An Information Society for all

– a publication about the Swedish IT policy

REGERINGSKANSLIET

Contents

Foreword

Today, we are in a period of tremendous societal change, as we stand on the threshold of the information society. Information technology represents a new base technology in the same way as electricity and the internal combustion engine did, in the early years of industrialism. Information technology is characterised by speed and interaction, and it is limitless. Time and space become less important. Old businesses and ways of working are disappearing, while new ones emerge. The free flow of information is practically unlimited.

IT is changing methods of working in businesses, government authorities and municipalities. This new technology is opening up opportunities for us to access information and knowledge in a completely new way. Information technology has increased administrative efficiency, automated production techniques, reduced the need to keep large amounts of products in stock and increased opportunities for international marketing. IT has been a major factor in developing businesses and making them more competitive.

At the same time, the rapid rise of the IT sector and the increasing dependence on this method of communication are not without their risks. One result of this rapid progress can be the creation of a gap between those people who have access to the technology, and real opportunities to use it, and those who do not have these opportunities.

The most important task today is to ensure that everyone will benefit from these advances. The use of IT allows both men and women to realise their creativity and develop new skills. We must learn about – and master – the new tools, irrespective of our gender, age, place of residence or profession. This contributes to raising the general quality of life, strengthening democracy, and enhancing Sweden's competitiveness.

The Government's task is to ensure that information technology functions as a catalyst for progress. The Government can affect the use of IT by encouraging increased skills in the IT sector, improving the accessibility to IT and through taking steps to enhance the users' confidence in the new technology.

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Summary

Sweden is one of the world's leading IT (Information Technology) countries. Consequently, the level of ambition of the Swedish Parliament is now being raised with a view to making the country the first to be "an information society for all". The background is that IT affects us all and changes our way of life. It is one of the basic technologies in the new society that is developing – the information society.

This document presents the Swedish Government's IT objectives, orientation and priorities areas for attaining the objective of an information society for all.

Measures in all political areas are required to reach the objectives. The Government also wants IT policy to contribute towards objectives being attained in broad policy areas. Consequently, the orientation in IT policy also affects other policy areas.

The Government has decided that central measures are to be focused primarily on three areas:
- *confidence* in IT – that everyone has confidence in the security of using IT
- *competence* in IT application – provision of the basic IT skills to all
- *accessibility* to the services of the information society – finding and using information, and communicating via IT

This document presents the trends in society that led to the decisions being made, a more detailed description of the areas to be accorded priority in the near future, and finally some of the measures that will help the Government attain its objective – an information society for all.

IT – What is Information Technology?

The term IT is an established expression. Everyone knows, or has a sense of, what it involves and means. But, still not everyone can describe it, and its scope is not obvious.

The Swedish Government has chosen to adopt the definition of IT made by the Swedish Traffic Committee of the Swedish Parliament:

> "Information technology, IT, is a collective term for various techniques used to create, store, process, transfer and present sound, text and pictures. IT makes this process possible regardless of the quantity of information and geographical distance. The merge of the fields of telecommunications, computers and media has led to the term IT now embracing all computer-based handling of information. The term "information and knowledge society" is also used to designate the stage following the industrial society where information and knowledge make up an increasingly important resource for creating national welfare."

In other words, IT can be said to be a large technical system for the handling of information and communication. The system builds upon a merger, a co-operation between different technologies and older infrastructures (the underlying basic systems for the transfer of information). The systems primarily included in the IT concept are computers, TV and other media technologies. Examples of components of the IT concept are the Internet, e-mail, PCs (personal computers), databases, the telephone network, cellular telephones, and the broadband network.

Although to a very large extent, IT is a matter of technical solutions for the transfer of text, pictures and sound, it is not just technology. It is also a system in society where the owners of IT systems, the organisation of all co-operation between systems and the regulations governing this function, determine how things will develop.

In other words, it requires people and organisations to construct, operate, develop and use IT systems. It also requires a legislative and economic framework to regulate them.

This means that social, cultural, political and economic circumstances are significant factors in the development of information technology.

The first Swedish IT Strategy

As early as March 1994, the Swedish Government formed a national IT commission, IT-Kommissionen. This commission consisted of a group of persons with different areas of expertise in IT.

The task of the IT Commission was to promote the value of information technology in Sweden in raising the quality of life for the population, and improve the international competitiveness of the country.

In August 1994, the IT Commission submitted its report, (SOU 1994:18). This included a vision as to how Sweden could become a leading information society, primarily in seven areas:

- education
- legislation
- administration in the public sector
- health and medical care
- communications network
- industry and commerce
- IT research.

A new IT Commission was appointed in January 1995, and was given a wider task than its predecessor: it was to advise the Government on strategic IT issues and subject areas, disseminate knowledge and map future trends.

In 1998, the Government set up a state enquiry into IT infrastructure with high transfer capacity, increasingly known as broadband. In 1999, work was started on an IT Bill that was submitted to the Swedish Parliament in March 2000. In this way a new foundation was laid for IT policy.

Bases of the Swedish IT policy

Sweden is one of the world's leading IT countries. Many positive factors have led to this position. Sweden has been a strong industrial country for a long time. We also use IT on a large scale in the private and state sectors. For example, Sweden is a world leader in wireless communication and the use of the Internet. A large number of companies are setting up in the IT sector.

There are a number of reasons for all this. Sweden has a long tradition of engineering and innovation. Another factor has been the large groups in society that are quick to accept advances in technology, encouraged by the personal computer reform in 1998. Another reason is the "knowledge lift" adult educational programme. We have long had an extensive telephone network, and our telecommunications market was the first in Europe to be deregulated (opened up to competition). Swedish universities were connected to the Internet long before the rest of Europe. This is one of the reasons why so many Swedes have access to, and actively use, the Internet today.

Another important reason for the success is that Sweden has a tradition of good co-operation between government and business. This has led to common activities that have promoted knowledge, development and expansion.

All this has led to Sweden becoming an elite IT country. There are great opportunities for this development to continue in the same way helping to promote employment, growth, environmental care, welfare and quality of life.

Development towards the information society

The IT revolution, or the "digital revolution", are two of the titles given the big changes in society today. IT is the driving force in the process.

The remarkably rapid development of IT affects us all. It has a rapid and dramatic effect on us and our surroundings. Business life, working life, culture, education and politics are being changed in the new society that is developing – the Information Society.

IT can be described as a new, revolutionary base technology. It can be compared with the impact of electricity and the internal combustion engine on the industrial society. It won't be long before IT is everywhere.

IT is rapid, with constant interaction between users and technical equipment – and it is limitless.

In the universal IT world, people can communicate more easily – time and place are of virtually no significance. Unlimited amounts of information flow freely all the time.

Old jobs and industries are disappearing on account of, or thanks to, IT. But the same time, new industries and professions are being created.

Sweden as an IT country
An international perspective
As previously mentioned, the IT sector is developing very rapidly in Sweden. This industry is strong and is growing fast. We also have large-scale use of IT in traditional industries. Sweden is one of the leading countries in the world with regard to the total number of telephone lines, cellular telephones, computers, and the number of Internet subscriptions per head.

The Swedish telecommunications market was one of the first in the EU to be opened up to competition. Today, there are around 160 business operators in Sweden that are engaged in some form of telephonic operations. A big choice and a large number of players operating in a highly competitive market, have stimulated the Swedish population to make great use of telephones, cellular telephones and telephonic services.

Just now, the most interesting area of development in IT and telecommunications is the use of the Internet via the cellular network. Swedish research and development are in absolute top class in the world in this sector.

Sweden also has good possibilities of retaining its strong position in the world with regard to IT development in the future. Many foreign investments are being made in research and development in IT in Sweden. In addition, several of the world's biggest IT and telecommunications companies, such as Microsoft, Nokia, Intel and IBM, have chosen to place parts of their research programmes in Sweden.

There are several different criteria that indicate whether a country is a "leading IT country". Development and use of technology and communication are not the only criteria included in the assessment. Attitudes and patterns of behaviour of the population are also significant. In this perspective, it can be said that Sweden is a leading IT country in many, but not all, areas.

According to IDC (International Data Corporation), Sweden is not only the leading IT country in Europe, but we have also overtaken the United States. The main reason for this is the PC Reform that has taken place since 1 January 1998 (read more about this at the end of this chapter).

The share of information technology in the GNP of Sweden is second highest in the world after the United States.

In 1997, Sweden was the world's fourth biggest exporter of communications equipment. In the same year, we were in tenth place with regard to the export of software.

The Internet is growing faster than any other information technology tool has done previously – faster than the telephone, radio or television, for example. The quantity of information transferred via "the Net," as the Internet is often called, doubles every hundred days.

The Scandinavian countries, the U.K. and Germany lead Europe, in terms of the number of Internet users in relation to their total populations. There are

also indications that Sweden itself has most Internet users in relation to the size of the population. In any case, Sweden and the other Scandinavian countries together, have approximately the same amount of Internet use as North America.

A large number of studies show that electronic commerce, i.e. trading over the Internet, is most widespread in North America. Here in Europe, Sweden is the leading country, together with the other Scandinavian countries.

The PC Reform

Sweden has rapidly become the country with most computers per household. In the autumn of 1999, a study showed that 67 per cent of the Swedish population between 15 and 84 had access to a computer in the home. One of the main reasons for this was the PC Reform (Personal Computer Reform) that was introduced on 1 January 1998.

The PC Reform was created to encourage people to acquire a computer. The objective of the reform was for all the inhabitants of Sweden to have access to the opportunities afforded by the information society.

This meant that businesses received tax relief for the purchase of computers that they then offered to their staff, to buy tax-free and to keep at home. The condition was that everybody with a permanent position, regardless of job title, would be included in the offer, not only those employees needing a computer at home. This reform gave the employees the chance to buy computers for a price far below retail. Employees paid for the computers by a deduction in the gross salary, normally over a period of three years.

The reform was a great success. Between 1997 and 1998 the proportion of employees with access to a computer in the home rose from 48 to 67 per cent. The reform had therefore contributed to the IT and computer maturity shown by the Swedish population today. It is also one of the reasons for the widespread awareness of the opportunities for accessing information and service via the Internet.

The use of IT in Sweden

60-70 per cent of people working in Sweden have access to computers in their work. In addition, the number of people with access to a computer at home has also risen dramatically. In the mid-1980s, only three per cent of the population had a computer at home, and today the figure is more than one in two. The figures presented above are impressive, but there are, however, differences between different groups in society.

65 per cent of the members of the Swedish Trade Union Confederation (LO) had computers at home in 1999. The corresponding figure for members of the Swedish Confederation of Professional Employees (TCO) was 85 per

cent, and for members of the Swedish Confederation of Professional Associations (SACO) 91 per cent. These differences also mean that certain children and young people have less access to a computer at home.

The use of computers and the Internet also varies depending on ethnicity, sex, age, and income and housing conditions.

More women than men completely lack experience of using computers and the Internet. Older people use computers and the Internet considerably less than the average for the population as a whole. People with higher salaries use computers and the Internet much more than people with lower salaries. People with higher education have much greater experience of computers than those with less education. People living in metropolitan areas use computers more than those living in sparsely populated areas.

One indication that the new technology is not spread evenly in society is that immigrants as a group use IT less than other groups.

These differences in the use of the technology are a problem. They affect the opportunities to find information, culture and public information, starting a company and looking for work. There is also a risk that lack of information reinforces marginalization.

The significance of IT in some key areas
IT, employment and growth
The opportunities afforded by the use of IT are now starting to become reality. Several studies indicate positive effects. Productivity is increasing and the rate of growth is high.

The effect of IT on growth has risen strongly in the last ten years. According to an OECD study, only 8 per cent of the growth between 1985 and 1990 in the world's leading industrial countries (the G7 countries) could be attributed to investments in IT. Between 1990 and 1996, investments in IT explained 17 per cent of the increase in the productivity of the countries.

It is clear that the information society will bring big changes, both in everyday and working life. Certain jobs and professions will be rationalized and disappear. This is a natural development when new technology is introduced, often with the purpose of improving efficiency.

While this may seem something negative, history shows clearly that technological changes have led to new job opportunities and higher incomes in the long term. The economy has mechanisms that create new jobs at the same rate at which the old ones disappear. This is also the case with IT. How big an effect the increased use of IT will have on the economic growth will depend on how well the economic mechanisms function.

The mechanisms can function as follows:

Firstly, IT creates the need for specialists in the sector. But IT also increases productivity. More goods of the same sort mean that the price can be reduced. A good supply of products leads, in turn, to an increase in consumption. High consumption leads to profit, which means that more people can keep their jobs.

This can also lead to better incomes since rationalizations can lead to higher salaries or profits. Higher incomes mean that people consume more. And this leads in turn to more employment.

Finally, new technology can create work in new companies that use this technology to produce and sell products or services.

Nothing indicates that IT leads to sustained unemployment. The United States, Canada and Japan, for example, have a high degree of IT maturity and lower unemployment levels compared to most European countries. Similarly, in Europe, those countries that have come furthest in the introduction of IT have lower unemployment levels than other countries.

The rapid introduction of IT in society does not mean increased unemployment in the long term. Some people can be out of work during a transition period, however, and to counteract this, and to make the transition as rapid as possible, training is required. The training should be aimed at complementing and broadening people's skills to meet the demands of the information society.

IT and the quality of life

Many people with disabilities are given better opportunities to communicate with others through IT. IT gives them the possibility to benefit from health and medical care, education, culture, public debate and entertainment. This can significantly improve their quality of life.

IT can make it easier for elderly people with disabilities to remain in their own homes. Relatives can receive support, knowledge and information about care needs and support measures through IT. IT can also give security through improved health monitoring, for example in sophisticated health care at home.

IT and democracy

The development of the Internet opens the doors to direct democracy, greater transparency and control for the citizens, and dialogue. IT opens new channels for people to communicate and form groups on different issues.

There are many indications that the ability to look for and find information via, for example, the Internet, will be of great importance for democracy in the future.

Most government authorities, municipalities and county councils have their own websites. Individuals and companies are given the opportunity to contact the organisation and politicians. One channel of encouraging democracy, dialogue and

influence, is that most politicians are presented on the websites of municipalities and county councils. Generally, they have an e-mail address as well as their telephone number, and this makes it possible for anyone to write to them.

There are forums for electronic conferences with citizens on some of these websites. People can conduct a dialogue with each other or elected representatives.

These electronic forums are being developed in certain municipalities and county councils. In the future, different networks for citizens and their organisations, parties, popular movements and study organisations can be created, and operate through them. Communication will be available either free of charge or at a nominal fee.

There will also be a lot of public information on the websites. For example, information about local events, what is happening in municipal work, or address and telephone lists.

Legislation is one of the cornerstones of an orderly and organised society. Consequently, the Swedish government has decided that a system will be created on the Internet where everyone has free access to laws and regulations.

One interesting opportunity is that the Internet and IT can attract people who have not previously been interested in political issues, and get them involved. The Internet makes it easier for individuals to access information, discuss issues with each other, and put forward their own views. IT can make it easier for people to influence democracy and the political decision-making process.

As yet, there is little experience of what this "virtual network" can lead to. There is nevertheless a good chance that it can make a contribution to democracy through direct dialogue between citizens and politicians.

IT and the mass media

The mass media are very important in our modern democracy. They provide people with the knowledge they need, enabling us to live and function together.

Thanks to IT, and primarily through the Internet, the opportunities for disseminating and accessing information have improved greatly. The situation of the mass media has therefore also changed. The boundaries between the different types of media become diffuse, and the media overlap each other. Several traditional media can, for example, be found in one channel of distribution. The boundary between media and computer communication is also becoming indistinct.

The Internet, in itself, has become one way of accessing information, but newspapers can also be read on the Internet. Text TV is another example – it is now possible to read text bulletins on television. Not to mention all the information that can now be accessed via a cellular telephone.

All this means that the development of the IT structure will also be important for the mass media in the future.

The Swedish Government, through its efforts, wishes to ensure that the mass media can continue with their important democratic work. For example, political decisions in connection with the expansion of IT, must be based on objectives regarding freedom of expression, accessibility, variety and freedom of choice.

In short, there must not be any hindrances to the mass media reaching the citizens and giving them the information they want.

Legislation is also affected. As a result of developments in IT, one type of mass media can today be embraced by several different laws depending on how the information is distributed and the form in which it reaches the recipient. This includes fundamental laws on freedom of expression, radio and television, and telecommunications.

Technological development also creates new media that are difficult to fit into the system of regulations that exists today.

The Swedish Government takes the view, therefore, that it is an important task in the next few years to co-ordinate legislation in the areas of telecommunications and media.

Political measures for IT, 1996–1999

It was described earlier how the Government's PC reform with new tax regulations led to an increase in the number of employees with a computer at home. The Swedish Government has also made other decisions to increase the usage of IT. The decisions have been in accordance with the IT Bill that was put forward in 1996 and prioritised regulatory systems, education and the supply of information to society.

The following is a description of what has happened.

Legal Rules
- Regulations on the protection of privacy and protection from infringement have been strengthened with regard to the treatment of personal details in the area of telecommunications and in computer communication.
- Sweden is participating in an international project to facilitate electronic commerce.
- A new law on bookkeeping applies regardless of the technology used in bookkeeping.

There are other examples of work being done to enhance the security of information. One example is development work to ensure a more secure Internet.

The Government has also proposed certain changes in the telecommunication laws to increase competition in the cellular telephone market. This means that operators with their own cellular telephone network must allow other

operators to use their network for cellular telephone services. The purpose is for competition to increase the range and the freedom of choice on the cellular telephone market so that the prices will be reduced for the users.

The regulations on distance working have also been reviewed to raise the possibility of this type of working.

Education

A great amount of resources were put into IT in all areas of education between 1996-1999, and this is still going on.

- An input of resources will raise levels of competence in the teaching profession, and improve the schools' connection to the Internet (IT inSchool – ITiS).
- The biggest subject in "the knowledge lift" – an adult educational programme, is basic computer studies.
- There are many advanced IT educational programmes.
- Universities are growing. Between 1997 and 2002, the number of university seats will increase by 89,000. The role of IT, and the opportunity to choose a specialization in IT, have become very common. The Royal Institute of Technology is to launch an IT university.
- All universities and university colleges have connections through the university computer network known as SUNET.
- According to the Swedish Transport and Communications Research Board, research councils, sector bodies and boards invested SEK 3.2 billion in 2,100 projects between the years 1995-1997. The majority of the projects focused on information technology, electronics or computer and systems studies.

It is important to see Sweden as a part of a global market with regard to access to competence and knowledge in IT. Consequently, the Government has taken measures to attract foreign students, researchers, specialists and others to study and work in Sweden. The Government, for example, has introduced a proposal for special taxation of foreign key personnel. This means that tax is reduced for three years for foreign citizens who work in Sweden for a limited period in technically advanced and research-intensive operations. The proposal has been submitted to the EU Commission, and can be put into effect from 2001 if it is approved.

The Government has also set up a study of recruitment of foreign students to Sweden. The study will focus on what is needed to increase the numbers of students from other countries coming to Sweden.

The supply of public information and technical infrastructure

- Decisions have been taken to create a public system for legal information that is to be accessible to everyone.

Swedish IT and Internet projects

IT in the public sector

In 1999, the Government decided that the Swedish ministries and the authorities should set an example in the use of IT in Sweden. The Swedish Agency for Public Management (Statskontoret) is responsible for this. Its task is to "reshape public administration using IT".

The electronic administration is now being developed in public administration under the watchful eye of the Swedish Agency for Public Management regarding efficiency, accessibility and security.

The Swedish Agency for Public Management also has other tasks in the IT sector to protect democracy and the efficiency of public administration. It works, for example, with studies and evaluations to provide background material for Government decisions. It also runs development projects in IT and telecommunications.

For more about the Swedish Agency for Public Management, see *www.statskontoret.se.*

Information to the citizens

The Internet is the basis for electronic communication between the public sector, the general public, and businesses in Sweden. Nearly 90 per cent of the country's public institutions has their own website and can be contacted via e-mail.

In addition to communication via e-mail, the use of the public databases is also increasing. This information is free.

For a few years now, "VirtualSweden" has been a gateway to Sweden's public sector via the Internet. The objective of Virtual Sweden is to give the population better service through a single portal to all municipalities, county councils, authorities, government, parliament and the EU.

The web address of Virtual Sweden is *www.virtualsweden.com.*

Other examples of websites where the general public can reach government authorities and get direct information are:

The Government: *www.regeringen.se*
The National Labour Market Board: *www.ams.se*
The National Board of Student Aid: *www.csn.se*
The National Tax Board: *www.rsv.se*

24-hour public authorities

At the start of 2000, a decision was made to create a 24-hour online service about IT. This is found via the website of the Swedish Agency for Public Management. Policies, practices and experiences of IT within public administration are compiled in this project. The information is published for the free use of citizens and society as a whole. It is a knowledge bank for all.

You find the 24-hour service at *www.statskontoret.se/service*

- A regulation concerning the fees of authorities for data in electronic form has been implemented.
- As part of the technical infrastructure, major new developments of the backbone network have taken place using, for example, fibre optics.
- Digital television transmission has started through the ground network.
- State investments have been made in the use of IT in school and cultural areas. State funding has also been implemented so that museums and libraries can have permanent connections to the university computer network.

Fast growing sector

IT is one of the fastest growing sectors in the industrialised part of the world. In Sweden, around 600 companies are engaged in the development of software, for example. Their sales are now doubling each year.

Swedish companies have been among the first in the world in creating IT systems for resource planning, programmes for the banking and financial sector, information security, programmes for the health and medical care sector, consultancy services for the Internet and new media. This creates new jobs, new opportunities, new products and new services.

For the future, a strong position in the IT sector can be decisive in a country having strong economic growth and high employment. Knowledge, creativity and variety are keys to success in the information age.

The Swedish Government has therefore made, and are making, efforts to promote Sweden as a leading IT and Internet country. It supports activities that will encourage exports and foreign investments in Sweden. It promotes information campaigns in Sweden and abroad, and helps to create different networks for contacts. The work is carried out in close co-operation with authorities, organisations and businesses in IT and telecommunications.

The Swedish Government is also working towards the placing of a European IT institution in Sweden, and ensures that Sweden works actively with IT issues at EU level.

IT in culture

There are several IT projects within Swedish cultural life. One of the main projects is being carried out within CultureNet Sweden. The background to the network is that the Swedish Government wants to create a digital network for co-operation between cultural institutions in Sweden.

The network has several objectives:
• increase accessibility to culture in Sweden
• inspiration to creativity
• inspiration to participation in cultural life
• develop communication between producers of culture and the general public
• increase the co-operation and exchange of experiences between cultural institutions

There is a website at *www.kultur.nu* as part of the work to give everybody access to the cultural life of the country

The website includes a register of websites with a total of 5,000 links, a bulletin board, discussion groups, and a web magazine containing news about culture and IT.

The New IT Policy

The IT policy of 1996 needed reshaping because of the extremely rapid development in IT. There are now completely new opportunities for how IT can be used. The toughening international competition is another reason. Sweden needed to look over its IT policy in order to continue as one of the world's leading IT countries.

The primary approach from 1996 continues. The use of IT is to be encouraged through as many people as possible becoming aware of IT. The awareness is to contribute to creativity, growth and employment. The IT policy is also to promote Sweden's competitiveness, increase knowledge, democracy and justice, gender equality, development of the welfare state, and increased efficiency within public administration.

This earlier orientation needed to be updated, however, for the following reasons:
• The large number of computers and cellular telephones need to be processed in a cycle that is not harmful to the environment. It is also important that IT contributes to environmental improvements, such as through environment friendly transport and environmental monitoring.
• If the development of the new technical infrastructure is controlled only by the market, there is a risk that it will not reach the population living in sparsely-populated parts of the country. The government's task is to ensure that everyone has access to the IT network.
• The policy needs to consider issues of ethnic variety and integration to an increasing extent. IT policy can determine the extent to which different groups have access to IT.

When the new IT policy was formulated, it was important that the areas of priority were made more precise. *Confidence* in IT, and IT security, are very

important issues. Electronic commerce is, for example, very dependent on security. The users must have confidence in the technology, and new laws and other measures must facilitate this commerce.

With regard to education, the concept has been widened to now include people's *competence* in using the opportunities afforded by IT. The competence will be attained through education in schools and at workplaces, and in the practical use of IT.

The PC reform has resulted in more people having computers at home. This is a good base for enhancing the competence of the general public. As well as these measures, Sweden needed to train, or acquire, more IT specialists, in order to continue as a leading IT country, and use them to advantage in the international market.

The *accessibility* to information must also be emphasised more, as well as the significance of the technical infrastructure.

The basis of the IT policy is that IT is involved in an increasing number of areas in society, both privately and in the workplace. The Swedish Government is convinced that IT creates opportunities for growth, improved welfare, increased awareness and increased democracy. Not all these opportunities are clear however. An IT society could lead to marginalization and exclusion, threats of new social divisions, commercialisation, and superficial cultural values.

IT is not just computers, fibre optic cables or software. IT is also people, knowledge, communication and culture. The great potential for IT lies amongst the people who think about how IT can be improved. Consequently, the investment in IT needs to be an investment in people, to give them know-how and competence. If know-how and competence are encouraged, and people are given access to an IT system they trust, Sweden can become a broad information society of high quality.

In the IT society, both a broad usage and specialist competence are needed. Qualified people and large businesses should be able to use sophisticated IT solutions. But all people must have sufficient knowledge to be able to use IT and access the benefits it offers. They must also trust that the system functions, so that they are comfortable about using it. Finally, they must have access to a network with high transfer capacity and the economic possibilities of using it.

Broad usage by many different individuals and groups in society will also facilitate the development of a more qualified use of IT.

Consequently, the IT policy is fundamentally more of a democratic project rather than a technological one. It is a matter of giving everyone access to the opportunities afforded by the technology.

Sweden is already one of the world's leading IT countries. The objective should now be to make Sweden the first country in which the information society is accessible to everyone.

Objectives, Action Plans and Proposals for Legislation

The objectives of the IT policy

The Swedish Parliament has now set an objective for the IT policy that Sweden will be the first country to become an information society for all. This means that everyone will have access to IT, have confidence in IT, be able to use it and benefit from the advantages it brings.

The information society is found to a greater or lesser extent over the whole world in all parts of society. This means that a country that wants to function well on the international market needs to be a leader in this area.

The Swedish IT policy is based upon a combination of technological and economic development in the IT sector, and an investment in a broad use by the entire population. The Swedish Government takes the view that a broad investment in IT is the only sustainable basis for Sweden in the long term being able to compete in the international marketplace.

The responsibility of the state is to ensure that the requisite conditions are created for the country to develop towards the set objective. It is also to ensure that the barriers that exist are either removed or are minimized. Finally, it should ensure that criminal and other negative forces are not allowed to flourish through the new technology.

IT policy approach

Objective-oriented measures are required in all areas of policy if Sweden is to become the world's first information society for all. These should not of course be implemented for the sake of the IT policy. IT is to be a tool for attaining the set objectives. If Sweden has a strong position in the international informa-tion society, it will be easier to attain important, general political objectives.

These are the general objectives put forward by the Swedish Government to which a positive IT development will contribute:
• sound finances and stable prices
• growth, more jobs and lower unemployment
• making Sweden a leading knowledge country and a leading research country
• strengthening a feeling of security, justice and welfare
• being able to hand over a society to the next generation where the major environmental problems have been solved
• ensuring that all of Sweden will develop
• to attain greater participation in the democratic process, as well as security and law and order

Areas to be promoted in the Swedish IT policy

Measures to promote Growth
• enhancing the competitiveness of the Swedish IT sector
• helping create new markets, more jobs and greater productivity throughout

society through the use of IT
• boosting the volume of electronic commerce.
Background: The IT sector has great potential for growth. Increased growth will result from resources being put into the IT sector instead of sectors with lower production and smaller demand.

A broad knowledge of IT amongst the general public will mean that other sectors can increase their usage of IT. This also creates opportunities for growth. Disadvantages of small businesses with limited resources can be lessened if they increase their use of IT.

If Sweden enhances its competitiveness, the country can be made more attractive for foreign investments and foreign expertise in IT.

Measures to promote Employment
Employment is to be promoted through the provision of IT training emphasizing quality at all levels.
Background: Sweden is to be a leading knowledge country, and IT will help in this. The opportunities afforded by IT will be used to create employment. Everyone will have the opportunity of getting information via IT to enhance skills.

The technical development that has been made possible by IT means that skills have become more important. Consequently, the Swedish educational system needs to help create the awareness that development in IT requires. This means that skills are required in at least Swedish, English, Mathematics and IT.

The reason why it is important to develop greater knowledge and skills in IT is not only that these provide great opportunities for the future. IT also involves a big change in the structures of working life. There is a risk that a rapid introduction of IT in the different parts of society will mean a long period of readjustment. The risk that large groups are kept outside the employment market is unacceptable. This risk can be reduced through a strong emphasis on training in IT.
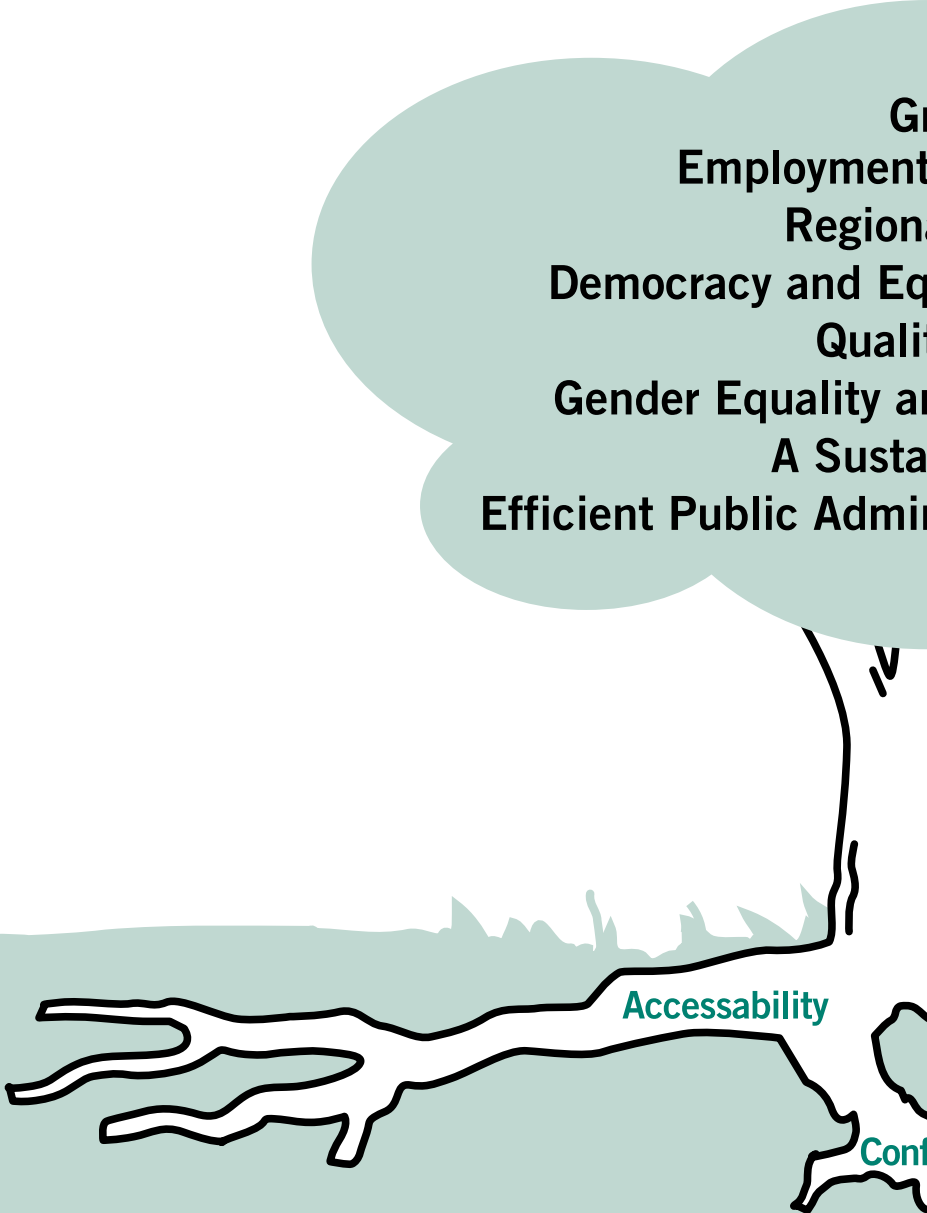
Measures to promote Regional Development
Regional development will be promoted by helping to create conditions for growth throughout the country by means of a good IT infrastructure.
Background: All parts of the country can be developed if people and businesses in all of Sweden are given the conditions necessary to use the new technology. IT can reduce the significance of distance by making it easier to communicate and transport information. Using IT, people can access information, service, culture and commerce, and communicate with authorities and companies irrespective of where they live.

The responsibility of the Swedish state is to ensure that there is a functioning infrastructure for IT throughout the country.

A Leading IT Nation – An

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Measures to promote Democracy and Equity
- facilitating the use of IT by everyone, making it easier for all to access infor-
  mation about public activities and to participate in the political decision-
  making process, both in Sweden and within the EU.
- contributing to a more active exercise of citizen's rights due to the new oppor-
  tunities that IT offers for applying the principle of freedom of expression
- utilising the opportunities afforded by IT for preserving and developing cul-
  ture, cultural heritage, and language in Sweden
- avoiding undue violation of privacy when IT is used.

Background: IT can make it easier to make contact with public officials and gather information about political decisions. With these opportunities, it beco-mes easier for people to influence policy-making.

Through IT, people can more easily co-operate in groups in their own country or in other countries on community issues. One way is to have forums on the Internet where discussions and communication can take place.

IT and the Internet have made it possible to disseminate, in a simple man-ner, information from various public databases. This applies, for example, to laws and regulations and other political activities. It is positive, and important for democracy that everyone can access information such as this, so that they are given a clear insight into the community and the results of the work done in public administration. Based on this knowledge, people can then, in various ways, put forward their own views and influence decision-making.

The measures taken by the state in the areas of culture and media primarily touch on freedom of expression, accessibility and variety. Since different areas within the areas of culture and media are merging together, the traditional concept of the media must be widened. It is important that the Swedish IT policy helps all to have access to the reporting of news and public debate. Consequently, the expansion of the infrastructure for IT is also an issue for cultural and media policies.

Through IT, access to culture and the cultural heritage becomes indepen-dent of time and place. People's opportunity to participate is increased in this way. The variety and variation that exists in the country becomes more visible. Through knowledge of variety, the opportunities are increased for greater respect for different people's culture and cultural heritage.

Finally, it is important to minimize the risks of undue violation of privacy when IT is used.

Measures to promote the quality of life
- enhancing individual welfare through the use of IT in everyday life and
  working life
- improving the quality of life for under-privileged groups through the use of IT.

Background: Elderly people can live longer at home with the help of IT. It can help people with disabilities find employment. IT can be of great importance for health care. IT can also make life easier for people living in sparsely-populated areas. People's contact with authorities and companies can also be made easier through the use of IT.

Use of the Internet and electronic commerce gives individuals the possibility to plan their own time and use services and make purchases whenever it suits them around the clock.

Measures to promote Gender Equality and Cultural Diversity
- increasing universal access to the advantages afforded by IT irrespective of gender, age, ethnic background, or any disability
- helping to ensure that the composition of IT specialist staff reflects the population structure as regards gender and ethnic background

Background: Everyone must be able to benefit from the information society.

For Sweden to take full advantage of the opportunities afforded by IT, no ingrained patterns must hinder people's choices of education and profession. Both men's and women's experiences and competence are needed for progress, on equal terms. Therefore, it is very important to break the traditions that lead to gender-oriented choices of educational programmes.

Sweden is to be a country with ethnic, religious, linguistic and cultural diversity. All forms of discrimination impact negatively on progress. Even here, it is very important that people are not hindered by ingrained patterns or prejudices in their choices of education and profession.

Measures to promote Efficient Public Administration
- having public administration set a good example in IT usage
- helping to ensure that electronic communication between government agencies, private individuals and businesses may be conducted safely and securely.

Background: In Sweden, public administration has a long tradition of being a leader in the use of IT. This orientation will also apply in the future. IT will help to improve efficiency and quality in public activities. It will also improve the service to individuals and businesses.

Through IT, information can be submitted and received smoothly. Examples of this include tax returns and applications that can be processed via the Internet.

All the information that private individuals and businesses need to receive or submit to authorities should be handled electronically. It must be made possible to conduct this in a safe and secure manner. It must also be possible for persons with disabilities to conduct their business in the same way.

Measures to promote a Sustainable Society
- IT being used to make a positive impact on the environment
- IT contributing to the reduction of the impact of transport on health and environment
- IT equipment being part of a sustainable recycling procedure

Background: Sweden will be a country in ecological balance. This also applies to IT.

The Swedish parliament has decided on general objectives for the environment. Through new technology that makes effective use of resources and other advances in technology, we can build welfare and prosperity without negative impact on the environment.

The manufacture of IT products can cause environmental problems at different stages. It uses natural resources, leads to discharges, use up energy, involve the use of chemicals, disposal of obsolete equipment, and so on. Work is going on now to reduce these negative effects.

IT can contribute to ecological sustainability in the community if the usage is planned on the basis that the environment is to be protected and improved. Impact on the environment and the use of resources can be reduced by, for example, distance working, directing the use of energy, dosage of chemicals, and more environment-friendly methods of transport.

Actual work on the environment, such as measurements, analyses, and co-operation projects, can be made easier through the use of IT.

IT also makes the dissemination of information regarding environmental work easier and more efficient.

Areas of priority in the IT sector for the Swedish state
Sweden will be an information society for all. To attain this objective, the Swedish IT policy is primarily oriented towards regulatory systems, education and training, and infrastructure. In these areas, the state is making priorities in
- *confidence* in IT
- *competence* in the use of IT
- *accessibility* to the services of the information society.

Background: If Sweden is to keep in step with other leading IT countries, we must be able to make high and special demands on the workforce, access to capital, computer awareness, and other conditions necessary for a good business climate.

Everyone is to have confidence in using IT for communications, commerce and raised quality of life.

Everyone is to have basic knowledge about using IT.

Access to national and international IT systems will be available over the whole country.

All these measures are to be implemented as soon as possible.

In attaining the objectives, it is natural to continually follow up the work that is being done. Improved keeping of statistics of IT usage is one measure. This information can show if the political measures need to be expanded, for example.

Sweden has also decided on increased work on developing IT in the EU. The Swedish Government is supporting the eEurope project for an information society for all within the entire EU (read more about this on page 36). The Swedish Government has also proposed that the EU sets up an IT authority. The purpose is to increase the opportunities for the development of IT within the EU on the basis of eEurope.

Action plan for national government measures

Finally, we present here examples of concrete measures that the Swedish Government is planning to take in the next few years to make a reality of "an information society for all".

This is just a summary and a selection of the entire action plan of the Government. We are also presenting measures to be adopted in certain areas. A more detailed description can be found in the Government's IT Bill of 1999/2000:86.

Measures for Enhancing Confidence in IT

General orientation

Regulations and systems in the IT sector should be such that they inspire confidence through being:
- safe, secure, predictable and technology-neutral
- international
- protective of individual privacy.

There are three areas to be prioritised over the next few years: protection against information operations, enhanced security on the Internet, and, finally, electronic signatures and other security technologies. In addition, the division of responsibility will be decided regarding the work on information security.

Measures
- Work to ensure that the Swedish part of the Internet can function independently of operations in other countries.
- Making available a secure and accurate national timing for the Internet via the National Metrology Institute for Time and Frequency.
- Promoting broad co-operation between the most important market actors amongst providers and users of IT. The purpose is to reach agreement on how to further a common infrastructure for electronic signatures, e.g. by the use of a solution based on smart cards.
- Legislation relating to electronic signatures to make their use easier has been presented in 2000.

Measures for Enhancing IT Competence

General orientation

The education system should provide all citizens with basic skills in the use of IT in everyday life and working life. The level of IT competence should be such as to allow employees to keep up with structural change and to strengthen their position in the labour market, and provide employers with sufficiently skilled labour. In addition, specialized IT skills are needed in the research and development sphere.

Measures

- Continuation of the special IT Programme for Schools (ITiS) in 2000-2001. The National Agency for Education is to work towards an increased use of IT in schools.
- An IT competence enhancement programme for small businesses starting in 2001.
- Analysis of women's use of IT.
- The number of places at institutions of higher education to be increased nationwide. 20,000 additional openings in 2000, and 10,000 places in 2001 and 2002. Most of the new openings will be in the fields of technology and the natural sciences.
- The Royal Institute of Technology is to launch an "IT university" in Kista just outside Stockholm.
- Universities and other institutions of higher education should take into consideration the need for competence in the field of network expansion and IT technology when they are planning educational programmes for IT specialists.
- Additional investment in the expansion of a cluster focusing on silicon technology.
- Establishment of a centre of expertise for Internet technology.
- Promote increased competence development in working life.

Measures for Improving Accessibility

General orientation

Over the next few years, households and businesses in all parts of Sweden should acquire access to IT infrastructure with a high transfer capacity. This is primarily to be achieved through market channels. Central government, however, has overall responsibility for ensuring that IT infrastructure with a high transfer capacity is available nationwide. Competition, low prices, and rapid development are fostered by a large number of operators and IT companies being given the opportunity to use the networks. Government measures and regulations should serve to ensure both competition neutrality and diversity in the networks. IT is capable of bridging geographical distances in Sweden and reducing the gap between metropolitan and sparsely populated areas. Therefore, there must not be major differences in accessibility, charges and capacity.

The infrastructure is also to include databases in respect of which central government will have special responsibility for ensuring universal accessibility. A national strategy should be developed for public information supply.

Measures

- A proposal for revision of the Utility Easements Act to facilitate expansion of communications infrastructure with a high transfer capacity.
- Proposals for a national IT infrastructure programme.
- A commercial backbone network extending to all municipal urban centres in Sweden.
- Government funding for regional line connections, prioritised for regional development and industrial policy reasons, and which over the next five years are not expected to be fully met by market players.
- Government grants to local authorities aimed at encouraging connection to networks with a high transfer capacity in sparsely populated areas.
- Tax relief for subscribers aimed at encouraging connection to networks with high transfer capacity.
- The question of local loop unbundling (LLUB) through legislative action is to be dealt with by the Government Offices.
- A report of measures required for the prevention of a local monopoly of property networks for broadband connection.
- A preliminary study of broadband for persons with disabilities. This is the beginning of pilot operations on a larger scale.
- Framing of a strategy to streamline and facilitate the provision of public information and the development of electronic information services.
- A statistical compilation of information and communication technology, within the framework of public statistics.

Measures in Certain Areas of Application

- 24-hour public authorities are to be developed. Through these, the general public will have electronic access to information and self-service round the clock.
- Common security solutions for public administration are to be implemented. They are to include systems for handling electronic signatures. Development is to be as rapid as possible. To this end, the National Tax Board, in collaboration with the National Social Insurance Board, the Swedish Patent and Registration Office, and the Agency for Administrative Development, will propose how the responsibility for the issuance and administration of certificates and electronic signatures should be organised in public administration.
- A proposal as to how the EU directive on electronic commerce may be incorporated into Swedish legislation is to be drawn up.
- Greater information on, and enhanced confidence for, the use of electronic commerce to consumers and small and medium-sized businesses.
- A national action plan for the development and rejuvenation of the health care system, including IT usage.
- A joint group, consisting of central government, local authorities and county councils, should be set up with the aim of further developing the prerequisites for the broad-based use of telemedicine.
- Pilot IT-programmes should be initiated in different living environments with a view to improving popular insight into and participation in the political decision-making process.
- Legislation in the telecommunications, computer and media sectors should be coordinated.
- The question of further expansion of ground-transmitted digital television is to be decided by Parliament.
- The Employment Protection Act is to be revised so that security of employment is no longer dependent on the location of distance employees in relation to the principal workplace.
- A commission is to be appointed to analyse how the use of IT can be improved to reduce the impact on the environment and contribute to a sustainable development.
- When procuring IT, central government is to lead the way in imposing accessibility and environmental requirements in line with EU legislation.

Sweden and IT in the future

After the IT Bill in the spring of 2000, the Swedish Parliament decided to set up the objective for Sweden to become the first country to create an information society for all. It has therefore become necessary to make a precise definition of the concept of the information society. In the work of the implementation of the IT Bill, the different proposals have been organised with three future information societies as a starting point. These follow on from each other during a time period that stretches from now to approximately ten years in the future.

The three visions are rough sketches that are based on the views of specialists and analysts. Based on knowledge available today, they attempt to describe at what speed and to what degree the future IT will develop and affect us.

The following is a short summary of the three visions.

The Internet Society
The first society can be called the Internet society. It exists today and has come quite a long way as it is based on the ordinary telephone network.

In the Internet society, central government and the EU need to not only ensure that the old infrastructure can be used more efficiently, but also that its quality is improved. They also need to ensure that the services used in the infrastructure are developed and are of good quality. In the latest IT Bill, the Internet Society is affected by the proposals and measures that deal with electronic commerce, security issues, transfer of public information, education and training, encouragement to use computers, and connections to the Internet, as well as large parts of the eEurope project (read more about the eEurope project on page 36).

The Broadband Society
This society is called the Multimedia and Broadband Society. The regulations for electronic communication are now being produced on an European level. The new regulations are to be adapted to the new society, where the boundaries between telecommunication, computer communication and media become less clearly defined, the so called convergence. The new regulations should also apply to the current expansion of the IT infrastructure with high transfer capacity.

Progress towards the Broadband Society has started, but it will be about another five years before it becomes reality.

The Accessibility Society
There are also longer-term visions. One has been formulated by the Technology Prediction Project (Teknisk Framsynsprojektet). Here we could call this the accessibility society. This society will come into existence in 5–10 years. By

then, our working lives and our private lives will have been thoroughly changed by IT. We describe a few examples here.

The Teknisk Framsynprojektet is a joint project between specialists from the Royal Swedish Academy of Engineering Sciences, the Swedish National Board for Industrial and Technical Development (NUTEK), and the Board for Strategic Research. The project is financed by central government and works in co-operation with many different interested parties.

The purpose of the project is to prepare Sweden for the future, and propose the direction and design of research, development and education. Eight panels have worked in different areas. One of them is the panel for information and communications systems.

This panel has identified seven key areas that are thought to have great significance for the long-term development in an accessibility society.

Teknisk Framsyn predicts that we will live in a society in which we have the opportunity to be continually connected. People communicate electronically with each other, regardless of time and space, their homes and workplaces, or with different services on the Internet.

Through a digital assistant, each individual can, by using special software, adapt the great flood of information to his or her wishes.

Commerce with products, information and services is conducted electronically.

The rapid development places high demands on education and competence. It will create the need for a continuous and immediate learning. The educational resource material will be adapted to different people, using IT.

The technical and biological worlds meet. This makes it possible to use biological material in technology, but also to meet purely human needs. Products such as hearing implants and silicon-based interfaces already exist today!

This society makes great demands on software, broadband, security, improved systems of payment, and new laws and regulations.

eEUROPE 2002

An information society for everyone in Europe in 2002.
In March 2000, at approximately the same time that the Swedish IT Bill
introduced in the Parliament, the heads of State and Government of the EU
memberstates established the goal of making Europe to the most competitive
and dynamic economy in the world. This requires that Europe takes advantage
of the opportunities afforded by IT.

To attain this objective, the European Commission and the Council have
drawn up the eEurope 2002 Action Plan. This can be described as the IT
policy of Europe. In practice, it means that all individuals and businesses are
to be able to use the opportunities afforded by IT.

The Swedish Government is very favourable to eEurope. The common
European objectives correspond to the objectives set up for Sweden. During
Sweden's chairmanship of the EU in the first six months of 2001, an impor-
tant task will be to monitor and advance the eEurope Action Plan forward.

Action plan for eEurope
To attain the objectives of eEurope, the action plan for the project contains very
precise measures in a relatively short period. The plan has clearly delineated
established rules and timelimits.

There are primarily three different methods that will be used to attain the
objectives:
• accelerating legislation
• funding for the building up of infrastructure and services
• open method of co-ordination and benchmarking

The objectives of eEurope
There are eleven action lines in the eEurope Action Plan. These can be sum-
marized in three main objectives:
1. A cheaper, faster, secure Internet.
2. Investing in people and skills.
3. Stimulate the use of the Internet.

The following is a brief presentation of the eleven action lines and examples of
actions for how they are to be attained.

1. Cheaper and faster Internet access
Internet access tarifs should be reduced by strengthening competition and
benchmarking. The directives for the new framework for electronic com-
munications and associated services should be adopted. It is important to
work towards introducing greater competition in local access networks and
unbundling of the local loop (free access to access nets). All regions are to
have good access to modern communication networks.

2. Faster Internet for researchers and students

High-speed networks open new doors for educational and research co-ope-ration. New ways of using IT are often developed in the academic world and form the base for commercial applications. The Commission has alrea-dy invested in upgrading the trans-European netwok capacity, but the net-works between research institutions around Europe still need to be impro-ved, expanded and made faster.

3. Secure networks and smart cards

To attain the objective of an information society for all, it is important that everyone has confidence in using IT. To enhance security, eEurope will pro-mote the development of solutions for Internet security and co-operation in the fight against "cyber crime". The use of smart cards and other solutions for security is also to be encouraged.

4. European youth into the digital age

All students are to be given the opportunity of becoming "digitally compe-tent". This means developing the skills needed to live and work in the infor-mation society. Teachers need to be trained and school curricula adapted. Access to the Internet and multimedia resources should be given for both teachers and students.

5. Working in the knowledge-based economy

No groups should be excluded from the information society, because they lack training or access to computers and the Internet. Everyone should have the opportunity to become digitally literate through lifelong learning. There must be more spaces in educational institutions and possibility for training in the workplace. Teleworking and part-time work should be encouraged as options. Internet-access should be available in public places.

6. Participation for all in the knowledge-based economy

Public information and services are increasingly available on the Internet. Everyone should be able to access this via IT. This also means that technology and services must be adapted to persons with special needs, such as disabiliti-es or advanced age. The Member States of the EU will cooperate and share their experiences. Design-for-all standards will be developed and legislation reviewed to ensure that citizens with disabilities can access information.

7. Accelerating electronic commerce

Electronic commerce is efficient and often reduces the costs. It is therefore important that all types of businesses, even small and medium-sized, are

included in the development. Security must be improved so that more private individuals will benifit from the advatanges of electronic commerce. This can be done through legislation on copyright, distance marketing of financial services, electronic money and jurisdiction. In addition, there will be electronic marketplaces for public procurements, and there are measures to boost consumer confidence and encourage Small and medium sized enterprises to go digital.

8. *Government online: electronic access to public services*
Public authorities of the EU countries will use the Internet in many different ways in the future. Organisations will change and services will develop, and this will increase efficiency and openness, and reduce costs. Individuals will have easier access to important information, and the communication between them and the governmental authorities will be improved. The EU Commission will also make better use of IT than it does today.

9. *Health and medical care on line*
Health care is expensive and difficult to administer in many EU countries. This can be improved through IT. For example an infrastructure will be created to connect primary and secondary healthcare providers. A set of quality criteria for health related websites should also be formulated. Information, and health and medical care, will be accessible to all. Many of these changes will require new legislation, and enhanced security so that patients have confidence in the technological solutions.

10. *European digital content for global networks*
The European content industry is growing rapidly. Europe has a good foundation to build upon through its different cultures and languages. The EU countries will coordinate their digitalisation of content. A programme will be launched to stimulate development and use of European digital content. IT can be used to create new content, digitalize material, develop new services, and ensure that material is stored and is available for a long time.

11. *Intelligent transport systems*
There are a number of problems in the transport sector in Europe, including congestion and insufficient safety. Intelligent systems can reduce bottlenecks and pollution. The use of safety systems can reduce the number of accidents. The Action Plan for eEurope includes the establishment of a "single European sky", a common system of location information for emergency services (via 112), plans for use of intelligent transport systems for road transport and further development of the Galileo infrastructure.

REGERINGSKANSLIET

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