# IT and Telecommunications Policy Report 2010

The Danish Government
April 2010

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Source acknowledgements: Unless otherwise stated, the Ministry of Science, Technology and Innovation is the source of the figures and statistics contained in this report.

# Minister's preface

We currently face a range of challenges. In the light of the economic situation, it is more important than ever that we focus on the creation of economic growth, so that we can continue to live in a prosperous welfare society. The government has set up a 'growth forum' intended to analyse and consider the challenges of the future, to ensure growth for the Danish economy.

Information and communication technology (ICT) is an important means of fulfilling the goal of growth and prosperity - and the technology is already available. What we need to do now is exploit it. We need to dare to think creatively and be innovative, to convert technological advances into social and economic development. The solutions are often simple - such as when after-school institutions introduce simple texting services for parents, so that their personnel can concentrate on the children instead of telephones. Similarly, parents can send and receive practical information about their children. This is not just smart, but to the benefit of children, parents and personnel - and society as a whole.

We need to ensure our competitiveness through a combination of research and development of new knowledge, a well-educated workforce, innovative use of ICT and the expansion of digital services. These areas represent great potential for creating growth, increasing efficiency, generating new jobs and developing new green solutions.

Investment in ICT has already contributed significantly to the growth in productivity from the start of the 80s to the present. ICT therefore plays a key role in getting safely through the current economic crisis, and creating a solid platform for development of the society of the future.

The significance of ICT to society's development is also a theme which occupies an important place on the international agenda. The European Commission's proposal for a long-term growth strategy, 'Europe 2020', designates ICT as one of the seven flagships which will help bring Europe out of the economic crisis and ahead in the global competition.

The IT and Telecommunications Policy Report 2010 takes stock of some of the central initiatives and results within the ICT area in 2009. These are results which will take us through the crisis and onwards.

Charlotte Sahl-Madsen
Minister for Science, Technology and Innovation

# 1. Greater political challenges and issues within ICT

Denmark currently faces some major challenges. The financial crisis has come at a time when, along with the rest of Europe, Denmark is in competition with growth economies such as China and India. In addition, there are the climatic challenges and demographic trends with more senior citizens and fewer in work. The problems we face are exacerbated by the fact that Denmark has experienced lower growth in economic prosperity than most other OECD countries.

ICT plays a key role in the plans for economic restoration throughout Europe. Investments in ICT is regarded as one of the most important ways of increasing productivity and creating new growth. Other European countries such as Sweden, Finland and France are focusing their policies in particular on rolling-out broadband and strengthening their ICT infrastructures. However, several studies have indicated that ICT will only begin to contribute improvements in productivity when the technology is in use and becomes an integrated part of working processes and organisations. Hence figures from the USA show that those businesses which have successfully integrated ICT into their organisations are also amongst the most productive.

In recent years, the Danish government has worked with developing the ICT infrastructure and increasing its use by citizens and businesses. The results have been good. In 2009, Denmark occupied first place in The Economist's E-readiness Index and World Economic Forums Networked Readiness Index, both of which measure a country's ability to convert digital possibilities into social and economic development. But other international comparisons also show that Denmark's position is under strong pressure from other countries, which are rapidly catching up on our digital lead.

As part of the general considerations of how Denmark can best deploy ICT for growth, welfare and increased productivity, the Ministry for Science, Technology and Innovation set up a High-speed Broadband Committee in March 2009. The committee was asked to come up with proposals on how citizens, businesses and public authorities can gain access to internet speeds which can handle the most advanced broadband services, and how the use of digital solutions can be encouraged.

The committee delivered its report in January 2010. The report presented wide-ranging studies on ICT's contribution to growth, welfare, productivity and the development of a sustainable society. It also clarified how all Danes can obtain the necessary skills to take part in the digital development. It pointed out that for Denmark to be able to exploit ICT optimally, the continued development of an advanced broadband infrastructure and a furtherance of the use of ICT in society were both required.

The Danish ICT policy must also been seen in the light of the EU. The president of the European Commission, José Manuel Barroso, recently placed focus on ICT as the source of growth in his proposal for a new European growth strategy 'Europe 2020: A strategy for

smart, sustainable and inclusive growth'. The European Commission has also announced an update of the EU's broadband strategy during 2010. During this year, Denmark will also start preparing for the Danish EU presidency in the first half of 2012. Danish priorities in the ICT field will therefore be formulated in the short-term as part of a new European digital agenda, spearheaded by the European Commission.

### Agreement on granting of UMTS funds for 2010-2012

The government intends Denmark to be one of the most innovative and creative societies in the world, which is why it reached agreement with the political parties behind the telecommunications agreement in November 2009 on the distribution of UMTS funds for 2010-2012. The agreement means the granting of DKK 552 million for research, innovation and ICT.

The granting of the UMTS funds means the government has maintained focus on stimulating research and innovation in society despite the difficult economic situation. It also indicates that there is broad political agreement on prioritising ICT as one of the essential areas which will contribute to increased growth and productivity in Denmark.

| Year | 2010 | 2011 | 2012 |
|---|---|---|---|
| Research | 62 | 69 | 70 |
| 1. ICT research | 45 | 40 | 40 |
| 2. Research portal | 2 | 2 | 2 |
| 3. Elite research | - | 12 | 12 |
| 4. Danish Centre for Marine Research | 3 | 3 | 4 |
| 5. University of the Arctic | 3 | 3 | 3 |
| 6. Digitisation of cultural heritage | 7 | 7 | 7 |
| 7. Research in architecture and design | 2 | 2 | 2 |
| Innovation | 82 | 75 | 74 |
| 8. Innovative environments | 72 | 68 | 67 |
| 9. Knowledge pilots | 10 | 7 | 7 |
| ICT | 40 | 40 | 40 |
| 10. Open standards and open source | 10 | 10 | 10 |
| 11. IT skills | 12 | 12 | 12 |
| 12. IT security | 10 | 10 | 10 |
| 13. Green IT | 8 | 8 | 8 |
| Total | 184 | 184 | 184 |

Table 1: The granting of UMTS funds (million kroner at 2010 prices)

The agreement allocated DKK 125 million to research and development within ICT and DKK 120 million to other ICT purposes. This makes it possible to implement a range of initiatives which both support development of the digital infrastructure and improve use of specific digital solutions in the ICT field.

The funds for ICT research will help ensure efficient use of our material and human resources, and contribute to the development of new solutions within public service production and welfare services. There is vast potential in the social and healthcare field in particular for solutions which can take over menial tasks and increase the level of service.

The UMTS agreement means that research into green ICT and cloud computing will also be boosted. More intelligent resource management will help reduce impact on the environment particularly in the energy, environmental, transport and healthcare sectors. Furthermore, better understanding of the benefits and risks involved in the use of cloud computing will be gained, including the development of business and security models which can promote its use.

The funds for ICT research will also help build up Danish research capacity within the ICT field. There is particularly large potential for increasing the Danish share of ICT funds from the EU's framework programs for research and development, which between 2011-2012 is expected to grant more than 3 billion euros for research in ICT alone.

The funds for other ICT purposes will help

- promote a competitive software market independent of specific suppliers through open standards and open source,
- boost ICT skills within the population,
- boost surveillance of threats to the internet's infrastructure, strengthen work on privacy, and make digital signature available to new target groups such as foreign residents and businesses,
- promote use of green ICT solutions.

### Open standards

The government has worked for several years on creating better interoperability between public IT systems, and promoting useful digital solutions for citizens and businesses. The government's efforts have focused on the digital infrastructure as well as the development of digital content.

Open standards are some of the key building blocks in the digital infrastructure and help enable different IT systems to exchange data and communicate with each other. Open standards also help boost competition in the software market, as dependence on specific software vendors is reduced.

Openness also helps lowering the entry barriers for new businesses wishing to supply solutions to existing IT systems, hereby encouraging faster and cheaper development of new, innovative solutions to the benefit of society.

Since the Danish Parliament passed resolution B103 on open standards in June 2006, the government has been in dialogue with the parliamentary parties on the use of open standards and in late 2007 entered into an agreement with KL (Local Government Denmark)

and Danske Regioner (Danish Regions) on the use of seven sets of mandatory open standards for the public sector. The agreement came into force on 1 January 2008 and helps ensure interoperable and effective digitalisation of the public sector. The standards include among others standards for data exchange between public authorities, electronic invoicing within the public sector, accessibility, digital signature, IT security and document exchange.

In recent years, open standards for document formats in particular have been in the political spotlight. In January 2010, all parliamentary parties agreed on a paper on the use of standards for software within the public sector. The aim of the paper is to promote competition within office software suites and to ensure that citizens and businesses are not dependent on any specific office suites in their communications with the public sector.

The ongoing debate on choice of document formats has induced broad political agreement on open standards as being essential to support competition in the ICT market and boost digital innovation. The political consensus on the importance of open standards was also emphasised during negotiations on UMTS funds for 2010-2012, when there was agreement on allocating funds for the founding of a knowledge centre for open source and standards.

## 2. The government's policy within the ICT field

The government's goal is that as many Danes as possible should have access to information and communication technologies and utilize them in their everyday lives. This will create new opportunities for individuals, create value in the form of productivity benefits for society, and contribute to innovation, growth and welfare.

A study by the World Bank shows that if high income nations achieve an increase in the take-up of broadband of 10 %, it will lead to an increase of around 1 % in gross national production.

Similarly, other studies have found, for example

- that the costs of a digital contact with public authorities is only a fraction of the cost of personal contact, and
- that people with good ICT skills earn more and have a better chance of finding employment than those with limited or no ICT skills at all.

It is therefore essential to integrate and use ICT in all elements of society. The government's efforts continue to be based on five strategic goals for digitalisation:

Digital communication infrastructures give us the means to exchange digital content via computers and 'smart' telephones, whether in the form of speech, public self-service solutions, e-commerce, digital TV, etc. As stated earlier, Denmark's digital lead is being challenged by countries who are investing heavily in the roll-out of new communication infrastructures. It is therefore vital to our ability to exploit ongoing digital development that we

have a goal of establishing *world class digital infrastructures,* able to handle the most advanced content - quickly, easily and cheaply - and which can be accessed anywhere and by anybody.

To exist in a digital world and ensure a wide use of digital solutions, the Danes must also have the *necessary ICT skills.* Along with the development of the population's ICT skills, we have to ensure the creation of open, accessible digital solutions, so that everyone will gain the full benefit of digitalisation. This will also help increase productivity.

Without *confidence and trust in the security of digital solutions,* we will not gain the full benefit of digitalisation. Protection of our private lives and personal data should be an integrated part of digitalisation projects. As ICT is embedded more and more in our everyday lifes, whether in credit cards or fridges, it is important that Danes feel secure in the digital world and trust the services they are offered. Security is not just about creating secure IT systems, but also about generating awareness amongst Danes where they must be alert and how to avoid abuse when using the internet.

Each citizen or enterprise must also find that there is value in using digital services. The government is working to create *relevant digital content and digital services* for every group in society. This will help increase the use of ICT within the population.

It is important that value creation within the next years is supported by sustainable development. ICT plays a key role in the development of a sustainable society. It is responsible for around 2 % of total $CO_2$ emissions, but is also a key element of the *solution to environmental and climatic problems.* We need to ensure that the use of ICT becomes 'greener', but what is just as important is that we make the most of the opportunities offered by ICT to reduce our energy consumption in other fields and create green growth. The government's goal is therefore that green digital solutions should be the natural choice.

The above five strategic goals are intended to build the ICT infrastructure whilst increasing the use of ICT in a secure and environment-friendly manner. The following chapters take a look at some of the work done in 2009 for each of the five goals.

## 2.1 World class digital infrastructures

The government wants broadband to be available for all Danes. The strategy for development of digital infrastructures is based on a market-driven and technology-neutral approach. Broadband coverage currently consists of a combination of technologies based on fiber, cable, copper and wireless technologies. Even though these technologies have different characteristics, they have all gone through rapid development which has increased their bandwidth. By leaving the choice of technology and development to the market, the foundations are laid for infrastructural development which matches existing conditions and needs. This precept has been valid for many years and has extensive backing in parliament.

**Coverage, speed and take-up of broadband**

99 % of all homes and businesses in Denmark currently have access to broadband. Analysis of broadband coverage for 2009 shows that there is just below 9,000 homes and businesses left which still do not have access to broadband. The analysis also shows an increase in access to fiber connections from 18 % in 2008 to 28 % in 2009. Mobile broadband is accessible in 97 % of the country compared to 87 % in 2008.

**Selected results**

- > New knowledge centre for open standards and open source
- > Passing of a new frequency act
- > Falling prices on broadband
- > Increased access to high-speed broadband

In line with more and more people and businesses gaining access to broadband, speeds have also increased. By the middle of 2009, 98 % of Danish homes and businesses could obtain a broadband connection with a speed of 2 Mbps, compared to 96 % in 2008. 77 % could obtain a connection of 10 Mbps compared to 68 % in the previous year.

| | Mid 2008 | Mid 2009 |
|---|---|---|
| Homes and businesses able to gain an internet connection of: | | |
| - minimum 512 Kbps or above | Over 99 % | Over 99 % |
| - minimum 2 Mbps or above | 96% | 98% |
| - minimum 10 Mbps or above | 68% | 77% |
| Median speed for broadband subscriptions (Mbps) | 4,5 | 6,5 |
| Fixed broadband, subscriptions per 100 residents | 36,6 | 37,1 |
| Mobile broadband, subscriptions per 100 residents | 3,8 | 7,6 |

Table 2: Key figures in broadband trends, 2008-2009

*The take-up of broadband* in Denmark remains high, even though the expansion rate is slowing down. Denmark is one of the world's leading nations and has the second highest number of fixed broadband connections within the EU and OECD with 37.1 subscribers per 100 inhabitants (June 2009).

Looking at a breakdown of broadband connections, this means that 76 % of all homes and 80 % of all businesses with over 10 employees have a broadband connection. Although the number of broadband connections to Danish homes remains high in an international context, the figures for Danish businesses have stagnated in recent years. Denmark is in 19th place in a European benchmark compiled in 2008. Whilst growth in fixed broadband connections is slowing down, the number of mobile broadband connections is growing. The number of mobile broadband subscriptions used exclusively for data traffic doubled between mid 2008 and mid 2009, from 209,000 to 419,000.

### Competition and prices in the telecommunications sector

The regulation of *competition* in the telecommunications sector is important in order to ensure a large and varied supply of high-speed services. This requires that the telecom companies can use the existing infrastructure on reasonable terms and that there are incentives to encourage them to invest in the development of new infrastructures as well. To encourage competition, the requirements to the terms on which TDC allows its competitors to provide broadband services via TDC's copper network have been tightened up. TDC has also been required to give other companies the opportunity to offer broadband services via its cable TV network. The necessity of a similar opening of the fiber network TDC bought from DONG in 2009 will be investigated in 2010. Whether the competitive situation on the telecommunications market has improved sufficiently for regulation to be removed is regularly monitored. It was decided in 2009 that this was the case for parts of the mobile telecommunications market.

*Price trends* on the broadband market in 2009 showed a drop in the price of broadband connections with higher speeds, whilst the prices for broadband connections with lower speeds remained stable. The cheapest broadband connection offered in 2008 on a nationwide basis for a download speed of at least 10 Mbps was DKK 249 per month. The price for the same connection one year earlier was DKK 299 - a drop of 17 %.

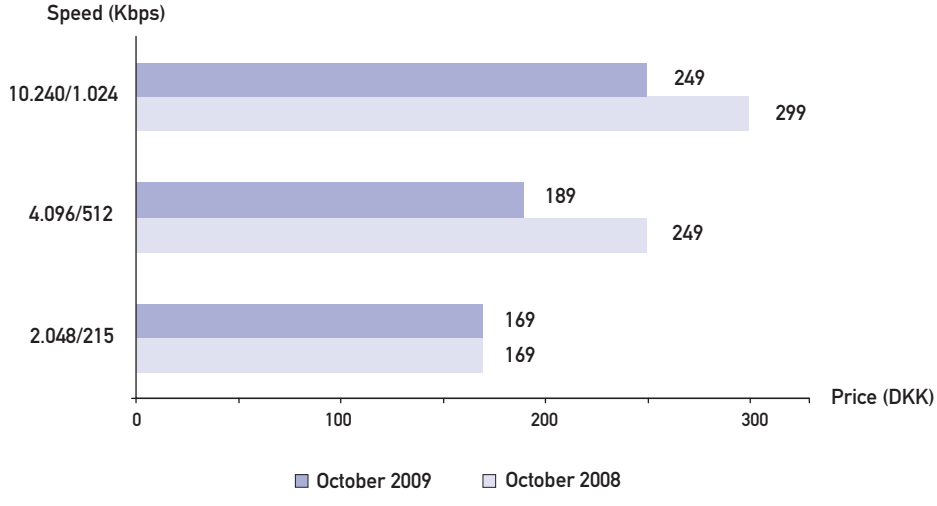


**Figure 1: Price trends for broadband subscriptions, October 2008 to October 2009**

Trends on the telecommunications market in 2009 showed a number of examples of charges and prices for telecommunications services which have reduced transparency on the market. Increased transparency and consumer information are essential for competition on the telecommunications market and are topics the government will focus on in 2010.

The EU adopted a revision of the telecommunications directives in 2009 to ensure a greater degree of uniformity in the rules for telecommunications companies across the European countries. The revision also led to closer coordination of telecommunications regulation in the EU by the formation of an association of European telecommunications authorities. The new directives meet several Danish key issues, including consumer information and greater predictability with regard to regulatory conditions, which apply to European internet and telecommunications providers. Bills for the implementation of the directives are expected to be laid before the Danish parliament in the latter half of 2010.

During 2009, the EU also revised its binding rules on roaming prices. These are the charges consumers pay for using their mobile phones outside their home country. The revision meant that the rules on roaming prices for calls were extended until 2012, whilst text and data services are now also included. This means that the price for sending a text message in another EU country has fallen from DKK 2.5 to around DKK 1. In addition to creating lower prices for consumers, the regulation of roaming prices also enhance mobility in the inner market.

### Development of new wireless broadband infrastructures

The still growing demand for mobile broadband meant a doubling of the number of mobile broadband subscriptions for data traffic in 2009 compared to 2008. Therefore it is important that conditions for development of wireless infrastructures for broadband continue to be improved.

The Danish Parliament unanimously passed a new frequency act in 2009, which provides easy and flexible access to frequencies and the construction of wireless infrastructures. The law entered into force on 1 January 2010 and supports market-driven frequency use, including extended access to trading of frequency licences or parts hereof. The act also increases the opportunity for owners of frequency licences to decide which technologies they wish to apply. In the long-term, the welfare benefits deriving from the new act are estimated at up to DKK 1 billion, as a result of amongst others increased innovation and faster development of new wireless services.

It was also decided in the middle of 2009, that the 800 MHz frequency band (MUX 7) is to be used for other purposes than TV, in particular for mobile broadband. The decision is important for the government's strategy of making broadband available for all, as the frequencies are well-suited to the provision of mobile broadband in low population density areas. Thus the frequencies can contribute to closing the remaining holes in the existing broadband coverage.

The wireless broadband infrastructure also supports the development of Denmark into a high speed society. In the autumn of 2009, the EU passed a change to the GSM Directive, which means that the frequencies which have so far been reserved for general mobile telephony (2G mobile telephony - GSM), can also be used for 3G mobile telephony and mobile broadband. Furthermore, the 4G auction for frequencies which are particularly attractive for

mobile high speed broadband was prepared in 2009 and will be held in the spring of 2010. The auction will give bidders maximum flexibility to combine the frequency licences that best suit their individual business plans.

The municipalities have the vital job of processing building applications arising from the need to erect new masts for expansion of the wireless broadband infrastructure. This means that the municipalities have great influence on the speed at which wireless services grow. In October 2009, the Minister for Science, Technology and Innovation and the chairman of KL (Local Goverment Denmark) encouraged the municipalities to make an active effort in providing their citizens, businesses and public institutions with faster access to mobile broadband within their areas.

### Internet infrastructure

The popularity of the internet has given rise to new challenges in managing its infrastructure due to the increase in domain name registration creating more disputes over rights to certain domain names. In addition, the number of internet protocol addresses (IP addresses, which act as the internet's telephone numbers) are beginning to run out. This represents a risk to the otherwise rapid development of internet use. In the international community there is agreement that the problem should be resolved by switching to a new protocol called IPv6, with many more IP addresses available. The Ministry of Science, Technology and Innovation initiated a consultation round in 2009 on switching to IPv6. The consultation will lead to a strategy and implementation plan for preparing Denmark for IPv6, which will be presented i 2010.

## 2.2 Digital skills for the future

Boosting the ICT skills of the general public is a major focus area for the government. A questionnaire-based survey by analyst bureau IDC of 1370 European businesses showed that the number of workplaces which do not need ICT skills is expected to drop to around 10 % over the next five years. It is therefore important to strive to ensure that Danes can make the most of the opportunities offered by ICT, and are not marginalised on the job market and within the information society in general.

**Selected results**

- Information campaign 'Til tasterne' on DR
- Mapping of opportunities for ICT skills development
- Growth in the Learn More Partnership
- Development of e-learning modules for ICT tuition
- Information campaign on website accessibility

### ICT skills

The ICT skills of the population are measured each year by the IT Barometer. The results in 2009 showed that there is still a group of the population which has not yet embraced ICT. The barometer will be adjusted in 2010 to ensure international comparison and to reflect relevant and current use of technology.

The last elements of the strategy 'The Danes' IT skills - a focused initiative' were implemented in 2009. A total of 17 e-learning modules with basic tuition on subjects such as using e-mail, internet and the citizens' portal, borger.dk, have now been developed. The information campaign 'Til tasterne' (Hit the Keys) was conducted in partnership with the Danish Broadcasting Cooperation (DR) on radio and TV with the intention of motivating the weakest ICT users to learn more about the subject.

The nationwide network for ICT tuition 'Lær mere-netværket' (the Learn More Partnership) has grown, and included 16 organisations by the end of 2009. The aim of the network is to give the Danes the chance to learn more about ICT in their local community. On the virtual meeting point and library, it-formidler.dk, network members have developed and published around 60 sets of educational materials on ICT which are for use free of charge.

In late 2009, the Ministry of Science, Technology and Innovation initiated a partnership with the Ministry of Education, Ministry of Employment, Ministry of Culture and the Ministry of Economic and Business Affairs to identify opportunities for ICT skills training for adults in Denmark. The results were published in March 2010 and show that there is an extensive and varied selection of ICT courses aimed at adults at all levels and in all price classes. In 2010, the mapping will form the basis for initiatives to increase awareness of ICT courses on offer.

### Accessibility

Easily accessible websites are a precondition for all citizens – regardless of handicap – to be able to use and gain the full benefit of digital solutions. An information campaign on accessibility was launched in January 2009 aimed at webmasters and management in public authorities. The same year, a template was published for an ICT accessibility policy which individual authorities can adapt and introduce into their organisations to ensure that open and accessible ICT solutions are created.

## 2.3 Valuable digital content and new opportunities

The government wants all relevant communication between businesses, citizens and the public sector to be digital by no later than 2012 (referred to as 'the e2012 goal'). Work on reaching the goal is intended to switch citizens and businesses over to digital channels and increase the use of digital solutions. Expanding digital communication to all areas will not only create new services to the benefit of citizens and businesses, but will also yield major efficiency benefits for the authorities and businesses which provide them.

In 2009, the government, Local Government Denmark and Danish Regions decided to hold an 'eDag3' (eDay3) in late 2010. By 1 November 2010, under the title of 'Nem adgang til det offentlige på nettet' (Easy online access to public services), all nationwide self-service solutions aimed at citizens and businesses must fulfil a range of targets supporting user-friendliness and making it easier to access them.

Holding ‘eDag3’ is a vital step towards realisation of the e2012 goal. The government will present a final implementation plan for fulfilling the target in partnership with the municipalities and regions in 2010.

The joint public portals borger.dk and Virk.dk are important elements in realising eDag3 and e2012. In 2009, borger.dk had around 5 million hits and Virk.dk around 8.5 million hits making them two of the most visited public websites in Denmark.

**Selected results**

- Agreement on holding ‘eDag3’ in 2010
- Development of borger.dk with access from mobile units
- Passing of a new law on mandatory use of digital reporting for businesses

As an online point of entry to public services, borger.dk helps to ensure a continuous and personalised user-perception of digital solutions and services from public authorities. In 2009, it became possible for the municipalities to transfer content from borger.dk to their own websites and present it in the graphical design of the local website. In addition, it was made possible to access the portal in a version adapted to mobile units from the address: m.borger.dk.

Virk.dk is the point of entry to public services for businesses, where they can submit information to the public authorities from a single site. The portal gives access to over 1,300 forms for submitting information and reporting, and a total 226,000 submissions were made in November 2009, the highest total for a single month ever.

In 2009, new laws and amendments to existing laws were enacted related to mandatory digital communication between businesses and the public authorities. These will mean that about half of the submissions and reports businesses currently have to submit to the public authorities will become mandatory in digital form during the course of 2010 and 2011. The authorities are being encouraged to implement their own legislation for the remaining submissions and reports before 2012.

The national infrastructure for exchange of electronic business documents - NemHandel, (EasyTrade) has made it possible for businesses to send electronic invoices and other documents direct from their own PC online to the public authorities and private businesses. During the course of 2009, the use of NemHandel grew rapidly, and by the end of the year. over 70,000 businesses used it. The public sector received just under 250,000 electronic documents via NemHandel in December alone. The experiences gained from NemHandel are playing a major role in the EU project PEPPOL, intended to set up a similar common infrastructure for e-trade throughout the EU countries.

The initiative ‘Offentlige Data I Spil’ (Open Data Innovation Strategy) focuses on making it easier for the private sector to use public sector data as the raw materials for developing innovative services and digital content. At EU level, the European Commission estimates that there is growth potential of up to EUR 27 billion by making public data available to the

private sector. Part of the initiative has been a project competition for new digital services based on public sector data. In addition, an open data source catalogue has been set up on the social platform for digitalisation, digitaliser.dk. A number of future activity areas have also been defined, including a general guide for public authorities publishing their data.

During 2009, digitaliser.dk was expanded with more functionality which enhances the partnership, dialogue and sharing of content on digitalisation. The website grew to have over 2,600 registered users - mostly ICT professionals from the public and private sectors. Digitaliser.dk is a debate forum, a means of collaboration and a content store in which the users are taking part in creating a digital Denmark.

## 2.4 Secure, safe use of ICT

Acting on behalf of the state, regions and municipalities, the government has signed an agreement with the company DanID on a new digital signature, called 'NemID' (EasyID). In doing so, Denmark becomes the first country in the world to launch a common digital signature for public online services, online banking and other private services. The signature has been developed and marketed in partnership with the financial sector and will be launched in mid-2010. It is expected to be available to all online banking customers by the end of the year. Free signatures will also be available to citizens at public service centres, tax centres and via the website nemid.nu. NemID will provide citizens and businesses with a user-friendly, secure and flexible way to conduct online transactions. The new signature will be available for commercial use later in 2010.

**Selected results**

- Agreement on a new digital signature, NemID
- Set-up of a state warning service for internet threats (GovCERT)

In May 2009, the government decided to set up a public warning service for internet threats, called GovCERT (Government Computer Emergency Response Team) with the purpose of providing civilian state authorities with an overview of threats and vulnerabilities in products, online services and IT systems. The GovCERT will continuously monitor IT security and inform the state authorities of IT security events and internet-based threats. The GovCERT is currently being established, and is expected to be fully functional during 2010. In November 2009, as a part of the UMTS agreement, it was decided that the GovCERT will also monitor and inform of internet-based threats to critical infrastructure on the internet.

The Ministry consults with the IT security committee on security issues. The committee was set up in April 2008 in order to strengthen information security in Denmark. The topics treated in 2009 by the committee included privacy in the information society and IT security-related issues in eGovernment.

## 2.5 A green digital agenda

The IT research and advisory company Gartner, estimated in 2007 that approximately 2 % of global $CO_2$ emissions are directly caused by the use of ICT equipment. Given the ever-growing spread and use of ICT, it is important to be conscious of the impact ICT has on the environment, and work to reduce it. But equally important is that ICT holds the key to reducing the remaining 98 % of $CO_2$ emissions from other areas. Green ICT solutions should also help reduce our general consumption of energy and resources. A green digital agenda is therefore not only good for the environment, but will also yield efficiency benefits and a black bottom line.

In May 2009, the Ministry of Science, Technology and Innovation hosted an OECD conference on green ICT in Elsinore, at which politicians, representatives from business and industry and scientists from all over the world discussed the role of ICT and its contribution to improving the environment and combating climate change.

**Selected results**

- New knowledge centre for green ICT
- OECD conference held on green ICT
- Catalogue of ideas and know-how on green ICT for enterprises
- Information campaign on green ICT aimed at children and juveniles

In connection with the conference, a catalogue of ideas and know-how on green ICT for business and industry was published, which contain advice and suggestions on how businesses can make their use of ICT greener, achieve savings and gain a greener profile. The catalogue was the result of collaboration between the Ministry of Science, Technology and Innovation, the Danish IT Industry Association (ITB) and the Danish IT Society (DANSK IT).

Children and juveniles represent the largest group of private ICT consumers, and is still the group which adapts most rapidly to new technology. Consequently, it is important to explain the importance of energy-saving technology and habits to this group. In 2009, the Ministry ran an information campaign, 'Tænk Grønt' (Think Green) aimed at children and juveniles and their use of technology.

The Strategic Research Council granted a total of DKK 25.3 million to research within green ICT in 2009. The grants will help ensure that green ICT research is conducted in close collaboration with its potential customers in the public and private sectors. They were given to three different research projects on intelligent crop monitoring and energy-saving technologies for flat screens and wireless communication.

In connection with the UMTS negotiations in November 2009, DKK 8 million were earmarked annually for the period 2010-2012 for a knowledge centre for green ICT with regard to continuing the government's existing work within the field. In collaboration with relevant stakeholders, the centre is currently working on setting up a knowledge bank with recommendations and examples of best practices within green ICT.

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