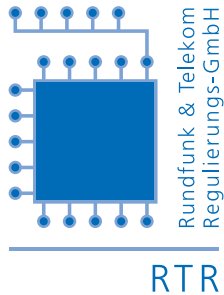


# ICT Factbook



# ICT Factbook

RTR Publication Series

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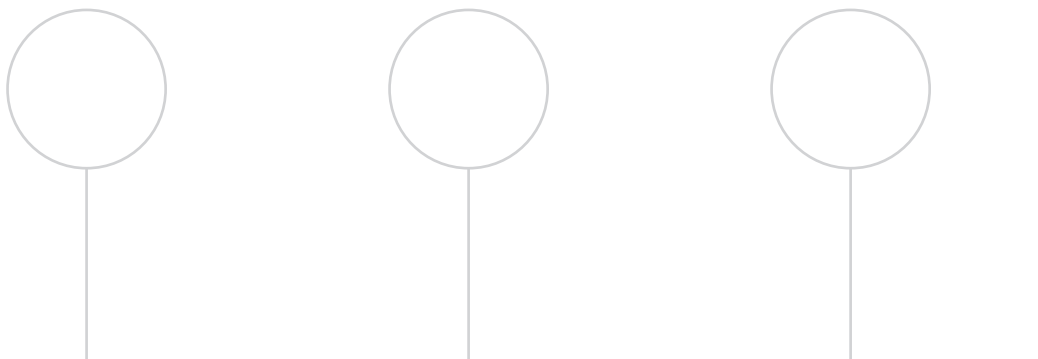




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# Introduction

In terms of revenues, the Austrian information and communication technology (ICT) sector has now surpassed the domestic tourism sector. With output totaling approximately EUR 28 billion,<sup>1</sup> the ICT sector is among the most important drivers of economic growth in Austria, and at the same time the sector offers immense potential for innovation in order to secure sustainable prosperity in Austria.

Despite its outstanding importance, this sector is barely noticed in the public eye and only addressed as a political issue in isolated cases. The general public's knowledge of this sector is often limited to rather specific areas, such as mobile communications. This low level of awareness of the sector's importance can be attributed in part to the available data, which is often sparse and scattered. Reliable and regular data is provided by Statistics Austria as well as a few private opinion research institutions and international organizations; otherwise, sector statistics can only be found in one-off or irregular studies.

In this context, it has become clear that a reliable data basis helps to focus awareness sustainably and improves the quality of decision-making substantially. For this purpose, RTR provides a snapshot of the market situation in mobile communications and broadband Internet access in the authority's quarterly survey of key data on the telecommunications sector, thus creating a sound basis of information for decision-makers in Austria. This makes it possible to analyze the effects of decisions, to identify future trends and to develop well-founded strategies.

RTR's ICT Factbook represents an important initial step toward creating an in-depth data basis for the ICT sector as a whole. The publication contains a unique compilation of data from various fields, such as culture, health, security, education and other areas in which ICT is used

<sup>1</sup> Source: Statistics Austria, Structural Business Statistics 2006, including the manufacture of parts and equipment, wholesale trade and broadcasting.

for the benefit of people in Austria. In contrast to other publications, the factbook not only addresses the core subject of information technology but also shows how intensively people use ICT in various areas as well as the changes brought about by these technologies. Another central theme in this publication is how various groups in society interact with ICT.

One especially important insight which can be gleaned from the factbook is that the digital divide in Austria is linked to education, age, gender and income, and that targeted measures will be required in order to close this gap. Whereas 95% of Austrians with a high level of education use the Internet, the medium is only used by about half of those with a low level of education. This disadvantage is rooted in the equipment available at schools: 68% of Austrian schools had broadband Internet access in 2006, while the top-ranked countries had already reached levels of around 95%. The main reason why computers are not used in the classroom is a lack of equipment (55% of responses). Whereas young people use new media intensively, the enthusiasm drops among older groups: The level of computer knowledge plummets in older age groups, with only one fourth of people over 65 years of age retrieving information from the Internet.

In health care, Austria's doctors do make use of these new media, but the penetration level in this group is still below the EU 27 average. This is especially relevant in this field because ICT deployment can enable substantial cost reductions without any sacrifice of quality. The use of ICT in health care is still in its fledgling stages: In 2007, only 12% of Austria's doctors exchanged patient data with other care providers by electronic means; a great deal of information is still administered on paper. Computers are also still used rather infrequently in patient consultations: Whereas doctors in the top-ranked countries regularly use computers for patient advising, only about half of Austria's doctors use them for this purpose.

In the field of culture, only a small percentage of items have been digitized, and more than 75% of media holdings are still only available in the form of books. The European Digital Library (EDL) project launched by the European Commission was the first attempt to accelerate the process of digitization in EU member states.

With regard to security, initiatives such as [saferinternet.at](http://saferinternet.at) have been launched in order to raise user awareness of relevant risks. For example, 64% of Internet users in Austria indicated that they had a firewall installed on their computer in 2005. 16% indicated that they had already had problems with computer viruses which led to a loss of time and/or data. The figure for Austria is lower than the EU 27 average (19%).

For two consecutive years now, Austria has ranked first in terms of e-government availability, and 81% of Austrian companies made use of these services in 2007. This value is substantially higher than the EU 27 average (65%). At the same time, there is potential for improvement in the individual use of these services, as less than one third of Austrians actually handle their official business online.

Statistics Austria estimates that the total expenditure for research and development will amount to 2.63% of GDP, meaning that Austria is well on its way to meeting the 3% target defined by the European Commission. At 2.14%, the share of employment in research and development is also clearly higher than the EU 27 average (1.45% in 2006) and has been increasing steadily in recent years.

The charts in the section on green IT show that CO<sub>2</sub> emissions could be reduced substantially in this field (and through the use of ICT). The increased use of video conferencing to replace business travel and online billing to replace paper invoices could reduce CO<sub>2</sub> emissions by millions of tons.

When interpreting and using the data in this publication, it is important to note that the information was compiled from a variety of sources, and that survey methods and definitions are not standardized. As this compilation is based on primary sources, we can not guarantee the accuracy and reliability of the data. The compilation process repeatedly showed the unsatisfactory data situation in Austria as well as the absence of key ICT indicators, especially when it is necessary to link this information with various other fields. A number of problems were also identified in connection with data consistency and the transparency of data definitions. As a result, the data found was analyzed and its quality verified wherever the information needed for this purpose was available and accessible. RTR's ICT experts then selected the relevant facts and figures, reviewed their plausibility and drew conclusions on that basis.



The factbook is subdivided into seven sections, each of which is devoted to a specific subject area. These sections begin with a preface which highlights the most important indicators, discusses the reliability of the data sources and provides additional help for interpreting the data. Within each section, the data subsection begins with an overview table that lists the individual topics covered. This table is followed by the individual topics and relevant data, including a chart as well as the underlying figures in each case.

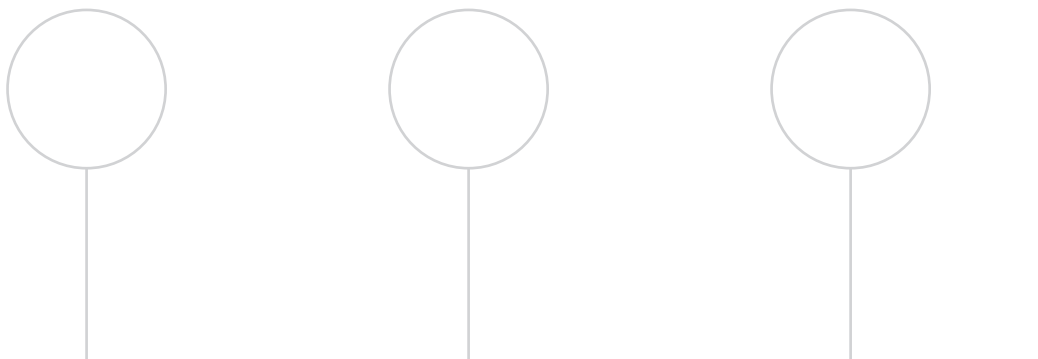
In closing, I would like to thank the RTR employees who helped create this publication, in particular Michael Spineth, Daniela Andreasch and Po-Wen Liu.

Georg Serentschy

CEO Telecommunications

Austrian Regulatory Authority for Broadcasting  
and Telecommunications





# 1. Economy, infrastructure and e-government

## 1.1 Preface


In addition to creating and securing jobs, ICT makes a substantial contribution to increasing productivity and competitiveness in all sectors of the economy.

This section provides an overview of the use of information and communications technologies in the fields of the economy, infrastructure and e-government in Austria.

The detailed analyses in this section contain specific information on each of the areas covered. The analyses are preceded by a fact sheet which gives an overview of the data presented in the section. A number of data sources were used to compile the information (Statistics Austria, OECD, Eurostat, RTR's Telecom Monitor, RTR's demand-side survey, the Austrian Internet Monitor [AIM] and European Information Technology Observatory [EITO]).

As the data basis and NACE classes applied may differ, the data presented here is often difficult to compare.

The section covering the economy presents a detailed description of the ICT sector in Austria as well as comparisons at the European level. For this purpose, data from Statistics Austria, the European Information Technology Observatory and the OECD are used. Statistics Austria uses NAV 1.1 as a data basis, while the OECD uses ISIC Rev. 3. The European Information Technology Observatory employs a different definition of the ICT sector which does not include revenues generated by the manufacture of parts and equipment, wholesale trade and broadcasting. This means that the data is not directly comparable with that generated by Statistics Austria. Data from the European Information Technology Observatory was used because it provides extensive and up-to-date reference values at the European level.



As for the field of infrastructure, this section provides details on the number of fixed-link broadband connections in households and businesses in Austria and Europe. In addition, a breakdown of all Austrian broadband lines (including mobile broadband) by infrastructure is presented. Broadband connections include all connections which offer a download bandwidth exceeding 144 kbit/s. In this context, it becomes clear that an above-average number of broadband connections are realized by means of mobile technology (UMTS/HSPA) in Austria; however, these connections are not included in international comparisons. The data sources used for this purpose were Eurostat (European comparison, not including mobile broadband) and RTR (breakdown by infrastructure including mobile broadband connections). Eurostat uses NAV 1.1 as a data basis. The breakdown of Austria's broadband connections by infrastructure is based on data collected regularly by RTR in accordance with the Austrian Communications Survey Ordinance (KEV).

The data on the field of e-government clearly indicates that the use of e-government services lags far behind the services available. Austria ranks first in terms of e-government services, but the actual use of these services is still low by comparison. However, Austria has also seen considerable growth in the use of these services.

## 1.2 Fact sheet and detailed analyses

Economy, infrastructure and e-government	Value	As of	Source	Details
<i>Indicators including the manufacture of parts and equipment and related areas (OECD definition, NACE Rev. 1.1)</i>				
Revenues of Austria's ICT sector in 2006	EUR 27,773,008,000	2006	1	Page 14
Number of employees in Austria's ICT sector in 2006	111,766	2006	1	Page 14
Number of businesses in Austria's ICT sector in 2006	15,202	2006	1	Page 14
ICT's share of value added in 2007	6.81 %	2007	2	Page 16
<i>Indicators excluding the manufacture of parts and equipment, wholesale trade and broadcasting (ICT sector definition according to the European Information Technology Observatory)</i>				
Revenues of Austrian ICT sector in 2007	EUR 15,333,000,000	2007	7	Page 14
Growth in revenues of Austrian ICT sector in 2007	2.9 %	2007	7	Page 14
Computer and Internet equipment Households with: Fixed-link only / mobile only / fixed-link and mobile telephone	8%/43%/49%	Q3/2007	5	none
Businesses with: Fixed-link only / mobile only / fixed-link and mobile telephone	14%/4%/82%	Q3/2007	5	none
Businesses with: 10-49/50-249/>250 employees with PCs	97,8%/99,7%/100%	Q1/2007	1	none
Internet and broadband access Households with broadband Internet access	45.72%	Q4/2007	4	Page 17
Broadband connections per 100 inhabitants (excluding mobile broadband)	20.4%	Q2/2008	4	Page 17
Broadband connections per 100 inhabitants (including mobile broadband)*	29.3%	Q2/2008	4	Page 17
Businesses with: 10-49/50-249/>250 employees with Internet access	96.6%/99.5%/100%	Q1/2007	1	Page 19
- " - with broadband Internet access	69.3%/86.6%/98.2%	Q1/2007	1	Page 19
Web sites, e-commerce 10-49/50-249/>250 employees with own web site	76%/89.9%/97%	Q1/2007	1	Page 19
Use of e-government services by individuals	27%	Q1/2007	1	Page 27
Use of e-government services by businesses	81%	Q1/2007	1	Page 29
Number of downloadable forms	790	Q3/2007	1	Page 25
Number of online procedures	117	Q3/2007	1	Page 25
Links for citizens	57%	Q3/2007	1	Page 25
Links for businesses	43%	Q3/2007	1	Page 25

<sup>1</sup> Statistics Austria<sup>2</sup> OECD<sup>3</sup> Eurostat<sup>4</sup> RTR (KEV)<sup>5</sup> RTR demand-side survey 2007<sup>6</sup> Austrian Internet Monitor (AIM)<sup>7</sup> European Information Technology Observatory 2007

\* Estimate

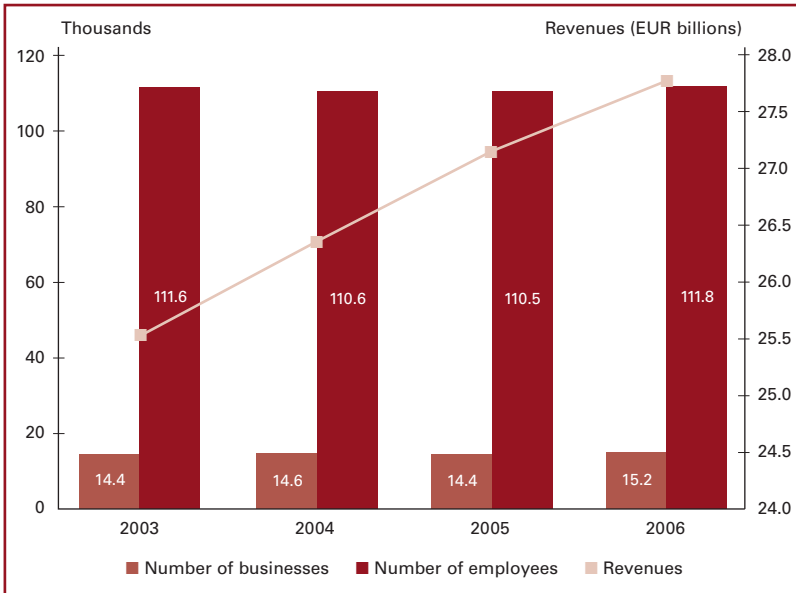
Table 1: Fact sheet on the economy, infrastructure and e-government

## ICT sector statistics:

### **5.25% of Austrian businesses operating in the ICT sector**

According to Statistics Austria's Structural Business Statistics, the Austrian ICT sector comprised some 15,202 businesses (5.25% of the total number of businesses in Austria) and 111,766 employees in 2006. Revenues in that year came to about EUR 27.8 billion (OECD definition, NACE Rev.1.1), which is approximately 5% of the total revenues of businesses in all industries (ÖNACE C–K).

The European Information Technology Observatory (EITO) 2007 employs a narrower definition of the ICT sector which does not include revenues generated by the manufacture of parts and equipment, wholesale trade and broadcasting. According to the EITO 2007, revenues in 2007 came to EUR 15.3 billion, up 2.9% from 2006 (EUR 14.9 billion). Although this value is very close to the EU average, further growth of 3.1% is expected in 2008. This will probably just exceed the average growth rate in the EU.



Source: Statistics Austria, Structural Business Statistics 2006, OECD definition, NACE Rev.1.1.

Figure 1: Key statistics on Austria's ICT sector

	2003	2004	2005	2006
Number of businesses	14,366	14,578	14,435	15,202
Number of employees	111,606	110,640	110,529	111,766
Revenues (including manufacture of parts and equipment) in EUR billions	25.532	26.358	27.153	27.773
Growth in number of companies		1.48%	-0.98%	5.31%
Growth in number of employees		-0.87%	-0.10%	1.12%
Growth in revenues		3.24%	3.01%	2.28%

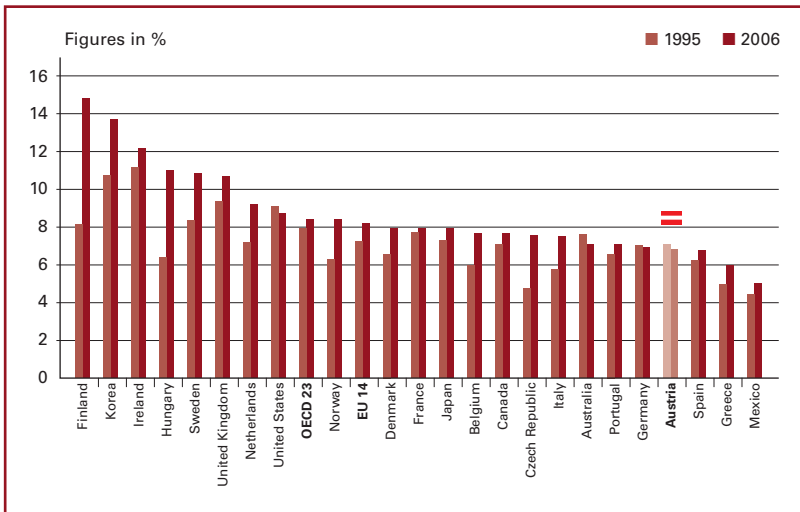
Source: Statistics Austria, Structural Business Statistics 2006, OECD definition, NACE Rev.1.1.

Table 2: Key figures on the ICT sector according to Statistics Austria



## ICT's share of value added in Austria: 6.8% according to OECD

In 2006, the Austrian ICT sector's share of valued added came to approximately 6.8%, thus placing Austria clearly behind the top-ranked countries such as Finland (14.8%), Korea (13.7%) and Ireland (12.1%) and below the OECD's overall average. ICT's share of value added in Austria has even dropped slightly compared to 1995, when it amounted to approximately 7.1%.



Source: OECD Key ICT Indicators, share of ICT value added in the business sector value added

Figure 2: Share of ICT in value added by the business sector

Country	1995	2006	Country	1995	2006
Finland	8.13%	14.78%	Japan <sup>3</sup>	7.27%	7.90%
Korea <sup>1</sup>	10.70%	13.69%	Belgium <sup>1</sup>	5.96%	7.65%
Ireland	11.12%	12.14%	Canada	7.04 %	7.62%
Hungary	6.41%	10.95%	Czech Republic <sup>1,3</sup>	4.77 %	7.54%
Sweden <sup>2</sup>	8.31%	10.78%	Italy	5.77 %	7.48%
United Kingdom <sup>2</sup>	9.27%	10.67%	Australia	7.62 %	7.08%
Netherlands	7.14%	9.20%	Portugal <sup>1, 2</sup>	6.58 %	7.07%
United States	9.08%	8.70%	Germany <sup>1</sup>	7.00 %	6.92%
OECD 23	7.91%	8.38%	<b>Austria</b>	<b>7.06 %</b>	<b>6.81%</b>
Norway	6.29%	8.34%	Spain	6.18 %	6.75%
EU 14	7.20%	8.15%	Greece <sup>1, 2, 3, 4</sup>	4.96 %	5.94%
Denmark	6.57%	7.93%	Mexico <sup>5</sup>	4.38 %	5.00%
France	7.73%	7.92%			

<sup>1</sup> Rental of ICT goods (7123) not available

<sup>2</sup> 2005 instead of 2006

<sup>3</sup> ICT wholesale (5150) not available

<sup>4</sup> Telecommunications services (642) included postal services

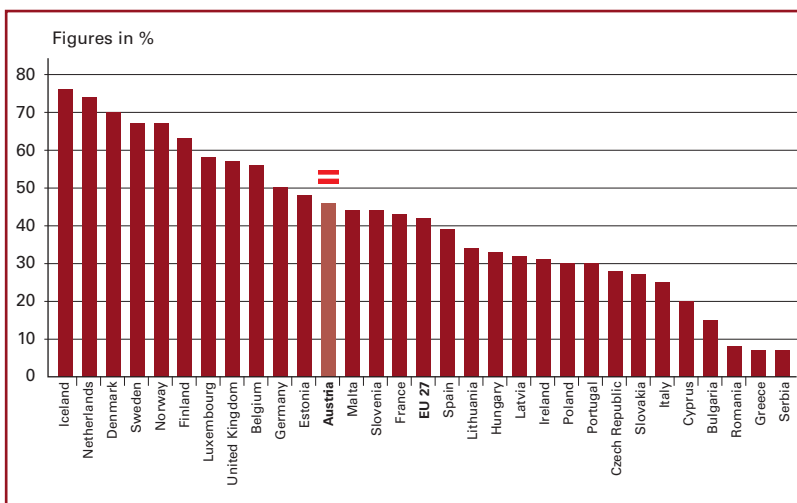
<sup>5</sup> 2004 instead of 2006

Source: IT Outlook 2008, April 2008

Table 3: Share of ICT in value added by the business sector

## Share of households with fixed-link broadband Internet access: Austria lagging behind top-ranked countries

Nationwide, 46% of households in Austria had broadband Internet access based on fixed-link infrastructure in 2007. Measured against the population of Austria (i.e., per capita), broadband penetration was approximately 20.4% in Q2 2008. These figures do not include mobile broadband connections; if those connections are included, the per capita penetration rate in Austria comes to approximately 29.3% for Q2 2008.



Source: Eurostat (2007)

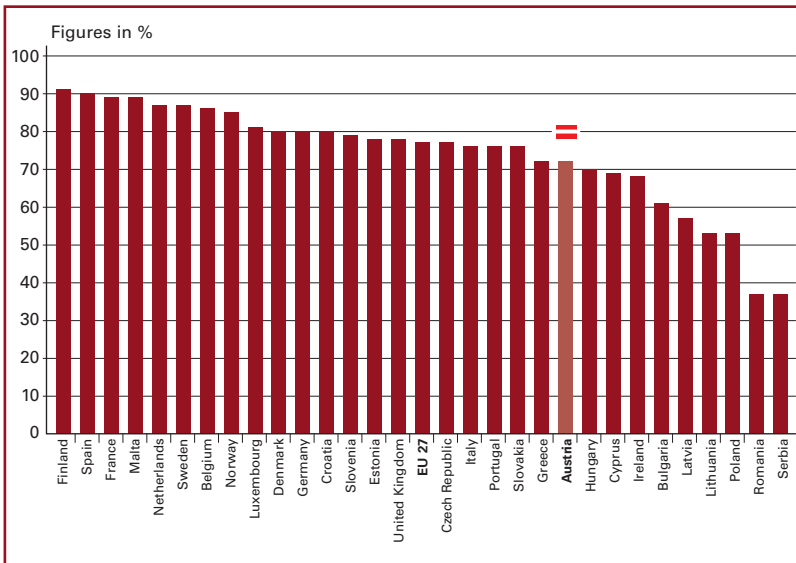
Figure 3: Households with broadband access based on fixed-link infrastructure

Country	%	Country	%	Country	%
Iceland	76	<b>Austria</b>	<b>46</b>	Portugal	30
Netherlands	74	Malta	44	Czech Republic	28
Denmark	70	Slovenia	44	Slovakia	27
Sweden	67	France	43	Italy	25
Norway	67	EU 27	42	Cyprus	20
Finland	63	Spain	39	Bulgaria	15
Luxembourg	58	Lithuania	34	Romania	8
United Kingdom	57	Hungary	33	Greece	7
Belgium	56	Latvia	32	Serbia	7
Germany	50	Ireland	31		
Estonia	48	Poland	30		

Table 4: Households with broadband access based on fixed-link infrastructure

## Share of businesses with fixed-link broadband Internet access: Austria just below EU 27 average

Businesses in Austria can hardly get by without Internet access these days. By January 2007, 97% of Austria's businesses had access to the Internet (Statistics Austria), and 72% of companies had broadband Internet access, which places Austria slightly below the EU 27 average (77%). In addition, over three quarters of Austrian businesses have a web site.



Source: Eurostat (2007)

Figure 4: Businesses with broadband access based on fixed-link infrastructure

Country	%	Country	%	Country	%
Finland	91	Slovenia	79	Ireland	68
Spain	90	Estonia	78	Bulgaria	61
France	89	United Kingdom	78	Latvia	57
Malta	89	Greece	72	Lithuania	53
Netherlands	87	<b>Austria</b>	<b>72</b>	Poland	53
Sweden	87	EU 27	77	Romania	37
Belgium	86	Czech Republic	77	Serbia	37
Norway	85	Italy	76	Hungary	70
Luxembourg	81	Portugal	76	Croatia	80
Denmark	80	Slovakia	76		
Germany	80	Cyprus	69		

Table 5: Businesses with broadband access based on fixed-link infrastructure

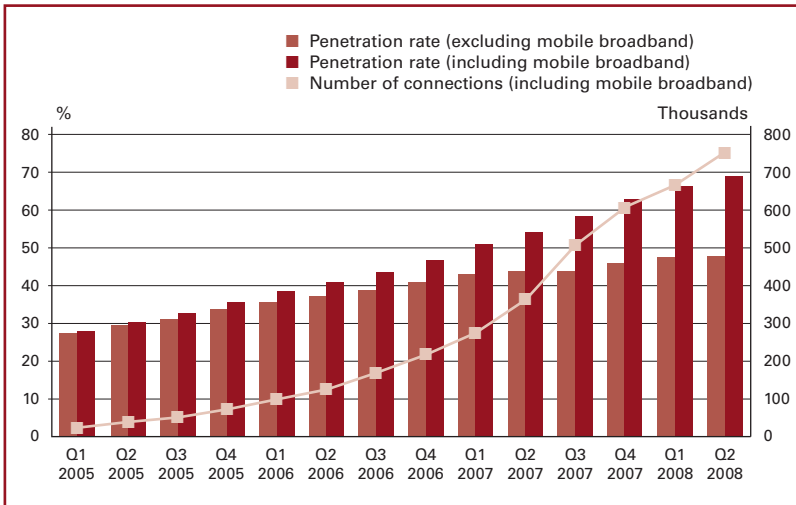
Figures in %	Internet access		Broadband access		Businesses with web sites	
	2006	2007	2006	2007	2006	2007
EU 27	92	94	73	77	63	65
Austria	98	97	69	72	78	78

Source: Eurostat, Data in Focus, Internet Usage by Enterprises (2007)

Table 6: Internet access, broadband access and web sites

## Broadband penetration: Rapid growth in mobile broadband connections

The number of mobile broadband connections has increased rapidly, reaching an estimated 749,965 by Q2 2008. If we add the number of mobile broadband connections to the total number of broadband connections in Austria, the level of broadband penetration amounts to more than 68.85% (based on the number of households).



Source: RTR communications surveys (KEV), including wholesale broadband connections and business customers. Definition of mobile broadband connections: mobile communications contracts which include a data volume of at least 250 MB per month (see Telecom Monitor).

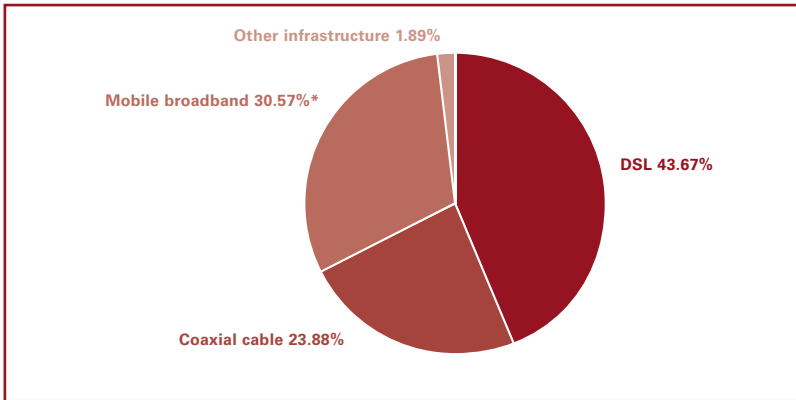
Figure 5: Broadband penetration and mobile broadband

	Fixed-link broadband connections (excluding mobile broadband)	Population	Households	Broadband penetration in Austria (excluding mobile broadband)	Broadband penetration in Austria (including mobile broadband)
<b>Q1 2005</b>	947,000	8,216,000	3,460,000	27%	28%
<b>Q2 2005</b>	1,019,000	8,230,000	3,471,000	29%	30%
<b>Q3 2005</b>	1,083,000	8,251,000	3,480,000	31%	33%
<b>Q4 2005</b>	1,172,000	8,266,000	3,490,000	34%	36%
<b>Q1 2006</b>	1,250,000	8,274,000	3,501,000	36%	39%
<b>Q2 2006</b>	1,307,000	8,280,000	3,506,000	37%	41%
<b>Q3 2006</b>	1,359,000	8,292,000	3,510,000	39%	44%
<b>Q4 2006</b>	1,432,000	8,299,000	3,516,000	41%	47%
<b>Q1 2007</b>	1,515,000	8,309,000	3,524,000	43%	51%
<b>Q2 2007</b>	1,545,000	8,315,000	3,534,000	44%	54%
<b>Q3 2007</b>	1,554,000	8,328,000	3,541,000	44%	58%
<b>Q4 2007</b>	1,622,000	8,334,000	3,548,000	46%	63%
<b>Q1 2008</b>	1,690,000	8,341,000	3,556,000	48%	66%
<b>Q2 2008</b>	1,703,000	8,348,000	3,563,000	48%	69%

Table 7: Broadband penetration and mobile broadband

### Broadband connections by infrastructure: 31% of broadband connections are based on mobile technology

By international comparison, Austria appears to have taken a leading role in terms of mobile broadband connections. In Q2 2008, some 31% of the 2.45 million broadband connections in Austria (see page 23) were based on mobile technology (RTR KEV, Q2 2008).



Source: RTR communications surveys (KEV), including wholesale broadband connections and business customers. Definition of mobile broadband connections: mobile communications contracts which include a data volume of at least 250 MB per month (see Telecom Monitor), as of Q2 2008.

\* Estimate

Figure 6: Broadband connections by infrastructure

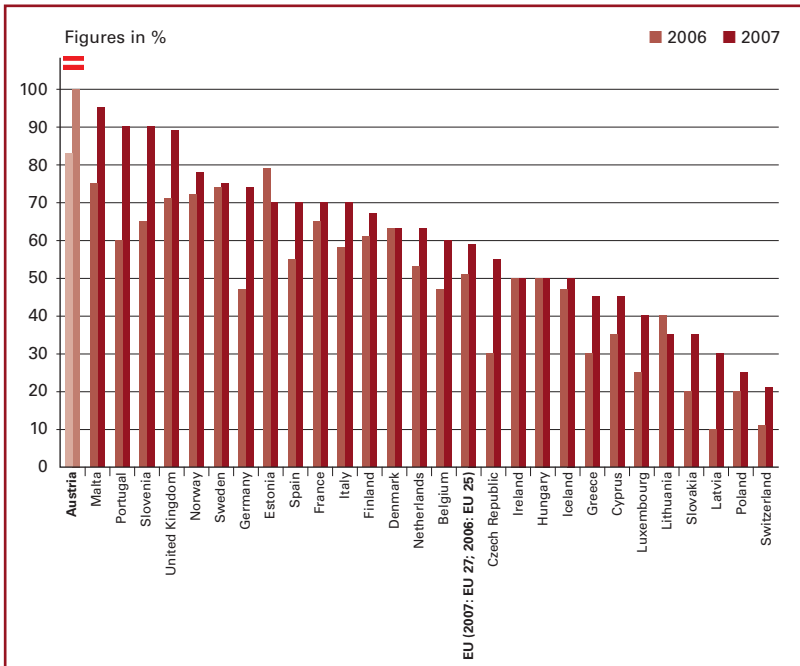
Quarter	DSL	Coaxial cable	Mobile broadband	Other infrastructure
Q4 2005	674,000	475,700	73,000	22,000
Q1 2006	736,300	490,000	98,800	23,600
Q2 2006	779,500	502,500	124,700	25,000
Q3 2006	818,500	514,000	168,200	26,400
Q4 2006	865,900	537,700	216,000	28,300
Q1 2007	928,700	557,200	273,100	29,300
Q2 2007	946,300	546,900	361,900	51,800
Q3 2007	952,100	550,000	504,600	52,200
Q4 2007	985,200	583,300	607,000	53,600
Q1 2008	1,057,800	583,100	664,800	49,500
Q2 2008	1,071,200	585,700	750,000	46,300

Table 8: Broadband connections by infrastructure



## Online availability of e-government services: Austria ranks first in EU

In terms of the availability of e-government services, Austria was ranked first in the EU for the second consecutive year. At present, 100% (2006: 83%) of the services included in the ranking's comparison of 28 European countries (EU 25 plus Iceland, Norway and Switzerland) can be handled by electronic means in Austria. The EU 27 average for 2007 was only 59%.



Source: Capgemini, The User Challenge, Benchmarking The Supply Of Online Public Services (September 2007).

Figure 7: Online availability of e-government services

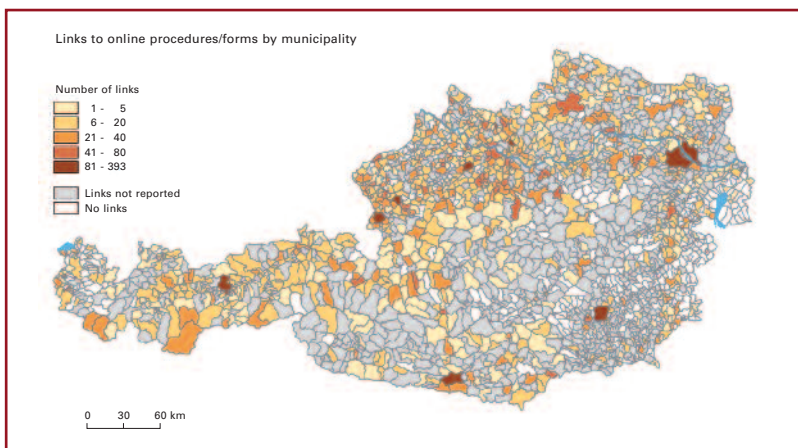
Country	2006	2007	Country	2006	2007
<b>Austria</b>	<b>83%</b>	<b>100%</b>	Belgium	47%	60%
Malta	75%	95%	EU (2006: EU 25)	51%	59%
Portugal	60%	90%	Czech Republic	30%	55%
Slovenia	65%	90%	Ireland	50%	50%
United Kingdom	71%	89%	Hungary	50%	50%
Norway	72%	78%	Iceland	47%	50%
Sweden	74%	75%	Greece	30%	45%
Germany	47%	74%	Cyprus	35%	45%
Estonia	79%	70%	Luxembourg	25%	40%
Spain	55%	70%	Lithuania	40%	35%
France	65%	70%	Slovakia	20%	35%
Italy	58%	70%	Latvia	10%	30%
Finland	61%	67%	Poland	20%	25%
Denmark	63%	63%	Switzerland	11%	21%
Netherlands	53%	63%			

Table 9: Online availability of e-government services

## e-government map:

### 90% of population can handle official business online

Online forms and procedures are available from all of Austria's federal ministries. In 2007, a total of 856 forms and online procedures were available, with the majority consisting of downloadable forms (92%). Statistics Austria estimates that 90% of Austria's population can handle official business online (i.e., 90% of the population lives in municipalities with at least one link to various forms and online procedures).



Source: Statistics Austria e-government map (September 2007)

Figure 8: e-government map

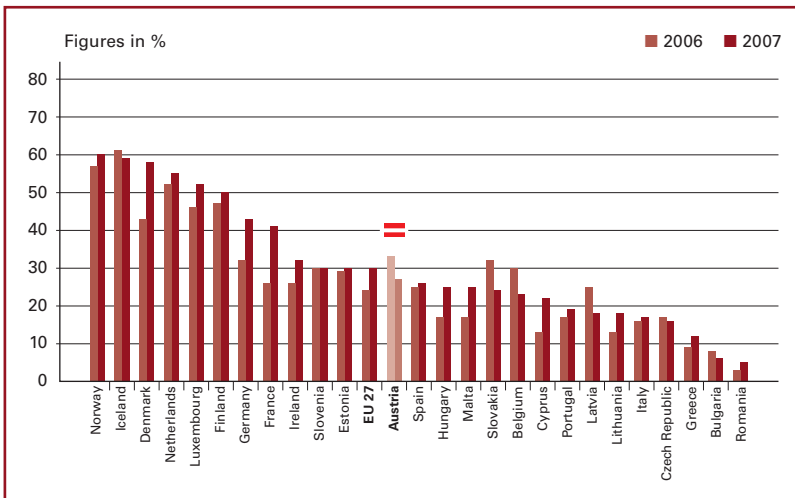
	Total	Downloadable forms	Online procedures
Burgenland	109	74	35
Carinthia	111	74	37
Lower Austria	121	104	17
Upper Austria	309	296	13
Salzburg	373	310	63
Styria	177	167	10
Tyrol	375	354	21
Vorarlberg	369	262	107
<b>Total</b>	<b>1,944</b>	<b>1,641</b>	<b>303</b>

Table 10: Number of online procedures and forms by province (excluding Vienna, which is counted as a municipality)

## Use of e-government by individuals: Use of services lags far behind availability

The chart below shows the percentage of individuals who had used the Internet for interactions with public authorities in the three months prior to the survey date.

As the chart clearly shows, the use of e-government services in Austria (27%) is just below the EU 27 average (30%).



Source: Eurostat, Definition: Percentage of individuals aged 16 to 74 who have used the Internet for interaction with public authorities in the last three months

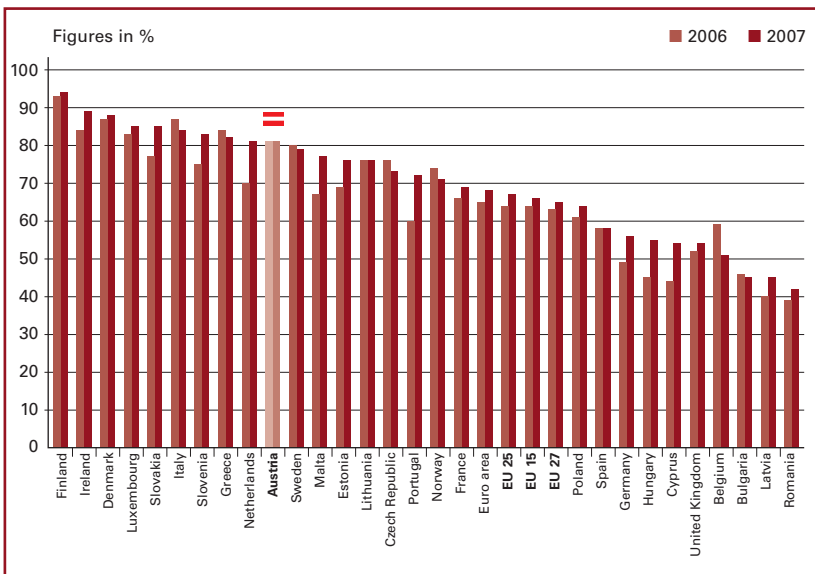
Figure 9: Use of e-government services (individuals)

Country	2006	2007	Country	2006	2007
Norway	57%	60%	Hungary	17%	25%
Iceland	61%	59%	Malta	17%	25%
Denmark	43%	58%	Slovakia	32%	24%
Netherlands	52%	55%	Belgium	30%	23%
Luxembourg	46%	52%	Cyprus	13%	20%
Finland	47%	50%	Portugal	17%	19%
Germany	32%	43%	Latvia	25%	18%
France	26%	41%	Lithuania	13%	18%
Ireland	26%	32%	Italy	16%	17%
Slovenia	30%	30%	Czech Republic	17%	16%
Estonia	29%	30%	Greece	9%	12%
EU 27	24%	30%	Bulgaria	8%	6%
<b>Austria</b>	<b>33%</b>	<b>27%</b>	Romania	3%	5%
Spain	25%	26%			

Table 11: Use of e-government services (individuals)

## Use of e-government by businesses: Majority of businesses in Austria use e-government services

The chart below shows the percentage of businesses which use the Internet for interactions with public authorities. Here it becomes clear that businesses in Austria use e-government services far more frequently than individuals. At 81%, the share of businesses which use these services is well above the EU 27 average (65%).



Source: Eurostat, Definition: Percentage of businesses which use the Internet for interaction with public authorities

Figure 10: Use of e-government services (businesses)

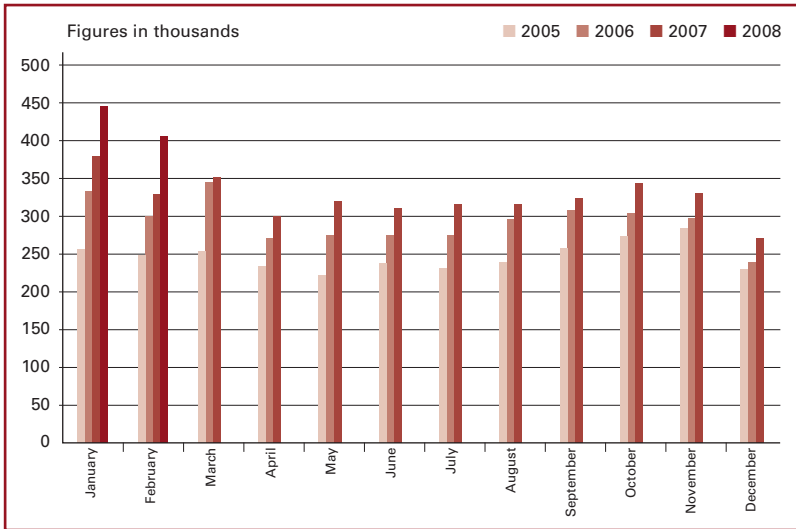
Country	2006	2007	Country	2006	2007
Finland	93%	94%	Norway	74%	71%
Ireland	84%	89%	France	66%	69%
Denmark	87%	88%	Euro area	65%	68%
Luxembourg	83%	85%	EU 15	64%	66%
Slovakia	77%	85%	EU 25	64%	67%
Italy	87%	84%	EU 27	63%	65%
Slovenia	75%	83%	Poland	61%	64%
Greece	84%	82%	Spain	58%	58%
Netherlands	70%	81%	Germany	49%	56%
<b>Austria</b>	<b>81%</b>	<b>81%</b>	Hungary	45%	55%
Sweden	80%	79%	Cyprus	44%	54%
Malta	67%	77%	United Kingdom	52%	54%
Estonia	69%	76%	Belgium	59%	51%
Lithuania	76%	76%	Bulgaria	46%	45%
Czech Republic	76%	73%	Latvia	40%	45%
Portugal	60%	72%	Romania	39%	42%

Table 12: Use of e-government services (businesses)

## e-government user sessions per month:

### Steady growth observed

In 2005, Austria's e-government sites recorded an average of 247,000 user sessions per month; by 2006, this figure had jumped to 293,000. In 2007, the number of user sessions even rose to an average of 324,000 per month, and this trend appears to have continued into 2008. Significant fluctuations in the use of e-government services can be observed over the course of the year: While the use of these services reaches its highest level in January and February (probably due to tax assessment procedures), the figures drop off considerably in December.



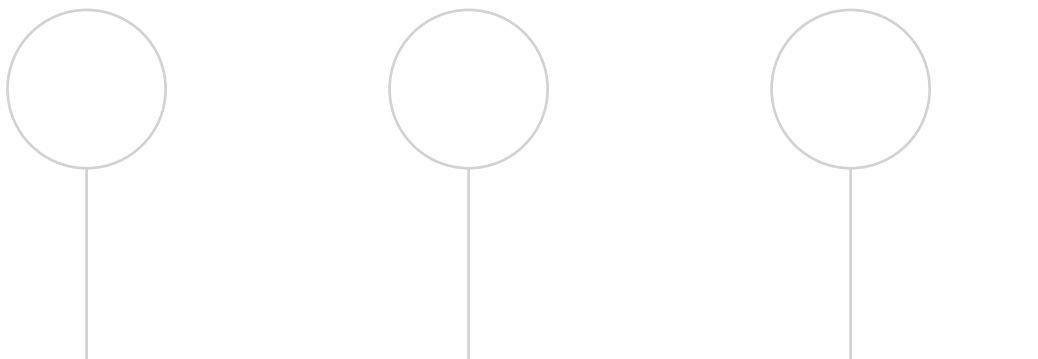
Source: Statistics Austria e-government map (September 2007)

Figure 11: User sessions per month, 2005 to 2008

Month	2005	2006	2007	2008
January	255,892	332,614	379,415	445,000
February	248,256	299,364	327,925	405,000
March	253,066	343,956	351,100	
April	233,950	270,556	299,923	
May	220,972	273,863	318,621	
June	237,608	275,239	310,278	
July	230,756	275,239	316,094	
August	239,438	295,364	315,685	
September	257,495	308,266	323,004	
October	272,661	303,117	343,313	
November	284,038	296,950	330,000	
December	230,268	238,701	270,000	

Table 13: User sessions per month, 2005 to 2008





## 2. Science and research

### 2.1 Preface

This section provides detailed information on a variety of fields in science and research. The information presented here is based on data from Statistics Austria and Eurostat.


In light of the generally acknowledged fact that there is a positive correlation between science and research and overall economic growth, Austria has also intensified its research efforts considerably in recent years.

Austria's ranking in the European Innovation Scoreboard (EIS) has improved steadily over the last few years, and Austria moved up to 13<sup>th</sup> place in 2007 (2006: 16<sup>th</sup>). However, there is still room to catch up in several areas, including the "Applications" and "Innovation drivers" categories.

Austria's gross domestic expenditure for research and development (R&D) will come to approximately 2.63% of GDP in 2008, meaning that Austria is well on its way to attaining the i2010 target (3%) as defined in the Lisbon Agenda.

The number of employees in the field of research and development has continued to grow in Austria. Whereas the R&D sector employed just under 53,000 people in 1998, this figure had risen to nearly 84,000 by 2008. This puts Austria in 7<sup>th</sup> place by international comparison. Approximately one fourth of the employees in the Austrian R&D sector are female.

In the ICT sector, R&D expenditure came to EUR 1.214 billion in 2006, and the number of employees came to 9,144 (in full-time equivalents, or FTEs).



More than half of Austria's businesses engaged in innovation activities in 2006, and 36% of businesses launched new or substantially improved goods or services on the market during the reporting period.

By international comparison, Austria took second place in terms of product and process innovations (NB: international reference data was only available from the year 2004).

## 2.2 Fact sheet and detailed analyses

Science and research	Austria	As of	Source	Details
European Innovation Scoreboard - Ranking	13	2007	1	Page 36
European Innovation Scoreboard – Innovation		2007	1	Page 37
European Innovation Scoreboard – Knowledge creation		2007	1	Page 39
European Innovation Scoreboard – Innovation and entrepreneurship		2007	1	Page 41
European Innovation Scoreboard - Applications		2007	1	Page 42
European Innovation Scoreboard – Intellectual property		2007	1	Page 44
R&D expenditure in EUR millions	6,318.6	2006	3	Page 45
R&D expenditure of higher education sector in EUR millions / in % of total	1,523.2/24.1%	2006	3	Page 47
R&D expenditure of government sector in EUR millions / in % of total	330.2/5.2%	2006	3	Page 47
R&D expenditure of private non-profit sector in EUR millions / in % of total	16.5/0.3%	2006	3	Page 47
R&D expenditure of business enterprise sector in EUR millions / in % of total	4,448.7/70.4%	2006	3	Page 47
R&D expenditure in ICT sector in EUR millions	1,214.3	2006	3	Page 52
Employees in R&D field of ICT sector (FTEs)	9,144.7	2006	3	Page 52
Gross domestic R&D expenditure in 2008 (% of GDP)*	2.63%	2008	3	Page 45
Gross domestic R&D expenditure in 2008 (EUR billions)*	7,512.2	2008	3	Page 45
Number of employees in R&D sector (absolute/FTEs)	83,966/49,377	2006	3	Page 49
Number of female employees	23.5%		3	none
Employees in Austria's R&D sector in %	2.14%	2006	2, 3	Page 51
Number of high-tech patent applications to the EPO per million inhabitants	6.73	2005	2	Page 54
Percentage of public funding for actively innovating businesses	30.8%	2006	3	none
Percentage of businesses engaging in innovation activities in Austria	50.6%	2006	3	Page 55
Percentage of businesses engaging in product innovation activities in Austria	35.8%	2006	3	Page 55
Percentage of businesses engaging in innovation activities with new-to-market products in Austria	23%	2006	3	Page 55
Percentage of businesses engaging in process innovation activities in Austria	39%	2006	3	Page 55

<sup>1</sup> European Innovation Scoreboard 2007

<sup>2</sup> Eurostat

<sup>3</sup> Statistics Austria

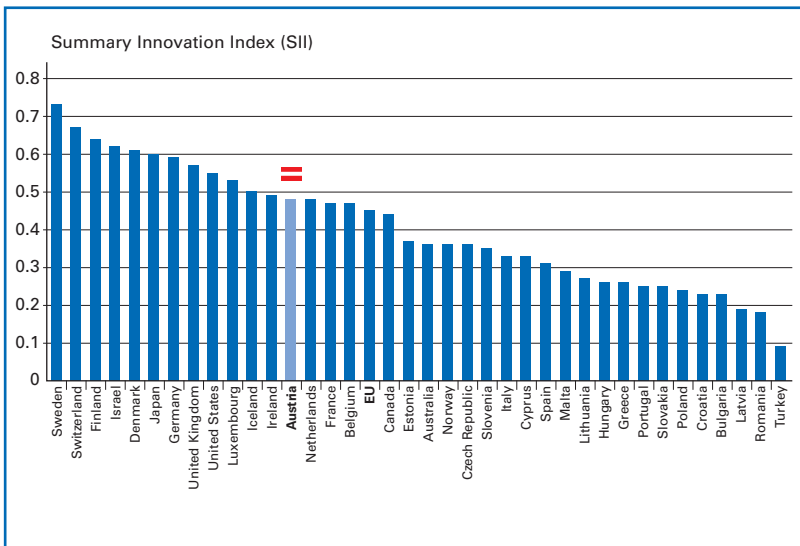
\* Estimate

Table 14: Fact sheet on science and research

## European Innovation Scoreboard (EIS) 2007:

**Austria ranked 13<sup>th</sup>**

Austria took 13<sup>th</sup> place in the ranking carried out in the European Innovation Scoreboard (EIS) 2007. The top three spots went to Sweden, Switzerland and Finland. The charts below (see pages 36-45) show Austria's position relative to the EU 27 in each of the categories underlying the EIS. Based on the difference in points (EU 27: 100 points), it is possible to determine whether Austria is above or below the EU 27 average. The data clearly shows that Austria enjoys a very strong position compared to the overall EU 27 in the "Intellectual property" category, while there is room for improvement in the "Applications" and "Innovation drivers" dimensions. Those values which were included in the EIS 2007 are presented below.



Source: Inno Metrics, European Innovation Scoreboard 2007, Comparative Analysis of Innovation Performance.

Figure 12: European Innovation Scoreboard 2007: Ranking

Country	SII score	Country	SII score	Country	SII score
Sweden	0.73	Netherlands	0.48	Malta	0.29
Switzerland	0.67	France	0.47	Lithuania	0.27
Finland	0.64	Belgium	0.47	Hungary	0.26
Israel	0.62	EU	0.45	Greece	0.26
Denmark	0.61	Canada	0.44	Portugal	0.25
Japan	0.6	Estonia	0.37	Slovakia	0.25
Germany	0.59	Australia	0.36	Poland	0.24
United Kingdom	0.57	Norway	0.36	Croatia	0.23
United States	0.55	Czech Republic	0.36	Bulgaria	0.23
Luxembourg	0.53	Slovenia	0.35	Latvia	0.19
Iceland	0.5	Italy	0.33	Romania	0.18
Ireland	0.49	Cyprus	0.33	Turkey	0.09
<b>Austria</b>	<b>0.48</b>	Spain	0.31		

	2007	2006	2005	2004
Austria's EIS rank	13	16	16	17

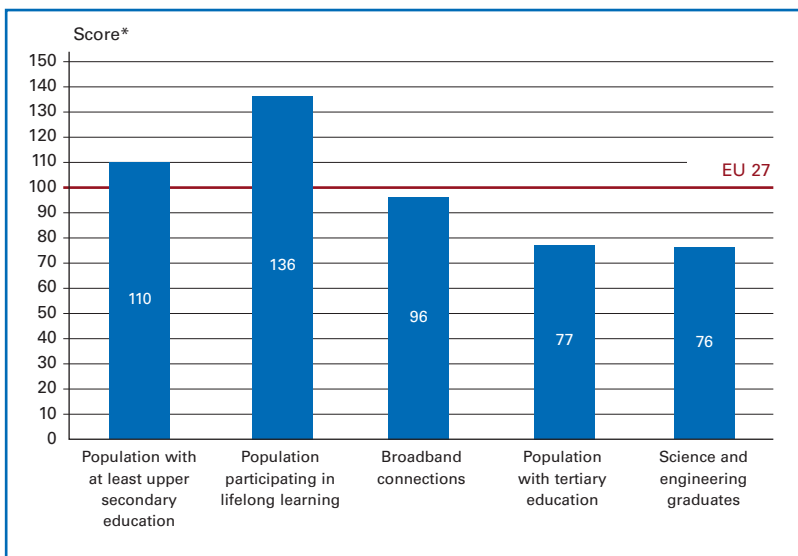
Table 15: European Innovation Scoreboard 2007: Ranking

## EIS 2007 (1/5):

### Austria vs. EU 27 – Innovation drivers

The "Innovation drivers" dimension is intended to reveal the structural circumstances necessary for the development of innovations. This dimension is the first of five categories included in the European Innovation Scoreboard (EIS).

In this category, it becomes clear that Austria needs to catch up in terms of the number of science and engineering graduates and the percentage of people who have completed tertiary education. Austria's values in these areas are below the EU 27 average. On the other hand, Austria scores higher than the EU 27 average with regard to upper secondary education and the percentage of the population which participates in lifelong learning.



Source: European Innovation Scoreboard 2007 (EU 27: 100; reference value for "Broadband connections" category: EU 25)

Figure 13: EIS 2007 (1/5): Innovation drivers

\* The score value reflects Austria's position relative to the EU 27. The EU average is consistently assigned the value 100 and forms the basis for the calculation of Austria's score. Example: Population with tertiary education: EU 27: 23, Austria: 17.6;  $17.6/23 = 76.5$  (rounded to 77).

	Value for Austria	As of	Source	Austria relative to EU 27 (100)
Share of 20 to 24-year-olds with at least upper secondary education	85.8%	2006	1	110
Share of 25 to 64-year-olds who participate in lifelong learning	13.1%	2006	1	136
Broadband connections per 100 inhabitants	15.8	2006	1, 2	96
Share of 25 to 64-year-olds with tertiary education per 100 inhabitants	17.6%	2006	1, 2	77
Science and engineering graduates per 1,000 inhabitants based on 20 to 29-year-old population	9.8%	2005	1	76

<sup>1</sup> Eurostat

<sup>2</sup> OECD

Table 16: EIS 2007 (1/5): Innovation drivers

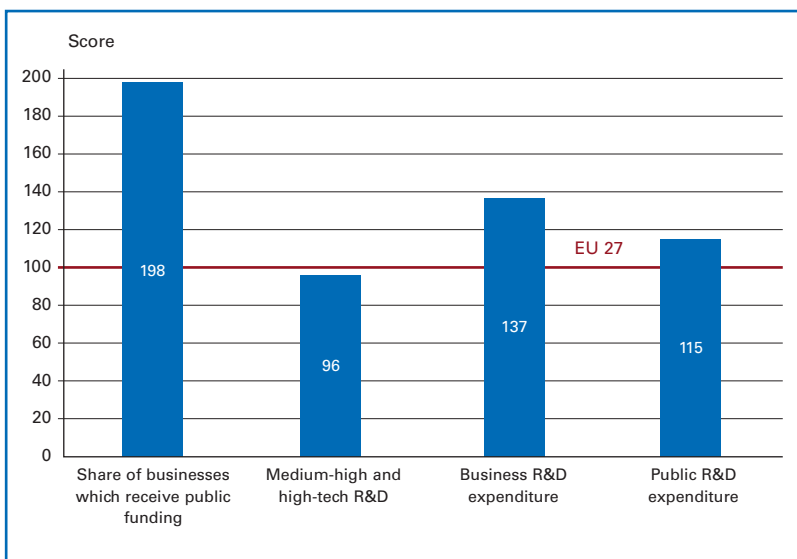
## EIS 2007 (2/5):

### Austria vs. EU 27 – Knowledge creation

Investments in research and development are an important prerequisite for the creation of knowledge. The chart below shows Austria's performance in this area compared to the EU 27.

Austria shows relatively strong figures in the "Knowledge creation" category. The country is slightly below the EU 27 average only in terms of medium-high and high-tech R&D as a percentage of manufacturing R&D expenditure.





Source: European Innovation Scoreboard 2007 (EU 27: 100)

Figure 14: EIS 2007 (2/5): Knowledge creation

	Value for Austria	As of	Source	Austria relative to EU 27 (100)
Share of businesses which receive public funding	17.8%	2004	1	198
Medium-high and high-tech R&D (% of manufacturing R&D expenditure)	82.3%	2002	1, 2	96
R&D expenditure of business enterprise sector (% of GDP)	1.6%	2005	1, 2	137
Public R&D expenditure (% of GDP)	0.75%	2005	1, 2	115

<sup>1</sup> Eurostat

<sup>2</sup> OECD

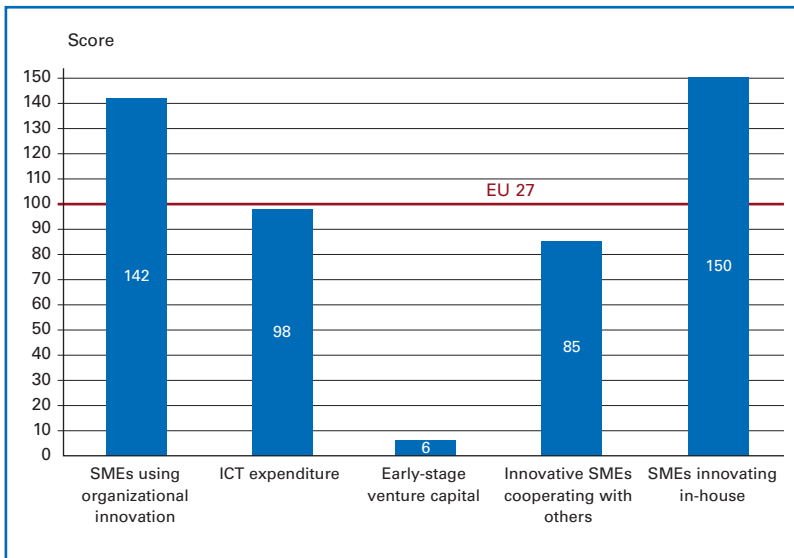
Table 17: EIS 2007 (2/5): Knowledge creation

## EIS 2007 (3/5):

### Austria vs. EU 27 – Innovation and entrepreneurship

The "Innovation and entrepreneurship" category reflects the efforts undertaken in order to foster innovations at the enterprise level.

In this category, Austria's position relative to the EU 27 is fairly inconsistent. In some areas, Austria's values are far below the EU 27 average, for example in "Early-stage venture capital." On the other hand, Austria's values are quite high in terms of "SMEs innovating in-house" and "SMEs using organizational innovation."



Source: European Innovation Scoreboard 2007 (EU 27: 100; reference value for "ICT expenditure in % of GDP": EU 25; reference value for "Early-stage venture capital in % of GDP": EU 15).

Figure 15: EIS 2007 (3/5): Innovation and entrepreneurship

	Value for Austria	As of	Source	Austria relative to EU 27 (100)
SMEs using organizational innovation (% of all SMEs)	48.1%	2004	1, 3	142
ICT expenditure (% of GDP)	6.3%	2005	1	98
Early-stage venture capital (% of GDP)	0.003%	2006	1	6
Innovative SMEs cooperating with others (% of all SMEs)	7.7%	2004	1	85
SMEs innovating in-house (% of all SMEs)	32.4%	2004	1	150

<sup>1</sup> Eurostat

<sup>3</sup> World Bank

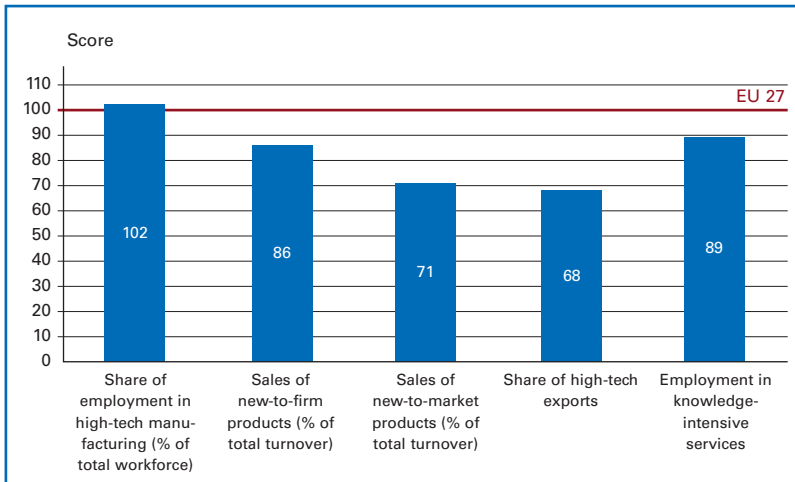
Table 18: EIS 2007 (3/5): Innovation and entrepreneurship

## EIS 2007 (4/5):

### Austria vs. EU 27 – Applications

The "Applications" category measures performance in terms of production and employment as well as the corresponding value added in the innovation sector.

Except for the area of "Employment in high-tech manufacturing segments," in which Austria scores slightly higher than the EU 27 average, Austria's values are below the respective EU 27 averages in this category. The area in which Austria needs to catch up the most is "High-tech exports as a share of total exports."



Source: European Innovation Scoreboard 2007 (EU 27: 100)

Figure 16: EIS 2007 (4/5): Applications

	Value for Austria	As of	Source	Austria relative to EU 27 (100)
Employment in high-tech manufacturing segments	6.8%	2006	1, 2	102
Sales of new-to-firm products (% of total turnover)	5.4%	2004	1	86
Sales of new-to-market products (% of total turnover)	5.2%	2004	1	71
High-tech exports as a share of total exports	11.3%	2006	1	68
Employment in knowledge-intensive services	2.9%	2006	1	89

<sup>1</sup> Eurostat

<sup>2</sup> OECD

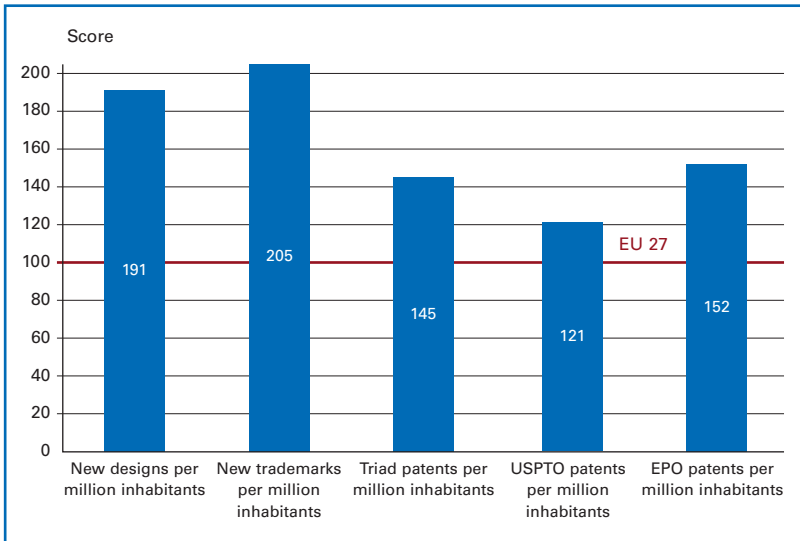
Table 19: EIS 2007 (4/5): Applications

## EIS 2007 (5/5):

### Austria vs. EU 27 – Intellectual property

The "Intellectual property" category shows the results attained from research, development and innovation based on the number of patents and trademarks per million inhabitants in a country.

In this category, Austria's values are above the EU 27 average in all five areas. Austria's position is especially strong in terms of the number of "New designs per million inhabitants" and "New trademarks per million inhabitants."



Source: European Innovation Scoreboard 2007 (EU 27: 100; reference value for "USPTO patents per million inhabitants" and "Triad patents per million inhabitants" categories: EU 25)

Figure 17: EIS 2007 (5/5): Intellectual property

	Value for Austria	As of	Source	Austria relative to EU 27 (100)
New designs per million inhabitants	208.8	2006	1, 2, 3	191
New trademarks per million inhabitants	221.5	2006	1, 2, 3	205
Triad patents per million inhabitants	30	2005	1, 2	145
USPTO patents per million inhabitants	63.4	2003	1, 2	121
EPO patents per million inhabitants	195.1	2003	1, 2	152

<sup>1</sup> Eurostat

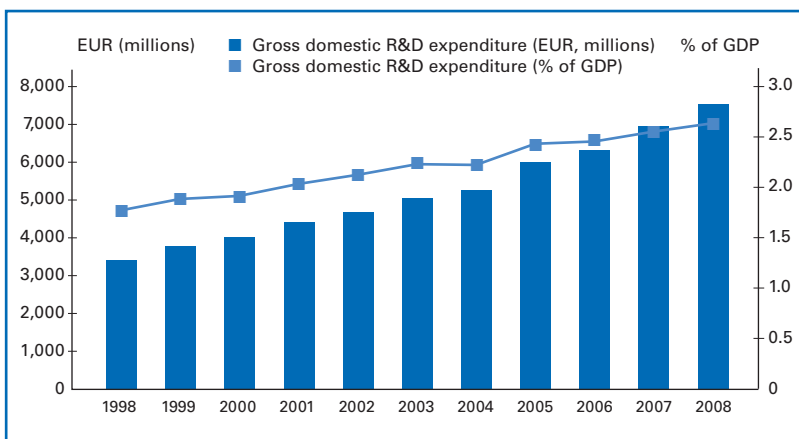
<sup>2</sup> OECD

<sup>3</sup> OHIM

Table 20: EIS 2007 (5/5): Intellectual property

## Gross domestic R&D expenditure: i2010 target already within reach

The total expenditure for R&D conducted in Austria will come to 2.63% of gross domestic product (GDP) in 2008, representing an increase of 8.1% compared to 2007. According to Statistics Austria's latest estimates, this means that research and development expenditure will total EUR 7.512 billion in 2008. As a result, Austria appears to be one of the few countries in the EU which is in a realistic position to attain the R&D intensity target under the Lisbon Agenda (3% of GDP) by the year 2010.



Source: Statistics Austria, Global Estimate 2008

Figure 18: Gross domestic R&D expenditure

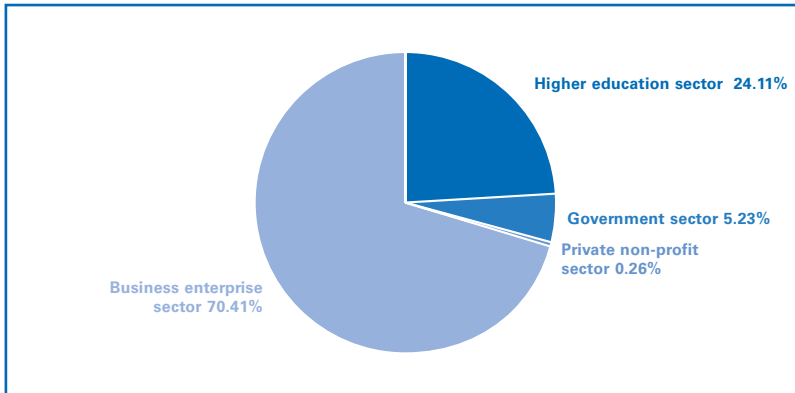
Year	Gross domestic R&D expenditure (EUR, millions)	Nominal GDP (EUR, billions)	Gross domestic R&D expenditure (% of GDP)
1998	3,399.83	192.38	1.77
1999	3,761.80	200.03	1.88
2000	4,028.67	210.39	1.91
2001	4,393.09	215.88	2.03
2002	4,684.31	220.84	2.12
2003	5,041.98	226.18	2.23
2004	5,249.55	236.15	2.22
2005	5,972.11	245.33	2.43
2006	6,318.59	257.90	2.45
2007	6,946.19	272.77	2.55
2008*	7,512.21	285.84	2.63

\* Estimate

Table 21: Gross domestic R&D expenditure

## R&D expenditure: Predominantly in business enterprise sector

The business enterprise sector was responsible for 70.4% of the EUR 6.32 billion in R&D expenditures in 2006. This sector also showed the highest growth rate in this area (+25.1%, or EUR 892.2 million). As for the other sectors, 24.1% of R&D expenditure can be attributed to the higher education sector, 5.2% to the government sector and 0.3% to the private non-profit sector. R&D expenditure in the private non-profit sector saw a decline of 23.5% or EUR 5.1 million in 2006 (see Statistics Austria).



Source: Statistics Austria

Figure 19: R&D expenditure by sector of performance, 2006

	Higher education sector	Government sector	Private non-profit sector	Business enterprise sector	Total
Expenditure (EUR, thousands)	1,523,160	330,232	16,519	4,448,676	6,318,587
%	24.11	5.23	0.26	70.41	100

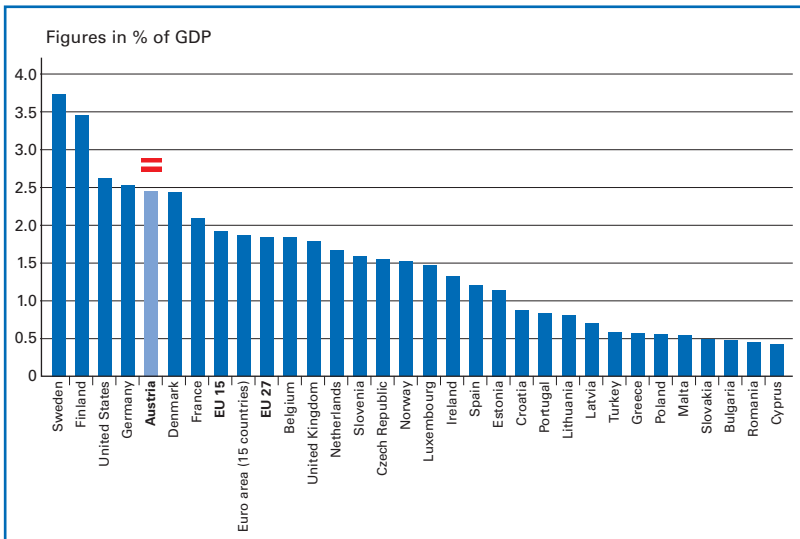
Table 22: R&D expenditure by sector of performance, 2006



## R&D expenditure as a percentage of GDP:

### Austria above EU average

Austria's R&D expenditure is rather impressive by international comparison. Austrian R&D expenditure totaled approximately 2.45% of gross domestic product (GDP) in 2006, just below the value for Germany. Austria's expenditure in this area rose to 2.63% in 2008 (NB: international reference data was only available from the year 2006). The top-ranked country was Sweden with a value of 3.73%.



Source: Eurostat

Figure 20: R&D expenditure in % of GDP: International comparison

Country	%	Country	%	Country	%
Sweden	3.73	United Kingdom	1.78	Lithuania	0.80
Finland	3.45	Netherlands <sup>1,2</sup>	1.67	Latvia	0.70
United States	2.61	Slovenia	1.59	Turkey	0.58
Germany <sup>1</sup>	2.53	Czech Republic	1.54	Greece <sup>2</sup>	0.57
<b>Austria</b>	<b>2.45</b>	Norway	1.52	Poland	0.56
Denmark <sup>1</sup>	2.43	Luxembourg <sup>1,2</sup>	1.47	Malta <sup>1</sup>	0.54
France <sup>1</sup>	2.09	Ireland <sup>1</sup>	1.32	Slovakia <sup>1</sup>	0.49
EU 15 <sup>2</sup>	1.91	Spain	1.20	Bulgaria	0.48
Euro area (15 countries) <sup>2</sup>	1.86	Estonia <sup>1</sup>	1.14	Romania	0.45
EU 27 <sup>2</sup>	1.84	Croatia	0.87	Cyprus <sup>1</sup>	0.42
Belgium <sup>1</sup>	1.83	Portugal <sup>2</sup>	0.83		

<sup>1</sup> Preliminary value

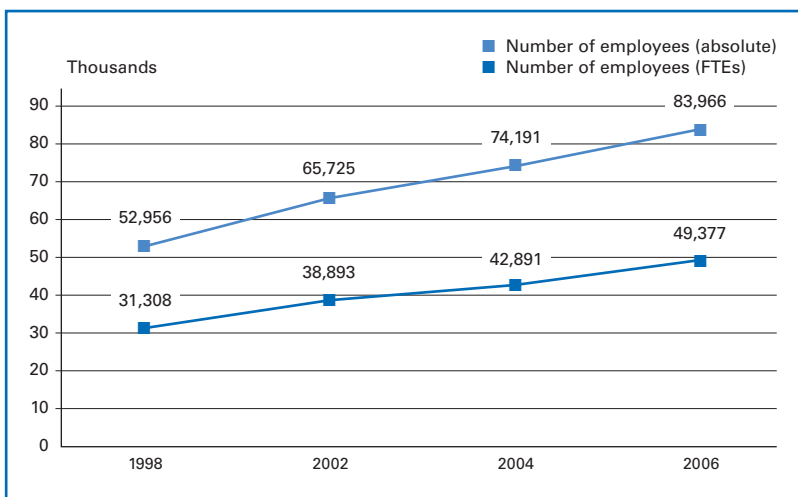
<sup>2</sup> Estimate

Table 23: R&D expenditure in % of GDP: International comparison

## Employment in R&D sector:

### Number of employees continues to climb

In 2006, approximately 49,400 employees (FTEs) worked in the field of research and development in Austria. The majority of those employees (69.1%) were employed by the business sector, while approximately one fourth (25.7%) worked in the higher education sector. Employment in R&D thus saw an increase of 15.1% compared to the year 2004. 23.5% of R&D employees (in terms of FTEs) were female; this percentage remained nearly unchanged compared to the year 2004.



Source: Statistics Austria

Figure 21: Employment in R&D sector

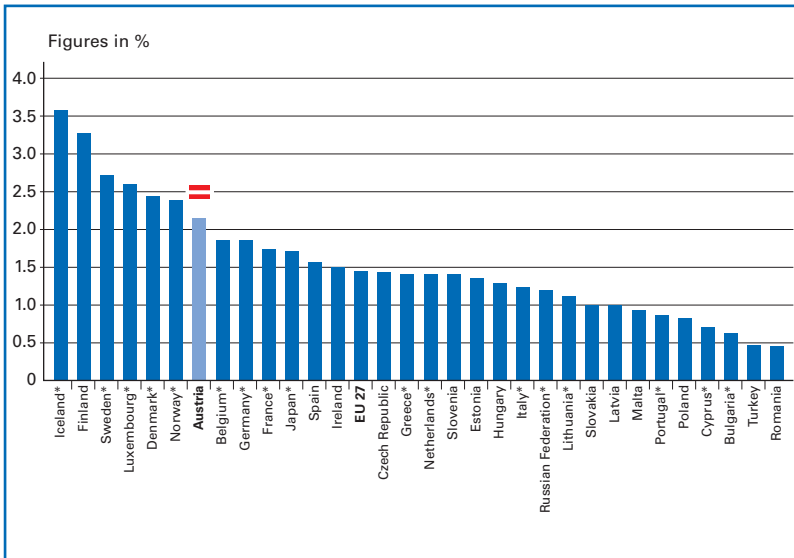
Sector of performance	1998		2002		2004		2006	
	FTEs	%	FTEs	%	FTEs	%	FTEs	%
Total	31,307.6	100.0	38,893.4	100.0	42,891.3	100.0	49,377.1	100.0
Higher education sector	8,670.1	27.7	9,879.0	25.4	11,501.5	26.8	12,668.2	25.7
Government sector	2,104.4	6.7	2,059.7	5.3	2,035.2	4.7	2,422.6	4.9
Private non-profit sector	148.4	0.5	227.2	0.6	212.0	0.5	160.5	0.3
Business enterprise sector	20,384.6	65.1	26,727.5	68.7	29,142.6	68.0	34,125.8	69.1

\* Data from year 2000 not available.

Table 24: Employment in R&D sector

## Number of employees in R&D sector: Austria ranks 7<sup>th</sup>

By international comparison, Austria placed seventh with a 2.14% share of employment in the R&D sector in 2006; this figure is well above the EU 27 average of 1.45%. The top-ranked country is Iceland, with a share of 3.58%, while Romania is at the bottom of the table with 0.45%.



Source: Eurostat  
\* Value from 2005

Figure 22: Share of employment in R&D sector (2006): International comparison

Country	%	Country	%	Country	%
Iceland*	3.58	Spain	1.57	Lithuania*	1.11
Finland	3.27	Ireland	1.50	Slovakia	1.00
Sweden*	2.71	EU 27	1.45	Latvia	0.99
Luxembourg*	2.59	Czech Republic	1.43	Malta	0.93
Denmark*	2.44	Greece*	1.41	Portugal*	0.87
Norway*	2.38	Netherlands*	1.40	Poland	0.83
<b>Austria</b>	<b>2.14</b>	Slovenia	1.40	Cyprus*	0.71
Belgium*	1.85	Estonia	1.35	Bulgaria*	0.63
Germany*	1.85	Hungary	1.28	Turkey	0.47
France*	1.73	Italy*	1.23	Romania	0.45
Japan*	1.71	Russian Federation*	1.19		

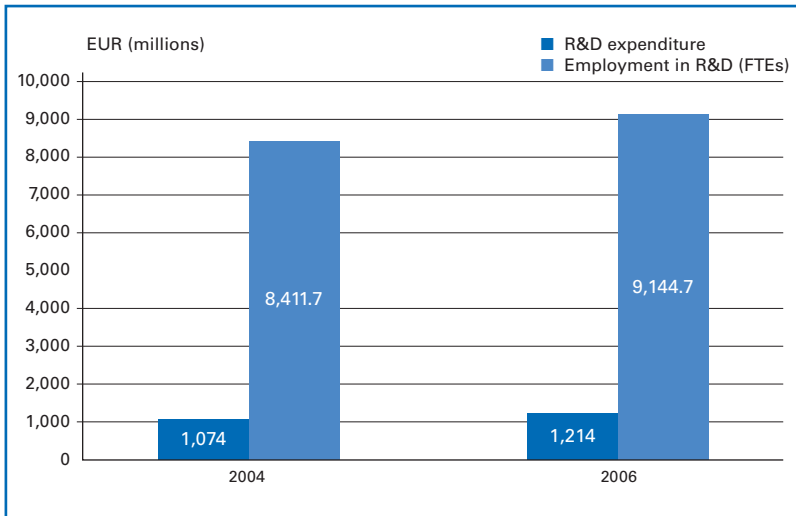
\* Value from 2005

Table 25: Share of employment in R&D sector (2006): International comparison

## R&D in the ICT sector:\*

### Highest expenditure levels in broadcasting, television and communications technologies

In 2006, R&D expenditure in the Austrian ICT sector came to approximately EUR 1.214 billion. This represents an increase of 13.1% compared to 2004. A total of 9,144.7 employees (in terms of FTEs) worked in R&D in Austria's ICT sector in 2006, up 8.7% from 2004. The majority of those employees (5,630 FTEs) worked in the field of broadcasting, television and communications technologies, followed by data processing and databases (2,170 FTEs).



Source: Statistics Austria, Research and Development Survey 2006.

\* ICT sector based on OECD definition

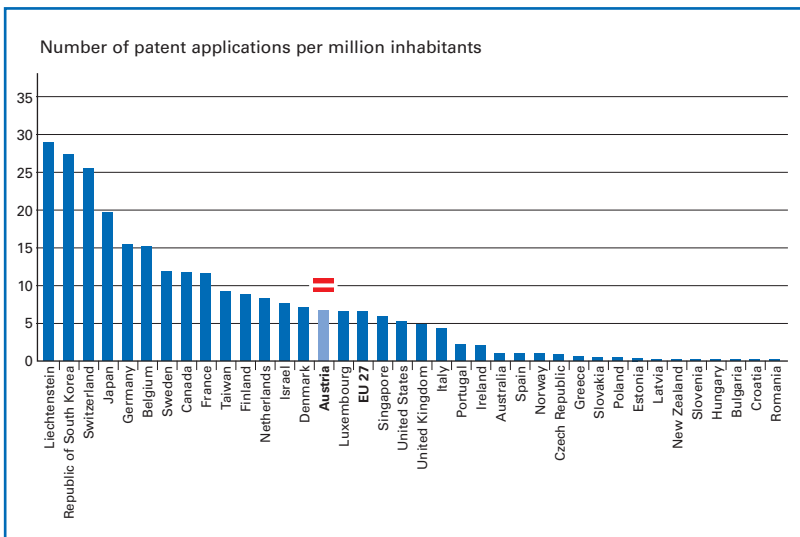
Figure 23: R&D in the ICT sector

Name	R&D expenditure (EUR, millions)	Employment in R&D (FTEs)
Office machines, data processing devices and equipment	17.536	183.1
Insulated cable and wire	3.513	24.4
Broadcasting, television and communications technologies	880.275	5,629.9
Measurement, control, navigation and related instruments and equipment; industrial process control systems	64.468	684.6
Wholesale trade in data processing equipment, peripheral devices, software and electronic components	10.906	108.6
Telecommunications services	39.316	343.8
Data processing and databases	198.315	2,170.3
<b>Total</b>	<b>1,214.3</b>	<b>9,144.7</b>

Table 26: Lines of business according to ÖNACE 2003

## High-tech patent applications: Austria above EU 27 average

In terms of high-tech patent applications, Austria places in the middle range by international comparison. With 6.73 high-tech patents per million inhabitants, Austria is just above the EU 27 average of 6.50. The top-ranked countries in this area are Liechtenstein, the Republic of South Korea and Switzerland.



Source: Eurostat, patent statistics

Figure 24: High-tech patent applications to the EPO in 2005  
(per million inhabitants)

Country		Country		Country	
Liechtenstein	28.90	Denmark	7.15	Czech Republic	0.84
Rep. South Korea	27.28	<b>Austria</b>	<b>6.73</b>	Greece	0.62
Switzerland	25.49	Luxembourg	6.59	Slovakia	0.41
Japan	19.68	EU 27	6.50	Poland	0.40
Germany	15.42	Singapore	5.92	Estonia	0.37
Belgium	15.19	United States	5.16	Latvia	0.33
Sweden	11.89	United Kingdom	4.79	New Zealand	0.31
Canada	11.73	Italy	4.35	Slovenia	0.29
France	11.55	Portugal	2.24	Hungary	0.20
Taiwan	9.19	Ireland	2.06	Bulgaria	0.19
Finland	8.81	Australia	1.04	Croatia	0.11
Netherlands	8.17	Spain	1.02	Romania	0.03
Israel	7.57	Norway	0.97		

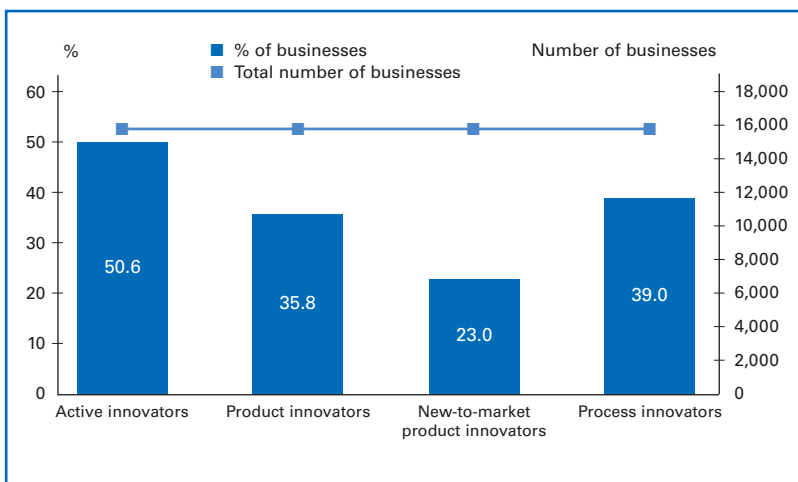
Table 27: High-tech patent applications to the EPO in 2005  
(per million inhabitants)

## Innovation activities of businesses:

### Half of Austria's businesses are active innovators

In 2006, approximately one half (50.6%) of the businesses in Austria engaged in innovation activities. 36% of Austrian businesses launched new or substantially improved goods or services on the market, and 23% of businesses launched new-to-market products. New or substantially improved processes or methods were introduced by 39% of all businesses in Austria in 2006.





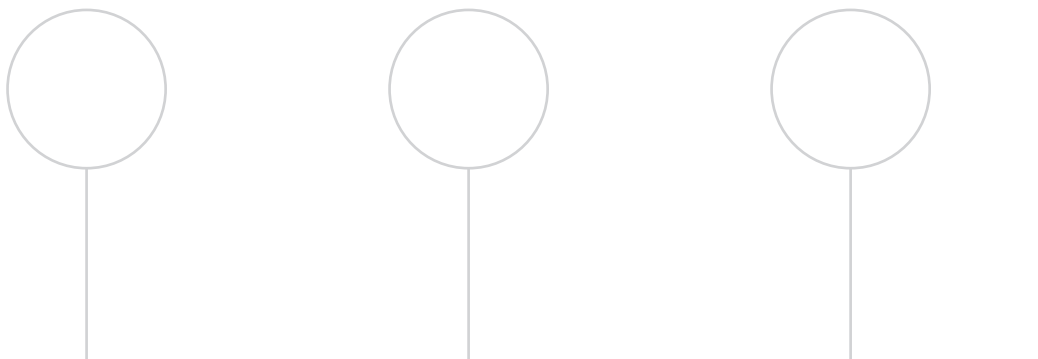
Source: Statistics Austria, 5<sup>th</sup> Community Innovation Survey (CIS) 2006; industries: mining, manufacturing, energy and water supply, wholesale trade and trade brokerage, transport and communications, finance and insurance as well as business-related services.

Figure 25: Innovation activities of businesses (2006)

	Total number of businesses	% of businesses			
		Active innovators	Product innovators	New-to-market product innovators	Process innovators
<b>Total</b>		<b>50.6</b>	<b>35.8</b>	<b>23</b>	<b>39</b>
10-49 employees	12,245	44	29.8	18.5	32.8
50-249 employees	2,881	71.1	52.8	34.6	57.8
250 or more employees	704	82.8	71.4	53.8	71.3

Table 28: Innovation activities of businesses (by size category)





## 3. Security and consumer protection

### 3.1 Preface

This section provides detailed information on a variety of fields related to security and consumer protection. The information presented is based on data from Statistics Austria, Eurostat, RTR, the OECD, the Austrian Federal Office of Criminal Investigation, and stopline.at, a site operated by Internet Service Providers Austria (ISPA).

The use of new media is changing the means of communication we use, generating new sources of information and streamlining business processes. In this context, ensuring security and consumer protection as well as providing information about relevant risks play a key role in reinforcing users' trust in new communication media (see [www.internetoffensive.at](http://www.internetoffensive.at)).

In recent years, e-commerce has made enormous gains in Austria: In 2008, 37% of the population purchased goods or services via the Internet. However, many Austrians still harbor concerns about the security of online purchases.

One possible way to improve the security of online transactions is to use electronic signatures, which can be used to verify the origin and authenticity of data. By international comparison, Austria has attained a position in the middle range in this respect.

Two thirds of Austrians with Internet access use a firewall to protect their PCs from attacks. In this area, the value for Austria is above the EU 25 average. At the same time, OECD data shows that the number of bot-infected PCs per 100 broadband connections is below 1% in Austria.

On a more alarming note, the Austrian Federal Office of Criminal Investigation received over 10,000 reports regarding child pornography on the Web in 2007. The web site [www.stopline.at](http://www.stopline.at), which allows Internet users to report illegal content (also anonymously), saw a sharp increase in the number of reports compared to 2006.

## 3.2 Fact sheet and detailed analyses

Security and consumer protection	Value	As of	Source	Details
Number of simple certificates per million inhabitants (AT)	17,576	2008	3	Page 64
Number of qualified certificates per million inhabitants (AT)	8,056	2008	3	Page 64
Internet users who have a firewall installed on their home computer	64%	2005	4	Page 66
Bot-infected computers per 100 broadband connections	0.85%	2007	5	Page 67
Security problems encountered by individuals with Internet access				
Payment card fraud	0.8%	2005	2	Page 71
Abuse of personal information sent via the Internet	0.9%	2005	2	Page 71
Computer virus resulting in a loss of information or time	15.5%	2005	2	Page 71
Security problems encountered by businesses with Internet access				
Unauthorized access	34%	2005	2	Page 73
Computer virus	2%	2005	2	Page 73
Computer virus	34%	2005	2	Page 73
Share of population which purchases goods or services via the Internet				
16-24 years old	37%	2007	1	Page 61
Occupation: Retired	49%	2007	1	Page 61
Occupation: Retired	10%	2007	1	Page 61
Level of education: High*	64%	2007	1	Page 61
Security concerns regarding online purchases:				
Concerns about providing credit card details	7%	2005	2	Page 62
Federal Office of Criminal Investigation child pornography hotline:				
Total number of leads	9,783	2007	5	Page 69
Number of useful leads	8,006	2007	5	Page 69
Leads related to Austria	502	2007	6	Page 69
Reports of illegal content to stopline.at				
Reports received	2,769	2007	6	Page 70
Accurate reports	930	2007	6	Page 70

<sup>1</sup> Statistics Austria

<sup>2</sup> Eurostat

<sup>3</sup> RTR

<sup>4</sup> OECD

<sup>5</sup> Austrian Federal Office of Criminal Investigation

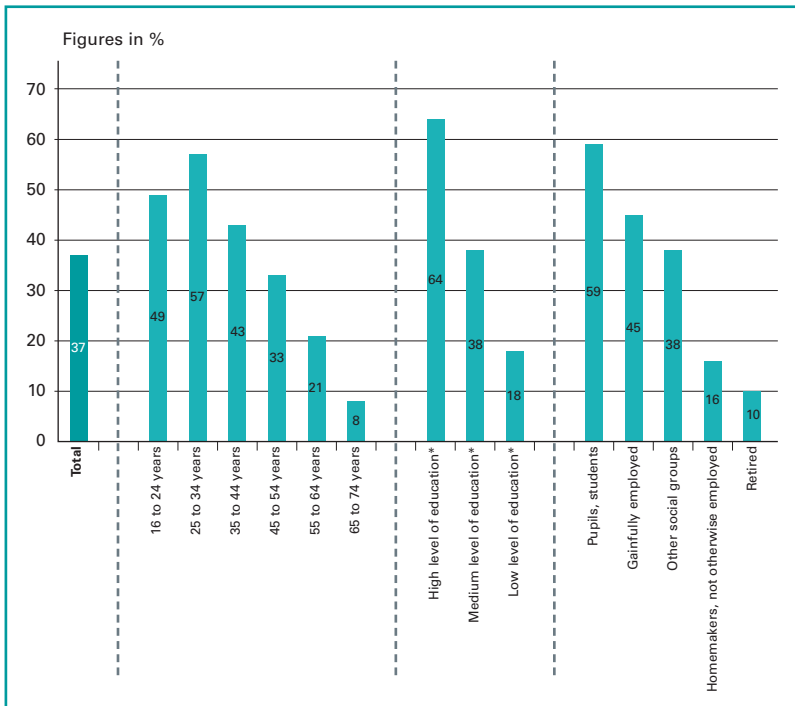
<sup>6</sup> Stopline.at, ISPA

\* See Table 51 for definitions.

Table 29: Fact sheet on security and consumer protection

## Online shopping: 37% of population purchases goods or services via the Internet

In recent years, e-commerce has made significant gains in Austria: In 2008, 37% of the population indicated that they had purchased goods or services via the Internet in the previous 12 months. Online shopping is most prevalent in the 25 to 34 age group. While only 10% of retired people indicate that they have made purchases via the Internet, the share of pupils and students who have done so is nearly 60%. In general, we can state that the percentage of online shoppers increases along with the level of education.



Source: Statistics Austria, Community Survey on ICT Usage in Households 2008 (created on June 27, 2008; survey period: February-March 2008).

\* See Table 51 for definitions.

Figure 26: Individuals who have shopped online for private purposes in the last twelve months

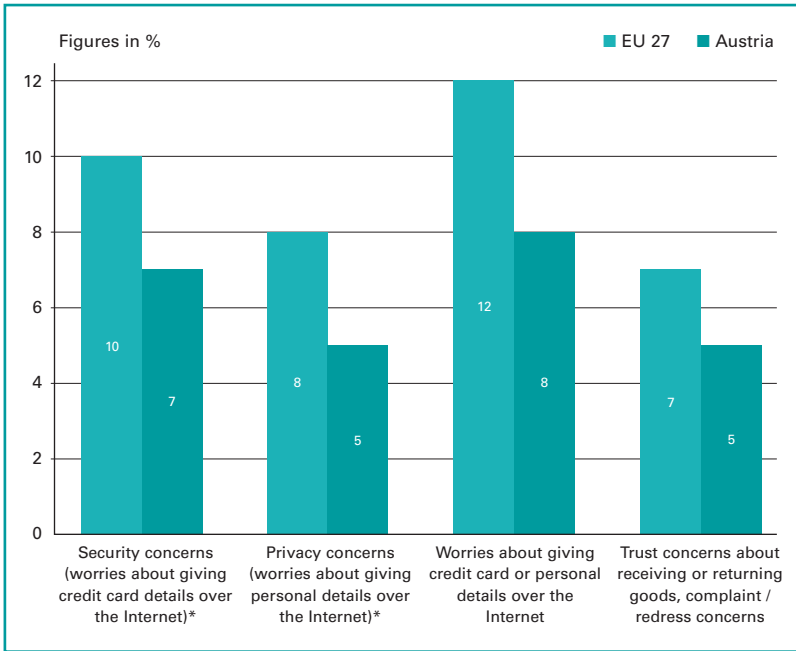
Age		Occupation		Level of education	
16 to 24 years	49%	Retired	10%	Low level of education	18%
25 to 34 years	57%	Homemakers, not otherwise employed	16%	Medium level of education	38%
35 to 44 years	43%			High level of education	64%
45 to 54 years	33%	Other social groups	38%		
55 to 64 years	21%	Gainfully employed	45%		
65 to 74 years	8%	Pupils, students	59%	Total	37%

Source: Statistics Austria, Community Survey on ICT Usage in Households 2008 (created on June 27, 2008; survey period: February-March 2008).

**Table 30: Individuals who have shopped online for private purposes in the last twelve months**

## Barriers to online purchases: Austrians cite security concerns

With regard to online shopping, Austrians harbor concerns regarding security (Austria: 7%, EU 27: 10%) and privacy (Austria: 5%, EU 27: 8%), although the figures regarding those concerns are not as high as the EU 27 average. The most frequently cited barriers to making purchases via the Internet are loyalty to shops and the need to shop in person (Austria: 18%, EU 27: 18% – not shown in chart).



Source: Eurostat (2006)

\* Data from 2005

Figure 27: Subjective barriers to buying or ordering goods/services via the Internet



	Security concerns (worries about giving credit card details over the Internet)*	Privacy concerns (worries about giving personal details over the Internet)*	Worries about giving credit card or personal details over the Internet	Trust concerns about receiving or returning goods, complaint / redress concerns
EU 27	10%	8%	12%	7%
Austria	7%	5%	8%	5%

Source: Eurostat (2006)

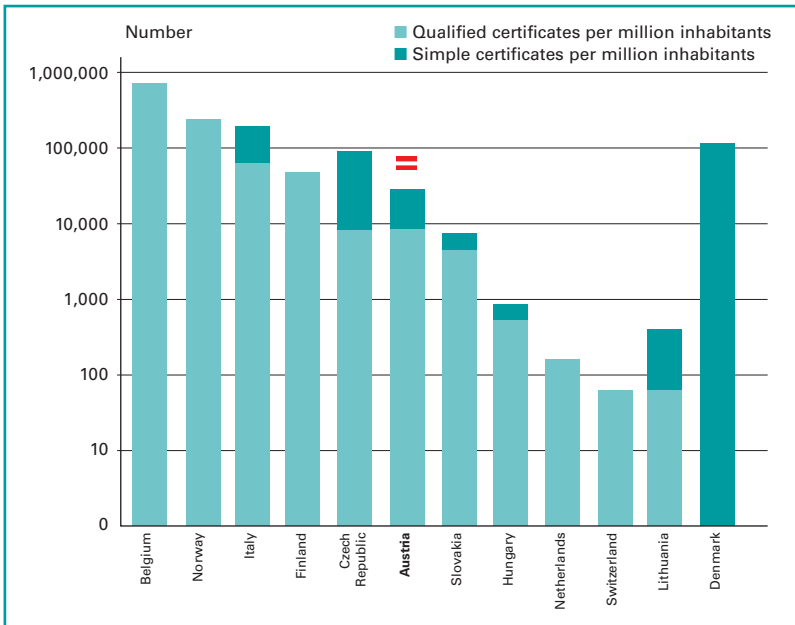
\* Data from 2005

**Table 31: Subjective barriers to buying or ordering goods/services via the Internet**

## Number of valid certificates:

### **Austria in middle range**

Electronic signatures can be used to verify the origin and authenticity of data. These signatures are based on certificates with which a certification service provider authenticates the identity of the signing party. In this context, qualified certificates are subject to special requirements, as this type of certificate is necessary in order for an electronic signature to be considered legally equivalent to a handwritten signature. At the beginning of 2008, there were approximately 210,000 valid certificates issued by Austrian providers. 66,000 of them were qualified certificates. As qualified certificates have been issued free of charge to users of the eCard (a signature card issued by Austria's health insurance institutions) using an online registration procedure for several months now, this figure is rising rapidly at the moment. Compared to other countries in Europe, Austria is in the middle range with regard to the existing number of valid certificates.



Source: RTR, based on information provided by national supervisory authorities for electronic signatures (October 2007)

Figure 28: Number of valid certificates per million inhabitants

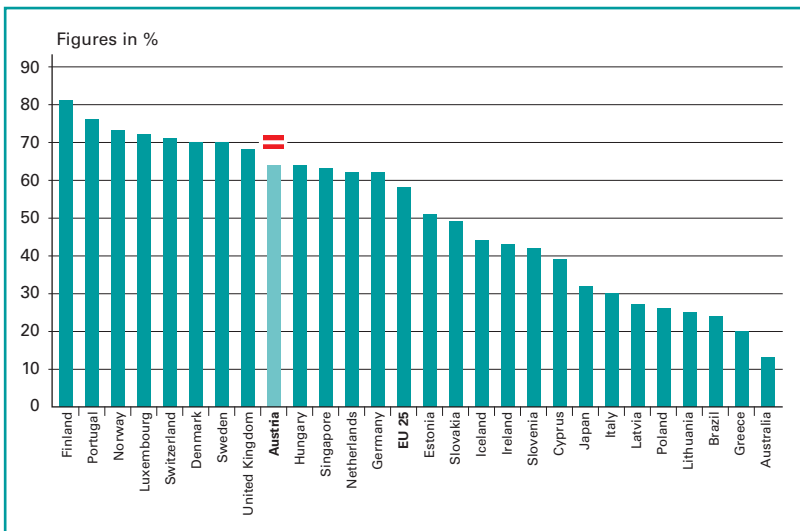
Country	Qualified certificates per million inhabitants	Simple certificates per million inhabitants
Belgium	768,939	0
Norway	247,607	0
Italy	51,595	154,785
Finland	38,133	0
Czech Republic	8,316	89,522
<b>Austria</b>	<b>8,056</b>	<b>17,576</b>
Slovakia	3,666	3,116
Hungary	479	346
Netherlands	180	0
Switzerland	66	0
Lithuania	65	356
Denmark	0	124,076

Table 32: Number of valid certificates per million inhabitants

## Computers and firewalls:

### Nearly two thirds of Internet users have a firewall installed

According to information provided by the OECD, 64% of Internet users in Austria have a firewall installed on their home computers. This is substantially higher than the EU 25 average (58%). The top-ranking country in this respect is Finland, where 81% of Internet users have a firewall installed at home. At the bottom of the list is Australia, where the corresponding figure is only 13%.



Source: OECD (2005)

Figure 29: Internet users who have a firewall installed on their home computer

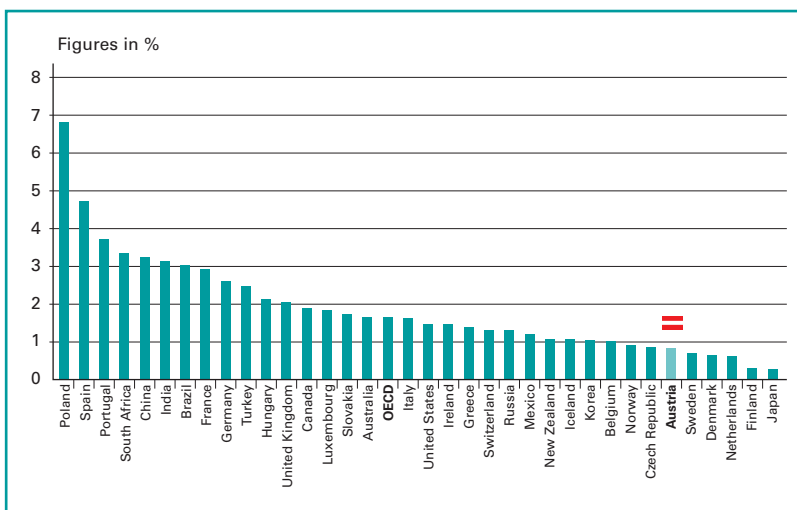
Country	%	Country	%	Country	%
Finland	81	Singapore	63	Cyprus	39
Portugal	76	Netherlands	62	Japan	32
Norway	73	Germany	60	Italy	30
Luxembourg	72	EU 25	58	Latvia	27
Switzerland	71	Estonia	51	Poland	26
Denmark	70	Slovakia	49	Lithuania	25
Sweden	70	Iceland	44	Brazil	24
United Kingdom	68	Ireland	43	Greece	20
<b>Austria</b>	<b>64</b>	Slovenia	42	Australia	13
Hungary	64				

Percentages estimated by RTR

**Table 33: Internet users who have a firewall installed on their home computer**

### Bot-infected computers: Few "zombie PCs" in Austria

A "bot" is a harmful computer program which enables an attacker to gain control of an infected computer. Bots (derived from the term "web robots") are generally part of a network of infected computers, commonly referred to as a "botnet" (see [www.symantec.com](http://www.symantec.com)). In Austria, the percentage of computers infected by bots is below 1%. The country with the highest percentage is Poland, where OECD figures indicate that 6.81% of computers are infected.



Source: OECD (OECD calculations based on OECD and Symantec data, April 2007)

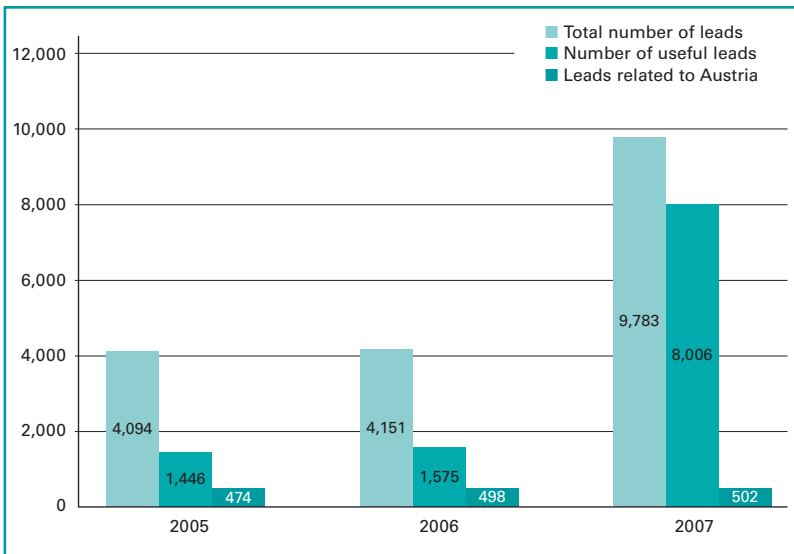
Figure 30: Bot-infected computers per 100 broadband connections

Country	%	Country	%	Country	%
Poland	6.81	Canada	1.89	New Zealand	1.09
Spain	4.71	Luxembourg	1.84	Iceland	1.06
Portugal	3.72	Slovakia	1.73	Korea	1.03
South Africa	3.34	Australia	1.67	Belgium	1.02
China	3.23	OECD	1.67	Norway	0.90
India	3.13	Italy	1.62	Czech Republic	0.87
Brazil	3.03	United States	1.48	<b>Austria</b>	<b>0.85</b>
France	2.92	Ireland	1.46	Sweden	0.70
Germany	2.59	Greece	1.40	Denmark	0.65
Turkey	2.47	Switzerland	1.32	Netherlands	0.61
Hungary	2.12	Russia	1.30	Finland	0.30
United Kingdom	2.04	Mexico	1.20	Japan	0.29

Table 34: Bot-infected computers per 100 broadband connections

## Hotline for reporting child pornography: Nearly 10,000 reports received

In 2007, a total of 9,783 reports were submitted to the child pornography hotline at the Austrian Federal Office of Criminal Investigation. Of those reports, approximately 8,000 provided useful leads, and just over 500 were related to Austria. While the number of leads remained roughly at the same level between 2005 and 2006, the figure nearly doubled between 2006 and 2007, and the number of useful leads has even increased fivefold.



Source: Austrian Federal Office of Crime Investigation

Figure 31: Federal Office of Criminal Investigation hotline for reporting child pornography

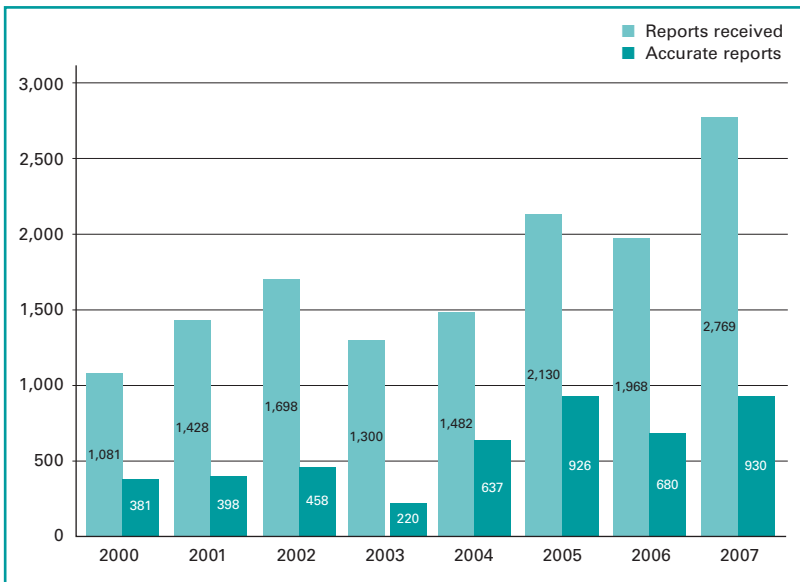
	2005	2006	2007
Leads	4,094	4,151	9,783
Number of useful leads	1,446	1,575	8,006
Leads related to Austria	474	498	502

Table 35: Federal Office of Criminal Investigation hotline for reporting child pornography

## Stopleveline.at: Peak in reports of illegal content

www.stopleveline.at is a web site which allows Internet users to submit reports (also anonymously) if they come across illegal content on web sites: Once such reports are received, the organization's employees check whether the material is actually illegal under Austrian law. In 2007, the number of reports received as well as the number of accurate reports reached a peak at stopline.at. According to the web site, however, illegal content is only hosted by Austrian providers in very seldom cases.

The vast majority of reports of illegal web content to stopline.at concerned child pornography (2,188 reports in 2007). Reports on radical right-wing content play only a subordinate role in this context (119 reports in 2007). The rest are miscellaneous reports.



Source: ISPA, 2007 annual report for stopline.at

Figure 32: Number of reports regarding illegal web content at stopline.at

Year	Reports received	Accurate reports
2000	1,081	381
2001	1,428	398
2002	1,698	458
2003	1,300	220
2004	1,482	637
2005	2,130	926
2006	1,968	680
2007	2,769	930

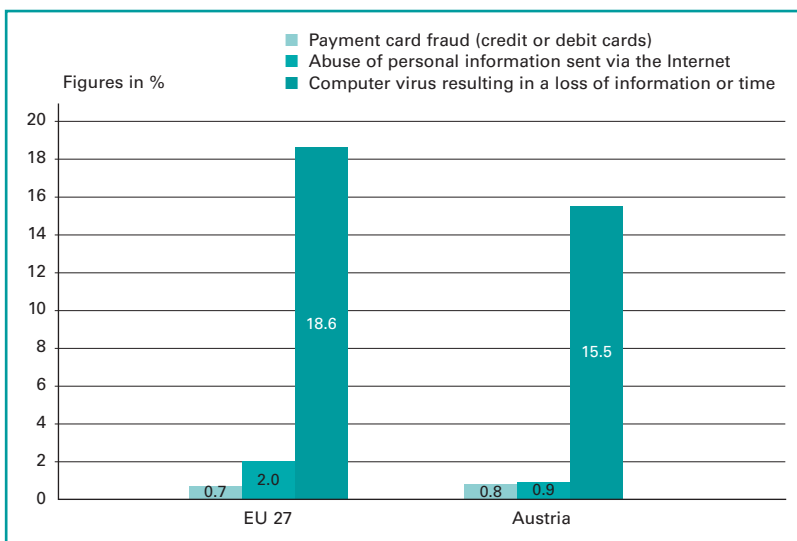
Table 36: Number of reports regarding illegal web content at stopline.at

### Security problems:

#### **15% of Austrians with Internet access have encountered problems with computer viruses**

15.5% of Austrians with Internet access indicated that they had had problems with computer viruses resulting in a loss of data or time. This places Austria just below the EU 27 average of 18.6%. In this context, payment card fraud and the abuse of personal information appear to play a secondary role.





Source: Eurostat (2005)

Figure 33: Percentage of individuals with Internet access who have encountered security problems in the last 12 months

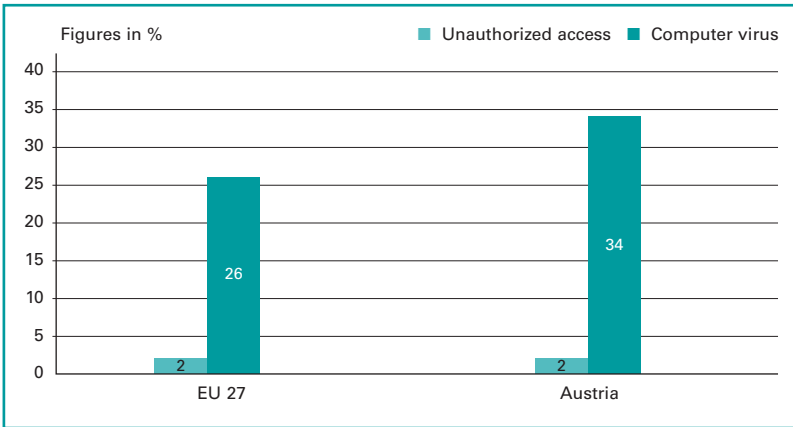
	EU 27	Austria
Payment card fraud (credit or debit cards)	0.7%	0.8%
Abuse of personal information sent via the Internet	2.0%	0.9%
Computer virus resulting in a loss of information or time	18.6%	15.5%

Table 37: Percentage of individuals with Internet access who have encountered security problems in the last 12 months

## Security problems:

### One third of companies with Internet access have had security problems

34% of businesses with Internet access in Austria indicated that they had encountered security problems in the 12 months prior to the survey. The same percentage indicated that they had had problems with computer viruses. In this respect, the large difference between the figure for Austria and the EU 27 average is rather striking. Unauthorized access to computer systems appears to be far less prevalent (2%) in this context.

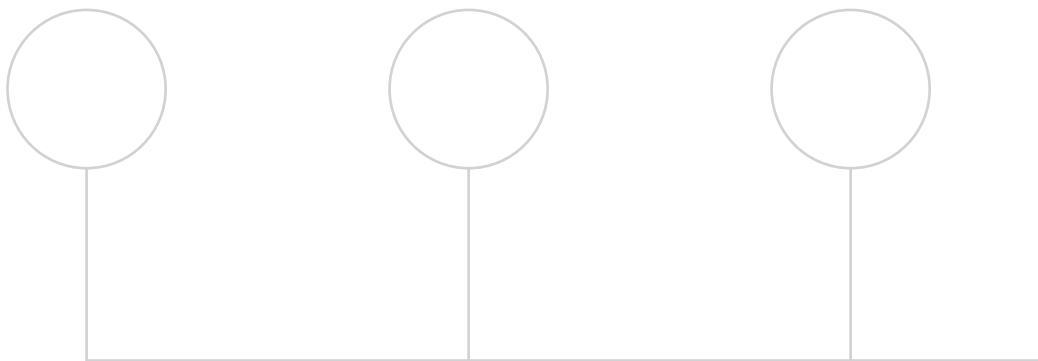


Source: Eurostat (2005)

Figure 34: Percentage of businesses with Internet access which have encountered security problems in the last 12 months

	EU 27	Austria
Unauthorized access	2%	2%
Computer virus	26%	34%

Table 38: Percentage of businesses with Internet access which have encountered security problems in the last 12 months



## 4. Culture and media

### 4.1 Preface


This section provides detailed information on a variety of topics related to culture and the media. The information presented is based on data from Statistics Austria, the European Digital Library, the Regioprint 2008 survey, the Austrian Internet Monitor, ComScore World Metrix, the Austrian National Library, Focus Media Research and the RTR / Salzburg University of Applied Sciences (UAS) study on mobile TV.

Information and communication technologies have had dramatic effects on existing media and traditional culture. At the same time, ICT has also created new media as well as a new form of culture. Terms such as "digitization" and "Web 2.0" have now become everyday concepts, and new forms of communication have arisen which have the potential for enormous growth (see [www.internetoffensive.at](http://www.internetoffensive.at)).

This section first examines the IT equipment and web presence of Austria's museums as well as the media holdings of Austrian libraries. In this context, it becomes clear that many museums do not have "future-proof" IT equipment or even their own web sites. A majority of media holdings in Austrian libraries are still only available in the form of books.

This means that major challenges are yet to be tackled in the digitization of national cultural goods; for example, only a relatively small share of the media holdings at the Austrian National Library have been digitized to date. By international comparison, Austria has attained a strong position in this area, placing fourth in terms of the number of pages digitized.

As regards the media landscape, radio still commands the highest reach in Austria. On the whole, the significance of print media is on the decline, while digital media such as the Internet are catching up quickly.



With the introduction of DVB-H (Digital Video Broadcasting – Handheld) in June 2008, Austria became one of the first countries in Europe to launch mobile terrestrial television broadcasting. In the pilot testing stage, subjects most preferred to use this medium at home, then on public transportation.

Social networking platforms such as Facebook and MySpace have become extremely popular and have shown enormous growth rates, especially in the Middle East and Africa.

## 4.2 Fact sheet and detailed analyses

Culture and media	Value	As of	Source	Details
Computer equipment in Austrian museums	79.70%	2006	1	Page 78
Purpose of computer use:				
Information for visitors	53.14%	2006	1	Page 80
Electronic inventory database	69.18%	2006	1	Page 80
Internet access	75.47%	2006	1	Page 80
Administrative tasks	84.28%	2006	1	Page 80
Museums with web sites	62.16%	2006	1	Page 78
Number of scientific and special libraries	88	2006	1	none
Media holdings of scientific and special libraries	48,318,937	2006	1	Page 82
Number of public libraries	2,312	2006	1	none
Media holdings of public libraries	12,900,000	2006	1	none
Visits to Austrian National Library web site in 2006	2,379,283	2006	1	none
Total holdings (items) of national libraries in EDL	401,058,284	2006	2	Page 83
Total pages digitized in EDL	125,340,850	2006	6	Page 83
Daily reach of top three media:				
Radio	78%	2008	3	Page 86
TV	70%	2008	3	Page 86
Daily newspapers	70%	2008	3	Page 86
Most popular activities on the Internet:				
Sending/receiving personal e-mail	82%	2008	4	Page 88
Subjective duration of media use in 2006/2008	418/419 min.	2006	3	none
Number of Internet users worldwide (millions)	860.514	June 2008	5	Page 88, 91
Total number of visitors to social networking sites (millions)	580.51	June 2008	5	Page 88, 91
Growth in number of visitors to social networking sites	25%	2008	5	Page 88, 91
Online advertising expenditure in 2007 (millions) / growth 2006 - 2007	65.2/ 77.17%	2007	7	none
Frequency of mobile TV usage:				
Daily or almost daily	22.4%	2007	8	Page 92
Several times per week	55.2%	2007	8	Page 92
Less frequently	22.4%	2007	8	Page 92

<sup>1</sup> Statistics Austria

<sup>2</sup> European Digital Library

<sup>3</sup> Regioprint 2008 survey

<sup>4</sup> Austrian Internet Monitor

<sup>5</sup> ComScore World Metrix

<sup>6</sup> Austrian National Library

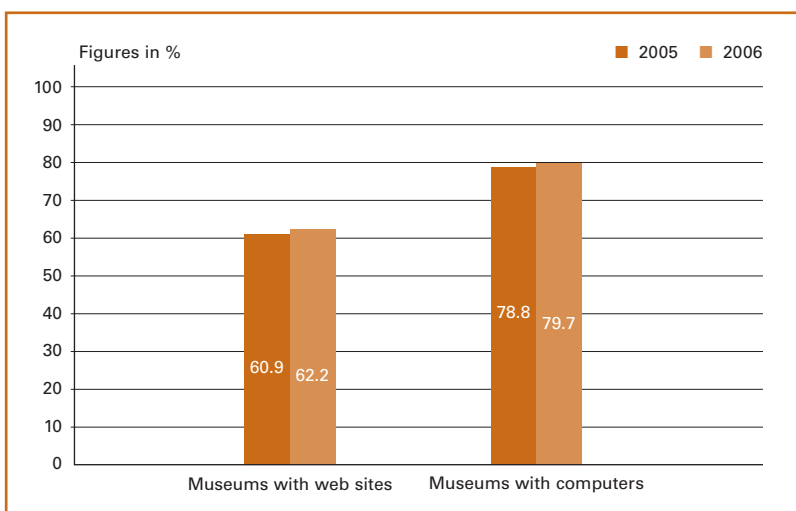
<sup>7</sup> Focus Media Research

<sup>8</sup> RTR/Salzburg UAS study on mobile TV

Table 39: Fact sheet on culture and media

## Computer equipment and Internet presence of museums: 62% of Austrian museums have their own web sites

In 2006, Austria had a total of 204 public and 195 private museums. Of those 399 museums, nearly 80% were equipped with a computer. In 2005, this percentage came to 79%, just slightly lower than the 2006 value. Similarly, the number of museums with their own web sites rose only slightly – from approximately 61% to just over 62% – between 2005 and 2006.



Source: Statistics Austria, Cultural Statistics (2006)

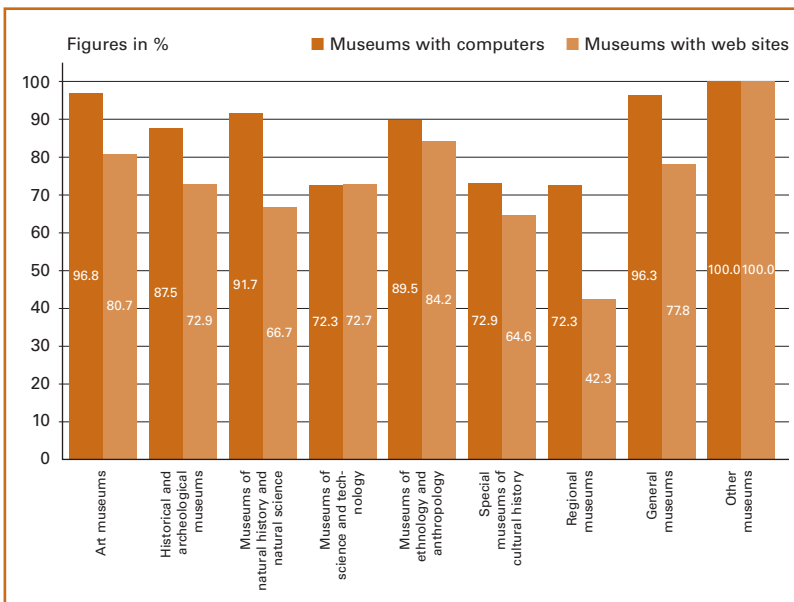
Figure 35: Computer equipment / Internet presence of museums

	2005	2006
Museums with web sites	60.90%	62.16%
Museums with computers	78.80%	79.70%

Table 40: Computer equipment / Internet presence of museums

## Computer equipment and Internet presence in detail: Technical museums take last place in computer equipment

Interestingly enough, Austria's scientific and technical museums are less likely to be equipped with computers and to have their own web sites. In terms of computer equipment, art museums are at the top of the list, while museums of ethnology and anthropology most often have their own web sites. Museums with a higher number of visitors also tend to be better equipped with computers and web sites.



Source: Statistics Austria, Cultural Statistics (2006)

Figure 36: Computer equipment and Internet presence of Austrian museums in 2006 (details)

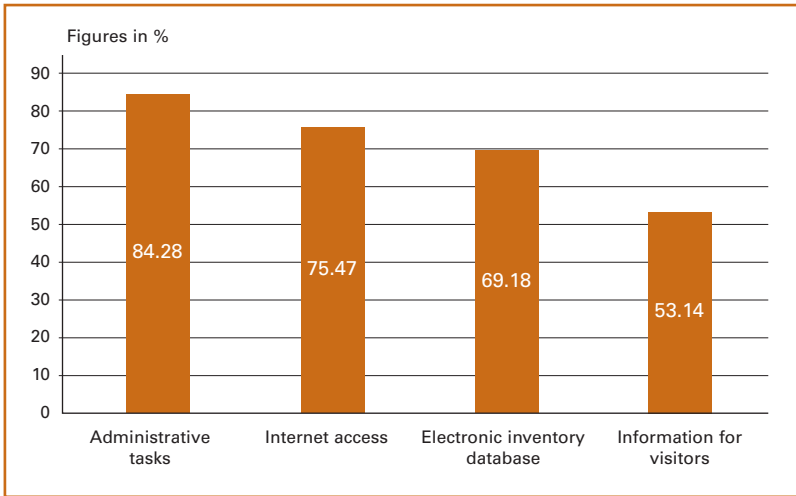


Number of visitors	Total number of museums	Museums with computers	Museums with web sites
up to 2,499	160	65%	41.25%
2,500 to 4,999	67	82.09%	61.19%
5,000 to 9,999	47	93.62%	74.47%
10,000 to 49,999	70	95.71%	87.14%
50,000 to 99,999	18	100%	94.44%
100,000 to 249,999	13	100%	100%
250,000 to 499,999	7	100%	100%
500,000 or more	4	100%	100%
Unknown	13	46.15%	30.77%

Table 41: Computer equipment and Internet presence of Austrian museums in 2006 (details)

### Purpose of computer use in museums: Internet access also gaining importance

In approximately 84% of cases, Austrian museums use the available computers for administrative tasks. The least common use of computers is visitor information. Compared to 2005, the predominant purpose of the computers at Austrian museums has seen a decided shift toward Internet access.



Source: Statistics Austria, Cultural Statistics (2006)

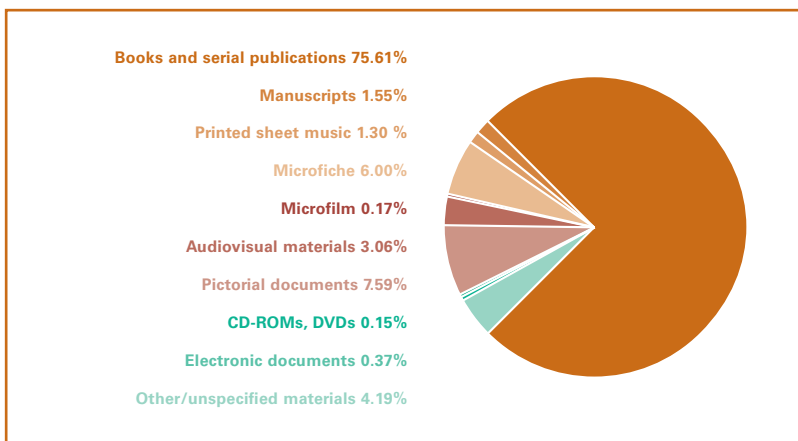
Figure 37: Computers in museums: Purpose of use

	2005	2006
<b>Administrative tasks</b>	67.51%	84.28%
<b>Internet access</b>	59.45%	75.47%
<b>Electronic inventory database</b>	53.65%	69.18%
<b>Information for visitors</b>	40.55%	53.14%

Table 42: Computers in museums: Purpose of use

## Media holdings of scientific and special libraries: Only a small share of media holdings available in electronic form

In 2006, more than three quarters of the media holdings in Austria's scientific and special libraries were still only available in the form of books and collection volumes. Only a small portion is available in electronic form. A total of 48,318,937 media resources are held in Austrian libraries, with CD-ROMs and DVDs making up the smallest portion (approximately 0.15%).



Source: Statistics Austria, Cultural Statistics (2006)

Figure 38: Media holdings of scientific libraries and special libraries in Austria (2006)

	Number	%
Books and serial publications	36,534,916	75.61%
Manuscripts	750,985	1.55%
Printed sheet music	629,452	1.30%
Microfiche	2,898,885	6.00%
Microfilm	80,531	0.17%
Audiovisual materials	1,476,722	3.06%
Pictorial documents	3,668,851	7.59%
CD-ROMs, DVDs	73,811	0.15%
Electronic documents	179,597	0.37%
Other/unspecified materials	2,025,187	4.19%
<b>Total</b>	<b>43,318,937</b>	

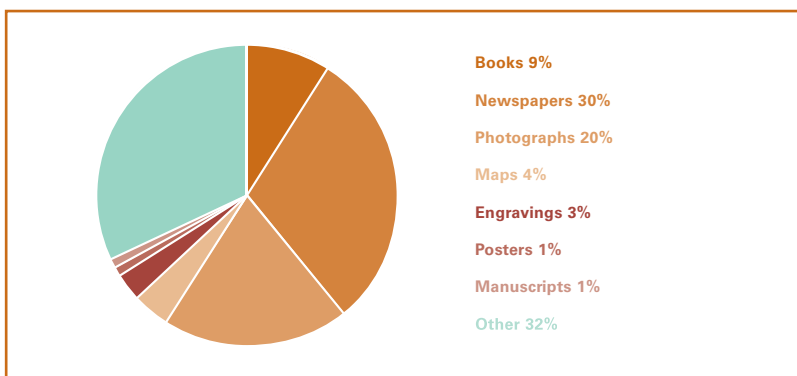
Table 43: Media holdings of scientific libraries and special libraries in Austria (2006)

## European Digital Library: International focus on digitizing cultural goods

The European Digital Library (EDL) is a project initiated by the European Commission in order to integrate the digital collections of national libraries and to make these resources available through a central portal.

According to the EDL Report on Digitisation in European National Libraries 2006-2012, the overall physical holdings of libraries in the European Digital Library network totaled 401,058,284 items in the year 2006.

The largest share of digitized items were newspapers (30%), and this development is likely to intensify even further until the year 2012. An increase is also projected in the number of digitized books (2006: 9%, projection for 2012: 11%), while the share of digitized photographs (20% in 2006) is expected to drop to 11% by 2012.



Source: EDL Report on Digitisation in European National Libraries 2006-2012

Figure 39: European Digital Library, objects digitized (2006)

EDL report	Number of objects digitized (2006)	2006 in %	Projected number of objects digitized (2012)	2012 in %
Books	279,190	9	1,537,913	11
Newspapers	1,468,000	30	6,293,000	43
Photographs	1,005,000	20	1,616,000	11
Maps	217,000	4	329,000	2
Engravings	157,000	3	269,000	2
Posters	65,000	1	300,000	2
Manuscripts	9,000	1	16,000	1
Other	1,673,973	32	6,742,138	25

	2006	2012
Pages digitized	125,340,850	738,404,404

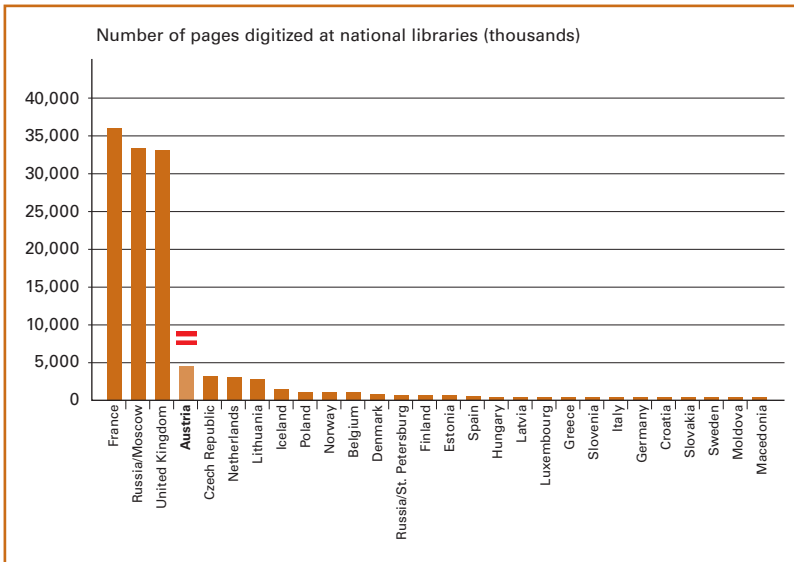
Table 44: European Digital Library, objects digitized (2006 and 2012)

## Number of pages digitized:

### Austria in 4<sup>th</sup> place

By international comparison, Austria placed fourth in 2006 in terms of the number of pages digitized at the national library. However, the three top-ranked countries – France, Russia and the United Kingdom – still have a considerable lead. In total, 125,340,850 pages had been digitized by 2006, and this figure is projected to rise to 738,404,404 by the year 2012.

Within the framework of its "digital library" strategy, the Austrian National Library also plans to build up digital collections and to make them available to the public. Thus the National Library plans to digitize 3.5 million pages of newspapers, 2 million pages of books, 300,000 pages of pictorial documents, 10,000 papyrus pages and 4,000 hours of audio material (see Austrian National Library web site).



Source: EDL Report on Digitisation in European National Libraries 2006-2012

Figure 40: Number of pages digitized at national libraries (2006)

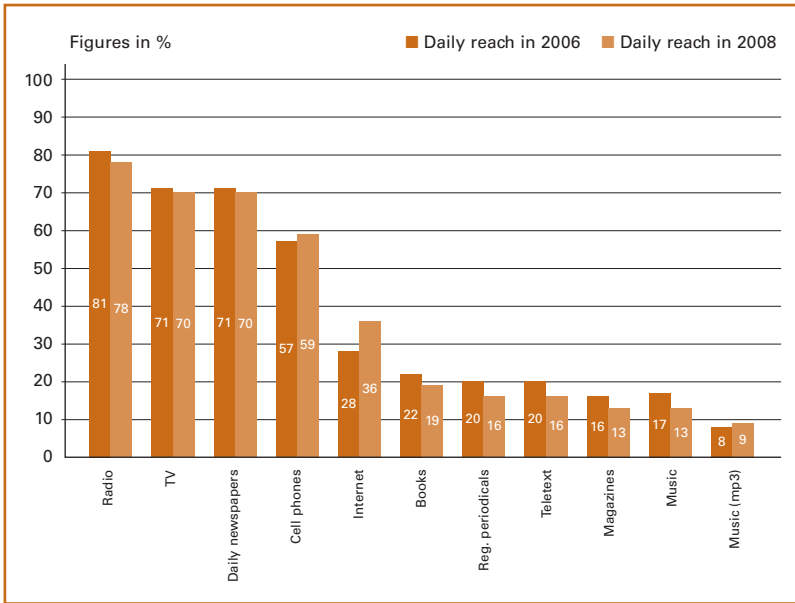
Country		Country		Country	
France	36,000,000	Belgium	975,500	Greece	240,406
Russia/Moscow	33,300,000	Denmark	800,000	Slovenia	223,462
United Kingdom	33,000,000	Russia/St.Petersburg	648,186	Italy	170,600
<b>Austria</b>	<b>4,500,000</b>	Finland	630,000	Germany	128,698
Czech Republic	3,200,000	Estonia	620,000	Croatia	59,698
Netherlands	3,000,000	Spain	500,000	Slovakia	30,000
Lithuania	2,800,000	Hungary	366,000	Sweden	24,000
Iceland	1,520,000	Latvia	303,400	Moldova	6,600
Poland	1,050,000	Luxembourg	241,300	Macedonia	3,000
Norway	1,000,000			<b>Total</b>	<b>125,340,850</b>

Table 45: Number of pages digitized at national libraries (2006)

## Media usage in 2006 and 2008:

### Overall reach of print media on the decline

As in 2006, radio was the most popular medium in terms of daily reach in 2008. Overall, radio is now used 3% less than previously, but the number of listening minutes is still increasing (i.e., fewer people are listening to the radio, but their listening time is rising). In general, a declining tendency can be observed in print media, while the use of digital media such as the Internet and cell phones is on the rise.



Source: Regioprint 2008 survey

Figure 41: Media usage in 2006 and 2008

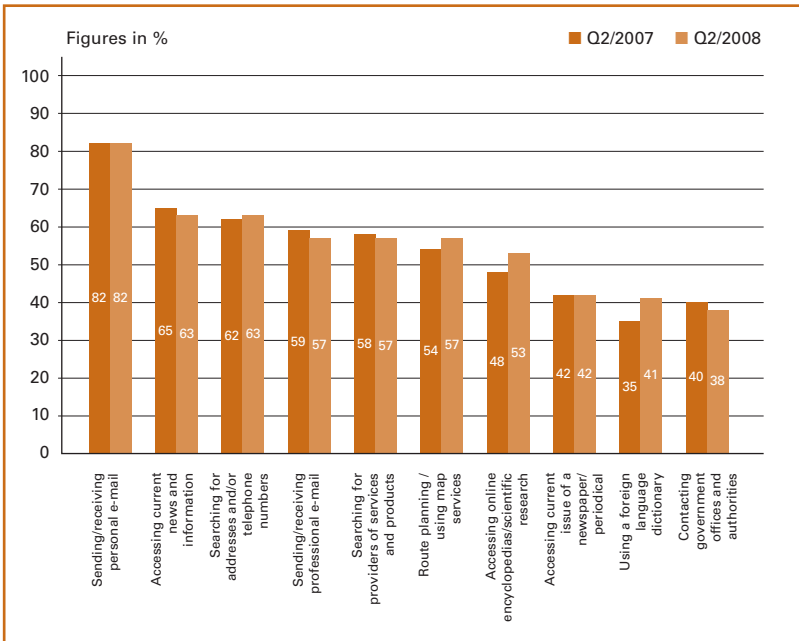
	Daily reach in 2006	Daily reach in 2008	Minutes of use 2006	Minutes of use 2008
Radio	81%	78%	195	201
TV	71%	70%	183	185
Daily newspapers	71%	70%	41	38
Cell phones	57%	59%	24	30
Internet	28%	36%	84	94
Books	22%	19%	70	73
Regional periodicals	20%	16%	31	30
Teletext	20%	16%	13	13
Magazines	16%	13%	35	33
Music	17%	13%	74	87
Music (mp3)	8%	9%	90	90

Table 46: Media usage in 2006 and 2008



## Top 10 uses of the Internet: Largest increase in use of online dictionaries

The Austrian Internet Monitor (AIM) surveys individuals regarding the activities for which they have used the Internet in the last four weeks (basis: individuals who use the Internet). In Austria, the Internet is used most frequently to send and receive personal e-mail, while the least common use is contacting government offices and authorities. The use of online foreign language dictionaries, encyclopedias and scientific research has also increased sharply.



Source: Austrian Internet Monitor Q2/2008

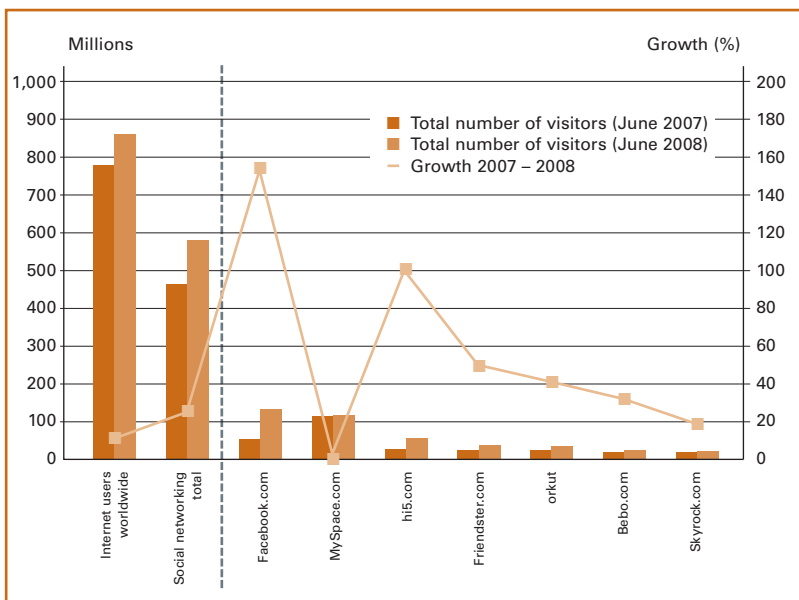
Figure 42: Internet usage: Top 10

	Q2/2007	Q2/2008
Sending/receiving personal e-mail	82%	82%
Accessing current news and information	65%	63%
Searching for addresses and/or telephone numbers	62%	63%
Sending/receiving professional e-mail	59%	57%
Searching for providers of services and products	58%	57%
Route planning / using map services	54%	57%
Accessing online encyclopedias/scientific research	48%	53%
Accessing current issue of a newspaper/periodical	42%	42%
Using a foreign language dictionary	35%	41%
Contacting government offices and authorities	40%	38%

Table 47: Internet usage: Top 10

## Total number of visitors to social networking sites: Highest growth at facebook.com

Social networking sites are becoming increasingly popular throughout the world. Between 2007 and 2008, social networking sites such as Facebook saw growth of approximately 25% worldwide. The number of visitors to these pages jumped from nearly 465 million in June 2007 to more than 580 million in June 2008 (visitors: see [www.comscore.com](http://www.comscore.com)). Once again, the largest gains in this area were made by Facebook, which saw a worldwide growth rate of 153%.



Source: ComScore World Metrix (15+ age group; place of use: at home and at work)

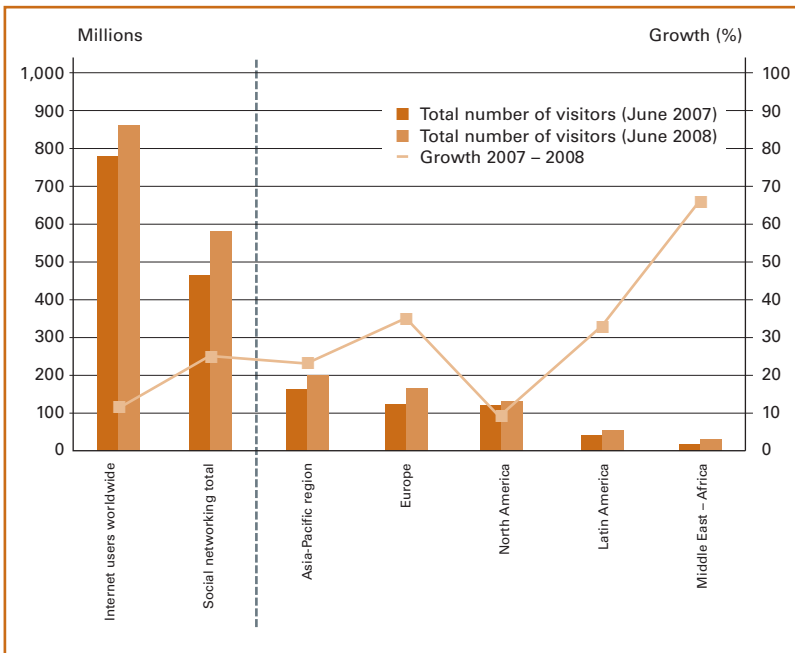
Figure 43: Internet users worldwide, total number of visitors and world-wide growth of various social networking sites

	Total number of visitors in 2007 (millions)	Total number of visitors in 2007 (millions)	Growth rate
Internet users worldwide	778.31	860.514	11%
Social networking total	464.437	580.51	25%
Facebook.com	52.167	132.105	153%
MySpace.com	114.147	117.582	3%
hi5.com	28.174	56.367	100%
Friendster.com	24.675	37.08	50%
orkut	24.12	34.028	41%
Bebo.com	18.2	24.017	32%
Skyrock.com	17.638	21.041	19%

Table 48: Internet users worldwide, total number of visitors and world-wide growth of various social networking sites

## Social networking sites: 35% growth rate in Europe

With global growth of 25%, social networking sites have surpassed the growth rate in the number of Internet users worldwide (11%). Therefore, only part of the growth across all regions can be explained by the increasing number of Internet users throughout the world. The number of visitors to these sites has risen most markedly in the Middle East (66%), but Europe and Latin America have also seen above-average increases (35% and 33%, respectively).



Source: ComScore World Metrix (15+ age group; place of use: at home and at work)

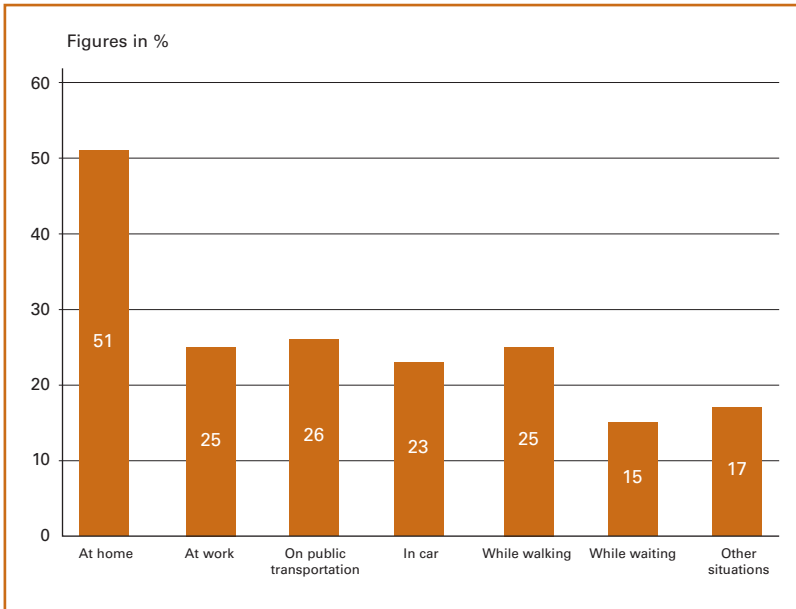
Figure 44: Internet users worldwide, total number of visitors and world-wide growth of social networking sites by region

	Total number of visitors in June 2007 (millions)	Total number of visitors in June 2008 (millions)	Growth rate
Internet users worldwide	778.31	860.514	11%
Social networking total	464.437	580.51	25%
Asia-Pacific region	162.738	200.555	23%
Europe	122.527	165.256	35%
North America	120.848	131.255	9%
Latin America	40.098	53.248	33%
Middle East – Africa	18.226	30.197	66%

Table 49: Internet users worldwide, total number of visitors and world-wide growth of social networking sites by region

## Preferred usage locations for mobile TV: Austrians prefer watching at home

With the introduction of DVB-H (Digital Video Broadcasting – Handheld) in June 2008, Austria became one of the first countries in Europe to launch mobile terrestrial television broadcasting. In the pilot testing stage, subjects most preferred to use this medium at home, then on public transportation. In the course of the day, the heaviest usage of mobile TV was recorded in the period between 6:00 pm and 8:00 pm. With regard to the frequency of use, 22.4% of participants indicated that they watched mobile TV daily or almost daily, while 55.2% stated that they watched several times per week (see also RTR's Communications Report 2007).



Source: RTR/Salzburg UAS study on mobile TV, 2007

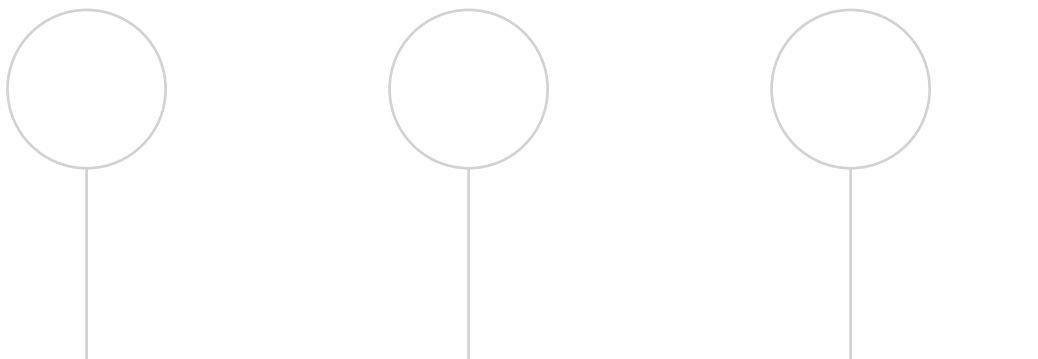
Figure 45: Preferred usage locations for mobile TV in pilot operation

<b>Usage</b>	<b>%</b>
At home	51
At work	25
On public transportation	26
In car	23
While walking	25
While waiting	15
Other situations	17
<b>Use of mobile TV throughout the day</b>	
6:00 am - 9:00 am	20.7
9:00 am - 11:30 am	29.3
11:30 am - 2:00 pm	37.9
2:00 pm - 6:00 pm	50.0
6:00 pm - 8:00 pm	60.3
8:00 pm - 10:00 pm	41.4
10:00 pm - 12:00 midnight	24.1
12:00 midnight - 6:00 am	6.9
<b>General frequency of use</b>	
Daily or almost daily	22.4
Several times per week	55.2
Less frequently	22.4

Table 50: Preferred usage locations and times for mobile TV during pilot operation







# 5. Education and generations

## 5.1 Preface

This section provides detailed information on a variety of topics related to education and generations. The information presented here is based on data from Statistics Austria, empirica and Eurostat.

In addition to reading, writing and arithmetic, the ability to use ICT has also established itself as a key cultural skill for the present and future in the information society. Such skills are a prerequisite for participating in a knowledge-based society (see [www.internetoffensive.at](http://www.internetoffensive.at)). Differing levels of education and age groups have a strong impact on the ability of individuals to use computers and the Internet. It is therefore crucial to account for the specific needs of each age group as well as other population groups.

At present, the use of new technologies is still constrained by various barriers and inhibitions in Austria. For example, this manifests itself in the different levels of computer and Internet use by individuals with various levels of education and in various age groups. Only one fourth of individuals over 65 years of age use the Internet, and the level of computer skills declines dramatically with increasing age.

As regards education, there is clearly room for improvement in Internet and broadband access at schools, as well as the number of schools where computers are used in the classroom. Teachers who do not use computers for instruction mostly cite the lack of available computers as the reason for not doing so.

## 5.2 Fact sheet and detailed analyses

Education and generations	Value	As of	Source	Details
Computer use in the last three months				
High level of education (ISCED 5-6)*	95.9%	2008	1	Page 99
Medium level of education (ISCED 3-4)*	80.1%	2008	1	Page 99
Low level of education (ISCED 0-2)*	50.9%	2008	1	Page 99
Internet use in the last three months				
High level of education (ISCED 5-6)*	95.2%	2008	1	Page 99
Medium level of education (ISCED 3-4)*	74.2%	2008	1	Page 99
Low level of education (ISCED 0-2)*	46.2%	2008	1	Page 99
Number of computers per 100 pupils in Austria (2006)	16	2006	2	Page 100
Number of computers per 100 pupils in Austria (2001)	11	2006	2	Page 100
Pupils per computer in Austria (2006)	6.25	2006	2	Page 100
Pupils per computer in Austria (2001)	9.09	2006	2	Page 100
Schools in Austria with Internet access	99.2%	2006	2	Page 101
Schools in Austria with broadband Internet access	68%	2006	2	Page 101
Percentage of schools which use computers for education in classrooms	64.8%	2006	2	Page 103
Reasons why computers are not used in class:				
Lack of computers	54.7%	2006	2	Page 105
Schools in Austria with their own web site	64%	2006	2	Page 107
Schools in Austria with their own LAN	68%	2006	2	Page 107
Computer use in the last three months				
16 to 24 years	95.2%	2008	1	Page 108
25 to 34 years	92.3%	2008	1	Page 108
35 to 44 years	86.6%	2008	1	Page 108
45 to 54 years	79.9%	2008	1	Page 108
55 to 64 years	56.6%	2008	1	Page 108
65 to 74 years	29.7%	2008	1	Page 108
Internet use in the last three months				
16 to 24 years	91.8%	2008	1	Page 108
25 to 34 years	88.5%	2008	1	Page 108
35 to 44 years	81.2%	2008	1	Page 108
45 to 54 years	73.2%	2008	1	Page 108
55 to 64 years	50.5%	2008	1	Page 108
65 to 74 years	25.5%	2008	1	Page 108
Computer skills: Connected and installed new devices				
16 to 24 years	73%	2006	3	Page 109
25 to 34 years	63%	2006	3	Page 109
35 to 44 years	52%	2006	3	Page 109
45 to 54 years	41%	2006	3	Page 109
55 to 74 years	21%	2006	3	Page 109

<sup>1</sup> Statistics Austria

<sup>2</sup> Korte/Hüsing (2006): Benchmarking Access and Use of ICT in European Schools 2006

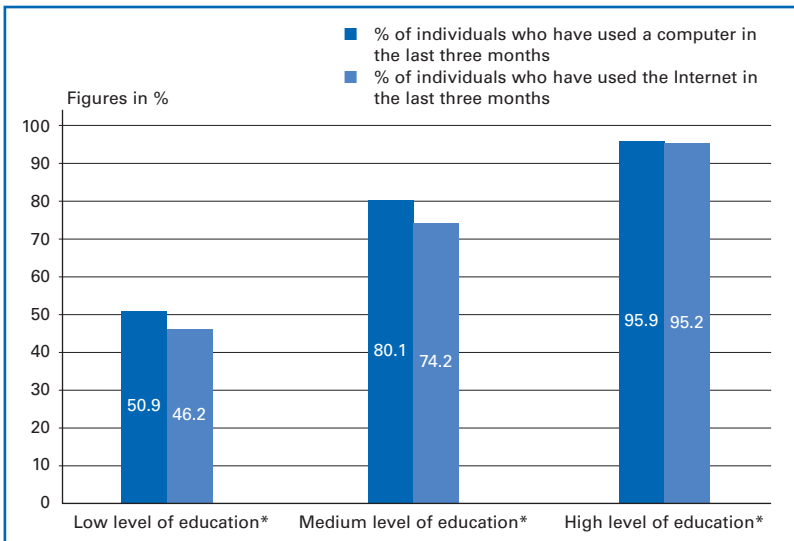
<sup>3</sup> Eurostat

\* ISCED 0-2: compulsory schooling; 3-4: upper secondary education, university courses up to 2 years; 5-6: university, doctorate.

Table 51: Fact sheet on education and generations

## Computers and Internet access: Closely linked to level of education

The digital divide in Austria is largely a matter of age and education. The higher an individual's level of education, the more frequently s/he will use computers and the Internet. At the highest levels of education, nearly all computer users had also used the Internet in the three months prior to the survey (survey period: February-March 2008).



Source: Statistics Austria, Community Survey on ICT Usage in Households 2008.

\* See Table 51 for definitions.

Figure 46: Computer and Internet use (2008)

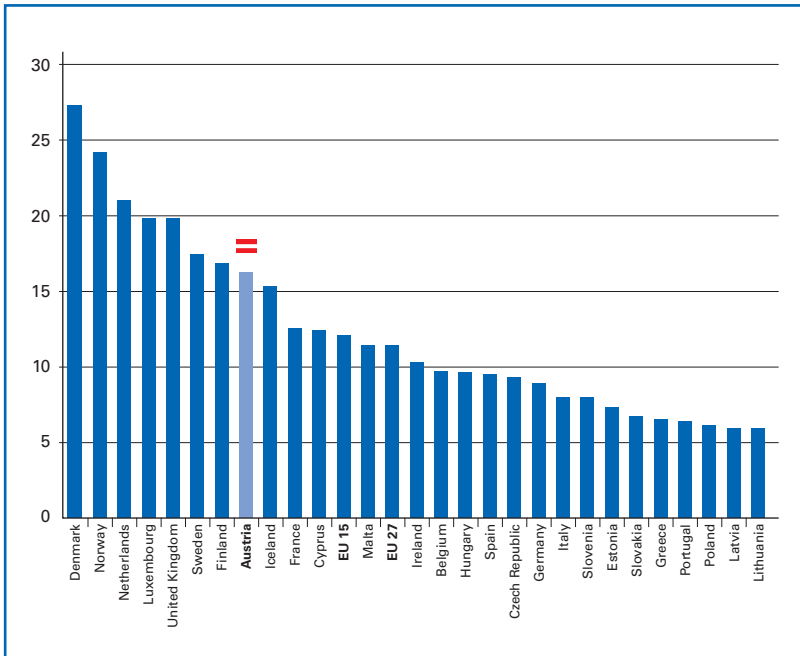
Computer and Internet users in 2008		
Education	% of individuals who have used a computer in the last three months	% of individuals who have used the Internet in the last three months
Low level*	50.9	46.2
Medium level*	80.1	74.2
High level*	95.9	95.2

Table 52: Computer and Internet use (2008)

## Computers in Austrian schools:

**16 computers for every 100 pupils, approximately 6 pupils per computer**

In Austria's schools, the average number of computers per 100 pupils came to about 16 in 2006 (2001: 11). This figure is significantly higher than the EU 27 average of 11 computers per 100 pupils. Conversely, this means that one computer is available for every 6.25 pupils in Austria. However, the countries ranked at the top of the list – Denmark and Norway – still have a considerable lead in this respect, with 3.70 pupils per computer in Denmark and 4.17 in Norway.



Source: Korte/Hüsing (2006): Benchmarking Access and Use of ICT in European Schools 2006. Final Report from Head Teacher and Classroom Teacher Surveys in 27 European Countries.

Figure 47: Number of computers per 100 pupils

Country	2006	2001	Country	2006	2001	Country	2006	2001
Denmark	27.3	31	Cyprus	12.4		Italy	8	6
Norway	24.2		EU 15	12.1		Slovenia	8	
Netherlands	21	13	Malta	11.4		Estonia	7.3	
Luxembourg	19.8	32	EU 27	11.3		Slovakia	7.1	5
United Kingdom	19.8	14	Ireland	10.3	10	Greece	6.7	
Sweden	17.4	17	Belgium	9.7	11	Portugal	6.4	
Finland	16.8	15	Hungary	9.6		Poland	6.1	
<b>Austria</b>	<b>16.2</b>	<b>11</b>	Spain	9.5		Latvia	5.9	
Iceland	15.3		Czech Republic	9.3	5	Lithuania	5.9	4
France	12.5	10	Germany	8.9	7			

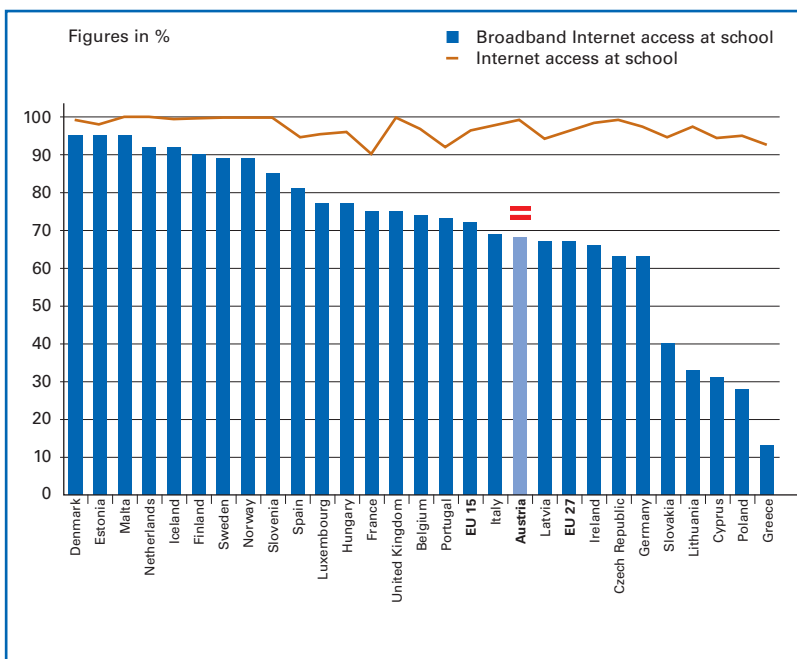
\* Note: This section includes comparisons of the Eurobarometer Flash 94/1001 and 95/102 results from 2001 with those from the current surveys from 2006. Please bear in mind that the figures are not directly comparable due to the use of slightly different approaches and methodologies.

Table 53: Number of computers per 100 pupils, 2006 vs. 2001\*

## Internet access in schools:

### 68% of Austrian schools have broadband access

In 2006, 99.2% of the schools in Austria had Internet access, and some 68% had broadband Internet access. Compared to the rest of the EU, Austria thus places 19<sup>th</sup> in terms of broadband access, which is below the EU 15 average (2006: 72%) but just above the EU 27 average (2006: 67%). At the top of the list is Denmark, where 64% of schools already had broadband Internet access in 2001 and 95% had broadband access in 2006. Overall, the broadband penetration rate in schools had already exceeded 75% in 15 EU countries by the year 2006. Across all countries, the Internet penetration rate at schools was above 90% in 2006.



Source: Korte/Hüsing (2006): Benchmarking Access and Use of ICT in European Schools 2006. Final Report from Head Teacher and Classroom Teacher Surveys in 27 European Countries. Basis: All schools.

Figure 48: Internet access in schools

Country	2006 (%)	2001 (%)	Country	2006 (%)	2001 (%)	Country	2006 (%)	2001 (%)
Denmark	95	64	Luxembourg	77	3	EU 27	67	
Estonia	95		Hungary	77		Ireland	66	-
Malta	95		France	75	10	Czech Republic	63	
Netherlands	92	27	United Kingdom	75	15	Germany	63	8
Iceland	92		Belgium	74	18	Slovakia	40	
Finland	90	52	Portugal	73	4	Lithuania	33	
Sweden	89	31	EU 15	72		Cyprus	31	
Norway	89		Italy	69	24	Poland	28	
Slovenia	85		<b>Austria</b>	<b>68</b>	<b>23</b>	Greece	13	3
Spain	81	10	Latvia	67				

\* Note: This section includes comparisons of the Eurobarometer Flash 94/1001 and 95/102 results from 2001 with those from the current surveys from 2006. Please bear in mind that the figures are not directly comparable due to the use of slightly different approaches and methodologies.

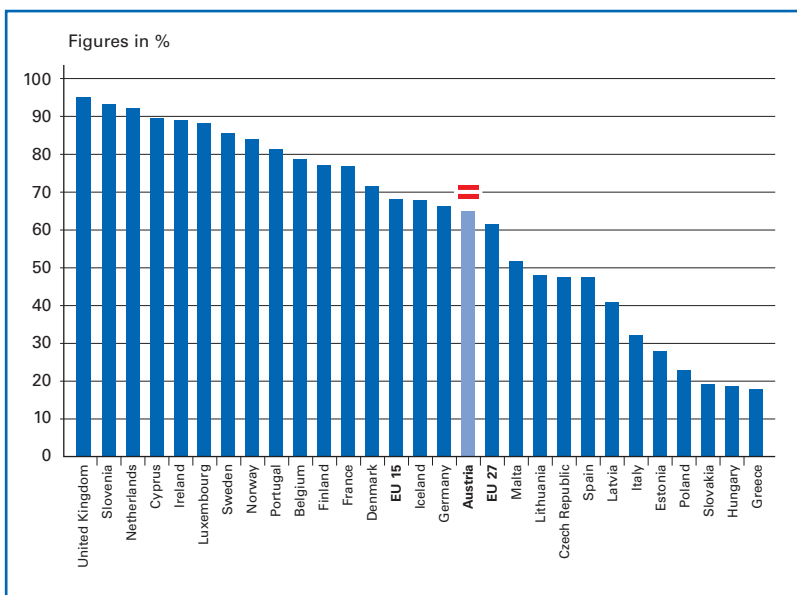
Table 54: Percentage of schools with broadband Internet access, 2006 vs. 2001\*

## Use of computers in schools:

### Most computers at schools used for classroom instruction

99.2% of Austria's schools use computers for instruction purposes. Of those schools, 64.8% use computers for education in the classroom. This places Austria just below the EU 15 average, but at the same time just above the EU 27 average. At the top of the list is the United Kingdom, where 95.2% of schools use computers for instruction in the classroom.





Source: Korte/Hüsing (2006): Benchmarking Access and Use of ICT in European Schools 2006. Final Report from Head Teacher and Classroom Teacher Surveys in 27 European Countries. Basis: All schools which use computers for instruction.

Figure 49: Percentage of schools which use computers for education in classrooms

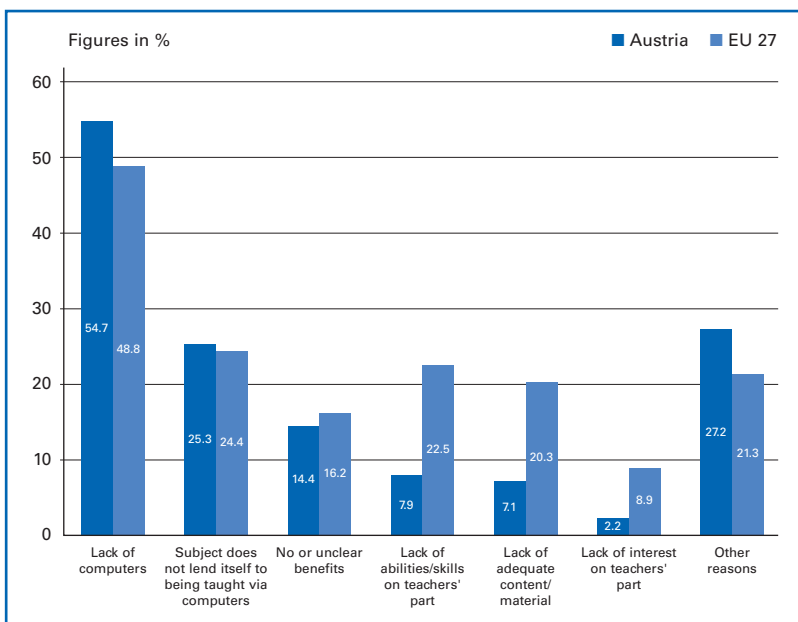
Country	%	Country	%	Country	%
United Kingdom	95.2	Finland	76.9	Czech Republic	47.6
Slovenia	93.1	France	76.7	Spain	47.6
Netherlands	92.1	Denmark	71.5	Latvia	40.7
Cyprus	89.5	EU 15	68.2	Italy	32.2
Ireland	89.0	Iceland	67.7	Estonia	27.9
Luxembourg	88.2	Germany	66.1	Poland	22.7
Sweden	85.5	<b>Austria</b>	<b>64.8</b>	Slovakia	19.2
Norway	84.0	EU 27	61.6	Hungary	18.5
Portugal	81.4	Malta	51.7	Greece	17.8
Belgium	78.8	Lithuania	48.0		

Table 55: Percentage of schools which use computer for education in classrooms

## Why computers are not used in instruction:

### Too few computers available in classrooms

The chart on page 104 shows that more than one third of the schools in Austria do not provide sufficient IT support in the classroom. The most frequently cited reason why teachers do not use computers in the classroom is the lack of available equipment. At the same time, one fourth of teachers stated that their subject does not lend itself to computer-assisted instruction. Only 7.9% cited insufficient skills on the teacher's part as a reason for not using computers in classroom instruction. This figure is far below the EU 27 average (22.5%).



Source: Korte/Hüsing (2006): Benchmarking Access and Use of ICT in European Schools 2006. Final Report from Head Teacher and Classroom Teacher Surveys in 27 European Countries. Basis: Teachers who do not use computers for classroom instruction.

Figure 50: Reasons why computers are not used in class

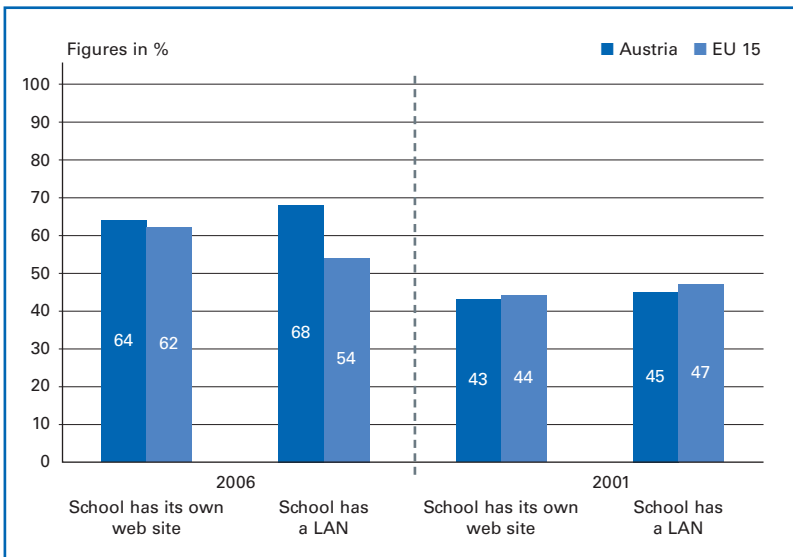
	<b>Austria</b>	<b>EU 27</b>
Lack of computers	54.7%	48.8%
Subject does not lend itself to being taught via computers	25.3%	24.4%
No or unclear benefits	14.4%	16.2%
Lack of abilities/skills on teachers' part	7.9%	22.5%
Lack of adequate content/material	7.1%	20.3%
Lack of interest on teachers' part	2.2%	8.9%
Other reasons	27.2%	21.3%

Table 56: Reasons why computers are not used in class

## Schools with web sites / LANs:

### 64% of Austria's schools had their own web site in 2006

In 2001, the percentage of schools in Austria which had their own web site or LAN was below the respective average for the EU 15. This situation had changed markedly by 2006, when 64% of Austria's schools already had their own web site (EU 15: 62%) and 68% had their own LAN (EU 15: 54%). Austrian schools have thus earned good marks in this area.



Source: Korte/Hüsing (2006): Benchmarking Access and Use of ICT in European Schools 2006. Final Report from Head Teacher and Classroom Teacher Surveys in 27 European Countries. Basis: All schools.

Figure 51: Schools with their own web site / LAN

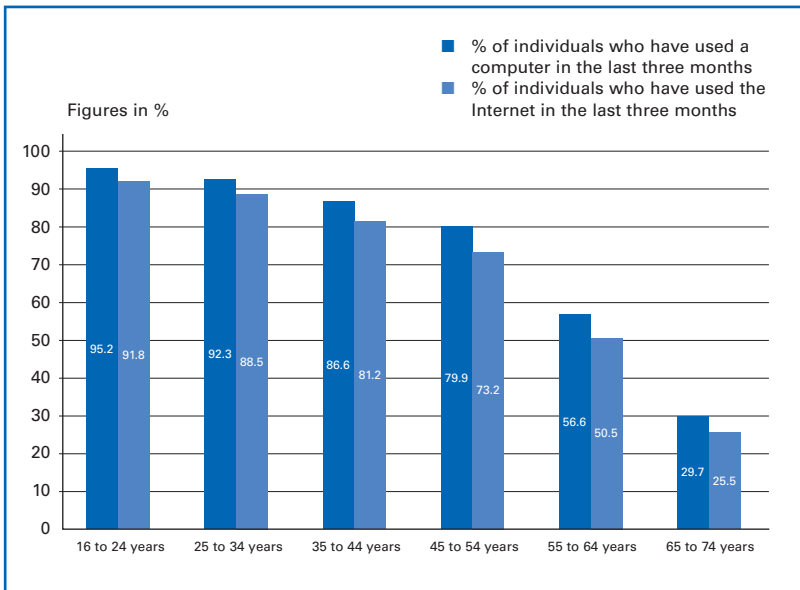
	2006		2001	
	Austria	EU 15	Austria	EU 15
<b>School has its own web site</b>	64%	62%	43%	44%
<b>School has a LAN</b>	68%	54%	45%	47%

Table 57: Schools with their own web site / LAN

## Computer and Internet use:

### Only one fourth of individuals over 65 use the Internet

Like education and income, age has a substantial impact on the frequency of computer and Internet use. Less than one third of the population over 65 years of age indicated that they had used a computer in the three months prior to the survey, and the percentage of Internet users is even lower. Predictably, the largest percentage of users can be found in the youngest age group surveyed: 95% of young people aged 16 to 24 had used a computer, and nearly 92% had used the Internet in the three months prior to the survey. This percentage drops substantially with increasing age.



Source: Statistics Austria, Community Survey on ICT Usage in Households 2008.

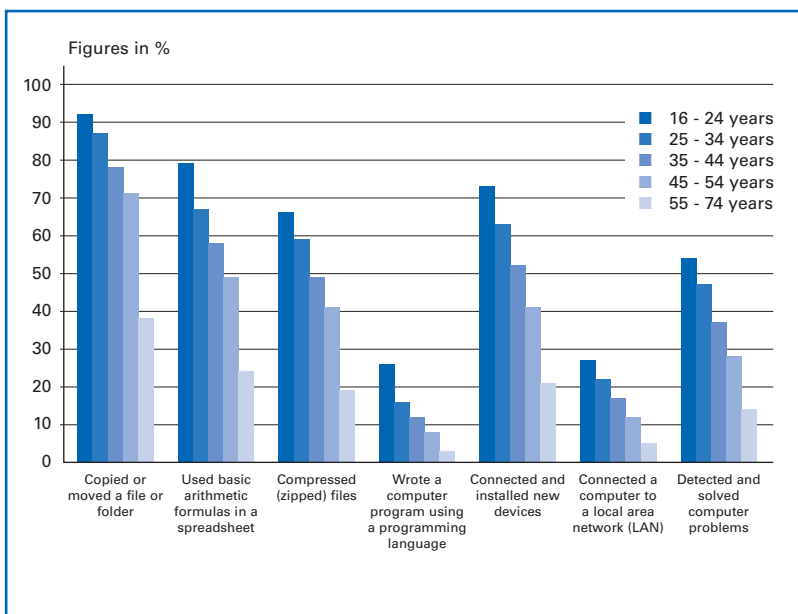
Figure 52: Computer and Internet users (2008)

	Individuals who have used a computer in the last three months	Individuals who have used the Internet in the last three months
16 to 24 years	95.2%	91.8%
25 to 34 years	92.3%	88.5%
35 to 44 years	86.6%	81.2%
45 to 54 years	79.9%	73.2%
55 to 64 years	56.6%	50.5%
65 to 74 years	29.7%	25.5%

Table 58: Computer and Internet users (2008)

### Level of computer skills in Austria: Skill level declines in older age groups

The level of computer skills also declines rapidly among older individuals. Whereas 73% of the individuals surveyed between the ages of 16 and 24 indicated that they had connected and installed new devices themselves, the corresponding figure for the 55 to 74 age group is only 21%. A comparison of the figures for Austria with those of the EU 27 clearly reveals that the level of computer skills in Austria is higher than the EU 27 average (regardless of age).



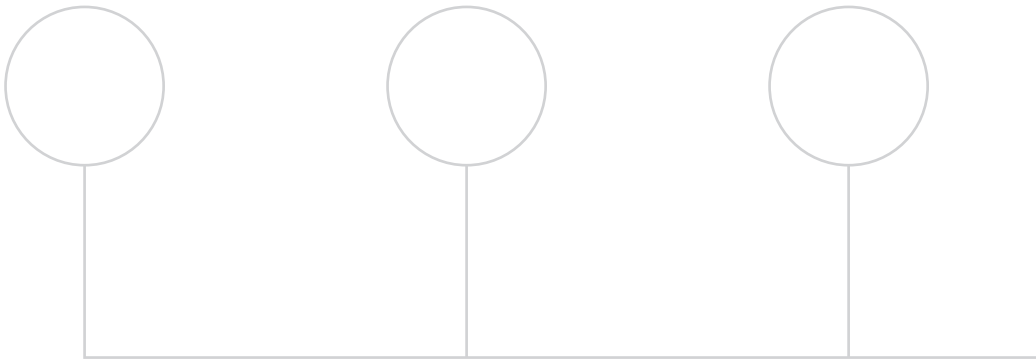
Source: Eurostat; basis: All individuals.

Figure 53: Individuals' level of computer skills in Austria

Figures in %	All		16-24 years		25-34 years		35-44 years		45-54 years		55-74 years	
	AT	EU 27	AT	EU 27	AT	EU 27	AT	EU 27	AT	EU 27	AT	EU 27
Copied or moved a file or folder	70	56	92	86	87	73	78	63	71	52	38	27
Used basic arithmetic formulas in a spreadsheet	52	39	79	64	67	53	58	44	49	35	24	17
Compressed (zipped) files	44	30	66	52	59	44	49	35	41	25	19	11
Wrote a computer program using a programming language	12	9	26	18	16	14	12	9	8	7	3	3
Connected and installed new devices	47	40	73	63	63	55	52	45	41	34	21	17
Connected a computer to a local area network (LAN)	15	19	27	33	22	28	17	21	12	16	5	6
Detected and solved computer problems	33	24	54	41	47	34	37	27	28	20	14	8

Table 59: Individuals' level of computer skills in Austria vs. EU 27





## 6. Health and social affairs

### 6.1 Preface

This section provides detailed information on a variety of fields related to health and social affairs. The information presented here is based on data from the OECD, empirica, Statistics Austria and the demand-side survey conducted by RTR.

The use of ICT in health care can increase satisfaction among patients as well as professionals working in the field. Wherever possible, all social groups should benefit from the deployment of these technologies, which is why it is crucial to ensure that certain population groups do not fall behind in the information society.

This section first presents Austria's health care expenditure as a percentage of GDP in an international comparison. In this context, it becomes clear that Austria is above the OECD average in terms of this percentage as well as per capita expenditure. However, the data also reveals that Austria still needs to catch up to the EU 27 in the use of ICT by general practitioners. With regard to the use of computers as well as Internet and broadband among general practitioners, the figures reported for Austria are below the EU 27 average. A similar picture emerges regarding the storage and electronic exchange of patient data as well as the use of computers in patient consultations. Finally, the percentage of general practitioners in Austria who have their own web site is examined in detail.

The data on the field of social affairs reveals that certain population groups in Austria are in danger of falling far behind in the information society. In this context, substantial differences according to gender, age, occupation and income can be identified in the use of computers and the Internet.

## 6.2 Fact sheet and detailed analyses

Health and social affairs	Value	As of	Source	Details
Share of expenditure on health care in % of GDP	10.1%	2006	1	Page 115
Per capita expenditure on health care	USD 3,606	2006	1	Page 115
Annual increase in per capita health care expenditure, 2000 to 2006 (in real terms)	2%	2002-06	1	none
Share of public funds in health care expenditure / OECD average	76%/73%	2006	1	none
Doctors per 1,000 inhabitants / OECD average	3.6/3.1	2006	1	none
Hospital beds per 1,000 inhabitants / OECD average	6.1/3.9	2006	1	none
MRI units per million inhabitants / OECD average	16.8/10.2	2006	1	none
CT scanners per million inhabitants / OECD average	29.8/19.2	2006	1	none
Life expectancy in Austria / OECD average	79.9/78.9	2006	1	none
IT equipment of general practitioners in Austria / EU 27:	84%/87%	2007	2	Page 116
GPs with Internet access	68%/69%	2007	2	Page 116
GPs with broadband access	37%/48%	2007	2	Page 116
Electronic transfer of results from laboratories	37%/40%	2007	2	Page 119
Use of computers in patient consultation	54%/66%	2007	2	Page 121
GPs with web sites	39%/28%	2007	2	Page 122
Percentage of general practitioners who store patient data electronically	77%	2007	2	Page 118
Individuals who have used a computer in the last three months	76.2%	2008	3	Page 124
Men	82.2%	2008	3	Page 124
Women	70.3%	2008	3	Page 124
Gainfully employed	88.8%	2008	3	Page 124
Retired	36.9%	2008	3	Page 124
Homemakers, not otherwise employed	44.7%	2008	3	Page 124
Pupils, students	99.6%	2008	3	Page 124
Other social groups	74.6%	2008	3	Page 124
Individuals who have used the Internet in the last three months	71.2%	2008	3	Page 124
Men	77.2%	2008	3	Page 124
Women	65.3%	2008	3	Page 124
Gainfully employed	83.5%	2008	3	Page 124
Retired	31.4%	2008	3	Page 124
Homemakers, not otherwise employed	39.1%	2008	3	Page 124
Pupils, students	99.5%	2008	3	Page 124
Other social groups	69.5%	2008	3	Page 124
Households with Internet access by income group				
Up to EUR 1,450	43.57%	2007	4	Page 125
Up to EUR 2,500	51.71%	2007	4	Page 125
Up to EUR 3,600	68.48%	2007	4	Page 125
Over EUR 3,600	85.11%	2007	4	Page 125

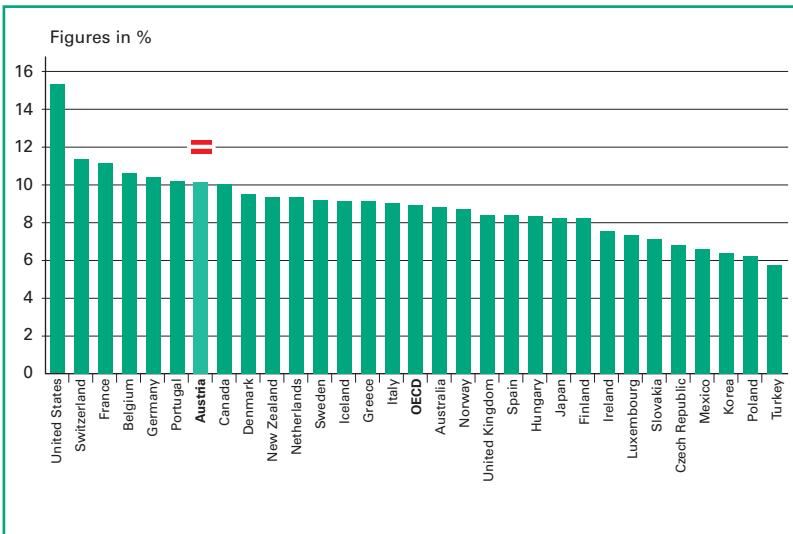
<sup>1</sup> OECD <sup>2</sup> Empirica, Benchmarking ICT use among General Practitioners in Europe 2008

<sup>3</sup> Statistics Austria <sup>4</sup> RTR demand-side survey

Table 60: Fact sheet on health care and social affairs

## Health care expenditure in % of GDP: Austria substantially above OECD average

In 2006, the total expenditure on health care in Austria amounted to 10.1% of GDP, which is more than one percentage point higher than the OECD average (8.9%). The highest level of expenditure on health care relative to GDP is found in the United States, where this figure came to 15.3%. On a per capita basis, health care expenditure in Austria (USD 3,606; PPP-adjusted) was also well above the OECD average of USD 2,824.



Source: OECD Health Data 2008: Statistics and Indicators for 30 Countries.

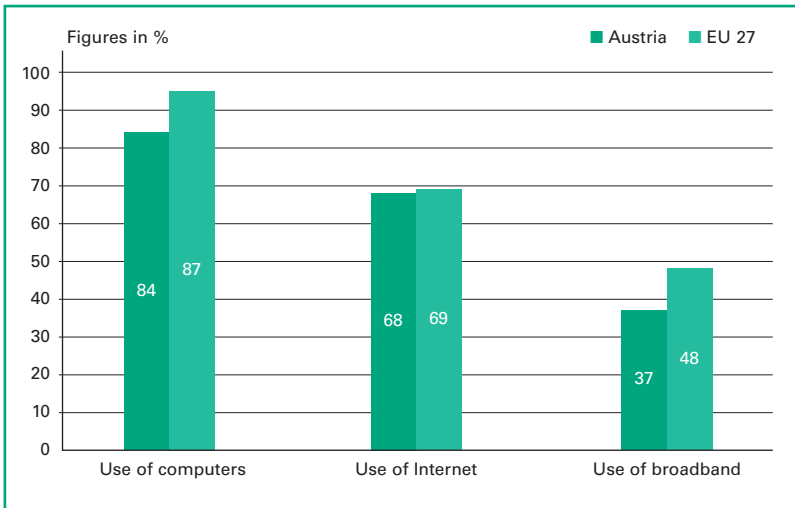
Figure 54: Share of expenditure on health in % of GDP (OECD countries, 2006)

Country	%	Country	%	Country	%
United States	15.3	Sweden	9.2	Japan	8.2
Switzerland	11.3	Iceland	9.1	Finland	8.2
France	11.1	Greece	9.1	Ireland	7.5
Belgium	10.6	Italy	9.0	Luxembourg	7.3
Germany	10.4	OECD	8.9	Slovakia	7.1
Portugal	10.2	Australia	8.8	Czech Republic	6.8
<b>Austria</b>	<b>10.1</b>	Norway	8.7	Mexico	6.6
Canada	10.0	United Kingdom	8.4	Korea	6.4
Denmark	9.5	Spain	8.4	Poland	6.2
New Zealand	9.3	Hungary	8.3	Turkey	5.7
Netherlands	9.3				

Table 61: Share of expenditure on health in % of GDP (OECD countries, 2006)

### Use of ICT by general practitioners in Austria: Slightly below EU average

As regards the use of ICT in their practices, Austria's general practitioners score just below the EU 27 average. 84% of general practitioners have a computer in their practice, and 68% use the Internet. Austria lags farthest behind in the level of broadband penetration among GPs: While an average of nearly half of practices in the EU 27 have broadband Internet access, this share is just over one third in Austria.



Source: Ingo Meyer et al. Benchmarking ICT use among General Practitioners in Europe - Final report. Study commissioned by the European Commission, Information Society & Media Directorate-General, Brussels; undertaken by empirica GmbH, Bonn, Germany, in association with IPSOS, April 2008. Basis: General practitioners in Austria.

Figure 55: Use of ICT by general practitioners in Austria

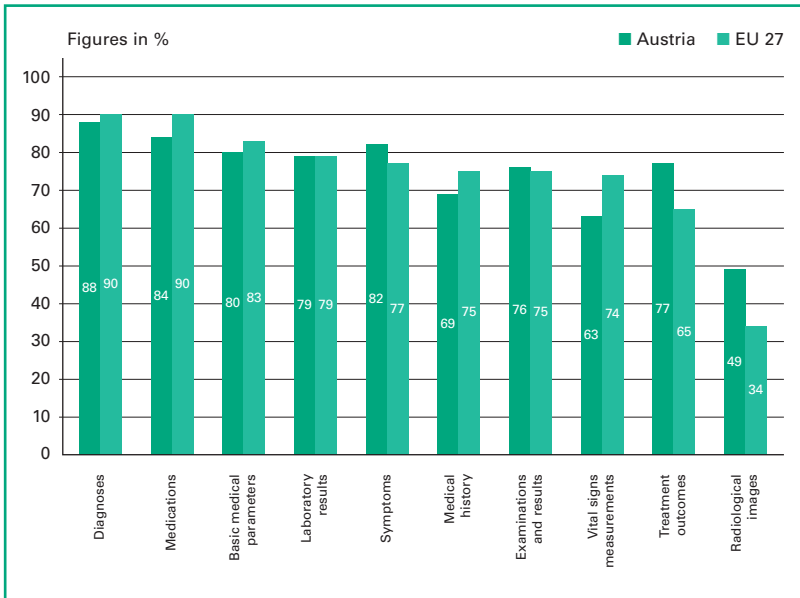
	Austria	EU 27
Use of computers	84%	87%
Use of Internet	68%	69%
Use of broadband	37%	48%

Table 62: Use of ICT by general practitioners in Austria

## Electronic storage of medical records: Austria shows room for improvement

This section provides details on the electronic storage and exchange of patient data in Austria.

The electronic storage of patient data is fairly common in Austria, with 77% of Austria's general practitioners storing at least one type of patient data. Austria scores well above the EU 27 average in the storage of radiological images (+15%) and treatment outcomes (+12%). As regards the storage of medical histories, the figure for Austria is six percentage points below the EU 27 average.



Source: Ingo Meyer et al. Benchmarking ICT use among General Practitioners in Europe - Final report. Study commissioned by the European Commission, Information Society & Media Directorate-General, Brussels; undertaken by empirica GmbH, Bonn, Germany, in association with IPSOS, April 2008. Basis: General practitioners who store patient data.

Figure 56: Electronic storage of medical records

	Austria	EU 27
Diagnoses	88%	90%
Medications	84%	90%
Basic medical parameters	80%	83%
Laboratory results	79%	79%
Symptoms	82%	77%
Medical history	69%	75%
Examinations and results	76%	75%
Vital signs measurements	63%	74%
Treatment outcomes	77%	65%
Radiological images	49%	34%

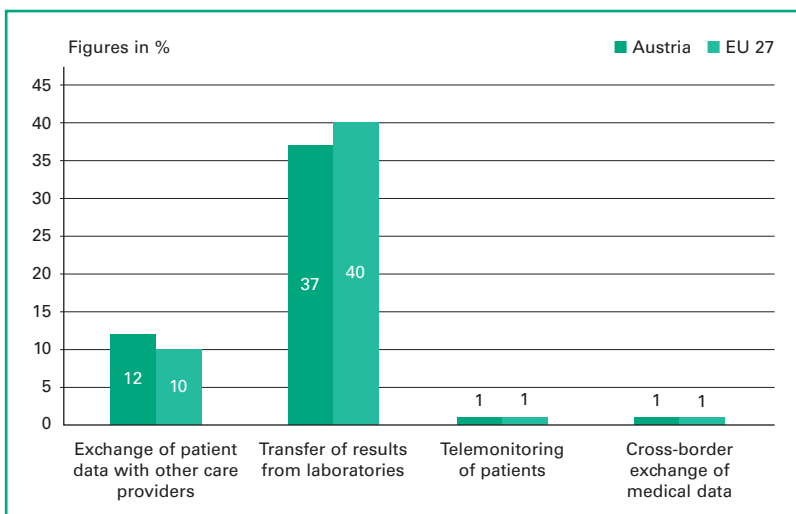
Table 63: Electronic storage of medical records

### Electronic exchange of patient data:

#### **12% of practices in Austria exchange medical data with other care providers**

The most common form of patient data exchange throughout the EU is the electronic transfer of laboratory results via the Internet. In this regard, the figure for Austria (37%) is just below the EU 27 average. 12% of Austria's general practitioners share patient data electronically with other care providers. Only 1% of general practitioners in the country exchange patient data across national borders. In this regard, the top-ranked country is the Netherlands with a value of 5%. The low value reported in this category can be explained in part by the different health care systems in EU member states.





Source: Ingo Meyer et al. Benchmarking ICT use among General Practitioners in Europe - Final report. Study commissioned by the European Commission, Information Society & Media Directorate-General, Brussels; undertaken by empirica GmbH, Bonn, Germany, in association with IPSOS, April 2008. Basis: General practitioners in Austria.

Figure 57: Electronic exchange of patient data

	Austria	EU 27
Exchange of patient data with other care providers	12%	10%
Transfer of results from laboratories	37%	40%
Telemonitoring of patients	1%	1%
Cross-border exchange of medical data	1%	1%

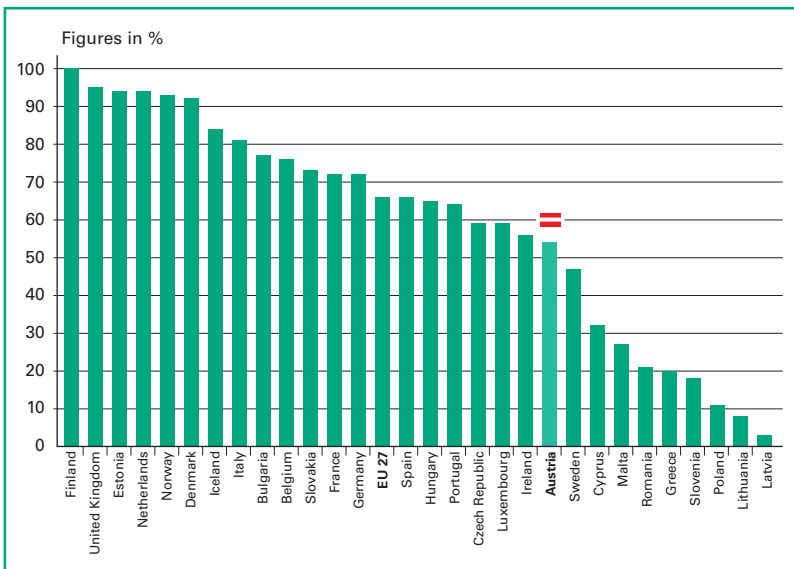
Table 64: Electronic exchange of patient data

## Use of computers in patient consultations:

### Austria in lower middle range

Aside from the electronic storage and exchange of patient data, general practitioners may also use computers in their direct interactions with the patient, for example in order to illustrate concepts more clearly using photos and/or animation.

In Austria, 54% of general practitioners use computers when advising their patients. This value is in the lower middle range of countries reporting an average level of computer use in patient consultations. The EU 27 average amounts to 66%.



Source: Ingo Meyer et al. Benchmarking ICT use among General Practitioners in Europe - Final report. Study commissioned by the European Commission, Information Society & Media Directorate-General, Brussels; undertaken by empirica GmbH, Bonn, Germany, in association with IPSOS, April 2008. Basis: All general practitioners in the country.

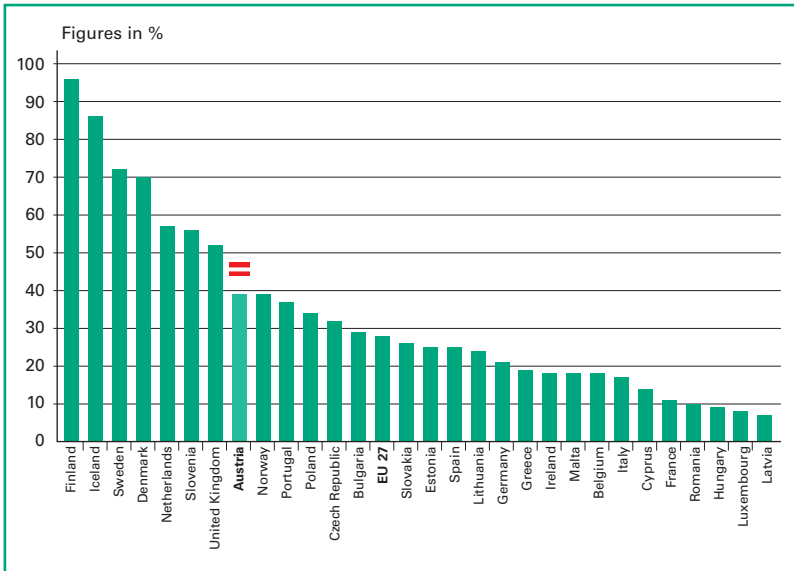
Figure 58: Computer use in consultation with the patient

Country		Country		Country	
Finland	100%	Slovakia	73%	<b>Austria</b>	<b>54%</b>
United Kingdom	95%	France	72%	Sweden	47%
Estonia	94%	Germany	72%	Cyprus	32%
Netherlands	94%	EU 27	66%	Malta	27%
Norway	93%	Spain	66%	Romania	21%
Denmark	92%	Hungary	65%	Greece	20%
Iceland	84%	Portugal	64%	Slovenia	18%
Italy	81%	Czech Republic	59%	Poland	11%
Bulgaria	77%	Luxembourg	59%	Lithuania	8%
Belgium	76%	Ireland	56%	Latvia	3%

Table 65: Computer use in consultation with the patient

### General practitioners with web sites: Austria has above-average number of sites

Doctor's practices with web sites are not particularly widespread in the EU: On average, only 28% of general practitioners in EU 27 countries have their own web site. However, there are some exceptions. In Finland, for example, nearly all (96%) doctor's practices have a presence on the Internet. In this respect, Austria's value of 39% is above the EU 27 average but far behind the leading countries.



Source: Ingo Meyer et al. Benchmarking ICT use among General Practitioners in Europe - Final report. Study commissioned by the European Commission, Information Society & Media Directorate-General, Brussels; undertaken by empirica GmbH, Bonn, Germany, in association with IPSOS, April 2008. Basis: All general practitioners in the country.

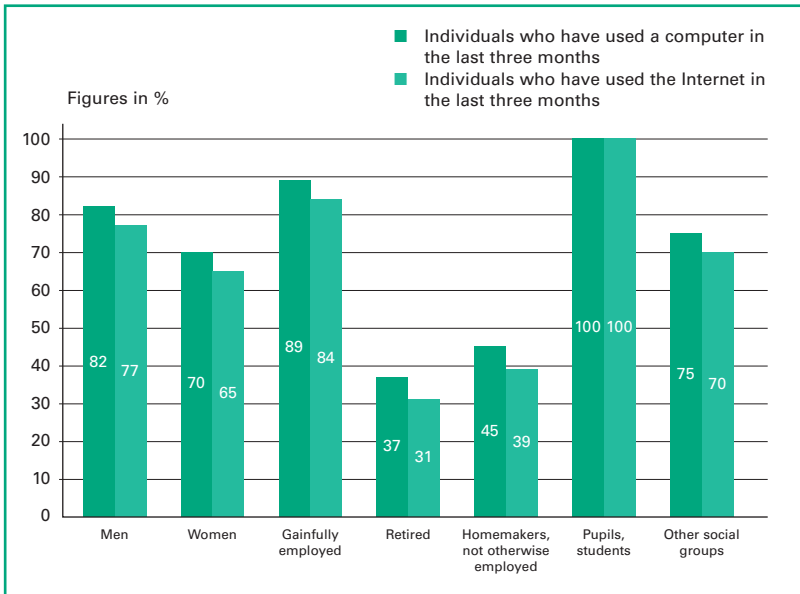
Figure 59: General practitioners with web sites

Country		Country		Country	
Finland	96%	Poland	34%	Ireland	18%
Iceland	86%	Czech Republic	32%	Malta	18%
Sweden	72%	Bulgaria	29%	Belgium	18%
Denmark	70%	EU 27	28%	Italy	17%
Netherlands	57%	Slovakia	26%	Cyprus	14%
Slovenia	56%	Estonia	25%	France	11%
United Kingdom	52%	Spain	25%	Romania	10%
<b>Austria</b>	<b>39%</b>	Lithuania	24%	Hungary	9%
Norway	39%	Germany	21%	Luxembourg	8%
Portugal	37%	Greece	19%	Latvia	7%

Table 66: General practitioners with web sites

## Computer and Internet use: Closely linked to gender, age and occupation

In recent years, the EU has undertaken a number of initiatives which emphasize the importance of "inclusion". Certain population groups are in danger of falling behind in the information society. In general, the use of computers and the Internet is at a lower level among women than men in Austria. Vast differences can also be identified among different occupations. While people who are gainfully employed and pupils/students exhibit a relatively high level of computer and Internet use, this figure is far lower among retired people and homemakers.



Source: Statistics Austria, Community Survey on ICT Usage in Households 2008 (created on June 27, 2008; survey period: February-March 2008).

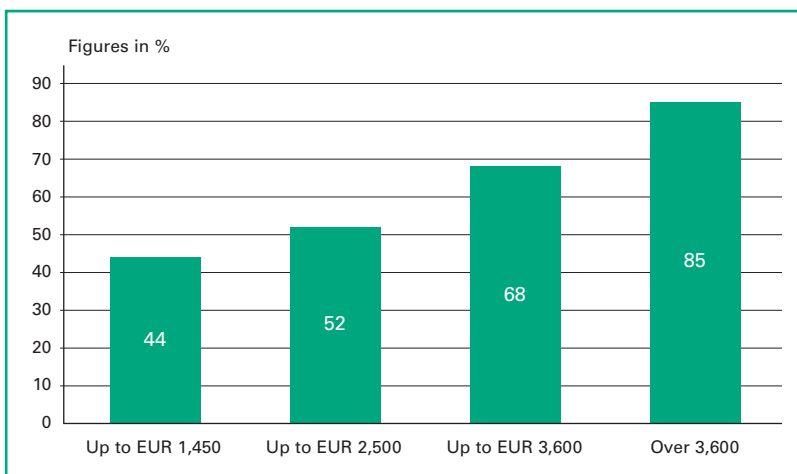
Figure 60: Computer and Internet use

	Individuals who have ... in the last three months	
	used a computer (%)	used the Internet (%)
<b>Total</b>	<b>76.2</b>	<b>71.2</b>
<b>Men / women total</b>	Men / women <b>82.2 / 70.3</b>	Men / women <b>77.2 / 65.3</b>
16 to 24 years	95.3 / 95.1	91.6 / 92.1
25 to 34 years	93.7 / 90.8	89.1 / 88
35 to 44 years	91.8 / 81.4	86.6 / 75.8
45 to 54 years	86.3 / 73.5	80.5 / 65.9
55 to 74 years	55.6 / 34.4	50.3 / 29.2
<b>Occupation</b>		
Gainfully employed	88.8	83.5
Retired	36.9	31.4
Homemakers, not otherwise employed	44.7	39.1
Pupils, students	99.6	99.5
Other social groups	74.6	69.5

Table 67: Computer and Internet use

## Households with Internet access: Digital divide also based on income

Another factor influencing households' access to the Internet is their income level. Internet penetration jumps markedly as household income increases. The level of Internet penetration reaches its peak in the highest income category surveyed. For details on additional influencing factors such as age and level of education, please refer to the section "Education and generations" (page 99).



Source: RTR demand-side survey 2007

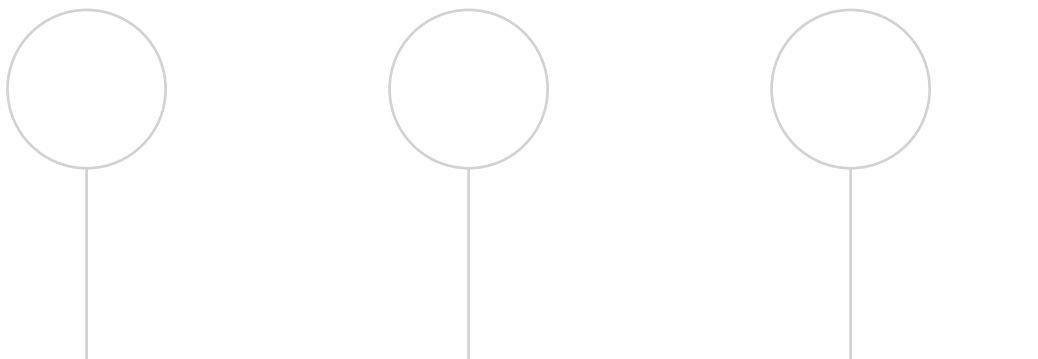
Figure 61: Internet penetration according to monthly income

Income	Households with Internet access
Up to EUR 1,450	43.57%
Up to EUR 2,500	51.71%
Up to EUR 3,600	68.48%
Over EUR 3,600	85.11%

Table 68: Internet penetration according to monthly income







# 7. Green IT


## 7.1 Preface

Climate change, global warming and increasing CO<sub>2</sub> emissions have led to an increase in awareness and will have a major impact on our lifestyle in the future. In order to create jobs and improve living conditions, it is necessary to increase economic output. In the past, however, economic growth has automatically led to higher energy consumption. In this context, innovative technologies have the potential to decrease consumption through the efficient use of energy and resources, thus making a positive contribution to climate protection by decoupling energy consumption from economic growth. The term "green IT" refers to the overall potential for energy and resource savings through ICT.

Only a small amount of specific data on the topic of green IT is available in Austria. The data presented here was derived from international studies (Simon Mingay, *GreenIT: A New Industry Shock Wave*, Gartner Research; *Saving the Climate at the Speed of Light*, ETNO, WWF; *OmniBoss Enterprise survey*, December 2007; *Effective Work in the 21<sup>st</sup> Century*, Durham Business School, JBA, April 2008) as well as Eurostat.

Worldwide energy consumption has increased by 60% in the last 25 years. ICT is responsible for 2% of the world's overall CO<sub>2</sub> emissions (Gartner). With the Kyoto Protocol, the EU agreed to reduce its greenhouse gas emissions by 8% (compared to the Kyoto base year) by 2008-2012. In the allocation of reductions within the EU, Austria assumed responsibility for a reduction of 13%. However, as the data on page 133 clearly shows, Austria is still rather far from reaching this target. This situation is different with regard to the share of renewable energies in gross domestic energy consumption (page 132).

CO<sub>2</sub> emissions can be reduced effectively through the use of ICT. Flexiworking and videoconferencing can be used to reduce traffic significantly – especially during peak times – and thus also to decrease CO<sub>2</sub> emissions. However, a study from Germany shows that only 25% of the businesses surveyed have developed a green IT strategy.



The GreenIT Survey carried out by IDC Austria revealed that more than 50% of customers already pay attention to how "green" their providers are. One third of customers consider it important or even very important that IT providers offer green products and services. Nearly 80% of executives indicate that green IT is becoming increasingly important for their companies. The main reason for using green IT is economic in nature, that is, the reduction of operating costs (power consumption, air conditioning, etc.).

There is an urgent need for broad-based action in this area. When companies become aware that energy efficiency can pay off financially, the topic of green IT will also find its way onto the agendas of decision-makers.

## 7.2 Fact sheet and detailed analyses

Green IT	Value	As of	Source	Details
Share of renewable energy in gross domestic energy consumption	20.5%	2005	5	Page 132
Biomass and waste	10.8%	2005	5	Page 132
Hydro energy	9.1%	2005	5	Page 132
Wind energy	0.3%	2005	5	Page 132
Solar energy	0.3%	2005	5	Page 132
Geothermic energy	0.1%	2005	5	Page 132
Index of total greenhouse gas emissions in CO <sub>2</sub> equivalents	115.2%	2006	5	Page 133
2010 target	87%	2006	5	Page 133
Share of total CO <sub>2</sub> emissions from ICT	2%	4/2007	1	Page 135
Caused by PCs and monitors	39%	4/2007	1	Page 135
Caused by servers (including cooling)	23%	4/2007	1	Page 135
CO <sub>2</sub> emissions in the EU by cause				
Use of offices	40%	4/2008	4	Page 137
Industry	28%	4/2008	4	Page 137
CO <sub>2</sub> savings from:				
Replacing 25% of business travel with video-conferencing	27.94 million tons	10/2006	2	Page 138
Increased use of online billing:				
10 million users	10,943 tons	10/2006	2	Page 140
Web-based taxation: 10 million users	10,143 tons	10/2006	2	Page 141
Flexiworking: 10 million employees	11.49 million tons	10/2006	2	Page 143
Companies with a green IT strategy	25%	12/2007	3	Page 144
Finance	40%	12/2007	3	Page 144
Production	28%	12/2007	3	Page 144
Green IT as a top-priority issue for senior management	53%	12/2007	3	Page 146
Finance	48%	12/2007	3	Page 146
Production	64%	12/2007	3	Page 146

<sup>1</sup> Simon Mingay, GreenIT: A New Industry Shock Wave, Gartner Research

<sup>2</sup> Saving the Climate at the Speed of Light, ETNO, WWF

<sup>3</sup> OmniBoss Enterprise December 2007

<sup>4</sup> Effective Work in the 21<sup>st</sup> Century, Durham Business School, JBA, April 2008

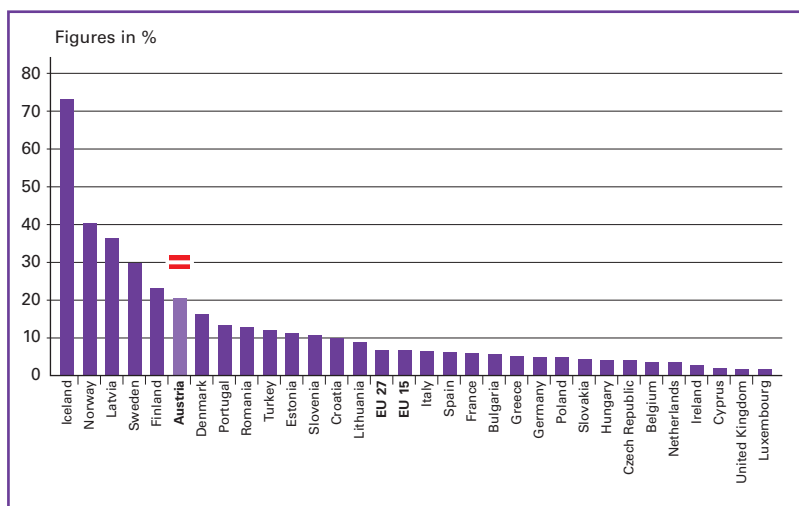
<sup>5</sup> Eurostat

Table 69: Fact sheet on green IT

## Share of renewable energy in gross domestic energy consumption in the EU:

### Austria has already reached i2020 target

The EU's i2010 target calls for a share of 10% of gross domestic energy consumption in the form of renewable energy. By the year 2020, this percentage should rise to 20%. Austria is one of the few countries which had already met this target in 2005. The largest share of renewable energy in Austria is produced from biomass and waste (10.8%), followed by hydro energy (9.1%). A far smaller share is produced in the form of wind energy (0.3%), solar energy (0.3%) and geothermic energy (0.1%).



Source: Eurostat, total of hydro energy, wind energy, solar energy, biomass and waste, geothermic energy

Figure 62: Share of renewable energy in gross domestic energy consumption in the EU

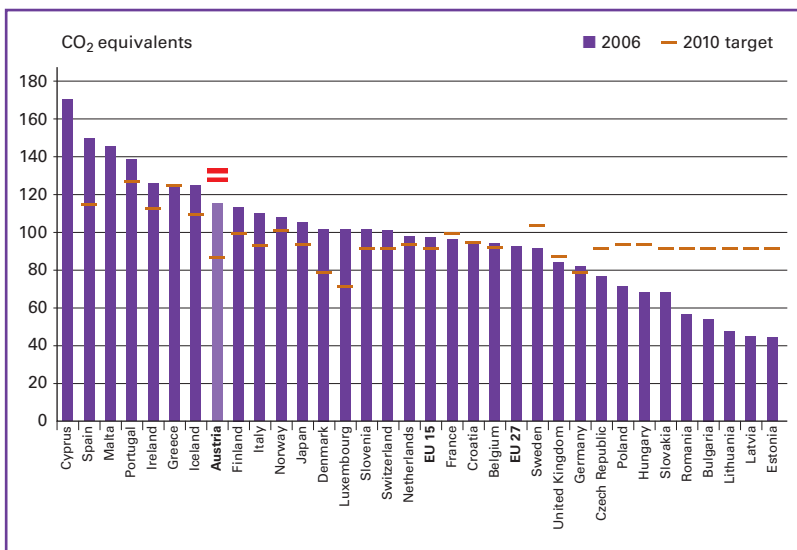
Country	%	Country	%	Country	%
Iceland	73.0	Slovenia	10.6	Poland	4.8
Norway	40.4	Croatia	10.1	Slovakia	4.3
Latvia	36.3	Lithuania	8.8	Hungary	4.2
Sweden	29.8	EU 27	6.7	Czech Republic	4.1
Finland	23.2	EU 15	6.7	Belgium	3.5
<b>Austria</b>	<b>20.5</b>	Italy	6.5	Netherlands	3.5
Denmark	16.2	Spain	6.1	Ireland	2.7
Portugal	13.4	France	6.0	Cyprus	2.0
Romania	12.8	Bulgaria	5.6	United Kingdom	1.7
Turkey	11.9	Greece	5.2	Luxembourg	1.6
Estonia	11.2	Germany	4.8		

Table 70: Share of renewable energy in gross domestic energy consumption in the EU

## Total greenhouse gas emissions in CO<sub>2</sub> equivalents vs. 2010 targets:

### Austria still far from meeting Kyoto target

In addition to impacts from "classic" air pollutants, the issue of potential global climate change from greenhouse gas emissions (the "greenhouse effect") has become increasingly important. With the Kyoto Protocol, the EU agreed to reduce its greenhouse gas emissions by 8% (compared to the Kyoto base year) by 2008-2012. In the allocation of reductions within the EU, Austria assumed responsibility for a reduction of 13%. As the chart below shows, Austria is still far from attaining this objective.



Source: Eurostat, no (joint) Kyoto target for Cyprus and Malta

Figure 63: Total greenhouse gas emissions in CO<sub>2</sub> equivalents vs. 2010 targets

Country	2006	2010 target	Country	2006	2010 target
Cyprus	170.1	*	EU 15	97.3	92
Spain	149.5	115	France	96	100
Malta	145	*	Croatia	94.8	95
Portugal	138.3	127	Belgium	94	92.5
Ireland	125.5	113	EU 27	92.3	*
Greece	124.4	125	Sweden	91.1	104
Iceland	124.2	110	United Kingdom	84	87.5
<b>Austria</b>	<b>115.2</b>	<b>87</b>	Germany	81.5	79
Finland	113.1	100	Czech Republic	76.3	92
Italy	109.9	93.5	Poland	71.1	94
Norway	107.7	101	Hungary	68.1	94
Japan	105.3	94	Slovakia	67.9	92
Denmark	101.7	79	Romania	56.3	92
Luxembourg	101.2	72	Bulgaria	53.8	92
Slovenia	101.2	92	Lithuania	47	92
Switzerland	100.8	92	Latvia	44.9	92
Netherlands	97.4	94	Estonia	44.3	92

\* No (joint) Kyoto target

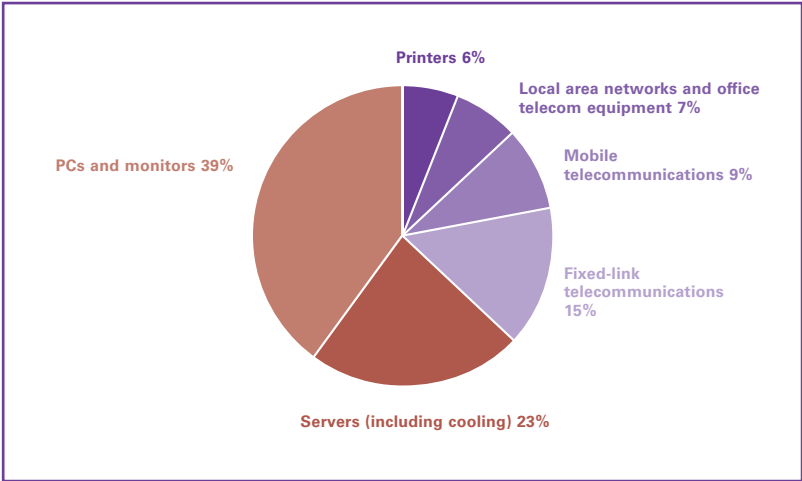
Table 71: Index of total greenhouse gas emissions and 2010 targets in CO<sub>2</sub> equivalents (base year = 100)

## Breakdown of carbon dioxide emissions caused by ICT: ICT causes 2% of global CO<sub>2</sub> emissions

According to a study conducted by Gartner Research, approximately 2% of global CO<sub>2</sub> emissions can be attributed to ICT. The largest share of emissions created by ICT is from PCs and monitors (39%) and servers (23%; including cooling). By identifying inefficiencies in technology and user behavior, it would be possible to eliminate a relatively large share of the CO<sub>2</sub> emissions created by ICT.

In addition, the efficient use of ICT would also make it possible to eliminate large parts of the CO<sub>2</sub> emissions caused by industry and other activities. Several of these possible reductions are presented below.





Source: Simon Mingay, GreenIT: A New Industry Shock Wave, Gartner Research (2006 estimate)

Figure 64: Breakdown of carbon dioxide emissions caused by ICT

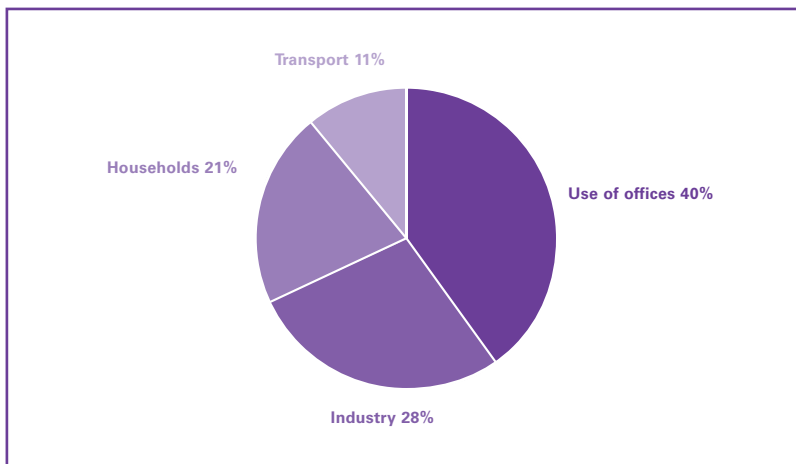
	Share of emissions
Printers	6%
Local area networks and office telecom equipment	7%
Mobile communications	9%
Fixed-link telecommunications	15%
Servers (including cooling)	23%
PCs and monitors	39%

Table 72: Breakdown of carbon dioxide emissions caused by ICT

## CO<sub>2</sub> emissions in the EU by cause:

### Use of offices creates largest share of emissions

According to a study conducted by Durham Business School, the largest share of CO<sub>2</sub> emissions in the EU can be attributed to the use of office space. Heating, lighting and air conditioning for the buildings as well as the pollutants released by commuting to and from work are among the most damaging factors for the environment. The use of offices alone is responsible for a share of approximately 40%. In contrast, the industrial sector causes approximately 28% of CO<sub>2</sub> emissions, households cause 21%, and the transport sector is responsible for about 11%. In this context, offices are actually used only about 30% of the time, meaning that they produce some 1,186 million tons of unnecessary CO<sub>2</sub> emissions in the EU.



Source: Effective Work in the 21<sup>st</sup> Century, Durham Business School, JBA, April 2008

Figure 65: CO<sub>2</sub> emissions in the EU by cause

	Share of emissions
Use of offices	40%
Industry	28%
Households	21%
Transport	11%

Table 73: CO<sub>2</sub> emissions in the EU by cause

## CO<sub>2</sub> savings from replacing business travel:

### **Videoconferencing can help eliminate CO<sub>2</sub> emissions**

One possible way in which the use of ICT can curb CO<sub>2</sub> emissions is by reducing the burden from travel. To this end, meetings in person can be replaced by videoconferences. Many companies have recognized that virtual meetings reduce burdens on the environment as well as the budget; they also increase efficiency and minimize safety risks (e.g., by replacing air travel).

Replacing 25% of business travel in Europe with videoconferencing could save nearly 28 million tons of CO<sub>2</sub> emissions. The increased use of audio conferences would also have extremely positive effects in terms of environmental impact. If 50% of employees in the EU 25 replaced a single meeting with an audio conference, approximately 2.128 million tons of CO<sub>2</sub> emissions could be eliminated.



Source: Saving the Climate at the Speed of Light, ETNO, WWF

Figure 66: CO<sub>2</sub> savings from replacing business travel with video conferencing

Replaced business travel in Europe (%)	CO <sub>2</sub> savings (millions of tons)
5	5.59
10	11.18
15	16.76
20	22.35
25	27.94
30	33.53

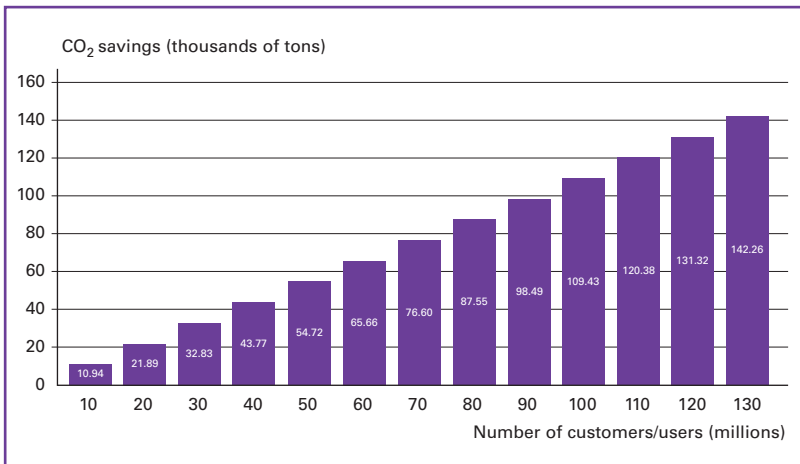
Table 74: CO<sub>2</sub> savings from replacing business travel with video conferencing

## CO<sub>2</sub> savings:

### Online billing reduces energy consumption

Where retail or business customers use online billing, they receive an electronic invoice via the Internet instead of a printed invoice by conventional mail. This requires less paper, transport, energy and physical infrastructure.

Existing online billing systems show that 10 million customers using online billing can save some 11,000 tons in CO<sub>2</sub> emissions; 90 million users would thus save nearly 100,000 tons. However, these calculations only include telephone bills; if this type of system were used in other areas, such as electricity, water, gas, etc., the potential savings are even higher.



Source: Saving the Climate at the Speed of Light, ETNO, WWF

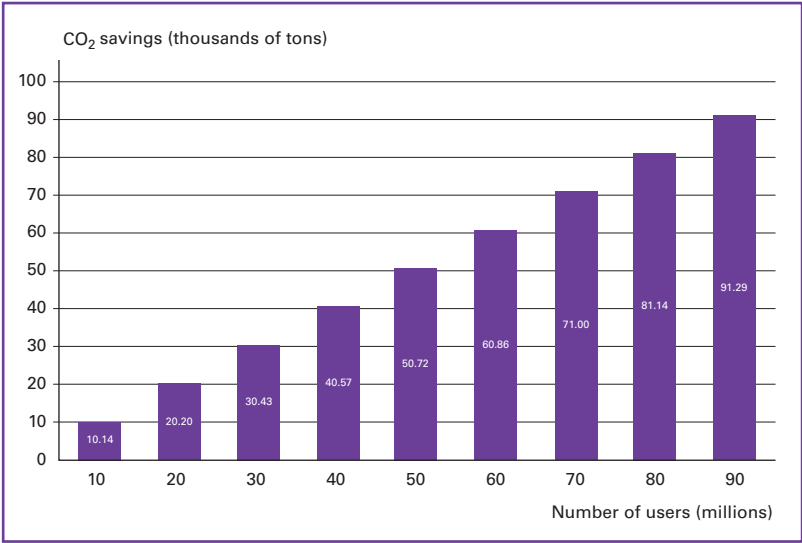
Figure 67: CO<sub>2</sub> savings from online billing

Number of customers/users (millions)	CO <sub>2</sub> savings (thousands of tons)
10	10.94
20	21.89
30	32.83
40	43.77
50	54.72
60	65.66
70	76.60
80	87.55
90	98.49
100	109.43
110	120.38
120	131.32
130	142.26

Table 75: CO<sub>2</sub> savings from online billing

### CO<sub>2</sub> savings from web-based taxation: e-government hand in hand with green IT?

Handling tax matters via the Internet is another way to save paper, transport and storage costs. In this field, there are many possible ways of conserving resources. As mentioned in the section on the economy, infrastructure and e-government, the availability of e-government services in Austria is the highest in the Europe. However, the use of these services by individuals and businesses leaves a great deal to be desired (see pages 27 and 29).



Source: Saving the Climate at the Speed of Light, ETNO, WWF

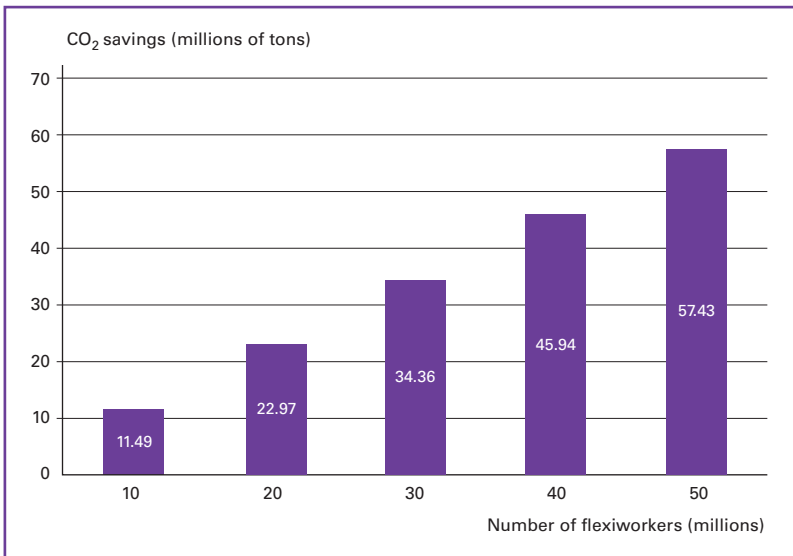
Figure 68: CO<sub>2</sub> savings from web-based taxation

Number of users (millions)	CO <sub>2</sub> savings (thousands of tons)
10	10.14
20	20.20
30	30.43
40	40.57
50	50.72
60	60.86
70	71.00
80	81.14
90	91.29

Table 76: CO<sub>2</sub> savings from web-based taxation

## Annual CO<sub>2</sub> savings from flexiworking: Massive potential reductions

Flexiworking or teleworking means allowing employees to perform their duties at locations other than the usual company office. This requires less office space and reduces transport costs substantially. The possibility of working from home one or two days per week, or even scheduling one's working hours flexibly, would certainly have positive effects on traffic and transport at peak times, thus making a huge contribution to reducing CO<sub>2</sub> emissions. In this way, 10 million teleworkers would bring about a reduction of approximately 11 million tons of CO<sub>2</sub> emissions. If 10% of employees in the EU 25 were teleworkers, approximately 22.17 million tons of CO<sub>2</sub> emissions could be eliminated.



Source: Saving the Climate at the Speed of Light, ETNO, WWF

Figure 69: Annual CO<sub>2</sub> savings from flexiworking



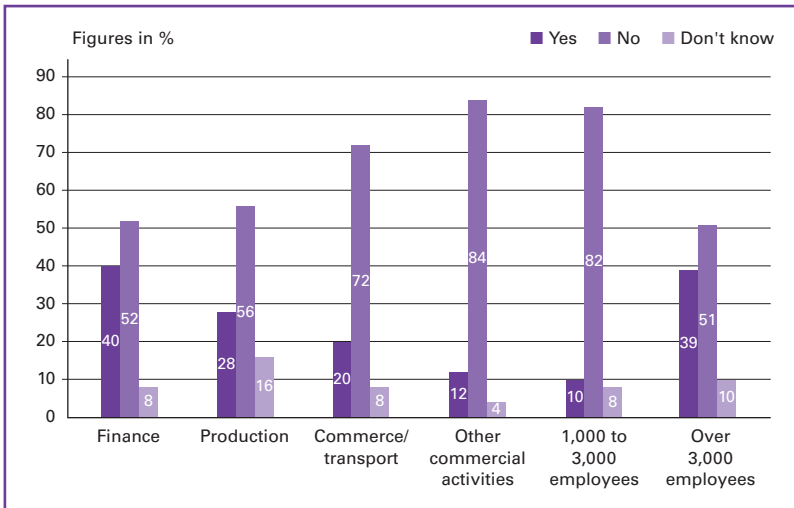
Number of flexiworkers (millions)	CO <sub>2</sub> savings (millions of tons)
10	11.49
20	22.97
30	34.36
40	45.94
50	57.43

Table 77: Annual CO<sub>2</sub> savings from flexiworking

### Developing green IT strategies:

#### **66% of Germany's businesses do not have a green IT strategy**

In December 2007, the British market research institute Vanson Bourne carried out the OmniBoss Enterprise survey on behalf of the IT company NetApp. The survey included 100 IT managers and IT directors at German companies. The results revealed that only 25% of the businesses surveyed have developed a green IT strategy. The top-ranking sector in this area is financial services, where 40% of providers have already developed such a strategy.



Source: OmniBoss Enterprise survey, December 2007, conducted by Vanson Bourne on behalf of NetApp (sample: 100 German IT managers and IT directors)

Figure 70: Has your company developed a green IT strategy?

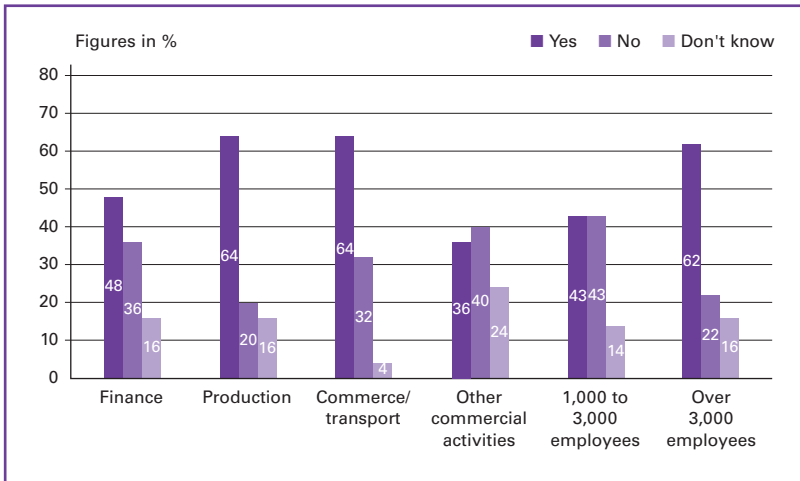
	Yes	No	Don't know
Finance	40%	52%	8%
Production	28%	56%	16%
Commerce/transport	20%	72%	8%
Other commercial activities	12%	84%	4%
1,000 to 3,000 employees	10%	82%	8%
Over 3,000 employees	39%	51%	10%
<b>Average</b>	<b>25%</b>	<b>66%</b>	<b>9%</b>

Table 78: Has your company developed a green IT strategy?

## Green IT as a top priority for senior management:

**53% of businesses surveyed say yes**

As shown on page 144, the majority of businesses surveyed have not developed a green IT strategy despite the fact that this topic is considered a top-priority issue for senior management in an average of 53% of those companies. In the production and commerce/transport sectors, this percentage came to 64%. In financial services, the share was markedly lower (48%). In addition to the industry, the size of the company also has an impact on whether green IT is considered an issue for executive agendas. Among companies with more than 3,000 employees, 62% of those surveyed indicated that green IT is an issue for the senior management. Where companies have 1,000 to 3,000 employees, this percentage is far lower (43%).

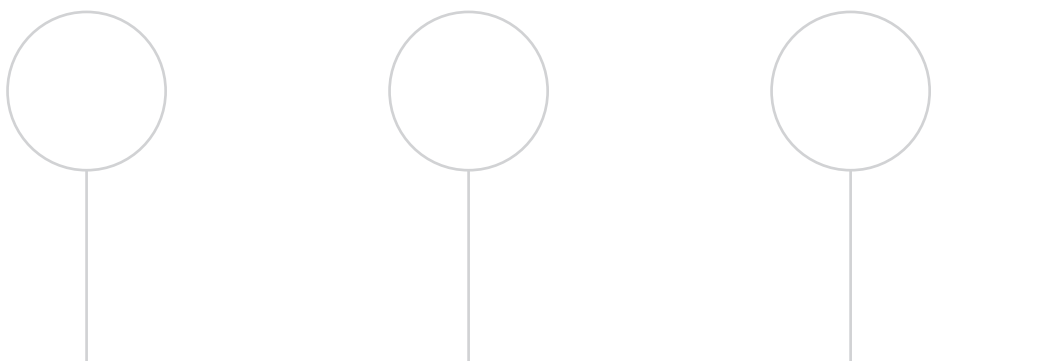


Source: OmniBoss Enterprise survey, December 2007, conducted by Vanson Bourne on behalf of NetApp (sample: 100 German IT managers and IT directors)

Figure 71: Is green IT a top-priority issue for senior management at your company?

	Yes	No	Don't know
Finance	48%	36%	16%
Production	64%	20%	16%
Commerce/transport	64%	32%	4%
Other commercial activities	36%	40%	24%
1,000 to 3,000 employees	43%	43%	14%
Over 3,000 employees	62%	22%	16%
<b>Average</b>	<b>53%</b>	<b>32%</b>	<b>15%</b>

Table 79: Is green IT a top-priority issue for senior management at your company?



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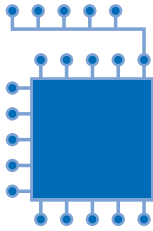
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