Federal Ministry
of Economics
and Technology

Innovation policy, information society, telecommunications

1st ePerformance Report 2007
Germany in the international benchmark

A study by TNS Infratest Forschung GmbH

www.bmwi.de

MONITORING INFORMATIONS- & KOMMUNIKATIONS- WIRTSCHAFT

tns infratest

MONITORING 07
INFORMATIONS- KOMMUNIKATIONS- & WIRTSCHAFT

Contents

Foreword by Administrative State Secretary Dr Joachim Wuermeling

The strong upturn in the German economy continues unabated. According to the latest information published by the German central bank, Germany is once again the "locomotive of growth" within Europe. Information and Communication Technologies (ICT) are key technologies in an increasingly knowledge-oriented society and act as growth accelerators for many other sectors. This is why it is so important, especially in the Information and Communication Economy sector, for Germany, as one of the world's leading economic nations, to also have competitive and efficient structures, innovative and progressive applications as well as modern infrastructures.

Internet technology is the central linking element. This is growing in importance both for business processes and in private life. At the same time, the development cycles for Internet technology are progressing at a highly dynamic rate. Political decisions and inferences relating to this sector must rely on in-depth analyses that are consistent over the long term to enable trends to both be recognised in a timely manner and correctly interpreted.

In its tenth edition, ***Monitoring the Information and Communication Economy 2007*** provides an instrument which, on the basis of a transparent presentation of the Information and Communication Economy, evaluates the key developments in this field. The ***10th Factual Report 2007*** provides a comprehensive overview of the development of the Information and Communication Economy, presents the status quo of Germany's ICT infrastructure, positions Germany in the international benchmark with respect to the key ICT applications and forecasts future developments and trends.

A comparison with Europe and other benchmark countries establishes an important yardstick for the status quo of the German Information and Communication Economy.

The ***1st ePerformance Report 2007*** summarises the most important findings of the ***10th Factual Report 2007*** and creates the necessary transparency for politicians and market participants. ***Monitoring the Information and Communication Economy*** points out where we are already on the right path and where there is still a need for action.

With its "iD2010 – Informationsgesellschaft Germany 2010" ("Information Society Germany 2010") action programme, the German government has laid down the cornerstones of its ICT policy for the present parliamentary term on the basis of the Monitoring Report. Building on this, at the first IT summit under the patronage of Federal Chancellor Angela Merkel, the business and political communities agreed on additional measures to strengthen Germany as an ICT country. A second summit meeting is scheduled for the end of 2007.

Dr Joachim Wuermeling

Administrative State Secretary at the Federal Ministry of Economics and Technology

Foreword by Head of Unit Bernd-Wolfgang Weismann

The ***10th Factual Report 2007 within the scope of the Monitoring the Information and Communication Economy*** project is the logical continuation of the survey compiled and elaborated over the past few years to provide a regular and broad synopsis of the development of the German, European and global information and communication technology markets.

Establishing widespread market transparency within the scope of this global benchmarking approach provides interested parties in the fields of politics, business, science and society with a comprehensive overview of one of the most important sectors of the German economy. It thus offers market participants and politicians a unique cohort study that enables companies and other Information Economy establishments and organisations to take speedy and appropriate action.

The findings of the 10th Report show that the efforts of the past few years are increasingly bearing fruit and that the strategic orientation taken by the German government in 2006 with its "iD2010 – Informationsgesellschaft Germany 2010" ("Information Society Germany 2010") programme and the national IT summit has proved to be the right course.

This is also the conclusion drawn by the present ***1st ePerformance Report 2007***. In 2006, Germany positioned itself above the European average benchmark for twenty out of thirty Information and Communication Economy key performance indicators. However, a shortfall can also be ascertained for eight key indicators. Growth of ICT turnover last year was below the European average, for example, and in the coming months it is planned to build up the use of e-Government services. Political industry leaders must continue in their efforts to press ahead in these areas in Germany.

Notable progress has been made above all in the "Infrastructure segment". One of the positive results is the good development in broadband penetration. Germany on the whole significantly improved its performance in this category compared to the previous year, although further efforts are necessary to enable it to quickly catch up with the European frontrunners. As a catalyst for a wide range of industry sectors, broadband Internet is a key technology that enables companies to be internationally competitive and operate cost-effectively.

New technologies such as VDSL or applications in the so-called Web 2.0 also herald important changes in the convergent information and communication markets in the years to come, which will have a significant impact on business and society.

Not only convergence, but networking and mobility as well are increasing. Supplier and user markets are also becoming more globalised. Against this background, the need as well as the demand for a continuous monitoring and positioning of Germany compared to the European and global benchmark is greater than ever.

Bernd-Wolfgang Weismann

Head of Unit at the Federal Ministry of Economics and Technology

Introduction by Dr Sabine Graumann / Dr Malthe. Wolf


In the seventh project year of ***"Monitoring the Information Economy"***, the Factual and Chart Reports have become an indispensable standard reference tool for decision-makers in the worlds of politics and business as well as in science and research, as the high and still growing number of downloads testifies. In line with the structural changes that have taken place, the Monitoring was extended in 2006 to include the Communication Economy segment. Accordingly, the project will be continued for the next three years under the title ***"Monitoring the Information and Communication Economy"***.

The authors have attempted to improve the reports from year to year, without detracting from the comparability of the results and information presented. The aims of the Monitoring have remained unchanged: to establish market transparency, evaluate the performance of the German ICT industry in the global benchmark, identify strengths, weaknesses, opportunities and threats and to disseminate the results to a broad general public.

From 2007, the Chart Report is for the first time being replaced by the ***"ePerformance Report"***. This is designed to succinctly summarise the depth of the data, information and interpretations contained in the ***Monitoring Factual Report*** on the real and expected developments in the German ICT industry. The report presents changes for the period 2005 to 2007 in so-called core or "key performance indicators" (for example: "Internet users") and measures Germany's performance against that of the European Information and Communication Economy. Further, the German ICT industry is positioned in comparison to the European market leader ("benchmark country") and the USA.

The results for the individual performance indicators are then aggregated in a so-called "ePerformanceIndex". This makes it possible to measure the development of the German Information and Communication Economy for 2005 and 2006 relative to the European performance in a single figure respectively. The assessment is carried out in the same way for the three Information and Communication Economy segments "Information Industry", Communication "Infrastructure" and "Applications".

By including forecasts for 2007, the report for the first time presents a three-year time series for key indicators and all segments of the Information and Communication Economy. It is intended to continue this extrapolation from one project year to the next. The listing of thirty core indicators was agreed by an expert workshop at the start of the new three-year project phase. For each key indicator, the ePerformance, forecasts, current trends and developments as well as weaknesses, strengths and future opportunities are succinctly outlined on one page. The close meshing of the ***ePerformance Report and the Factual Report*** means that the subjects focused on in the ePerformance Report are described in more detail in the Factual Report (http://www.tns-infratest.com/bmwi).

As a central reference tool, the ***"ePerformance Report"*** will reliably present the developments in the Information and Communication industry in the coming years. In this context, it is perhaps fortuitous that the publication of this first ***"ePerformance Report 2007 – Germany in the international benchmark"*** coincides with a new boom in the German ICT industry, as our findings relating to Germany's ePerformance in 2007 reflect.

Dr Sabine Graumann
Director Business Intelligence
TNS Infratest
Sabine.Graumann@tns-infratest.com

Dr Malthe Wolf
Project Manager Monitoring the Information and Communication Economy
TNS Infratest
Malthe.Wolf@tns-infratest.com

Management Summary: The German Information Economy in the international benchmark

Methodological changes

Ten factual reports and six trend reports have been compiled within the framework of the project "Monitoring the Information and Communication Economy 2000-2009". These reports relate the current level of development and dynamics of the German Information Economy. This year for the first time, the "ePerformance" of the German information industry for 30 selected core indicators compared to the performance of the European Information Economy is analysed for the period 2005 to 2007. Furthermore, comparisons are made to other benchmark countries, in particular to the European Economic Area and the United States. All results - for a set of thirty core indicators - are aggregated in an "ePerformanceIndex". The listing of indicators was agreed by an expert workshop at the start of the new three-year project phase.

The development of the Information and Communication Economy 2005 to 2007

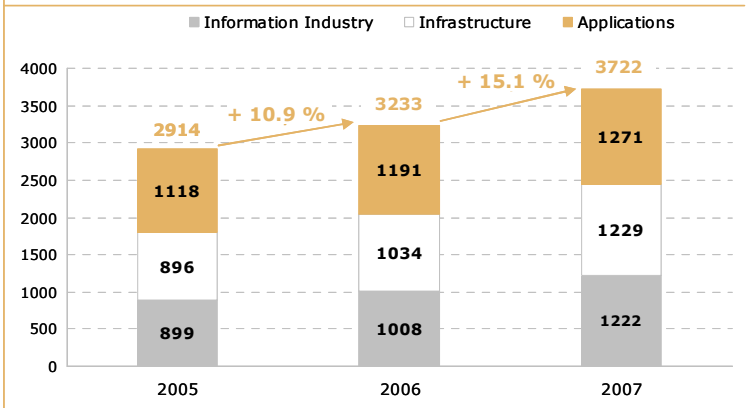
The German Information Economy improved in 2005/2006, forecasts remain positive

The ePerformanceIndex for the German Information Economy improved in 2006 by 10.9 percent or 319 points to 3,233 points. This puts the maturity of the German Information Economy clearly ahead of the European average (3,000 points). In 2007, the Information Economy will grow by 15.1 percent to 3,722 points and thus further build its leading position in the European ICT industry.

Chart I ePerformance Report 2007

Germany in the benchmark

Maturity of the German ICT industry above the European average: 2006: +11 percent – 2007: +15 percent



Base: ePerformanceIndex values ("Information Industry", "Infrastructure" and "Applications") for the years 2005 and 2006 and forecast for 2007, reference year 2006

TNS Infratest, July 2007

For 20 of 30 key performance indicators, Germany lies above the European average

The key results of the ePerformance analysis are:

For twenty of the thirty core indicators, Germany attained the European average.

➔ Germany is characterised by a particularly strong position in e-Commerce. In per capita B2B and B2C e-Commerce turnover, Germany lies far higher than the average for Western Europe. Germany will gain a visibly growing leading position in this area.

For ten other key performance indicators, Germany lies below the Western European average.

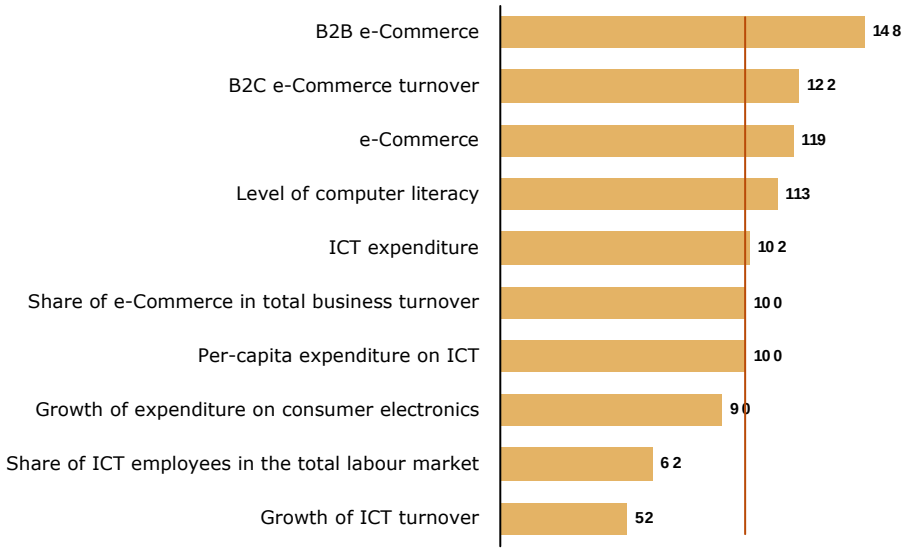
➔ Analysing the "Information Economy" segment more closely, this is valid for the "Growth of ICT turnover", "Growth of expenditure on consumer electronics" and the "Share of ICT employees in the total German labour market".

➔ The e-Performance Index is below the Western European average for the "Infrastructure" indicators "Broadband and DSL connections" as well as "Cable modem line" penetration in the population.

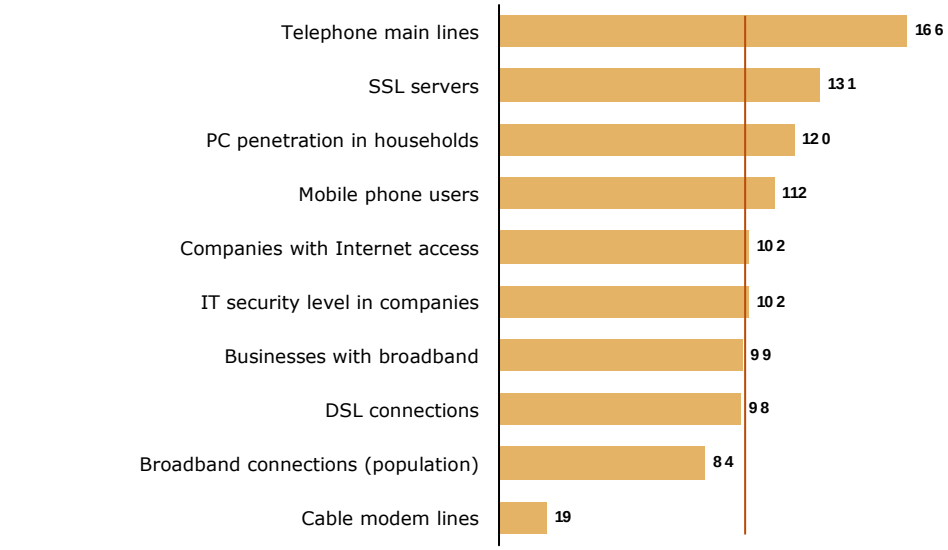
➔ In the "Applications" segment, Germany does not reach the average European performance regarding the penetration of "Online use and availability of e-Government services" and "Internet access in educational establishments".

Current Performance of the Information and Communications Industry 2006 compared to Europe – Overview

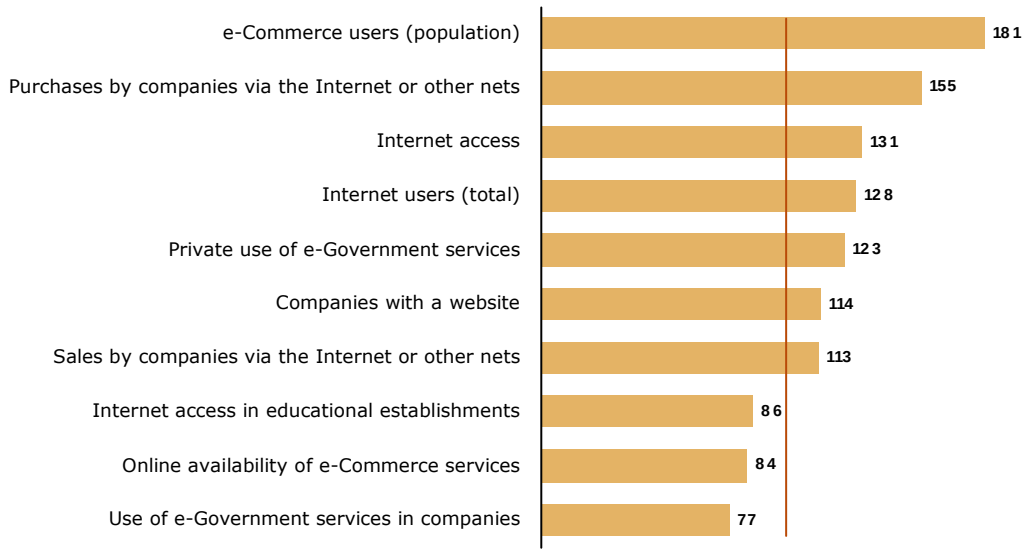
"Information Industry" segment



"Infrastructure" segment



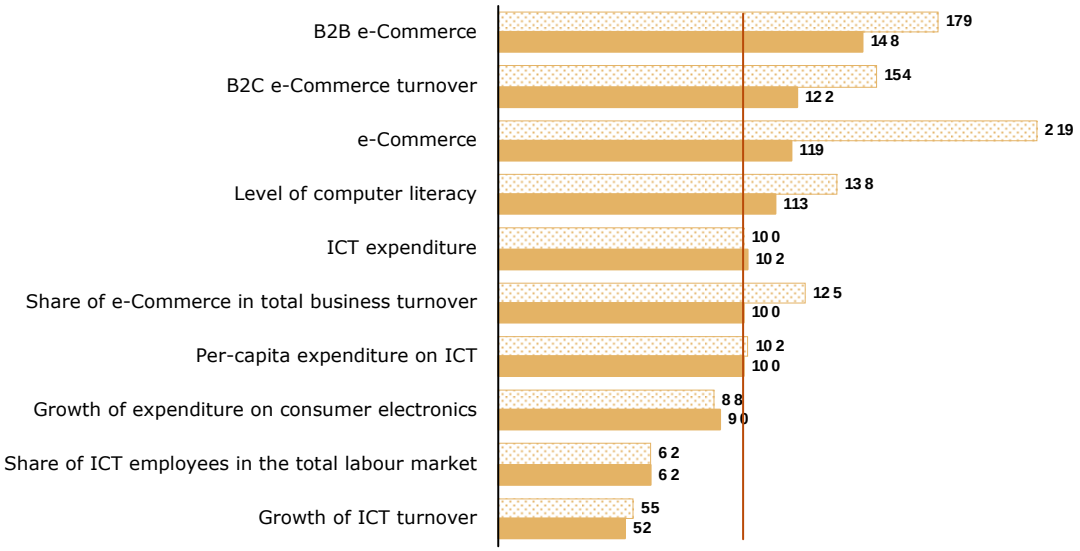
"Applications" segment



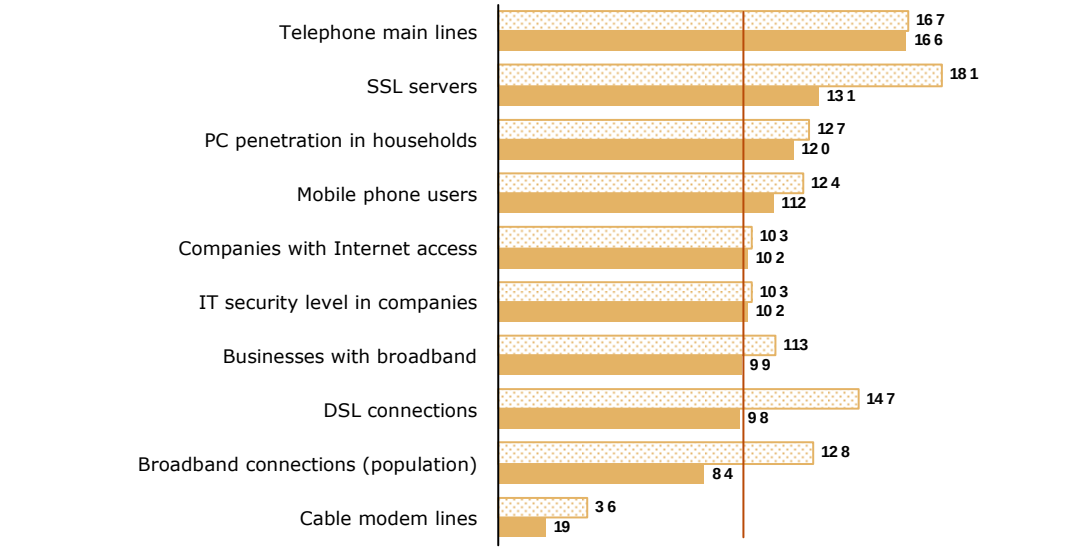
Indicator value 100 = average performance of the European ICT industry, reference year 2006

Future Performance of the Information and Communications Industry 2006 to 2007– Overview

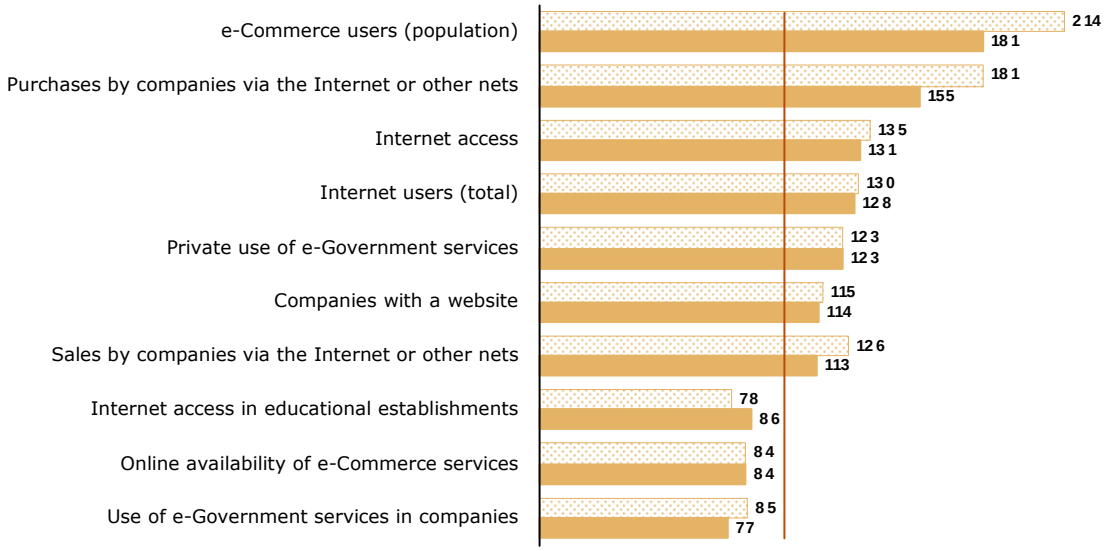
"Information Industry" segment



"Infrastructure" segment



"Applications" segment



Indicator value 100 = average performance of the European ICT industry, reference year2006

Backlog demand beyond 2007

In 2007, the German Information Economy will continue to build its leading position in the European ICT industry. Forecasts show that the core indicator values "Broadband" and "DSL line penetration in the population" will exceed the European average.

By contrast, in "Applications", Germany will continue to lie below the European average for the core indicators "Online use and availability of e-Government services", "Use of e-Government services in companies" and "Internet access in educational establishments".

A significant shortfall compared to the average performance of the European ICT industry will continue to exist for the penetration of "Cable modem lines" in the population.

In the "Information Industry" segment, Germany will in 2007 again fail to beat the European average regarding "Growth of expenditure on consumer electronics", "Growth of ICT turnover" and "Share of ICT employees in the total labour market".

In the following, past successes, future developments and necessary measures for segments where backlog demand exists are analysed in detail.

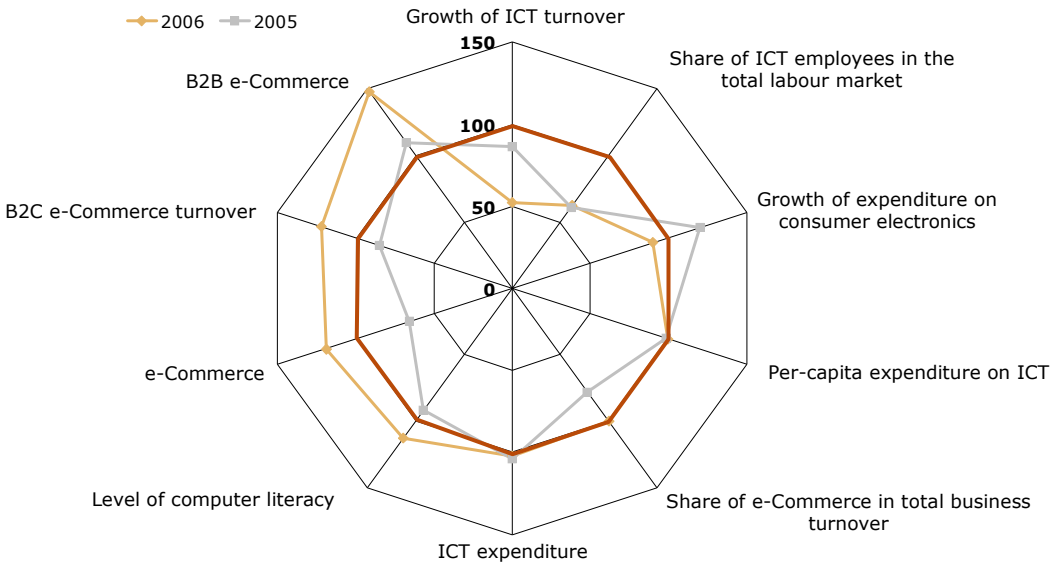
"Information Industry"

ePerformance above European average – positive future outlook

The importance of the Information Economy has increased in relation to other sectors of the economy. It has become one of the biggest industries in Germany and will continue to develop its leading position. If there is an innovative industry in Germany per se, it is still the Information Economy. ICT forms the technological basis for the information and content industry and a knowledge-based society. It influences the new multimedia and service offerings in businesses (e-Business, B2B e-Commerce), public administration (e-Government) and in private life (B2C e-Commerce). The Internet has attained significant economic importance.

The ePerformanceIndex for the German information industry has increased by 109 points to 1,008 points, compared to the previous year. This for the first time puts Germany above the European average score of a possible 1,000 points. In 2007, this value is expected to further improve by 24 percent to 1,222 points.

Strengths and weaknesses of the Germany ICT industry
2005 and 2006 compared to Europe



Indicator value 100 = average performance of the European ICT industry, reference year 2006

TNS Infratest, July 2007

Strengths of the Information Industry

Compared to the previous year, the **strengths** of the German information industry are:

- a strongly improved performance in e-Commerce (index value increases from 66 to 119 points);
- an increase in the index value from 110 to 148 points as a result of excellent performance in B2B e-Commerce;
- a significantly better positioning of Germany in B2C e-Commerce (increase in the index value from 85 to 122 points).

Additional strengths of the German information industry are:

- Germany is the third largest global ICT market;
- Germany is by far the largest market in the ICT sector in Europe;
- the importance of the ICT industry as the largest industrial sector on the domestic market with a high level of performance for productivity, growth and innovation;
- the positive economic business climate with growth in turnover volumes for 2007 and the subsequent years;
- a strong research landscape with R&D laboratories of all key German ICT manufacturers in Germany plus outstanding achievements in public ICT research;
- a presence in ICT growth markets, for example 70 percent global market share for German chip card companies;
- the special market size and opportunities of "Europe" as a world region with particular sales prospects for the German Information Economy.

Weaknesses of the Information Industry

However, these strengths are not yet fully exploited. Consequently, there exist fundamental **weaknesses** and specifics of the German Information Economy that are restraining brisk market developments. In particular, these include:

- The largest ICT market in Europe is growing only half as briskly as the European average. The index value even declined from 86 points for 2005 to 52 points of the European performance in 2006.
- New products and services or innovations do not go to market quickly enough. For example, with 102 percent, the share of ICT expenditure in the gross domestic product is only slightly above the European average. The value for this indicator has even declined by 2 percent compared to the previous year. A higher rate of investment in the German Information Economy would be desirable.
- Media competence, measured against the level of computer literacy, increased significantly in 2006 from 92 percent to 133 percent of the European performance. However, there is still an urgent need for improvement.
- The positive developments on the labour market should not mislead about the increasingly serious lack of qualified staff. This is a particular disadvantage for the larger number of existing small and medium-sized businesses in Germany. Currently, 776,000 qualified ICT employees work in the Germany ICT industry and another 650,000 qualified ICT employees in other industry sectors. Furthermore, Germany's high labour productivity compared to the rest of Europe leads to a relatively low employment level in the German ICT industry.

These weaknesses are further aggravated by:

- a decreasing turnover in telecommunications caused by the absolute decline in fixed lines as well as
- increasing outsourcing and nearshoring activities.

Opportunities in the Information Industry

As ICT offers a huge variety of application areas, there are a wide range of particular **areas of action, sub-segments and products and services** which should be further exploited.

Areas of action:

- the investment weakness of the public sector in the ICT industry should be reduced in the wake of economic revival and conditional upon this higher tax revenues;
- small and medium-sized enterprises that have successfully established themselves in market niches with high-tech productions should be strengthened;
- research and development to create marketable products should be improved.

Particular sub-segments to be further exploited:

- the consumer electronics sub-market, the potential of which has so far been insufficiently utilised. In Germany, the growth in expenditure on consumer electronics decreased from 120 points in the previous year to 90 points in 2006. This can only be partly explained by the high price fluctuations for appliances and electronic components;
- e-Commerce, which in the B2B segment still lags far behind the existing possibilities. The share of "e-Commerce in total business turnover" did improve in 2006 from 78 to 100 points. However, that only corresponds to the performance of the Western European Information Economy as a whole;
- convergence and Triple Play are currently developing at a much slower rate than expected. Barriers towards new technical possibilities or less promising new products and services still exist;
- RFID: here the German ICT industry has already reached a leading position in the so-called "Internet of Things".

Products and services to be further exploited:

- in the strategic growth area "embedded systems" (for instance in the automotive industry) and in other information economy enhancements to products of information economy users;
- increases in efficiency and advances in existing production processes (e.g. micro-electronics, process automation);
- the reorganisation of operational sequences (e.g. in "e-Business" implementation at all stages of the e-Business value chain, enterprise resource planning and supply chain management);
- individual business applications and solutions ("customisation"), for example the use of Voice over IP and the use of innovative products within the e-Health sector.

Threats in the Information Industry

The **threats** which cannot be dealt with by the Information Economy at business level include in particular:

- a susceptibility to the business cycle and specific market conditions: the particular success of the Information Economy has led to a special dependence on the economic situation in the key client industries. To this extent, all measures that can increase the domestic demand in the long term and in particular accelerate the "information economy investment cycle" make an important contribution to the development of the Information Economy;
- decline in international competitiveness: the last seven years have been characterised by a dramatic loss in international competitiveness from the viewpoint of the German Information Economy - with the exception of the Scandinavian countries. Eastern Asia as well as the USA have improved their competitiveness in comparison to Europe;

- ➔ legislation and regulation: the legal framework has increasingly become a competitive factor. For example in media, copyright and digital rights management, data security, protection from Internet and PC criminality, there is an increasing need for modernisation and regulation;
- ➔ the dependency of key ICT client sectors on the public sector: five out of the seven key client sectors are highly regulated and/or to a large extent dependent on public investments. These include the public sector, the health sector, the environmental sector as well as the chemical and pharmaceutical industry;
- ➔ the mismatch between the educational and training establishments and the demands of the information industry has to be eliminated. Legal prerequisites for recruiting the "best brains" in the ICT industry should be created worldwide.

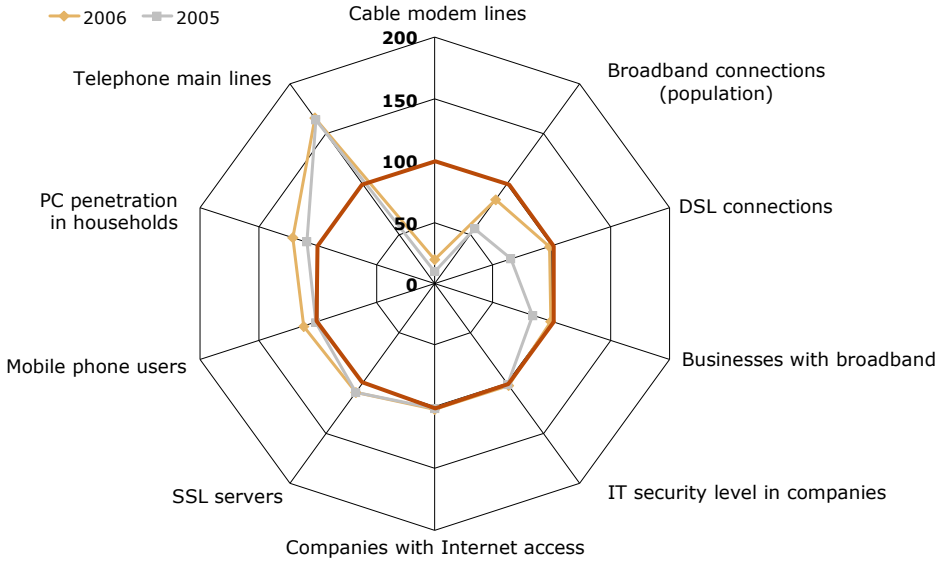
"Infrastructure"

ePerformance in "Infrastructure" has to be improved significantly

The digitalisation and convergence of information and communication technologies increase the volumes of data being transferred via the Internet. These high-volume multimedia applications are made possible through new ICT technologies and infrastructures.

In all core "Infrastructure" indicators Germany's performance improved in 2006. Overall, the ePerformanceIndex rose by 15.4 percent from 896 points to 1,034 points. This for the first time puts Germany above the Western European average in ICT infrastructure.

Strengths and weaknesses of Germany in "Infrastructure" 2005 and 2006 compared to Europe



Indicator value 100 = average performance of the European ICT industry, reference year 2006

TNS Infratest, July 2007

Strengths in "Infrastructure"

The particular German **strengths** in infrastructure are:

- ➔ the penetration of mobile phones. A supply density of 104 percent was achieved in mobile communications in 2006. This positions Germany 12 percent above the European ePerformance index;

- ➔ the telephone density, which is still an important parameter for globally assessing the level of technical development of a country. With 166 index points and 66.6 connections per 100 inhabitants, Germany has one of the highest connection densities worldwide. However, a decline in the number of fixed line connections in favour of mobile connections and alternative telecommunications possibilities (VoIP) can be expected in future;
- ➔ the SSL server penetration, with which Germany currently positions itself 31 percent above the European average. This corresponds to 29 SSL servers per 100,000 inhabitants in 2006 – but could be further improved.

Opportunities in "Infrastructure"

Additional **opportunities** exist in the following areas:

- ➔ penetration of new broadband technologies, in particular DSL, in the population. With 98 percent, Germany has caught up with the Western European performance almost to the last point;
- ➔ further improvement in the area of broadband penetration in businesses, after Germany almost drew equal with the European performance in this segment, too, in 2006;
- ➔ companies with Internet access. Here, with a penetration of 95 percent, Germany only ranks in the upper European mid-field, but has nevertheless almost reached saturation point;
- ➔ the number of PCs in households, which increased by 10 percent in 2006 and now relates to 77 percent of all households. This translates into a core indicator value of 120 and together with Luxembourg the fifth position in a European ranking;
- ➔ the further lowering of costs for broadband and mobile telephony, which will generate high growth rates for mobile data services.

Weaknesses in "Infrastructure"

The most important infrastructure **deficits** include:

- ➔ the below-average penetration of broadband Internet access in the population. Although the indicator did improve from 55 percent to 84 percent of the European performance, this is only 15.5 percent of the population compared to 30 percent for the European leader Denmark;
- ➔ an almost non-existent penetration of cable modem lines and broadband connections other than DSL in the population. For cable modems, for instance, only 19 percent of the European performance is attained, while Switzerland as the leader in Europe reaches 329 points. A stronger position for cable modem would be desirable in order to intensify the competition for broadband connections and trigger competitive impulses in the Information Economy;
- ➔ the PC density in schools: in Germany, 11 pupils have to share one computer.

Threats in "Infrastructure"

The more the dependency on ICT infrastructures increases, the more important prevention, reaction and sustainability in the case of security problems become. How secure or how risky is the German ICT security infrastructure?

94 percent of German businesses made provisions for ICT security in 2006. Germany, thus, lies within the average of the EU25 countries and ranks sixth together with Belgium and the Czech Republic. The majority of German businesses react to security threats to a satisfactory, albeit improvable extent. There continues to be a lack in security awareness: for instance only every fourth organisation documents its security policy measures (or planned security policy measures). Furthermore, the security awareness of the population should continue to be promoted.

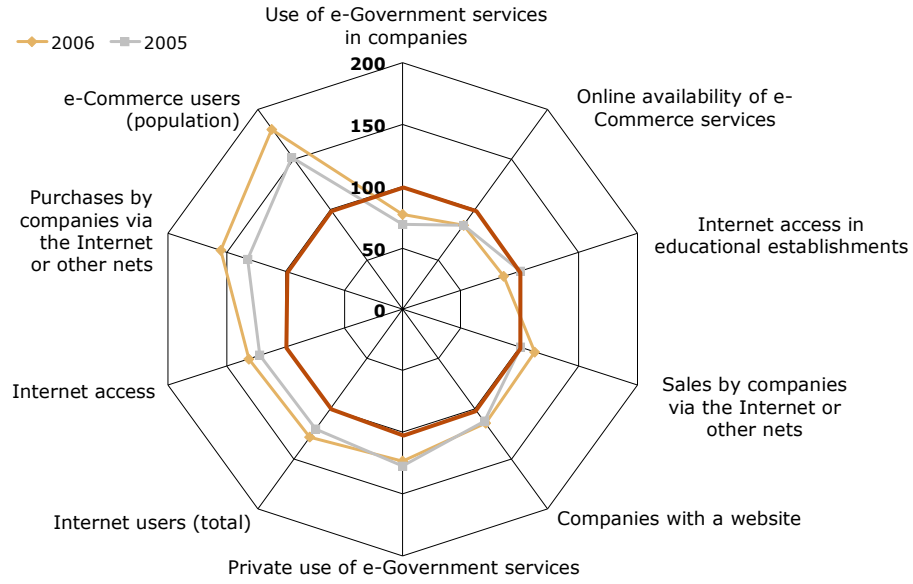
"Applications"

"Applications" ePerformance improves slightly

"Applications" refers to the actual extent to which the Internet is used and the applications for which it is used. This covers areas such as Internet use (private, in businesses, in administration), areas of application (private, e-Business, e-Government) as well as barriers or reasons to decline technologies.

The ePerformanceIndex for "Applications" has improved slightly, by 6.5 percent to 1,191 points. The value for the ePerformance of the European ICT industry was already exceeded in the previous year.

Strengths and weaknesses of Germany in "Applications" 2005 and 2006 compared to Europe



Indicator value 100 = average performance of the European ICT industry, reference year 2006

TNS Infratest, July 2007

Strengths in "Applications"

The particular German **strengths** for applications in the private sector, in businesses and in public administration are to be found:

- ➔ in private use: 38 percent of the German population shops online. With this, Germany positions itself in third place behind Norway and Sweden with a peak value of 181 percent of the European performance. In 2005, this value was only 152 percent;
- ➔ in e-Procurement in businesses: 48 percent of German businesses make use of e-Procurement. In 2006, the indicator value improved from 132 percent in the previous year to 155 percent of the European performance;
- ➔ in the use of e-Government services by the population, despite the fact that the indicator value in 2006 slipped from 127 to 123 percent of the European performance.

Opportunities in "Applications"

Particular **opportunities** for the German ICT industry arise in the number of individuals and businesses with websites, as well as in e-Business.

Internet presence:

- improve Internet penetration by individuals:
  - measured in percent of the population: currently, 69 percent of the population (14 to 74 years old) use the Internet. The indicator value has thus risen from 120 to 128 percent of the European performance;
  - measured in percent of households: currently, 67 percent of households use the Internet. Here, the indicator value has increased from 122 to 131 percent of the European performance.
- 73 percent of German businesses with more than 10 employees have their own website. This puts the German economy 14 percent above the average European value.

E-Business in particular with the following potentials (provided that the existing qualification bottlenecks and implementation barriers are reduced):

- higher development stages, especially in SMEs;
- interoperability and standardisation as well as
- development and expansion of networks.

Additional opportunities are to be seen

- in offering contents and
- in developing mobile data services.

Weaknesses in "Applications"

The existing **weaknesses** include in particular:

- the use of e-Government services in companies: here the indicator value is 77 percent of the European performance. This means an improvement of 8 percent;
- online availability of e-Government services: this is stagnating at an indicator value of 84 percent of the European performance;
- Internet access in educational establishments: here, the indicator value has decreased from 100 to 86 percent of the European performance. This means that only 12 percent of the population accesses the Internet in educational institutions;
- digital divides, which despite being on the decline are still apparent in terms of gender, age, education and income;
- too little confidence in the security of the Internet, as well as
- wide-scale incompatibility in e-Government systems due to a lacking cooperation and coordination in cross-administrative exchange.

Threats in "Applications"

In the long term, other **threats** for the ICT industry cannot be excluded:

- e.g. the development of a "sub-culture" refusing to use technologies;
- terrorist attacks on the World Wide Web.

Germany's Positioning

Germany's positioning

"Monitoring the Information and Communication Economy" monitors some 70 key performance indicators in time series, out of which experts selected thirty core indicators to be aggregated for the ePerformance analysis. The following "Overview of Germany's positioning" considers the positioning for 46 indicators. It summarises and evaluates the results of the extensive secondary research. Germany's positioning is reflected in the international benchmark averages.

Germany's positioning

Top scores worldwide	1st rank in Europe	Among European top positioning	Improved position
Penetration rates • Internet usage (#9) • Online buyers (# 3) • Telephone main lines (#3) **Absolute values** • Number of broadband connections (# 5) • Internet hosts (# 10) • Internet usage (# 3) • Internet users by language (# 5) • Internet utilisation time (# 5) • Costs for DSL connections (# 6) • Number of PCs (# 4) • Market for ICT worldwide (# 3)	**Penetration rates** • e-Business in companies **Absolute values** • ICT turnover • IT turnover • TC turnover • B2B turnover • B2B market places • B2C turnover • Number of DSL connections • Number of broadband connections • Internet hosts • Costs for broadband • RFID market	**Penetration rates** • eBusiness Readiness (# 4) • Internet access in companies (# 7) • e-Procurement in companies (# 4) • Companies with own website (# 7) • Companies with Internet (#7) • Companies with Extranet (# 4) • PC penetration (# 5) • Mobile phone lines (# 8) • SSL server (# 2) **Absolute values** • Number of employees in ICT (# 2)	**Penetration rates** • Share of ICT in GDP (# 14 worldwide) • Mobile phone lines (# 8 EU) • Internet hosts (# 1 EU) • Companies with broadband connection (# 9 EU) • Broadband cable (#15 worldwide) **Absolute values** • Number of broadband connections (# 1 EU) • B2C turnover (# 1 EU) • Share of ICT investments in total investments (# 15 worldwide)

Summary

Fields for political action

The analysis results in an update of last year's ten-point programme supporting the future development of the Information Economy. Key action areas are:

"Information Industry"

1. Convergence, mobility and networking: promoting applications across industries and sectors;
2. R&D: encouraging further ICT investments;
3. Promoting IT and Internet security;
4. Improving the existing "mismatch" between qualifications on offer and those requested, in close cooperation with educational institutions and the Information Economy, in order to counter the shortfall of qualified personnel;
5. Eliminating communication and cooperation problems between suppliers and users.

"Infrastructure"

6. Developing high-speed broadband networks in order to attain the target mark of iD2010 in due time;
7. Optimising media and telecommunications policy, modernise legal framework.

"Applications"

8. Modernisation of the public sector with special consideration of its role as customer and partner of the Information Economy;
9. Stronger focus on the demand side: easy access to the Internet, improvement of Internet penetration in the population and in small businesses, reduction of the digital divides, barrier-free accessibility;
10. Reaching higher levels of e-Business and their further dissemination among SMEs, improving interoperability and standardisation in business processes.

Information and Communication Economy: Expert statement "Information Industry"

The German economy has seen a more positive development over the past few months than was widely forecast. The Information and Communication Economy made an important contribution to this upturn. New developments in Information and Communication Technologies (ICT) will in future not only bring about economic, but also social changes. Germany remains the third largest global ICT market – after the USA and Japan – and the largest in Europe. In Germany, and in Europe as a whole, the IT market is the engine of growth for this development. Thus, for example, expenditure for IT services, in particular IT outsourcing, is growing. The telecommunications market in the majority of European countries is saturated. As a result of deregulation, new EU directives and increasing pressure from discount providers, both cost pressure and competitive pressure are rising.

A change can also be seen, however, in customer requirements and patterns of use. The challenge now is for ICT providers to seize this opportunity. New hopefuls are above all developments that can be subsumed under the term "convergence" and are set to re-organise the market. The multi-play offerings (especially Triple Play and Quadruple Play) associated with these, are only just establishing themselves on the market. Cable network and mobile phone operators are offering fixed-line network and broadband connections and Internet and fixed-line providers are branching out into IP TV. This is creating totally new competitive situations.

Multi-play is underscoring the current trend whereby the computer is increasingly becoming a central factor of domestic life and a major entertainment medium. Within the context of the "digital home", the computer, as well as the (networked) television, on which PC and Internet applications can be used, will become a comprehensive information, communication and entertainment medium. It is possible to listen to music, watch films and look at photos as well as shop via the Internet and write emails.

Mobile terminals will also revolutionise the ICT market. Mobile Internet, mobile TV and "allrounders" – such as the new iPhone – present customers as well as providers with new challenges. Web 2.0 as a new phase of the Internet (e.g. Kazaa, Skype, YouTube, MySpace, Blogs, Podcasts) will also introduce new trends with an increased demand especially in the field of online content.

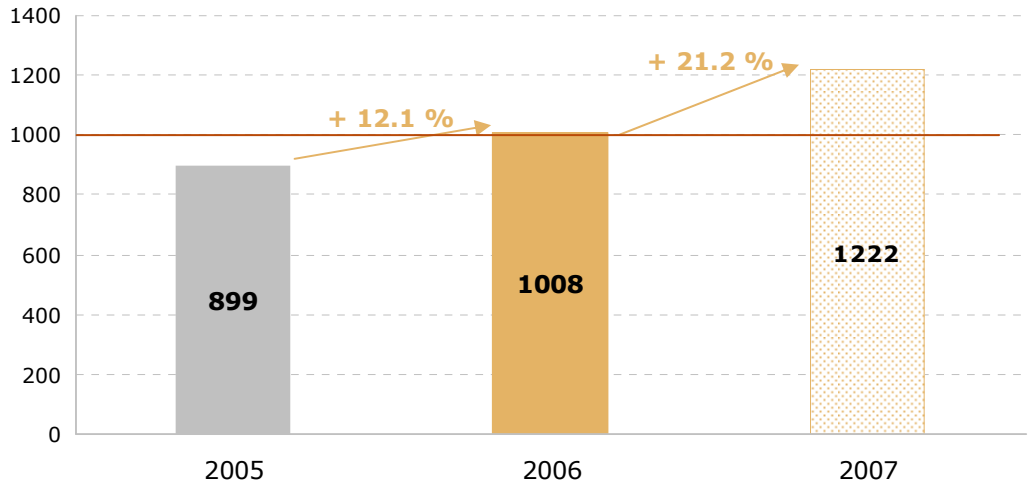
The dynamic developments in the ICT market have a positive impact on the labour market: the number of employees has risen slightly, especially in the IT services, software and Internet segments. However, one problem is that there are currently not enough qualified employees to meet the increased demand. To ensure the continued positive development of the ICT market, the training and recruitment of skilled IT staff must therefore be a key focus.

Robert A. Wieland

Managing Director, TNS Infratest InCom

Information and Communication Economy
"Information Industry" ePerformanceIndex 2006

"Information Economy": with +12.1 percent above the European average – but not sufficient ICT investment



Base: core indicator values 2005 and 2006, forecast for 2007, reference year 2006

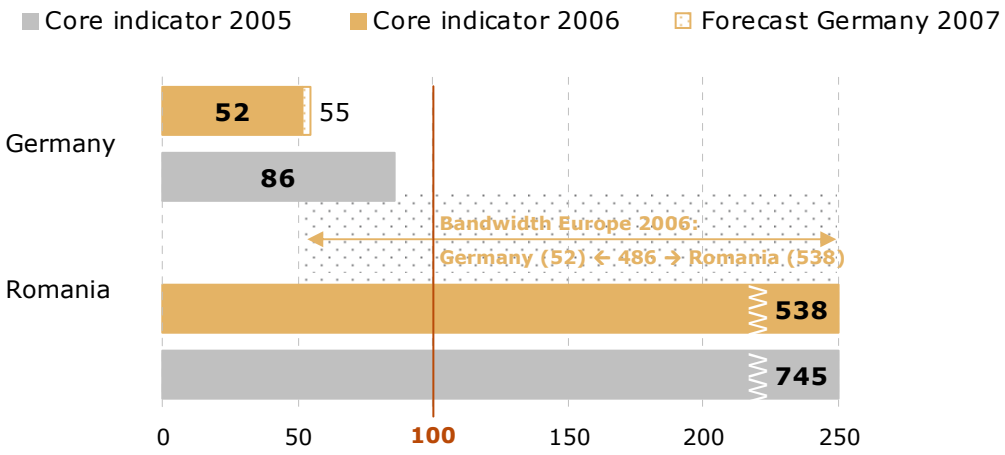
TNS Infratest, July 2007

"Information Industry" ePerformanceIndex:

- The ePerformanceIndex for the "Information Industry" segment has increased by 109 points to 1,008 points. This is 12.1 percent higher than in 2005. This places the German Information and Communication Economy above the European average score of a possible 1,000 points.
- In comparison with the European development, heterogeneous trends can be seen with respect to the individual indicators. One group of four key indicators showed a positive trend compared to the previous year and at the same time lies above the European average. These are "e-Commerce turnover per inhabitant", "B2B e-Commerce" and "B2C e-Commerce" as well as the "Level of computer literacy".
- A second group of key indicators also showed a positive development, but fell short of the European average. These were the "Share of e-commerce in total business turnover" as well as "Per capita expenditure for ICT".
- The "Share of ICT expenditure in the GDP" shows a slight downward trend; however, the value still lies above the Western European average.
- The "Share of ICT employees in the total labour market" (narrowly defined) has increased slightly, but nevertheless remains below the European average.
- "Growth of ICT turnover" declined significantly by 34 points. This indicator value now lies 48 percent below the European average. The need for Germany to increase its rate of ICT investment is thus clearly underscored and confirmed by Monitoring results.
- According to forecasts, the ePerformanceIndex is set to improve by 21.2 percent assuming that the strengths are appropriately exploited. Thus ICT acts as a growth accelerator for many industries and industry segments. As a cross-sectoral technology, ICT is the driving force for an efficient business and scientific environment. Particular opportunities arise through developments in the field of convergence and Triple Play, stepping up ICT investments, the further development of e-Commerce and more intensified exploitation of the German SME structure.

"Information Industry" ePerformance: Key indicator – Growth of ICT turnover

The largest ICT market in Europe is only growing half as briskly as the European average



Base: ICT turnover
Indicator value 100 = average Europe, reference year 2006

TNS Infratest, July 2007

ePerformance:

- With a turnover of 134 billion euros, Germany is the third-largest global market and by far the largest in Europe in the ICT sector in 2006 (not taking into consideration sales in the field of consumer electronics). However, the key ePerformance indicator value is 48 percent below the stated European average.
- In 2005, "Growth of ICT turnover" in Germany had scored 86 points. This means that 2006 recorded a significant decline of 34 points.
- This can partly be explained by the high backlog demand of the Eastern European countries in the ICT sector. Romania, for example, achieves growth of 438 percent above the European average for this key indicator value. However, this development is happening from a lower absolute basis. Much the same applies to countries like Poland, Latvia, Lithuania, the Czech Republic and Slovakia. This also explains the high bandwidth of 486 points.
- The USA lies 107 percent above the European average in 2006.
- Due to their high level of development, the leading ICT nations in Europe have predictably lower growth rates than the up-and-coming Eastern European countries. Italy, Switzerland, Belgium, Luxembourg, Denmark and France, for example, show growth rates of between 1.9 and 2.3 percent and thus even lie significantly below the Western European average.

Trends and challenges:

- The German ICT industry will minimally improve its position in 2007.
- The engine of growth is the market for information technology. The market for telecommunications, on the other hand, is the only market in Europe to show an absolute decline in turnover due to the stagnation or downturn in the fixed-line market and falling mobile telephony prices (discounters). The market drivers of ICT are the good general economic situation and increasing expenditure by consumers and businesses.
- New growth potential can be developed through convergence processes between the IT and TC sub-markets. These developments will be accompanied by a fundamental change in media usage and have an impact on the business and earnings structure of existing network operators, media companies, the advertising industry and, not least, content providers.
- The German ICT industry faces the challenges of a serious skills shortage, not enough investment in ICT infrastructures, a lacking focus in the promotion of ICT research, an ongoing increase of outsourcing and nearshoring, severe price fluctuations for appliances and electronic components and too slow dissemination of technical progress.

"Information Industry" ePerformance: Key indicator – ICT expenditure as a percentage of GDP

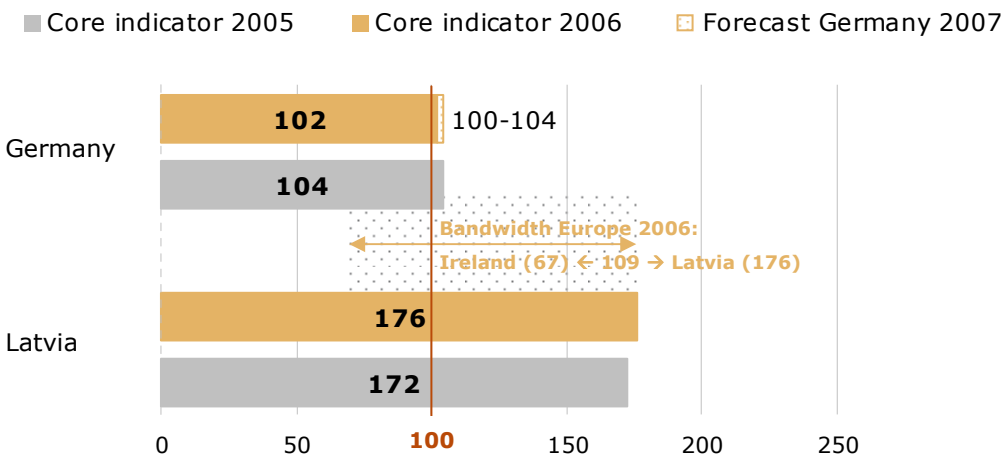
ePerformance:

- For the key ePerformance indicator "ICT expenditure as a percentage of the gross domestic product (GDP)", the German ICT industry attains a value of 102 points and is thus 2 percent above the Western European average. The German performance has declined slightly compared to the previous year by 2 percent. Germany's ICT expenditure contributes 5.76 percent to the gross domestic product.
- The country with the highest share of ICT expenditure in the GDP in Europe is Latvia with a value of 176 points. This represents a 9.89 percent share of the GDP. This puts Latvia 74 points ahead of Germany.
- With a key indicator value of 96 points, the USA falls just below the Western European average and has an ICT share of 5.4 percent of the GDP.
- ICT expenditure as a percentage of GDP is growing strongly in the Eastern European countries due to the backlog demand in these countries, whereas the share in the more "saturated" ICT economies is significantly lower.
- Leading countries in terms of ICT expenditure as a percentage of GDP are Latvia, Estonia, Bulgaria and Romania with values of around 9 percent.
- ICT expenditure as a percentage of GDP is significantly below the Western European average in Norway and Ireland.

Trends and developments:

- The German indicator value will level off at between 100 and 104 points in 2007 depending on the general economic development.
- Given the potential that exists in Germany and the importance of cross-sectoral ICT technology as an accelerator for general economic growth, as well as the possibilities for increasing the efficiency of science, administration and the health system through ICT, higher investments would be possible. Respective support programmes such as the government's High-Tech Strategy – a first-time national strategy across all government departments aimed at putting Germany back at the top of the key markets of the future – illustrate a new departure on the part of the German government in terms of innovation policy. 15 billion euros has been earmarked up to 2009 for lead technologies and inter-technology cross-sectoral projects.
- Under these sectoral circumstances, Information and Communication Technology expenditure as a percentage of the gross domestic product is likely to double in Germany over the course of the next ten years (TNS Infratest). By 2015, ICT expenditure as a percentage of GDP will be at least 12 percent.

The ICT expenditure of the German economy is in line with the European average. A higher level of investment would be desirable.

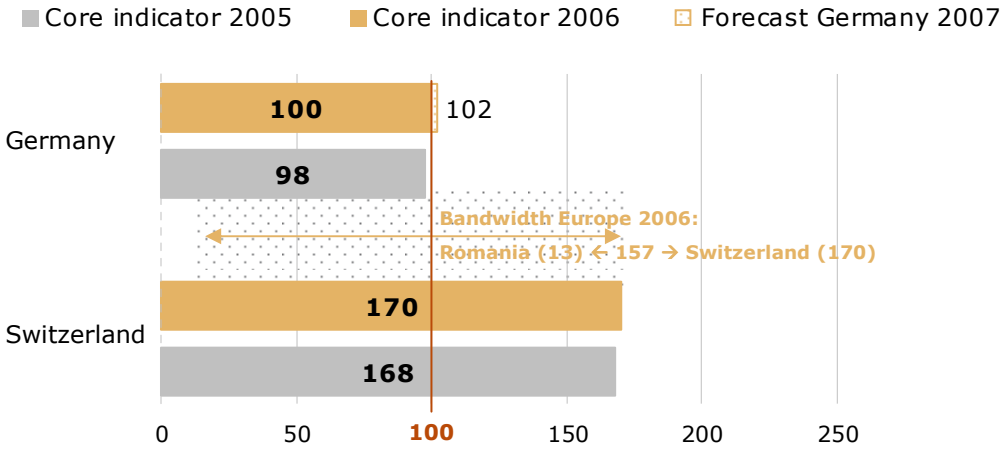


Base: share in the GDP
Indicator value 100 = average Western Europe, reference year 2006

TNS Infratest, July 2007

"Information Industry" ePerformance: Key indicator – Per-capita expenditure on ICT

The German per capita expenditure on ICT is in accordance with the Western European average.



Base: per capita expenditure
Indicator value 100 = average Western Europe, reference year 2006

TNS Infratest, July 2007

ePerformance:

- At 1,620 euros, the "Per-capita expenditure on ICT" in Germany corresponds almost exactly to the Western European average of 1,626 euros.
- This puts Germany 70 points below the frontrunner Switzerland, which has 70 percent higher per-capita expenditure than the Western European average. That is 2,763 euros.
- Japan lies 138 points and the USA 19 percent above the Western European average.
- In Europe, Sweden (2,473 euros), Denmark (2,464 euros) and Norway (2,260 euros) follow Switzerland at the top of the table. The UK (2,059 euros) and the Netherlands (2,056 euros) occupy ranks 6 and 7.
- Due to their low per-capita income, the Eastern European countries are the stragglers. Hence at the bottom of the table, Romania only attains 13 points of the Western European average. The best-performing Eastern European country is Slovenia with 825 euros per-capita expenditure and 51 percent of the Western European average.

Trends and developments:

- In 2007, Germany will increase its indicator value to 102 points and thus lie 2 percent above the Western European average. As a result of the general economic trend, the European Union will also improve slightly compared to other world regions.
- The gap between the German ICT industry and the leading countries will remain more or less constant in 2007. A significant improvement of this indicator value cannot be expected in the medium term until the government's development policy and High-Tech Strategy translates into a higher investment ratio and the infrastructure and legal conditions are aligned to the new convergent markets through "iD2010".
- The comparatively low ICT investments also reflect Germany's weak growth over the past few years.

"Information Industry" ePerformance: Key indicator – Growth of expenditure on consumer electronics

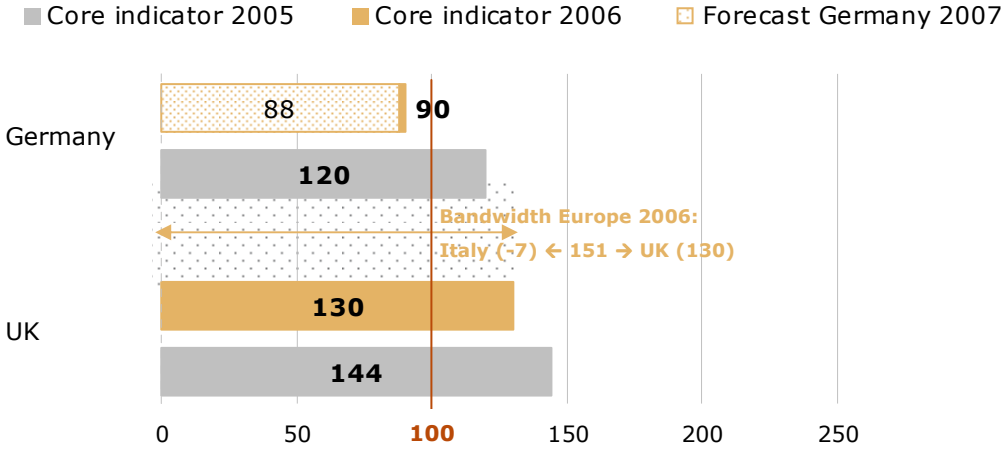
ePerformance:

- Expenditure on consumer electronics in Germany is 25 percent lower than the European average. In 2006, Germany attains 90 percent of the Western European average. This can be partly explained by the high price fluctuations for appliances and electronic devices.
- Expenditure on consumer electronics in Germany amounts to 13 billion euros in 2006. This corresponds to a growth of 8.2 percent.
- The leader in Western Europe is the UK with a performance of 30 points, ahead of France with a performance of 19 percent above the Western European average.
- Italy is the only country listed to show a negative growth of -0.6 percent, thus attaining a key ePerformance indicator of -7 points.

Trends and developments:

- Germany's performance will continue to decline slightly in 2007 and can be expected to reach only 88 percent of the average Western European performance.
- New market development possibilities arise in connection with media PCs, digital video recorders and game consoles with Internet connections, as well as multimedia and broadband applications such as IPTV (triple-play), video-on-demand and music-on-demand.
- Germany's position in Europe can be strengthened by improving the acceptance of new technologies, products and services, accelerating the diffusion of technical progress into new products and by reforming the media law.

Germany declines by 10 percent in consumer electronics.

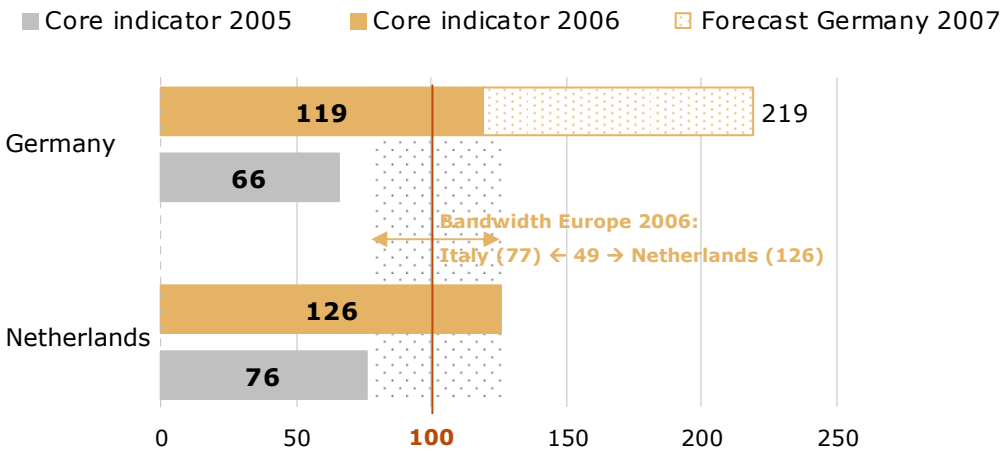


Base: growth in expenditure on consumer electronics
Indicator value 100 = average Western Europe, reference year 2006

TNS Infratest, July 2007

"Information Industry" ePerformance: Key indicator – e-Commerce turnover per inhabitant

Germany is strong in e-Commerce (turnover per inhabitant).



Base: turnover per inhabitant
Indicator value 100 = average Western Europe, reference year 2006

TNS Infratest, July 2007

ePerformance:

- The German ICT industry has increased its e-Commerce turnover (B2B and B2C) per inhabitant by more than 80 percent compared to the previous year. This translates into a per-capita turnover that lies 19 percent above the Western European average. In 2006, expenditure per inhabitant is 12,759 euros. Total e-Commerce turnover amounts to 438 billion euros. This puts Germany in seventh place in the international ranking.
- Germany lies only 7 points behind the European frontrunner, the Netherlands. The latter has improved its indicator value by more than 60 percent to 126 points and with 13,436 euros per inhabitant comes sixth in the international ranking after South Korea (14,702 euros).
- The USA lies 73 percent above the Western European average with an indicator value of 173 points (18,557 euros). This ranks the USA fourth after Australia (38,721 euros), Japan (32,822 euros) and Taiwan (30,190 euros).
- The leading countries in Europe after the Netherlands and Germany are the UK (12,000 euros) and France (10,794 euros).
- Italy is the straggler with 77 percent of the Western European average and a turnover of 7,953 euros per inhabitant.

Trends and developments:

- Germany can expect a growth of 84 percent in 2007. An indicator value of 219 points will be attained. This is significantly higher than double the Western European per-capita turnover. For 2010, an e-Commerce turnover in Germany of 781 billion euros is anticipated.
- Following an 84 percent turnover increase in global online trading in 2006 and a generated turnover of 17.9 billion euros, a rise of 93 percent to a turnover of a good 34 billion euros is expected in 2007.
- The driving forces behind this development are the growing number of Internet users, the ever faster and more convenient Internet connections, as well as mobile access possibilities via UMTS and WLAN.
- Added to these are high growth rates in mobile commerce and so-called online content such as music, films, images, texts and games. This is being driven above all by the increasing coverage of broadband connections and the accompanying convergence potentials (for instance to the media sector).
- Germans are still worried about security. Retailers, operators, payment system providers and the government are urged to act accordingly. In a TNS Infratest survey, for example, only 42 percent of users felt that shopping on the Net was secure (2006).

"Information Industry" ePerformance: Key indicator – B2B e-Commerce: turnover per inhabitant

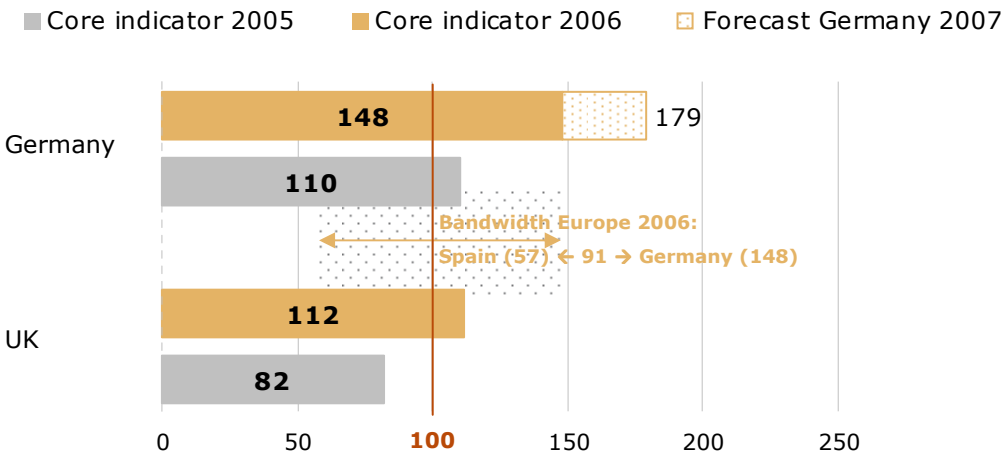
ePerformance:

- According to the key ePerformance indicator "B2B e-Commerce turnover per inhabitant", we can recognize a clear and visibly growing leading position of the German ICT industry. With an indicator value of 148 points, Germany lies 48 percent above the Western European average. This is an improvement of over 30 percent compared to the previous year. Total turnover amounts to 392 billion euros. Germany accounts for 31 percent of the Western European e-Commerce turnover.
- The UK follows Germany with a turnover of 217.7 billion euros and a 12 percent higher turnover than the Western European average.
- With 92 points, France is 8 percent below the Western European average (turnover: 183.9 billion euros).

Trends and developments:

- At 12.8 percent, the average annual growth rates in Germany for B2B turnover up to the year 2010 will not be as strong as in the past few years. Nevertheless, the key indicator value will grow by 62 percent to 241 points by 2010. This will translate into a total turnover of 636 billion euros. For 2007, a key indicator of 179 points can be predicted.
- In Germany, 89 percent of the e-Commerce turnover is accounted for by transactions between companies (B2B). Business with customers (B2C) attains a share of 11 percent. By 2010, this ratio will shift in Germany to 81 to 19 percent.
- Germany is by far the biggest B2B market in Europe and will maintain this position up to 2010.
- By 2008, with a market share of 37 percent, Western Europe will lead ahead of the USA with 29 percent as the biggest e-Commerce market in the B2B segment.
- The driving forces behind this development are increasing broadband penetration, greater participation of small businesses in e-Commerce activities, growing corporate networking, increasing participation of German companies in global procurement and sales markets via integrated processes and standards, more intensified competition among providers, higher acceptance for new contents and convergence products, greater media competence of employees, as well as more governmental support for IT and Internet security.

Germany's above-average successes in e-Commerce are based on an extraordinary performance in B2B.

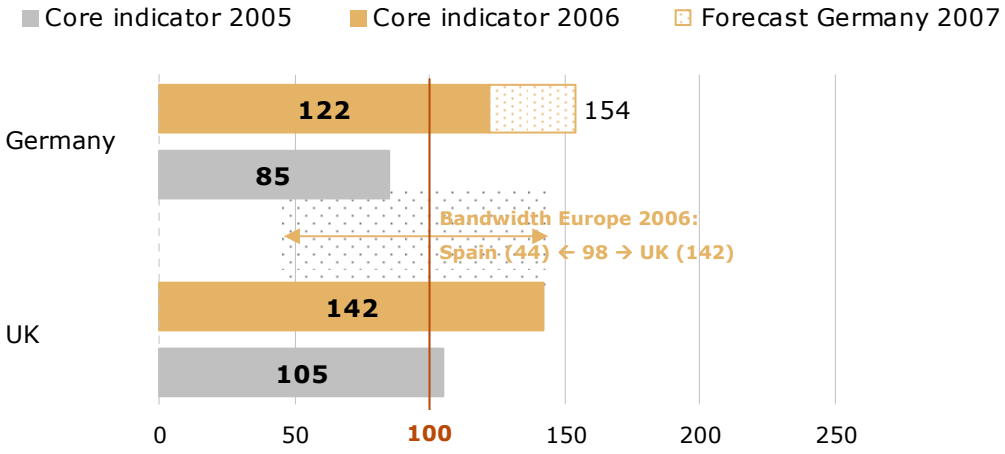


Base: turnover per inhabitant
Indicator value 100 = average Western Europe, reference year 2006

TNS Infratest, July 2007

"Information Industry" ePerformance: Key indicator – B2C e-Commerce: turnover per inhabitant

The German ICT industry shows great improvement in B2C e-Commerce, too.



Base: per capita turnover per inhabitant for 10 articles
Indicator value 100 = average Western Europe, reference year 2006

TNS Infratest, July 2007

ePerformance:

- According to the "B2C e-Commerce per inhabitant" indicator, the German ICT industry lies 22 percent above the Western European average. This represents an increase of over 40 percent compared to the previous year, a per-capita turnover of 558 euros and position 2 in Western Europe. In 2005, Germany had ranked well below the Western European average.
- The UK leads with 652 euros per inhabitant. That is 42 percent above the Western European average.
- Spain attains a per-capita turnover of 200 euros. That is 44 percent of the Western European average.

Trends and developments:

- By 2010, Germany could attain an indicator value of 384 points, with a corresponding total turnover of 145 billion euros. With this, Germany generates 25 percent of the total Western European B2C volume. That is almost four times the Western European turnover. For 2007, a turnover of 57.5 billion euros can be predicted, 698 euros per inhabitant and a key ePerformance indicator value of 154 points.
- In Germany, the share of B2C e-Commerce in total e-Commerce turnover of currently one tenth will increase to almost one fifth by 2010. The driving forces are the increasing penetration of broadband mobile (Internet) data connections including the corresponding hardware, as well as the development and expansion of a mobile communications infrastructure.
- The Internet is more important for trade than simply looking at the generated turnover would suggest. The Internet has in the meantime advanced to a central information medium where many traditional retail purchases are prepared. However, security continues to be an issue and according to the latest surveys, many Germans still prefer to pay the conventional way rather than online.
- In 2006, a turnover of 300 million euros was generated through sales of music via mobile phones. That is 15 percent of the total German music market. This turnover will grow to 506 million euros by 2010.
- One particular driving force behind this development is the market for digital music, which will reach 60 million euros in 2007 (48 million euros in 2006).
- The announced abolition of the Digital Rights Management (DRM) systems, i.e. the waiver of any form of copy protection, will eliminate consumers' reservations. High growth rates and significant positive spillover effects on neighbouring markets can be expected, for example for videos and games.

"Information Industry" ePerformance: Key indicator – Share of e-Commerce in total business turnover

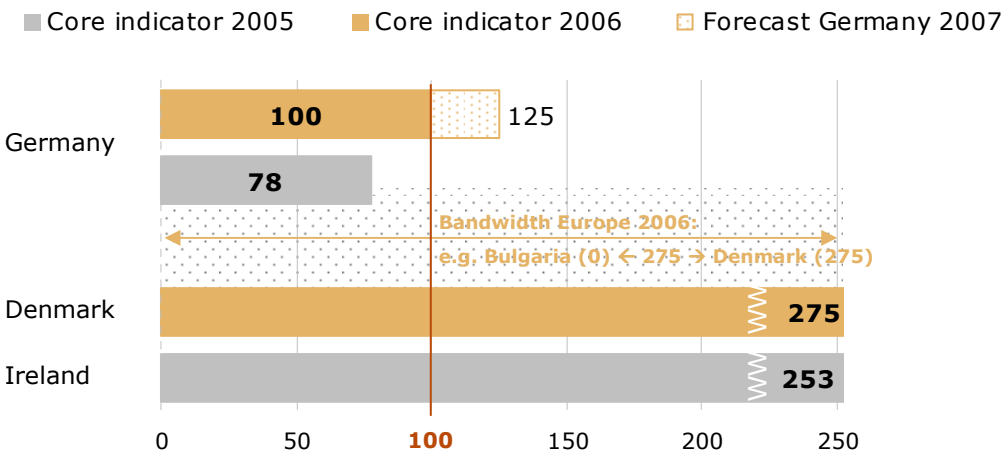
ePerformance:

- With an indicator value of 100 points for the "Share of e-Commerce in total business turnover", Germany corresponds exactly to the European average. This represents a significant increase of 28 percent compared to the previous year.
- On the other hand, only 4 percent of total business turnover is currently generated via the Internet. In 2004 and 2005, the shares of turnover both in Germany and in Europe even remained constant at 3 percent respectively.
- Denmark is the only European country to have exceeded the level of a share of turnover of 10 percent, showing a share of e-Commerce of 11 percent. This is 125 percent higher than the European average.
- Ireland follows with a share of turnover of 9 percent ahead of Sweden, the UK and Norway, with a share of 6 percent of total turnover respectively.
- Like Germany, France and Spain lie exactly in the European average.
- In Eastern European countries such as Bulgaria, Romania and Slovakia, e-Commerce has practically no relevance for businesses.

Trends and developments:

- In 2007, Germany will attain an indicator value of 125 points and thus lie 25 percent above the European average. The share of turnover will grow to 5 percent.
- The major driving forces are the growth in broadband connections, increasing business networking, for example through Extranets, better interoperability and more standardization. This development is also enhanced by the increased integration of small and medium-sized enterprises in electronic trading, the rising of awareness for new target groups by drawing on local advice, improved qualifications among SMEs, encouraging cooperations and networks among SMEs, as well as the creation of supporting regulatory systems.
- Obstacles to implementation are financial cost, reluctance to restructure business processes, questions of technical integration and the lacking technical know-how.

Germany as strong or weak as Europe: inadequate implementation of e-Commerce in companies.

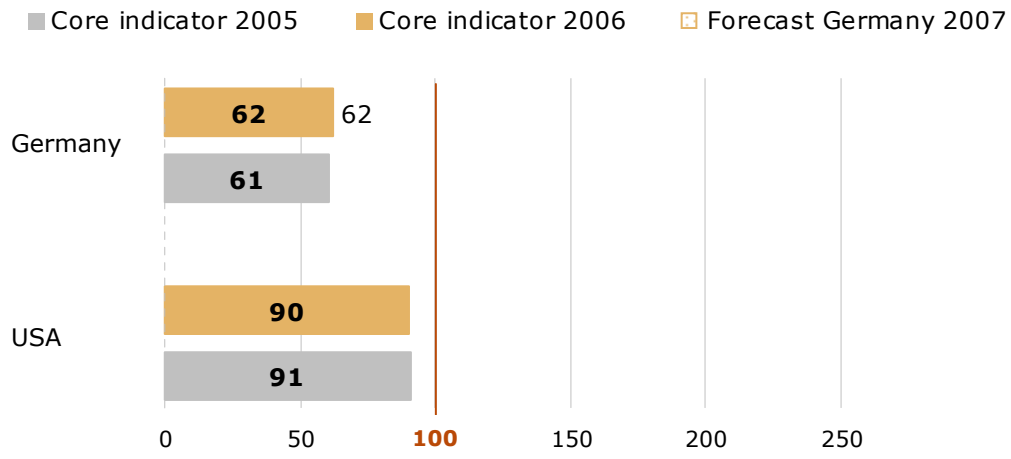


Base: total turnover of companies with at least 10 employees
Indicator value 100 = average EU25, reference year 2006

TNS Infratest, July 2007

"Information Industry" ePerformance: Key indicator – Share of ICT employees in the total labour market

High labour productivity leads to a relatively low employment rate in the German ICT industry.



Base: employees, total
Indicator value 100 = average EU15, reference year 2006

TNS Infratest, July 2007

ePerformance:

- The "Share of ICT employees in the total labour market" in Germany is 38 percent below the average of the EU15 countries.
- This low value can be explained by the high labour productivity in the German ICT industry, which compared to the rest of Europe leads to a relatively low share of employees in the German ICT industry.
- According to BITKOM, the German Association for Information Technology, Telecommunications and New Media, 776,000 people work in the German ICT industry in 2006 (excl. consumer electronics).
- The share of employees is currently for the most part constant at 2 percent of the total German labour market.
- The indicator value for the USA also falls below the EU15 average by 10 percent. This difference narrowed slightly in 2006.
- The number of employees in the German ICT industry in 2006 increased by 1,400 jobs or 0.2 percent, above all in the prospering IT services, software and Internet segments.
- In the USA, salaries have increased by 3 percent, in Germany by 3.2 percent.

Trends and developments:

- In 2007, with an increasing employment rate in absolute terms, the German ICT industry will uphold its indicator value of 62 percent.
- According to BITKOM, 55 percent of ICT businesses are planning to increase their number of regular staff. This is particularly the case for small and medium-sized enterprises.
- The majority of skilled IT staff are needed in the fields of application development, systems / databases, and computer sales (43 percent of all job advertisements in 2006).
- In the medium-term, German ICT businesses and IT departments of companies are looking for 20,000 employees. Whether this need can be met in future is doubtful. In 2006, for example, the number of first-semester students in computer sciences dropped from 38,000 in 2000 to 28,400. By 2010, the number of computer science graduates will decline by 20 percent from 17,100 to 13,700. 2006 also saw a drop in the number of training contracts.
- In 2006, the number of outsourcing contracts (>40 million euros) rose to a new record of 350. Outsourcing turnover in Germany (IT and business process outsourcing) amounts to 14 billion euros. In 2008, outsourced services in the German economy will reach a volume of 35 billion euros.

"Information Industry" ePerformance: Key indicator – Level of computer literacy*

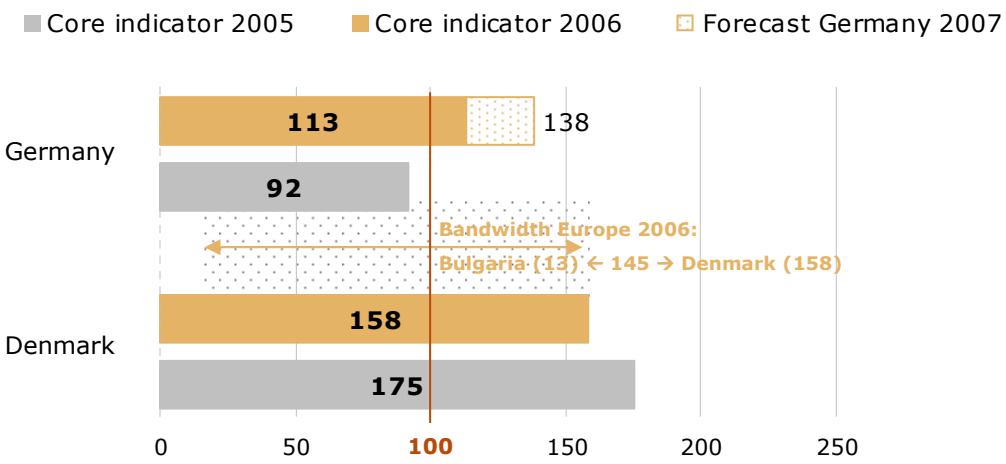
ePerformance:

- In 2005, computer literacy in Germany was below the Western European average. In 2006, it was 13 percent above the average. This is an amazing development.
- However, the European frontrunner, Denmark, attains an indicator value of 158 points.
- Other leading countries when it comes to e-competence are Norway, Iceland, Luxembourg, the Netherlands, as well as Austria and Sweden with indicator values of between 125 and 154 points.
- Many countries on the other hand have a considerable backlog demand. Countries like Macedonia, Romania or Bulgaria, for example, have indicator values of 25 points or lower. But even economically powerful countries such as France (88 points) and Italy (71 points) lie significantly below the European average.
- Consequently, the bandwidth of differences in the levels of computer literacy between 13 points in Bulgaria and 158 points in Denmark – a sign of a particularly wide competence divide – is especially high.

Trends and developments:

- In 2007, the level of computer literacy among Germans will rise by 21 percent to an indicator value of 138.
- As in 2006, the European Union will not be able to improve its position in relation to the global benchmark.
- Well-founded expertise in fields such as database, network, security and project management is becoming increasingly important for qualification, employment, growth and competitiveness.
- The industry association BITKOM assumes that above all the skills shortage in the IT and telecommunications segment will impede a further positive development of the ICT industry. Every second German company sees this as a growth inhibitor.

Computer literacy: 2005 below, 2006 significantly above the European average.



Base: population, total, *) persons with higher skills
Indicator value 100 = average EU15, reference year 2006

TNS Infratest, July 2007

Information and Communication Economy
Expert statement "Infrastructure"

Anyone reading the results of statistics and surveys on communication network infrastructures should bear at least two things in mind: firstly, in the European Union's most populous country, the comparison should not be based entirely on the percentages of "penetration", since in absolute terms such things are measured in euros and not in percent. As a percentage, DSL connection rates in the region of the number of inhabitants of Norway only position Germany in the upper midfield. Secondly and even more importantly: the global communication network infrastructures are – even for experts – much more difficult to describe than other infrastructures and thus to a large extent elude qualitative and even quantitative comparative analysis. When it comes to their functionality and quality for users and consumers, things like electricity, water and roads can be reduced to equal points of comparison. Thus "pure" drinking water, an "adequate" electricity supply and "acceptable" road surfaces are easy to qualify and quantify, whereas even the simple question of what is a "good" television picture, radio sound or telephone clarity has always produced vastly fluctuating responses – far beyond the results of technical measuring equipment.

This applies all the more in light of a plethora of service offerings from new network infrastructures that over the past 25 years have also developed and are continuing to develop in Germany. Surprisingly, people within range of a television transmitter or broadband cable who in the meantime expect to see a film on a large screen with a nearly two-arm-span diagonal "in almost cinema quality" are equally happy receiving a TV signal on a laptop in an isolated farmhouse or on a mobile phone in a street café on a palm-sized screen with analogue "fuzziness" or digital "interruptions". If an energy company tried to placate its customers in rural areas with the argument that the electricity supply was not sufficient to run a fan heater at full power, but that to compensate, the air in the country was better than in the city, it would soon find itself under pressure. A water supply company that supplied its customers with water only intermittently or not at all whenever they turned on a tap would receive a very negative market response indeed.

No telecommunications operator on the other hand needs to worry that the delayed delivery of an SMS or a futile search for a "free mobile radio channel" will lead to complaints and subsequently to a measurable market reaction. Any possibly resulting abstinence is only reflected in the macroeconomic comparison. With communications networks, the relation between the supply and the demand for services differs from other infrastructures. Here, physics plays a role, and on the other hand users have always made a connection between the technical signal and the "content", in other words the "services" such as the "programmes". Physics exercises a monopoly that it is hard to attack.

In a cable, the strength of an electric signal with a high data frequency is severely reduced, limiting its range. If more remote subscribers are to be connected, active components have to be built into the network – and to do so is very cost-intensive. That is why the "connectivity" for example for DSL in Germany is possible only for a maximum of 90 percent of households; supplying the remaining 10 percent would – roughly speaking – cost the same amount and would therefore no longer be economically viable. In the case of radio signals, this applies all the more, especially as the newly developed high gigahertz frequency ranges radiate in a straight line (like light). An upcoming WiMax technology radio signal sent from the Zugspitze would easily reach the Hafelekarspitze near Innsbruck 50 kilometres away. However, to supply users within a radius of several kilometres of the Zugspitze with a radio signal, a lot of transmitter masts would have to be erected, because valley communities literally lie "in the shade". To cap it all, in many networks the "upward signals" required for interactivity are much more difficult to realise, simply because of the necessary energy expenditure. Thus the physics of the networks presents our industry with a really tricky problem, since it is very difficult in the short term to generate the necessary upfront investments through line charges. Depending on the regulating regime, the line market is also divided between several competing providers, which makes the payback even more uncertain.

On top of all this comes a further differentiation of the market against the background of the "convergence of content". When a TV signal (irrespective of differences in quality) can be received via satellite, cable or modem (in Germany there are currently seven platforms), the individual network operators are faced with a veritable market fractalisation, in which the risks increase overproportionally. One company, for example, had the "access licence fee" for UMTS it had purchased at auction for 8.5 billion euros cancelled through a court decision because it failed to develop the contractually promised infrastructure with 25 percent coverage. Similar dilemmas, incidentally, threaten those companies that have contracted to establish the infrastructure for the geodata satellite system Galileo by 2010. This will prompt other investors in future to more carefully examine their opportunities and risks; along with the confusingly high number of network technologies, this might even result in an infrastructure wait-and-see policy.

Since nobody – especially in the EU – wishes to return to the supposedly non-innovative network monopoly structures, the pressure is now on to find completely new pre-competitive cooperation approaches. New co-financing business models play an important role in this. Such models are in the meantime being broadly and intensively discussed and implemented in the UK, as well as in the USA and Japan, whereas in Germany the infrastructure problem has been pushed all too neatly into the background – not least as a result of the surfeit of misconception-generating brilliant claims with their confusing abbreviations. In this context, it should not be forgotten that in the consumptive sector, the "programme content" also ultimately decides about the business model of the service operator. The only thing all forecasters appear certain about is that the wealth of new interactive "volume-intensive multimedia applications" necessitates "new full-coverage infrastructures".

Technology has, incidentally, created the preconditions for creating order out of the confusion of mobile telecommunications systems: an equipment module for Software Defined Radio has been presented by the German research department of a global telecommunications manufacturer, through which it is possible to realise and even during operation switch between different network technologies ranging from GSM, EDGE, UMTS through to WiMax using a uniform equipment technology. This would all at once offer users a much higher availability because one of the networks would always be "available". The question now is to decide who in the value chain under the provisions of the prevailing anti-trust and monopolies law is responsible for the far-sighted procurement of this network equipment, since it is clearly a shared resource for all competing operators. It is an issue that can theoretically be settled; however, it presupposes that somebody – be they from the world of politics or an industry association – feels proactively "responsible for settling it", which in Germany is by no means self-evident. Unfortunately, too many political and industry decision-makers have made the empirically safe experience that the most efficient way to solve a problem is to pretend (at least for the time being) that "it doesn't exist".

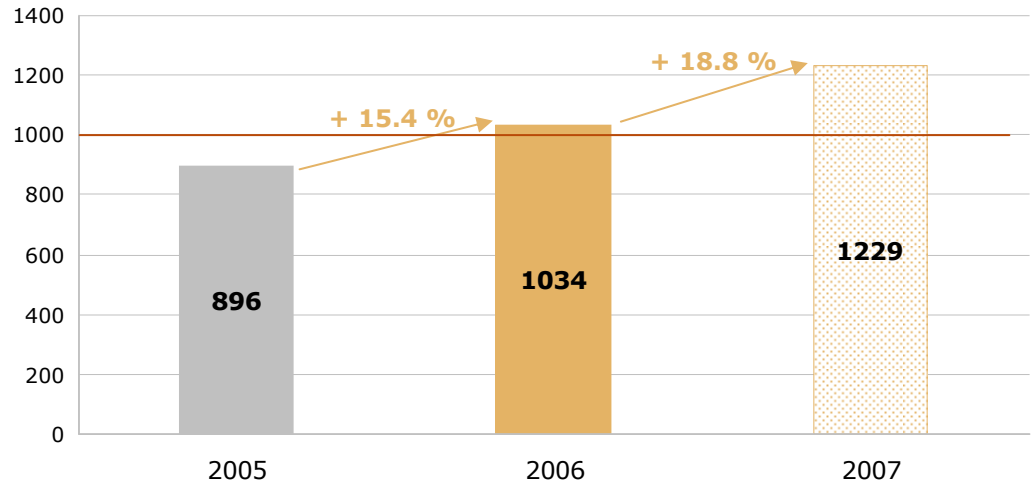
Dr Dieter Klumpp,

Alcatel-Lucent Stiftung für Kommunikationsforschung

(Foundation for Communications Research)

Information and Communication Economy
Communications "Infrastructure" ePerformance Index

In 2006, the communications infrastructure lay above the Western European average with a plus of 15 percent.



Base: core indicator values 2005 and 2006, forecast 2007
reference year 2006

TNS Infratest, July 2007

"Infrastructure" ePerformance Index:

- The ePerformance Index in the "Infrastructure" segment increased by 15.4 percent from 896 points in 2005 to 1,034 points in 2006 and thus – on the basis of the 2006 reference year – lies above the Western European average.
- Improvements were achieved above all in broadband penetration. With 98 points for DSL connections, Germany has already nearly attained the European average.
- With respect to further alternative broadband technologies, it must be noted that cable modems are still a long way from reaching their full potential in Germany. Germany comes last in this field among the EU15 countries.
- With a penetration rate of 77 percent, German businesses have almost equalled the European average. 95 percent of German businesses with at least ten employees have access to the Internet.
- The number of personal computers among the population has increased less briskly. Nevertheless, Germany has improved its position by 11 points and thus increased its distance from the European average. However, there is still a 13-point gap between Germany and the leading European countries. In future, additional sales opportunities will be provided by mobile and multimedia PCs.
- In mobile communications, the one-hundred-per-cent mark for mobile telecommunications penetration was for the first time exceeded in 2006.
- With regard to the number of fixed lines among the population, Germany is among the frontrunners in Europe with 66 percent. In the next few years, a decline in the number of fixed-line connections is to be expected in favour of Internet solutions such as Voice-over-IP and mobile communications.
- In order to secure Germany's lead position In Europe for e-Commerce, a further penetration of SSL servers would be desirable. Here, Germany already lies 31 percent above the average of the EU15 countries.
- The security of the information society and security of the individual must continue to be proactively guaranteed by the government, providers and users.
- According to forecasts, the German Communications "Infrastructure" will on the whole improve more strongly than in 2006, namely by 18.8 percent, bringing it to 1,229 points.

"Infrastructure" ePerformance: Key indicator – Companies with Internet access

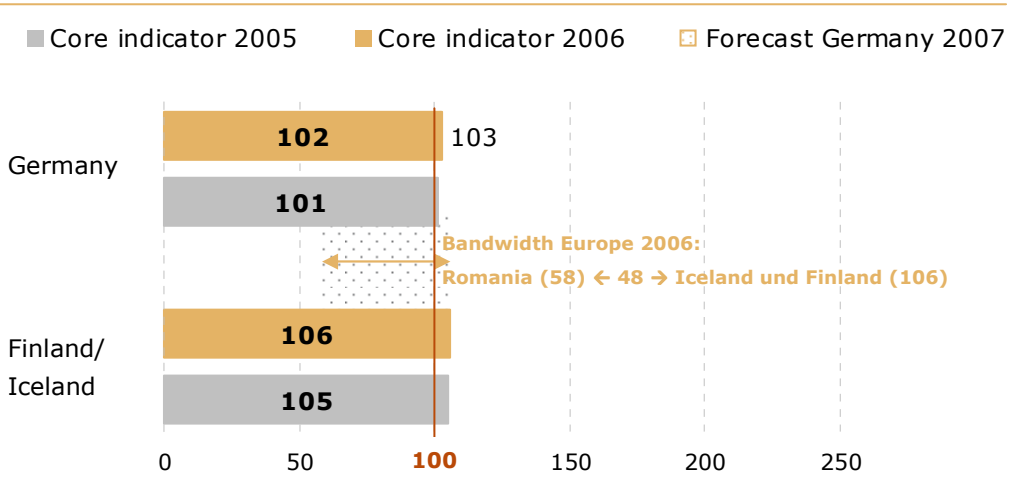
ePerformance:

- Rapid Internet access is increasingly becoming standard.
- Germany lies 2 percent above the European EU25 average and only 4 points behind the European frontrunners when it comes to the provision of companies with Internet connections.
- The market leaders are Finland and Iceland with an indicator value of 106 points each and 99 percent of businesses with at least ten employees connected to the Internet. These are followed by the Scandinavian countries, the Netherlands and Austria.
- 95 percent of German businesses with at least ten employees have access to the Internet. Hence here, too, the saturation threshold has almost been reached. In the European average, some 93 percent of businesses had access to the Internet in 2006.
- Taking Internet access in companies without regard to the size of the business into consideration, around 79 percent of all German businesses have Internet access in 2006 (2005: 78 percent).
- In nearly all European countries, more than nine out of ten businesses with at least ten employees are connected to the Internet.
- Enormous gaps can be ascertained only for Romania (58 percent of companies connected up) and Bulgaria (75 percent). Here, only three out of four companies have access to the Internet.

Trends and developments:

- In 2007, Germany will increase its indicator value to 103 points. This means that 96 percent of German companies are online.
- ICT usage in companies and the penetration rate for Internet access is to a large extent dependent on the sector and the respective size of the company.
- The provision of companies with Internet access is becoming the accepted standard as this gives businesses clear productivity advantages in a globalised world. This applies equally to large-scale companies as well as small and medium-sized enterprises. In cases where there is no Internet access, this as a rule leads to far-reaching economic consequences, especially for international business.
- The German broadband initiative as well as still declining connection prices will further improve penetration in the future.

Internet connections have become standard in German and European companies.

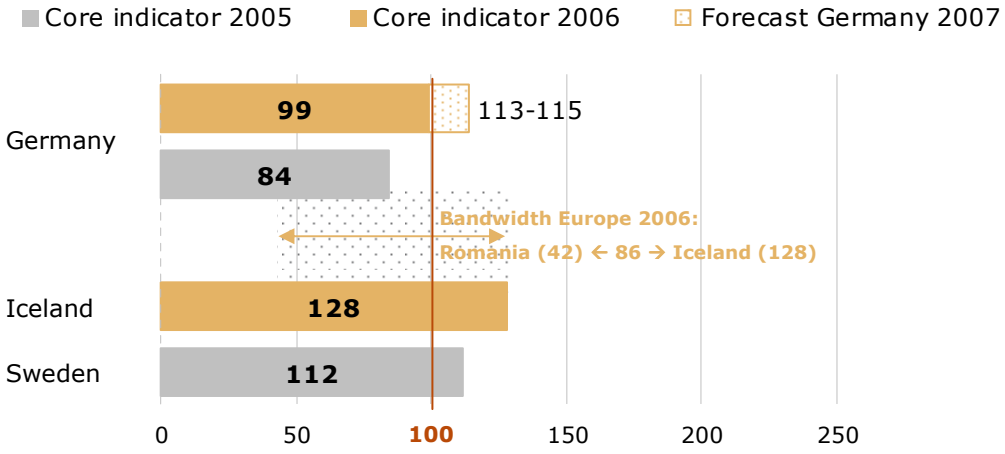


Base: companies with at least 10 employees
Indicator value 100 = average EU25, reference year 2006

TNS Infratest, July 2007

"Infrastructure" ePerformance: Key indicator – Businesses with broadband

There still is backlog demand in German companies with regards to the diffusion of broadband – although it caught up to some extent in 2006.



Base: companies with at least 10 employees
Indicator value 100 = average EU25, reference year 2006

TNS Infratest, July 2007

ePerformance:

- Germany has improved its performance for the "Businesses with broadband" indicator by 15 points. With an indicator value of 99 points, it has positioned itself almost exactly in the European average. However, it only comes 13th in the ranking of the EU25 countries.
- While 73 percent of all German businesses with at least ten employees have a broadband connection, Germany lies just below the Western European average. This relative deficit can be attributed to the fact that broadband connections are not (yet) available everywhere in all federal states.
- In 2006, 80 percent of EU25 businesses with at least ten employees have broadband connections.
- The frontrunner is Iceland with 95 percent of businesses with broadband and an indicator value of 128 points. This puts Germany at just under 30 percent below the peak European value.
- Countries with a penetration rate of over 80 percent include Scandinavia, Spain, Belgium, Denmark and the Netherlands.
- The majority of EU25 countries lie very close together in terms of penetration rates. Nevertheless, the gap between the best- and the worst-performing country is 86 points.
- Romania and Poland achieve indicator values of only 42 and 62 points.

Trends and developments:

- Germany will improve its position in 2007 to 115, possibly only 113, points. In the first case, this would correspond to 84 percent of companies with broadband.
- Germany will continue to show above-average growth rates of around 20 percent per year and will catch up with the European frontrunners by 2010.
- Europe will improve compared to other regions of the world.
- The importance of providing businesses with broadband connections is a competitive factor that will become increasingly key over the next few years, since it helps to accelerate business operations, lower costs and improve efficiency, as well as enable communication on national and global markets.

"Infrastructure" ePerformance: Key indicator – Broadband connections

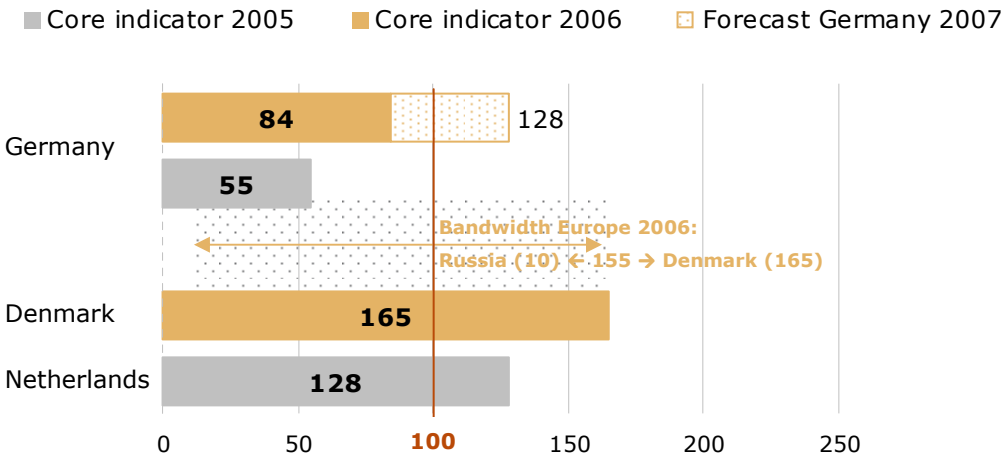
ePerformance:

- Germany has improved significantly in terms of the number of broadband connections in the population and increased its indicator value from 55 to 84 points. However, this is still a good 15 percent below the Western European average and translates into the 11th place in Europe. After growth of 5.3 percent, the penetration rate is now 15.5 percent.
- The European frontrunner, Denmark, attains an indicator value of 165 points and a penetration rate of 30.3 percent.
- With an indicator value of 99 points, the USA has positioned itself almost exactly in the Western European average. 18.3 percent of the population there has a broadband connection.
- In Europe, the Netherlands (28.6 percent), Sweden (26.8 percent) and Finland and Switzerland each with 26.1 percent follow Denmark at the top of the table.

Trends and developments:

- In 2007, 23 percent of the German population has a broadband connection.
- For Western Europe, growth rates of around 20 percent are expected up until 2010.
- New volume-intensive and multimedia applications will promote and challenge the new broadband infrastructures both worldwide as well as in Europe and Germany. These include the Next Generation Networks (NGN), especially multimedia and real time communication with applications such as Triple Play, VoIP and Web 2.0 offerings.
- Developing Germany into a strong broadband country, for example through initiatives such as "Informationsgesellschaft Deutschland 2010 – iD2010" ("Information Society Germany 2010"), is placing a bet on a strong competitive factor. It is intended to achieve full broadband coverage of 98 percent of all households by 2008 as well as broadband use by 50 percent of all households well before 2010 (2006: 37 percent penetration). Forecasts already predict 54 percent by 2008.

In broadband connections, Germany is catching up with the Western European average.

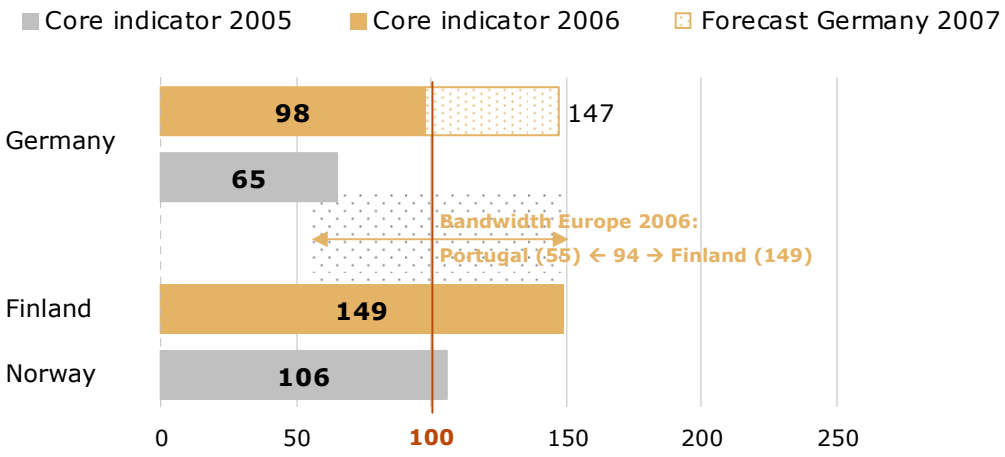


Base: population, total
Indicator value 100 = average Western Europe, reference year 2006

TNS Infratest, July 2007

"Infrastructure" ePerformance: Key indicator – DSL connections

With regards to DSL connections, Germany switches from catching-up to overtaking in 2007



Base: population, total
Indicator value 100 = average Western Europe, reference year 2006

TNS Infratest, July 2007

ePerformance:

- With a growth in the score value for DSL (Digital Subscriber Line) connections from 65 to 98 points, Germany almost attained the Western European average in 2006.
- Recording a DSL penetration rate of 14.9 percent in the population, Germany is now positioned ninth in Europe.
- Finland is the Western European frontrunner with an indicator value of 149 points. 23 percent of the Finnish population has a DSL connection.
- The USA lies 44 percent below the Western European average since it has a much higher cable modem penetration.
- Other strong DSL countries in Western Europe are Norway (20.5 percent DSL penetration in the population), France (19 percent) and Switzerland (17.3 percent).
- A backlog demand exists not only in the Eastern, but also in the Southern European countries. For example, Romania, Macedonia and Bulgaria, as well as Ireland and Greece, show a very high deficit.

Trends and developments:

- In 2007, Germany will increase its indicator value to well over 140 points and thus lie above the Western European average. Over 20 percent of the population has a DSL connection.
- By 2010, Germany will be one of the leading DSL countries in Europe.
- DSL will continue to develop its dominant global position. By 2010, two out of three broadband connections will be DSL-based.
- A high DSL penetration alone, however, says nothing about a country's general level of development with regard to broadband use, especially where alternative broadband technologies, such as cable, can occupy strong market positions.

"Infrastructure" ePerformance: Key indicator – Cable modem lines

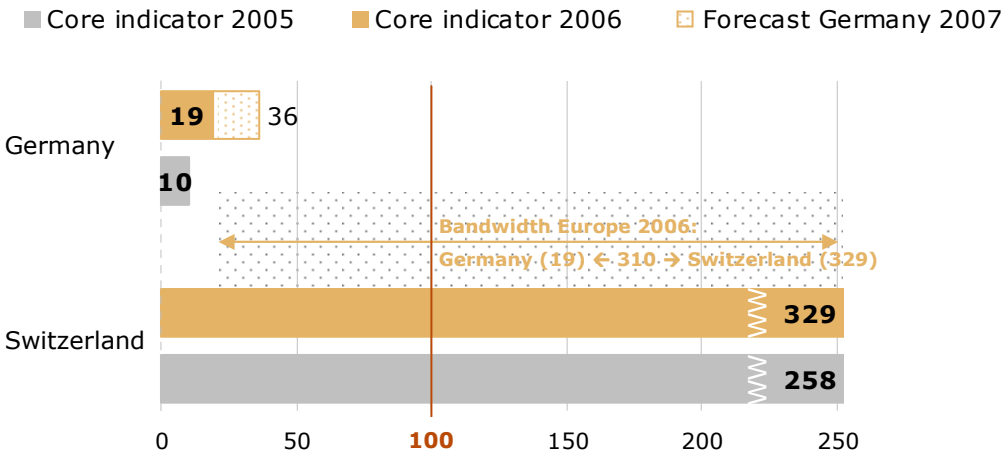
ePerformance:

- In Germany, 0.6 percent of the population has a cable modem line. That is 19 percent of the Western European average. In the EU15 ranking, Germany thus comes last, with a gap of 310 points from the European frontrunner.
- This is Switzerland with an indicator value of 329 points and a penetration of 10.2 percent.
- Denmark follows in second place with an indicator value of 316 points and a penetration rate of 10 percent.
- With an indicator value of 313 points, the USA achieves peak values globally and compared to Europe. Just under 10 percent of the US population has a cable modem line.
- Internationally, broadband cable has not been able to stop the winning streak of DSL as the predominant broadband technology. It has been falling steadily since 2003.
- Other Western European countries with low penetration values are France (0.9 percent), Finland (3.1 percent) and Spain (3.5 percent).

Trends and developments:

- The indicator value for Germany increased by 90 percent in 2006. In 2007, this rate will once again double. With this, Germany will attain 36 percent of the Western European average.
- Germany is gradually seeing a development that in other countries is already self-evident – an alternative broadband Internet connection via cable.
- Triple Play offerings will in future increase the opportunities for developing broadband cable connections.
- DSL is likely to maintain its predominant position in Europe, however. Other competing technologies such as satellite or glass fibre cables remain insignificant.
- A stronger positioning of alternative technologies to DSL would be desirable in order to more rapidly reach full-coverage penetration with broadband applications, catch up with the frontrunners and trigger additional growth impulses for the ICT industry.

Strengthening the position of cable modem connections is in the interest of the German ICT industry.

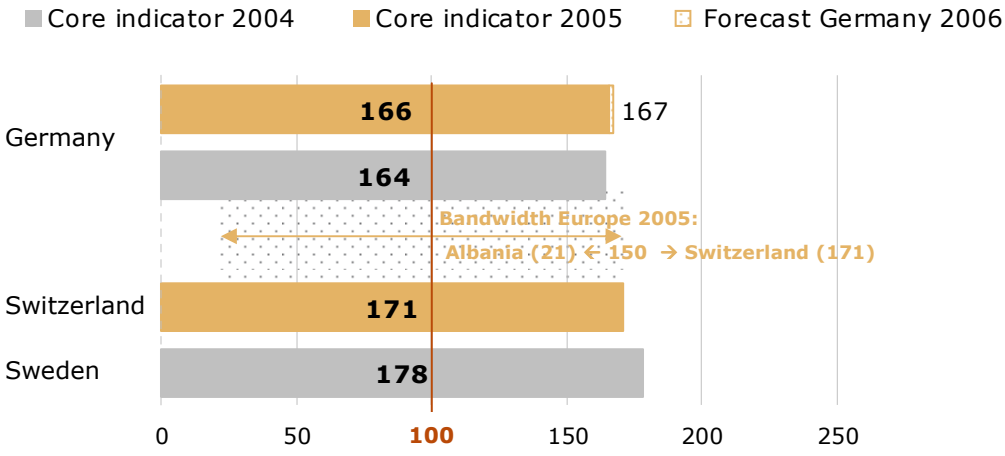


Base: population, total
Indicator value 100 = average Western Europe, reference year 2006

TNS Infratest, July 2007

"Infrastructure" ePerformance: Key indicator – Telephone main lines

With regards to telephone main lines, Germany is close to saturation level with a penetration of two-thirds of the population.



Base: population, total
Indicator value 100 = average Europe, reference year 2005

TNS Infratest, July 2007

ePerformance:

- Germany lies significantly above the European average for telephone main lines in 2005 with 166 points. It ranks just behind the frontrunner Switzerland with 171 points.
- In 2005, 66.6 per 100 German inhabitants, 75.8 per 100 Swedes and 72.6 per 100 Swiss had a telephone connection.
- With 68.4 per 100 inhabitants, the USA lies above the Western European average and attains an indicator value of 151 points. Just under 60 percent of US Americans have a telephone line.
- In Europe, the penetration rate is 40 percent, in the leading countries 50 percent and above.
- Albania ranks at the bottom of the table in Europe with an indicator value of 21 and a supply density of 8.6 percent. However, also the countries of former Yugoslavia as well as Turkey (26 percent) and the Ukraine (26 percent) lie well below the average.
- There are also big divides when it comes to world regions. The supply density in African and Middle Eastern countries, for example, is 5 percent and below.

Trends and developments:

- Germany has almost reached the saturation threshold for telephone main lines and will improve by half a point in 2007. This corresponds to a supply density of 67 percent.
- In future, the number of fixed-line connections can be expected to decline in Germany as well as in other countries. Alternative technologies such as mobile communications and telecommunications possibilities via the Internet, such as Voice-over-IP (VoIP), will complement or replace the fixed-line network. "Fixed-mobile convergence", i.e. the abolition of the separation into fixed-line and mobile telecommunications, is gradually prevailing in favour of mobile telecommunications.
- The telephone main line density will remain an important benchmarking indicator in the foreseeable future for assessing a country's technical level of development and existing economic potential. The traditional fixed-line connection is still by far the most widespread form of connection between computers and the Internet.

"Infrastructure" ePerformance: Key indicator – Mobile phone users

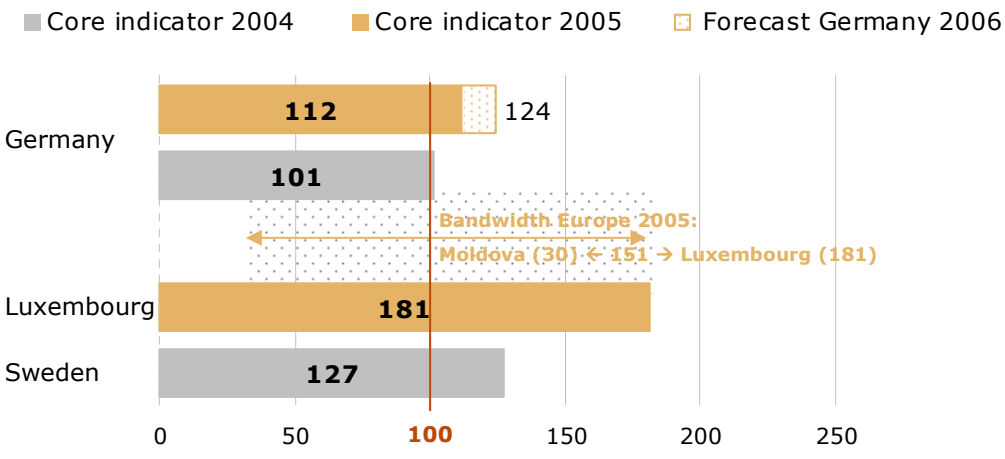
ePerformance:

- In 2005, 95 percent of the population in Germany used mobile phones; in 2006, the one-hundred-per-cent mark for mobile phone penetration was exceeded. The indicator value for "Mobile phone users" has climbed to 112 points and is thus well above the European average.
- Among the main EU15 European countries, Italy leads with a penetration rate of 124 percent and an indicator value of 145 points. The frontrunner in Europe is, however, Luxembourg with an indicator value of 181 points and a supply density of 154 percent. This translates into a density of one-and-a-half mobile phones per inhabitant.
- The USA lies 16 percent below the Western European average and attains a key ePerformance indicator of 84 points. In 2004, this value was 73 points, showing that the US is continuing to catch up quickly.
- Other leading countries in Europe are Lithuania, the UK and Portugal.
- While more than 80 percent of Europeans use a mobile phone, less than 15 percent do so on the African continent.
- Within Europe, there is a huge backlog demand in the Ukraine, Albania and above all Moldavia.

Trends and developments:

- The indicator value in Germany will improve in 2007 to 124 points. The penetration rate will grow to 105 percent.
- Globally, high - and for Africa and the Middle East very high – growth rates are expected. In Western Europe, the penetration rate of 100 percent will be exceeded.
- Mobile Commerce will continue to flourish. Mobile TV has only just taken off in Germany. Very high growth rates are anticipated.
- The prerequisite for many new convergent applications are broadband mobile data networks.
- The "mobilisation" and "ubiquity" of business and society will continue to change our lives enduringly.

In mobile communications, a supply concentration above 100 percent is reached for the first time.

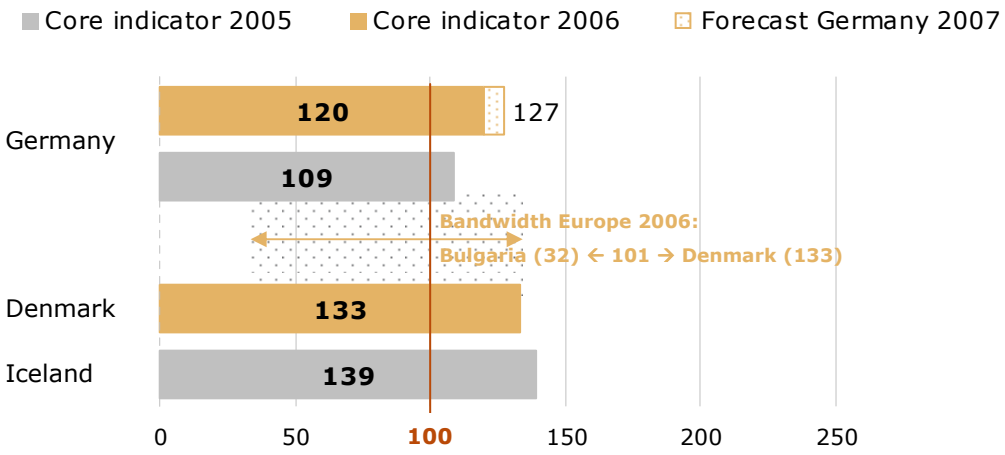


Base: population, total
Indicator value 100 = average Europe, reference year 2005

TNS Infratest, July 2007

"Infrastructure" ePerformance: Key indicator – PC penetration in households

Germany improves penetration rate – marketing potential remains due to mobile and multi-media PCs.



Base: households, total
Indicator value 100 = average EU15, reference year 2006

TNS Infratest, July 2007

ePerformance:

- In terms of PC penetration in households, Germany attains a supply density of 77 percent. This translates into an indicator value of 120 and together with Luxembourg the fifth position in an intra-European ranking. With a growth of the score value from 109 to 120, the gap to the frontrunners was considerably reduced.
- Denmark is the leader in Europe with an indicator value of 133 points and a penetration rate of 85 percent.
- Other European countries with top scores are Iceland (84 percent), the Netherlands (80 percent), Sweden (82 percent) and Norway (75 percent).
- The bandwidth of 101 reflects an inconsistent PC penetration within Europe. Countries showing a large backlog demand are Bulgaria (with 21 percent of the Western European performance), Macedonia (25 percent) and Romania (26 percent), as well as Greece (37 percent).
- Globally, with a penetration rate of 77 computers per 100 inhabitants, the USA is at the same level as Germany.
- By way of comparison: in 2006, 84 percent of German companies – irrespective of the number of employees – used computers. 58 percent of employees used a computer, 46 percent of the computers were connected to the Internet.

Trends and developments:

- In 2007, Germany will improve its indicator value to 127 points. By 2010, 91.6 percent of Danish and Dutch households will have a computer, in Germany this value will reach 82.5 percent and on the European average 74.7 percent. This translates into sixth position for Germany in the intra-European ranking.
- Whereas around 904 million computers were in use globally in 2006, in 2007 the one-billion mark will be surpassed for the first time.
- By 2010, Western Europe will have a PC penetration in households of over 80 percent.
- New sales potential will be provided by mobile devices as well as the new sub-markets for ultra-mobile PCs, handheld PCs and media centre PCs.
- 87.5 percent of German school pupils have the possibility to use a PC; at primary schools and Realschulen (lower-level secondary school) this value is only 79.4 percent, however. In Germany, 11 pupils have to share one computer.
- With the growing number of convergence offers, the penetration of TV and mobile phones will, next to that of computers, become increasingly important.

"Infrastructure" ePerformance: Key indicator – SSL server density

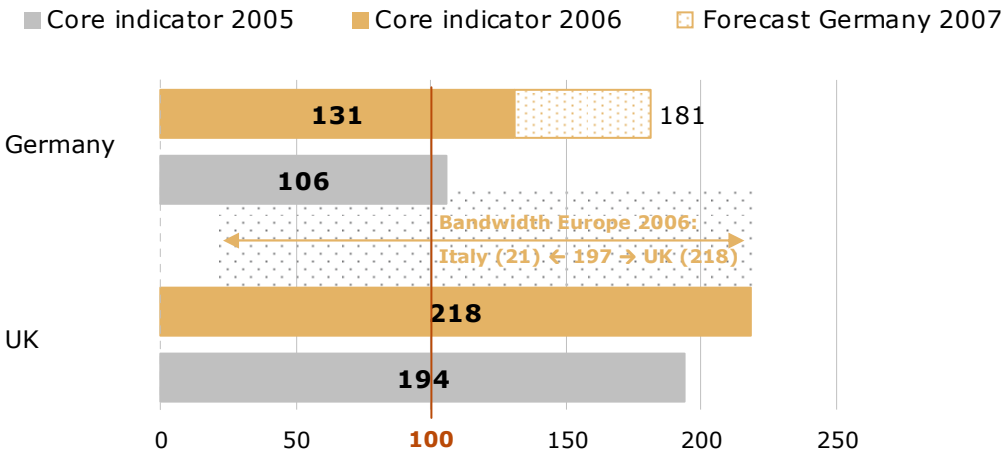
ePerformance:

- One of the most reliable indicators of a country's available modern e-Commerce "infrastructure" is the number of servers that work with the Secure Socket Layer (SSL).
- Germany attains an indicator value of 131 points in 2006 for SSL (Secure Socket Layer) servers and thus lies 31 percent above the average of the EU15 countries. This corresponds to 29 SSL servers per 100,000 inhabitants.
- This puts Germany in ninth place in the ranking of the EU15 countries. The gap to the best-performing country is 87 points.
- The frontrunner among the EU15 countries is the UK with 48 SSL servers per 100,000 inhabitants and an indicator value of 218 points.
- Within Europe, penetration of SSL servers in the individual countries is heterogeneous, as the bandwidth of 197 percent according to country shows.
- Globally, the USA leads with an indicator value of 365 points and 81 SSL servers per 100,000 inhabitants.
- There is a particular backlog demand in Italy (4.6 SSL servers / 100,000 inhabitants) and Greece (3.4 SSL servers / 100,000 inhabitants) as well as in the Eastern European countries, whose values lie below ten SSL servers per 100,000 inhabitants.

Trends:

- The https SSL application guarantees a high transmission reliability for sensitive data and is a good precondition for the further development of e-Commerce solutions.
- With 23 percent, Germany shows the strongest growth within the EU in 2007.
- Sweden, Denmark, Ireland and the Netherlands will maintain their growth rates in 2007 at between 12 and 15 percent.
- A further development of SSL servers parallel to the positive developments in e-Commerce would be desirable and would secure Germany's lead position in the field of e-Commerce.

SSL servers boost e-Commerce – Germany continues to catch up.

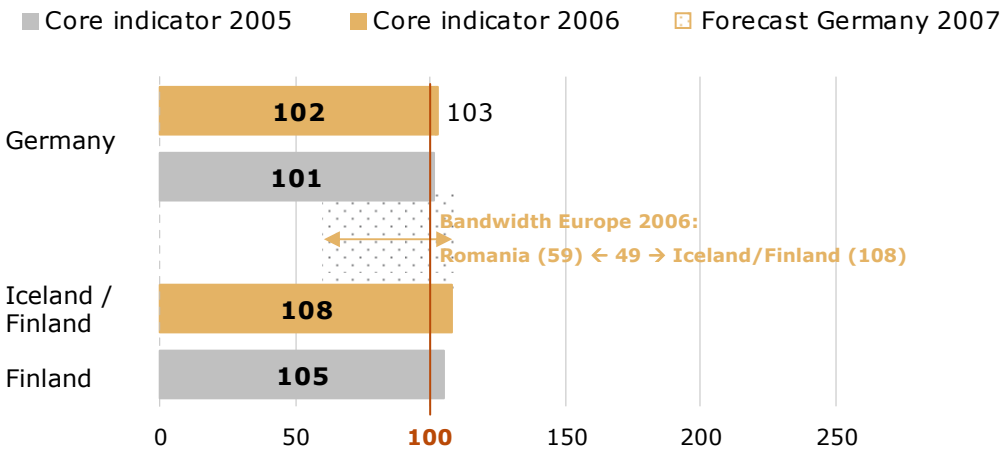


Base: population, total
Indicator value 100 = average EU15, reference year 2006

TNS Infratest, July 2007

"Infrastructure" ePerformance: Key indicator – ICT security level in companies

A majority of German companies are making arrangements for ICT security.



Base: companies with at least 10 employees
Indicator value 100 = average EU25, reference year 2006

TNS Infratest, July 2007

ePerformance:

- The more the dependency on ICT infrastructures increases, the more important prevention, reaction and sustainability in the case of security problems become.
- 94 percent of German businesses made provisions for ICT security in 2006. Germany thus lies within the average of the EU25 countries and ranks sixth together with Belgium and the Czech Republic.
- The European frontrunners are Iceland and Finland with indicator values of 108 points respectively. This means that 99 percent of companies take active security precautions.
- Other European countries with top scores are Austria (105 points), the Netherlands (104 points), Denmark (104 points) and Sweden (103 points).
- Stragglers when it comes to ICT security are Romania (59 points), Bulgaria (78 points) and Latvia (83 points).

Trends and developments:

- The indicator value for Germany will increase from 102 to 103 points in 2007. High growth rates are no longer possible as in the meantime nearly all businesses invest in ICT security.
- At the same time, the threats are increasing and new ICT security risks are emerging. For example, there is an increase in the number of emails with links to infected websites and phishing rates are also on the rise.
- The majority of German companies in the meantime react to security threats to a satisfactory, albeit improvable extent. There continues to be a lacking security awareness: only one in four companies in Germany has established a written code of practice.
- Private computer users, but also businesses, are not sufficiently informed about the extent of the dangers and tend to behave naively or too trustingly on the Internet. Strengthening the security awareness of the German population must be consistently promoted and realised.
- In order to counter attacks, innovative and secure products and a reliable infrastructure are needed.
- "Capable of improvement [in the short- and medium-term] are the security of the information society and the security of the individual in the information society" (iD2010").

Expert statement "Applications"

The current development in the Applications segment can best be described by looking at the respective user groups. The main social players in this context are consumers, businesses and public administrative bodies.

1. Consumers / society

'Thanks to Informatics' (slogan of the year of Informatics 2006), we can say today "We have made it!"

The use of the Internet including its further development to Web 2.0 in the form of blogs, YouTube, Second Life or Twitters has become a social phenomenon that has made it into the feature pages of our daily and weekly newspapers.

It looks as though the era of the digital divide, which separated non-Internet users from Internet users, has been superseded by the generation of digital natives. This new generation of youths and young adults have already grown up with different private and commercial forms of Internet use. They therefore no longer distinguish and differentiate between using the Internet at work for purposes of research or communication and using it privately to exploit different media. This generation considers the Internet as an integrated access to information, goods and services, but also as an exchange platform for communication and shared activities and hobbies such as games, music or videos, which extends into our own living rooms.

2. Businesses

For businesses, use of the Internet has become an indispensable part of their infrastructure both in the B2B segment as well as in relations with customers.

In the B2B segment, communication and interchange standards have established themselves in many sectors, facilitating national and international cooperation as well as the exchange of data and information, but also accelerating the coordination of physical goods. The resulting growing international cooperation gives rise to new challenges, for example regarding inter-cultural communication.

That Internet use is becoming a matter of course in the corporate environment is also reflected in the fact that nationwide coverage for broadband connections is seen as an important theme where Germany has some catching up to do.

Above all two groups of challenges present themselves to companies in their dealings with the Internet:

a.) End customers, who increasingly see themselves as digital natives, expect information and transactions via the Internet as a matter of course. To enable them to provide a tailor-made offering, companies are challenged to take up trends such as blogs or forums of their target group (c.f. StudiVZ student community) and also creatively follow the state of the art.

b.) The theme of convergence not only refers to entertainment media, but also influences the integration of classic PC, Internet and TC applications. The requirements arising from the migration of classic IT landscapes into integrated systems explain the current gain in importance of Enterprise Architecture Management in many companies.

3. Public administrative bodies

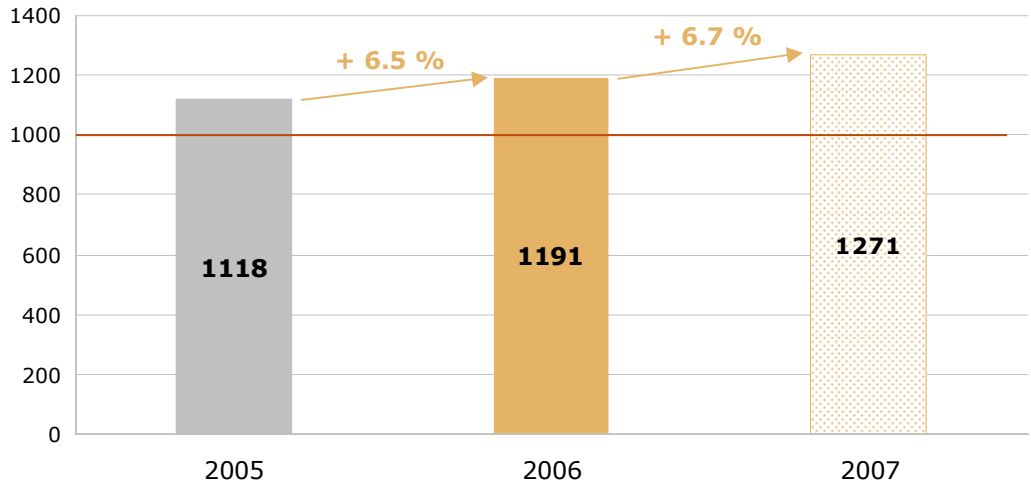
The electronic handling of administrative processes – aka e-Government – and its further development is gaining new momentum as a result of the passing of the EU services directive. The prominence being given to this topic through the activities of the German government (IT summit, e-Government 2.0 etc.) is also instrumental in the startup of new projects in cooperation with the IT industry at all federal levels. While the focus of the digitalisation of administrative processes has so far concentrated on the internal perspective, a new customer orientation and hence consideration of the needs of citizens and businesses can now be recognised. With wide-ranging infrastructure projects such as e-Passport and registration processes, it is intended to lay the foundation for additional applications.

Prof Dr Helmut Krcmar,

Technical University of Munich, Chair of Business Informatics

Information and Communication Economy "Applications" ePerformance Index

With "Applications" by companies and the public, the German ICT industry is in line with the trend. There is backlog demand for the supply and demand of e-Government services.



Base: core indicator values 2005 and 2006, forecast 2007, reference year 2006

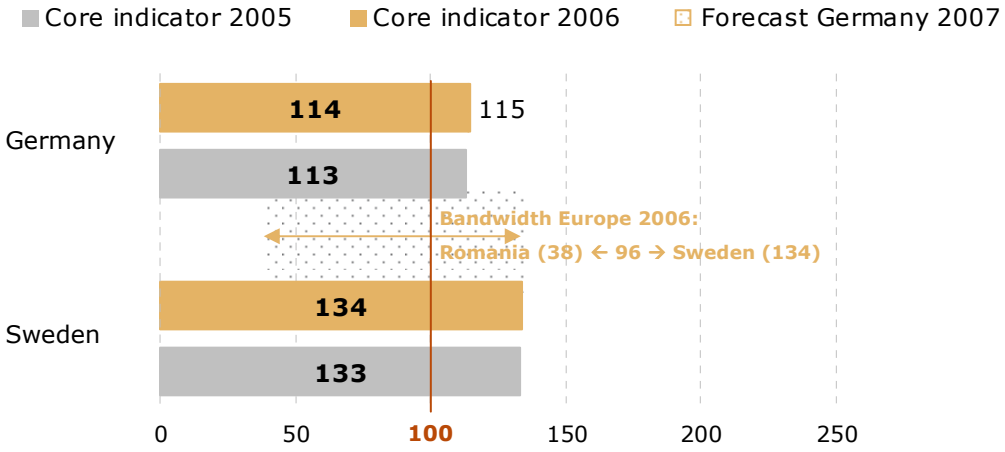
TNS Infratest, July 2007

"Applications" ePerformanceIndex:

- The ePerformanceIndex improved by 6.5 percent to 1,191 points in 2006, which was better than the average European performance. The European average performance was already surpassed in 2005. In 2007, the "Applications" segment is again showing above-average growth of 6.7 percent to 1,271 points.
- The "Applications" segment is subdivided into three applications perspectives: the company perspective ("e-Business Readiness"), private ("Individual Readiness") and public administration (e-Government).
- In "e-Business Readiness", Germany lies above the European average for e-Procurement (+55 points, forecast 2007: +81 points), companies with a website (+14 points, forecast 2007: +15 points), as well as online sales (+13 points, forecast 2007: +26 points). Specific driving forces behind the continued positive developments are interoperability between companies and the implementation of legal and technical standards in the supply chain.
- In "Individual Readiness", Germany has an above-average performance for e-Commerce users. With a current score of 181 points (forecast 2007: 214-221 points), Germany ranks among the Top 3 in Europe. The number of Internet users is slowly growing (128 points, forecast 130-135 points), Internet use in private households lies at almost the same level with 131 points (forecast 135-138 points). In the EU25 ranking, Germany comes eighth. The biggest barriers to Internet use are too high prices, infrastructure-related access problems in some federal states, insufficient media competence, backlog demand in schools and educational establishments, lacking motivation and fear of "Internet addiction". Stimulus providers are online content (for example music), mobile data services and also fear of social exclusion.
- In "e-Government Readiness", Germany shows a deficit both on the supply side with only 84 points and in the use of e-Government services in companies with 77 points (forecast 2007: 85 points). The main exigencies from the company perspective are standardisations, inter-administrative transaction-oriented offerings and overcoming federal barriers. In order to achieve broad acceptance – also among the population at large – corresponding PR and publicity work, user friendliness, offerings to meet different life situations and incentives for using electronic services are needed.
- Obstacles that apply to all fields of application are the insufficient broadband penetration, legal and IT security concerns and insufficient media competence on the part of users, where there is still a need for improvement.

"Applications" ePerformance: Key indicator – Companies with a website

The share of companies with a website is close to stagnation – however, compared to Scandinavia there is still potential for further development.



Base: companies with at least 10 employees
Indicator value 100 = average EU25, reference year 2006

TNS Infratest, July 2007

ePerformance:

- The share of businesses with at least ten employees and their own website has risen in Germany to 73 percent. This is 14 percent above the European average and 1 percent higher than in 2005. This puts Germany in seventh place.
- Without taking size into consideration, in 2006 58 percent of all German companies have their own website. While only just over half of companies with between one and 19 employees have their own website (52 percent), the penetration for 250 and more employees has already reached as much as 92 percent.
- Websites in the research and development (99 percent), automotive construction (97 percent), coking plant and oil processing (94 percent), hotel and catering (91 percent) sectors, as well as in the field of culture, sport and entertainment (90 percent), are most prevalent.
- The frontrunner is Sweden with an indicator value of 134 points and 86 percent of companies with their own Internet presence.
- Next come Denmark and Finland with 83 points and 80 percent of companies with a website. In the Europe-wide EU25 average, 64 percent of all companies have their own website, which corresponds to a growth of 2 percent over the previous year.
- Countries with a high backlog demand are Portugal (35 percent of companies with a website), Latvia (34 percent) and Romania with an indicator value of 38 points and 24 percent of companies with a website.

Trends and developments:

- In 2007, the indicator value for Germany will improve by only one point, although compared to Scandinavia significant development potential exists.
- The future penetration rates in companies will continue to fluctuate from one sector to another and also depend on the respective size of the business.
- Austria, the Netherlands and Norway are continuing to show above-average growth rates.

"Applications" ePerformance: Key indicator – Purchases by companies via the Internet

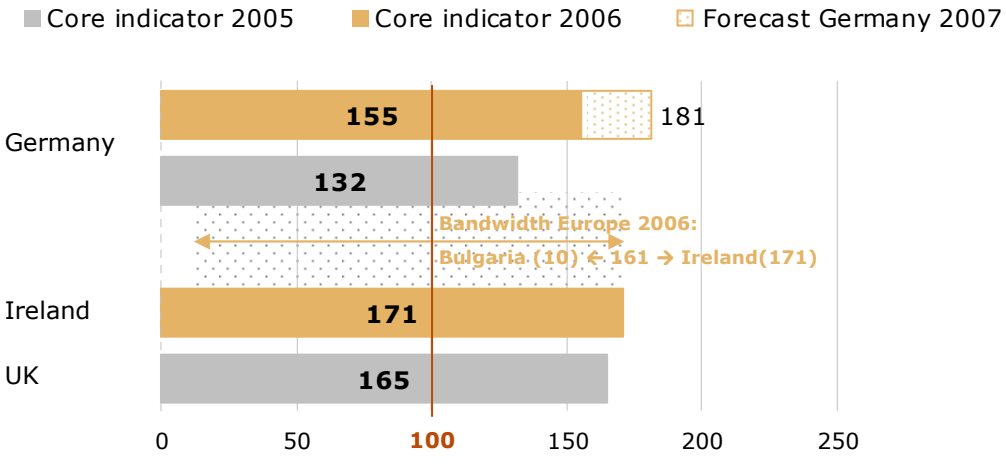
ePerformance:

- The core of e-Business is electronic shopping, i.e. so-called e-Procurement of goods and services via the Internet or other electronic networks.
- The key ePerformance indicator increased in 2006 from 132 to 155 points. This means Germany's performance lies 55 percent above the Western European average. 48 percent of businesses in Germany with at least ten employees carry out their procurement online. Germany thus occupies fourth place in the EU15 country ranking.
- Ireland is the Western European frontrunner with an indicator value of 171 points. 53 percent of Irish enterprises make use of e-Procurement.
- Other European countries with above-average scores are the UK (165 points), Norway (158 points), Sweden (142 points) Iceland (123 points), Austria (119 points) and Denmark (109 points).
- In the EU15 countries, just under one third make use of e-Procurement. This corresponds to an improvement of 19 percent.
- A backlog demand exists in particular in Eastern and Southern Europe. In Bulgaria, Latvia and Romania, virtually no use is made of the possibilities of e-Procurement. Italy, Greece, Portugal and Spain reach a performance of 48 percent of the Western European average or less. In Italy, only 10 percent of companies buy online.

Trends and developments:

- Germany will achieve 181 points for e-Procurement in 2007 and thus improve by 26 percent compared to the Western European average. This means 56 percent of German enterprises make use of e-Procurement.
- E-Procurement is becoming the driving force of e-Business applications. This applies both to internal processes as well as to marketing and sales.
- The driving forces behind e-Procurement are improved broadband penetration, the introduction of small businesses to the Internet, the further development of Germany's leading position in European e-Commerce as well as interoperability between companies. The increasing opening of the markets necessitates the implementation of technical and legal standards in the field of electronic supply chain management. Standards are becoming a crucial competitive factor.

Positive development in e-Procurement for the German information and communications industry.

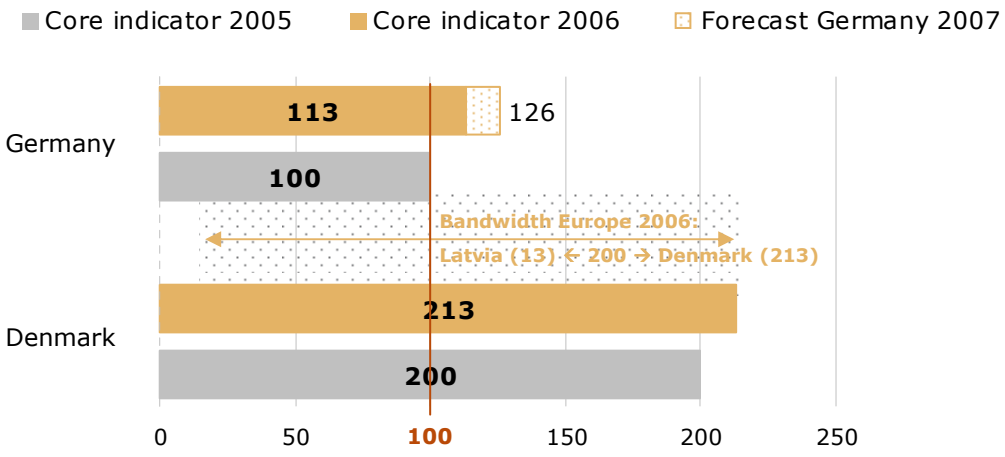


Base: companies with at least 10 employees
Indicator value 100 = average EU15, reference year 2006

TNS Infratest, July 2007

"Applications" ePerformance: Key indicator – Sales by companies via the Internet

Germany's performance in online sales and distribution lies 13 percent above the Western European average.



Base: companies with at least 10 employees
Indicator value 100 = average EU15, reference year 2006

TNS Infratest, July 2007

ePerformance:

- The possibility for customers to order goods and services online via the Internet is used to a much lesser extent than e-Procurement.
- In 2005, Germany's performance for sales by companies via the Internet lay precisely in the EU15 average. In 2006, it is 13 percent above this value. This translates into seventh position for Germany in an intra-European ranking.
- In 2006, 20 percent of German companies sell online – while 48 percent make use of e-Procurement. The number of companies that sell their goods and services via the Internet and similar networks is significantly lower than the number of online buyers.
- In Denmark, 34 percent of companies take advantage of this possibility. The European leader lies 113 points above the Western European average.
- Other European countries with top scores are the UK (30 percent of businesses with online sales), Norway (28 percent), Sweden (24 percent) and – with a significant gap - France (18 percent).
- In the EU15 average, the share of companies with online sales has risen by 23 percent.
- A backlog demand exists in regions of Eastern and Southern Europe. In Latvia, Romania and Bulgaria, but also in Italy, less than 5 percent of businesses sell online.

Trends and developments:

- In 2007, the indicator value for Germany will climb by a further 13 points to 126 points of the Western European average. This will mean one in five German companies will sell online.
- The driving forces behind this development are increasing broadband penetration, pressure from competitors, incentives for cost-saving measures, shorter delivery times, productivity and turnover increases.
- Barriers continue to exist in terms of insufficient legal and IT security and above all in the media competence of German SMEs. Furthermore, the Internet must be more closely integrated into the production process value chain. Thus the importance of the Internet as a sales channel (see key ePerformance indicator "Share of e-Commerce in total business turnover") for electronic trading is currently still low.

"Applications" ePerformance: Key indicator – e-Commerce users

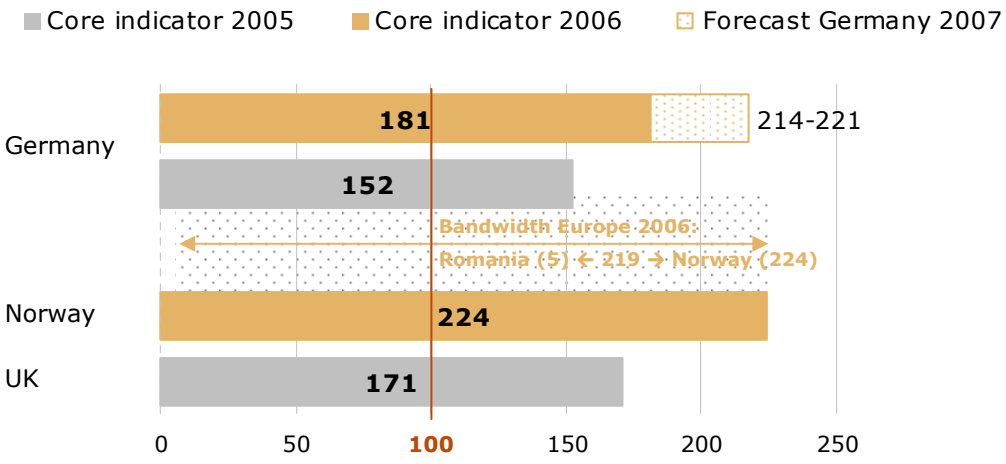
ePerformance:

- Germany's above-average performance in e-Commerce is reflected in the "e-Commerce users" ePerformance indicator. With an indicator value of 181 points, Germany is among the Top 3 in Europe.
- 38 percent of the German population shopped online in 2006.
- Norway has increased its position by 58 points and comes first in Europe with 224 points ahead of Sweden with 186 points. 47 percent of Norwegians and 39 percent of Swedes shop online.
- Other European countries with top scores are the UK and the Netherlands with 38 and 36 percent respectively.
- A good fifth of all people in Europe between the ages of 16 and 74 are online buyers.
- In Romania, Lithuania, Bulgaria and also Greece, only between 1 and 3 percent of the population uses the Internet to shop. The gap between the best- and the worst-positioned countries amounts to 219 points.

Trends and developments:

- In 2007, Germany's indicator value will increase by a further 18 percent to 214-221 points. This will mean 46 percent of the German population shops online.
- More users are buying on the Net. But the buyers are also using the Internet more intensively. This applies above all to the countries of the European Union.
- Broadband mobile connections and Mobile Commerce will gain in importance in the future. The biggest driving force for B2C e-Commerce via mobile platforms are – in addition to music downloads – m-Commerce and mobile data services.
- Barriers: the Germans still have too little trust in the Internet. This is illustrated by the fact that in 2005, 48 percent of German purchases on the Internet were paid for by conventional invoice. Moreover, 66 percent of all interviewees (Federal Statistical Office) stated there was no demand for e-Commerce. 48 percent miss personal service when shopping on the Internet. Increasing cases of fraud have made people uncertain. Another factor is that consumers are unable to physically examine goods on the Net the way they can in a normal shop.

Brisk rise in e-Commerce users – particularly due to mobile commerce.

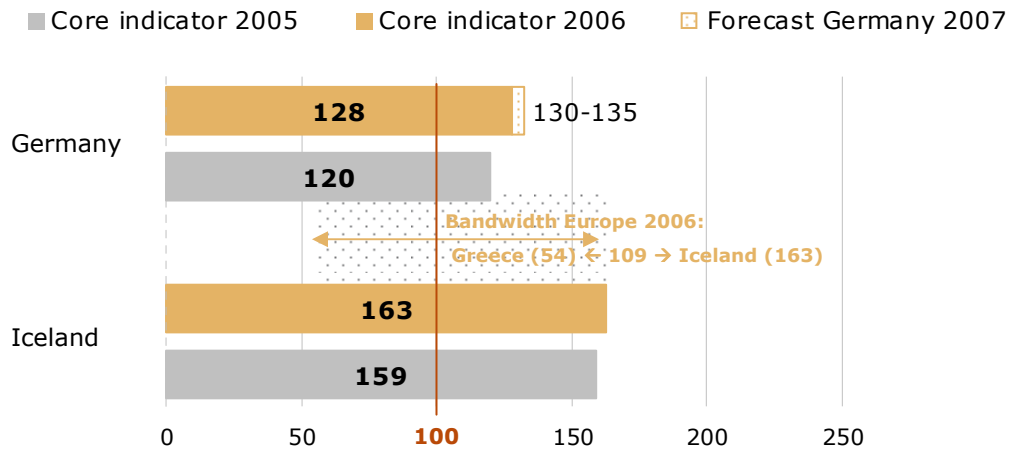


Base: population, total
Indicator value 100 = average EU25, reference year 2006

TNS Infratest, July 2007

"Applications" ePerformance: Key indicator – Internet users

The number of Internet users continues to grow but still remains significantly behind the best-of-class Iceland.



Base: population, 16 to 74 years, Internet usage during the last three months
Indicator value 100 = average EU25, reference year 2006

TNS Infratest, July 2007

ePerformance:

- In 2006, 18 percent of the world population was online. Germany lies 28 percent above the European average with its number of Internet users and comes seventh in an EU25 ranking. 69 percent of Germans between the ages of 16 and 74 have used the Internet in the past three months.
- Iceland is the frontrunner with an indicator value of 163 points. 88 percent of the population there (+2 percent since 2005) uses the Internet.
- The USA attains an indicator value of 143. There, 77 percent of adults over the age of 18 were surfing the Net somewhere in 2006, making the USA the uncontested global leader when it comes to the Internet.
- Other European and global frontrunners are Sweden (86 percent), Denmark (83 percent), the Netherlands (81 percent), Finland (77 percent) and Luxembourg with 71 percent, which comes ahead of Germany in sixth place.
- 54 percent of all Europeans (EU25) aged between 16 and 74 use the Internet.
- The Baltic and Eastern European states show high average annual growth rates (higher than 4 percent).

Trends and developments:

- In 2007, Germany's indicator value will increase to between 130 and 135 points.
- According to a TNS Infratest survey, 34.1 percent of the population over the age of 14 is offline. 5.7 percent plans to go online in 2007.
- In mid-2006, only around 3 percent of public websites met the minimum barrier-free requirements in Europe, although physically challenged people make up 15 percent of the population.
- Digital divides continue to exist, although they are becoming less marked: at the beginning of 2007, 53.8 percent of German women (over 14) are online. A further 6.2 percent plan to go online in 2007. 88.1 percent of 14- to 29-year-olds are online, as is 35.4 percent of the 50-plus generation (TNS Infratest, 2007).
- In 2007, the Internet user rate in the new federal states is lower than the total German average of 60.2 percent. Berlin, Hamburg, Bremen and the state of Hesse are the leaders in terms of Internet use in Germany, while Saxony-Anhalt and the Saarland bring up the rear with 53.3 percent and 50.7 percent.
- The biggest barriers to Internet use are too high prices, infrastructure-related access problems, insufficient computer literacy and lacking motivation of potential onliners. This also applies to the penetration of the Internet in private households.

"Applications" ePerformance: Key indicator – Internet access in households

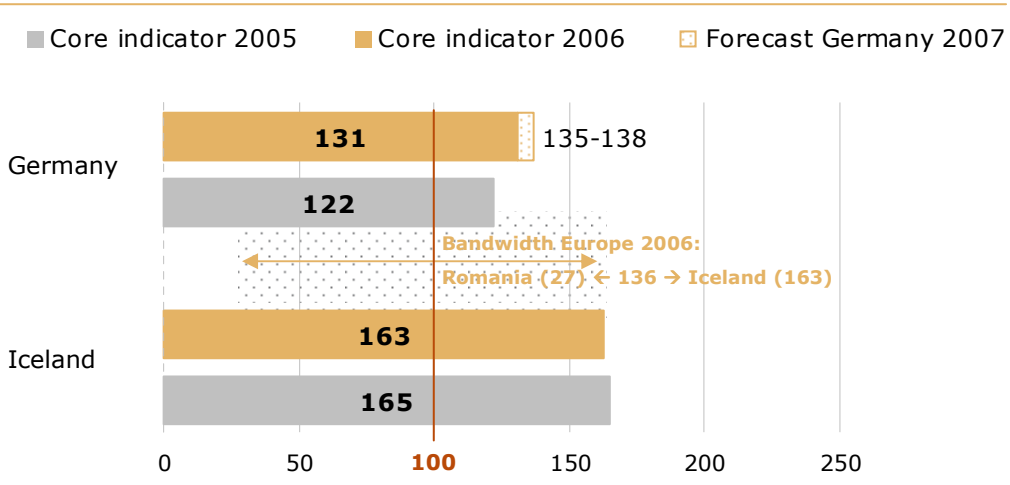
ePerformance:

- In terms of "Internet access in households", Germany attains an indicator value of 131 points. This translates into eighth place for Germany in a European ranking. 67 percent of German households are connected to the Internet.
- With an indicator value of 163 points, Iceland once again comes first in the ranking. 83 percent of all households are online.
- Other European countries with top scores are the Netherlands, Denmark, Sweden and Luxembourg, which all lie at least 35 percent above the European average.
- In the EU25 countries, more than half (51 percent) of all households have Internet access.
- The stragglers in Europe are the Eastern European countries such as Bulgaria with 17 percent penetration in households, as well as Romania and Macedonia with 14 percent respectively.

Trends and developments:

- According to forecasts, the key ePerformance indicator "Internet access in households" will improve in 2007 to a value of between 135 and 138 points. Around 70 percent of German households have access to the Internet in 2007.
- The Eastern European countries with a backlog demand predictably attain much higher growth rates. This is particularly the case for Lithuania and Hungary.
- According to a TNS Infratest survey, Internet use depends on the size of a household. While around 52 percent of people living in a two-person household are Internet users, this figure increases significantly for those living in larger households of three or more persons. People living in four-person households show a particularly high use of the Internet: currently 77 percent are Internet users.
- The number of Internet users is lowest in single-person households: only 44 percent of single-person households are online.
- The increasing dissemination of broadband infrastructures as well as the growing offer of multimedia and communicative applications is accelerating Internet penetration in households and in the population.

Internet access depends on household size.

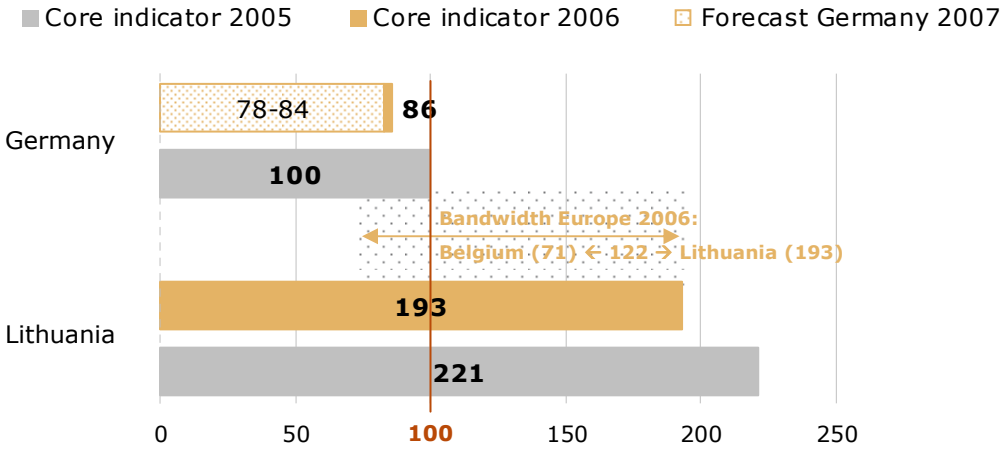


Base: households, total
Indicator value 100 = average EU25, reference year 2006

TNS Infratest, July 2007

"Applications" ePerformance: Key indicator – Internet access in educational establishments

Schools and universities are using the Internet less instead of more!



Base: population, 16 to 74 years, Internet usage during the last three months
Indicator value 100 = average EU15, reference year 2006

TNS Infratest, July 2007

ePerformance:

- The use of the World Wide Web in schools, universities and other educational establishments in Germany has declined by 14 percent to 86 points. In 2005, German Internet use in educational establishments lay precisely within the European average. This translates into the third-from-last place for Germany in a European ranking.
- 12 percent of the German population has access to the Internet from an educational establishment.
- In many Eastern European countries by contrast, the corresponding share is over 20 percent, since private Internet access is much less widespread. Thus the European frontrunner Lithuania attains a score corresponding to 193 percent of the European use.
- Other European countries with top scores are the northern countries such as Iceland (157 points), Denmark (121 points) and Finland (164 points), as well as the UK (107 points). These countries traditionally have a very good information infrastructure in public libraries.
- Below-average use is to be found above all in Belgium, Malta and Austria with an indicator value of 71 points respectively.

Trends and developments:

- This key indicator will continue to decline in Germany in 2007 to a value of between 78 and 84 percent of the European average.
- Internet penetration in schools is increasing: while in March 2006, 88 percent of all schools were online, one year later this figure is 92 percent (TNS Infratest). A further 5.2 percent are planning to use the Internet in the coming 12 months. Hence school pupils are at the head of the league table of Internet users – before higher qualified users.
- The increase in the use of the Internet in everyday contexts combined with the growing availability of high-speed Internet access will lead to higher access frequency at different places.

"Applications" ePerformance: Key indicator - Use of e-Government services in companies

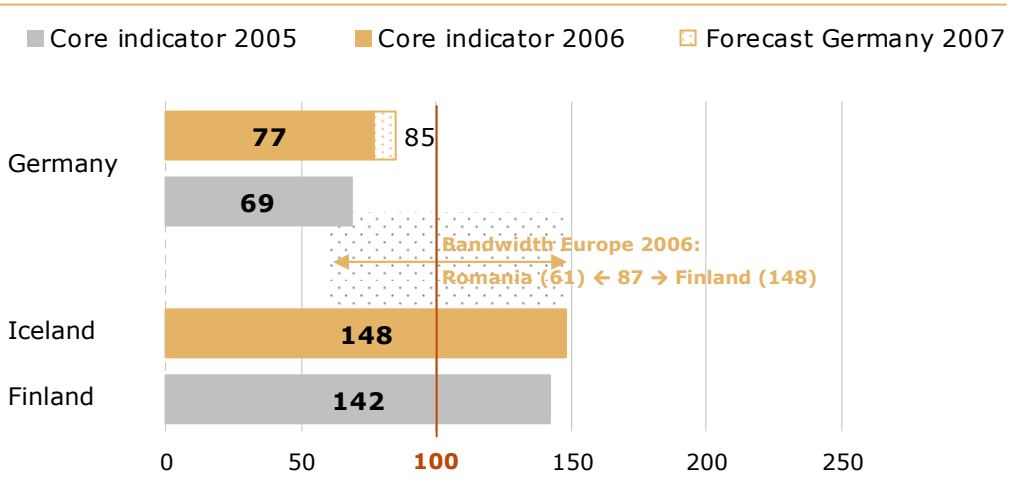
ePerformance:

- In Germany, 49 percent of companies use e-Government services. This corresponds to an indicator value of 77 points and is significantly below the average.
- Iceland is the European frontrunner with an indicator value of 148 points. 95 percent of companies there use e-Government services.
- Finland follows with 93 percent, Denmark with 87 percent, Italy with 87 percent and Greece with 84 percent.
- Just under two thirds of companies in the European Union (64 percent) use e-Government services.
- The lowest scores in Europe are attained by Romania and Latvia with indicator values of 61 and 63 points.

Trends and developments:

- The indicator value for Germany will improve in 2007 to 85 points. 54 percent, i.e. more than half of German companies use e-Government services.
- Germany will continue to close the gap to other European countries up to 2010, among other things through intensified customer orientation and cooperation with companies within the German government's "e-Government 2.0" programme.
- The implementation of the EU services directive – in particular guaranteeing the same contact person at authorities and a comprehensive offer of e-Government services within the scope of Germany Online – is also the driving force throughout Europe for the use of e-Government services in companies.
- The increasing provision of online administration services also benefits the economy through cost savings and quality improvements. The continuing growth in the share of companies that make use of e-Government services shows the interest on the part of businesses in such public services.
- Not only are there too few e-Government users in industry. Companies still do not make sufficient use of the services offered.
- From the company perspective, supporting factors include data interchange standardisations for G2B interactions, offerings geared towards customer needs that are easy to navigate and offer value added through vertical networking in general administrative services. Overcoming federal barriers and promoting cooperation between regional administrative bodies are essential for guaranteeing needs-oriented services.

Special backlog demand with regards to the industry's usage of e-Government services.

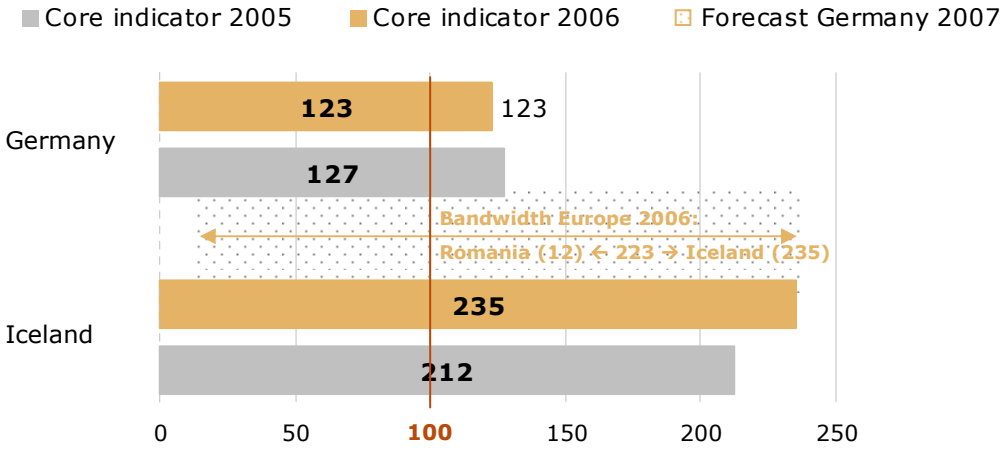


Base: companies with at least 10 employees
Indicator value 100 = average EU15, reference year 2006

TNS Infratest, July 2007

"Applications" ePerformance: Key indicator – Private use of e-Government services

Only every third German uses e-Government services.



Base: population, total
Indicator value 100 = average EU15, reference year 2006

TNS Infratest, July 2007

ePerformance:

- Germany lies 23 percent above the Western European private use of e-Government services in 2006. However, compared to the intra-European benchmark of the previous year, use has declined by 4 percent. Germany thus occupies eighth position in a European ranking.
- 32 percent of the German population uses e-Government services.
- The European frontrunner is Iceland with 235 percent of the European performance. 61 percent of the population there uses e-Government services.
- Norway follows with 57 percent, Finland with 47 percent and the Netherlands with 52 percent of private e-Government users.
- Only one in four Europeans use e-Government services. What's more, use is very heterogeneous throughout Europe.
- A backlog demand exists above all in Romania, Poland and Bulgaria where less than 10 percent of the respective population uses e-Government services.

Trends and developments:

- The indicator value for Germany will remain constant in 2007 at 123 points.
- Many e-Government services for private citizens are only in the early stages of development and still need to be built up. Currently, the e-Government service offering does not cover all situations where citizens require administrative services.
- Challenges exist in the lacking awareness level and acceptance of e-Government services, lacking acceptance of the Internet for communication with public administrative bodies, a low level of online use of e-Government services and lacking user friendliness.
- Concerns about security need to be allayed by creating trust and technically secure solutions in order to generate broad acceptance. This also applies from the company perspective. It is hoped to remediate this situation through projects such as the "electronic identity card" and "citizens' portals".
- Target group-oriented PR and publicity work is needed in order to promote e-Government services, which also includes offering incentives for using electronic services. This, too, applies from the company perspective.
- Continuous user surveys are needed in order to more carefully target personnel as well as financial resources. This will become obligatory in future within the scope of the German government's e-Government 2.0 programme.

"Applications" ePerformance: Key indicator – Online availability of e-Government services

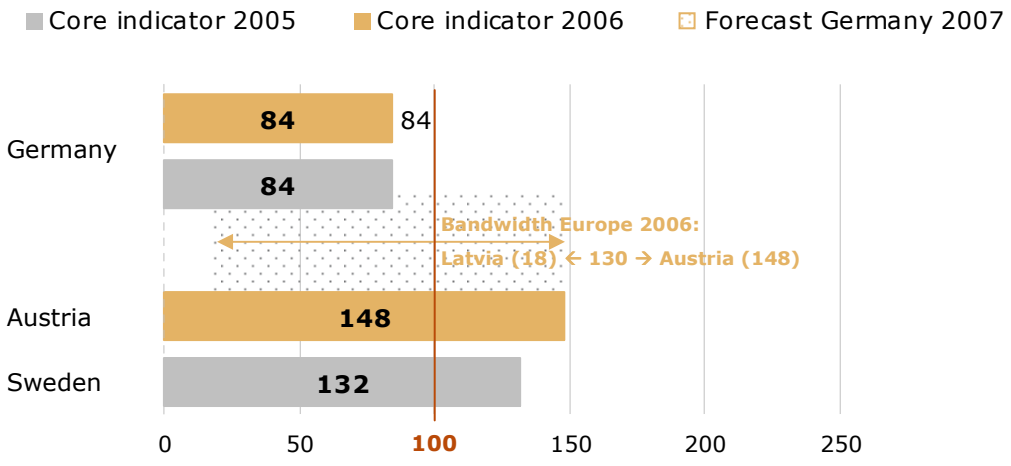
ePerformance:

- In twenty key public areas of responsibility, Germany achieves 84 points for the online availability of e-Government services and thus lies with 16 percent well above the Western European average. This value has not changed compared to the previous year Germany thus occupies 15th position in an intra-European ranking.
- The online availability of specific services is 47 percent.
- Top of the table in Europe is Austria with 148 points and an online availability of the respective services of 83 percent.
- Within the European Union on the other hand, half of the selected services can already be used fully electronically. And the online availability of such services is continuing to grow.
- The stragglers within Europe are Latvia and Switzerland with an availability of 10 and 11 percent for the online availability of specific services.

Trends and developments:

- The indicator value for Germany will once again remain constant in 2007 at 84 points.
- The online availability of services can be promoted through improved cooperation between administrative bodies and administrative levels, technical design, standardisation, signatures, user-friendly software, more rapid processing, reduced fees and mandatory use (as in Denmark for example). Here, the "Germany Online" initiative of the federal government, states and municipalities provides the right approach.
- The use of e-Government services can be enhanced by increasing the value added for the citizen and making it visible. This includes above all providing transaction services (and not just pure information services) designed to meet the citizens' respective needs.
- Continuous acceptance evaluations of the services offered are needed in order to more carefully target and position personnel as well as financial resources.
- In order to improve e-Government services, greater penetration and, consequently, inter-level tasks are required. In order to achieve this, greater political control of activities is needed on all levels.

In comparison to Europe, the online availability of German e-Government services is stagnating.



Base: 20 available essential authority services
Indicator value 100 = average EU15, reference year 2006

TNS Infratest, July 2007

Methodology

Establishing market transparency. The ePerformance Report succinctly summarises the data, information and interpretations contained in the "Monitoring" Factual Report on the real and expected developments in the German ICT industry. The report presents changes in the period 2005 – 2007 according to a minimal list of 30 selected so-called core or "key performance indicators" (for example: "Internet users") and continuously measures Germany's performance against that of the European Information and Communication Economy. Further, the German ICT industry is positioned in comparison to the European average frontrunner ("benchmark country"). In the following, the methodology is described.

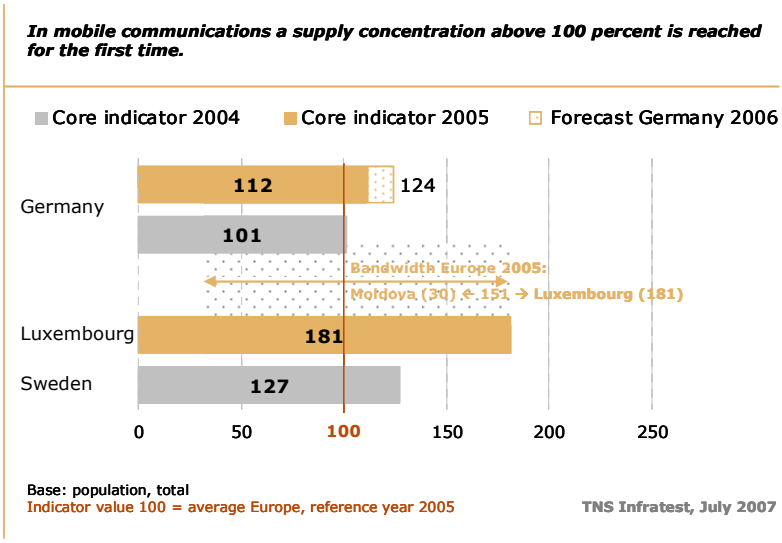
Selecting the indicators. The listing of key indicators was agreed by an expert workshop at the start of the new three-year project phase. Key selection criteria were relevance, evidential value and coverage of the selected subject area, as well as regional and temporal comparability of the data. To this end, the quality grid compiled for the classification of pilot studies was referred to. At the same time, the project team had to balance out the opposing requirements for high evidential value and data availability.

Basis of assessment. In order to establish longer time series and fully maintain the comparability of the data, the evaluations for 2005 and 2006 only considered indicator values that originate from a source for at least one European benchmark region. For the underlying sources, the project team relied exclusively on long-established pilot studies whose future availability can be taken as guaranteed. Here, we were able to fall back on six years of "Monitoring" experience.

Method of assessment. In order to measure ePerformance for each key indicator, Germany was positioned in comparison to the best-ranking European benchmark country and to Europe for the years 2005 and 2006. In each case, the available European average value was taken as a benchmark value, which referred to the benchmark region either on the basis of Western Europe (EU15 plus Norway and Switzerland) or Europe as a whole, the EU15 or the EU25 countries. This benchmark value was allocated the index value 100, which thus represents the listed European average in the stated reference year. The current level of maturity of the German Information and Communication Economy was evaluated on the basis of the difference between Germany's performance and the European average of 100 and in comparison to the best-positioned country for the respective key indicator.

Forecasts for 2007 – where available – were taken from the established pilot studies or in individual cases estimated on the basis of at least three-year time series by TNS Infratest. The future ePerformance in the European benchmark was then calculated as described above.

Reading example: The following chart provides a reading guide for the key indicator "Mobile communication".



Accordingly, with 101 points, the German ICT industry in 2004 performed 1 percent better than the Western European economy with an allocated indicator value of 100. In 2005, the German ICT industry improved by a further 11 percent compared to the Western European average, and can be expected to reach 124 percent of the Western European performance in 2006. Further, the chart shows that Germany must make up 69 points in order to catch up with the European benchmark country Luxembourg. Sweden follows Luxembourg and lies 27 percent above the European average. The gap between the best- and the worst-positioned countries amounts to 151 points.

An indispensable link between quantitative data and qualitative statements. On the basis of the above indicators and their aggregates, a first assessment of the current positioning of the German Information Economy was made. Further, the results were qualitatively interpreted and supplemented by other data, interpretations and evaluations. These are indispensable, especially since the indicators were not weighted.

Status quo and forecasts as well as strengths, weaknesses, opportunities and threats. The qualitative statements relating to the individual charts were further subdivided into the sections "ePerformance" and "Trends and developments" for 2007 and beyond:

- ➔ Under "ePerformance", the performance of the German Information and Communication Economy in 2006 was rated in comparison to the best-positioned country in Europe, to the performance of the Information Economy in the respective European benchmark region and to the USA as the globally leading Information Economy nation. Additionally, the most important determinants for Germany's positioning as established in the Factual Report were listed.
- ➔ "Trends and developments" presents the expected performance of the German Information and Communication Economy in comparison to the listed benchmark regions for the year 2007 and, as far as possible, beyond. Further, this section looks at the major driving forces and obstacles or barriers with respect to future developments in the respective problem area.

Calculating the ePerformanceIndex for the German Information and Communication Economy and its segments. The results for the individual performance indicators were aggregated in a so-called "ePerformanceIndex". These aggregates are possible because the applied formation of indicators (indicator: European average = 100 points) results in a standardisation. This made it possible to measure and interpret the development of the German Information and Communication Economy for 2005, 2006 and 2007 relative to the European performance in a single figure respectively. The assessment is carried out in the same way for the three Information and Communication Economy segments "Information Industry", Communication "Infrastructure" and "Applications".

Further methodological developments. For this ePerformance Report, the individual indicators and segments were not weighted according to their importance. It is intended to discuss the possibilities that exist here in a future expert workshop. Should the indicators be weighted in future reports, this can also be carried out retrospectively. To be able to extrapolate forecasts for three years as opposed to so far only one, the project team is considering setting up a panel of experts to be recruited from the references of meanwhile six years of "Monitoring".

MONITORING 07
INFORMATIONS- KOMMUNIKATIONS- & WIRTSCHAFT

Contact partners

Authors and project management:

Dr Sabine Graumann
Dr Malthe Wolf

TNS Infratest Forschung GmbH
Business Intelligence
Landsberger Straße 338
80687 München
Germany

t +49 (0)89 5600-1221 or -1133
f +49 (0)89 580 - 1996

sabine.graumann@tns-infratest.com
malthe.wolf@tns-infratest.com

www.monitoring-ik-wirtschaft.de

Press and public relations:

Michael Knippelmeyer
Director Public Relations

TNS Infratest Holding GmbH & Co. KG
t 049 (0)521-9257-687
michael.knippelmeyer@tns-infratest.com

Publisher's details:

Published by:

Federal Ministry of Economics and Technology
DG VIIC1 – Fundamental Issues relating to the Information Society, IT and Media Industry
www.bmwi.de

TNS Infratest Forschung GmbH
Business Intelligence
www.tns-infratest-bi.com

Design and production:

Kathleen Susan Hiller
viaduct b.
www.viaduct-b.de

Printed by:

Königsdruck
www.koenigsdruck.de

ISBN:
978-3-9811764-2-1

Notes

Notes