Federal Ministry
of Economics
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Innovation Policy, Information Society, Telecommunications

ICT Strategy of the German Federal Government: Digital Germany 2015

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Content

A. Strategy for the digital future of Germany

For Germany as a high-tech location, information and communication technologies (ICT) play a decisive role. They are the key to productivity in all industries. Measured by gross value added today, the ICT industry itself is ahead of mechanical engineering and motor-vehicle manufacturing. In employment terms, it was just behind mechanical engineering in 2009, accounting for 846,000 jobs. We need to better harness the large potential of ICT for growth and employment in Germany. Smart networking through modern ICT in traditional sectors, such as energy, transport, health, education, leisure, tourism and administration, affords new opportunities but also poses new challenges, especially in data protection. This is why the Federal Government has developed a new ICT strategy for the digital future of Germany. It sets the government ICT policy framework for ministries to plan and implement the necessary measures.

The ICT strategy, Digital Germany 2015, sets out the **priorities, tasks and projects for the period up to 2015**. It aims to do the following:

- Strengthen competitiveness through the use of ICT in all segments of the economic process
- Expand digital infrastructure and networks to meet future challenges
- Safeguard the protected and personal rights of users in the future Internet and in the use of new media
- Step up research and development in the ICT sector and speed up the translation of R&D findings into marketable products and services
- Strengthen basic, further and continuing education and training and competencies in handling new media
- Make consistent use of ICT to cope with social problems, including sustainability and climate protection, health, mobility, administration and the improvement of the quality of life of citizens

With the implementation of the ICT strategy, the Federal Government is seeking to contribute to promoting sustainable economic growth, help create new jobs and bring about social benefits. It is also aware of the social-policy significance of Internet and ICT, will continue to engage in dialogue on the prospects of German Internet policy and the appropriate role of government in the future organisation of the Internet and channel the outcomes into improving the regulatory policy framework.

The Federal Government's ICT strategy is aligned with the goals of the Digital Agenda for Europe[1] and will further enhance Germany's international competitiveness as a business location. In implementation, it will take account of both activities at European level (including the EU Strategy for Key Enabling Technologies and the Innovation Union) and projects and developments at international level and in multinational organisations.

Modern and efficient federal government IT will lay the foundation for the effective organisation of Germany's digital future. Stringent joint IT use in the federal administration and for large-scale government projects is a benchmark for Germany as an IT location. The future development of federal IT will be steered by the interministerial Chief Information Officers Council together with the Federal IT Management Group chaired by the Federal Government Commissioner for Information Technology. Core tasks include framing architectures, standards and methods for IT and providing the necessary infrastructure.

With the entry into force of Section 91 (c) of the Basic Law in 2009 and the appointment of the IT Planning Council, the foundation and capacities were put in place for the efficient and purposive development of public-sector IT and federal e-government.

The ICT strategy, Digital Germany 2015, will be carried out in close interaction among policymakers, industry and scientists. The Federal Ministry of Economics and Technology is in charge of coordinating the implementation under the specific purviews of the various ministries. A major role here is played by the National IT Summit, which has already provided a key impetus and will continue to perform a function in future strategy implementation.

Measures

- Setting up a monitoring system in consultation with the relevant ministries and publishing its findings.

1 http://ec.europa.eu/information_society/digital-agenda/index_de.htm

B. Objectives, measures, projects

1. New growth and jobs through digitalisation

1.1 ICT sector in Germany

The strengths of the German ICT industry lie in software and embedded systems, which are, however, frequently unknown to the public. There are many more high-quality, leading ICT products and services from Germany than is generally known, such as semiconductor chips from Europe's largest microelectronic cluster in Dresden. According to OECD, Germany was the fifth largest producer of electronic products worldwide in 2009.

The Federal Government is committed to supporting the production and export of ICT products and services and related research in Germany. We need to raise local national content. In addition to inventions, we must also continue to introduce innovations, because these generate growth and jobs through new, internationally competitive products and services. Of special importance here are regional clusters, which can give a powerful impetus to multi-sectoral innovations. Building and supporting these will therefore be a major issue in innovation dialogue.

ICT afford good prospects for small and medium-sized enterprises. These frequently need a different kind of support to large-scale companies, in finance, internationalisation, exports and the search for talent as well as in research and development. So we need to pursue distinct policy approaches.

Qualified specialists are coveted by ICT firms. Considering demographic trends and the bright prospects for the industry, this demand is likely to increase in future.

The Federal Government will pay close attention to ICT as part of developing a strategy for securing labour supply and under the IT Summit in cooperation with the private sector. Promoting young enterprises will also play a major role here.

Small and medium-sized enterprises, young businesses and start-ups in ICT

Current studies[2] reveal a disproportionately large

2 A survey on the breakdown of software and IT services by the Fraunhofer ISI Institute in 2010 revealed that in 88.5% of the enterprises in 2006 only 1 to 9 persons (including owners) were engaged in this sector, while in almost 1% of the enterprises more than 100 persons were employed. Of particular note by international standards is the under-representation of companies with a workforce of 20 - 99 (5% of enterprises, 23% of employees, 19% of turnover and 11% of investments).

number of small and only a few medium-sized suppliers in the German software industry in particular. These, however, earn a larger share of industry turnover than small and medium-sized enterprises (SMEs) in other sectors.

The Federal Government will seek to cater for the special needs of SMEs in ICT. The promotion measure, Innovative SMEs: ICT, encourages them to make greater efforts in research and development. A major feature of this programme is the thematic flexibility and the streamlined approval procedure every six months. The Federal Government will also continue to support the development of centres of excellence in ICT and provide further assistance for the current Central Innovation Programme for SMEs (ZIM) and cooperative industrial research.

Germany as a nation must return to its tradition of start-up entrepreneurs. It needs more new businesses, especially in cutting-edge technologies. ICT affords great potential for high-tech business start-ups. In all economic sectors, modern ICT today is a major bridgehead for creating new products and services and upgrading efficiency and quality. With the initiative, Start-up Nation Germany, the Federal Government is seeking to foster a national culture of business start-ups, including the launch of the new start-up competition, Innovative ICT, and support for ICT university-based start-ups with the EXIST grant. Furthermore, it will improve the climate for business start-ups and corporate finance for small and medium-sized ICT enterprises.

Young ICT businesses are often key drivers for the rapid practical application of innovations. First of all, though, they have to reach a critical size to be competitive on international markets. The Federal Government will therefore identify and carry out support measures for young enterprises in cooperation with the companies engaged in the IT Summit.

Objective: Creation of 30,000 new jobs in the ICT sector and in the applied ICT industries by 2015. Raising the number of ICT-based business start-ups. Support for SMEs and crafts businesses in using Internet and ICT.

Measures

- Start-up Nation Germany initiative focused on innovative business start-ups
- Start-up competition, Innovative ICT, with financial start-up assistance and active support in the initial steps towards self-employment
- Promotion of ICT university-based start-ups with the EXIST grant
- Continuation of the funding programme, Innovative SMEs: ICT
- Dialogue with and support for young IT enterprises via the IT Summit process
- Strengthening ICT competency in SMEs and crafts
- Further development of Commission on the Economics of Geo-Information by extending a network of enterprises, authorities and scientific institutes
- Initiative for enhancing the usability of applied software for crafts and SMEs
- Endowment of the High-Tech Start-Up Fund II in 2011

Trade and Investment Promotion Programme for the Digital Internal Market

Global trade in ICT products almost doubled from 2000 to 2008 (from US$ 2.2 billion to US$ 4 billion), with emerging nations recording particularly strong growth. Worldwide, Germany took eighth place with ICT exports of US$ 111 billion.

The highest-growth component of ICT exports are IT services (US$ 70 billion in 1996, US$ 325 billion in 2008, +14% each year). With exports of services amounting to US$ 15.1 billion, Germany took second place among the OECD countries behind Ireland with US$ 34 billion. The leading exporter of IT services in

2008 was India with exports worth US$ 49.4 billion. As the bulk of German foreign trade takes place in Europe, the Federal Government supports the Commission's approach of promoting cross-border online commerce in the EU.

Objective: Increasing exports and attracting investments

Measures

- Including ICT in the Trade and Investment Promotion Programme (IT Summit)
- Locational marketing to solicit and retain investors and talent for Germany (IT Summit); focus on green IT, e-energy, for example

Open standards and interoperability

Standardisation and interoperability in the ICT sector are of national strategic importance. Because they are essential for the interoperability of complex technical systems, setting and implementing standards is a way of gaining competitive advantages. Standardisation also enables extensive non-proprietary scope when selecting products. The Federal Government attaches priority to open standards for ensuring unhindered access to ICT markets. They are the best way to support interoperability and functionality in complex technical systems. Interoperable basic telecommunications infrastructure (including network interfaces, platform requirements) are essential for generating new services.

The Federal Government is seeking to position Germany for an international spearheading role in the development and dissemination of technologies based on open standards. The use of open-source software in public administration will also enhance the interoperability and future viability of information technology systems and make a contribution to strengthening ICT competency in Germany for improving competitiveness and security on the software market.

Under the European Digital Agenda, we shall seek close and constructive cooperation with the European Commission on the planned reform of ICT standardisation in Europe.

Objectives: Support for German manufacturers in the early standardisation of technological developments. Promoting the dissemination of open standards and interoperable systems in industry and administration, also at European level. Promoting know-how exports to establish open, interoperable ICT architectures and infrastructures.

Measures

- Setting up facilities for interoperability tests and identifying benchmarks for procurement projects
- Installing an Internet portal on interoperability
- Supporting interoperability know-how transfer to other nations, including developing countries
- Establishing a national clearing house for solving interoperability problems

Digital media and creative industry

The Internet and new technologies have done much to accelerate digitalisation in the media sector. The use of ICT does not just generate new online products in the conventional media (press market, radio industry, book market) but increasingly influences all submarkets in the cultural and creative industry, e.g. music, electronic games, design and film.

Objective: Further development of industry potential and its economic application

Measures

- More in-depth dialogue with the industry under the Culture and Creative Industry Initiative
- Industry dialogue on preventing Internet piracy
- Federal German Computer Game Prize

1.2 Digital networking of business and industry

The new high-performance networks will pave the way for smart network platforms and will enable ICT use in all social sectors, particularly in transport, energy, education, leisure, tourism and administration. Their innovation potential can, however, only be harnessed and the opportunities of the information society put to full use if high-performance networks are available everywhere and meet the specifications of the respective applications in a networked society.

ICT and energy

Secure, efficient and environment-friendly power supply must also be assured and improved for the future. ICT will play a key role here. They can help to establish an Internet of Energy to rationalise information flow among a growing number of generation plants, including an increasing amount of renewable and locally generated energies, power grids and terminals.

An ICT-based management of the energy supply chain will be able to balance power supply and demand. This is the only way to efficiently integrate the growing ratio of mostly volatile renewable energies and increasing decentralised production into the mains. This will give rise to an integrated data and energy network with new structures and functionalities (smart grid).

Objective: By building an ICT-based power grid, Germany will make a decisive contribution to the EU energy triangle of secure, competitive and sustainable supply. The Federal Government is looking to increase the share of renewable energies in power supply to at least 30% by 2020. Only by developing an ICT-based smart grid can renewable energies and decentralised producers be efficiently integrated into the existing power grid.

Measures

- The beacon project, E-Energy: ICT-based Energy System of the Future, sets the following priorities:
  - Developing and testing smart ICT-based measuring, control and regulation technologies along the whole supply chain
  - Designing electronic market places for the smart power grid
  - Developing and using non-proprietary norms and standards
  - Testing new business models
  - Reviewing the regulatory framework; framing data privacy and user protection schemes

ICT for electromobility

Safeguarding long-term, environment-friendly, individual mobility is very important for our society. Electric vehicles are a promising option here.

Future electric vehicles must be able to communicate and interact closely with power and traffic networks. ICT play a key role both for power supply connections to charge batteries and for the switch-over to other means of transport, such as busses and trains, due to the currently restricted radius of electro cars.

ICT enable the most efficient management of operating, invoicing and controlling processes and the exchange of necessary information among traffic networks, energy suppliers and electric vehicles. By means of suitable control mechanisms, electro cars could also be used as mobile power reserves in future to feed back electricity into the distribution grid during high demand. Batteries, electronics and electronic

systems play a central role in the overall electric vehicle system, since they are a major innovation driver for electromobility and provide the basis for energy-efficient system solutions.

Objective: By building the ICT-based infrastructure and applying ICT for high energy efficiency in vehicles, the Federal Government will prepare the way for putting one million electric vehicles onto Germany's roads by 2020.

Measures

- The research programme, ICT for Electric Mobility, sets the following priorities:
  - **Smart e-grid**
    Controlled charging and feed back; integration into electronic market places and smart grids, invoicing and roaming concepts
  - **Smart traffic**
    ICT for long-distance strategies, cockpits and mobility centres; fleet management; authentification and identity management; business models
  - **Smart vehicle**
    New ICT system architecture; smart battery management system for improving current battery designs for better performance and reach; data protection and security schemes
  - MEMO research project - Media-based Learning and Collaboration Services for Electromobility

- Electric Vehicle System research programme with the focus on the following:
  - Battery system research
  - Vehicle electronics and energy management
  - Overall electric vehicle system and manufacturing methods

ICT for traffic

Traffic telematics contributes both to raising traffic safety, particularly road traffic, and to increased efficiency among transport operators through suitable traffic guidance measures. This technology is a useful and necessary addition to investment and regulatory policy. ICT systems are the main way to improve traffic safety.

Developing products, systems and standards as well as the operation of telematics infrastructure are primarily the job of industry. Collective systems, such as guidance and control systems on trunk roads, can be operated by the public sector. Providing a framework and drafting future guidelines are the tasks of government.

Directive 2010/40/ EU of the European Parliament and of the Council of 7 July 2010 sets out a common legal framework for the introduction of smart road traffic systems and for its interfaces with other means of transport.

Objective: Improving road traffic safety and flow through the application of ICT

Measures

- Implementation of Directive 2010/40/EU of the European Parliament and of the Council of 7 July 2010 on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport. The directive includes following priority measures:
  - Provision of EU-wide multimodal travel information services
  - Provision of EU-wide real time traffic information services
  - Specification of a minimum dataset for traffic information
  - Harmonised provision for an interoperable EU-wide eCall application
  - Information services on safe and secure parking places for trucks and commercial vehicles

- Drafting a national action plan for smart road traffic with the following priorities:
  - Germany-wide management in the development and introduction of the smart road traffic system through setting joint priorities and reaching agreements on joint measures and instruments
  - Ensuring the technical lead of German enterprises also at European level by means

of German standards
  - Meeting the directive requirement of member states to adopt their own action plans

- Transport research programme, Mobility and Transport Technologies, with the focus on
  - Smart logistics
  - Personal mobility in the 21st century
  - Smart infrastructure

Cloud computing

At present, cloud computing is one of the most promising avenues for ICT providers and users. It offers user enterprises a way to obtain customised storage capacities, computing power and software via the Internet for flexible use to meet needs. The fees charged depend on functional scope, utilisation time and number of users. Companies can save on costs through economies of scale. Thanks to non-localised access via various terminals, the users can obtain the same requisite information access at any time. In addition, they can draw on professional, continually updated and legally compliant IT so as to concentrate more on their core business.

To ensure the secure and reliable use of cloud computing, a number of problems need to be solved. Current IT concepts have to be adapted to specific requirements, particularly in data security and protection, standardisation, interoperability and service quality. Legal problems include liability issues and aspects of contractual law as well as legal assurance of data protection and security. Cloud computing calls for new business models in the German ICT industry.

The Federal Government is seeking to speed up the development and introduction of cloud computing facilities. Especially small and medium-sized enterprises and the public sector should be able to take early advantage of the opportunities. The current challenges will be addressed with the new Cloud Computing Action Programme.

Measures

- The new Cloud Computing Action Programme comprises four fields of activity:
  - Harnessing innovation and market potential (research programme for secure Internet services, cloud computing for small and medium-sized enterprises and the public sector – trusted cloud)
  - Creating a pro-innovative framework (security and legal framework, standards, certification)
  - Coshaping international developments
  - Providing informational guidance

2. Digital networks of the future

Mounting data traffic on the Internet can only be handled in future by developing new technologies for the access networks, core networks and for mobile communication. As critical infrastructure, future networks and smart network platforms must be made secure and reliable.

In terms of both quality and quantity, the concern is not just with simply making adjustments or improvements to existing telecommunications networks, but with the full-coverage installation of a new basic broadband, IP-based infrastructure – next generation networks (NGN). This is why an international locational policy race has begun to build high-performance networks for full broadband coverage.

This is particularly the case where besides pure information highways smart network platforms are needed for education, transport, energy, health, leisure, tourism and administration to solve economic and social problems. For cost and efficiency reasons, the next generation networks will have to be optimised by merging existing network technologies into an intelligent, high-performance and flexible network platform.

High-performance broadband networks

With the Federal Government's broadband strategy,[3] Germany has set ambitious targets for nationwide supply. By the end of 2010 if possible, it aims at full-scale provision with broadband connections of at least 1 MBit/sec (downstream). As soon as possible, high-performance networks (> 50 MBit/sec) will cover the whole country; a sub-target is to make networks available for at least three-quarters of the population by the end 2014. This will surpass the targets[4] of the European Union's Digital Agenda for 2013 and 2020.

Broadband strategy implementation monitoring to date has come to a very positive overall assessment of structure and development. Specific measures are being taken to carry out the recommendations in the monitoring report.

In comparison with other major European economies, Germany is the current leader in broadband use. If high market growth continues, it will be able to extend its position further. Among the G7 states, it is now in second place.

Besides DSL and cable providers, particularly radio technology and, in individual cases also, satellite

3 http://www.zukunft-breitband.de/

4 Full basic broadband coverage by 2013; availability of over 30 Mbit/sec for 100 % of all households and of at least 100 MBit/sec for at least 50 % of all households by 2020

systems contribute to full basic broadband coverage. Germany was the first country in Europe to release and auction frequencies under the digital dividend for broadband mobile radio applications. Immediately after assigning digital dividend frequencies, work began with network expansion to include unserved areas. In the second quarter of 2011 at the latest, we will achieve full national basic broadband coverage, so that companies and households in rural areas will have access to modern ICT.

The constructive collaboration of stakeholders in industry, municipalities, the federal states and central government and also many citizens' initiatives make a major contribution to rolling out broadband networks. In addition to its radio spectrum policy measures, the Federal Government has supported this development by providing funding and setting uniform conditions for assistance (Joint Task Scheme - Improvement of Agricultural Structures and Coastal Protection, Joint Task Scheme - Improvement of Regional Economic Structures, Framework Regulation on Empty Conduits), and promoted information and publicity campaigns on the requisite measures (regional events in cooperation with the German Association of Districts and the German Association of Chambers of Industry and Commerce (DIHK), booklets, a broadband portal, an information offensive, a broadband atlas). In autumn 2010, a broadband office was established as a central contact point for related issues at national level.

Prospects are favourable for the installation and extension of high-performance networks. Particularly the rapid upgrading of TV cable networks and the roll out of local broadband networks will speed up their development.

The Federal Government expects to be able to meet most expansion targets in future as well largely through competition in the technology and provider mix. To a limited extent, government flanking can be worthwhile where market solutions are uneconomic. The Federal Government will seek to ensure that currently available infrastructures (transport, energy, water management, etc.) are put to greater use for broadband rollout. The Infrastructure Atlas prepared by the Federal Network Agency, which has already made a major contribution here, needs to be stepped up in future.

The Federal Government supports the full-coverage expansion of so-called next generation networks, including a funding competition with pilot schemes to demonstrate the feasibility of high-performance networks also outside conurbations at manageable cost through greater use of synergies.

High-performance networks can only be expanded rapidly via a variegated provider setup. This poses interoperability, standardisation and new access issues that need to be addressed quickly. The NGA Forum (**n**ext **g**eneration **a**ccess)[5] established at the Federal Network Agency makes important contributions to this along with the IT Summit process. A major goal of the German Federal Government is to enhance the role of SMEs in the development process.

Objective: Full-coverage supply and availability of broadband networks

Measures

- Implementing and upgrading the broadband strategy
- Forced development and extension of full high-performance network coverage by harnessing interinfrastructural synergies
- Implementing pilot schemes for high-performance networks outside conurbations
- Strengthening SMEs in the expansion process

5 http://www.bundesnetzagentur.de/DE/Sachgebiete/Telekommunikation/RegulierungTelekommunikation/NGAForum/NGAForum_node.html

Legal framework for telecommunications and network neutrality

To ensure legal and planning certainty in the future expansion of high-performance networks, the Federal Government will implement the new European regulatory framework through the current amendment of the Telecommunications Act. The key points for broadband expansion are:

- Longer regulatory cycles and longer-term regulatory schemes
- Taking account of specific investment risks in building new networks in subsequent remuneration decisions
- Accounting for cooperation in network expansion as part of regulation
- Improved framework for network expansion by facilitating co-use of available infrastructure

In the interests of users, the Federal Government is concerned to ensure non-discriminatory and transparent services. The Telecommunications Act already provides instruments to prevent abuse. The technology underlying the Internet is, however, undergoing radical change, as are the business models of service providers, network operators and equipment manufacturers. As part of broadband data services, Internet, telecommunications and media services will be delivered in future on one platform. Despite all the common features, quite different principles come into conflict in many ways. This affects both access and remuneration issues and the specification of transparency obligations in network traffic control and minimum standards for contents transport.

The Federal Government attaches priority to competition and network expansion. It will make a close appraisal of ways to ensure non-discriminatory and unbridled access to information in future networks (network neutrality). The amendment of the Telecommunications Act will establish the powers for specifying transparency obligations and minimum quality standards. Due to the societal significance of information technology, the Federal Government welcomes the current public debate and also seeks dialogue with all stakeholders through the IT Summit.

Objective: Ensuring planning and legal certainty in the expansion of high-performance networks. Guaranteeing non-discrimination in future networks.

Measures

- Implementation of the European TC directives; adoption of the amended Telecommunications Act in May 2011
- Introduction of enlarged powers to set transparency obligations and minimum quality standards in the Telecommunications Act
- Maintaining the high German and European standard in non-discriminatory freedom of information
- Continued dialogue with social groups
- Monitoring with reporting requirements

Radio spectrum policy

Mobility and the growing need for information in the modern knowledge society call for increasing transmission capacities – spectrum and performance needs are increasing for mobile wireless applications as rapidly as in the cabled sector. In April 2010, 360 megahertz of spectrum was thus auctioned for wireless network access to provide telecommunications services in Germany, doubling the range available for this use.[6] As the first country in Europe, Germany has provided so-called digital dividend frequencies for broadband mobile applications. Now available are more than 600 megahertz of radio spectrum below 5,000 megahertz.

Radio frequencies, however, remain in short supply. As other radio users also have demands, particularly radio broadcasters, the Federal Government promotes spectral flexibilisation and harmonisation as a basic prerequisite for the efficient use of frequencies. Frequency ranges at 900 and 1,800 megahertz, which are still in very intensive use for voice telephony (GSM), will be made more flexible in the next five years.

In response to rapid market development, legal provisions and the regulatory framework must be made adaptable enough to ensure that spectrum resources can also be provided quickly to meet future needs. Streamlined international solutions must be found, also to take advantage of economies of scale in the procurement of terminals and network elements for the available frequency uses.

Objective: Meeting frequency needs for use by mobile data services, including incentives for efficient frequency use. National and international adjustments of the frequency spectrum.

Measures

- Guaranteeing frequency resources to meet needs for radio applications
- Creating incentives for efficient frequency use (flexibilisation, more spectrally efficient technologies)
- Long-term European strategy for technology and service neutrality
- Implementing the digital dividend for mobile applications
- Harnessing potential for development in the terrestrial radio sector
- Harmonising frequencies to obtain economies of scale

Internet governance

Considering the great social and economic importance of the Internet, the reliable and efficient distribution of limited Internet resources plays a major role. This holds both for the tasks of the global allocation of IP addresses and the registration of domain names as well as decision-making and supervision (Internet governance).

The Federal Government generally supports the self-regulating ICANN scheme for the regulation of central issues in Internet governance, provided it can continue to perform its coordinating functions effectively and efficiently and can meet its global accountability obligations to governments, companies and civil-society organisations.

6 Reserve capacities are now available through newly assigned spectrum resources in mobile telephony at 2.5 GHz. As early as December 2006, bands were allocated from the 3.5 GHz range (WIMAX), which can also be used for mobile radio applications. In addition, frequencies are generally assigned for wireless use as so-called WLAN applications.

Objective: Advocacy of German interests in Internet coordination and critical Internet resources.

Measures

- New version of the so-called IANA Contract between ICANN and the U.S. Department of Commerce
- Active policy collaboration in the UN Internet Governance Forum (IGF) and in committees of ITU, OECD and others dealing with questions of Internet policy

Federal networks, Germany Online infrastructure/internetwork

To cope with the heightened and growing threat, critical communications infrastructures under the purview the Federal Government, particularly the federal networks and the internetwork (Article 91c of the Basic Law in conjunction with the Act on Linking Central/Federal State IT Networks - IT NetzG) need to meet state-of-the-art, high-performance and security standards. Pioneering strategies will be upgraded and implemented based on these modern and secure public administration network infrastructures, especially in e-government and e-participation and aspects of modern Internet policy. With the development of the internetwork between central and federal state government, the Federal Government achieved its aim of a seamless, multi-tier administration by 2012. Upgrading and integrating this internetwork into a joint communications infrastructure are additional milestones.

Measures will also be taken to ensure that new technologies in communications infrastructures are put to purposive use and develop new application scenarios and services. For central government and the federal states and municipalities, the Internet Protocol Version 6 (IPv6) will make a major contribution to introducing new internet technologies in modern, secure communications infrastructures.

Objective: Development of the internetwork between central and federal state government for seamless, multi-tier administration. Extension of this internetwork and integration of other federal networks.

Measures

- Amalgamating the government networks IVBB and IVBV/BVN into a joint public administration network infrastructure for providing a standardised service portfolio and streamlined security technologies as part of the project, Federal Networks
- Ongoing consolidation, partly by integrating other federal networks as well as the internetwork into the new modular network infrastructure
- Management of the new network infrastructure by a central service organisation (CSO) under the purview of the Federal Ministry of the Interior also with a view to better supervision by the Federal Government, more independence of individual enterprises and greater security, including better crisis resilience, economic efficiency and flexibility
- Assignment of tasks performed by the DOI organisation to the Federal Government
- Preparation of a strategy for the introduction and use of IPv6 in public administration in Germany

3. Trustworthy and secure digital world

The rapid development of the Internet calls for measures to make sure it is trustworthy and secure and for answers to the question of individual responsibility and the role of the state in the digital world. Effective data protection is essential for the acceptance and development of an information and knowledge society. The Federal Government subscribes to the following principles in developing and planning its Internet policy:

- Precedence to the application and enforcement of existing law over new legislation
- Precedence to self-regulation over new legislation
- Evolving and enforceable system of laws

There is a need here for the coherent development of national, multinational and international law.

The Federal Government sees the task of the state in information technology and the Internet as ensuring freedom and stability, protection and reliability and supply and innovation. In these functions, it will create a climate for greater confidence in Internet technologies and services. All stakeholders - users, providers or IT security planners - bear specific responsibility for IT security. Important here is to educate young people in particular about current risks and raise their awareness of the need for greater self-protection. The Federal Government is also concerned to ensure full policing throughout the Internet.

Internet security

The security and availability of computer networks make up major functional parameters of our globally networked society.

In contrast to legitimate users, internationally well organised criminal elements are also engaged on the Internet. There has also been a discernible increase in espionage and sabotage activities. The Federal Government is committed to making networks and services safer.

Objective: Securing basic digital services. Guaranteeing the accessibility and reliable availability of the Internet as infrastructure.

Measures

- Promoting the application of trustworthy and tamper-proof hardware components and of IT systems (trusted computing) in the federal administration and in major infrastructure sectors and collaboration in the Trusted Computing Group

- Making recommendations for the use of trusted platform modules
- Making recommendations for the security of IT systems in major infrastructure sectors
- Devising a system of incentives for the voluntary application of more secure IT systems for better protection against malware
- Programme for security research with the focus on
  - Security in mobile environments
  - Protection of Internet infrastructures
  - Development of verified secure systems with a defined level of security (built-in security)
  - New technologies for the protection of IT systems
- Expansion of services by the Federal Agency for Security in Information Technology for Internet security

Data protection and security (protection of personal rights on the Internet)

Increasingly, the Internet is a medium for individual lifestyles, maintaining contacts and worldwide information exchange. Many millions of people are engaged in social networks and publish in forums. This affords new avenues of participation and social contact, but it also poses new risks to the protection of personal rights on the Internet. The technical capabilities of modern terminals enable new applications that progressively merge the Internet with reality for the users and provide ways to accumulate data.

The Federal Government will make proposals for upgrading data protection on the Internet.

Objective: Protection of personal rights also in the digital sphere and strengthening self-determination and responsibility. The Internet must be a medium where freedom and legal certainty are assured. Guaranteeing security and transparency in handling electronic identities in the digital environment.

Measures

- Upgrading data protection on the Internet to strengthen self-determination and responsibility
- Establishing a foundation for data protection
- Appraising ways to improve data processing transparency

Consumer protection on the Internet

Many consumers use the Internet to obtain information in a simple way on certain topics and/or avail themselves of services. Some disreputable companies exploit the inattention of consumers when surfing and try to inveigle them into concluding contracts requiring payment, while deliberately concealing the obligation to pay for the product. Consumers are thus unaware that the product or service is being offered against payment and are then put under heavy pressure to pay the supposed bill.

Objective: Better protection of consumers against cost and/or subscription traps on the Internet.

Measures

- At EU level, the Federal Government advocates obliging businesses to clearly specify the price in combination with an obligatory confirmation slot for the conclusion of contracts with consumers on the Internet (so-called button solution). An e-commerce contract shall only enter into force when before making an order the customer has been notified in clearly visible form by the seller of the total costs and he has confirmed acknowledgement of this information by means of a separate declaration. The Federal Government has made such a proposal at the negotiations in Brussels on a directive on the rights of consumers and will continue to press for the inclusion of this type of provision.

- Submission of draft legislation for national regulation of protection against cost traps

Digital security: user-centred, secure identity management and protection against identity theft

Secure identities are crucial for trustworthy and reliable activities in the digital world. Even more than today, the identity of persons and objects will in future function as the key for accessing certain products and services in closed and public networks. Public authorities (central government, federal states and municipalities) but also private institutions will provide statutory infrastructure elements as an identification facility, such as the electronic proof of identity.

The use of electronic identities in the private sector must be made transparent, placed under civic control and only regulated as far as necessary.

The Federal Government supports the use of the electronic proof of identity in the new identity card and other documents and promotes other applications, e.g. De-Mail. At European level, it advocates secure, transparent and interoperable systems for electronic identities and their management.

Objective: Providing a framework and infrastructure components for secure, transparent and user-centred identity management to enable citizens to handle their digital identities as independently as possible and also ensure the necessary trustworthiness for developing and providing disparate forms of legal digital services. Government and private sector measures to educate the population about the dangers of identity theft, including means of protection.

Measures

- Promoting the application of the electronic proof of identity in the identity card

- Guidelines for the development, implementation and standardisation of socially accepted and constitutionally legitimate technologies for electronic identity management

De-Mail - secure exchange of electronic messages among industry, administration and citizens

De-Mail will enable the easy, confidential and verifiable transfer of electronic messages and documents among communication partners of certified identity. This will ensure legal certainty for business and administrative procedures and is a major prerequisite for greater data protection and security in electronic communication.

The Federal Government will set the legal framework (De-Mail Act) and make the technical arrangements with close private-sector involvement. De-Mail will be implemented and operated by largely private government-approved (accredited) providers. These will be mutually interoperable in a secure network to avoid stand-alone solutions.

Objective: Laying the legal foundation for the accreditation of De-Mail providers to ensure transparent and trustworthy services for citizens and enterprises through minimum secure electronic message exchange requirements for encryption, secure communication partner identity and verifiability (proof of dispatch/delivery)

Measures

- De-Mail Act initiated by cabinet decision on 14 October 2010
- Accreditation of at least five De-Mail providers based on the De-Mail Act by the end of 2011

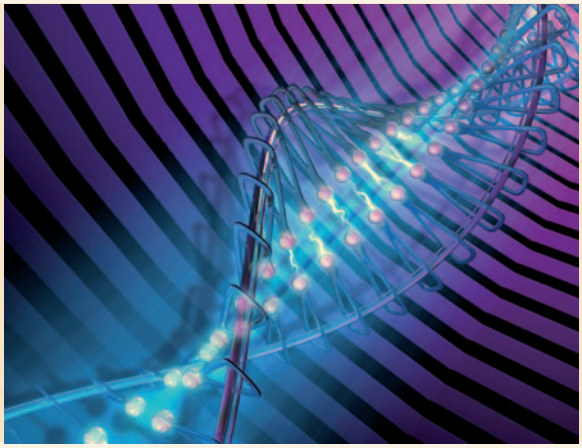
Protection of intellectual property in the digital age

Intellectual property rights for innovative products and creative services must also be enduring and enforceable in the digital environment. This is why copyright in particular will play a key role in the modern media and information society.

Objective: Continued assurance of a high level of protection and effective enforceability of copyright. Developing better and effective instruments for the consistent prevention of copyright infringements on the Internet. Framing European legislation on the activities of collecting societies, i.e. a European right of protection and administration. Creating the basic conditions for the digitalisation and online distribution of so-called orphan works. The Federal Government will seek to establish ancillary copyright for press publishers.

Measures

- Continued assurance of a high level protection and effective enforceability of copyright
- Appraisal of developments in provider liability, including European developments, also for preventing copyright and personal rights violations
- Support in establishing a European legal framework for the activities of collecting societies, i.e. a European right of protection and administration, and for online use of orphaned works
- Submission of draft legislation for the Third Basket of copyright reform in 2011 to establish a national legal framework for the use of orphaned works and the regulation of other copyright issues in the information society
- Measures to promote social consensus on the role of the creative process, intellectual property and their cultural and economic value



4. Research and development for a digital future

Research for the Internet of the future

In developing the future Internet as a major communications and information infrastructure, user interests will be accorded higher priority. The Federal Government will therefore initiate and support research on the protection and informational self-determination of users on the Internet, its maintenance as a secure and free medium and its cultural development.

With its ongoing development of the High-Tech Strategy, the Federal Government is breaking new ground. It will expand research on the Internet of Things and services for new applications to harness the economic potential of these developments in Germany.

The future Internet can only be developed as a global medium together with international partners. The Federal Government attaches priority to initial cooperation with European partners and will press for stepping up relevant initiatives in the European Research Framework Programme. Furthermore, national and European projects will be networked with global international activities towards an Internet of the future.

Internet of Services

Knowledge is the most important resource in the 21st century. Business opportunities lie above all in the efficient use of knowledge and information and their translation into marketable products and services. To be able to make use of the knowledge available on the Internet, it must be meaningfully collated and combined, using automated methods as far as possible.

The so-called Internet of Services will give rise to development and service platforms to facilitate the design and delivery of knowledge-based services. In future, more services will be provided via Internet cloud computing platforms (see Chapter 1.2).

The Federal Government supports the development and testing of basic technologies for the Internet of Services, with priority attached to semantic technologies for the efficient accessing of Internet knowledge.

Objective: Developing and testing basic technologies for the future Internet of Services. Efficient accessing of Internet knowledge through new services.

Measures

- The research programme, THESEUS – New Technologies for the Internet of Services, sets the following priorities:
  - In the social sector, including patent research, integration of business operations and partners, information logistics, web services, image processing in medicine
  - In the private sector, including digital desk and private library, e.g. with user-generated contents, networking in virtual communities
  - In the cultural sector, including the provision of digitalisation, processing and search technologies for libraries, museums, film, radio and company archives

- SimoBIT research programme for secure mobile information technology in SMEs and administration

Internet of Things

The international networking of our life and work is one of the main agents of change in our economy and society. The Internet of Things is the next technical evolutionary step. Objects, including everyday articles, will become intelligent thanks to programmability, storage capacities, sensors and communication abilities and will be able to exchange information autonomously, instigate actions and control each other via the Internet.

For manufacturers and service providers, this means product innovations and the development of new innovative business models for largely undeveloped markets, such as service robotics or home networking.

Objective: Using local, relevant technological competencies in the Internet of Things to enable many producers, providers and users to integrate upcoming developments early on into their innovation cycles and develop new potential markets.

Measures

- Technology programme, AUTONOMICS - autonomous and simulation-based systems for small and medium-sized enterprises
- The Connected Living initiative for open standards and interfaces in home networking
- National Roadmap Embedded Systems
- Software top clusters

Research on leading digital technologies

Grid computing/Supercomputers

Scientific institutions and business and industry need increasing computing power, larger storage capacity and more complex software. The Federal Government will adopt a phased approach to accessing top-performance computing power: grid computing for easy use of supercomputers via fast networks; bundling and coordination of resources for supercomputers in the Gauss Alliance and European cooperation in the European supercomputer network, PRACE, for future supercomputing technology.

Objective: Ensuring access to supercomputing resources. Improving the attractiveness of grid technologies. Assured availability of suitable software for supercomputers.

Measures

- Continuation and expansion of the D-Grid Initiative, particularly for commercial users
- Collaboration in the European Grid Initiative Study, EGI
- Promoting the development of software for supercomputers
- Cooperation in developing the European supercomputer network, PRACE
- Continuation of the Gauss Alliance

3D technologies

The broad introduction of digital 3D media will give many manufacturers and providers access to a new, promising market for innovative products and services. There are large opportunities for cinema, television and the Internet, but also for industrial or medical applications.

In technological terms, 3D comprises the whole process chain, from recording to efficient transmission and storage formats, signal processing, software and hardware for post-production to new display and projection technologies. With its more pronounced SME structure, German industry needs to bundle locational interests quickly to raise competitiveness.

3D system integration

With the development of the third dimension (3D), more efficient and cost-effective electronic products can be manufactured in future. Germany has already gained an excellent position in international competition in 3D system integration. A three-dimensional combination of several chips requires new approaches (system integration technology) in assembly and packaging technologies (handling of an enormous number of electrical contacts and combining components manufactured in different ways).

Power electronics

Already today, about 40 per cent of the energy consumed worldwide is electrical. This share is forecast to rise to 60 per cent by 2040. With new developments in so-called power electronics, electricity will be used even more efficiently in future. To maximise energy efficiency, it is not, however, enough to optimise the capacity of individual semiconductor devices. There is also a need for new system solutions, including a multitude of different elements and aspects. These range from new materials, component concepts and assembly technologies to innovative system integration and reliability aspects to the standardisation of construction elements and cost-effective manufacturing techniques.

Objective: Bundling competencies of German manufacturers, providers and scientific institutions in 3D visualisation to gain a leading position in major applications. Leading position in 3D system integration. Efficient energy use and energy efficiency through modern power electronics.

Measures

- Establishing a 3D innovation centre based on the findings of the research project, PRIME (Development and testing of new technologies for 3D media)
- Setting up a 3D technology centre for system integration (All Silicon System Integration Dresden – ASSID)
- Developing technologies for 3D system integration at chip and component level
- Automation of chip design
- Developing modern power electronics for innovative and energy-efficient system solutions

5. Education, media competency and integration

Growth and employment can only be assured with well-trained and qualified specialists and the demand for these will continue to rise. Educational policy needs to harness the potential and provide opportunities for talent to improve vertical and horizontal qualification. This can only be done by stepping up the use of information and communication technologies and digital media to foster a new culture of lifelong learning in basic and further vocational training. Also needed is a general improvement of media competency in the population at large.

Basic, further and continuing education and training

As part of two funding guidelines with altogether € 60 million, the Federal Government has so far supported the development, testing and application of new educational services through digital media.

Other media-assisted initiatives for specific target groups and requirements are presently in preparation. Internet-based measures are, for example, planned in so-called age management: the further training of older skilled personnel and further media-didactic training for multipliers, such as vocational teachers, trainers and educational personnel in transitional systems, training and continued education. Additional measures focus on mobile in-service learning aimed at combining didactic methods with innovative technical facilities. New digital educational services for children and youth will be developed to promote media skills for handling the Internet and abilities acquired from Internet experience.Motivating girls and young women to take up a course of training or study in the ICT sector remains a major priority here.

With various programmes and projects, the Federal Government is focusing on promoting junior personnel in electronics. There is a need to motivate young people for electronics and convince students to engage in research. This is why the Federal Government supports the school-pupil contest INVENT a CHIP and the student programme for electromobility, DRIVE-E.

Objective: Advancing innovations in basic, further and continuing vocational training and education. Continued development of a culture of in-service learning and teaching. Use of digital media for educational services based on smart educational infrastructure networks. Imparting media skills in school and out-of-school education.

Measures

- Mobile in-service learning
- Further media-didactic training for multipliers in basic and further training
- Improving trainability through media competency among youth
- Initiative for technical education
- Initiative for improving children's media competency: Child-appropriate Internet Content and the surfing space, fragFINN.de
- National computer science competition, computer science contest for schoolchildren: Informatik-BIBER
- Promotion of junior personnel in electronics (INVENT a CHIP) and electromobility (DRIVE-E)
- Using the scope for continuing education/ training under Social Security Code III
- 50 Plus Initiative
- Get into a Dialogue - dialogue on child and youth policy in the digital world
- The Net for Children initiative
- Youth campaign, watch your web and the youth portal, netzcheckers.de

Working in the digital world

ICT are not just important for innovative and competitive businesses. IT-assisted communications and working platforms afford employees and employers scope for more flexible working hours and workplaces and thus support job/family compatibility and/or a better work-life balance. ICT competencies are needed to take advantage of these opportunities.

Objective: Developing ways for new ICT to enlarge the scope for flexible working hours and workplaces and improve their usefulness for companies and people.

Measures

- New Quality of Work Initiative (INQA) with the participant partners, the Confederation of Germany Employers' Associations (BDA), trade unions, social insurance agencies, foundations
- Developing ways of using ICT for flexible working hours and workplaces
- Implementation activities and campaigns for these schemes

Digital integration

Just as enterprises and the economy as a whole, people themselves also benefit from their Internet know-how. This is increasingly becoming a prerequisite for equal opportunities in private and professional life and can often tangibly improve quality of life. The distinct increase in the onliner ratio in recent years to 72 % in 2010[7] strengthens Germany as a business location. This figure also means, however, that more than every fourth person still makes no use of the Internet in 2010. The Federal Government will therefore continue its activities for digital integration. It is looking to improve people's Internet competencies so that they can gain both private and professional benefits from the many Internet services. Digital integration in future will focus more on improving the digital competency of citizens, starting with children and including elderly people.

Objective: Improving the digital competency of citizens. Use of Internet technologies for public participation in policymaking. Taking greater account of the special concerns of persons with disabilities for accessible and barrier-free use of ICT services (such as internet applications, digital television media, digital health management, home environment, traffic information systems and workplace design).

Measures

- Experience Internet Initiative
- Expansion of citizen services by the Federal Agency for Security in Information Technology
- Procedures for public participation in policymaking
- National Action Plan for Improving the Participation of Persons with Disabilities
- Implementation of the e-government strategy for participation

7 (N)ONLINER Atlas 2010 http://www.nonliner-atlas.de/

6. Digital solutions for societal challenges and citizen-friendly administration

E-government and electronic communication with the administration

As e-government brings citizens and businesses closer to policymaking and administration and makes processes more effective and transparent, it will receive further assistance. The government programme, Transparent and Networked-based Administration, contains relevant projects. Legal provisions in particular need to be amended wherever necessary (E-Government Act), transparency enhanced and access facilitated to information and services (geodata, open government, public service number D115).

Under the auspices of the IT Planning Council, a multi-tier, e-government strategy will be drafted for the first time with the support of industry, the scientific community and administration. It will specify the new institutional and constitutional allocation of responsibilities in IT (Article 91c of the Basic Law in conjunction with the IT Interstate Agreement) and establish a streamlined e-government landscape for all government tiers in Germany.

With technical and organisational support measures, companies will be relieved of part of the burden and costs of meeting statutory information and reporting obligations to the administration. The companies will retain full control over the reporting processes. In particular, a scheme will be devised to account for all scales of enterprise.

Objective: Ongoing development of federal e-government services and collaboration in the national e-government strategy to enable the administration's provision of requisite information throughout the system and the fully electronic, seamless handling of internal and external procedures with open standards. Efficient data exchange between industry and administration.

Measures

- Implementation of the relevant projects from the government programme, Transparent and Networked-based Administration
- Preparation/Adoption of a national e-government strategy by the end of 2010
- Implementing the strategy with projects as of 2011
- Carrying out the measure for pilot testing and implementing a process-data accelerator for data exchange between industry and administration as part of the Federal Government's IT Investment Programme by the end of 2011
- Maximum integration of information and reporting obligations from various domains by 2015

ICT in the federal administration

Information and communications technology is a major driver for simplifying and modernising administration. It is an indispensable tool for the efficient performance of federal administrative tasks and for achieving the policy goals of the Federal Government. Another joint aim here is a future network-based, IT-based administration, which is why Federal IT management has been reorganised. Effective institutions have been established for this, including the Federal Government Commissioner for Information Technology and the interministerial Chief Information Officers Council.

There is a need to consolidate and strengthen these institutions and to continue with the implementation of the aims and measures specified in the Federal IT Management strategy. Key tasks here are efficient federal IT service centres and the establishment of an advisory council to bundle the demand for IT in the federal administration. Another aim is to align the federal IT administration more closely with administrative needs and processes through the ongoing methodological and substantive development of the framework architecture of Federal IT Management. This will lay the foundation for an effective management of the IT landscape in federal administration to guarantee the viable, innovative, economic and efficient use of information and communications technology.

Objective: The continuation and ongoing implementation of the Federal IT Management strategy in information and communications technology will ensure future effective, customer-friendly, user-friendly, innovative, secure and cost-effective administration. **Objective:** The continuation and ongoing implementation of the Federal IT Management strategy in information and communications technology will ensure future effective, customer-friendly, user-friendly, innovative, secure and cost-effective administration.

Measures

- Continuation of the capacities established by the Federal IT Management strategy in federal administration
- Strengthening the Federal Government Commissioner for Information Technology
- Establishment and expansion of efficient federal IT service centres
- More economic and efficient organisation of IT supply and demand in federal administration
- Consolidation and standardisation of federal administration IT
- Continued development and establishment of a general enterprise architecture management for federal administration
- Coordination and alignment of federal information technology with administrative operations

E-justice

At European level, Germany is actively involved in the development of the E-Justice Portal. This provides information on the legal systems of the member states for courts, lawyers and notaries on the one hand and citizens and businesses on the other. It facilitates online access to registers, for example, commercial and company registers as well as to legal proceedings, such the European payment order.

At national level, legal and practical preparations must be made for the introduction of electronic criminal case files. Besides cost and resource savings, the departure from the conventional paper file through digitalisation will make a major contribution to accelerating proceedings to improve basic rights.

Objective: Citizens and companies must be able to claim their rights quickly and effectively in Europe and across borders. This also includes the rapid judicial recovery of uncontested claims in cross-border cases by means of the instruments provided in the E-Justice Portal. Establishing the legal conditions for an electronic case file in German criminal proceedings and concurrent preparation of technical implementation recommendations for regulatory bodies at federal state level.

Measures

- Integration of the European payment order and the trade and company register into the European E-Justice Portal by 2013
- Preparations for the introduction of electronic case files in criminal procedure law

Sustainability and resource conservation (green IT)

The Federal Government will make consistent use of green IT[8] to meet major environmental challenges, such as higher energy and resource efficiency and climate protection. While minimising the increasing energy demand[9] of the growing ICT industry, there is also a need to harness the large potential for improving energy and resource efficiency in other industries.[10] This largely conforms with the action plans of international organisations such as ITU and OECD, but in smart networks, for example, it also goes beyond the measures discussed in the EU's Digital Agenda.

The Federal Government will seek to play a pioneering international role in the energy-efficient and resource-efficient use of ICT. The aim here is to minimise the electricity consumption of ICT infrastructure operated by the Federal Government and to make recommendations for the public procurement of environment-friendly ICT products. Dialogue with federal states and municipalities will increase expertise and savings.

The Federal Government will take rapid steps to harness the available potential by promoting the use of existing ICT facilities and developing new technologies. Federal Government measures will mainly concentrate on:

- Information and advice to consumers and users on green IT products, services and manufacturers
- Promoting research and development in particularly innovative and efficient technologies and their application as well as the deployment of energy management tools
- Promoting exports of green IT products and services
- Networking and cooperation with German ICT industry, particularly via the IT Summit

Objective: Forty per cent reduction of ICT energy consumption at federal level by 2013. Voluntary target for reducing ICT energy consumption by industry.

8 By green IT is meant all activities for the environment-friendly use of ICT and its application for environmental protection. This includes the entire lifecycle of ICT products and also other environmental impacts besides energy consumption, such as the consumption of environmentally relevant raw materials.

9 Experts estimate that ICT electricity demand will increase by more than 20 % in Germany by 2020.

10 Particularly in mobility, buildings, power grids and logistics, experts assess that savings could be made amounting to 194 million tonnes of CO_2 a year in Germany through the use of ICT applications.

Measures

- Stepping up the Green IT Action Plan together with industry and research institutions with the following priorities:
  - 40% target for federal ICT
  - Support for a green IT information portal
  - IT2Green technology promotion programme (Energy-efficient ICT for SMEs, administrative bodies and residences)
  - Cooperation with the Green IT Alliance and Green IT Science Forum
- Environmental Innovation Programme, focusing on IT Goes Green and a green IT consultancy office
- KfW Special Fund for Energy Efficiency
- Environmental labelling of ecological ICT products
- Alliance for sustainable procurement with federal states and municipalities, including portals for environment-friendly procurement

E-health and demographics

Information and communication technologies will enable us to successfully cope with the future social and health care challenges posed by demographic trends. In particular, telemedicine and telemonitoring e-health applications will help in providing sustainable care for the chronically ill in their home environment and bridging the physical distance between patients and physicians/nurses. Beyond the health sector, e-health applications based on a secure and viable telematics infrastructure have the potential to maintain and improve living conditions for citizens with increasing life expectancy.

The potential of e-health applications can only be harnessed through a concerted approach in line with the common aims of all stakeholders. The Federal Government will therefore identify the current practical barriers together with the implementing organisations in the health sector and service providers and prepare packages of measures for individual fields of activity to help speed up the transition from the pilot phase to standard care services.

ICT can also make a major contribution to good, effective and efficient assistance in caring for older people. The Federal Government will promote new forms of support and care.

Objective: Enabling full use and provision of telemedicine/telemonitoring applications. Applying ICT in care for the elderly.

Measures

- Preparing an e-health implementation strategy (packages of measures) in 2011 and starting implementation in 2012
- Implementation of the measures, The Smart Home – process optimisation, short distances, debureaucratisation

Annex 1: Table of objectives

Theme (chapter, page)	Objective
1. New growth and jobs through digitalisation	
ICT sector in Germany, small and medium-sized ICT enterprises, young businesses and business start-ups (p. 5)	Creation of 30,000 new jobs in the ICT sector by 2015, raising the number of ICT-based business start-ups. Support for SMEs and crafts in the use and application of Internet and ICT.
Foreign Trade and Investment Promotion Programme, Digital Internal Market (p. 6)	Increasing exports and attracting investments
Open standards and interoperability (p. 7)	Support for German manufacturers in the early standardisation of their technological developments. Promoting the dissemination of open standards and interoperable systems in industry and administration also at European level. Supporting the export of know-how for setting up interoperable ICT architectures and infrastructures.
Digital media and creative industry (p. 7)	Further development of industry potential and its economic application.
ICT and energy (p. 8)	By building the ICT-based power grid, Germany will make a decisive contribution to the EU energy triangle of secure, competitive and sustainable supply. The Federal Government aims to raise the share of renewable energies in power supply by 2020 to at least 30%. Installing an ICT-based smart grid is the only way to efficiently integrate decentralised producers into the existing power grid.
ICT for electromobility (p. 8)	By building the ICT-based infrastructure and applying ICT for high energy efficiency, the Federal Government will pave the way for putting one million electric vehicles on Germany's roads by 2020.
ICT for traffic (p.9)	Improved safety in road transport and traffic flow through the use of ICT
Cloud computing (p. 10)	The Federal Government is seeking to speed up the development and introduction of cloud computing solutions. Small and medium-sized enterprises in particular and the public sector should be able to take early advantage of the opportunities. The present challenges will be addressed with the new Cloud Computing Action Programme.

Theme (chapter, page)	Objective
2. Digital networks of the future	
Broadband high-performance networks (p. 11)	Full-coverage supply and availability of broadband networks
Legal framework for telecommunications and network neutrality (p. 13)	Ensuring planning and legal certainty in the rollout of high-performance networks. Guaranteeing non-discrimination in future networks.
Radio spectrum policy (p. 14)	Meeting frequency needs for use by mobile data services, including incentives for efficient frequency use. National and international adjustments of the frequency spectrum.
Federal networks, Germany Online infrastructure/ internetwork (p. 15)	Development of the internetwork between central and federal state government for seamless, multi-tier administration. Extension of this internetwork and integration of other federal government networks.
3. Trustworthy and secure digital world	
Internet security (p. 16)	Securing basic digital services. Guaranteeing reliable Internet availability.
Data protection and security – protection of personal rights on the Internet (p. 17)	Protection of personal rights also in the digital sphere and strengthening self-determination and responsibility. The Internet must be a medium in which both freedom and legal certainty are assured. Guaranteeing security and transparency in handling electronic identities in the digital environment
Consumer protection on the Internet (p. 17)	Better protection of consumers against cost and/or subscription traps on the Internet
Digital security: user-centred, secure identity management and protection against identity theft (p. 18)	Providing a framework and infrastructure components for secure, transparent and user-centred identity management to enable citizens to handle their digital identities as independently as possible and also ensure the necessary trustworthiness to be able to develop and offer disparate forms of legal digital services. Government and private-sector measures to educate the population on the dangers of identity theft, including information on protective measures.
De-Mail - secure exchange of electronic messages among industry, administration and citizens (p. 18)	Laying the legal foundation for the accreditation of De-Mail providers to ensure transparent and trustworthy services for citizens and enterprises through minimum requirements for secure electronic message exchange on encryption, secure communication partner identity and verifiability (proof of dispatch/delivery)

Theme (chapter, page)	Objective
Protection of intellectual property in the digital age (p. 19)	Ongoing assurance of a high level of protection and the effective enforceability of copyright. Framing European legislation for the activities of collecting societies, i.e. a European right of protection and administration. Setting up a framework for the digitalisation and online distribution of so-called orphan works. The Federal Government is seeking to create an ancillary copyright for press publishers
4. Research and development for a digital future	
Internet of Services (p. 20)	Developing and testing basic technologies for the future Internet of Services. Efficient accessing of knowledge on the Internet through new services
Internet of Things (p. 21)	Using local competencies in the relevant technologies for the Internet of Things to enable many producers, providers and users to integrate new developments into their innovation cycles and develop new potential markets
Grid computing/Supercomputers (p. 21)	Ensuring access to supercomputing resources. Improving the attractiveness of grid technologies. Assuring the availability of suitable software for supercomputers
3D technologies (p. 22), 3D system integration (p. 22), power electronics (p. 22)	Bundling competencies of German manufacturers, providers and scientific institutions in 3D visualisation to gain a lead position in major applications. Leading position in 3D system integration. Efficient energy use and energy efficiency through modern power electronics
5. Education, media competency and integration	
Basic, further and continuing education/training (p. 23)	Advancing innovations in basic, further and continuing vocational education/training. Further development of a culture of in-service learning and teaching. Use of digital media for educational services based on smart educational infrastructure networks. Imparting media skills in school and out-of-school education
Working in the digital world (p. 24)	Developing ways of putting the scope new ICT affords enterprises and people to better use for flexible working hours and workplaces

Theme (chapter, page)	Objective
Digital integration (p. 25)	Upgrading the digital competency of citizens. Using Internet technologies for public participation in policy-making. Taking greater account of the special concerns of persons with disabilities to ensure accessibility and barrier-free use of ICT services (such as internet applications, digital television media, digital health management, home environment, traffic information systems and workplace design)
6. Digital solutions for societal challenges	
E-government and electronic communication with the administration (p. 26)	Upgrading federal e-government services and collaboration in the national e-government strategy to enable the administration's provision of the requisite information throughout the system and the seamless handling of internal and external procedures with open standards. Efficient data exchange between industry and administration
ICT in the federal administration (p. 27)	The continuation and ongoing implementation of the Federal IT Management strategy in information and communications technology will ensure continued, client-friendly, user-friendly, innovative, secure and cost-effective administration.
E-justice (p. 27)	Citizens and companies will be able to claim their rights quickly and effectively in Europe and across borders, also including the rapid judicial recovery of uncontested claims in cross-border cases, through the instruments provided in the E-Justice Portal. Establishing the legal conditions for an electronic case file in German criminal proceedings and concurrent preparation of technical implementation recommendations for regulatory bodies at federal state level
Sustainability and resource conservation -green IT (p. 28)	Forty per cent reduction of ICT energy consumption at federal level by 2013. Voluntary target for reducing ICT energy consumption by industry
E-health and demographics (p. 29)	Enabling full-coverage use and provision of applications in telemedicine/telemonitoring. Use of ICT in care for older people

Annex 2: Table of measures

Theme (page)	Measure	Link
1. New growth and jobs through digitalisation		
ICT small and medium-sized enterprises, young businesses and business start-ups (p. 5)	Start-up Nation Germany initiative	www.existenzgruender.de
	Start-up Competition - Innovative ICT	www.gruender-wettbewerb.de
	EXIST start-up grant	www.exist.de/exist-gruenderstipendium
	Funding programme: Innovative SMEs: ICT	www.hightech-strategie.de
	Strengthening ICT competency of SMEs and crafts	www.bmbf.de/foerderungen
	Further development of Commission on the Economics of Geo-Information	www.geobusiness.org
	Initiative to improve the usability of applied software for crafts and SMEs	
	High-Tech Start-Up Fund II	www.high-tech-gruenderfonds.de
	Dialogue with young IT enterprises via the IT Summit process	
Trade and Investment Promotion Programme – Digital Internal Market (p. 6)	Inclusion of ICT in the Trade and Investment Promotion Programme	
	Locational marketing to solicit and/or retain investors and talent in Germany	
Open standards and inter-operability (p. 7)	Setting up facilities for interoperability tests and identifying benchmarks for pro-curement projects	
	Setting up an Internet portal on interoper-ability	
	Supporting interoperability know-how transfer to other countries	
	Establishing a national clearing house for solving interoperability problems.	

Theme (page)	Measure	Link
Digital media and creative industry (p. 7)	Dialogue with industry under the Culture and Creative Industry Initiative Industry dialogue on preventing Internet piracy Federal German Computer Game Prize	www.kultur-kreativ-wirtschaft.de www.deutscher-computerspielpreis.de
ICT and energy (p. 8)	E-Energy – Smart grids made in Germany	www.e-energy.de
ICT for electro-mobility (p. 8)	Research programme: ICT for Electromobility Electric Vehicle System research programme (key technologies for electromobility – STROM)	www.ikt-em.de www.bmbf.de www.bmbf.de/foerderungen
ICT for traffic (p. 9)	Implementation of Directive 2010/40/ EU of the European Parliament and of the Council of 7July 2010 on the framework for introducing smart traffic systems in road transport and for its interfaces with other means of transport Drafting a national action plan for smart road traffic Transport research programme: Mobility and Transport Technologies	www.bmwi.de
Cloud computing (p. 10)	Cloud Computing Action Programme Trusted Cloud research programme	www.cloud-computing-aktionsprogramm.de www.bmwi.de/go/trusted-cloud
2. Digital networks of the future		
Broadband high-performance networks (p. 11)	Implementing and upgrading the broadband strategy Forced development and extension of full high-performance network coverage by harnessing interinfrastructural synergies Implementing pilot schemes for high-performance networks outside conurbations Strengthening SMEs in the expansion process	www.zukunft-breitband.de

Theme (page)	Measure	Link
Legal framework for telecommunications and network neutrality (p. 13)	Implementation of the European TC directives; adoption of the amended Telecommunications Act in May 2011 Introduction of enlarged powers to set transparency obligations and minimum quality standards in the Telecommunications Act Maintaining the high German and European standard in non-discriminatory freedom of information Continuation of dialogue with social groups Monitoring with reporting requirements	www.bmwi.de
Radio spectrum policy (p. 14)	Guaranteeing frequency resources to meet radio application needs Creating incentives for efficient frequency use (flexibilisation, more spectrally efficient technologies) Long-term European strategy for technology and service neutrality Implementing the digital dividend for mobile applications Harnessing development potential in the terrestrial radio sector Harmonising frequencies to achieve economies of scale	www.bmwi.de
Internet governance (p. 14)	New version of the so-called IANA Contract between ICANN and the U.S. Department of Commerce Active policy collaboration in the UN Internet Governance Forum (IGF) and in committees of ITU, OECD and others dealing with Internet policy issues	www.icann.org

Theme (page)	Measure	Link
Federal networks, Germany Online infrastructure/internetwork (p. 15)	Amalgamating the government networks IVBB and IVBV/BVN into a joint network infrastructure of public administration for the provision of a standardised service portfolio and uniform security technologies as part of the Federal Networks project Further consolidation partly through integration of other federal networks as well as the internetwork into the new modular network infrastructure Central management of the new network infrastructure by a central service organisation (CSO) under the purview of the Federal Ministry of the Interior with a view to better control by the Federal Government, more independence from individual enterprises and greater security, including better crisis resilience, economic efficiency and flexibility Assignment of tasks performed by the DOI organisation to the Federal Government Preparation of a strategy for the introduction and use of IPv6 in public administration in Germany	www.cio.bund.de
3. Trustworthy and secure digital world		
Internet security (p. 16)	Promoting the application of trustworthy and tamper-proof hardware components and IT systems (trusted computing) in the federal administration and in major infrastructure sectors as well as collaboration in the Trusted Computing Group Providing application recommendations for trusted platform modules Provision of recommendations for the security of IT systems in major infrastructure sectors	www.cio.bund.de

Theme (page)	Measure	Link
Internet security (p. 16) Continued	Devising a system of incentives for the voluntary application of more secure IT systems for better protection against malware Programme for security research Expansion of services by the Federal Agency for Security in Information Technology for Internet security	 www.bsi-fuer-buerger.de www.sicher-im-netz.de
	Raising awareness of citizens as well as small and medium-sized enterprises	
Data protection and security – protection of personal rights on the Internet (p. 17)	Upgrading data protection on the Internet for strengthening self-determination and responsibility Establishing a foundation for data protection Appraising ways to improve the transparency of data processing	
Consumer protection on the Internet (p. 17)	At EU level, the Federal Government advocates obliging businesses to clearly specify the price in combination with an obligatory confirmation slot for the conclusion of contracts with consumers on the Internet (so-called button solution) Appraisal of a national regulation for protection against cost traps	www.bmj.de/abofallen
Digital security: user-centred, secure identity management and protection against identity theft (p. 18)	Promoting the application of the electronic proof of identity in identity cards Guidelines for the development, implementation and standardisation of socially accepted and constitutional technologies for electronic identity management	www.personalausweisportal.de
De-Mail – secure exchange of electronic messages among industry, administration and citizens (p. 18)	De-Mail Act initiated by cabinet decision on14 October Accreditation of at least five De-Mail providers based on the De-Mail Act by the end of 2011	www.cio.bund.de

Theme (page)	Measure	Link
Protection of intellectual property, in the digital age (p. 19)	Ongoing assurance of a high level of protection and the effective enforceability of copyright Appraisal of developments in provider liability including European developments also with a view to preventing copyright and personal rights infringements Support in establishing a European legal framework for the activities of collecting societies, i.e. a European right of protection and administration, and for the online use of orphaned works Submission of draft legislation for the Third Basket of copyright reform in 2011 to establish a national legal framework for the use of orphaned works and the regulation of other questions of copyright in the information society Measures to promote social consensus on the role of the creative process, intellectual property and their cultural and economic value	
4. Research and development for a digital future		
Internet of Services (p. 20)	THESEUS research programme SimoBIT research programme	www.theseus-programm.de www.simobit.de
Internet of Things (p. 21)	AUTONOMICS technology programme Connected Living initiative for the creation of open standards and interfaces for home networking National Roadmap Embedded Systems Software top clusters	www.autonomik.de www.connected-living.org
Grid computing/ Supercomputers (p. 21)	Continuation and expansion of the D-Grid Initiative Cooperation in developing the European Grid Initiative – EGI	www.d-grid.de

Theme (page)	Measure	Link
Grid computing/ Supercomputers (p. 21) Continued	Promoting the development of software for supercomputers	
	Cooperation in developing the European supercomputer network, PRACE	www.bmbf.de
	Continuation of the Gauss Alliance	www.gauss-centre.eu
3D technologies (p. 22)	Establishing a 3D innovation centre based on the findings of the research project, Production and Projection Techniques for Immersive Media (PRIME)	www.prime3d.de
3D system integration (p. 22)	Establishment of a technology centre for 3D integration (ASSID)	www.izm.fraunhofer.de
	Developing technologies for 3D system integration at chip and component level	www.bmbf.de
	Automation of chip design	www.bmbf.de
Power electronics (p. 22)	Development of modern power electronics for innovative and energy-efficient system solutions	www.bmbf.de
5. Education, media competency and integration		
Basic, further and continuing education/training (p. 23)	Mobile in-service learning	
	Further media-didactic training for multipliers in basic and continuing education/ training	
	Improving trainability through media competency among youth	
	Initiative for technical education	
	Initiative for improving children's media competency, Child-appropriate Internet Content and the secure surfing space, fragFINN.de	www.ein-netz-fuer-kinder.de www.fragFINN.de
	Promotion of junior personnel in electronics (INVENT a CHIP) and electromobility (DRIVE-E)	www.invent-a-chip.de
	Federal computer science competition, Informatik-BIBER	www.drive-e.org

Theme (page)	Measure	Link
Basic, further and continuing education/training (p. 23) Continued	Continuing education/training under German Social Security Code III	www.informatik-biber.de
	IT 50 Plus initiative	www.it-50plus.org
	Internet Dialogue - Dialogue on child and youth policy in the digital world	www.dialog-internet.de
	Net for Children initiative	www.ein-netz-fuer-kinder.de
	Youth campaign, watch your web	www.watchyourweb.de
	Youth portal, netzcheckers.de	www.netzcheckers.de
Working in the digital world (p. 24)	New Quality of Work Initiative (INQA)	www.inqa.de
	Finding ways to use ICT for flexible working hours and workplaces and implementing activities and campaigns for these schemes	
Digital integration (p. 25)	Experience Internet initiative	www.internet-erfahren.de
	Expansion of citizens' services of the Federal Agency for Security in Information Technology	www.bsi-fuer-buerger.de
	Procedures for public participation in policymaking.	www.einfach-teilhaben.de
	E-government strategy for participation	
	National action plan for greater participation of persons with disabilities	
6. Digital solutions for societal challenges		
E-government and electronic communication with the administration (p. 26)	Implementation of projects from the government programme, Transparent and Network-Based Administration	www.verwaltung-innovativ.de
	Preparation/Adoption of a national e-government strategy by the end of 2010 and implementation as of 2011	

Theme (page)	Measure	Link
E-government and electronic communication with the administration (p. 26) Continued	Implementation of the measure for pilot testing and implementing a process data accelerator for data exchange between industry and administration as part of the Federal Government's IT Investment Programme by the end of 2011 Maximum integration of information and registration obligations from various domains by 2015	
ICT in the federal administration (p. 27)	Continuation of the capacities established by the Federal IT Management strategy in federal administration Strengthening the Federal Government Commissioner for Information Technology Establishment and expansion of efficient federal IT service centres More economic and efficient organisation of IT supply and demand in federal administration Consolidation and standardisation of federal administration IT Upgrading and establishment of a general enterprise architecture management for the federal administration Coordination and alignment of federal information technology with administrative operations	www.cio.bund.de
E-justice (p. 27)	Integration of the European payment order and the commercial and company register into the European E-Justice Portal by 2013 Preparations for the introduction of electronic case files in criminal procedure law	

Theme (page)	Measure	Link
Sustainability and resource conservation – green IT (p. 28)	Enhancement of the Green IT Action Plan Technology promotion programme – IT2Green Environmental Innovation Programme with the funding focus, IT Goes Green and the Green IT Consultancy Office KfW Special Fund for Energy Efficiency	 www.it2green.de www.green-it-beratungsbuero.de
	Environmental labelling of ecological ICT products Alliance for sustainable procurement with federal states and municipalities, including portals for environment-friendly procurement	
E-health and demographics (p. 29)	Preparing an e-health implementation strategy (packages of measures) in 2011 and starting implementation in 2012 Implementation of the pilot measures, The Smart Home – process optimisation, short distances, debureaucratisation	