ICT for Everyone
– A Digital Agenda for Sweden

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Sweden is, in many ways, a prominent ICT nation with good infrastructure and advanced services, and with a large proportion of the population regularly using ICT and the Internet. But if we think we are living in the best of all worlds, with nothing left to do, I fear that we will soon lose our lead. ICT is a field that spans many – indeed all – areas of policy. The Government's aspiration is for Sweden to lead the way in use of ICT in order to attain policy goals for growth in all parts of the country, social welfare, democracy and climate improvement.

The purpose of the Digital Agenda for Sweden is to collate all ongoing activities in a horizontal, cohesive strategy in order to make use of all the opportunities offered by digitisation to individuals and businesses.

We have probably seen only the start of all the benefits that the use of ICT can bring. If we use the technology correctly:

- those schoolchildren who find it most difficult to learn can instead, using their own computers, become the best in the class at searching, editing and presenting information
- severely ill patients admitted to hospital in an emergency will avoid having to give their case histories as the doctor will have received all the relevant information from the electronic patient records
- it will be possible for more service jobs to be done from home, raising quality of life, saving travel, time and money and reducing environmental impact
- ICT can make democracy more accessible, even from someone's kitchen table.

The Digital Agenda has been shaped in an open process, partly through various different round-table discussions and other meetings. But good ideas and inputs have also been received, for example, by letter and e-mail and on web-based forums, Twitter and Facebook.

To bring the whole of the Government and all the ministries together, state secretaries from all government departments have worked together in a group of state secretaries. The Agenda now presented consequently encompasses all affected parts of the Swedish Government Offices.

Dialogue, openness and transparency have been my bywords. Never before has any process in the work of the Swedish Government Offices been so open.

I would like to express my sincere gratitude to everyone who has so far contributed to the process in some way. The foundation has now been laid for continued work, and it is now that the really important work starts, when the objectives of the Digital Agenda have to be put into practice. From the study circle on computer use in Kisäng to research on next-generation mobile technology in Kista: every effort is important in ensuring that we attain the goal of Sweden becoming the best in the world at utilising the opportunities offered by digitisation.

Anna-Karin Hatt
Minister for Information Technology and Energy

Summary

To meet the challenges that exist both internationally and nationally, the Swedish Government wishes to make use of the opportunities offered by digitisation, and has therefore taken a decision on ICT for Everyone - A Digital Agenda for Sweden and proposed a new goal for ICT policy, that Sweden should become the best in the world exploiting the opportunities of digitisation.

The Government's principal task is to create good conditions through rules, to formulate policy goals and to eliminate obstacles to development. However, if Sweden is to become the best in the world at exploiting the opportunities offered by digitisation, everyone, beside the Government, has a role to play, both individuals, businesses and organisations and municipalities, county councils and regional cooperation bodies. It is important to work strategically on long-term ICT policy issues associated with the agenda, while also monitoring and analysing development. The Government therefore intends to set up a Digitisation Commission which will be tasked with doing so.

The Agenda identifies needs for efforts in four strategic areas based on the user's perspective: easy and safe to use, services that create benefit, the need for infrastructure and the role of ICT for societal development.

Easy and safe to use

At a time when society is becoming increasingly digitised, it is important that everyone can share the opportunities that are created. This entails, among other things, being able to use the Internet and other digital services in everyday life as a private individual, entrepreneur or employee.

To increase digital inclusion, it is important that *everyone who wants to should be able to make use of the opportunities offered by digitisation.* Many conditions need to be met for digital inclusion to be achieved. It may be a matter of actual access to a computer and fixed or mobile connections with sufficient capacity or the possibility of getting help if problems arise. The issue of how everyone, who wants to, should be able to take part in the information society on the basis of their own circumstances spans virtually all areas and requires an integrated approach, cooperation and dialogue.

Access to and usability of public e-services should increase. The eGovernment Delegation's guidance on web development should therefore be applied in developing e-services. The Government will set up a user forum to ensure that attention is paid to the user and accessibility perspective at a high strategic level.

The Government also intends to issue several remits in this area, for instance to the Swedish Agency for Disability Policy Coordination (Handisam) on a future structure for follow-up of e-accessibility. Statistics Sweden will be tasked with compiling statistics for the area. Many important initiatives to improve inclusion are being taken by various organisations, key players and enthusiasts around the country. The Government will therefore task the National Post and Telecom Agency (PTS) with investigating the need for reviewing the options for supporting such initiatives.

There is a need for a more open *and smarter administration that supports innovation and participation.* The Government's overarching objective for e-government is

that work on e-government should lead to it being as simple as possible for the greatest possible number of people to exercise their rights and fulfil their obligations and make use of administrative services. Public information and e-services are community-wide resources that can be used by others and in so doing contribute to the growth of society. By making databases more accessible, Sweden can boost growth in small and medium-sized ICT companies. The Government is monitoring how the authorities are complying with the Act (2010:566) on Re-use of Documents from Public Administration and how they are improving conditions for re-use.

Digital skills may be crucial to individuals' prospects of getting and retaining employment, starting and running businesses or strengthening the innovativeness and competitiveness of businesses. *Everyone of working age must have good digital skills to be employable or be able to start up and run businesses.*

Strengthening digital skills in schools and higher education is only sufficient up to a certain point; there is also a need to develop skills in the world of work and organisations in general. In international competition, Swedish companies must be able to recruit foreign experts and other key individuals. To improve simplicity and predictability when companies recruit foreign staff, the Government intends to implement a simplification of what is known as the expert tax. In July 2011, the Government decided to appoint a commission of inquiry on measures to increase the use of ICT by small businesses.

There continue to be many people who are able to use ICT and the Internet but do not dare to do so. *The use of ICT and the Internet must be characterized by security awareness and trust.* The National Post and Telecom Agency (PTS) contributes to the funding of the network organisation *Surfa Lugnt* ('Surf Calmly'), which has long been working on increased online security and safety on the web. The agency's efforts to support *Surfa Lugnt* should continue. The support on security issues provided by PTS, the Swedish Civil Contingencies Agency, the Swedish Consumer Agency, the Swedish Data Inspection Board etc. should be strengthened. As a way of helping users to take responsibility for security, it needs to be ensured that there are Internet-based services for users at a reasonable price where they can have the contents of their terminal equipment checked. Only to the extent that tried-and-trusted and well used services of this kind do not exist on the private market or cannot be expected to be developed in the near future can there be a need for central government to develop these.

Services that create benefit

There is a need for attractive and easy-to-use digital services for different aspects of life. To meet these varying needs, there is a need for a large and varied supply of services that are developed by both the private and public sectors. The development of new and better services encourages the use of digital channels and contributes to making established sectors and organisations more efficient at the same time as new creative ideas, innovations and business models are emerging.

The Government is continuing with work aimed at creating *a simpler everyday existence for private individuals and businesses and more efficient public administration.* A number of important e-government projects will continue to be undertaken.

The potential of ICT must be utilised to boost growth, competitiveness and trade for businesses. It is important to improve the conditions for further utilisation of public information from government agencies for both commercial and non-profit purposes. The transition to electronic procurement should be sped up. Improved coordination of central government, municipal and county council procurement of ICT can promote this development. The Government therefore considers it important that the public sector encourages innovation and entrepreneurship through procurement and standardisation. The Government is working on eliminating obstacles to trade internationally in the ICT area, including expansion of the Information Technology Agreement (ITA). The Government intends to continue with its efforts to make life easier for

businesses, for example by using digital solutions that can simplify the disclosure of information so that businesses can avoid any kind of duplicate reporting. The Swedish Agency for Economic and Regional Growth has devised a solution that makes it possible to check the authenticity of various foreign e-signatures. It should be possible to use this solution when authorities deal with foreign administration, for example in digital public procurement. To further strengthen companies' development opportunities, the Government proposes expanding research and development tax credits. To clear away obstacles and create a single market for electronic commerce that works well, an action list containing specific initiatives will be presented as part of the work of the Ministry for Foreign Affairs. The eGovernment Delegation has been tasked by the Government with promoting and coordinating the work of the government agencies on improving the conditions for re-use of documents. This includes, for instance, paying special attention to the prospects of smaller companies and new business start-ups gaining access to the market for public information. The Government intends to closely monitor how the Act on Re-use of Documents from Public Administration is applied. A question to which special attention is being paid is whether any agency should be tasked with monitoring compliance with the Act and supporting the agencies in carrying out their work.

National efforts in eHealth are focused on creating visible and practical improvements to three main target groups: the individual, health care and social services personnel and decision-makers in the health and social services. Government action is being undertaken together with a broad group of national organisations through "National eHealth - the strategy for accessible and secure information in healthcare". A broad range of initiatives have been taken as part of these efforts. The work is now focused on delivering the beneficial effects of various e-health services, delivering more personal e-services for the whole population, increased coordination and development of eHealth in municipal health care and social services and increased interaction with related national and international reform processes and initiatives.

Schoolchildren must, and teachers should, have access to modern learning tools that are required for up-to-date education. Every pupil, on completing primary and lower secondary school, must be able to use modern technology as a tool for knowledge-seeking, communication, creation and learning.

ICT is one of the school's teaching tools, needed to attain the school's aims.

One way of strengthening digital expertise among school system personnel is to utilise ICT as a platform, where suitable, in skills development.

In the area of democracy, ICT must provide support for citizen dialogue and contribute towards increasing citizens' knowledge, social engagement, insight and influence. Over the next few years it will be a joint challenge for central government, the municipalities and the county councils to develop the use of ICT for support in dialogue with citizens. The Government therefore continues, for instance, to support the Swedish Association of Local Authorities and Regions project Citizen Dialogue with the support of ICT, which is due to run until 2013.

In the area of culture, cultural activities, collections and archives must be preserved digitally and made available to the public electronically to a greater extent. The overarching goal is for *cultural activities, collections and archives to be preserved digitally and made available to the public electronically to a greater extent by* 2015. The Government intends to formulate a national strategy for digitisation of the cultural heritage, based on proposals that have emerged in the reporting of remits on digitisation, electronic access and digital conservation. An important type of development work is the project presented in the report on the remit of the cooperation council of the central museums on a standardised and common platform, sverige.museum, in which the collections of the state museums are digitised, structured and made accessible. A new labour market initiative – the 'Cul-

tural Heritage Lift' – will be implemented over the period 2012-2014. This initiative can give organisations in the field of the cultural heritage great opportunities to take action to digitise, digitally conserve and make digitally accessible collections, archives and libraries.

Need for infrastructure

To enable digital services to be used and offered, there is a need for a basic infrastructure with electronic communications that work well. The Internet as a carrier of services has to be accessible and robust, and the information transmitted online has to be processed in a secure manner.

Sweden must strive to ensure an accessible, open and robust Internet within the country and globally. To achieve more secure communication for authorities, there is a need for requirements for an Internet specification that can be used in the procurement of Internet connections by authorities. A joint Internet specification with different robustness and security requirements (model cases) is therefore due to be produced by 2013. In addition, all authorities should make use of DNSSEC and be reachable with IPv6 by 2013. The Government intends to issue remits concerning these issues to PTS, the Swedish Civil Contingencies Agency and other affected authorities. By 2013 there must be tools to enable both consumers and suppliers to measure and compare internet connections. The Government is considering further initiatives in this area. Sweden must be active internationally in order to gain a hearing for its views on a stable, open, robust and global Internet.

Private and public information systems must be secured with the aim of safeguarding values in society such as democracy, privacy, growth and economic and political stability. A national coordinating function for information security will be established. The Swedish Civil Contingencies Agency (MSB) should annually present an assessment of the situation in the area of information security with regard to threats, vulnerabilities and risks at the level of society.

A functioning soft infrastructure is needed to enable the potential offered by digitisation to be fully exploited. The government sector holds responsibility for standardisation through the participation of government agencies in work on standardisation as part of the general responsibility of each agency. Membership of the EU means that central government is responsible for regulations being formulated in such a way that they make a free flow of goods and services between the Member States possible.

Under the activities of the eGovernment Delegation, an ICT standardisation council has been established to facilitate the preparatory discussion of ICT standardisation issues. In consultation with the Swedish Standards Council (SSR), the 'Standardisation Project' was set up in 2010. The project is aimed at assisting the ministries so that they can more effectively identify strategic areas for standardisation and consequently contribute to boosting Swedish competitiveness and economic growth in a global perspective.

The public sector in Sweden must use geographical information that is described in nationally determined reference systems and is based on international agreements. Lantmäteriet (the Swedish mapping, cadastral and land registration authority) must implement a transition to a nationwide digital register map following consultation with the Swedish Association of Local Authorities and Regions. The change-over is due to be implemented by 31 December 2017.

Robust electronic communication means that the communications must be constructed in a reliable manner. PTS must contribute through its efforts to a reduction in the number of disruptions to electronic communication. The efforts of PTS must also contribute to the players in the sector becoming capable of dealing with serious disruptions to operation in both urban and rural areas.

Other measures that are taken include redundancy in interurban fibre networks, maintenance of rock chambers where the operators locate their vital equipment, measures to raise skills, spreading of mobile communication networks, national cooperation projects for example on

status reports and information databases and information databases and repeated exercises as a basis for future efforts.

The goal of broadband policy is for *Sweden to have world-class broadband. All households and businesses should have good opportunities to make use of electronic community services and other services via broadband. This means that 90 per cent of all households and permanent places of business should have access to 100 Mbps by 2020. In 2015, 40 per cent of households and permanent places of business should have access to 100 Mbps.* Work in the Broadband Forum has been successful and has contributed to an increased dialogue between the various parties in the market and specific proposals for measures that can promote access to broadband. The Government therefore proposes to extend the forum's remit. In the budget bill for 2012, the Government proposes that support for duct should be extended by earmarking SEK 120 million over the period 2012–2014. In addition, the Government proposes that the rural development programme should receive SEK 300 million for broadband expansion and that SEK 75 million over the period 2012–2014 should be used for co-funding of broadband measures.

The role of ICT in societal development

Increased digitisation affects all societal processes and structures in Sweden and at the global level. Examples are the role of ICT for a more sustainable society, global development, how research and innovation can be pursued, how people can exercise their freedom on the web, and modernised forms of democracy, participation and insight through increased transparency in the implementation of development assistance etc.

Digital information and digital tools should be used to a greater extent in research activity and innovation processes. The Government has tasked the Swedish Agency for Innovation Systems (Vinnova) with constructing and strengthening test beds in health care and care of the elderly. The Government additionally intends to prepare a bill on research and innovation in 2012. The work on drawing up a national innovation strategy has begun. The issue of increased coordination of innovation policy with other policy areas will be discussed in this work.

ICT must contribute to an environmentally sound society. There is great potential to bring about environmental improvements in Swedish towns and cities with ICT support. The Delegation for Sustainable Cities was asked by the Government some time ago to highlight how sustainable development and efforts to counteract climate change can be combined with the promotion of ICT, among other things. This focus should be further prioritised. In the 2012 Budget Bill, the Government proposes that SEK 10 million should be earmarked in 2012-2014 to establish a knowledge platform with associated independent coordination councils and should both strengthen the collaboration between actors and boost knowledge on smart grids.

Gender equality in the area of ICT is to be greatly improved. There is a need for more women to be involved in making decisions and to take part in the development of digitisation and its capabilities. It is therefore important that more women choose to work in ICT-related professions and that more women study on university programmes focused on ICT. The ambition is for the proportion of women in ICT-related professions and women who study on programmes with an ICT focus to increase sharply by 2020. The Government decided in September 2011 to task the Swedish Agency for Growth Policy Analysis with conducting a follow-up of the proposals presented by the Royal Institute of Technology (KTH) in 2007 in the report Jämställd IT-utveckling för ökad tillväxt (Gender equality in ICT development for increased growth).

In order to strengthen freedom on the web, Sweden must endeavour to ensure that human rights are respected on the Internet. This means increased international support on key principles of protection and promotion of human rights, including freedom of expression, on the Internet. The principles include minimising various forms of surveillance and censorship of the Internet. In future sessions, Sweden

will continue to press for the UN Human Rights Council to address freedom of expression and other human rights on the Internet. The aim is to clarify the application of human rights on the Internet. In addition, Sweden will press for other international forums also to integrate the rights perspective in an effective manner. It is also important to increase coordination and collaboration nationally and internationally.

With the aim of promoting creativity and innovation, it must be simple to conclude contracts on copyright in the digital environment. The conditions for those who wish to obtain access to creative content should therefore be improved at the same time as safeguarding copyright. The Government should press for well balanced and appropriate regulations on the issue of licensing of copyright both nationally and at the EU level.

Use of ICT in development assistance must contribute to poverty reduction, democratisation and respect for human rights. Effective poverty reduction is promoted by openness in implementing development assistance. Sweden should support innovative approaches and new arenas, as well as national and international actors with respect to capacity and method development and encourage collaboration between new and more established actors in the area. Increased coordination and collaboration in Sweden, in the EU and globally should also be aimed for. The Government prioritises openness in the implementation of development assistance, and intends to continue to pursue the issue of transparency and effectiveness of development assistance in international contexts. Sweden will also seek to ensure greater transparency among cooperating partners and other development assistance actors, including multilateral organisations, private actors and the organisations of civil society.

Introduction

Let us, for a brief moment, turn the clock back twenty years. It was then, in the early nineties, that computers really started to enter Swedish homes. Before that time, people had to make do with an electric typewriter at best. The same situation applied at many workplaces. Several employees shared a computer or else there were secretaries who dealt with all the typing. More and more people then acquired a computer for their own use and were able to send one another digital messages. It was not until around 1995-1996 that the Internet really made a breakthrough and the number of Internet connections started to grow. Carl Bildt and Bill Clinton were the first heads of government to send one another e-mail. In the same way, Sweden was a pioneer in mobile telephony and gained an extensive GSM network earlier than many other countries. Those days now seem a long way away, and no one could have really anticipated the development that has taken place in the meantime.

Sweden today is a leading ICT nation and holds a strong position with regard to both ICT use and broadband. For example, 6.3 million Swedes, or 91 per cent of the population, had Internet access at home in 2010 and more than 99 per cent had access to broadband. Nine out of every ten people use the Internet regularly, and 85 per cent have a broadband connection. ICT is of great significance to the Swedish economy and makes a large contribution to the country's overall growth in productivity. It was estimated that between 2000 and 2005 as much as 33 percent of the rise in productivity in the private sector in Sweden could be attributed to ICT. However, ICT does not just contribute to economic growth but also to improving and simplifying everyday life for everyone – the public, businesses, organisations and the public sector, wherever one is in life or whatever one does.

The Government actively addresses ICT issues in several areas. It has, for instance adopted the National eHealth strategy, a new Schools Act, syllabuses and curricula that clarify the need for digital skills, an action plan for e-government and an eGovernment Delegation, a Broadband Strategy for Sweden and a strategy for greater innovation in services. The opportunities presented by digitisation are also of key significance in ongoing work towards developing a national innovation strategy. ICT issues are also prioritised at European level. In the spring of 2010 the European Commission presented a Digital Agenda for Europe, which is one of seven flagship initiatives in the EU's overarching growth strategy EU2020. The European eGovernment Action Plan 2011-2015, which is concerned with how ICT can be used to create smarter and more efficient public administration in Europe, was presented in December 2010. The Commission's communication The Single Market Act, which was presented in April 2011, also drew attention to the importance of establishing a digital single market. Freedom of expression on the Internet is a priority in Swedish policy, which has produced results for instance on the UN Human Rights Council.

Rapid development is taking place. People influence, and are influenced by, digitisation regardless of whether they wish to do so or not. Digitisation is changing all parts of society and sweeping away old truths. Just as no one could have pre-

dicted the present-day situation twenty years ago, it is impossible today to predict what the situation will be like in another twenty years. The challenge for Sweden, and for other countries, is to exploit the opportunities that development presents. There is a need to become even better at using ICT in order to boost Swedish competitiveness, growth and innovation, while respecting human rights and ensuring sustainable development.

Societal challenges

Sweden and other countries face several major societal challenges over the next few years, at both the global and national levels. Globally these include the issue of climate change and the need to reduce the impact of society on the environment, the financial crisis that is engulfing large parts of the world, the effects of globalisation and the importance of creating improved living conditions in developing countries. There is also a need to improve respect for human rights, including freedom of expression, and to address issues of democracy.

Sweden also faces challenges such as an ageing population, with one of five people in Sweden being over the age of 65 in 2020. This will put a severe strain on the welfare system and society at large. Further challenges include the issue of democracy, the fact that there are young people in Sweden who are sidelined and feel that they do not have any opportunity to influence their own situations in life. Many people also experience social exclusion. Another challenge is gender equality, as Sweden continues to have both visible and invisible discrimination, low representation and differing conditions for women and men to play a full part in society. A further challenge is to ensure that Swedish companies will be able to maintain and strengthen their competitiveness and contribute to increased employment and growth in the economy. A good climate for innovation and investment and access to a well educated and trained labour force are therefore important factors for Sweden. So too are an ability to encourage and create the right conditions for entrepreneurship and utilise the capability to develop innovations based on the opportunities presented by digitisation.

ICT can contribute to meeting these challenges, such as creating new ways of designing solutions for an ageing society (e-health, digital aids), digital solutions for the environment (smart grids, intelligent transport systems), promoting cultural diversity (digital distribution of cultural content), democracy (transparent administration, systems for dialogue with decision-makers), improved competitiveness for businesses (digital skills, new products, services and business models and more efficient activity with the aid of ICT) and so on.

Opportunities and challenges of digitisation

ICT presents huge opportunities. As new technology, new applications, new digitised working practices and new standards are developed and become more widespread, the contribution ICT makes to economic growth and social welfare and a better improvement is increasing. ICT and the Internet are also a powerful global facilitator for ever more boundless innovation across the world. New offerings are emerging that combine products and services, new business models and processes to produce, consume and distribute in interaction between the customer and the user. This naturally presents opportunities for companies to grow and expand internationally. This trend is also clear in other areas. The Internet gives people throughout the world revolutionary opportunities to communicate – with one another, with authorities and with those in power. The Internet can also play a crucial role in development, democratisation and the liberation of people in many parts of the world. The improved freedom of expression and information that an open Internet brings with it is a positive feature. But an Internet characterised by freedom is not self-evident and is something that must be safeguarded.

ICT also makes it possible to store large quantities of information and knowledge that can be easily and quickly made avai-

lable globally. Citizens and organisations, especially businesses, can interact with one another in real time across the world in a completely different way than was previously possible. ICT-based solutions can additionally contribute to improving accessibility and efficiency both in businesses and in public administration. Efficient and service-oriented administration with clear ground rules reduces costs for both the citizens and businesses. Openness in public administration can be strengthened through changed attitudes, values and new technology and can consequently foster greater participation, democratic accountability and interaction with members of the public and other actors. Individually adapted service and e-services are developing to an ever greater extent, which may make it easier for entrepreneurs to operate and may mean that citizens can participate and exercise self-determination on the basis of their own circumstances. Nor should it be forgotten that ICT and the Internet are a source of both benefit and enjoyment for many people. The Internet makes new forms of social contacts, experiences and knowledge transfer possible in a way that changes people's everyday lives. Heavy dependence on ICT has made society vulnerable to disruptions and outages. An accessible, robust and secure infrastructure is therefore crucially important.

Although ICT and the Internet mainly have a favourable impact on society, there are also downsides to their development that need to be seriously addressed. These include, for example, the risk of non-permitted controls and surveillance of individuals in a completely different way than in the past. To preserve public trust in ICT and the Internet, it is important to safeguard personal privacy and to maintain the protection contained in current legislation. At the same time, the anonymous nature of the Internet means that there is an increased likelihood of violations and of violence-promoting and brutalising messages and materials being spread. It has also been shown that the Internet has become a further arena for certain criminal activities, such as information leaks, phishing and other forms of fraud. This highlights the great significance of security issues for the Internet, both for individuals and for society, and the importance of also effectively fighting crime on the Internet. But ICT highlights the importance of positive setting of standards in the social media and of conducting a continuous dialogue on how to act and interact online. It is especially important to strengthen the resistance of children and adolescents to violence-promoting and antidemocratic currents.

The Internet is a new and powerful distribution channel for all types of digital media, which affects the book, gaming, music and film industries with regard to both business logic and opportunities to develop new products and services. It is important not to treat the Internet as a separate forum in which there is greater acceptance of infringements of ethics or the law. Fundamental values, established principles and legislation apply on the Internet as much as they do on the street, regardless of whether freedom of expression, trademark protection, copyright or the control of crime is concerned. Human rights apply both on-line and off-line.

The realisation that the world of today is to a great extent digitised also needs to be reflected in Sweden's international engagement. In international development cooperation, it is important that Sweden contributes to improving access to and utilisation of ICT with the aim of increasing knowledge, freedom, capacity, dissemination of information and participation irrespective of physical boundaries.

Digital agenda for Sweden

In order to meet the challenges that exist both internationally and nationally, the Government wishes to utilise the opportunities presented by digitisation. To succeed in this there is a need for everyone to help one another and have a common goal and direction to ensure that Sweden becomes the best in the world at utilising the opportunities presented by digitisation. There is therefore a need for a coherent strategy with clear goals and actions that brings together all the forces for good around the country and makes smarter use of existing resources. What is done can then have the greatest possible effect.

The digital agenda is a tool for coordinating the Government's efforts and actions in the area of ICT. It is a way of kicking off a process that will lead to Sweden becoming the best in the world at exploiting the opportunities offered by digitisation.

The digital agenda is also an agenda for Sweden's international involvement, and the Government must continue to include digital future issues as key aspects of its foreign, trade and development assistance policy. At the same time, the credibility Sweden gains through its international engagement must have an impact at the national level.

ICT policy objectives

In its budget bill for 2012 (Government Bill 2011/12:01), the Government has proposed that earlier ICT policy objectives and interim targets sub-targets on growth and quality should be cancelled and replaced by the following ICT policy objectives.

Sweden will be the best in the world at exploiting the opportunities afforded by digitisation

Provided the Riksdag (Swedish Parliament) votes in favour of the Bill, the Government's work will be focused on this objective. Regarding the goals for accessibility, it is proposed that the goals stated in the bill Accessible Electronic Communications (Government Bill 2009/10:193) should continue to apply. The objective is that Sweden shall have world-class broadband. All households and businesses should have good opportunities to use electronic public services with broadband access.

Sweden today is strongly placed in the field of ICT, which is also evident in international comparisons. According to the Network Readiness Index[1] compiled by the World Economic Forum, for example, Sweden has the best conditions and makes best use of ICT. This index measures national conditions for the development and spread of ICT, business climate, some regulatory aspects, human resources and access to hard infrastructure for ICT. In addition, readiness and interest is measured among three main groups of stakeholders: individuals, businesses and government. Finally, current use of ICT among the three main groups of stakeholders is also measured. Sweden is followed in the ranking by Singapore, Denmark, Switzerland and the United States. Sweden also comes out top in the Digital Economy Rankings for 2010[2], which compares the level of different countries in the information society, closely followed by Denmark, which had previously headed the rankings. In comparisons of the competiveness of different countries,

[1] Networked Readiness Index 2010–11. World Economic Forum.
[2] Digital economy rankings 2010. Economist intelligence unit in colloboration with IBM Global Business services.

Sweden is in the top group. In the Global Competitiveness Report[3] for 2010–2011, for example, Sweden is ranked second after Switzerland, which means that it has overtaken both Singapore and the United States since the previous reporting period.

Sweden has a strong ICT and telecom sector and a solid tradition of research and innovation, which has resulted in new services and products and leading companies. It was, for example, in Sweden that modern mobile telephony was invented and developed. A large proportion of the Swedish workforce is employed in the ICT sector or in ICT-related professions in other sectors. ICT also strengthens other key sectors in Sweden such as the defence industry, the pharmaceutical industry and the engineering industry. What has contributed to this is that Sweden has a high level of education, high use of ICT and interest in new technology, as well as good access to ICT infrastructure. In addition, Sweden introduced competition-promoting regulation of the telecom market at an early stage.

Although Sweden has a top ranking in most international comparisons, there are areas where its position is weaker. These include conditions for companies and their use of ICT. Four indicators in the rankings referred to above in which Sweden is less well placed point in this direction. Companies' use of ICT is an important driver contributing to increased prosperity and economic growth. It is important that Sweden continues to strengthen its position in all areas.

The objective of the Digital Agenda for Sweden can be related to the rankings referred to above, in that according to these or other similar ratings, Sweden is to be among the best nations in the world. However, it is also important that Sweden achieves a top ranking in other areas such as gender equality in the ICT sector, democracy and human rights, not covered by the studies mentioned above. This may, for example, relate to measuring the ability of schoolchildren to use computers. To create motivation and harness resources, there is a need for an overarching goal that marks out a desired direction where all stakeholders, individuals, businesses and organisations as well as municipalities, county councils, regional co-operation bodies and government agencies can contribute to Sweden's overall Digital Agenda.

ICT policy aims in relation to other goals

All government policy is covered to varying degrees by ICT policy, while the governing objectives for each area also encompass issues that lie outside ICT policy. This means that certain issues encompassed by ICT policy are also governed by objectives for other areas. An example is e-government, which is encompassed by ICT policy while the objective of administrative policy is what governs. Another example is the objectives for information security, where issues of everyday security come under ICT policy, while the whole area at the same time is governed by the objectives of information security for society.

Strategic areas

There is a need for action in several areas to attain the objective of the agenda and face up to the challenges that exist at both the global and national levels. Four strategic areas at an overarching level have been developed based on the perspective of the ICT user:

- easy and safe to use,
- services that create benefit,
- the need for infrastructure and
- the role of ICT in societal development.

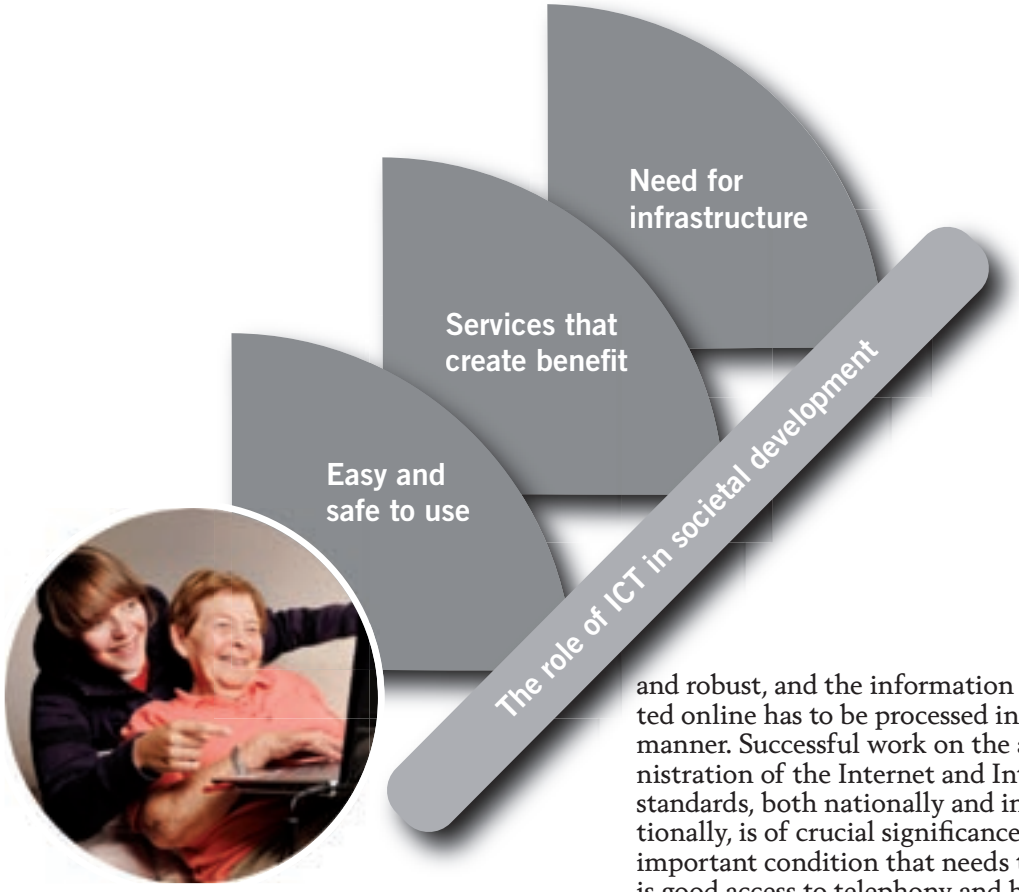
There are several sub-areas in each strategic area that represent the substantive issues the Government is actively working on.

The introductions presented for each sub-area are not interim targets that have decided upon but express the Government's aspirations in ICT policy.

Easy and safe to use

At a time when more and more aspects of society are becoming digital, it is important that everyone can make use of the opportunities that are created. This entails, for instance, being able to use the Internet and other digital services in everyday life

[3] Global competitiveness report 2010–11. World Economic Forum (Schweiz).



as a individual, entrepreneur or employee. The vast majority of Swedish people today use ICT and the Internet more or less regularly. But there are also those who are either unable or unwilling to make use of the opportunities offered by digitisation. These are mainly elderly people, but also include younger citizens, business owners and consumers, and the reasons include lack of trust in the Internet, lack of digital know-how or economic circumstances that prevent them from participating.

Services that create benefit

There is a need for attractive and easy-to-use digital services for different aspects of life. To meet these varying needs, there is a need for a large and varied supply of services that are developed by both private and public actors. The development of new and better services encourages the use of digital channels and contributes to making established sectors and organisations more efficient while at the same time new creative ideas, innovations and business models are emerging.

Need for infrastructure

To enable digital services to be used and offered, there is a need for a basic infrastructure with electronic communications that work well. The Internet as a carrier of services has to be accessible and robust, and the information transmitted online has to be processed in a secure manner. Successful work on the administration of the Internet and Internet standards, both nationally and internationally, is of crucial significance here. An important condition that needs to be met is good access to telephony and broadband in all parts of the country. The basic principle is that this should be provided by the market, and continued investments are needed in all parts of the country. The physical infrastructure therefore has to be built in such a way that data traffic works even if disruptions or outages occur. Geographical information of good quality is important for services that are dependent on location-bound information.

The role of ICT in societal development

Increased digitisation affects all societal processes and structures in Sweden and at the global level. ICT developments leads, for example, to the rules intended to protect personal privacy, secrecy, copyright etc. often needing to be adapted in order to respond to the changed circumstances to which technological development gives rise. Several of the most important factors for ongoing changes in society at the national and global levels come from the development and use of IT. Examples are the role of ICT for a more sustainable society, for global development, how research and innovation can be pursued, how people can exercise their freedom on the web, and modernised forms of democracy, participation and insight through increased transparency in the implementation of development assistance etc.

A common challenge with different roles

If Sweden is to become the best in the world at exploiting the opportunities offered by digitisation, everyone has a role to play, individuals, businesses and organisations as well as municipalities, county councils and co-operation bodies. If everyone contributes, and if everyone works together, it is possible to really get things to happen. It is important to emphasise, at the same time, that everyone has different roles.

The Government's principal task is to create good conditions through rules, to formulate policy goals and to eliminate obstacles to development, but also to pursue the opportunities that digitisation presents at the global and national levels. Government has a significant role to play as purchaser of services, but it also has a responsibility to create good conditions for the development of new services and the establishment of infrastructure. Government is also responsible for developing its own administration, making it more efficient and makingit more accessible with the assistance of ICT. By developing purchasing skills in the public sector on the basis of identified needs in different areas, more services that create benefit and value can be developed. Government agencies and municipalities additionally have a special responsibility to provide models and drive efforts to ensure that everyone can use ICT. Disability, socioeconomic circumstances or geography must not pose obstacles.

It is the market players who are responsible for innovative services and business models and technical development and who make investments in infrastructure. The basic principle is that digital services and infrastructure are provided by the market. However, the public sector has a responsibility to ensure that rules decided upon are applied in a uniform manner. Primary and lower secondary schools, upper secondary schools and universities and other higher education institutions are responsible for pupils and students being given an opportunity to develop the digital skills needed in today's society. At the same time, the research world has an important role to play in generating knowledge that can modernise, improve and support digital development. Civil society, individuals and organisations also have a significant role to play. At the same time, central government has a responsibility for ensuring transparency and free access to public information, making participation in political processes possible and creating good conditions, for example, for a vibrant civil society and free media. Digital services are developed interactively by market players and users. The involvement of organisations and individuals plays a great role in the use of ICT and access to broadband. This is particularly the case in sparsely populated and rural areas, where local initiatives are taken for example to build broadband.

New forms of cooperation with more and new actors are required to enable the opportunities offered by digitisation to be exploited. It is important in development cooperation, for example, to encourage collaboration between new and more established stakeholders in the area, such as local, national and international organisations. It is especially important to encourage innovative thinking and the development of new methods and working practices.

The Government is setting up a Digitisation Commission

The initiatives and measures presented below in the strategic areas are intended to contribute to attaining the objective of the Digital Agenda for Sweden. This necessitates continuously following up and analysing development in all areas. It is particularly important to work strategically on long-term ICT policy issues associated with the agenda. There is no government agency with sole responsibility for ICT policy issues. The Government therefore intends to set up a Digitisation Commission which will be tasked with promoting attainment of the objective of the digital agenda.

The work of the Digitisation Commission can be compared to the work undertaken by the eGovernment Delegation.

The Delegation's remit is to strengthen the development of e-government and coordination in the area. Work under this remit is regularly described in interim reports to the Government with data and proposals for various measures. Experience of the Delegation's work is favourable, partly due to its broad endorsement.

The Digitisation Commission will describe and analyse actual development towards the ICT policy objective and report this to the Government. In a similar way to the eGovernment Delegation, the Digitisation Commission should highlight and analyse problems and identify opportunities in the area.

The Commission will also present proposals for suitable measures that contribute to accomplishing the ICT policy objective. An important part of the work of the Digitisation Commission will be to collaborate with authorities, individuals and organisations in the area.

The Commission's primary task is to formulate a draft action plan for its efforts to promote fulfilment of the objective in the agenda. The underlying principle is that this should be done with existing resources. The Commission, after consulting relevant authorities, individuals and organisations, is also to come up with a proposal on how development towards the objective in the agenda can be followed up. This is to be based on the strategic areas formulated by the Government in the agenda. The Commission will therefore define, in its proposal for follow-up, necessary key indicators that can be regularly monitored and that are significant to fulfilment of the objective.

Easy and safe to use

At a time when more and more services in society are becoming digital, there is a need for everyone to be able to make use of the opportunities that are created. This relates, for example, to being able to use the Internet and other digital services in everyday life as a citizen, business owner or employee.

One of the most important societal resources that is being digitised is information. Public digital information is a national resource that can be made more or less accessible. Privacy-sensitive information should be ring-fenced by security procedures and be selectively available. Other information concerning weather, traffic, roads, maps, streets and vehicles can be made more generally available through digitisation.

The vast majority of Swedish people today use the Internet more or less regularly. But there are also those who for various reasons are either unable or unwilling to make use of the opportunities offered by digitisation. A third of people do not use the Internet to pay bills. These are mainly elderly people, but there are also some younger people who do not use the Internet.

To reduce social exclusion and increase participation and employment opportunities and enterprise, there is a need for action to be taken in several areas.

Digital inclusion

Everyone who wants to must be able to make use of the opportunities offered by digitisation.

Strategic challenges

Digital inclusion is increasingly essential in order to be able to take part in modern-day society and make use of education, community services, social participation and entertainment and amusement. The increasing trade in goods and services on the Internet also presents consumers and businesses with new opportunities and challenges. Digital inclusion is concerned with the possibility of taking part in all aspects of community life and being able to exercise one's rights and fulfil one's obligations as a citizen. It does not involve replacing other forms of social and physical participation with digital resources, but it is important that everyone who wishes to has an opportunity to make use of what digitisation offers, regardless of personal circumstances such as age, disability and level of knowledge or other circumstances that can be described as economic, cultural and ethnic. The conditions that need to be met to achieve digital inclusion are many and complex. It may be a matter of actual access to a computer and fixed or mobile connections with sufficient capacity or the possibility of getting help if problems arise.

An important issue of principle is whether products and services such as websites are accessible and usable so that everyone can actually use them. Basic digital skills are needed to be able to use ICT.

New technology and new solutions made available by digitisation can make everyday life and participation in society easier. The Government has a responsibility for creating the necessary conditions so that positive effects benefit the individual and society. If the objective of Sweden being the best in the world at exploiting the opportunities offered by digitisation is to be met, as large a proportion as possible of Sweden's population and

businesses needs to be digitally involved.

Ninety-one per cent of the Swedish population had Internet access at home in 2010. Of these, 85 per cent had broadband access at home. Nonetheless, nearly half a million Swedish people do not use computers and the Internet at all. Sixty-five per cent of these were over the age of 65[4].

The issue of how everyone who wants to should be able to take part in our information society on the basis of their own circumstances spans virtually all areas and requires an integrated approach, cooperation and dialogue.

Initiatives adopted

The eGovernment Delegation has developed Guidance on Web Development. This guidance contains requirements regarding how the needs of elderly people and people with disabilities should be met. A website that follows the guidelines can be used by more people and is easier and more effective and can create benefit for everyone from a user's perspective.

The Legal, Financial and Administrative Services Agency (Kammarkollegiet) has been working since 2008 to ensure usability and accessibility for people with disabilities in procurements for framework contracts on products and services in the area of ICT. The Legal, Financial and Administrative Services Agency, the National Post and Telecom Agency (PTS) and the Swedish Agency for Disability Policy Coordination (Handisam) and several organisations for the disabled are working together on standardisation in the area.

In June 2011 the Government adopted a new strategy for disability policy 2011-2016. The Government has formulated a strategy based on the perspective that disability policy is cross-sectoral, that implementation is part of the work on human rights, that the principle of responsibility and funding applies and that government agencies have a special responsibility in implementation.

In September 2010, the Government tasked Handisam with submitting proposals for a future structure for the follow-up of e-accessibility. The results of this remit were presented in the report Proposal for a Future Structure for Follow-up of e-Accessibility in December 2010. The report's principal message is that there is a great need to define e-accessibility, to devise indicators and in particular to synchronise statistics, follow-ups and activities.

Many people are working to increase digital participation through voluntary initiatives. An example of this is 'ICT Lift' (IKT-lyftet), a project that started in September 2009 on the initiative of the county libraries. Another example is a joint petition known as Digidel 2013, in favour of there being 500 000 more Internet users by 2013. This campaign is being run by people and organisations representing all parts society: libraries, folk high schools, non-profit associations such as disabled federations and Seniornet, the Swedish ICT & Telecom Industries, learning centres, government agencies, Municipalities for Joint Development of e-Services (Sambruk) and study associations. The Internet Infrastructure Foundation (.SE) is responsible for this work and certain office resources.

Actions

Access to and usability of public e-services should increase. The eGovernment Delegation's guidance on web development should therefore be used in the development of public e-services; knowledge and use of the guidance must be spread to the developers of private e-services. It is important that knowledge and purchasing skills on accessibility and usability are strengthened in relation to public procurements of e-services. Public information should also be available in such formats that as many people as possible can use the information.

The issue of usability emerges in several different areas and among many different actors, but there is no common platform for practical discussion and exchange of experience. The Government will set up a user forum to ensure that attention is paid to the user and accessibility perspective at a high strategic level. The principal task of the forum will be to ensure a continuous dialogue between the general public and user groups, the industry, the research community and

[4] Statistics Sweden, Use of computers and the Internet by private persons in 2010.

representatives of end-user organisations, and together to identify specific conditions that need to be met for usability and accessibility that can then be implemented by those responsible.

The Government will task Handisam with putting the proposals in its report Proposals for a Future Structure for Follow-up of e-Accessibility into practical form in cooperation with those affected.

Many important initiatives to increase inclusion are being taken by various organisations, key players and enthusiasts around the country. The Government will therefore task PTS with investigating needs and reviewing the options for supporting such initiatives.

There are no statistics at present that shed light on access to and use of ICT for people with disabilities. It is important that the statistics presented depict the whole population. The Government will therefore task Statistics Sweden with compiling long-term sustainable statistics in the area in cooperation with Handisam and other stakeholders.

Consumers need to feel secure in what they do if e-commerce is to reach its full potential. In May 2011, the Government appointed an inquiry chair to analyse the legal position of the consumer when goods or services are bought and paid for via digital media (ToR 2011:38).

E-services and information as a basis for innovative services

Smarter and more open administration that supports innovation and participation.

Strategic challenges

The overarching objective of government administrative policy, as formulated in the Government Bill on administrative policy[5], is an innovative and collaborative public administration that adheres to the rule of law and is efficient, has well developed quality, service and accessibility and that consequently contributes to the development of Sweden and to efficient EU activity. E-government should contribute towards this objective. It is also evident from the Government Bill that the Government's overarching objective for e-government is that it should be as simple for as many as possible to exercise their rights and fulfil their obligations and make use of administrative services. E-government should aim to bring about lower costs and the greatest possible benefit for businesses and citizens, public administration and society as a whole. Transparency in public decision-making processes, case-handling and access to public information should increase.

It is important that protection of the individual's privacy is respected in the development of new e-services. This is particularly important when authorities' databases and other information are supplied for use and processing by other authorities or businesses.

Public information and e-services are community-wide resources that can be used by others and in so doing contribute to the growth of society. By improving circumstances so that businesses and non-profit organisations can easily use the information and services for the development of their own services, these services can supplement the range of services provided by the administrative authority and meet the various needs that exist in society.

Initiatives adopted

The eGovernment Delegation has been tasked with promoting and coordinating the work of the authorities on improving the conditions for re-use of documents. This work is to be based on the Act on the Re-use of Documents from Public Administration. As part of its remit, the Delegation has also been asked to develop guidance on the use of social media by government agencies.

Actions

The Government wishes to improve the prospects of new and innovative e-services being developed by actors other than government agencies. This improves the prospects of new and innovative e-services being developed and is an important platform for growth. There are large databases in the public sector that represent a unique resource for Sweden. By making them

[5] Government Bill 2009/10:175 Offentlig förvaltning för demokrati, delaktighet och tillväxt (Public administration for democracy, participation and growth).

more accessible, Sweden can boost growth in small and medium-sized ICT companies. Access to the information must, however, be made secure and privacy-protected, which necessitates developing new standardised information structures.

The Government is monitoring how the authorities are complying with the Act (2010:566) on Re-use of Documents from Public Administration and how they are improving conditions for re-use. An issue to which particular attention will be paid in the Government's continued work is whether any authority should be tasked with monitoring compliance with the Act and supporting the authorities in their task of providing information for re-use. Examples of such tasks that may be imposed on an authority are to give the authorities guidance on legal matters and matters concerning fees for information, drawing up and administering standard terms and coordinating the information that the authorities have to provide on terms, fees and data for re-use. An important issue for the Government to consider is what support and coordination is needed for the authorities to be able to consider the needs of re-users in an effective way.

Digitals skills

Everyone of working age must have good digital skills to be employable or be able to start up and run businesses.

Strategic challenges

Digital skills may be crucial to individuals' prospects of getting and retaining a job, starting and running businesses or strengthening the innovativeness and competitiveness of businesses. The requirement for skills applies both to each individual's knowledge, proficiency and attitudes and to the supply of trained specialists to businesses and organisations in the public sector and their ability to offer e-services that work well.

Schools provide the knowledge and skills for the labour force of tomorrow. Swedish 15-year-olds are already showing better understanding in digital reading than in traditional reading[6]. In view of the fact that almost all 15-year-old schoolchildren, more than 97 per cent, have access to a computer at home[7], digital skills among the general public are expected to increase as time goes by. To increase the proportion of young people, especially girls and young women, who apply to study ICT-related subjects and programmes in higher education, the interest of pupils in mathematics, technology and science should be encouraged already at primary and lower secondary school. See also the sections on School and education and Gender equality.

Strengthening digital skills in schools and higher education is only sufficient up to a certain point, there is also a need to develop skills in the world of work and organisations in general. This applies to more fundamental digital skills, for example to work more intelligently with ICT support, but also top-level skills for example for ICT development. From the point of view of Swedish ICT companies it is important that access to top-level skills is safeguarded and developed. Adult education and universities have an important role to play here which necessitates teachers in the educational institutions themselves having the necessary digital skills. Voluntary initiatives are also of very great significance for the development of digital skills. Such initiatives are focused on the needs for fundamental knowledge and skills that exist in everyday contexts, for example when visiting libraries where services such as Seniornet operate.

The business and public sectors demand different forms of ICT expertise (for instance systems engineers, programmers, people who master multimedia, electronic engineers and interaction designers) and often top-level skills and supplementary practical experience (project management and experience of a specialist field). Success in attracting and retaining this labour is crucial to the competitiveness of industry and society. This entails both retaining the workforce that is trained and being able to attract top-level skills from abroad. The Swedish ICT & Telecom Industries federation is monitoring skills provision under the Scorecard.se project, run by the Royal Swedish Academy of Engineering Sciences.

[6] OECD 2009. PISA 2009 Results: What Students Know and Can Do. Student performance in reading, mathematics and science.

[7] see source above.

The project has identified a shortage of skills in the area. An analysis conducted by the Swedish Government Offices (Ministry of Enterprise, Energy and Communications) and Swedish ICT & Telecom Industries in 2008 also showed that there was a shortage of the right ICT skills, but indicated that the shortage was expected to level out in the longer term and turn into a surplus of people trained in IT.

The need for top-level skills is governed by trends in various specialist fields that are difficult to assess. There ought to be little risk of a long-term surplus of specialists in a sector marked by global competition and rapid change, particularly for Sweden, which in several respects is at the forefront of ICT development. There should be readiness for top-level skills to avoid problems with bottlenecks in Sweden. In the context of the Digital Agenda for Europe, proposals are made that are aimed at the Member States. One of the proposals is made under the heading of long-term e-skills and digital literary policies and is aimed at the Member States introducing long-term strategies for e-skills and digital expertise and promoting relevant incentives for small and medium-sized businesses and disadvantaged groups.

Initiatives adopted

The EU's flagship initiative Agenda for New Skills for Jobs was adopted in the autumn of 2010 and contains descriptions of e-skills, which is the Commission's term for the concept of digital skills. The Commission notes that it is estimated that there will be a shortage of ICT specialists in 2015 equivalent to between 348 000 and 700 000 jobs due to a deficiency of digital skills in all areas of the economy, particularly among the elderly, those with a low level of education and employees in small and medium-sized businesses. These people, according to the Commission, should be given basic computer knowledge, while people who, for example, work in ICT should be given the opportunity to acquire specialist knowledge. The Commission will specifically, according to the communication, propose an EU-wide strategy and EU-wide tools by 2012 that will help the Member States to integrate ICT skills and computer knowledge (e-skills) in key measures for life-long learning.

Swedish ICT & Telecom Industries is monitoring skills provision in the framework of Scorecard.se, a project run by the Royal Swedish Academy of Engineering Sciences that compares five important factors of success.

Actions

Swedish companies must be able to recruit foreign experts and other key individuals in international competition. There are therefore special tax rules for people classified as experts. To improve simplicity and predictability when companies recruit foreign staff, the Government intends to implement a simplification of what is known as the expert tax.

In July 2011, the Government decided to appoint a commission of inquiry on measures to increase the use of ICT by small businesses (ToR 2011:54). See the section of Entrepreneurship and business development.

Everyday security

The use of ICT and the Internet must be informed characterized by security awareness and trust.

Strategic challenges

Modern-day society is heavily dependent on ICT and the Internet working. Responsibility for network and information security is shared by users, market players and thegovernment sector. All these parties need to do more to improve network and information security and to increase trust in ICT systems. Private-sector organisations in particular have an important role to play in providing secure networks, products and services, and a great deal can be done in dialogue with the private sector. Increased security promotes trust, which drives the use of services that in turn drive innovation, trade, growth, participation etc. Good everyday security is also fundamental to the emergency preparedness of society.

Well informed and aware ICT users who demand a high level of security are crucially important in increasing security

and confidence in electronic communication. Continuous efforts therefore need to be made to raise skills among users in routine and preventive security. The market players who have the best knowledge on these issues have great responsibility to contribute to this. There are a number of different types of intrusion in the computers of ordinary users, for example viruses, trojans, botnets, spy ware and other undesirable storage of malicious code that must be counteracted. A 'botnet', for example, gives the people who are behind its use control over computers. Botnets can be used to distribute spam mail or carry out denial-of-service attacks (by overloading servers). Users should therefore install firewalls to an even greater extent and update their antivirus systems.

The media landscape is becoming increasingly complex and offers great opportunities. At the same time, ICT is making new demands. One challenge is to provide knowledge so that members of the public can make full use of the digital media and understand their role in society. It is not uncommon for children's and adolescents' knowledge of the opportunities and risks associated with digital media to surpass that of parents. To enable them to provide support for children and adolescents in their everyday lives as media users, adults need greater knowledge of what these everyday lives are like.

Initiatives adopted

The National Post and Telecom Agency (PTS) has a special website, (www.pts.se/internetsakerhet), where the Agency's advice and services are collated, together with information for instance on how to set wireless networks and how to use Bluetooth securely. This website also contains the services Test Your Computer, which scans the computer for security weaknesses, and Test Your Password, which teaches tricks for the creation of strong passwords.

A new government agency, the Swedish Media Council, was formed on 1 January 2011, with the effect that work on digital media skills issues has been made more permanent. Several other agencies, such as the Swedish Data Inspection Board, also undertake outreach work relating to information security focusing primarily on individual privacy.

The Riksdag has recently adopted resolutions prompted by the Government Bill Better Rules for Electronic Communications[8]. Clearer requirements on IT security are consequently being introduced, and a formal reporting duty is also proposed for operators in relation to incidents involving privacy.

Actions

The network organisation Surfa Lugnt ('Surf Calmly') has long been working on increased security and safety on the web, and is funded in part by PTS. The agency's efforts to support Surfa Lugnt should continue.

The support on security issues provided by PTS, the Swedish Civil Contingencies Agency, the Swedish Consumer Agency, the Swedish Data Inspection Board etc. should be strengthened. As a way of helping users to take responsibility for security, it needs to be ensured that there are Internet-based services at a reasonable price for users where they can have the contents of their terminal equipment checked with regard to perimeter protection or the presence of botnets and other malicious code and obtain advice on what actions and preventive efforts they should take as individuals. Only to the extent that tried-and-trusted and well used services of this kind do not exist on the private market or cannot be expected to be developed in the near future can there be a need for central government to develop these. PTS is working with the operators with the aim of producing sector-wide guidelines on botnets.

The activities of the Media Council have provided increased knowledge of the media situation among children and adolescents and are contributing in this way to reducing the harmful media impacts on them. It is favourable that this work is continuing and is being given greater depth at the new government agency the Swedish Media Council. The continued work of other government agencies on information security is also valuable. See the section on The information security of society.

[8] Government Bill 2010/11:115, Report 2010/11:TU20, Parliamentary Communication 2010/11:256.

Services that create benefit

The emergence of a society with more and more digital services is largely based on there being attractive and easy-to-use services in all imaginable areas. There should be a large and varied range of services that have been developed by actors in both the private and public sectors: services that have been developed to handle different situations in life, from the cradle to the grave. A good range of digital services encourages the use of digital channels rather than more traditional ones, which contributes to transforming established sectors and making them more efficient, while new ideas, business models and companies emerge at the same time.

Public administration plays a significant role here as a provider of public services, but also as a large purchaser of services. The time has come to radically improve the efficiency of administration. More and better e-services make it possible to build administration that is both more efficient and simplifies everyday life for business owners ands.

Public administration

A simpler everyday life for individuals and businesses and more efficient public administration.

Strategic challenges

The Government is continuing with its work on creating a simpler everyday existence for individuals and businesses in which actors in the public and private sectors will be put in a better position to create services that, for instance through automation and self-service, meet the needs of people and businesses in different situations. Government will collaborate by sharing and re-using information to bring about reduced disclosure of data for businesses, local authorities and individuals.

Sweden became an early pioneer in the digitisation of public administration. Increasingly systematic work has been done since the end of the 1980s to use ICT to free up resources for more advanced tasks. When the Internet was introduced in the 1990s, the government agencies already had relatively high technological maturity, and e-services became a way of facilitating outward contact. Electronic information exchange was able to replace other methods of exchanging information between authorities. In 2000, the strategy for the 24-hour government agency was set forth in a Government Bill[9]. The aim was for the government agencies to be able to improve the accessibility of the services they offered. The strategy was based on an already successful tradition in which the government agencies themselves decided how ICT should best be used to develop their operations. Since 2007 the Government has speeded up development and strengthened the control of e-government as public administration as a whole had not been able to benefit from the network-oriented use of ICT to a sufficient degree. Continued development requires a higher degree of electronic collaboration in government administration.

The Government has been working on systematically building up comprehensive change management in the area of e-government since 2007. Since the adoption of the action plan[10] for e-government in 2008, the Government has been working on strengthening control in e-government.

[9] Ett informationssamhälle för alla (An information society for all) 1999/2000:86.
[10] Handlingsplan för eFörvaltning – Nya grunder för IT-baserad verksamhetsutveckling i offentlig förvaltning (Action plan for e-government – New principles for ICT-based development of activity in public administration).

The digitisation of society is creating an expectation that the public sector will be able to supply services in just as simple and effective a way as private service providers. This is crucial but resource-demanding work that necessitates information management and collaboration across organisational boundaries. The challenges faced include funding issues and differences in regulations and technical standards.

Initiatives adopted

The eGovernment Delegation has been working on implementing the action plan for e-government since 2009, and today involves around 200 people, principally from the public sector, in its various working groups and committees. The Delegation has succeeded in creating a great force for change in a short time, and the results are now visible in the form of strategic development projects and guidelines. The Delegation is due to present the final report on its remit by 31 December 2014.

The eIdentification Board was formed on 1 January 2011 with the task of supporting and coordinating the needs of the public sector for secure methods of electronic identification and signature (ToR 2010:69).

The Government has tasked an inquiry chair with preparing the establishment of a joint-agency service centre tasked with offering services primarily in financial and personnel administration to government agencies (ToR 2010:117). The aim is to increase efficiency and reduce administrative expenses in central government through increased concentration of administrative support activity. The inquiry chair presented the report 'A joint-agency service centre with proposals on how a service centre for services in administrative support should be formulated' on 15 April 2011[11]. The report proposes that a service centre should be established as a separate authority and funded by fee income with a requirement for full coverage of costs. In addition, it is proposed that the services offered by the service centre should initially cover financial and personnel administration and support for e-purchasing and that the financial unit in the operational support of the Swedish Tax Agency and suitable parts of the operational support of the Swedish Social Insurance Agency should form the basis of the service centre. The Inquiry estimates the potential savings at SEK 55 million per year at a take-up of 26 government agencies, equivalent to 25 per cent of government employees. This would equate to a productivity gain of 33%. The Inquiry's proposals are currently being discussed at the Government Offices.

With the aim of raising efficiency and quality in public administration at national, regional and local level, the Government decided in May 2011 to appoint a committee in the form of a national council for innovation and quality in public administration (ToR 2011:42). The Council is to support and encourage work on innovation and change in public administration that can result in significant improvements for individuals and businesses and improved efficiency in existing processes. The Council has , among other things, to identify areas, services and case-handling processes which are considered particularly important to develop from the perspective of a citizen and a business owner.

Actions

A number of strategic e-government projects will continue to be undertaken. These projects are intended to simplify everyday life for individuals and businesses, while also leading to savings for central government as a whole. They relate in particular to government-wide services and services linked to the core operation. An example of a joint-agency information and guidance service aimed at future and existing entrepreneurs is verksamt.se.

More efficient public activity provides the right service at a lower cost and with increased accessibility. This is brought about through efficient utilisation, sharing and re-use of information, through smarter development of activity in which processes, rules and ICT solutions work together. Standardised services and interfaces in administration create opportunities for both the private and public sectors to develop new services.

[11] Swedish Government Official Reports SOU 2011:38

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Entrepreneurship and business development

The potential of ICT must be utilised to boost growth, competitiveness and trade for businesses.

Strategic challenges

ICT has a key role to play in the vast majority of companies, in simplifying activity and making it more efficient, open and accessible to customers and suppliers. ICT can also drive the development of new processes, products and services. Various digital services that provide information and guidance can make it easier to start and run companies. In addition, small and medium-sized companies can reach out internationally. It is very important that work that has been started in the government agencies to simplify and increase services to entrepreneurs, for example through verksamt.se, should continue to be developed.

The use of ICT among companies is generally high, but at the same time there are studies showing that small businesses in particular do not exploit the potential ICT offers and that the use of ICT varies depending on where the business is located and in what sector it operates. Many of these companies ought to be able to develop their operations and simplify their everyday activity with the aid of ICT and the Internet[12]. The innovative opportunities that ICT provides can encourage enterprise linked to, for instance, health and social services, the environment and administration.

The cultural and creative industries are an area where ICT can contribute to creating new markets for businesses and entrepreneurship. Artistic skill combined with technology and ICT create entirely new conditions for both art and culture in themselves, but also in order to develop cultural and creative industries. The Government's action plan for the cultural and creative industries is aimed among other things at strengthening entrepreneurship and enterprise in the cultural field and at promoting cultural and creative expertise in industry for increased competitiveness and innovative capacity.

It is important to improve the conditions for further utilisation of public information from government agencies for both commercial and non-profit purposes. The European Commission estimated in 2006 that the commercial value of public information amounted to four times the value of the EU market for mobile roaming services. The Swedish market was valued at between EUR 226 and 614 million. Sweden's position in the growing market is probably relatively strong, as Sweden has both a large quantity of public information of good quality and a high degree of digitisation. An increased degree of coordination can provide a more efficient supply of ICT services. Cloud computing[13] could also drive growth in the ICT industry, at the same time as lowering administrative costs.

A continued priority is simplification for businesses. Simplified and reduced submission of data, for example, can enable entrepreneurs to devote more time and resources to operating and developing their businesses. Digital solutions are an important tool in this work.

The transition to electronic procurement should be hastened. E-procurement contributes to increased efficiency in the public sector and provides time gains and simpler administration. E-procurement is also an important tool to facilitate and improve the efficiency of processes for companies submitting tenders. It may, for instance, lead to reduced bidding expenses, shorter lead times and a reduced risk of errors in tenders. e-Procurement is particularly significant in increasing cross-border procurement in the European single market.

With regard to cross-border trade, the Government is making active efforts to ensure that a number of measures are taken at EU level. Current legislation and the recommendation for qualified signatures in e-procurement should, for instance, be reviewed as there is a lack of solutions to facilitate mutual recognition of electronic signatures and identifications.

It is also important to continue the working currently in progress at EU level on developing simpler solutions with usernames and passwords, self-declarations and/or qualification solely of winning bidders. It is also important to follow

[12] See for exmple: Barriers to information and communication technology adoption in small firms, Parida et al, 2010 (http://entreprenorskapsforum.se/swe/wp-content/uploads/2010/09/WP_Barriers_to_ICT_adoption.pdf).
[13] Cloud Computing has two important characteristics: perceived infinite resources and payment in terms of consumption of resources. The service offered by the cloud is called utility computing, which can be most closely compared to the consumption of resources such as electricity and water. (IASA – Sveriges IT-arkitekter).

the application of various directives at EU level to avoid inadequate harmonisation and adaptation to the new conditions that a digital services market brings with it.

The public sector in Sweden is a large purchaser of various types of ICT-related products and services. It can in certain circumstances point to opportunities and the use of new innovative technology that contribute, for instance, to improvements in public services. Improved coordination of central government, municipal and county council procurement of ICT can promote this development. The Government therefore considers it important that the public sector encourages innovation and entrepreneurship through procurement and standardisation.

Good, high-speed access to the Internet is required for small and medium-sized enterprises to be able to be established and develop in rural areas. Rural businesses are spread across the country, and access to high-speed broadband may be essential in enabling them to reach their customers.

Initiatives adopted

The Government adopted a national action plan for the cultural and creative industries in September 2009. The action plan is aimed among other things at strengthening entrepreneurship and enterprise in the cultural and creative industries and at promoting cultural and creative expertise in industry for increased competitiveness and innovative capacity.

In accordance with the Government Bill 'Public administration of democracy, participation and growth' (Government Bill 2009/10:175), the Riksdag has opted for an Act (2010:566) on re-use of documents from public administration. Under this law, public information has to be made accessible for re-use on terms that create the right conditions for healthy competition, for the development of new services and applications and for greater market access. The law is aimed at promoting the development of an information market by facilitating use by individuals of documents that are provided by authorities.

Actions

Access to a broad range of ICT product services at attractive cost is essential to increased use of ICT and electronic commerce. The Government is working on eliminating obstacles to trade internationally in the ICT area, including expansion of the Information Technology Agreement (ITA).

The Government intends to continue with its work on making life simpler for businesses. An ambition is to simplify the provision of information by using digital solutions so that businesses avoid any kind of duplicate reporting.

The Swedish Agency for Economic and Regional Growth has devised a solution that makes it possible to check the authenticity of various foreign e-signatures. It should be possible for the solution to be used when government agencies deal with foreign administration, for example in digital public procurement but also in other case management.

To strengthen the prospects for the cultural and creative industries in the long term, in June 2010 the Government appointed a Council for Cultural and Creative Industries. This is part of the Government's national commitment to such industries over the period 2009–2012.

ICT use in small and medium-sized enterprises should increase in order to boost growth potential and increase market opportunities both nationally and internationally. The Government has therefore appointed an inquiry to propose measures to increase the use of ICT by small businesses (ToR 2011:54). The Inquiry is due to present its proposals on 1 October 2012, with an interim report in March 2012.

A number of measures are needed to achieve a digital single market that works well. There are many reasons for various obstacles today, such as low trust in the Internet, cultural differences for example with regard to language and obstacles of a more legal nature. In the area of value-added tax, inadequate harmonisation with respect to VAT between the various Member States of the EU creates problems for companies that offer digital services. Harmonised regulations, non-discrimination and correct and uniform application of adopted legislation are therefore of key significance in ensuring that Swedish companies are not put at a disadvantage in international competition. It is also

important to have collective and readily accessible information on what rules and regulations apply in each EU Member State. Another important aspect is to promote and enable increased use of e-procurement, for instance through active efforts at EU level.

Established small and medium-sized enterprises account for a large proportion of Swedish trade and industry. These also have a need to modernise, become more competitive, be able to expand in more business areas and export. The Government has therefore appointed a committee to review corporate taxation. Among other things, the committee has been tasked with examining various options for reducing the taxation of venture capital in the corporate sector and making conditions equal for funding from equity and from loans. In addition, the committee's remit covers reviewing rules for tax incentives for research and development (ToR 2011:1).

To further strengthen companies' business opportunities, the Government proposes expanding deductibility for research and development. Current application of the rules is too strong, and in future it is to be sufficient for the research to be of reasonable interest to the company's operations for deductibility to be possible.

In efforts to promote Swedish exports, it is important that the Government works along a broad front to promote e-commerce. Sweden is uniquely placed to be a leader in electronic commerce, and there is great untapped potential, both nationally and internationally. To clear away obstacles and create a single market for electronic commerce that works well, an action list containing specific initiatives will be presented as part of the work of the Ministry for Foreign Affairs. The ambition in this work, which involves both companies and government agencies, is for Sweden to create the most attractive conditions for electronic commerce in Europe, so that cross-border electronic commerce can achieve its full potential.

The eGovernment Delegation has been tasked by the Government with promoting and coordinating the work of the government agencies on improving the conditions for re-use of documents. This includes, for instance, paying special attention to the prospects of smaller companies and new business start-ups gaining access to the market for public information.

The Government intends to closely monitor how the Act on Re-use of Documents from Public Administration is applied. A question to which special attention is paid is whether any agency should be tasked with monitoring compliance with the Act and supporting the agencies in carrying out their work. It may, for example, be a matter of providing guidance on legal issues, fees or devising standard terms.

Health care and social services

National efforts in eHealth are focused on creating visible and practical improvements to three main target groups: the individual, health care and social services personnel and decision-makers in the health and social services

Strategic challenges

Government efforts since 2006 have been pursued together with a broad group of national organisations through "National eHealth - the strategy for accessible and secure information in healthcare". A common consensus has been created and several initiatives have been taken. County councils and municipalities, in their capacity of being responsible for health care and social services, have a key role in the introduction of the strategy together with the national organisations. Several parts of the strategy today are at an introductory stage or in operation.

The population is ageing, which imposes great strains, especially on welfare systems. New technology and new and enhanced processes, structures and options for implementation change how health care and social services can be run. The possibility of providing information relevant to health and offering services to the individual is increasing, but a growing body of information may, at the same time, create risks with regard to security and privacy. The right information at the right time is an important part of the work on developing preventive health care and enabling the individual to control his or her own situation better.

Individuals, in their role as resident, patient, user and family member, have to have access to readily accessible and quality-assured information about their health and access to documentation from previous actions and treatments. They must be offered individually adapted service and interactive and informative services to enable them to be involved and make their own decisions based on their own circumstances.

Personnel in health care and social services have to have access to electronic decision-making support that works well in ensuring high quality and security, while making their daily work easier. Necessary and structured information must be available as a basis for decisions on interventions and treatments. There is also a great need for these systems, for instance in the form of decision-making and process support, to be more independent of the organisation and to be developed according to the user's needs.

A step towards attaining the objectives of the National eHealth strategy requires measures to increase knowledge among staff in health care and social services on the use of ICT. Personnel in health care and social services must have good knowledge of the use of ICT, both for their daily work and for development opportunities. This requires changes and greater efforts in basic training programmes.

Decision-makers in health care and social services need to receive appropriate support to enable them to follow up the quality and security of their activities and obtain a relevant and comprehensive basis on which to decide on operational control, planning and allocation of resources. Efforts are also required in relation to knowledge management, learning and innovation. Knowledge and commitment need to increase regionally and locally to drive the development of eHealth and health care, but in particular in social services. The implementation of ICT services and e-services that have great potential to contribute to efficiency and quality improvements will otherwise be delayed.

The use of ICT in health care and social services has increased since the year 2000. As conditions have improved and digitisation has become increasingly common in society, use of ICT has also increased. Work in national eHealth has gone over the years from covering ICT and technological development to focusing on developing such processes and support in organisations as are required to safeguard the individual's health, well-being and quality of life. The degree of complexity and the need for structure in the organisations is consequently increasing.

Greater collaboration within and between municipalities and county councils is required to attain the benefits that technology and development bring. An important factor in this is greater Swedish innovativeness that can encourage joint solutions. Sweden's good international position and work in the area of eHealth create a sound basis for innovation and favourable conditions for enterprise. It is crucial to strengthen the incentives for collaboration in the development and introduction of ICT support and other forms of technology that improve the individual's welfare.

Structured and clear information about interventions in health care and social services needs to be ensured by using and continuing to develop information structures that have been developed, national specialist terminology and national and international standards. Technical and structural development must work together with the regulations and guidelines that govern the activities of health care and social services. The regulations must also, if necessary, be reviewed and revised to balance the needs for security, efficiency and flow of information in operation against data protection and the privacy and rights of the individual. Another issue linked to the individual's privacy is the need for research for data of high quality as part of the work on improvement and development.

Initiatives adopted

A national ICT strategy for health care and social services was established by the Riksdag in 2006 (Government Communication 2005/06:139, report SoU30, Parliamentary Communication 281). This strategy was revised in 2010 and has since

been known as "National eHealth – the strategy for accessible and secure information in health care". The strategy is jointly backed by the Government, the National Board of Health and Welfare, the Swedish Association of Local Authorities and Regions, the Association of Private Care Providers and the sector organisation Famna. The Government takes further steps in a number of areas in the updated strategy from 2010. A number of relevant initiatives are described here.

The Government has tasked the National Board of Health and Welfare with taking national coordinating responsibility for appropriate and structured documentation in Sweden health care and social services, as well as making it easier for health care providers and providers of social services to introduce and apply a national information structure and national specialist terminology, for instance through a commitment to training at the local level. The National Board of Health and Welfare will also establish and put into operation an organisation for long-term administration and ongoing continued development. There is an associated need to review existing rules on documentation.

A steering group directed by the Ministry of Social Affairs has been set up to establish a national prescription database and to speed up the introduction of electronic support to prescribers in the whole of health care and affected parts of the social services. The steering group is due to draw up an action plan for planned actions in 2011.

The Government has tasked the Swedish Agency for Innovation Systems (Vinnova) with making it easier, through test beds, for innovators to develop and demonstrate innovative solutions in health care and elsewhere.

The Government has decided on funds to implement support for management of authorisation and security in the exchange of information between municipalities, county councils, private providers and individuals. Funds are being paid in 2011 to regional development managers to contribute to an exchange of experience and cooperation between municipalities and county councils. In the area of information security, the Swedish Civil Contingencies Agency runs private/public forums in health care. The aim is to improve information security in the area.

A review of the national quality registries has been conducted, with the aim of increasing the benefit and usability of the data in the registries and to improve the reporting and quality of the data reported to the registries The Government has subsequently decided to appoint a national coordinator for development of the national quality registries.

The Government has established the eIdentification Board to support and coordinate electronic identification and control. An e-identification solution that works well is crucial to the security, usability and introduction of eHealth and its solutions.

The Welfare Development Council was appointed by the Government in 2010 and is due to continue working until December 2012. The Council, which consists of experts from both the public and private sectors, is intended to contribute knowledge, experience and specific problems on what can improve the prospects for freedom of choice, diversity and accessibility in health care and social services. The Council has the option of addressing issues that affect ICT, for example the development of quality registries.

Actions

The Government is supporting the development of new interactive services that can provide individuals with broad access to simple and secure e-services so that they can plan their own care and treatment. This may relate to individuals' access to their own medical records through a secure web solution, Mina vårdkontakter ('My Care Contacts') and 1177 for interaction with health care, information and advice or a Health Diary in which patients themselves can document and monitor their health development and obtain personal advice. These e-services depend on the prospects of the organisations of communicating the information to the individual in a clear and understandable way.

There is a lack of national support at present to monitor and prevent health care-related infections. In September 2011,

the Government decided to financially support the work of the Swedish Association of Local Authorities and Regions on developing electronic decision-making support in the form of an infection tool. The work entails development and pilot testing of ICT support for the monitoring of infections – a national infection tool.

Work over the next few years will focus on supplying the beneficial effects of various e-health services, supplying more personal e-services for all members of the public, greater coordination and development of eHealth in municipal health care and social services and increased interaction with adjacent national and international reform processes and initiatives.

The Government judges that there is a need to clarify what information may be exchanged across the boundaries of responsible authorities, organisations and professions on the basis of existing regulations. The National Board of Health and Welfare was therefore tasked in June 2011 with drawing up a handbook to clarify the legal situation regarding exchange of information in health care and social services on the elderly.

School and teaching

Schoolchildren must, and teachers should, have access to modern learning tools that are required for contemporary education.

Every pupil, on completing primary and lower secondary school, must be able to use modern technology as a tool for knowledge-seeking, communication, creation and learning.

Strategic challenges

According to the curriculum for primary and lower secondary school, the school is responsible for every pupil, on completing primary and lower secondary school, being able to use modern technology as a tool in searching for information, communication, creation and learning. There are also equivalent curriculum goals for upper secondary school. This means that the pupils have to acquire the digital expertise needed in present-day society.

Responsibility for issues concerned with ICT in the schools area rests on the municipal and independent authorities responsible for schools. The issue of digital learning tools and teaching materials is thus one for the authorities responsible for schools and the commercial market for teaching materials.

ICT is used in many schools and in the everyday lives of many schools, and Sweden is one of the countries with the highest proportion of schoolchildren who have access to a computer at home[14]. While Swedish schoolchildren perform well in digital reading, Sweden occupies a mid-table position among the OECD member states in the use of computers at school and the ability of schoolchildren to use computers.The report LearnIT[15] shows that the use of ICT in teacher training in the early 2000s was low.

ICT is used in schools as a teaching tool for pupils and teachers. A strategic challenge is the issue of pupils' access to computers and how computers are used in instruction. But it is also important to understand the importance of the teachers having expertise and understanding of the new opportunities offered to young people in the media reality of today as well as access to computers for their work and for communication with parents. A further strategic issue applies to the use of ICT as an aid to efficient school administration.

In 2010 and 2011 the documents governing schools, in the form of a new Schools Act (2010:800), new syllabuses and a new curriculum for Swedish primary and lower secondary schools have been reviewed and clarified. The upper secondary school has also acquired new syllabuses, and a new qualification descriptor has been introduced for teacher and preschool teacher training programmes. The new statutes are considered to provide what is necessary for digital skills among teachers, pupils and students. The way the knowledge requirements are formulated on the basis of established syllabuses and curricula has a crucial bearing on how these skills are provided, as well as for how the teachers put the instruction into practice.

There are proposals under the Commission Communication 'Digital Agenda for Europe' on e-learning aimed at the Member States. The proposal is that each Member State should: "Mainstream eLearning in national policies for the moderni-

[14] OECD PISA 2009.
[15] KKK-stiftelsen (The Knowledge Foundation) 2004.

sation of education and training, including in curricula, assessment of learning outcomes and the professional development of teachers and trainers". The term eLearning is not described more closely in the Commission Communication and does not have a generally accepted definition, which makes it difficult to respond to the Commission's recommendation. The curricula of primary and lower secondary school and upper secondary school in Sweden state what knowledge is to be conveyed but do not indicate how the instruction is to be carried out. Under the Schools Act, schools have to use the teaching tools needed for contemporary education, but teachers and bodies responsible for schools decide themselves how the instruction is to be given, including choice of teaching tools and how these are to be used in instruction.

Initiatives adopted

Between 2005 and 2010, the Government earmarked special funds for the development of ICT in teaching. The total sum involved is SEK 39 million, of which SEK 10 million for 2010. The funds were previously assigned to the then National Agency for School Improvement, and since 2008 have been assigned to the National Agency for Education, which has used them among other things for the programme PIM (Practical ICT and Media skills).

In the autumn of 2011 the first pupils enter the reformed upper secondary school. As part of the reform, new syllabuses have been devised for all subjects and courses in upper secondary school. The National Agency for Education decides on the syllabuses with the exception of the subjects that are common to all upper secondary school programmes, and on which the Government decides. On 2 December 2010, the Government decided on syllabuses for the subjects common to all upper secondary schools which are to be applied to programmes started after 1 July 2011 (Ordinance [SKOLFS 2010:261] on syllabuses for subjects common to all upper secondary schools). Under the aims of the subjects of history, social science, mathematics and natural science, mention is made of ICT, knowledge of how to use modern information technology, digital technology, digital media etc. so that students can search for and achieve knowledge and search for and interpret source material. These statements are followed up in the central contents of courses concerned, where it is stated that the teaching has to give pupils the ability to use information technology, and then return in the knowledge requirements for the various grades, which indicate to rising degrees the requirements for pupils' ability to use various tools.

According to its remit in its appropriation directions, the National Agency for Education has to continuously monitor teachers' use of ICT and ICT skills in preschool, school and adult education. This follow-up has to take place in accordance with the authority's proposals in the report on the remit and a plan for improved follow-up of ICT use and ICT skills in preschool, school and adult education. The follow-up also has to relate to the schools' administrative ICT use, as well as their measures to communicate the work of the school and organisation with homes using ICT. The results of this remit are to be reported to the Swedish Government Offices (Ministry of Education) every three years, on the next occasion no later than 15 April 2013.

ICT is one of the school's teaching tools, needed to attain the school's aims.

Actions

The Government decided in February 2008 on a remit for the National Agency for Education on goals and final tests for each study path in Swedish For Immigrants (SFI). The remit has since been amended in appropriation directions so that the transition period during which tests that are not ICT-based may be used has been extended to 1 January 2011. The remit has since been further amended so that the National Agency for Education, in a limited study, has to develop all parts of the ICT-based tests in SFI. The National Agency for Education also has to review the issue of technical solutions linked to ICT-based tests, such as security solutions, and try out the tests in a selection of municipalities.

The authorities responsible for schools – municipalities and independent bodies – are responsible for curricula and syl-

labuses being followed, aimed at ensuring that pupils gain the digital skills needed in modern-day society. The Government therefore takes a positive view of the authorities responsible for the schools collaborating with other bodies concerned so that the objective is met at good quality throughout the country.

One way of strengthening digital expertise among school system personnel is to utilise ICT as a platform, where suitable, in skills development.

Democracy

ICT must provide support for citizen dialogue and contribute towards increasing citizens' knowledge, community involvement, insight and influence.

A living democracy in which individuals have an opportunity to influence decisions that concern their everyday lives is the goal of democracy policy. In the framework of work to strengthen democracy, priority issues are good opportunities for insight and influence, local and municipal democracy, greater opportunities for influence in the democratic process and expanded influence using e-tools. It is therefore beneficial if ICT supports citizen dialogue and contributes towards increasing citizens' knowledge, community involvement, insight and influence.

Strategic challenges

ICT and the Internet play an important role in the development of national, regional and local democracy. The Government also advocates broader participation by citizens between elections, and the Internet can fulfil an important function here, particularly in view of the large proportion of the Swedish population who today have access to the Internet. The Internet makes increased access to information and insight into public activity possible and also provides opportunities for participation in democratic processes, which if used correctly can strengthen democracy. Democracy and ICT in combination make it possible to also influence political decisions for those who do not attend traditional meetings.

All levels of society face the democratic challenge posed by digital development. Strategies for information, communication and dialogue need to be supplemented and developed. It is also important to think about an approach to the new technology and the opportunities it affords.

Initiatives adopted

Several experiments in digital democracy have been initiated in recent years. As part of efforts to increase opportunities for insight and influence for citizens, since 2006 the Government has granted the Swedish Association of Local Authorities and Regions a total of SEK 6 100 000 to run the Citizen Dialogue project with ICT support.

The objective of the project is to make political decision-making processes more transparent and accessible and to increase the influence of citizens through the use of ICT solutions and citizen dialogues. The Government therefore supports the country's municipalities and county councils in their efforts to strengthen citizen endorsement through ICT tools and innovative methods for citizen dialogue. Individuals are consequently given a better opportunity to be informed, to participate and to influence the political process.

The emphasis in this work to date has been on supplementing the traditional channels with ICT-based tools for dialogue. The tools have been developed throughout with the citizen and usability at the centre, and are now being tried out in practice in the country's municipalities and county councils.

Experiences from the various sub-projects show that participation is increasing by involving individual citizens in the political decision-making processes. The project is therefore also aimed at increasing knowledge of new methods for political participation. Information from the Swedish Association of Local Authorities and Regions shows that there is increasing interest among municipalities and county councils in making use of dialogue tools.

Actions

Over the next few years it will be a common challenge for central government, the municipalities and the county councils to develop the use of ICT for support in dialogue with citizens. This should take

place in a way that strengthens democracy by developing a transparent democracy and giving citizens an increased opportunity to exert influence in the democratic decision-making processes. The Government therefore continues, for instance, to support the Swedish Association of Local Authorities and Regions project Citizen Dialogue with the support of ICT, which is due to run until 2013.

Access to culture

Cultural activities, collections and archives must be preserved digitally and made available to the public electronically to a greater extent. All central government institutions that collect and preserve cultural heritage material and cultural heritage information and make it available are to have a plan for digitisation and accessibility.

Strategic challenges

One of the national cultural policy goals is to promote a living cultural heritage that is preserved, used and developed. Digital development gives cultural authorities, institutions and public-service broadcasters completely new ways of providing citizens, the business community and researchers with access to culture and the cultural heritage. The new ways of producing, distributing and assimilating music, film and literature improve the prospects of reaching a larger and broader public.

Cultural content – all forms of artistic and creative expression – plays a large social and economic role in society. There is demand for digital versions both among citizens and in the business community and in the research community. Digitisation and digital preservation of, and electronic access, to the Swedish cultural heritage can promote creativity, innovation and entrepreneurship and support activity in other sectors, such as cultural tourism. Collaboration between actors and organisations in the area is needed to bring about good and innovative synergies and cost-effective solutions.

The production of cultural content faces new opportunities and challenges as a consequence of digitisation. In the culture bill 'Time for culture' (Government Bill 2009/2010:3), the Government notes that there is a crucial need for a continued balanced relationship in which regulations on copyright ensure that the fundamental conditions are made for production of content and respect for the basic principles of copyright, while the opportunities for the development of new ideas, products and services in the information society are exploited. See also the section on copyright.

Initiatives adopted

In the Bill 'Time for culture', the Government emphasises the need to find common solutions to drive ahead work on digitisation, digital conservation and digital mediation.

Initiatives have been taken at European level to establish a European digital library – Europeana – for digital material from throughout Europe (books, newspapers, photographs, film, audiovisual work, archive papers, museum objects, monuments and archaeological cultural heritage).

It was established in the budget bill for 2011 that a coordination secretariat will be established for digitisation, digital conservation and digital availability of the cultural heritage at the National Archives to meet the need for continued work on development.

The Government estimated in the budget bill for 2011 that SEK 15 million annually would have to be earmarked for a commitment to digitisation of cinemas in 2012-2015. However, development in this field has been faster than expected. The Government has therefore given notice in the budget amendment for 2011 that the investment will be brought forward and implemented in 2011-2014. The investment in digitisation of cinemas favours sustainable growth throughout the country and innovation and entrepreneurship for many different groups in society.

On 23 June 2010, the Government tasked the Library of Talking Books and Braille Publications and the National Post and Telecom Agency with intensifying development and change work on government-funded talking newspaper activity. In a sub-report from March 2011, proposals were presented for a switch from read-in talking newspapers to what are known as speech synthesis newspapers. A second

sub-report was presented in September 2011 with updates regarding the development of new formats for digital talking newspapers. It is proposed that the switch will be implemented by 2015. The basic principle is to increase accessibility for users and improve the cost-effectiveness of the operation. A final report is due to be presented by 1 March 2013.

The Government has implemented changes in the grant provisions in literature and newspaper ordinances that mean that support in future has to be technology-neutral and not linked to a particular form of distribution. In addition, the Literature Inquiry currently in progress has been tasked with analysing how the Swedish book market has developed over time, among other things with regard to diversity in publication (ToR 2011:24). Particular attention is to be given to digital development and its significance for production, distribution and sale. The Inquiry is due to submit a report by September 2012.

Actions

The overarching aim is for cultural activities, collections and archives to be preserved digitally and made available to the public electronically to a greater extent by 2015. All central government institutions that collect and preserve cultural heritage material and cultural heritage information and make it available must have a plan for digitisation and accessibility. The Government is looking for new user-friendly solutions and a joint approach so that citizens can gain better access to the cultural heritage in the digital environment. The Government intends to formulate a national strategy for digitisation of the cultural heritage, based on proposals that have emerged in the reporting of remits on digitisation, electronic access and digital conservation.

An important type of development work is the project presented in the report on the remit of the co-operation council of the central museums on a standardised and common platform, sverige.museum, in which the collections of the state museums are digitised, structured and made accessible. The Government considers that the coordination secretariat for digitisation, digital conservation and making the cultural heritage accessible at the National Archives can be an important contributor to this development work.

A new labour market initiative – the 'Cultural Heritage Lift' – will be implemented over the period 2012–2014. This initiative may give government agencies, institutions, organisations and non-profit organisations in the field of the cultural heritage great opportunities to take necessary and long-needed action to digitise, digitally conserve and digitally make accessible collections, archives and libraries.

In April 2011, the Government tasked the Swedish Institute for Language and Folklore with developing forms of operation and coordination of a national language database in consultation with the parties concerned. The long-term establishment of a national language bank containing language databases promotes the development of technology, which benefits the languages in Sweden and improves access to information for everyone.

There is a rich cultural heritage at the public-sector broadcasters, Sveriges Radio AB, Sveriges Television AB and Sveriges Utbildningsradio AB, consisting of radio and television programmes from several decades which have principally been produced using funds from the radio and television licence fee. It is desirable for the material to be made available to the public to a greater extent. On 1 April 2011, amendments to the Copyright Act (1960:729) came into effect making it easier to clarify rights to copyright-protected material in the archives of the radio and television broadcasters. It is consequently easier for the broadcasters to make such material available to the public, for example on the Internet.

The national stages Operan and Dramaten have been tasked since 2008 with carrying out digital transmissions so that performances can reach a vastly larger audience.

The Government decided in August 2011 to present a consultation document to the Council on Legislation concerning an electronic duty to supply. Under this proposal, electronic legal deposits of digital publications would have to be submitted to the Royal Library.

Need for infrastructure

Several conditions need to be met to make it possible to use and offer digital services. This includes there having to be good access to physical infrastructure for telephony and broadband around the country and this being robust and capable of withstanding strains without serious outages, the Internet as a carrier of services being available and stable and the information transmitted on the Internet being handled securely and reliably.

It is primarily the market players who are responsible for and make investments in the communication networks. Other important actors for favourable development are municipalities, county councils, regional co-operation bodies and government authorities, for example county administrative boards. The role of central government is to ensure that the market works effectively and, together with public actors, to give the companies the conditions they need to pursue their activity. But central government also has a responsibility, together with private actors, to ensure that communication services and the Internet work reliably and dependably. These are issues that are becoming increasingly important as the dependence of society on communication services increases. Another key task for central government is to ensure access to geographical information of good quality, which is important for services that are dependent on spatial information.

The Internet in Sweden and globally

Sweden must strive to ensure an accessible, open and robust Internet within the country and globally.

Strategic challenges

Communication is a necessity in a modern democratic society, both to promote enterprise, innovation and competition but also so that the individual can obtain and disseminate information, utilise his or her freedom of expression and participate in the information society. Thanks to a number of Swedish pioneers and early public involvement, there is reason to be proud of the development of the Internet in Sweden. However, there is a need for continued efforts to ensure that the Internet in Sweden is open, robust, stable and accessible. The Internet is, however, a world-wide communication network with development driven by many different people and organisations. Sweden must also continue to be involved internationally and cooperate with the industry and with other countries to preserve the Internet as an open, decentralised platform for communication. The development of the Internet must be characterised by openness, freedom and security, to the benefit of individuals, businesses, organisations and the public sector. See also the sections on robust electronic communication and freedom on the Net.

The Internet in Sweden

One of the Internet's critical resources is access to IP addresses and the domain name system. To ensure access for all citizens to e-services on the Internet, especially in the development of public e-services, it is important to monitor the development of technology and security. Internet Protocol version 4 (Ipv4) is the version of the internet protocol (IP) on which the Internet today is mainly based.

One of the important issues that need to be addressed is the introduction of a new version of the internet protocol (IPv6).

All the remaining addresses for IPv4 have been used up at central level, and in the near future will have been shared out among the operators. New users will therefore for the most part only be able to communicate via IPv6. It is therefore important that both private and public operators start to use IPv6.

An important measure to lay a solid foundation for security is for the authorities to use the domain name system DNSSEC[16], especially to ensure that their communication will be secure and reliable.

To strengthen transparency and increase mobility in the market, the consumers must be able to make conscious and well-informed choices. There is also a need for tools for consumers and suppliers to measure, compare and verify Internet connections. Today there is, for example, Bredbandskollen ('Broadband Check') which consumers can use to measure the bandwidth of different Internet connections, but there also need to be tools to allow other parameters to be measured and consequently allow Internet connections to be tested, verified and compared[17].

There is fundamental societal interest in establishing an open Internet and the principle of open networks and services, also known as net neutrality. The user must in principle be able to receive and send content and freely use content services that do not harm the network. If it turns out that consumers find it difficult to take out subscriptions without blocks, or that actual problems arise with down-prioritised traffic, the National Post and Telecom Agency (PTS), under the terms of the Electronic Communication Act, can issue a regulation on what is known as minimum service quality, which compels all operators in the market to offer subscriptions without blocks. To date, PTS has judged there to be no need to make use of this option.

The Internet globally

IP addresses and the domain name system are managed by five different Regional Internet Registries and at the global level by the organisation Internet Corporation for Assigned Names and Numbers (ICANN).

The Government's position is that ICANN should continue to be the organisation that is responsible for domain names and IP addresses. The Government considers it to be highly advantageous to retain and develop the model multi-party collaboration that is applied within ICANN.

The Government's intergovernmental advisory committee to the ICANN Board is the Governmental Advisory Committee (GAC), of which Sweden is an active member. The Government considers GAC's role as an adviser to ICANN to be a good model.

The Internet Governance Forum (IGF) is the only open global platform for discussions on the Internet and the development of the Internet that exists today. The IGF process has led to increased exchange of experience and dialogue between different stakeholders, especially with regard to human rights. One of the great advantages is that IGF is a non-binding and non-decision-making body. The exchange of experience and knowledge in IGF is an important basis for decisions on the Internet and its development among the various participants in IGF. IGF is therefore important in order to maintain a global and robust Internet characterised by freedom and openness.

Initiatives adopted

The eGovernment Delegation has been tasked with developing a strategy for how the development of e-services by the public sector should support the transition to new technology, for example the transition to IPv6.

In December 2010, the Government tasked PTS with describing how Ipv6 can be introduced at authority level with respect to accessibility, security and economics. The purpose of the description is to be able to serve as support for government agencies, municipalities and other organisations in the public sector when introducing IPv6.

[16] DNSSEC secures use of the domain name system (DNS) through the use of electronic signatures. It means that the person asking knows the answer really comes from the right source and has not been modified, and it is the basis for minimising the risk of accessing the wrong website.

[17] Developed by the National Post and Telecom Agency but managed by .SE.

In September 2010 the Government asked PTS to take information measures for increased openness for broadband and Internet connections. The Government is considering further initiatives in this area.

The Government has appointed an inquiry chair with the remit to review the existing support for consumers in the form of information and guidance and propose how it should be organised and operated to be more appropriate, effective and equivalent for all consumers in the country (ToR 2011:38). The inquiry is due to report by 31 March 2012.

The Electronic Communications Act (2003:389) states that it must be clearly apparent what is applicable with regard to restrictions when consumers buy or procure an Internet connection. In addition, the rules have been amended so that a possibility is provided for PTS, if necessary, to issue regulations on minimum service quality.

Actions

To achieve more secure communication for authorities, there is a need for material for an Internet specification that can be used in the procurement of Internet connections by authorities. A joint Internet specification with different robustness and security requirements (model cases) is therefore due to be produced by 2013. In addition, all authorities should make use of DNSSEC and be reachable with IPv6 by 2013. The Government intends to issue remits concerning these issues to PTS, the Swedish Civil Contingencies Agency and other affected authorities.

In September 2010 the Government asked PTS to take information measures for increased openness for broadband and Internet connections. By 2013 there are to be tools to enable both consumers and suppliers to measure and compare internet connections. The Government is considering further initiatives in this area.

Sweden will be active internationally in order to gain a hearing for its views on a stable, open, robust and global Internet. Sweden will promote and strengthen multi-party collaboration nationally, regionally and globally. Sweden will continue to be involved, for instance through GAC (ICANN) and IGF. This involvement should take place in collaboration with other parties concerned and other countries. In these forums, Sweden should, among other things, continue to pursue issues concerning respect for human rights on the Internet.

The information security of society

Private and public information systems must be secured with the aim of safeguarding assets in society such as democracy, privacy, growth and economic and political stability.

The goals for the information security of society are to[18]

- ensure the functionality, efficiency and quality of society,
- contribute to the fight against crime in society,
- strengthen the ability of society to prevent and cope with serious disruptions and emergencies,
- promote the growth of the business sector,
- safeguard the freedoms and rights and personal privacy of citizens, and
- increase knowledge among citizens and organisations about, and trust in, information management and ICT systems.

Strategic challenges

Today most countries regard information security as a great national challenge, and information security is regarded as being of strategic, foreign-policy and security-policy significance. It is judged that a large-scale ICT incident can have serious consequences for vital public services and critical infrastructure.

In the government communication 'Emergency management of society – strengthened collaboration for increased security', the Government highlights the importance of collaboration and coordination in all sectors of society and at all levels of responsibility.

[18] Government Communication 2009/10:124 Samhällets krisberedskap – stärkt samverkan för ökad säkerhet (Emergency preparedness of society – strengthened collaboration for increased security).

The national action plan for information security drawn up by the Swedish Civil Contingencies Agency covers a number of areas of action: information security in organisations, skills provision, information sharing, collaboration and response, communication security and security in products and systems.

Examples of other important areas to continue working on include emergency exercises at all levels of society, security in control systems (supervisory control and data acquisition, SCADA) in vital public services, standardisation and the use of standards, for example management systems for information security, and the use of encryption.

It is important for the public to know how solutions for secure information management are procured and consequently how standards for information security are set. The work on information security must also be done in collaboration between the public and private sectors. It is therefore crucial that the private sector gives its backing to the goals the Government establishes and if necessary formulates its own.

Initiatives adopted

The Government has taken several initiatives in recent years for Sweden to become better at utilising modern technology to simplify, increase efficiency and practically benefit citizens, businesses and employees, especially for the Government's and the authorities' own work. The Swedish Civil Contingencies Agency, in cooperation with other responsible authorities, has devised a strategy for the information security of society on behalf of the Government. This strategy, which was presented in 2010, applies to the period 2010-2015 and is aimed at the whole of society – from government agencies, municipalities and county councils, businesses and organisations to individuals. The action plan for the information security of society administered and developed by the Swedish Civil Contingencies Agency together with those affected under the Government decision is another significant initiative. The Computer Emergency Response Team (CERT-SE), formerly the Swedish ICT Incident Centre (Sitic), which at the time was located at the National Post and Telecom Agency, has been transferred back to the Swedish Civil Contingencies Agency with effect from 1 January 2011.

The Government decided on five remits for the Swedish Civil Contingencies Agency in the area of information security on 14 April 2010. These remits are aimed at strengthening the information security of society and ability to prevent and deal with ICT incidents. They include investigating how a secure digital information and communication structure for the public sector can be created. In addition, the Agency was tasked with drawing up a national plan that clarifies how serious ICT incidents can be handled and how technical expert networks can be created to support society in the event of serious ICT incidents and create greater response capability. The Agency will investigate how a system for mandatory incident management for government agencies can be designed. In addition, as a contribution towards strengthening the situational picture and creating the possibility of early warning, the Government has tasked the National Defence Radio Establishment, in consultation with the authorities that make up the Cooperation group for information security (Samfi), to submit proposals on how a detection and warning system for vital public services and critical infrastructure can be designed and introduced. In addition, the Swedish Civil Contingencies Agency has been tasked, on the basis of analyses of capability assessments, risk and vulnerability analyses that have been performed and assessments of relationships of dependency, with proposing that individual authorities engage the services of the National Defence Radio Establishment for ICT security analyses. This will be done in consultation with the supervisory authorities under the Protection of Security Ordinance (1996:633).

In the EU Directives on electronic communications recently implemented through the amendments to the Electronic Communications Act (2003:389), the requirements for reliability were updated

and an obligation on operators to report disruptions to operation and incidents involving privacy to the National Post and Telecom Agency was introduced.

The eGovernment Delegation supports the authorities in their administrative development, including work on information security. The eGovernment Delegation is also working on electronic ID (e-ID).

MSB has the right to issue regulations concerning the information security work of government agencies. It has, for example, specified that government agencies must apply a standardised management system for information security (the ISO 27000 series).

Actions

According to the Government Communication 'The emergency preparedness of society – strengthened collaboration for increased security', a national collaborative function for information security should be set up. The Swedish Civil Contingencies Agency (MSB) should annually present an assessment of the situation in the area of information security with regard to threats, vulnerabilities and risks at the level of society. Sweden's involvement in international cooperation in the area of information security should additionally be supported and developed.

MSB and the Swedish Defence Radio Establishment have presented a number of proposals under various government remits (see above). These proposals are under discussion at the Swedish Government Offices.

See also the section on everyday security.

Soft infrastructure

A functioning soft infrastructure is needed to exploit the potential offered by digitisation.

Strategic challenges

Alongside the hard infrastructure, for example communication networks, there is a need for resources in the form of information made available, basic services and functions. The soft infrastructure represents a foundation on which to achieve interoperability, i.e. to make systems, organisations or operational processes work together and capable of communicating with one another by following agreed rules. Schemes for independent assessments of characteristics or requirement levels also form part of the soft infrastructure, for example certification of management systems for ICT security.

Standards are voluntary common solutions devised by consensus for problems that often occur. Standardisation promotes cooperation between the public and private sectors and is an important horizontal instrument for competitiveness with regard to significance for example for product safety and information security. This has been confirmed, for instance, in the Europe 2020 strategy for smart, sustainable and inclusive growth and in the flagship initiative on a digital agenda for Europe. Participation and influence in the work on developing standards is necessary to enable the demands of society for security, efficiency and sustainable development to be met.

Central government has a special responsibility to assist in the preparation of ICT standards that affect the protection of vital public services and critical infrastructure. The special expertise of central government in the area should be applied to contribute to development in the field and make sure that national needs are met by such standards.

There are many standards in the area of ICT that cannot be easily categorised. An example is the work on standardisation in cloud computing, which affects security, data exchange and contracts. Around 98 per cent of the standards that exist in Sweden today are identical to equivalent standards at EU and global level.

A review of European standardisation policy is currently in progress in the Commission[19]. This review is justified, in part, by services needing to be covered by rules and standards developed by non-official global forums and consortia becoming increasingly common and having steadily gained in significance. The Commission proposes that such standards can

[19] Proposal for a Regulation of the European Parliament and of the Council on European Standardisation, COM (2011) 315 and Communication from the Council to the European Parliament, the Council and the European Economic and Social Committee. A strategic vision for European standards: Moving forward to enhance and accelerate the sustainable growth of the European economy by 2020, COM (2011) 311.

also be used in legislation and procurement. Sweden plays an active part in this work so that the results can be transferred to Swedish conditions. This is particularly important in the area of e-government, to achieve increased interoperability and to support work on procurement.

Sector-specific standardisation work in the area of ICT is in progress in collaboration with the parties concerned, with the aim of creating common information, services and communication structures. Such collaboration takes place for example in the health service and in geographical information. This type of collaboration should also be initiated or deepened in a number of other sectors and together with the municipal sector. Under the remit of the eGovernment Delegation, standardisation efforts are in progress covering sector-wide structures, resources and functions in the area of ICT. This applies, for instance to government-wide information and common terms.

Many standardised functions cover both the public sector and the business sector. This applies, for example, to e-invoicing, e-archiving and e-identification. The public and private sectors collaborate with the business community on issues of this type under the work on standardisation. The PSI Directive[20], which makes it possible for private and non-profit organisations to re-use public information, also highlights the need for collaboration on standardisation issues between the public and private sectors. If users of the e-services referred to above are to feel confident in them, there is a need for the services to follow applicable security regulations. As central government supports these services, it is crucial that the expert resources of central government are utilised in work aimed at developing and operating such services.

One way for central government to influence the use of standards in the area of ICT is through its role as a major purchaser of ICT. This role in central, municipal and county government is a large one, in terms of both costs and complexity. The fact that procurement in these sectors is rarely coordinated and rarely takes place according to the usual regulations adds to the cost and entails risks to information security in organisations.

Another way of influencing the use of standards is the EU's framework for regulating the characteristics of products. A method of legislation is used there that entails the legislation being general and standard-receptive, i.e. referring to standards with respect to detailed requirements for the characteristics of the product instead of the detailed requirements directly appearing in the legislation. Standard-receptive legislation can be used in a number of areas to make the legislation more flexible.

Actions adopted

The government sector holds responsibility for standardisation through the participation of government agencies in the work on standardisation under the general responsibility of each agency to pursue its activities in an efficient and secure manner. Membership of the EU means a national responsibility for regulations being formulated in such a way that they make a free flow of goods and services between the Member States possible.

Central government contributes to the operations of the Swedish Standards Council annually by making grants. In addition, government agencies, as well as the county council and municipal sector, provide resources to the technical committees that undertake the standardisation work.

Under the activities of the eGovernment Delegation, an ICT standardisation council has been established to facilitate the Delegation's preparatory process on ICT standardisation issues. The Delegation is also developing a national framework for interoperability and a strategy for its introduction. Based on the principles of the framework, guidelines are being developed for the public sector.

International standards are also of key significance to systematic work on information security. They state requirements and guidelines that can be used for all types of organisations. Organisations can consequently operate on the basis of proven experience and more easily create the necessary conditions for better security. Standards have many advantages,

[20] Directive 2003/98/EC of the European Parliament and of the Council of 17 November 2003 on the re-use of public sector information

such as the fact that participation in standardisation work and the use of standards increase transparency between different organisations, which makes it easier to lay down requirements and assess levels of security in products, systems and complete organisations. The resources of central government with regard to assessment of security in ICT products can be found in particular in the Swedish Armed Forces, the Swedish Defence Radio Establishment and the Swedish Certification Body for ICT Security (CSEC), located within the Swedish Defence Materiel Administration. In the context of the Cooperation Group for Information Security (SAMFI), MSB develops protection profiles under the Common Criteria for prioritised product categories in cooperation with affected authorities.

In April 2008, the Government presented a communication to the Riksdag on the significance of standardisation in a globalised world, which discusses ICT standardisation (Government Communication 2007/08:140). This communication highlights the need for a more permanent structure for the coordination of standardisation that can provide support to an analysis of what strategic issues Sweden should address with regard to standardisation.

In consultation with the Swedish Standards Council (SSR), the 'Standardisation Project' was set up in 2010. The project is aimed at assisting the ministries so that they can more effectively identify strategic areas for standardisation and consequently contribute to strengthening Swedish competitiveness and economic growth in a global perspective.

Geographical information

The public sector in Sweden must use geographical information that is described in nationally determined reference systems and that is based on international agreements.

Strategic challenges

Geographical information is used in all parts of society. Geographical information describes phenomena that can be shown on a map using coordinates or some other indication of location, for example an address. Other similar concepts are spatial information and geodata. Geographical information is becoming increasingly significant in central and local government as a means of making planning, decisions and follow-up more efficient. The business community has a demand for information and services for use in business development, the transport sector, media, tourism and leisure. Geographical information is used, for example, as a basis for task management, management of emergency service actions, environmental monitoring, positioning, traffic management, planning and building and, in particular, as a basis for the development of services.

Infrastructure for geographical information can be described as a coherent whole of information together with different conditions required to make the information accessible and usable, for example rules, services for searching for, finding and using the information and systems for collaboration between different actors. Structured management of the information is an essential requirement in developing e-services in society. At the same time as geographical information is used by many different actors for widely differing applications, it is produced and managed by many different bodies. This necessitates there being a fundamental structure for the infrastructure that makes it clear to the parties how different issues of common interest should be addressed.

The great challenge is to be able to update and connect large quantities of existing information to modern reference systems.

Actions adopted

The Act (2010:1767) on Spatial Information and the Ordinance (2010:1770) on Spatial Information came into force on 1 January 2011. As a result, the INSPIRE Directive[22] has been transposed into Swedish law. The aim is to create an infrastructure for electronic geographical information so that changes in the environment can be predicted, prevented and managed and so that EU environmental policy can be for-

[21] See informationssakerhet.se.

[22] Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE).

mulated and implemented effectively. The practical implementation of the Directive will proceed in various stages for a number of years to come. This takes place as part of the work on the national geodata strategy, in collaboration between Lantmäteriet (the Swedish mapping, cadastral and land registration authority), the Geodata Advisory Board, the municipalities and around 20 government agencies. The Swedish node for INSPIRE consists of the Internet portal geodata.se.

A new model to provide society with geodata has been devised as part of the work on the geodata strategy. It includes expanded partner cooperation, data sharing with other authorities and municipalities, new search and display services and direct delivery to end-users. Lantmäteriet has devised new collaboration models together with other parties in order to implement the national geodata strategy. The new form of geodata collaboration applies with effect from 1 January 2011.

Lantmäteriet is responsible for the national geodetic infrastructure, which is the basis of the fundamental information and is used to determine where something is on the land surface. This consists of the national reference systems sustainable over time in both 3D and position, height and gravity as well as the national network of permanent reference stations for positioning[23]. A uniform reference system simplifies production, processing and use of geodata by making it easier to compile data from different sources. This is a priority task under the national geodata strategy.

Actions

As part of the work on adaptation to climate change, Lantmäteriet is working on the construction of a national height model. The height model is being produced using laser scanning from aircraft. Good height information increases the options for indicating areas at risk, for instance, of flooding and landslides and therefore, for example, avoiding housing development in such areas. In the budget bill for 2012, the Government proposes continued investments in the area of adaptation to climate change for the period 2012-2015. This strengthening means that further resources may be earmarked for the height model and that this can be completed during the period.

Following consultation with the Swedish Association of Local Authorities and Regions, Lantmäteriet is to implement a change-over from a nationwide digital register map in accordance with the Government's assessment in the bill 'A coherent system for spatial information' (2009/10:224). The change-over is due to be implemented by 31 December 2017.

See also the section on e-services and information as a basis for innovative services.

Robust electronic communication

Robust electronic communication means that the communications must be constructed in a reliable manner.

Strategic challenges

The objective of policy for the information society is secure, robust and readily accessible communications that are primarily provided through markets that work effectively. The greater part of all the investments to bring about robust electronic communication are made by the market itself, but as the parties involved are not responsible for the whole entity, there is a need for measures to raise robustness that are necessary from a societal point of view. It may, for example, relate to building links in a rural area that are particularly important to reduce outages due to cables being dug up or maintaining central nodes such as rock chambers that house vital equipment where no one takes responsibility for the totality. The National Post and Telecom Agency (PTS) therefore works continuously on robust electronic communication in cooperation with the market players, the Swedish Civil Contingencies Agency (MSB) and other government agencies, municipalities and county administrative boards. This work has been necessary to preserve the stability and security in the Internet and telecom traffic, which increasingly represent a very important community

[23] GNSS (GPS/GLONASS), Swepos®.

infrastructure. MSB is working on the development of fundamental levels of security to create the conditions necessary for adequate robustness in various vital public services. MSB should pursue this development and increase knowledge about how the authorities can work together with various crucial public services.

The Electronic Communications Act (2003:389) imposes certain basic requirements on the operators but does not cover all the robustness measures required to reduce vulnerability. This applies for example to the actions required for vital parts of the networks, for example rock chambers, for which individual operators are not solely responsible.

Acceptance of outages is diminishing as society becomes increasingly dependent on the Internet and telephony. Outages in Internet and telecom traffic can have increasingly serious consequences for society. Effective work on continuous measures to raise robustness that provide an optimum return requires continued cooperation between the public sector and the market, as well as stable funding of operation. It also contributes to future reduced costs to society as a result of fewer outages and more reliable networks for telecom and Internet traffic.

Initiatives adopted

PTS will devise a new strategy in 2011 for the area of robust electronic communication for the period 2012-2014. It will take other important action in 2011 such as a cooperation and emergency management exercise in the electronic communication sector (Telö11). The Agency will also introduce a system for the exchange of operational information between operators and conduct training courses in reliability for metropolitan area networks and in building robust rural networks.

PTS is also working on developing a system to create a common standardised way of presenting outage information in the electronic communication sector. The concept is known as Common Situational Awareness (GLU) and provides information about major disruptions and disruptions that affect the use of the 112 emergency number in an area. The system covers telecom operators and SOS alarm, and is due to enter service in 2011.

PTS, together with the Swedish National Grid and the Swedish Transport Administration, funds Ledningskollen.se, which is aimed at reducing the risk of excavation damage by providing information on where lines and cables are located. In September 2011, the Government tasked PTS with making Ledningskollen.se easier to use by developing a mobile phone app for this purpose.

Actions

To attain the goal of electronic communications being constructed in a reliable manner, PTS has to contribute through its actions to a decrease in the number of disruptions of operation in electronic communication. The efforts of PTS are also to have contributed to the players in the sector having become more capable of dealing with serious disruptions to operation in both urban and rural areas.

Other measures that are taken include redundancy[24] in interurban fibre networks, maintenance of rock chambers where the operators locate their vital equipment, measures to raise skills, dissemination of mobile communication networks, national cooperation projects for example on status reports and information databases and, finally, recurrent exercises as a basis for future efforts.

Broadband

The goal of broadband policy is for Sweden to have world-class broadband. All households and businesses should have good opportunities to make use of electronic community and other services via broadband.

This means that 90 per cent of all households and permanent places of business should have access to 100 Mbps by 2020. In 2015, 40 per cent of households and permanent places of business should have access to 100 Mbps.

Strategic challenges

Access to ICT infrastructure and broad-

[24] Physically separated network that ensures that electronic communication can take a different route in the event of cable breaks etc

band are crucially significant in determining whether companies can be operated and developed in all parts of the country. It is also essential in order to be able to live and have a functioning daily life, do the shopping, keep in contact with family and friends and enjoy entertainment. A well established ICT infrastructure contributes to greater regional and local competitiveness. A high level of use of electronic communications among households and businesses encourages the development of new and better services and other innovations that are made possible by digitisation.

There is a large selection of broadband operators to choose between in large cities and in many major conurbations, quite often with competing ICT infrastructures. However, in smaller towns and in rural areas the situation is often different, with a smaller selection of possible competing operators. There are also areas that, for example, lie outside the coverage of mobile networks, in a radio shadow or far away from a telecom station, where it may, in practice, be impossible to obtain functioning broadband. Certain sparsely populated parts of the country in addition have no access at all to a functioning ICT infrastructure. In an increasingly digitised society, digital services are constantly changing and new services are emerging, which means that there is heavy demand on transmission capacity. To meet the demand for high-quality broadband, there is a need for large investments in new infrastructure and more efficient technology.

An ICT policy objective adopted by the Riksdag is that Sweden should have world-class broadband and that all households and businesses should have good opportunities to make use of electronic community services via broadband. This objective is primarily to be achieved through markets that work well. This means that 40 per cent of all households and businesses should have access to broadband in 2015. The equivalent figure for 2020 is 90%. A survey of the market shows that the target for 2015 has already been met and that 44 per cent had access to 100 Mbps by the end of 2010. The expansion has largely been brought about by the market, but the clear political objectives with a high level of ambition have contributed to driving development forward. Market investments together with work by the Government to establish a market that functions well have contributed to this positive trend. Government efforts to expand broadband have also made a positive contribution.

To achieve the objective (for 2020), it is important to create good conditions for investments so that the market players are willing to expand ICT infrastructure throughout the country. This entails there being stable ground rules and good competition prevailing in the market. The challenge is to have well balanced regulations that both promote investments in new infrastructure and at the same time ensure effective competition. Municipalities, county councils, regional co-operation bodies and county administrative boards also play an important role in promoting the expansion of ICT infrastructure. A challenge is to increase knowledge of what an expanded ICT infrastructure can contribute at the regional and local levels. At the same time, the prospects of expanding infrastructure are poorer in the sparsely populated parts of Sweden. There is a need for targeted action to ensure that households and businesses in these parts of the country have similar opportunities. In particular, there is a need to utilise the local forces to the good that exist, for example local residents' associations.

A challenge is to ensure that sufficient bandwidth is available to the market to cope with the use of and demand for wireless broadband.

Initiatives adopted

In November 2009, the Government presented a broadband strategy for Sweden. A timed target was presented in this strategy, namely that in 2020, 90 per cent of all households and businesses should have access to broadband at a speed of at least 100 Mbps. An interim target formulated was that 40 per cent of households and businesses should have access to broadband at that speed in 2015. The strategy also contained proposals for measures in

five different action areas that in the main have now already been implemented.

To provide the conditions necessary for good competition, the Riksdag, on a proposal from the Government, has passed amendments to the Electronic Communications Act based on the EU's telecom package[25]. An amended model has also been introduced for radio frequency administration[26].

The Government has also decided on various forms of support for investments in broadband. One of these is duct support, which can be used to lay duct at the same time as other infrastructure is being built. Duct support in 2010 totalled SEK 95 million. In addition, the Government has decided on broadband initiatives under the 2007-2013 rural development programme for Sweden, aimed at increasing access to broadband in areas where commercial players are not expected to expandit within a reasonable time. Broadband investments under the rural development programme totalled SEK 250 million. The Government therefore committed just over SEK 100 million to measures for reliable and robust electronic communications. In addition to this there are other public investments in broadband that are planned and carried out by municipalities, county councils and regional co-operation bodies.

In March 2010 the Government decided to set up a Broadband Forum, tasked with promoting the expansion of broadband throughout the country. The purpose of the Broadband Forum is to serve as a meeting place for dialogue and cooperation between the Government, authorities, organisations such as the Swedish Association of Local Authorities and Regions and companies active in the Swedish broadband market.

Another important element in attaining the goals of the Government's broadband strategy is the use of mobile or other wireless solutions. Bandwidth access is essential for wireless services. Because all the frequencies that were opened to the use of mobile services will soon have been allocated in a technology-neutral and service-neutral way, the market is now well placed to increase the coverage and speed of wireless communication.

It was stipulated in the allocation of licences for the 800 MHz band by the National Post and Telecom Agency that the winner has to undertake to ensure that those households and businesses that today lack broadband coverage at a speed of at least 1 Mbps will receive it. The licenceholder has undertaken to spend SEK 300 million on expansion so that the homes and permanent places of business that today lack broadband by this definition gain access to it before the end of 2014.

As a result of the previously mentioned amendment to the Electronic Communications Act, licences to use radio transmissions as a general rule have to be technology-neutral and service-neutral. This enables the licence holders to use their licences for the purpose their customers demand.

Following an inquiry, PTS has reduced the spectrum that the Swedish Armed Forces have at their disposal and has released a large amount of spectrum for civil users. Some of this spectrum can be used for wireless broadband.

Actions

Work in the Broadband Forum has been successful and has contributed to an increased dialogue between the various parties in the market and specific proposals for measures that can promote access to broadband. The Government therefore proposes to extend the forum's remit.

In the budget bill for 2012, the Government proposes that support for duct should be extended by earmarking SEK 120 million over the period 2012–2014. In addition, the Government proposes that the rural development programme should receive SEK 300 million for broadband expansion and that SEK 75 million over the period 2012-2014 should be used for co-funding of broadband measures.

[25] Government Bill 2010/11:115.
[26] Government Bill 2009/10:193.

The role of ICT in societal development

ICT permeates the whole of society, affects the most widely differing societal processes and drives community development, both nationally and globally. The development and use of ICT are often crucial factors in ongoing social change, both positive and sometimes negative.

This section addresses a large number of different processes and areas in society in which strategic use of ICT has an important role to play in community development. If Sweden as an international player is to remain a strategically leading ICT nation that uses the opportunities presented by digitisation for positive societal development at both the national and global levels, there is a need for continued focus for instance on research and innovation, ICT for the environment and for global development, freedom on the Internet and increased openness in implementing development assistance etc.

Research and innovation

Digital information and digital tools must be used to a greater extent in research activity and innovation processes.

Strategic challenges

When ICT is used in the service of mankind, new opportunities are created for the use of information and knowledge as well as a need for knowledge. Interdisciplinary research, for example between behavioural science and medicine, can respond to the challenges that people face in their jobs and leisure as a result of increased digitisation.

The contribution ICT makes to growth and societal development is significant. Sweden's ICT-related sectors cope well in global competition, largely due to their strong innovative capability. Sweden is also one of the leading research nations in the world. But it is not possible to base the success of the future on the achievements of yesterday – the challenge is obviously to retain this position. An important issue for future competitiveness is that digital information and digital tools are accessible for research actors, the general public and the business community, for instance in research and innovation activities.

Swedish ICT research and a long technological tradition have given the country a strong position in ICT and the telecommunications field. Globalisation is changing the conditions for development and competitiveness in this area. Research and development of high quality are crucial in ensuring that new successful goods and services will be created. This applies both to research driven by inspiration and curiosity and to research with an approach to development motivated by benefit or need. Long-term efforts are needed to ensure knowledge, expertise and technological development.

Needs-oriented research must be based on the use of ICT and the needs and areas of use of the private and public sectors. ICT makes it possible to search for and process large quantities of data that can result in greater understanding of complex processes and be an important research tool.

ICT is both a driver and facilitator of innovation. The increasing demand for digital solutions – software, systems etc. – creates the conditions necessary for continued growth in ICT and telecom companies. The solutions that these companies supply in turn open up opportu-

nities for new and better offerings from companies or organisations in all parts of society. It may relate to the use of ICT as a new marketing channel or new ways of ordering and delivering welfare services. An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations.

The Swedish public sector is a large purchaser and user of various forms of ICT-related goods and services, and in many contexts can act as a driver and highlight the opportunities offered by new technology and new digital services. It is particularly important in ICT to create opportunities and stability for new and medium-sized enterprises.

Procurement and standardisation should therefore be able to contribute towards encouraging innovation.

Work on innovation and development between different actors, sectors, experiences and industries can contribute both to long-term work and pilot projects and to long-term strategic work on the basis of various societal challenges such as climate change, the environment or an ageing population. This can have impacts on investments and initiatives. An important element is creating clusters and public-private partnerships focused on various challenges to society. It is important to utilise the knowledge and commitment of users, and the innovations must meet real needs.

Initiatives adopted

Research funding for universities was boosted by the Government Bill 'A lift for research and innovation' (Government Bill 2008/09:50). At the same time, initiatives were introduced in areas stated as being of strategic importance to Swedish society and the business community. Several of these are relevant to the Digital Agenda for Sweden.

The Government adopted a services innovation strategy in July 2010. Service innovations are innovations where the value arises in use of the service. The strategy highlights the significance of access to broadband, need for knowledge about digital service development companies and the significance of the Internet for digital service innovations. As a result of the service innovation strategy, the Swedish Agency for Innovation Systems (Vinnova) has been tasked with coordinating and convening a forum on the future of the Internet. The forum is to establish a broad dialogue and disseminate experience, promote collaboration and identify priority areas.

Actions

The Government has tasked Vinnova with constructing and strengthening test beds in health care and care of the elderly. Test bed means a common environment or structure to develop and demonstrate new concepts. This initiative is intended to make it easier for innovators to develop, test and demonstrate the potential of innovative solutions through close cooperation with users. ICT plays a key role for innovations in the health of the future together with common structures and processes.

The Government intends to prepare a Bill on research and innovation in 2012.

As notified in the 2010 Statement of Government Policy, work has begun on drawing up a national innovation strategy. The issue of increased coordination of innovation policy with other policy areas will be discussed in the work on the strategy. An innovation and business climate that boosts Swedish competitiveness and attractiveness necessitates initiatives in many different areas of policy, including the area of ICT.

ICT for the environment

ICT must contribute to an environmentally sound society.

Strategic challenges

Society faces great climate and environmental challenges. To meet these challenges, the EU has established climate and energy policy targets for 2020 that greenhouse gas emissions will be 20 per cent lower than in 1990, consumption of

primary energy will decrease by 20 per cent and the proportion of renewable energy will rise to 20 per cent. Sweden's target for 2020 is a 40 per cent reduction in greenhouse gas emissions, in the non-trading sector, a 20 per cent improvement in energy efficiency and a proportion of at least 50 per cent renewable energy out of total energy use[27]. The target with regard to energy efficiency in buildings is that the total use of energy per heated unit of area in residential and commercial premises should decrease by 20 per cent by 2020 in relation to use in 1995.

ICT is estimated to have potential to reduce carbon dioxide emissions in certain areas, principally the areas of construction, housing, energy and transport, by 15 per cent[28]. ICT is consequently an important tool in achieving our common climate and environmental targets.

ICT makes possible servicification, which means that certain products and services, such as online newspapers, e-books, e-commerce etc. become digital. It is particularly important to replace transport and travel with various ICT solutions, such as videoconferencing. Another area is ICT solutions for decision support and environmental monitoring. There is, for example, increased demand to create services that help in consumer choices - shopping in an environmentally correct way, controlling one's energy consumption or simulating alternatives and illustrating results. ICT solutions that could be developed further are information tools (via EAN codes or applications) for communicating information about the chemical contents of articles or ecolabelled products in various product categories. Some of this information is currently to be found on the websites, for example, of the Swedish Chemicals Agency, the Swedish Consumer Agency or various sector organisations.

Other interesting solutions in the energy area are 'smart grids', where ICT will make smart production, distribution and use of energy possible. The use of ICT is of particular interest in construction and housing in energy efficiency in properties. Control systems can help control energy flows and lighting in an environmentally efficient way. In the area of transport, it is mostly a matter of improving logistics and improving efficiency using intelligent transport systems (ITS), for example through more efficient use of traffic signals, regulation of slip roads or lanes, warnings of tailbacks, tunnel control or variable messages on digital signs. In industry, ICT solutions for control and monitoring of industrial processes can contribute to environmental savings, for instance through the checking of material and energy consumption and remote control.

Greater knowledge and dialogue between the private and public sectors is needed to fully exploit the potential of ICT for an environmentally sound society. It is important that ICT is used in as climate-effective and environmentally effective a way as possible. The adverse impact of ICT on the environment is to some extent addressed in the Government's agenda 'ICT for greener administration - agenda for ICT for the environment 2010-2015', which also contains a listing of the laws and regulations applicable to ICT and the environment. A strategic challenge for the future is to gather more knowledge on the environmental impact of the Internet, particularly in view of the equipment and energy expended and the fact that the Internet is being used by more and more people.

Initiatives adopted

The agenda ICT for a greener administration contains goals and recommendations in the areas of purchasing, operation and use, as well as meetings and travel. The target group is principally public administration, primarily the 180 or so government agencies that come under the Ordinance (2009:907) on environmental management in government agencies (the Environmental Management Ordinance), but other parts of the public sector are also encouraged to follow the recommendations in the agenda. Follow-up of the agenda will take place through the agencies' annual environmental reporting under the Environmental Management Ordinance. The environmental reporting is collated by the Swedish Environmental Protection Agency every spring.

In connection with the decision on

[27] Sweden has 16 environmental objectives, se www.miljomal.se
[28] SMART 2020: Enabling the low carbon economy in the information age, a report by the Climate Group on behalf of the Global eSustainability Initiative (GeSI).

the agenda, the Government tasked the Swedish Environmental Protection Agency with drawing up indicators in the area of ICT for the environment, with the aim of being able to follow up the agencies' implementation of the agenda better. The report on the remit was presented in May 2011.

The Government established a Council for Intelligent Transport Systems (ITS Council) in June 2010. The aim is to make better use of the opportunities to use information and communication technology in the transport system to attain transport and business policy objectives. The Council is to develop forms of cooperation between authorities and the business community, provide advice to and speed up the work of the Swedish Transport Administration and other parties on implementing the action plan for intelligent transport systems and promote greater Swedish action in the EU. A final report is due to be presented by 31 December 2012.

Actions

There is great potential to bring about environmental improvements in Swedish towns and cities with ICT support. The Delegation for Sustainable Cities was asked by the Government some time ago to highlight how sustainable development and efforts to counteract climate change can be combined with the promotion of ICT, among other things. This focus should be further prioritised.

ICT plays an important role in the area of energy in the development of 'smart grids'. In the Bill 'Strengthened consumer role for an enhanced electricity market and sustainable energy system' (Government Bill 2011/11:153), the Government judged that Sweden should benefit from the development of smart grids. In the 2012 Budget Bill, the Government proposed that SEK 10 million should be earmarked in 2012-2014 to establish a knowledge platform with associated independent coordination councils and should both strengthen the collaboration between actors and boost knowledge on smart grids.

Gender equality

Gender equality in the area of ICT must be greatly improved.

Strategic challenges

A great deal remains to be done in the area of ICT and gender equality. There is a skewed gender distribution both among professionals in the ICT sector and in ICT programmes at universities. There are still relatively few women among senior managers, project managers and in research and development. This means that the potential for women's participation and knowledge in the area of ICT is not fully utilised.

Statistics from the National Agency for Higher Education show that the trend is for ever fewer women to graduate from higher ICT training programmes. This is despite the fact that a number of projects have been implemented from the 1990s onwards to increase the willingness of women to train in ICT professions. It is therefore important that efforts are already made at primary and lower secondary school to encourage and support the interest of girls in natural science, mathematics and technical subjects in particular.

Statistics from Statistics Sweden relating to 2009 show that around 140 000 people in Sweden had what is referred to as an ICT profession[29], of whom 78 per cent were men and 22 per cent women. The men in the field of ICT had salaries that were 16 per cent higher than those of the women. The statistics for ICT training programmes[30] show that 79 per cent of those who had received post-secondary ICT training were men. 90 per cent of students with IT-related training at upper secondary level were men. Based on the society of today, however, the definition of ICT professions may be considered to be too narrow. In a broader perspective, there are other educational programmes and professions in which ICT is an important component, although they are not covered by the definition.

It is a great challenge to engage more women in ICT-related training programmes and professions. If this is to be possible, there is a need for both the education system and companies to succeed in

[29] ICT professions are defined as ICT managers, systems analysts and programmes, other computer specialists, computer technicians and computer operators, according to the standard for Swedish classification of professions.

[30] ICT education programmes include the following specialisations: Data, general education, Systems science and software engineering, Computer science, Other education in computer science and systems knowledge, Computer use, Data, other/unspecified education, Engineering - electronics, computer engineering and automation, Electronics, telecommunications and computer technology, Automation / Control engineering, Other education in electronics, computer engineering and automation.

making ICT interesting and attractive, so that more women take it up. This means, for instance, that better career opportunities should be created for women in the ICT sector. It is also important for gender equality issues to be integrated into activity, not just in individual projects or in the hands of enthusiasts.

Initiatives adopted

On behalf of the Government, the Royal Institute of Technology (KTH) in the autumn of 2007 drew up a proposal for an action plan, 'Gender-equal ICT development for increased growth', containing measures to change people's views of the ICT professions, highlight good models and create better career opportunities for women in the ICT industry.

In March 2009 the then Swedish Business Development Agency was asked by the Government to conduct a survey of relevant national and regional initiatives taken with the aim of promoting participation by women in the ICT and telecom sector[31]. Some examples of best practice that were presented were the mentorship programme Womentor, Digigirlz, Teknikåttan and Resurscentra för kvinnor (Resource centres for women).

The Delegation for Gender Equality in Schools, the Delegation for Gender Equality in Higher Education and the Technology Delegation have recently completed inquiries that present a large number of proposals for improving gender equality in schools and higher education.

It is stated in the appropriation directions for the 2011 budget year regarding higher education, under the objective of gender equality, that the Government intends to return with targets to attain an even gender distribution among professors.

In 2010, the Government tasked the Swedish Agency for Economic and Regional Growth with arranging a national conference on gender equality in ICT for increased growth and with proposing how work for increased gender equality in the area of ICT can continue. The conference was held on 8 December 2010, with around seventy active participants. The Agency presented the report Jämställd it- för ökad tillväxt (Gender equality in ICT – for increased growth) on 28 February 2011.

Actions

There is a need for more women to be involved in making decisions and take part in the development of digitisation and its capabilities. It is therefore important that more women choose to work in ICT-related professions and that more women take university programmes focused on ICT. The ambition is for the proportion of women in ICT-related professions and women who study on programmes with an ICT focus to increase sharply by 2020.

The Government decided in September 2011 to task the Swedish Agency for Growth Policy Analysis with conducting a follow-up of the proposals presented by KTH in 2007 in the report Jämställd it-utveckling för ökad tillväxt (Gender equality in ICT development for increased growth). The proposals cover measures that can be implemented by the three target groups, the ICT industry (the business community), those involved in ICT training programmes at higher education institutions and the Government, through ministries and agencies.

Freedom on the net

In order to strengthen freedom online, Sweden must endeavour to ensure that human rights are respected on the Internet.

Strategic challenges

Online freedom is a distinct priority area in Swedish foreign policy. Various regimes daily engage in online censorship, for instance trying to stop opposition movements by limiting their options for communicating with the outside world. Mobile traffic and use of the Internet is disrupted or closed down. Attempts are also made to track down critics of regimes, and to spy on them online, with the aim of monitoring the exchange of thoughts, views and ideas. The outcome is that around a hundred 'cyber dissidents' are currently imprisoned in various countries. This makes online freedom and security one of the great global issues for the future. Fundamental issues of freedom, human rights, for example with

[31] Kvinnors delaktighet på IT- och telekomområdet – övergripande kartläggning av initiativ som främjar kvinnors delaktighet på IT- och telekomområdet (Women's participation in the area of ICT and telecoms - overarching survey of initiatives that promote participation by women in the area of ICT and telecoms), March 2009.

respect to freedom of expression and opinion, and democratisation are concerned. Supported by several leading countries, Sweden has driven UN work on issues of human rights and the Internet. Sweden has, in addition, hosted and will again host international expert meetings with the UN's Special Rapporteur for Freedom of Opinion and Expression, Frank La Rue. The Government is spending SEK 150 million on special actions for democratisation and freedom of expression in 2011.

Freedom online is a foreign-policy initiative with the objective of demonstrating more clearly how human rights are applied on the Internet. It is an initiative that will also have a bearing on the development of policy in Sweden, as the fundamental principles to be established internationally are also expected to be implemented in Sweden. These principles are not expected to create new human rights but rather to make it clear how human rights are to be applied in the Internet environment. The aim is to contribute to strengthening the international framework for human rights and the Internet and for Swedish Internet policy to be in line with this international framework.

In recent years, human rights, in particular issues of freedom of expression and the right to privacy, have received considerable attention in discussions on administration of the Internet. It is therefore important to establish as a matter of principle that human rights also apply on the Internet. This means that only such restrictions of human rights as are usually permitted outside the Internet can be applied to the Internet. Restrictions, surveillance, monitoring and filtering in a way that contravenes human rights are unfortunately becoming increasingly common. In some countries it happens that dissidents and people who work to promote human rights are monitored and are also arrested. It is important in this context to emphasise the principle of freedom from liability for Internet suppliers with regard to content carried in the traffic that passes through the Internet, in accordance with the Electronic Commerce Directive.

There is a need to clarify what human rights mean in an Internet context. Under the Internet Governance Forum (IGF)[32] Sweden is pressing for issues concerned with human rights to be more visible and to permeate all the core areas of the IGF. In the same way, Sweden is active in the UN, the Council of Europe, UNESCO, the OECD and in other international contexts to ensure that human rights are respected on the Internet.

Freedom of expression is a fundamental human right that is protected by a number of international conventions. The protection includes freedom of expression being applicable irrespective of the medium through which the message is conveyed. Freedom of expression is nevertheless regarded by many governments, including many totalitarian and authoritarian regimes, as a threat to their hold on power. Various forms of monitoring and censorship of the Internet have therefore become a new and increasingly common way of attempting to stifle or limit freedom of expression. Such restrictions are often contraventions of human rights.

The new information technology is also utilised for cyber warfare and cyber espionage. Lack of security online is used to threaten the freedom of users. This shows that online freedom is closely linked to security with regard to the functioning of networks and privacy of users. At the same time, there is an important balancing of interests between, on the one side, the freedom of users and protection of personal privacy, and the requirement of security and monitoring to combat misuse on the other. Security and monitoring measures must, however, always be taken with full respect for human rights.

Initiatives adopted

Since 2009, Sweden has been working specifically to strengthen freedom of expression on the Internet. This work is done in various forums and in several different ways. An important part of this work is the cooperation with the UN's Special Rapporteur for Freedom of Opinion and Expression, which also covers the right to privacy and access to the Internet from a rights perspective.

32See also the section on the Internet in Sweden and globally.

The aim in this cooperation is to raise the profile of these issues in the UN Human Rights Council. In June 2011, the Special Rapporteur for Freedom of Opinion and Expression presented a report on freedom of expression and the Internet to the UN Human Rights Council.

The most important outcome of this work to date is the Swedish initiative for an inter-regional statement on freedom of expression and the Internet at the same session of the UN Human Rights Council. This statement addressed several of the key areas of the Special Rapporteur's report and received broad endorsement by 40 countries across the world, such as Brazil, India, Indonesia, South Africa and the United States.

Actions

In order to improve freedom online, Sweden should endeavour to ensure that human rights are respected on the Internet. This means increased international support on key principles of protection and promotion of human rights, including freedom of expression, on the Internet. The principles include minimising various forms of surveillance and censorship of the Internet.

In future sessions, Swedish will continue to press for the UN Human Rights Council to address freedom of expression and other human rights on the Internet. The aim is to clarify the application of human rights on the Internet.

In addition, Sweden will press for other international forums to integrate the rights perspective in an effective way, for example with regard to administration of the Internet under IGF. It is also important to increase coordination and collaboration nationally and internationally.

Copyright

With the aim of promoting creativity and innovation, it must be simple to enter into contracts on copyright in the digital environment. The conditions for those who wish to obtain access to creative content should therefore be improved at the same time as safeguarding copyright.

Strategic challenges

Digital technology and the use of the Internet are giving more people and businesses the opportunity to create and disseminate the results of their creations. Businesses also have greater opportunities to develop and distribute creative content. Users can obtain access for instance to books, music and film to a far greater extent than previously. The prospects of originators, suppliers of services and materials and end-uses being able to benefit from digitisation are therefore good.

In a knowledge-based society it is important, not least for financial reasons, to stimulate and promote innovation, creative activity and investments. As part of this work, copyright must be safeguarded in the digital environment. The development of digital technology is opening up new opportunities to use and distribute works. It is also crucial that the results of creative activity can easily be enjoyed by large numbers of people. All this necessitates copyright legislation that simplifies the conditions for gaining access to copyright-protected material at the same time as protecting the interests of the rights holders. Copyright is of fundamental significance to the possibility of culture creators making a living from their artistic creation.

An increased range and greater opportunities to reach a large number of users means greater demands for a functioning scheme for copyright clearance. This applies in particular in the digital environment, where mass use and situations that apply across national borders are common. Well balanced licensing solutions can, however, make it easier to use copyright-protected material while assuring the rights holders of compensation.

Initiatives adopted

At the EU level, the Commission has highlighted the significance of copyright for the development of a digital single market in its communication A Digital Agenda for Europe. As part of this work, which is partly aimed at facilitating access to creative content in the digital environment, a number of measures are proposed

to simplify the procedures for clearance, administration and cross-border licences for copyright. One such proposal is for instruments relating to collective administration of rights. The Commission additionally presented a proposal in May 2011 for a directive on orphan works (works where the holder of the rights is unknown or cannot be reached). In addition, in July 2011 the Commission presented a green paper on the online distribution of audiovisual works.

At the national level, an inquiry chair has conducted a review of certain copyright issues. The final report 'A new Copyright Act' (Swedish Government Official Reports 2011:32) was presented in April 2011. The interim report 'Contractual copyright' (Swedish Government Official Reports 2010:24) contains a number of proposals aimed at making it easier to enter into copyright contracts. The Inquiry proposes expanded and simplified provisions on 'contract licences'. Such provisions make it possible to enter into contracts on the use of works with an organisation that represents several originators in the field and consequently to gain the right to also use works of originators who are not represented by the organisation. The proposals in this section are aimed in part at creating the necessary conditions for large quantities of material to be made available more easily, while originators and other rights holders receive compensation for their creation. The proposals are currently under discussion at the Government Offices.

Actions

The Government should press for well balanced and appropriate regulations on the issue of licensing of copyright both nationally and at the EU level.

ICT for global development

Use of ICT in development assistance must contribute to poverty reduction, democratisation and respect for human rights. Effective poverty reduction is promoted by openness in implementing development assistance.

Strategic challenges

Information and Communication Technology for Development (ICT4D) is an issue given high priority by the Government in development cooperation. Development in ICT will not stop but will instead speed up. At the same time, the threats to freedom of expression that technical development has brought with it are increasing. There are great challenges, among other things in a lack of collaboration and a lack of common standards, both between authorities and internationally. Access to the new technology also varies between different countries, but also within countries and between different groups. Effective and strategic ICT4D work necessitates increased collaboration with more and new actors.

The Government is prioritising greater openness in carrying out development assistance. Information on development assistance should therefore to a greater extent be made available in a digital, comparable and open format for people in Sweden and cooperating countries. This improves the prospects for direct access, scrutiny and efficient use of resources. This applies both in Sweden and in countries with which Sweden undertakes development cooperation. Openness is additionally expected to lead to increased democratic accountability, dialogue on the results of development assistance and more effective poverty reduction, administration and management of resources. It is therefore crucially important to publish public information on development assistance in internationally comparable formats systematically and without undue delay.

To bring about this openness there is a need for increased collaboration and information management across authority, organisational and national borders. Sweden is therefore taking part in several international initiatives to improve global access to relevant and comparable information on development assistance.

Initiatives adopted

Development assistance should use ICT in a broad perspective in areas such as health and education but also through further

reinforcement of special efforts towards democratisation and freedom of expression. The Government has instructed Sida to earmark funds to make innovation, skills provision and development of methods and capacity in ICT4D possible. Attention should be consistently paid to ICT in development cooperation, but with a special focus on the areas of democratic development and human rights, as well as health and education, both through targeted initiatives and in the form of initiatives in which ICT is used as a method. Sweden supports a number of initiatives in these areas, for example aimed at strengthening actors for change, both individuals and groups, who promote democratisation and freedom of expression.

Development assistance should contribute to greater opportunities for development, democracy and human rights, accountability, participation, entrepreneurship, growth, freedom and knowledge. This may entail creating access to ICT by providing education, infrastructure, technical equipment and Internet connections. Special emphasis should be given to access to the use of new technology for women and girls. Another important perspective is the development of national, regional and international strategies in the area that strengthen freedom of expression and respect for human rights.

The Government has also asked the Swedish International Development Cooperation Agency (Sida) and other authorities in Expenditure Area 7, International Development Assistance, to make information on development assistance available as soon as possible with the aim of implementing a guarantee of transparency for Swedish development assistance. The intention with the guarantee is for general documents and other public information on development assistance to be made available on the Internet. As part of this remit, the information service www.openaid.se, which the Ministry of Foreign Affairs has developed together with Sida, should be enhanced. This service is to offer information on development assistance for free use in an open standard. The information is to be adapted and integrated with international standards for the publication of development assistance information.

Actions

It is important to continue to focus on implementing policies and strategies in the area and to use the lessons learnt from this work in a broader perspective. Sweden should support innovative approaches and new arenas, as well as national and international actors with respect to capacity and method development and encourage collaboration between new and more established actors in the area. Increased coordination and collaboration in Sweden, in the EU and globally should also be aimed for.

The Government prioritises openness in the implementation of development assistance, and intends to continue to pursue the issue of transparency and effectiveness of development assistance in international contexts. The Government and affected agencies will continue to work towards increasing insight into development assistance, for instance by implementing the guarantee of transparency in line with the remits that have been decided upon. In the longer term, information on development assistance should also be made available to people in the recipient countries. The intention is for other Swedish authorities and actors also to be covered by the guarantee of transparency in the longer term. Sweden will also seek to ensure greater transparency among cooperating partners and other development assistance actors, including multilateral organisations, private actors and the organisations of civil society.

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