates and a consortium was chosen to install a public key infrastructure. Measures to address online security issues and to raise awareness about them included an online education platform, an IT threat observatory and a publicly funded research programme.
- *Infrastructure*: An organisation was set up to construct, manage and market an advanced fibre optic infrastructure and connections with international backbones. A fourth 3G-license was issued and the transition to digital TV is almost completed.
- *eGovernment*: One-stop-shops for enterprises and citizens are being rolled out until 2010 and a digital assistant for enterprises is to go online in 2007.
- *eInclusion*: A convention on the legal status of teleworking was signed and ICT will be employed in initial and ongoing education, particularly for long distance learning.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)	100.0	100.0	100.0		87.4	1
DSL coverage in rural areas (as % of total population)			100.0		65.9	1
Broadband penetration (as % of population)	2.8	7.1	13.4	19.7	15.7	7
DSL penetration (as % of population)	2.4	6.2	12.0	17.9	12.8	5
Predominant download speed			0.5-1Mbps			
Households having broadband (as % of those having access to the internet at home)	16.2	27.7	51.7	62.8	62.1	16
% of enterprises with broadband access	39.1	48.0	64.2	76.0	74.5	11
Number of 3G subscribers per 100 inhabitants			6.1		5.0	7
Digital Television in households			6.7		30.6	20
Music: number of single downloads per 100 inhabitants						
Internet Usage						
% population who are regular internet users	48.1	58.9	63.4	65.2	46.7	7
Take up of internet services (as % of population)						
Sending emails	47.5	59.2	62.6	64.8	43.8	7
Looking for information about goods and services	46.5	52.8	60.7	63.7	42.9	7
Internet telephoning or videoconferencing	4.6	5.9	10.9	16.3	7.1	2
Playing/downloading games and music	17.3	29.0	29.8	26.4	18.2	7
Listening to the web radio/watching web tv	8.9	14.9	19.1	21.6	11.8	6
Reading online newspapers/magazines	22.4	27.8	29.4	29.1	19.0	9
Internet banking	23.3	34.6	37.1	40.8	22.0	8
Places of access						
% at home	43.2	58.6	64.7	65.1	42.6	7
% at work	25.8	26.5	26.3	31.7	23.0	7
% at educational place	10.2	7.1	9.6	7.7	8.0	18
% at PIAP	14.4	7.8	2.9	1.9	6.8	28
eGovernment Indicators						
% basic public services for citizens fully available online	8.3	8.3		8.3	36.8	23
% basic public services for enterprises fully available online	25.0	37.5		37.5	67.8	24
% of population using e-Government services	28.1	44.8	46.0	45.8	23.8	5
of which for returning filled in forms	10.9	21.2	18.7	17.3	8.1	4
% of enterprises using e-Government services	64.8	71.5		82.7	63.7	7
of which for returning filled in forms	25.0	25.6		32.3	44.8	23
ICT in schools						
Number of computers connected per 100 pupils				18.3	9.9	5
% of schools with broadband access				77.0	67.0	11
% of teachers having used the computer in class during the last 12 months				70.2	74.3	16
e-Commerce						
E-commerce as % of total turnover of enterprises					11.7	
% enterprises receiving internet orders	9.1	10.9			13.9	
% enterprises purchasing on the internet		32.8	40.0		37.9	
e-business. % enterprises:						
with integrated internal business processes	40.2	35.8	44.7	39.8	37.3	11
with integrated external business processes	15.3	15.9	16.1	13.7	13.5	10
Security: % enterprises using Secure servers	57.4	53.2	57.7		41.0	
% using digital signatures for authentication	14.3	12.8		10.2	14.3	17
Employment and Skills						
% employees using computers connected to the Internet	32.7	35.5	32.9	32.2	36.1	16
% of persons employed with ICT user skills.	23.9	26.9	27.3		18.5	
% of persons employed with ICT specialist skills	3.1	3.6	3.6		3.1	
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP	5.0				5.5	14
ICT sector share of total employment	3.8				4.0	13
ICT sector growth (constant prices).	3.6				3.6	6
R&D expenditure in ICT by the business sector, as % of GDP					0.3	
=== as % of total R&D expenditure					25.7	

18. LATVIA

ICT on the ground

Latvia shows an uneven performance in the information society indicators. Enterprise use and government service levels are among the lowest in Europe, whereas certain types of connectivity and citizen use are above EU average.

The percentage of broadband subscriptions in the Latvian population remains less than half of EU average. DSL accounts for about half of all connections. The country still has a base of nearly 50% narrowband users, and DSL coverage is high, which could mean faster broadband growth is possible in the future. Latvian citizens use the basic and utility online services at average levels, despite of low connectivity. Furthermore, media services and Internet telephony are considerably more popular, much like in its Baltic neighbours. The above average consumption of audiovisual digital content has not been harnessed commercially – possibly due to the market's limited size and low broadband connectivity – both hindering factors in the roll out of high quality offerings.

The availability of public services continues to be among the lowest in Europe, and use among enterprises is the lowest or close to lowest in Europe in most regards. Citizen use has increased and is now above average with the few services available, although advanced use is naturally less common. Broadband connectivity in school is low, and the actual use of ICT and computer availability the lowest of the measured countries.

Skills levels in the work force are about average, with a slight decrease for specialist levels, possible due to work force developments. However, enterprise and work force use of Internet is not on the same levels, and in several aspects among the lowest in Europe.

ICT policies in the National Reform Programme

The Latvian NRP stresses three ICT-related priorities: eGovernment, network security and improvement of broadband coverage.

- *eTrust*: The introduction of a safe electronic signature and certifications are in the implementation phase and smart card-based solutions are issued since September 2006.
- *eGovernment*: Enabling legislation was passed in 2005 and 2006 and a coordination unit has been set up. Measures to date include: the implementation of an integrated register of state information systems until 2009, the installation of an Intranet-based accounting systems until the end of 2009, the installation of an electronic procurement agency and an electronic document circulation system within the national government. National unified information systems for libraries, state archives and museum inventory are being implemented. A unified web portal was launched. State information systems are developed and improved, schools, libraries and local governments are equipped with Internet access and public Internet access points are being set up.
- *Broadband*: Two programmes are under way to develop broadband in rural areas until 2008.

- *eInclusion*: ICT are already used to train groups at risk of social exclusion. Telework for disabled persons and distance learning are in an early planning stage.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)			85.0		87.4	18
DSL coverage in rural areas (as % of total population)					65.9	
Broadband penetration (as % of population)		2.4	4.5	9.3	15.7	19
DSL penetration (as % of population)		1.4	2.6	4.0	12.8	22
Predominant download speed			LE 512kbps			
Households having broadband (as % of those having access to the internet at home)		36.6	45.7	53.3	62.1	22
% of enterprises with broadband access		44.8	48.1	58.9	74.5	22
Number of 3G subscribers per 100 inhabitants			0.0		5.0	22
Digital Television in households					30.6	
Music: number of single downloads per 100 inhabitants						
Internet Usage						
% population who are regular internet users		27.3	36.3	46.0	46.7	14
Take up of internet services (as % of population)						
Sending emails		24.6	33.1	40.5	43.8	16
Looking for information about goods and services		18.8	27.2	36.2	42.9	16
Internet telephoning or videoconferencing		2.9	8.3	14.0	7.1	5
Playing/downloading games and music		15.5	20.6	23.9	18.2	11
Listening to the web radio/watching web tv		9.5	11.5	17.0	11.8	8
Reading online newspapers/magazines		19.2	23.8	26.7	19.0	10
Internet banking		11.7	15.6	22.1	22.0	13
Places of access						
% at home		10.9	20.7	31.4	42.6	18
% at work		17.2	18.2	21.6	23.0	16
% at educational place		6.8	7.0	9.2	8.0	14
% at PIAP		11.6	8.2	8.8	6.8	7
eGovernment Indicators						
% basic public services for citizens fully available online		8.3		8.3	36.8	23
% basic public services for enterprises fully available online		0.0		12.5	67.8	27
% of population using e-Government services		13.4	13.4	25.0	23.8	14
of which for returning filled in forms		3.6	5.0	6.1	8.1	17
% of enterprises using e-Government services		40.5	35.2	39.9	63.7	27
of which for returning filled in forms		14.6	15.2	20.6	44.8	26
ICT in schools						
Number of computers connected per 100 pupils				5.1	9.9	27
% of schools with broadband access				67.0	67.0	19
% of teachers having used the computer in class during the last 12 months				34.9	74.3	27
e-Commerce						
E-commerce as % of total turnover of enterprises			0.7	1.3	11.7	22
% enterprises receiving internet orders			1.8	3.0	13.9	25
% enterprises purchasing on the internet			7.3	12.9	37.9	23
e-business. % enterprises:						
with integrated internal business processes		14.9	17.4	14.6	37.3	25
with integrated external business processes		4.0	3.6	5.1	13.5	23
Security: % enterprises using Secure servers		13.8	12.2	15.4	41.0	22
% using digital signatures for authentication		6.7	7.3	9.3	14.3	21
Employment and Skills						
% employees using computers connected to the Internet		17.3	16.5	19.1	36.1	26
% of persons employed with ICT user skills.	17.3	17.0	17.1	18.9	18.5	13
% of persons employed with ICT specialist skills	3.0	3.3	3.3	3.1	3.1	11
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP					5.5	
ICT sector share of total employment					4.0	
ICT sector growth (constant prices).					3.6	
R&D expenditure in ICT by the business sector, as % of GDP					0.3	
=== as % of total R&D expenditure					25.7	

19. MALTA

ICT on the ground

Although data are incomplete, Malta shows a mixed performance in the few available indicators for information society development.

The percentage of broadband subscriptions is just below EU average and has shown slow growth compared to previous years. DSL accounts for more than half of all broadband connections. Despite broadband penetration only slightly below average, a market for paid audiovisual online content has not materialized so far, possibly due to the market's limited size and average broadband speeds.

eGovernment supply for citizens is measured as the highest in Europe, whereas enterprise supply is slightly below normal. The number of enterprises interacting online with public authorities in was higher in 2005 than the EU average of 2006. Schools are very well connected, scoring second in Europe, but the availability of computers and teacher use in classroom is only average.

User skills levels in ICT in the work force are among the highest in the EU. Expert level skills are however now below average. Enterprise connectivity and technology use was in 2005 generally already above the EU average of 2006, so it seems safe to assume that Malta here performs above average.

ICT policies in the National Reform Programme

The ICT sector in Malta is well-developed and the government aims at attracting more ICT companies: a National ICT Framework aims to make Malta a better place to invest and various measures are improving digital skills among workers.

- The *SmartCity@Malta initiative* aims to attract "knowledge-based activities by leading global players in the field". The project has attracted foreign direct investment and is expected to create over 5000 mostly ICT-related jobs.
- *Digital Skills*: A number of initiatives that address employment in the ICT sector and general ICT competencies are being implemented. They include an eWork Framework, a National ICT Skills Framework, ICT certifications for students and the unemployed, fiscal incentives to encourage education in ICT and science, an ICT student placement programme, and academic initiatives developed in partnership with Microsoft, Cisco, SAP and IBM.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)	95.0	95.0	99.0		87.4	5
DSL coverage in rural areas (as % of total population)			0.0		65.9	22
Broadband penetration (as % of population)		3.8	11.1	13.2	15.7	15
DSL penetration (as % of population)		3.2	6.5	8.1	12.8	16
Predominant download speed			1-2Mbps			
Households having broadband (as % of those having access to the internet at home)				76.7	62.1	8
% of enterprises with broadband access	62.3		77.7		74.5	
Number of 3G subscribers per 100 inhabitants			0.0		5.0	22
Digital Television in households					30.6	
Music: number of single downloads per 100 inhabitants			0.0			15
Internet Usage						
% population who are regular internet users				36.0	46.7	21
Take up of internet services (as % of population)						
Sending emails				31.3	43.8	22
Looking for information about goods and services				25.6	42.9	24
Internet telephoning or videoconferencing				4.1	7.1	26
Playing/downloading games and music				16.6	18.2	19
Listening to the web radio/watching web tv				9.9	11.8	19
Reading online newspapers/magazines				16.6	19.0	19
Internet banking				16.0	22.0	17
Places of access						
% at home				32.2	42.6	17
% at work				14.0	23.0	25
% at educational place				3.8	8.0	28
% at PIAP				1.8	6.8	29
eGovernment Indicators						
% basic public services for citizens fully available online		33.3		83.3	36.8	1
% basic public services for enterprises fully available online		50.0		62.5	67.8	15
% of population using e-Government services				16.2	23.8	19
of which for returning filled in forms				3.4	8.1	20
% of enterprises using e-Government services			68.3		63.7	
of which for returning filled in forms	35.5		45.4		44.8	
ICT in schools						
Number of computers connected per 100 pupils				10.2	9.9	10
% of schools with broadband access				95.0	67.0	1
% of teachers having used the computer in class during the last 12 months				74.5	74.3	13
e-Commerce						
E-commerce as % of total turnover of enterprises					11.7	
% enterprises receiving internet orders	20.6		14.3		13.9	
% enterprises purchasing on the internet			46.8		37.9	
e-business. % enterprises:						
with integrated internal business processes			43.4		37.3	
with integrated external business processes			18.9		13.5	
Security: % enterprises using Secure servers	38.0		41.2		41.0	
% using digital signatures for authentication	2.9		10.7		14.3	
Employment and Skills						
% employees using computers connected to the Internet	29.2				36.1	
% of persons employed with ICT user skills.	19.9	20.5	20.4	20.8	18.5	3
% of persons employed with ICT specialist skills	3.1	4.1	3.3	2.4	3.1	24
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP					5.5	
ICT sector share of total employment					4.0	
ICT sector growth (constant prices).					3.6	
R&D expenditure in ICT by the business sector, as % of GDP					0.3	
=== as % of total R&D expenditure					25.7	

20. THE NETHERLANDS

ICT on the ground

The Netherlands are one of the best performing countries in Europe and lead the way in information society development. The only exceptions are in levels of eGovernment supply and 3G take-up.

Broadband take-up is the highest in the EU and the conversion from narrowband has been rapid. Further growth will need to come from increased overall Internet use. DSL is the most popular broadband technology, but still almost half the market is connected through other means like cable TV. Citizen use of online services is very high and in general among the highest in the EU. High broadband penetration and widespread consumption of audiovisual online content support a sizable market for online content and relatively high usage of commercial download services. 3G is still in infancy.

The Netherlands is close to the EU average in overall supply of eGovernment services, but is still only a mid-level performer. However, citizen usage is very high, and the highest in Europe for some advanced services. For enterprises, advanced use is very high, while overall use is more average. ICT use in schools is very high, both for usage, connectivity and availability.

The level of ICT skills in the work force is high in all aspects and the fourth highest in the EU for specialist skills. The proportion of R&D investments going to ICT-related research is the third highest in the EU. The proportion of enterprises with a broadband connection is above the EU average, although a bit behind the leading countries. Use of advanced business integration is on European top levels, while commercial activities have improved somewhat since last years, without reaching top levels.

ICT policies in the National Reform Programme

ICT programmes in The Netherlands are being consistently implemented.

- *eGovernment*: At the beginning of 2006 approximately 55% of government services were available online (up from 50% in 2005). The goal to raise this number up to 65% has been upheld. The roll-out of the authentication facility DigiD made it easier for the citizens to exploit benefits of these services.
- *Fostering ICT use*: Among the several programmes to increase the use of ICT, two important ones are under way: Connecting the Dots (closer integration of local initiatives) and the new ICTRegie (strengthening and focusing ICT research). A new Social Sectors & ICT Action Programme, which was enacted in 2005 aims to employ ICT in order to improve mobility in urban areas, to increase the attractiveness and quality of education and to improve public safety. Increased use of ICT by SMEs is targeted by other ongoing initiatives: Netherlands goes Digital, Netherlands Digital: Groundbreaking with ICT and Widescreen Television throughout the Netherlands.
- *Spectrum Policy*: In late 2005 the Radio Spectrum Policy Memorandum was approved by the government.

- *ICT security*: Actions were undertaken to combat spam (an opt-out regime for businesses) and to raise digital security awareness (a declaration of the business community).

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)	94.0	99.0	99.0		87.4	5
DSL coverage in rural areas (as % of total population)			99.0		65.9	4
Broadband penetration (as % of population)	10.7	16.4	23.8	29.8	15.7	1
DSL penetration (as % of population)	5.2	10.3	14.4	18.3	12.8	2
Predominant download speed			1-2Mbps			
Households having broadband (as % of those having access to the internet at home)	33.0		68.8	82.4	62.1	4
% of enterprises with broadband access	36.6	53.7	71.3	81.7	74.5	9
Number of 3G subscribers per 100 inhabitants			1.4		5.0	14
Digital Television in households			11.4		30.6	14
Music: number of single downloads per 100 inhabitants			26.7			5
Internet Usage						
% population who are regular internet users			73.5	76.4	46.7	5
Take up of internet services (as % of population)						
Sending emails	52.5		73.1	75.9	43.8	2
Looking for information about goods and services	28.6		70.0	73.0	42.9	4
Internet telephoning or videoconferencing			5.0	10.1	7.1	10
Playing/downloading games and music	15.7		36.8	41.6	18.2	1
Listening to the web radio/watching web tv			19.8	27.9	11.8	4
Reading online newspapers/magazines	24.6		29.4	36.4	19.0	7
Internet banking			49.6	58.7	22.0	4
Places of access						
% at home	55.9		73.7	76.7	42.6	4
% at work	30.5		36.3	38.9	23.0	4
% at educational place	6.9		8.4	9.2	8.0	13
% at PIAP	11.9		3.0	2.8	6.8	26
eGovernment Indicators						
% basic public services for citizens fully available online	18.2	18.2		36.4	36.8	13
% basic public services for enterprises fully available online	37.5	50.0		75.0	67.8	10
% of population using e-Government services			45.6	51.8	23.8	3
of which for returning filled in forms			20.4	29.7	8.1	1
% of enterprises using e-Government services	41.0	46.7	56.9	69.7	63.7	15
of which for returning filled in forms	23.1	27.1	43.6	61.0	44.8	5
ICT in schools						
Number of computers connected per 100 pupils				20.0	9.9	3
% of schools with broadband access				92.0	67.0	4
% of teachers having used the computer in class during the last 12 months				90.0	74.3	4
e-Commerce						
E-commerce as % of total turnover of enterprises					11.7	
% enterprises receiving internet orders	16.6	18.6	21.4	27.9	13.9	3
% enterprises purchasing on the internet		28.7	35.3	45.3	37.9	10
e-business. % enterprises:						
with integrated internal business processes	60.0	58.9	60.9	61.7	37.3	2
with integrated external business processes	17.2	20.5	18.3	18.0	13.5	2
Security: % enterprises using Secure servers	53.4	59.9	34.5	43.1	41.0	10
% using digital signatures for authentication	10.2	12.8	13.0	15.4	14.3	6
Employment and Skills						
% employees using computers connected to the Internet	35.1	36.8	42.2	44.8	36.1	6
% of persons employed with ICT user skills.	22.5	20.5	19.6	19.7	18.5	6
% of persons employed with ICT specialist skills	4.5	4.2	4.3	4.1	3.1	4
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP	5.6				5.5	9
ICT sector share of total employment	4.0				4.0	11
ICT sector growth (constant prices).	1.9				3.6	14
R&D expenditure in ICT by the business sector, as % of GDP	0.4				0.3	6
=== as % of total R&D expenditure	35.3				25.7	3

21. POLAND

ICT on the ground

Poland performs at the bottom end of the scale for most information society benchmarks and improvement seems slow. Enterprise usage is slightly better than citizen usage. Like in a few other countries, Internet telephony and online media use is relatively higher than other indicators would normally imply.

Broadband take-up among citizens is among the lowest in Europe. Only about one third of citizens use the Internet regularly, and more than half of all online households now use broadband. DSL connections make for about two thirds of the market. Use of basic and utility services are among the lowest in Europe, but use for downloading media is closer to average, and Internet telephony actually above average. Digital television adoption is an area where Poland moves into top ten figures. Poland's market for digital content currently suffers not only from low broadband penetration but also from a lack of necessary legislation in fields such as copyrights, broadcasting and other media rights.

eGovernment supply is close to the lowest in Europe. Citizen use of eGovernment services is very low. However, enterprise usage is close to average, even well above when it comes to returning filled-in forms online, indicating that the will to use services is somewhat higher than the available connectivity and service levels provide for. ICT availability and use in schools are very low.

Skill levels among employees are below the EU average, but not dramatically so. Investments in ICT-related R&D as well as the share of R&D going to ICT-related activities are the lowest among the measured countries. Polish enterprises now have the lowest take-up rate of broadband in Europe. Enterprise use is higher than citizen use, although generally well below average, with the exception of eSignatures. Growth in enterprise use is currently slow.

ICT policies in the National Reform Programme

The Polish Progress Report lists measures in several key areas:

- *eGovernment*: Several long term programmes have been started: the 'teleinformatisation' of the Network for the Public Administration (STAP); an overhaul of Public registers (PESEL 2); an electronic platform of public administration services (ePUAP); a central portal for the ministry of justice (ePortal); an electronic system for tax declarations; an integrated system for medical information in health services; and, the modernisation of the electronic system for monitoring public aid (SHRIMP).
- *Legislation*: The report summarises legislative work on the implementation of the EU directive on electronic commerce and on the amendment of the bill on electronic signature. The compulsory acceptance of electronic signature by public authorities has been postponed by two years.
- *EU regional policy funds* are used to finance projects focusing on ICT use in the administration and by businesses as well as on the development of broadband infrastructure.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)		55.2	62.3		87.4	24
DSL coverage in rural areas (as % of total population)			51.9		65.9	18
Broadband penetration (as % of population)		0.6	1.7	4.5	15.7	23
DSL penetration (as % of population)		0.3	1.2	3.4	12.8	23
Predominant download speed			0.5-1Mbps			
Households having broadband (as % of those having access to the internet at home)		31.8	51.2	60.2	62.1	18
% of enterprises with broadband access		27.8	42.7	46.4	74.5	27
Number of 3G subscribers per 100 inhabitants			0.0		5.0	19
Digital Television in households			19.2		30.6	10
Music: number of single downloads per 100 inhabitants						
Internet Usage						
% population who are regular internet users		22.4	29.3	34.4	46.7	23
Take up of internet services (as % of population)						
Sending emails		19.3	24.1	27.2	43.8	25
Looking for information about goods and services		14.7	18.0	24.7	42.9	25
Internet telephoning or videoconferencing		3.5	4.5	8.0	7.1	13
Playing/downloading games and music		14.0	12.0	16.2	18.2	20
Listening to the web radio/watching web tv		5.6	5.7	9.8	11.8	20
Reading online newspapers/magazines		13.6	12.5	16.1	19.0	20
Internet banking		4.0	5.9	9.1	22.0	23
Places of access						
% at home		15.0	20.4	26.4	42.6	23
% at work		8.8	11.1	13.1	23.0	26
% at educational place		7.8	10.0	9.9	8.0	10
% at PIAP		11.4	6.0	5.5	6.8	14
eGovernment Indicators						
% basic public services for citizens fully available online		0.0		8.3	36.8	23
% basic public services for enterprises fully available online		25.0		37.5	67.8	24
% of population using e-Government services		12.6	12.5	5.8	23.8	25
of which for returning filled in forms		3.5	2.6	2.0	8.1	25
% of enterprises using e-Government services		73.8	64.1	60.9	63.7	18
of which for returning filled in forms		67.5	60.2	56.3	44.8	7
ICT in schools						
Number of computers connected per 100 pupils				5.6	9.9	24
% of schools with broadband access				28.0	67.0	26
% of teachers having used the computer in class during the last 12 months				61.4	74.3	22
e-Commerce						
E-commerce as % of total turnover of enterprises		2.8	4.4	5.9	11.7	17
% enterprises receiving internet orders		3.8	4.2	7.1	13.9	20
% enterprises purchasing on the internet		9.7	17.2	22.7	37.9	16
e-business. % enterprises:						
with integrated internal business processes		15.5	18.0	19.5	37.3	22
with integrated external business processes		10.4	5.6	4.7	13.5	24
Security: % enterprises using Secure servers		8.7	12.0	14.4	41.0	24
% using digital signatures for authentication		19.4	13.6	13.3	14.3	9
Employment and Skills						
% employees using computers connected to the Internet		21.5	27.1	27.8	36.1	21
% of persons employed with ICT user skills.	14.6	15.1	14.8	15.2	18.5	23
% of persons employed with ICT specialist skills	2.7	2.8	2.7	2.7	3.1	17
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP	5.5				5.5	11
ICT sector share of total employment	2.6				4.0	16
ICT sector growth (constant prices).	5.0				3.6	4
R&D expenditure in ICT by the business sector, as % of GDP	0.0				0.3	16
=== as % of total R&D expenditure	12.1				25.7	16

22. PORTUGAL

ICT on the ground

Portugal has had a lower than average development in most information society indicators, but performs notably well in 3G adoption and eGovernment and better in online media than other forms for usage.

Conversion to broadband in Portugal was relatively good the last year but overall Internet use is low and broadband connection rates are still a bit below EU average. The increase in broadband take-up is slightly slower than average. DSL accounts for more than half of broadband connections. Usage of online services among citizens is somewhat lower than connectivity levels would imply and, with exception of online media use, in the lowest part of the scale. The market for audiovisual content online is relatively limited and does not live up to the country's potential. 3G adoption is one of the highest in Europe, and digital television is in the top ten.

The availability of eGovernment is very good for enterprise services and above average for citizens. Use of these citizens and enterprises services is slightly below average but those who use them tend to be more advanced users, for example, the proportion return completed forms online is above average. Growth rates in service usage are around the average. A higher than average number of schools have broadband connections, and a fair number of teachers use computers in the class for teaching, but the number of available computers for students is still low.

Skill levels in the work force are low, but both the use of Internet at work and the number of employed persons with ICT specialist skill is improving. The overall picture for enterprise use is more complex. Growth in enterprise connectivity last year has not kept up with other countries after a couple of years of good growth.

ICT policies in the National Reform Programme

Within the NRP, ICT issues are treated mostly in the Ligar Portugal action plan, and the progress report for 2006 lists several measures undertaken.

- *eGovernment*: Enabling legislation for a public key infrastructure and the digitalisation of the Portuguese official journal was passed in May 2006. One-stop-shop electronic kiosks for company registration have been in use since July 2005 and work is underway for online equivalents. A newly established eGovernment portal for companies already offers advanced applications like online company registration through lawyers and notaries. Electronic invoicing was to be used by public authorities from 2007. The first pilot project for an integrated eID card is to start in early 2007.
- *Promotion of ICT use*: Since December 2005 the purchase of computers has been supported through tax rebates for families with students. Additional projects with a total budget of 200 million Euros are underway to promote ICT take-up, use and ICT industries in the regions.

- *Infrastructure:* In 2005 the bandwidth of the connections of the Portuguese fibre optic grid to international backbones was doubled and Spain and Portugal agreed to link their fibre optic networks to the same effect.
- *Digital Skills:* Measures included the training of teachers in basic and secondary education in ICT and the integration of ICT in their curricula. In 2005 all public schools were connected to broadband.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)	84.0	92.0	92.6		87.4	9
DSL coverage in rural areas (as % of total population)			79.0		65.9	9
Broadband penetration (as % of population)	4.1	7.2	10.8	13.5	15.7	14
DSL penetration (as % of population)	1.4	3.3	6.1	8.4	12.8	14
Predominant download speed			1-2Mbps			
Households having broadband (as % of those having access to the internet at home)	36.3	47.0	62.7	68.3	62.1	12
% of enterprises with broadband access	31.0	48.6	62.8	65.9	74.5	18
Number of 3G subscribers per 100 inhabitants			9.0		5.0	3
Digital Television in households			20.2		30.6	9
Music: number of single downloads per 100 inhabitants			6.9			12
Internet Usage						
% population who are regular internet users	21.9	25.1	27.8	31.4	46.7	24
Take up of internet services (as % of population)						
Sending emails	19.9	23.7	25.8	28.8	43.8	24
Looking for information about goods and services	21.0	23.2	25.9	29.8	42.9	21
Internet telephoning or videoconferencing	2.5	3.1	3.2	5.5	7.1	22
Playing/downloading games and music	11.1	13.3	14.1	16.2	18.2	21
Listening to the web radio/watching web tv	5.9	8.1	9.0	10.7	11.8	16
Reading online newspapers/magazines	12.7	14.7	16.4	15.8	19.0	21
Internet banking	6.1	7.6	8.4	9.8	22.0	21
Places of access						
% at home	14.6	17.1	19.5	23.2	42.6	26
% at work	12.5	14.6	15.5	16.3	23.0	24
% at educational place	6.6	7.2	7.8	8.0	8.0	17
% at PIAP	7.2	8.4	4.7	5.4	6.8	15
eGovernment Indicators						
% basic public services for citizens fully available online	18.2	25.0		41.7	36.8	11
% basic public services for enterprises fully available online	62.5	62.5		87.5	67.8	3
% of population using e-Government services		12.5	14.0	16.5	23.8	18
of which for returning filled in forms	5.2	7.6	9.0	11.5	8.1	10
% of enterprises using e-Government services		57.2	57.9	60.3	63.7	19
of which for returning filled in forms	42.5	50.1	52.5	53.7	44.8	12
ICT in schools						
Number of computers connected per 100 pupils				5.4	9.9	25
% of schools with broadband access				73.0	67.0	16
% of teachers having used the computer in class during the last 12 months				69.5	74.3	17
e-Commerce						
E-commerce as % of total turnover of enterprises	1.6	4.9		8.2	11.7	11
% enterprises receiving internet orders	2.1	6.0	6.3	5.4	13.9	22
% enterprises purchasing on the internet		16.1	19.4	19.6	37.9	20
e-business. % enterprises:						
with integrated internal business processes	21.3	33.1	36.7	28.1	37.3	16
with integrated external business processes					13.5	
Security: % enterprises using Secure servers	34.8	28.8	18.4	21.5	41.0	19
% using digital signatures for authentication	7.6	5.4	9.3	9.7	14.3	19
Employment and Skills						
% employees using computers connected to the Internet	17.8	18.8	21.4	24.5	36.1	23
% of persons employed with ICT user skills.	12.1	13.4	12.4	12.3	18.5	25
% of persons employed with ICT specialist skills	2.2	2.1	2.2	2.7	3.1	19
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP	4.5				5.5	18
ICT sector share of total employment	1.7				4.0	19
ICT sector growth (constant prices).	2.7				3.6	10
R&D expenditure in ICT by the business sector, as % of GDP	0.1				0.3	14
=== as % of total R&D expenditure	21.5				25.7	10

23. ROMANIA

ICT on the ground

Although data on Romania is incomplete, it is clear that it is at a relatively early stage in the development of the information society.

The percentage of population regularly using the Internet in Romania is currently the lowest in Europe. Around one third of homes with Internet access have broadband, a figure well below EU average. Usage of Internet services is among the lowest in Europe in all measured services, including eGovernment services. The low level of fixed telephone network penetration in Romania is clearly one of the main obstacles for the development of broadband and internet usage.

Both user and specialist ICT skills among employees and employee use of Internet are very low. While the number of employees with user skills is increasing, specialist skill levels have shown a slight decrease lately.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)					87.4	
DSL coverage in rural areas (as % of total population)					65.9	
Broadband penetration (as % of population)					15.7	
DSL penetration (as % of population)					12.8	
Predominant download speed						
Households having broadband (as % of those having access to the internet at home)				36.6	62.1	26
% of enterprises with broadband access		7.0			74.5	
Number of 3G subscribers per 100 inhabitants					5.0	
Digital Television in households					30.6	
Music: number of single downloads per 100 inhabitants						
Internet Usage						
% population who are regular internet users		9.9		18.4	46.7	29
Take up of internet services (as % of population)						
Sending emails		9.7		16.3	43.8	29
Looking for information about goods and services		4.9		10.0	42.9	29
Internet telephoning or videoconferencing		0.6		2.5	7.1	28
Playing/downloading games and music		5.0		10.7	18.2	27
Listening to the web radio/watching web tv		1.6		4.5	11.8	28
Reading online newspapers/magazines		3.0		6.8	19.0	28
Internet banking		0.4		0.6	22.0	29
Places of access						
% at home		4.9		11.0	42.6	29
% at work		4.3		7.4	23.0	29
% at educational place		2.2		4.3	8.0	26
% at PIAP				2.5	6.8	27
eGovernment Indicators						
% basic public services for citizens fully available online					36.8	
% basic public services for enterprises fully available online					67.8	
% of population using e-Government services				2.9	23.8	26
of which for returning filled in forms		1.1		0.6	8.1	26
% of enterprises using e-Government services		30.9			63.7	
of which for returning filled in forms		11.6			44.8	
ICT in schools						
Number of computers connected per 100 pupils					9.9	
% of schools with broadband access					67.0	
% of teachers having used the computer in class during the last 12 months					74.3	
e-Commerce						
E-commerce as % of total turnover of enterprises					11.7	
% enterprises receiving internet orders		2.2			13.9	
% enterprises purchasing on the internet		1.9			37.9	
e-business. % enterprises:						
with integrated internal business processes		49.8			37.3	
with integrated external business processes		36.3			13.5	
Security: % enterprises using Secure servers		10.8			41.0	
% using digital signatures for authentication		3.5			14.3	
Employment and Skills						
% employees using computers connected to the Internet		7.2			36.1	
% of persons employed with ICT user skills.			8.4	9.1	18.5	27
% of persons employed with ICT specialist skills			2.4	2.3	3.1	25
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP					5.5	
ICT sector share of total employment					4.0	
ICT sector growth (constant prices).					3.6	
R&D expenditure in ICT by the business sector, as % of GDP					0.3	
=== as % of total R&D expenditure					25.7	

24. SWEDEN

ICT on the ground

Sweden is placed among the top nations in most i2010 indicators and is firmly within the group of leading countries in European information society development. However, there are signs that aside from a group of very advanced enterprise users, there is still a sizeable group not using eBusiness tools at a level matching the overall development in Sweden.

Sweden has the 4th highest number of broadband connections at home in the EU. About two thirds of connections are DSL-based but there are also around 300,000 fibre connections, the highest number in Europe. Swedish citizens are among the most active users of Internet in the EU in every regard except Internet telephony. High broadband penetration translates into a vibrant and competitive market for music downloads with very high usage and very low prices. Sweden is one of few countries with significant 3G usage and is highly developed in digital television.

eGovernment levels are generally high. Enterprises use of public services is above average but below the top performing countries. ICT availability in schools is high, and use by teachers in class is especially widespread.

Basic ICT skills within the work force are above EU average and specialist skill levels are the highest in Europe. Investment in ICT-related R&D is the second highest in Europe and comprises around one third of total R&D. The enterprise broadband connectivity rate is over 80% but businesses do not have the same level of usage as the citizens: While eCommerce use is high in Sweden, only a quarter of businesses are using fully integrated business processes, well below the EU average. This divide in usage levels is a trait shared with a handful of other countries, like Ireland, Norway and the UK.

ICT policies in the National Reform Programme

The Swedish ICT policy aims to create a sustainable information society for all through the achievement of three sub-goals: quality, sustainable growth and accessibility.

- *Quality:* In January 2006 the Swedish Administrative Development Agency was established to further develop the public administration with particular emphasis on the development of an electronic administration. A new strategy for electronic management in the central Government was decided including targets for public procurement, electronic purchasing and e-mail handling. Similar measures are taken at the level of municipalities, counties and regions. Efforts are underway to unify the IT infrastructure for the public sector. Another focus is on actions for more coordination in the development of IT standards and increased use of open source software at all levels of Government.
- *Sustainable Growth:* The Swedish National Agency for School Improvement is to promote the development of ICT in preschools, schools and adult education. The Swedish Business Development Agency is examining opportunities for telework in sparsely populated areas. In 2006 a three-year programme aimed at stimulating the use of eID was initiated. Various measures address gender equality in the IT sector.

- *Availability:* The "broadband support" initiative to expand IT infrastructure with high transfer capacity in sparsely populated areas has been prolonged until end-2007. Plans are underway to ensure that the SITIC (the national centre for IT disruption) can handle future challenges related to IT disruptions.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)	95.0	96.0	93.5		87.4	8
DSL coverage in rural areas (as % of total population)			66.0		65.9	14
Broadband penetration (as % of population)	10.2	13.6	19.3	24.5	15.7	4
DSL penetration (as % of population)	5.9	8.4	12.5	16.0	12.8	6
Predominant download speed			1-2Mbps			
Households having broadband (as % of those having access to the internet at home)			55.4	65.9	62.1	14
% of enterprises with broadband access	62.2		82.5	88.9	74.5	3
Number of 3G subscribers per 100 inhabitants			8.3		5.0	5
Digital Television in households			44.3		30.6	3
Music: number of single downloads per 100 inhabitants			44.4			2
Internet Usage						
% population who are regular internet users	69.3	75.3	75.9	79.8	46.7	2
Take up of internet services (as % of population)						
Sending emails	66.2	63.6	67.4	73.6	43.8	4
Looking for information about goods and services	64.0	59.3	69.8	74.0	42.9	2
Internet telephoning or videoconferencing	3.3	3.8	4.5	8.6	7.1	12
Playing/downloading games and music	26.8	23.1	31.4	33.8	18.2	4
Listening to the web radio/watching web tv	14.7	12.7	20.5	28.5	11.8	3
Reading online newspapers/magazines	30.0	28.0	39.1	41.3	19.0	6
Internet banking	38.3	40.3	50.7	56.9	22.0	6
Places of access						
% at home	65.3	69.3	70.7	77.1	42.6	2
% at work	35.7	36.9	39.7	38.4	23.0	6
% at educational place	12.7	11.4	11.8	11.8	8.0	5
% at PIAP	7.6	8.2	5.1	4.8	6.8	17
eGovernment Indicators						
% basic public services for citizens fully available online	54.5	63.6		63.6	36.8	4
% basic public services for enterprises fully available online	85.7	87.5		87.5	67.8	3
% of population using e-Government services	44.0	38.6	51.7		23.8	
of which for returning filled in forms	11.5	11.3	21.4		8.1	
% of enterprises using e-Government services		91.8	79.6	80.1	63.7	9
of which for returning filled in forms	40.3	52.6	47.8	52.8	44.8	13
ICT in schools						
Number of computers connected per 100 pupils				16.5	9.9	6
% of schools with broadband access				89.0	67.0	7
% of teachers having used the computer in class during the last 12 months				90.9	74.3	3
e-Commerce						
E-commerce as % of total turnover of enterprises	12.3			13.6	11.7	8
% enterprises receiving internet orders	8.9	19.4	22.4	23.4	13.9	5
% enterprises purchasing on the internet		68.4	66.7	70.0	37.9	1
e-business. % enterprises:						
with integrated internal business processes	23.2	24.9	25.3	28.0	37.3	17
with integrated external business processes	6.5	8.9	8.3	8.8	13.5	20
Security: % enterprises using Secure servers	42.9	49.1	53.7	57.9	41.0	4
% using digital signatures for authentication	13.7	15.2	16.1	17.5	14.3	4
Employment and Skills						
% employees using computers connected to the Internet	50.1	52.1	53.3	52.9	36.1	3
% of persons employed with ICT user skills.	19.3	20.0	18.9	19.4	18.5	9
% of persons employed with ICT specialist skills	4.7	4.4	4.9	4.9	3.1	1
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP	6.3				5.5	8
ICT sector share of total employment	5.5				4.0	2
ICT sector growth (constant prices).	3.0				3.6	9
R&D expenditure in ICT by the business sector, as % of GDP	1.0				0.3	2
=== as % of total R&D expenditure	32.8				25.7	4

25. SLOVAKIA

ICT on the ground

Slovakia has an overall low level of connectivity, but Slovakian citizens are active Internet users within the limits set by the infrastructure.

Household take-up of broadband and overall Internet connectivity are among the lowest in Europe. Growth in broadband has tripled from a very low starting point but there has been little increase in overall number of Internet users. DSL accounts for a bit more than half of all connections. Usage levels are higher than the connectivity would imply, and not far from EU average. Reading news and magazines online is particularly popular. This can partly be explained with the high frequency of Internet use outside the homes, at Public Internet Access Places, in schools and at work. Despite the popularity of music and games downloads, the low broadband penetration does not permit the development of a commercial market for online content. Digital television is still in its infancy.

eGovernment services are not yet widely available online in Slovakia but citizens and enterprises use of basic services is above the EU average and close to average for advanced services. Enterprise service use has grown especially fast. Availability of broadband and computers in school are low but teachers use computers for teaching more than availability would imply.

ICT skill levels among employees are unequal: For expert skills, Slovakia is above EU average whereas basic user skill levels are among the lowest in Europe. Connectivity among enterprises is slightly better than in households but at the low end of the European scale. Enterprise use of eBusiness applications and eCommerce is low, with the exception of eSignatures.

ICT policies in the National Reform Programme

The development of the Information Society is one of the policy priorities of Slovakia.

- *eGovernment*: The Central Public Administration Portal was put into limited operation; electronic procurement systems and electronic signature projects have been furthered; several studies on future ICT measures have been prepared (including a system for electronic data exchange among registers, a personal embedded chip ID cards and free access to the land register).
- *Digital Literacy*: ICT issues are being included in the curricula at all levels of education, teachers have been given training on the use of ICT in the educational process and schools were provided with some necessary infrastructure. To promote digital literacy the “Stur’s Movement” project has funded ICT training for local communities.
- *eBusiness*: some legislative actions were undertaken to support electronic commerce and developments in electronic communications.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)	18.3	44.0	60.7		87.4	25
DSL coverage in rural areas (as % of total population)			25.0		65.9	21
Broadband penetration (as % of population)		0.6	1.8	4.3	15.7	24
DSL penetration (as % of population)		0.5	1.5	2.9	12.8	25
Predominant download speed			LE 512kbps			
Households having broadband (as % of those having access to the internet at home)		15.2	31.0	43.0	62.1	24
% of enterprises with broadband access		24.8	47.6	60.8	74.5	20
Number of 3G subscribers per 100 inhabitants			0.0		5.0	22
Digital Television in households			12.7		30.6	13
Music: number of single downloads per 100 inhabitants						
Internet Usage						
% population who are regular internet users		39.8	42.8	43.1	46.7	16
Take up of internet services (as % of population)						
Sending emails		37.7	42.4	41.6	43.8	15
Looking for information about goods and services		26.6	30.1	33.5	42.9	19
Internet telephoning or videoconferencing		4.5	3.6	7.0	7.1	18
Playing/downloading games and music		18.5	16.1	18.5	18.2	16
Listening to the web radio/watching web tv		6.0	5.5	8.2	11.8	23
Reading online newspapers/magazines		22.6	23.2	25.4	19.0	12
Internet banking		10.1	10.1	12.6	22.0	20
Places of access						
% at home		22.4	20.1	23.6	42.6	25
% at work		26.0	27.0	25.7	23.0	13
% at educational place		10.5	11.0	11.4	8.0	8
% at PIAP		18.6	11.7	7.2	6.8	9
eGovernment Indicators						
% basic public services for citizens fully available online		8.3		8.3	36.8	23
% basic public services for enterprises fully available online		25.0		37.5	67.8	24
% of population using e-Government services		25.4	26.6	32.2	23.8	9
of which for returning filled in forms		4.9	6.5	7.2	8.1	13
% of enterprises using e-Government services		47.1	56.6	77.2	63.7	10
of which for returning filled in forms		18.2	16.3	44.6	44.8	17
ICT in schools						
Number of computers connected per 100 pupils				5.8	9.9	23
% of schools with broadband access				40.0	67.0	23
% of teachers having used the computer in class during the last 12 months				70.3	74.3	15
e-Commerce						
E-commerce as % of total turnover of enterprises			0.0	0.0	11.7	24
% enterprises receiving internet orders		6.5	6.5		13.9	
% enterprises purchasing on the internet		16.3	22.4		37.9	
e-business. % enterprises:						
with integrated internal business processes		21.2	25.5	22.2	37.3	20
with integrated external business processes		7.1	9.2	9.8	13.5	17
Security: % enterprises using Secure servers		13.2	20.9	15.2	41.0	23
% using digital signatures for authentication		5.6	10.4	14.6	14.3	7
Employment and Skills						
% employees using computers connected to the Internet		19.4	25.5	28.6	36.1	19
% of persons employed with ICT user skills.	15.0	15.7	15.4	15.3	18.5	22
% of persons employed with ICT specialist skills	2.7	3.0	3.2	3.3	3.1	8
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP	7.1				5.5	4
ICT sector share of total employment	4.4				4.0	7
ICT sector growth (constant prices).	-2.0				3.6	18
R&D expenditure in ICT by the business sector, as % of GDP					0.3	
=== as % of total R&D expenditure					25.7	

26. SLOVENIA

ICT on the ground

Slovenia shows good development in the information society indicators, although it is generally just behind EU averages.

Broadband take up among households is just below EU average and is growing at similar rates as Europe as a whole. Overall Internet usage is also on EU average, and the same applies to the share of household connections that are broadband. DSL is the dominant platform.

Citizens are using Internet and online services at normal rates to the connection level. Usage is close to EU average for utility services, and above EU average for media use.

The number of eGovernment services fully online is above the EU average, and especially good for citizen services. The number of individuals interacting with public authorities has grown fast to well above average levels, but advanced service use still lags behind for citizens. Enterprise use of eGovernment is above European average on both basic and advanced levels. Whereas the number of broadband connected schools is fairly high, the number of computers and the actual use by teachers lags behind.

ICT skills levels in the work force are slightly above average both for user-level and specialist skills and the number of specialists employed shows continued improvement. Investment in R&D is lower than average as is the relative share of ICT-related R&D activities. Enterprise connectivity levels have not grown significantly the last year and are now just above the EU average. Use of eBusiness applications is lagging behind and eCommerce growth has been slower than the EU average.

ICT policies in the National Reform Programme

The Progress Report features several measures and achievements:

- *Electronic communications*: In 2006 the incumbent was floated on the stock market and its privatisation was advanced. Currently, support for broadband roll out in rural areas is being prepared and a tender is being held for public wireless access points, particularly in rural areas.
- *eGovernment*: A unified Government portal, set up in May 2006 allows access to digital services, an online one-stop-shop for individual entrepreneurs was introduced 2005 and a similar system for larger companies will go online in 2007. Also an integrated register for social and labour benefits is in its advanced planning stage.
- *eInclusion*: Public Internet access points were set up and vocational and secondary education are being restructured to emphasise ICT. Work on a "Digital Library of Slovenia" began in 2005.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)			55.0		87.4	26
DSL coverage in rural areas (as % of total population)			27.0		65.9	20
Broadband penetration (as % of population)		5.3	8.6	12.6	15.7	16
DSL penetration (as % of population)		3.2	5.4	8.6	12.8	13
Predominant download speed			0.5-1Mbps			
Households having broadband (as % of those having access to the internet at home)		21.8	40.3	61.7	62.1	17
% of enterprises with broadband access		61.8	73.9	74.9	74.5	13
Number of 3G subscribers per 100 inhabitants			1.3		5.0	15
Digital Television in households			6.9		30.6	19
Music: number of single downloads per 100 inhabitants			0.0			15
Internet Usage						
% population who are regular internet users		33.4	40.5	46.6	46.7	13
Take up of internet services (as % of population)						
Sending emails		29.3	35.8	41.7	43.8	14
Looking for information about goods and services		29.5	36.2	41.8	42.9	14
Internet telephoning or videoconferencing		2.6		4.4	7.1	25
Playing/downloading games and music		15.7	23.7	21.0	18.2	14
Listening to the web radio/watching web tv		6.4	10.5	14.7	11.8	12
Reading online newspapers/magazines		16.4	20.0	23.8	19.0	14
Internet banking		8.6	11.5	16.1	22.0	16
Places of access						
% at home		25.9	35.4	40.8	42.6	13
% at work		20.1	22.7	28.3	23.0	10
% at educational place		8.1	7.1	9.9	8.0	11
% at PIAP		10.8	6.0	9.4	6.8	6
eGovernment Indicators						
% basic public services for citizens fully available online		50.0		58.3	36.8	8
% basic public services for enterprises fully available online		37.5		75.0	67.8	10
% of population using e-Government services		13.0	19.2	30.5	23.8	10
of which for returning filled in forms		2.9		6.3	8.1	15
% of enterprises using e-Government services		47.0	72.1	74.5	63.7	13
of which for returning filled in forms		35.6	44.7	49.1	44.8	16
ICT in schools						
Number of computers connected per 100 pupils				7.5	9.9	19
% of schools with broadband access				85.0	67.0	9
% of teachers having used the computer in class during the last 12 months				67.6	74.3	20
e-Commerce						
E-commerce as % of total turnover of enterprises				9.2	11.7	10
% enterprises receiving internet orders		10.7	8.8	11.6	13.9	15
% enterprises purchasing on the internet		25.5	26.1	22.4	37.9	17
e-business. % enterprises:						
with integrated internal business processes		20.5	19.9	19.7	37.3	21
with integrated external business processes		6.2	9.0	7.3	13.5	21
Security: % enterprises using Secure servers		32.3	25.5	23.8	41.0	17
% using digital signatures for authentication		15.2	5.9	10.6	14.3	14
Employment and Skills						
% employees using computers connected to the Internet		28.6	35.9	35.4	36.1	12
% of persons employed with ICT user skills.	20.0	19.6	19.6	19.0	18.5	10
% of persons employed with ICT specialist skills	2.6	2.6	2.8	3.2	3.1	9
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP					5.5	
ICT sector share of total employment					4.0	
ICT sector growth (constant prices).					3.6	
R&D expenditure in ICT by the business sector, as % of GDP	0.2				0.3	10
=== as % of total R&D expenditure	17.3				25.7	12

27. UNITED KINGDOM

ICT on the ground

In general, the UK performs slightly behind the leading group of countries in Europe for information society development. It excels in basic skill development and commercial online activities, performs better than average in overall use, but falls behind in advanced enterprise usage, including use of eGovernment services.

Broadband take-up has progressed well, and less than a third of household connections are now narrowband. Based on an overall high connectivity, usage is also generally well above average. However, growth in usage is not fast enough to push UK above mid-level rankings. High broadband penetration and a sizeable established music industry are among the factors, which have facilitated the development of Europe's largest market for music downloads - both online and to mobile devices. Using public access points is particularly popular. 3G is performing well compared to other countries and the UK is first in Europe for digital TV.

Online availability of public services for citizens is very high, whereas it is low and not progressing for enterprises. Enterprises use of services is also very low. ICT in education is well developed, the UK is leading Europe in teachers' use in class, and the number of computers available to students is high, while broadband availability is above average without being exceptional. Use of ICT in schools is good but mixed: While the number of computers available to students is above average without being particularly high, broadband access is good and the teachers use computers in the classroom more often than anywhere else in Europe.

Skill levels in the work force are high: for user level ICT-skills the highest in Europe. Specialist levels are slightly higher than EU average, but not developing. Investment in R&D and the ICT share of these investments are on EU average. Enterprises do not have the same high level of connectivity as citizens, although above average in Europe. Companies buy and sell online at top EU levels but are at the low end for use of eBusiness integration applications. This gap between eBusiness and eCommerce levels is a trait shared among many of the northern countries, including the Netherlands, Ireland, Finland and Norway.

ICT policies in the National Reform Programme

The UK has started to implement the priority actions set out in the National Reform Programme: Convergence, research in ICT and digital inclusion. Additional attention has been paid to:

- *eGovernment*: An implementation plan for the eGovernment strategy was launched.
- *ICT for enterprise and innovation*: The use of ICT by businesses has been recognised as a key driver of productivity and competitiveness and the DTI has been working with the sector to single out best practices and analyse the impact of ICT use.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)	85.0	95.0	99.5		87.4	4
DSL coverage in rural areas (as % of total population)			94.9		65.9	5
Broadband penetration (as % of population)	4.4	8.8	14.9	20.4	15.7	6
DSL penetration (as % of population)	2.3	5.8	10.8	15.5	12.8	8
Predominant download speed			1-2Mbps			
Households having broadband (as % of those having access to the internet at home)	19.4	28.3	52.4	70.1	62.1	11
% of enterprises with broadband access	26.7	50.2	65.4	77.4	74.5	10
Number of 3G subscribers per 100 inhabitants			8.6		5.0	4
Digital Television in households			68.7		30.6	1
Music: number of single downloads per 100 inhabitants			39.3			3
Internet Usage						
% population who are regular internet users	46.5	48.6	53.9	56.8	46.7	10
Take up of internet services (as % of population)						
Sending emails	51.2	53.0	56.6	52.8	43.8	10
Looking for information about goods and services	49.8	49.2	56.8	55.2	42.9	9
Internet telephoning or videoconferencing	4.0	4.0	4.8	6.7	7.1	19
Playing/downloading games and music	18.6	25.3	23.3	24.5	18.2	9
Listening to the web radio/watching web tv	10.3	9.6	14.9	15.2	11.8	11
Reading online newspapers/magazines	22.9	18.3	24.0	23.3	19.0	15
Internet banking	22.3	22.4	26.9	27.8	22.0	11
Places of access						
% at home	50.1	51.0	55.1	55.5	42.6	9
% at work	27.2	29.4	31.0	30.2	23.0	8
% at educational place	10.5	10.6	10.4	9.8	8.0	12
% at PIAP	25.0	23.7	16.0	13.8	6.8	3
eGovernment Indicators						
% basic public services for citizens fully available online	54.5	60.0		80.0	36.8	2
% basic public services for enterprises fully available online	42.9	57.1		57.1	67.8	20
% of population using e-Government services	21.1	21.7	24.3		23.8	
of which for returning filled in forms	4.1	3.4	4.8		8.1	
% of enterprises using e-Government services		34.5	38.8	52.5	63.7	22
of which for returning filled in forms	7.0	12.2	19.2	37.6	44.8	19
ICT in schools						
Number of computers connected per 100 pupils				18.5	9.9	4
% of schools with broadband access				75.0	67.0	13
% of teachers having used the computer in class during the last 12 months				96.4	74.3	1
e-Commerce						
E-commerce as % of total turnover of enterprises	11.9	14.3	15.6	17.4	11.7	2
% enterprises receiving internet orders	8.6	13.1	14.7	18.8	13.9	8
% enterprises purchasing on the internet		45.3	53.9	62.4	37.9	3
e-business. % enterprises:						
with integrated internal business processes		34.5	10.0	15.3	37.3	24
with integrated external business processes		9.6	8.9	10.9	13.5	13
Security: % enterprises using Secure servers			47.4	50.1	41.0	6
% using digital signatures for authentication			7.5	10.2	14.3	16
Employment and Skills						
% employees using computers connected to the Internet		54.4	38.3	41.5	36.1	7
% of persons employed with ICT user skills.	24.3	24.1	24.6	24.7	18.5	1
% of persons employed with ICT specialist skills	3.2	3.2	3.2	3.2	3.1	10
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP	6.9				5.5	5
ICT sector share of total employment	4.5				4.0	6
ICT sector growth (constant prices).	7.4				3.6	2
R&D expenditure in ICT by the business sector, as % of GDP	0.3				0.3	8
=== as % of total R&D expenditure	24.2				25.7	7

28. NORWAY

ICT on the ground

As for broadband, Norway has grown rapidly from a somewhat slower initial take-up than the other Nordic countries into having one of the highest number of broadband connections at home in Europe, according to Eurostat household figures (not listed in comparison table in this document). With a continued high conversion rate, broadband now accounts for more than 80% of all home connections, meaning future growth potential mostly lies in increased overall take-up. Usage is very high, and for online media and financial use only surpassed by Iceland. Like a few of the countries with the most active user base, also use in public access points is very high.

eGovernment supply levels are solid, although Norway has fallen slightly from being among the absolute top levels during a year of delayed developments. Usage of eGovernment services among citizens is however still the second highest and most consistent in Europe. Perhaps reflecting service types and business structure, enterprises are on one side very high users of advanced services, but not even in the top ten list of Europe for overall usage. ICT maturity in schools is overall very high: Number of PCs is especially high, whereas broadband connectivity and actual use by teachers are somewhat lower.

The Norwegian work force is among the most skilled in Europe, and has the second highest share of employees with expert ICT-skills. Internet use at work is high. Business use of online services and eCommerce is also very advanced. However, use of fully integrated business systems and eBusiness tools is only around EU average, and growth here has been slow. Use of eSignatures is, like for other high-performers like Finland and Iceland, still among the lowest in Europe, which might reflect other solutions or structures at play. Enterprises have a steadily growing and high broadband connectivity rate.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)	68.0	82.0	88.4		87.4	15
DSL coverage in rural areas (as % of total population)			82.7		65.9	7
Broadband penetration (as % of population)					15.7	
DSL penetration (as % of population)					12.8	
Predominant download speed						
Households having broadband (as % of those having access to the internet at home)	37.8	49.9	64.7	83.0	62.1	3
% of enterprises with broadband access	46.9	60.3	78.0	86.1	74.5	6
Number of 3G subscribers per 100 inhabitants			2.5		5.0	9
Digital Television in households					30.6	
Music: number of single downloads per 100 inhabitants						
Internet Usage						
% population who are regular internet users	65.8	67.9	73.7	76.7	46.7	4
Take up of internet services (as % of population)						
Sending emails	64.4	65.8	68.2	72.3	43.8	5
Looking for information about goods and services	61.3	61.9	66.8	73.7	42.9	3
Internet telephoning or videoconferencing	4.2	5.5	7.6	13.3	7.1	6
Playing/downloading games and music	23.5	22.8	25.6	36.6	18.2	2
Listening to the web radio/watching web tv	17.4	21.3	24.4	34.5	11.8	2
Reading online newspapers/magazines	53.7	56.2	59.9	64.9	19.0	2
Internet banking	48.6	54.5	61.9	66.5	22.0	2
Places of access						
% at home	60.2	62.0	67.4	73.4	42.6	5
% at work	39.8	40.6	46.6	47.1	23.0	2
% at educational place	12.5	12.9	12.3	12.0	8.0	4
% at PIAP	13.9	19.1	7.3	10.9	6.8	4
eGovernment Indicators						
% basic public services for citizens fully available online	40.0	40.0		60.0	36.8	6
% basic public services for enterprises fully available online	57.1	75.0		87.5	67.8	3
% of population using e-Government services	43.4	37.3	51.7	57.5	23.8	2
of which for returning filled in forms	13.2	8.5	20.6	28.2	8.1	2
% of enterprises using e-Government services	64.8	68.7	83.5	74.1	63.7	14
of which for returning filled in forms	23.0	40.0	59.2	62.3	44.8	4
ICT in schools						
Number of computers connected per 100 pupils				22.7	9.9	2
% of schools with broadband access				89.0	67.0	7
% of teachers having used the computer in class during the last 12 months				89.4	74.3	5
e-Commerce						
E-commerce as % of total turnover of enterprises	6.2	7.5	14.7	13.9	11.7	6
% enterprises receiving internet orders	11.6	20.0	19.8	24.9	13.9	4
% enterprises purchasing on the internet		47.3	57.2	65.7	37.9	2
e-business. % enterprises:						
with integrated internal business processes	30.5	30.4	33.8	34.3	37.3	14
with integrated external business processes	10.5	12.0	13.4	15.3	13.5	8
Security: % enterprises using Secure servers	26.2	31.4	53.7	59.2	41.0	2
% using digital signatures for authentication	10.0	5.2	7.5	8.6	14.3	24
Employment and Skills						
% employees using computers connected to the Internet	50.7	48.7	52.2	50.4	36.1	4
% of persons employed with ICT user skills.	19.4	19.5	19.5	19.5	18.5	8
% of persons employed with ICT specialist skills	4.6	4.5	5.1	4.7	3.1	2
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP					5.5	
ICT sector share of total employment					4.0	
ICT sector growth (constant prices).					3.6	
R&D expenditure in ICT by the business sector, as % of GDP					0.3	
=== as % of total R&D expenditure					25.7	

29. ICELAND

ICT on the ground

In most connectivity and citizen use indicators, Iceland is the most advanced country in Europe. Iceland has by far the highest take-up of broadband by households in Europe, according to Eurostat figures (not listed in comparison table in this document). Overall Internet take-up and use is also the highest in Europe. However, government service levels and eBusiness use are Iceland's weak points.

The citizens are also the most active service users in Europe in most regards, and both for utility and media use. Close to 90% of all connections are now broadband.

eGovernment supply levels have not developed in the same speed as in other countries and are now only average. Usage of eGovernment has however picked up and is now the highest in Europe. Schools are very well connected to broadband. The number of computers available to students is high, although not among the very highest in Europe, and classroom use of computers by teachers is only average.

While the level of IT-specialists is above EU-average, its level of basic user skills, although not known for 2006, has been more average before. Enterprise use of ICT varies: Commercial use is high, especially for selling online, whereas eBusiness use is not on the same levels.

Broadband	2003	2004	2005	2006	EU25	Rank
Total DSL coverage (as % of total population)	90.0	92.0	92.0		87.4	10
DSL coverage in rural areas (as % of total population)			79.0		65.9	9
Broadband penetration (as % of population)					15.7	
DSL penetration (as % of population)					12.8	
Predominant download speed						
Households having broadband (as % of those having access to the internet at home)	40.3	56.4	75.2	86.8	62.1	2
% of enterprises with broadband access	19.9			95.2	74.5	1
Number of 3G subscribers per 100 inhabitants			0.0		5.0	22
Digital Television in households					30.6	
Music: number of single downloads per 100 inhabitants						
Internet Usage						
% population who are regular internet users	74.7	76.9	80.6	84.1	46.7	1
Take up of internet services (as % of population)						
Sending emails	73.0	73.4	75.2	77.0	43.8	1
Looking for information about goods and services	68.8	71.9	73.0	76.2	42.9	1
Internet telephoning or videoconferencing	6.8	8.8	14.1	18.2	7.1	1
Playing/downloading games and music	29.6	33.8	28.6	34.0	18.2	3
Listening to the web radio/watching web tv	16.7	21.1	31.4	42.6	11.8	1
Reading online newspapers/magazines	59.6	61.1	64.9	66.9	19.0	1
Internet banking	47.7	53.6	60.9	66.8	22.0	1
Places of access						
% at home	68.8	65.1	76.9	79.7	42.6	1
% at work	37.8	41.2	46.6	49.2	23.0	1
% at educational place	12.3	12.9	17.1	19.5	8.0	1
% at PIAP	3.8	5.6	11.6	15.3	6.8	2
eGovernment Indicators						
% basic public services for citizens fully available online	18.2	36.4		36.4	36.8	13
% basic public services for enterprises fully available online	42.9	71.4		62.5	67.8	15
% of population using e-Government services	55.7	58.5	55.3	60.6	23.8	1
of which for returning filled in forms	39.4	18.7	19.9	27.4	8.1	3
% of enterprises using e-Government services	97.4			94.6	63.7	1
of which for returning filled in forms	63.1			80.6	44.8	1
ICT in schools						
Number of computers connected per 100 pupils				14.8	9.9	8
% of schools with broadband access				92.0	67.0	4
% of teachers having used the computer in class during the last 12 months				79.5	74.3	9
e-Commerce						
E-commerce as % of total turnover of enterprises	5.9			8.0	11.7	12
% enterprises receiving internet orders	5.9			29.5	13.9	2
% enterprises purchasing on the internet				60.0	37.9	4
e-business. % enterprises:						
with integrated internal business processes	30.7			40.6	37.3	9
with integrated external business processes	8.7			10.2	13.5	15
Security: % enterprises using Secure servers	48.1			39.9	41.0	12
% using digital signatures for authentication	5.5			9.4	14.3	20
Employment and Skills						
% employees using computers connected to the Internet	45.9			46.4	36.1	5
% of persons employed with ICT user skills.	18.8	18.1	17.2		18.5	
% of persons employed with ICT specialist skills	3.4	3.2	3.6		3.1	
Indicators on growth of ICT sector and R&D						
ICT sector share of total GDP					5.5	
ICT sector share of total employment					4.0	
ICT sector growth (constant prices).					3.6	
R&D expenditure in ICT by the business sector, as % of GDP					0.3	
=== as % of total R&D expenditure					25.7	