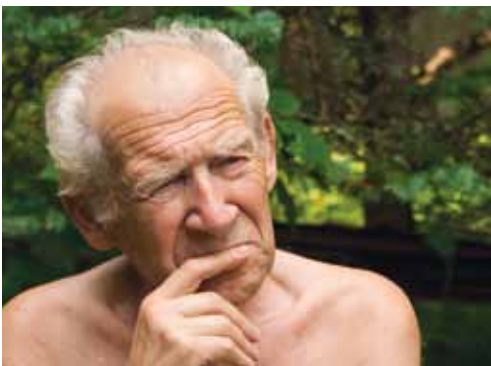


Productive and inventive Finland



Digital Agenda for 2011–2020





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Digital Agenda for 2011–2020

First edition

Published by Ubiquitous Information Society Advisory Board, Ministry of Transport and Communications

Sales viestintapalvelut@ivm.fi

Photos Digita (Pentti Hokkanen/Flaming Star), YLE photo archive and Shutterstock

Design and layout Euro RSCG Helsinki

Printed by Juvenes Print Tampereen yliopistopaino Oy, Vantaa 2011

ISBN 978-952-243-197-4 (hard copy), **ISBN** 978-952-243-198-1 (online publication)

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Preface



The Digital Agenda for Finland 2011–2020 is geared to promoting growth and productivity throughout society. Digitisation has advanced at a remarkable pace in all areas of life, from the workplace and education to service use and leisure activities. Services are now spreading to interactive platforms, monitors and touch screens, making them accessible wherever and whenever they are needed. The magnitude of the productivity leap will depend on how these new practices are taken up by individuals and businesses. The key is that services are easy to use.

Improving productivity in public and private services depends crucially on the use of information and communication technologies (ICT). Well-designed and implemented digital solutions help to improve service qual-

ity. Success will come to those businesses, authorities and communities that understand that clients do not need to have technological expertise. Usability is a particularly important consideration given the continuing ageing of the population and the new methods of health and welfare service delivery. Citizens must have at least basic skills in the use of ICT services, which requires that support and advice is readily available.

Lack of information is slowing the take-up of digital services to a greater extent than service availability. For instance, 100Mb connection speeds, energy consumption data transfers, e-service portals, public data interfaces and pressure sensors designed to detect falls in older people will only begin to attract wider use when people are made aware of their

benefits. There seems to be no shortage of ubiquitous innovations, and therefore the dissemination of positive examples and knowledge will assume increasing importance in the future. Steps are also needed to narrow the gap between regional differences in infrastructure.

In order to turn objectives into action, it is necessary for all stakeholders to produce a digital agenda covering their respective missions. This involves developing an architecture of activities that makes use of technology and that encourages service experts to create better practices and to improve organisational efficiency. This implies a new way of thinking about user-driven services and about productive and innovative ICT use in key activities.

The purpose of the strategy set out in this document is to foster and give direction to changes aimed at bringing prosperity to our society and well-being to its people. The members of the Advisory Board are convinced that this can be achieved through open collaboration, in which public administration, business, the third sector, and science and research work in concert with citizens to address problems and produce solutions that reflect the vision and objectives.

Helsinki, 25 November 2010
Ubiquitous Information Society Advisory Board

Introduction

Employment and growth can be fostered by making more efficient use of digital information in service and product development in different sectors of society. This, however, requires fundamental changes to the way that organisations work. Apart from improving productivity, the promotion of new ICT solutions and the adoption of new practices will make possible a higher standard of services.

By taking on board these new practices and by launching national priority projects, Finland can respond to the **challenges** of productivity, population ageing, sustainable development and international competition.

In today's fast-changing world, certain **pre-conditions** must be in place to meet these far-ranging socio-economic challenges, including the development of information use, user-driven services, competencies and management in all areas of society. This must be a collaborative effort based on a new set of premises.

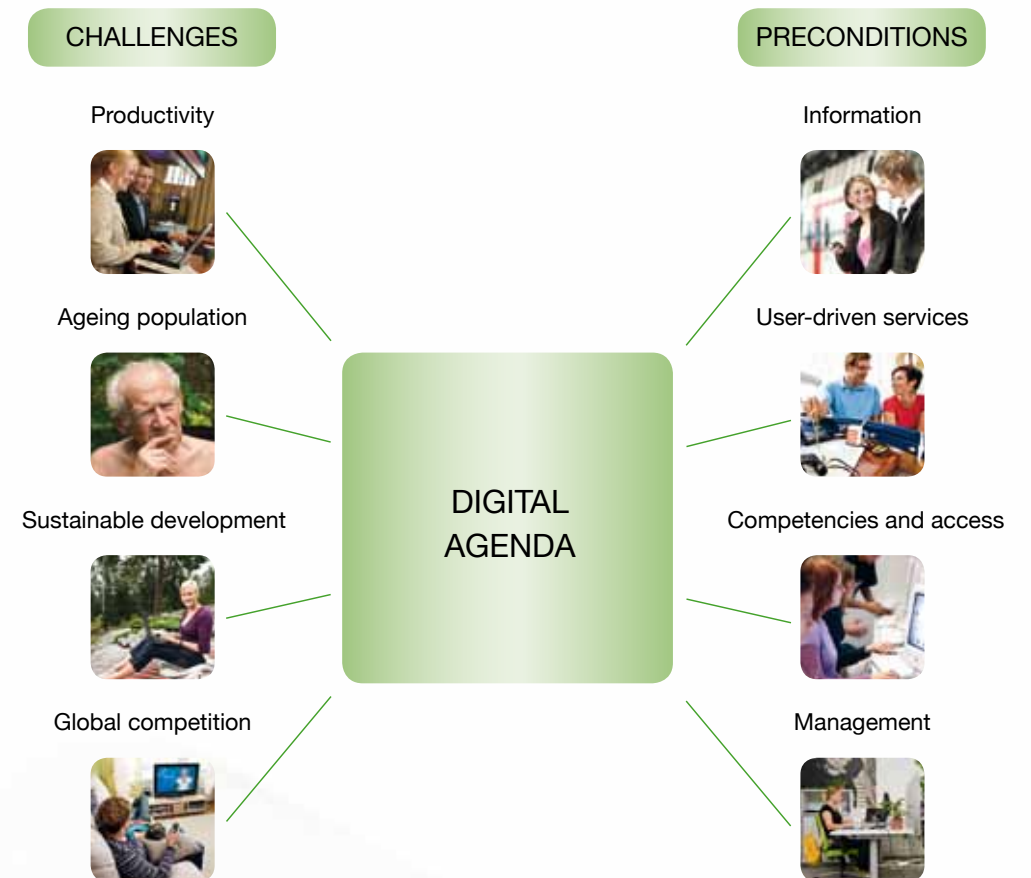
Advances in ICT are changing economic structures and social systems at an accelerating rate. Finland has some crucial advantages on its side, including the agility that comes with small size, a high level of social trust, high levels of skills and competencies and a robust ICT infrastructure, all of which must be put to good use.

This document describes the core strategic objectives set for the development of the information society as based on interactive consultations among experts and dialogue

with citizens. In addition it sets out the means for achieving those objectives.

Transition to the information society requires a commitment to change and adopt new networking practices. The Digital Agenda is in line with the National Innovation Strategy adopted by the Finnish Government and with the EU Digital Strategy. It also details the steps and actions required to update the National Information Society Strategy 2007–2015. The Agenda encourages different sectors to formulate digital strategies that capitalise on existing ICT opportunities within their respective fields. The actions outlined in the Agenda must be more closely targeted by means of an action plan once decisions have been made on organisation in the new government term.

With the continuing advances in technology and the rise in skill levels, users are now better placed than before to contribute to the design and use of new services. People are acting together and participating in the social fabric in new ways. The necessary conditions must be created for this participation. Besides the public and private sector, the third sector is playing an increasingly important role in the information society. Public administration, business and industry, the third sector, science and research and individual citizens must work closely together in a transparent partnership to reform production and other practices, giving due regard to basic civil and human rights.



Vision for 2020

The use, production and development of digital data, contents and services is an integral part of our daily lives. Fast communication networks have helped to create a better balance between work, education, family life and leisure activities.

The positive impacts of ICT on productivity and quality have made possible the continued existence and development of the welfare society. Drawing on the Finnish culture of collective agreements and flexibility for change, public administration, business and industry and the third sector are putting the strengths of digital Finland to the best possible use to further common interests. This is a concerted effort to search out best practices based on people's and society's needs rather than on existing instruments, administrative structures or technologies.

Public administration, business and industry, science and research and the third sector have mounted an effective response to the challenges associated with population ageing, dwindling labour resources and the sustainability of public finances.

Digital services are designed with a view to usability, flexibility, safety and accessibility. Service quality is measured in terms of impact and user experiences. People feel that services are making their daily life easier. Services are universally accessible to all.

In the information society public administration has the role of a facilitator that consistently promotes open and transparent practices and the effective use of information. People trust in the information infrastructure, and mechanisms are in place to ensure an appropriate level of privacy protection. Adequate arrangements and provision have been made for national and international threats to information security, and information networks continue to function in the event of disruption or failure, too.

Information is exchanged and refined across sectors, administrative boundaries and hierarchies. The public and private sectors work closely together and in developing services make good use of new business opportunities.

Information that the public sector collects, produces and holds is easy to access and use. People can readily get hold of information about themselves. They have ownership of that information, which they can carry with them and use as they see fit. Everyone understands their own responsibility as producers, users and distributors of their personal information. Secure handling of information is a matter of course in our everyday lives.

Finland has contributed to creating and thereafter benefited from a European Digital Single Market by taking a pioneering role in the

digitisation of administrative processes and services, the introduction of SEPA payments, the harmonisation and reform of copyright and other legislation related to digitalisation as well as in standardisation.

National content production is of a high quality, and the contents enrich people's lives. New business concepts have been developed that are suited to the digital environment, and they further promote content use.

Digital services and contents are also treated equally in relation to other forms in terms of taxes.

ICT is used in a number of ways to support and facilitate learning. Fast network connections, digital materials that support learning and online services are widely available to citizens, promoting lifelong learning.

Support and advice in the use of ICT for e-services and communication is readily available, particularly for older people.

Finland has continued on its success trajectory by making the digital service market a new pillar for competitiveness, growth and welfare. Finland has taken a leading role in developing and delivering digital services, including services based on public and open data, commercial customer and social media services, and infrastructure services. Open collaboration in processing and refining information creates new innovations and new business opportunities.

Traditional production processes and practices have also been developed and realigned. The focus of production is continuing to shift from products to services, which both offers greater value added for customers and at the same time supports sustainable development.

ICT is effectively harnessed for the needs of sustainable development and combating climate change, areas in which R&D input has yielded good results. Smart technology is steering transport, housing and other infrastructure and processes in society in an ecological and sustainable direction. The use of services provided at a distance has increased in both the public and business sector, which also benefits the environment.

Funding has been made available not only for technological but other lines of research in the field of digitalisation. This promotes the development of growth businesses and facilitates evaluations of the state of the information society, i.e. socio-economic change.

Scientists and researchers in Finland make extensive use of the infrastructure and services created for e-research. Science and research is world class and well networked, which contributes to generating welfare and new innovations.

All background material for decision-making in public administration is readily available and comparable in easy to understand format. Social media are an integral part of interaction and communication. The general public are in the position to contribute to policy formulation and decision-making through digital networks and services.

Legislation supports the creation of strong and well-functioning digital service markets. Responsibility for the provision of services required by legislation is shared between the public authorities, business and industry, and the third sector. Intelligent and flexible use of national strengths also helps to bolster our country's systemic competitiveness.

Productivity leap in services

**Objective:
Digitise services to improve overall productivity**

The administrative burden on businesses and public administration needs to be reduced by adopting new digital practices. To support and consolidate the use of digital services, it is necessary to introduce incentives, obligations and standards, which will also improve service compatibility.

Changes are required in the way that information and communications systems are developed in order to guarantee open competition and a diverse range of services along with reasonable prices and better quality. The aim is to establish an overall structure that is based on documented and open interfaces, and that is flexible in terms of technologies and service providers.

IT solutions can help dispense with various routines, eliminate overlap and support effective and efficient information use.

The automation of financial management processes and the adoption of new organisational practices can help reduce administrative costs by as much as one-half and allow organisations to focus resources on core tasks. Online billing will provide the basis for automated and real-time book-keeping, taxation, financing and financial management processes. Steps are needed to promote standards (e.g. common reporting scheme) with a view to facilitating and expediting information processing. Not only central government but also local governments and businesses must set target deadlines for discontinuing paper-based and other non-structured billing. SMEs will need support and advice in the changeover to automated data processing.

Assessments must always be conducted of the relevance of any given process before the service is digitised. All new and updated processes must be transparent and as simple as possible both with respect to customer service and the necessary back office work. The process must always start from the needs of customers and end-users, choosing the most appropriate tools and solutions to fit those needs rather than the other way round.

At the same time, there is more variation in service channels. One aspect – raised at the municipal level in particular – is the need to ensure that the back office functions and systems supporting basic services are running in accordance with best practices. Process productivity can also be enhanced just by developing back office processes, even if the service appears to the customer as entirely traditional.

Users must be given the opportunity to pool their everyday transaction needs (e.g. tax, insurance, housing, banking and social services) into an appropriate e-service environment familiar to them. In the same way, relevant data materials (e.g. register data, documents, notifications, certificates, bills, decisions) must be accessible to users.

Digital transaction services require various support systems for such purposes as user identification, consent handling, agreement management and contactability information. In particular, steps are needed to develop the e-service infrastructures of public administration, operators, intermediaries and banking institutions so that developers of new services can produce applications based on existing practices. A contactability information service updated by users themselves must be created for businesses and individuals to facilitate the use of e-services. These services shall include easy to use identification solutions that can be applied across different electronic environments.

Cloud computing shall be considered as a possible model for the organisation of information and services. This would give fast and flexible access to applications and services. Also, this may allow the IT system infrastructure to be developed into structures based on open standards, which will improve interoperability among organisations.

Technology and edit locks preventing the development of IT systems shall be removed by supporting open interfaces and standards. System procurement processes must allow latitude for innovation: price must not be the single most determining factor.

Necessary actions:

1 Define and coordinate digitalisation projects that yield the greatest productivity benefits over the process lifetime based on thorough impact assessment.

2 Give individuals and businesses the opportunity, on an easy to use digital platform (desktop or homepage solution supporting the citizen service platform), to services and information that fit their needs and personal preferences.

3 Define and ensure that existing, nationally important e-infrastructures are available for new digital service development. Incorporate payment and billing services as widely as possible as part of digital services and processes.

4 Introduce easy to use, appropriate and technology-neutral tools of e-identification.

5 Promote automatic administrative and financial processes by incentives and where necessary by obligations and transparent pricing. Encourage all to use open standards that support interoperability (e.g. common reporting scheme).

6 Support SMEs and other companies to switch over to digital practices through local development projects, consultancy support (e.g. service vouchers), communication and information sharing.

7 Develop generic services for contactability information that businesses, individuals and authorities need in e-services or message handling (e.g. e-mail, e-invoicing and video address).

8 Encourage and build on good practices in innovative procurements and in the use of flexible software development methods. Take advantage of open source in open innovation processes.



Seeing the ageing population as a resource



Objective: Secure and develop the position of seniors as active citizens

Population ageing requires the development and delivery of efficient and high-quality health and welfare services. At the same time it is necessary to address the growing demands of service availability and productivity. This will require the application of digital practices to upgrade and reform processes, procedures and services. It is necessary to ensure that senior citizens have the skills they need to cope in an increasingly technical environment.

One-third or 33% of the Finnish population aged 65 or over use the Internet, compared to a figure of 82% in the total population. Projections are that by 2020, the age group 65 or over will account for one-quarter of the Finnish population, which means there is a very real risk that this growing population group will be excluded from the information society. Many older people do not feel comfortable using modern technology, or do not consider it important in their everyday lives.

Equal participation in society and contact with other people increasingly require the use of technological services. Older people should know how to use the Internet and ICT services so that they can handle daily errands

online, study and engage in leisure activities, look after their health and safety at home and keep in touch with friends and family. Learning new skills reduces the risk of marginalisation and gives a greater sense of independence. To increase their activity, senior citizens must be motivated to get to know and learn how to use ICT.

One useful ICT learning avenue for older people and others with special needs is provided by the peer-to-peer learning model. There are various voluntary and local groups nowadays that provide guidance and direction for older people in the use of ICT devices and services, either at community halls and other public venues or through home visits. Older people

are not just recipients of voluntary services, but increasingly involved in providing those services. The continuity of these good practices must be secured because the maintenance and organisation of voluntary activities requires resources. A unified concept based on common practices would give greater consistency and unity to the field and facilitate effective learning across the country.

Digital practices can help to relieve some of the pressure under which the public service system is currently working. Improved usability of digital services and a high level of associated skills facilitate the development of new practices. It is necessary to take measures to automate information management, such as data recording and transfer between social and health care services, so that professionals can focus on care provision and the risk of mistakes can be reduced. Design and planning of user-friendly digital services in health care must also take account of the needs of multilingual staff and users.

Ensuring well-being requires the delivery of care services that rely on technology, but service development is also necessary to tap into the experiences of seniors themselves: this is crucial in developing the tools and

skills that are needed for an active life. The development of services for seniors is based on usability and accessibility.

Smart, user-driven and cost-effective solutions (e.g. remote health care services, pressure sensors and smart boards at residential homes) need to be promoted in order to facilitate seniors' daily lives. Adequate guidance and technical support services must be made available, giving due consideration to older people's special needs. In the future, with more and more health and welfare services delivered in people's homes, it should be possible for seniors to continue to live independently in their homes longer.

Welfare solutions designed to support successful ageing shall be built into special areas of strength that we as a nation have. In order to open new export opportunities it is important to continue to develop new concepts and ideas to bring digital solutions intended for older people into commercial production.

Necessary actions:

1 Search for innovative solutions to the challenges of an ageing society through themed competitions and targeted calls. Support entrepreneurship and develop markets based on the results and networks of existing programmes (e.g. Tekes). Create incentives to disseminate information about successful experiments, to achieve economies of scale, and to make information available both nationally and internationally.

2 Charge a particular body, network or programme with responsibility to search for applications where technology can offer the greatest benefits in responding to the challenges of ageing, for instance in self-health care. Make sure that best practice information on these applications is readily available.

3 Provide support and advice to seniors. Strengthen practical research (e.g. show rooms and usability laboratories).

4 Make effective use of the network of public services (libraries, post offices, one stop service points, schools) as well as civic and voluntary organisations in the provision of ICT help services for seniors. Allocate necessary resources to small-scale projects. Launch a broadly-based collaborative "Long live connection: turn on the computer" programme to encourage computer use among senior citizens and develop this into a nationwide concept.

5 Package experiences and best practices from the domestic market into service concepts and social innovations for the international marketplace (e.g. "retirement packages").

6 Develop e-authorisation so that senior citizens can safely authorise their children or other carers to manage their e-transactions with the authorities and other service providers, such as banks.

A world leader in sustainable development

Objective:
A digital environment supports ecological and sustainable choices

One important way to promote sustainable development is through a change in consumption habits. ICT can help improve the transparency of choices and provide information about the impacts of those choices. Distance communication and other new technological practices can significantly reduce the adverse environmental impacts of everyday activities and service delivery.

ICT can deliver improved efficiency in many different tasks and processes. More can be achieved with less material, less transport and less travel. At the same time ICT can help dispense with old and inefficient ways of doing things and create new, innovative ones in their stead.

The transition to sustainable consumption requires a favourable climate of public opinion. This needs to be supported by providing information, tools and incentives that will help consumers make the right choices and monitor their impacts at both the individual and society level. Standardised methods are needed so that the environmental impacts of different communication technologies can be reliably measured.

Sustainable consumer behaviour requires that consumers are informed about the impacts of their purchasing decisions and that they are given immediate feedback on their use of products or services (e.g. energy consumption). Based on this information consumers can then make the choices they want based on their own values, which may serve to enhance economic or ecological efficiency or social justice. The feedback given to consumers about their choices will help them appreciate the consequences of their purchases and consumption, and in this way allow them to make sustainable choices. Those consumer choices will in turn encourage businesses to develop new information services and to offer them sustainable goods (e.g. smart electricity grids).

ICT-based environmental technology is a growing business opportunity. Given our high level of expertise and technology in this area, Finland is well placed to become a global market leader in specific niches.

In its international engagement and communication, Finland must take advantage of its strong brand in the field of sustainable development management. By taking a pioneering lead and actively contributing to the development of international standards, we are well placed to achieve a lead market position in the ICT-based business sector and in this way to strengthen our national competitiveness.

Framework conditions for business must also be improved by creating better financing mechanisms. By setting an example through public procurements, for instance, it is possible to generate demand for services that promote sustainable development. Smart technology solutions can pave the way to completely novel products, services and business concepts. Eco-efficient production requires a rethinking and reorganisation of both infrastructure and production processes.

People's awareness and attitudes can also be influenced by education and by creating incentives and reward systems to promote sustainable, ecological and ethical ways of life. Here it is important that the public sector sets an example by making sustainable choices.

Necessary actions:

- 1** Create a flexible legislative framework that allows for the establishment in Finland of a lead market for ICT-based business that supports sustainable development.
- 2** Launch priority projects on the interface of the information, communication and environment sectors that have significant social and other impacts, and secure adequate resources for these projects.
- 3** Develop financing instruments for micro and SME innovation (e.g. innovation voucher, procurement voucher) and business incubator activities. Support measures and initiatives to attract international venture capital and develop public procurement procedures towards sustainability for instance by bringing life-cycle thinking into procurements and investment decisions.
- 4** Create models for cross-sectoral interaction and cooperation with a view to promoting and disseminating eco-efficient communication technology through good practices.

- 5** Lower existing levels of energy intensity by incorporating smart solutions in the information infrastructure and by integrating information networks. Upgrade network architecture, which will facilitate decentralised energy production and supply that is responsive to demand.
- 6** Emphasise operational and energy efficiency in building construction and in urban and regional planning (e.g. secondary use of space) to reduce the need for mobility (e.g. teleworking, e-conferencing).
- 7** Encourage manufacturers to produce and publish comparable data on the environmental impacts of products or services throughout their life-cycle. Promote the transparent presentation of costs for products and services.



Growth from the single market



**Objective:
Make Finland an
influential pioneer
in the digital
single market**

With the development of the EU single market and the digital service market, the Finnish economy is becoming ever more closely integrated into an open global economy. Finland has always benefited from the liberation of trade, and we now need to promote the EU digital strategy objective of creating a single market for digital serv-

ices, products and contents. A diverse range of content services will require a progressive harmonisation of copyright regulations, acknowledging at once the importance of content production and the position of both consumers and right holders.

The EU is lagging behind the United States both in the use of digital contents and services and in related research funding. There are various reasons for this, including the distribution of copyright holdings, ineffective multichannel distribution and development, incomplete harmonisation of regulation, the partial absence of standards and differences in operational culture. In a fast-changing digital environment the rapid and flexible deployment of copyrights is essential so that businesses can develop new services and contents for digital distribution channels.

In its EU policy Finland emphasises the importance of mobility and e-commerce in products, services and contents in the single market, which would benefit businesses, individuals and public administration. E-business in contents is a major driving force for employment in creative industries and for new business models within the industry. The

development of lines of communication and spectrum policy within the EU benefits creative industries, too, in that the development of digital services and contents that require high data transfer capacity ultimately depend upon fast connections.

Transborder services and electronic practices reinforce the single market. Finland can contribute to this through its competence in harmonisation, regulation and standardisation and through the implementation of EU-wide solutions.

The requirements of the digital age and the global regulation environment must be reflected in all EU legislation. This legislation must not hinder the adoption of new technologies. To simplify and streamline regulation, it is necessary to identify those solutions that are most relevant to the development of the digital market.

Necessary actions:

1 Emphasise the global perspective in information society planning processes. Business and the public sector shall pool their resources to identify key strengths and prioritise areas of development. Increase collaboration among national stakeholders.

2 Attempt as a matter of policy to influence the decisions within the single digital market (e.g. regulation and standardisation of financial management, copyright regulation, consumer rights, spectrum policy).

3 Launch a project to reform copyright regulation in the field of electronic communications.

4 Identify key transborder services where Finland can generate added value and that can be used in developing services.

5 Step up participation in EU-level research and development projects by accumulating competencies (e.g. search for partners, incentive resources, national coordination). Set measurable targets for participation.

6 Attract foreign innovators (e.g. businesses, researchers, private investors) into Finland by providing a well-functioning digital service market and a good development (e.g. spectrum frequencies, copyrights) and competence environment (e.g. centres of expertise in selected areas of research and education) and by developing other incentives that add to Finland's appeal (e.g. effective regulation).

7 Develop domestic projects (e.g. the eServices and eDemocracy Acceleration Programme) to reflect European or global perspectives and opportunities while seeking to assume a pilot role within the EU.

Information in productive use

Objective: Information resources are freely and readily accessible to all

One of the key success factors for society is the ability to exploit the full value and potential of public sector information. The strategic objective must be openness, accessibility and the possibility to easily utilise that information with a view to ensuring its high quality and continued availability.

This objective requires a joint commitment by all sectors of society as well as measures to increase the digitisation, openness, availability and use of information. Legislation or its guidelines and resources must be reformed with a view to facilitating new digital practices that are based on the use of public information resources.

Efforts are needed to make better use of Finland's high-quality and extensive information resources. The main obstacles to this are the presence of strict regulations, silo-like administrative structures, the financing of operations by levying charges for information, and the cautious release of information by the authorities. Procedures and open practices need to be set up that support the productive use of information.

Bearing in mind the advances in technology, distribution channels and end-uses, steps are also needed to simplify copyrights with a view to enhancing the availability and secondary use of contents. The copyright system must be balanced from the point of view of users, and at the same time protect the livelihood of copyright holders.

Public data that are produced with public money should be readily and easily available to all, without compromising privacy protection and safety.

Levying charges for accessing and using information must not be an obstacle to the use of information resources. On the other hand demands on data scope and the requirements of data provision and associated services should not be allowed in a way that prevents changes to the conditions on which public information is released. The question of covering production costs of public data must be resolved at the same time.

It is also important to support in every possible way the active involvement of individuals in the production of public information, too. Socially produced information is fast, flexible, inexpensive and inclusive.

Immediate action is needed to open up information by making use of existing standards and by conducting pilots. This will make visible new business opportunities, which will motivate new players to join in. Experiences gained from pilot projects will also help develop measures that promote the use of public data.

The creation of a national information infrastructure based on efficient and innovative information use is also a key to the development of new needs-driven services. The aim is that in the future the quality and economy of services can be improved by making effective use of information embedded in different systems. Privacy protection is important, and challenges that a high-level of privacy protection present to the use of information can be addressed by anonymising the source of information, for example.

At the same time citizens and businesses must have better opportunities to examine and make use of their personal information.

The aim is to increase people's participation and opportunities to exert influence, in which openness and ease of access to information at different stages of social decision-making are also crucial factors. The use of online sources in policy preparation is conducive to better consultation with the public and improves people's opportunities, regardless of their background, to contribute to the production and dissemination of information and to the development of society.

Necessary actions:

- 1** Develop society's information infrastructure (including information security, data protection, copyright) and information model (shared concepts and architectures) with a view to improving information utility. Streamline national information management and the organisation of information production. Immediately compile metadata standards for public information resources.
- 2** Revise legislation in order to promote the use of open information and digital contents, with due consideration to the rights of individuals and right holders. Provide the authorities with advice and guidance to increase the use of information and contents (e.g. steering systems and practices).
- 3** Ensure access to personal data contained in public and private information resources and make them available for personal use.
- 4** Remove obstacles to information use so that information produced with public funding is easy to find, and is available for

use primarily free of charge in a standardised, machine-readable format via an open programming interface (API). Avoid collection and storage of overlapping information.

5 Oblige the authorities that collect and administer information resources to describe and, where necessary, to first define their key information resources and rights of use. Reward the authorities that have to do the most to promote the use of their information resources.

6 Assign responsibility for ensuring the functioning of APIs and standards as well as for supporting information system providers and buyers to follow practices of openness.

7 Allocate funding to practices and communities that develop and promote the use and integration of data. Facilitate the participation of the research community and businesses in a collective effort to create a semantic network that combines and integrates information resources.



Service needs are best known by users



**Objective:
Digital services
are designed
collectively**

People themselves are the best experts on their everyday life. The improvement and development of services should be firmly grounded in everyday needs in a way that reflects people's changing life situations and service expectations.

Future business models and the service system will be driven by

user needs and participation. In service development, we should place increasing focus on usability and testing. Users should be involved from the very outset in the development process in which ICT is embedded and used in various service channels. Services shall be provided in different languages to the extent deemed necessary.

Skills and education levels are rising all the time. People are used to working together and acting collectively, but they expect to receive individual service. Ever-growing demands are being placed upon electronic services. In order to satisfy those demands, users must be involved more closely in service development. Successful service design must start from an understanding of consumers' everyday life. Online services, too, have to be brought to where the people are. Social media are thus an important complement and addition to service portals online.

The traditional culture of paper forms must be discarded in favour of services that are better attuned to people's everyday life and that better reflect people's current life situation and service expectations. A priority objective in service development should be to identify the types of transactions and services where self-service can be replaced by anticipatory services, with customers being offered tailored services based on their current life situation. This will allow for the adjustment and development of service delivery according to people's needs. People also use services in different places and while they are on the move, and therefore services must be made available everywhere and anytime. For instance, health care systems must support people's mobility so that patient data are flexibly available irrespective of the service point.

User segmentation is important in the public sector because reaching different user groups requires different practices and means of communication. The message, too, has to be different for different groups. The inclusion of children and young people is particularly important to ensure that the message gets across and that services are taken up. For instance, if teenagers are targeted for a particular service, then they should also be involved in designing the service and its content.

The recognition of user needs from the earliest planning stages also serves to promote equality. Following the Design for All principle throughout the planning and production process will allow for cost-effective service delivery to all users. User panels can be used to identify different user needs and habits, which will provide important clues for the development of better services.

Designing for usability and accessibility in digital services will increase equality among service users and strengthen demand for services, and thereby create new markets and growth.

Public administration has a central role to play in creating a well-functioning digital market. Public administration serves both as a legislator and regulator in the organisation and implementation of basic services.

Necessary actions:

1 Launch service design projects involving both the public and private sector, emphasising the anticipatory perspective and customer involvement in the service process.

2 Duplicate service ideas and take advantage of service providers' knowledge of customer needs and service demands (e.g. e-service plans in the public sector). Allow the supply to be steered by the existing choices and user experiences that are already familiar to users.

3 Take advantage of the know-how of leadership industries (e.g. gaming industry and user interface design) and language technology in designing meaningful and creative new services and applications. Set productivity and impact targets for priority projects and define follow-up measures for services (e.g. processing and response times).

4 Direct public administration to involve citizens – and children and young people in particular – and organisations in service development for instance through social media and consumer panels and by going out amongst the public to gain a better understanding of the everyday life. Invest in marketing the services.

5 Describe the needs of different user groups and take those needs as a vantage-point for service design. Address different user groups individually in service projects.

6 Direct authorities to create open interfaces in their e-service processes to enable further development of services and user interfaces on this basis.

7 Incorporate accessibility and usability considerations in all legislation on the information society and set them as requirements that cut across all service development. All public procurements shall be based on the criterion of usability.

8 Ensure the usability of public online services by means of user panels consisting of special needs groups and by stressing the importance of plain language.

9 Support (e.g. Tekes) usability and accessibility research as well as new innovations produced in businesses. Put the most innovative services and models into practice more widely.

Improving skills and access

Objective:
Everyone has the opportunity and skills to use digital services

All individuals shall have equal opportunities to take part in the dissemination of information in society and to use digital services. Fast broadband connections across the country set the basis for accessibility. It is necessary to ensure that these connections are available at schools and public service points, in particular. Education, research and learning environments must be developed.

Skills and competencies constitute the basis for our international competitiveness, and therefore the reform of learning processes can also open up new global business opportunities.

Internet penetration has reached 82% in Finland, but even so large numbers of people still remain excluded from the information society. For instance, two-thirds of people aged 65 or over and one-third of people with primary or less schooling have not used the Internet. All people must have the opportunity to improve their skills in accordance with the principle of lifelong learning.

IT skills, communication skills, media literacy and the use of social media constitute the foundation for the skills that are needed to use digital services. It is equally important that people know how to protect their privacy.

A well-functioning information society requires that mechanisms are in place to guarantee the safety of its services and an appropriate level of privacy protection. The production of digital contents and services therefore requires collective responsibility. All stakeholders share a responsibility for the safety of the digital environment and the usability of services.

ICT use should be an integral part of education from the earliest age. Apart from good connections and equipment, this requires above all appropriate contents and a change in the whole culture of education. Learning happens in all environments. Distance learning shall be further developed so that schools can offer a wider range of subjects.

All individuals shall have equal rights to learning, individual learning paths and the use of up-to-date ICT devices. Lifelong learning requires that learning environments and methods are continually developed and deployed.

Well-designed digital services and learning materials (e.g. games and simulations) can help to stimulate learning motivation. Elec-

tronic services and materials could also be used in teaching and learning designed to support the integration of immigrants.

Sales of e-learning materials attract 23% VAT. The corresponding tax rate for textbooks is 9%. As far as taxes are concerned, digitally produced learning materials should be put on the same footing with paper production.

The wide range of service users and user situations poses complex challenges to online service design and delivery. Services must be readily available to different groups of users regardless of their skills, limitations and place of residence. Availability, ease of use, data security and accessibility are an integral part of high-quality online services.

One important aspect of service production and delivery is to make sure users are aware of the existence of services. It is also important that everyone who is willing to contribute to content production can do so. Furthermore, it is necessary to ensure the availability of assistance to support the use of e-services.

Social networking contributes to strengthening the dialogue between the public and private sector and civil society as well as to diversity in social development. Materials related to decision-making processes shall be available to citizens and decision-makers in readily comparable and understandable format.

Fast and efficient broadband connections and Internet access regardless of location promote the use of digital services.

The target set for the National Broadband Strategy is that by the end of 2015, almost all permanent residences and places of business and public administration have access,

within a range of two kilometres, to at least 100 Mbit/s connections. For the practical implementation of this strategy, additional provisions are needed to ensure that the owner's responsibility for the final two kilometres or local geographical conditions do not become a disproportionate disincentive. Broadband solutions must make sensible and optimum use of existing technologies for both fixed and wireless connections. Furthermore, sepa-

rate measures are needed to ensure connections to schools, libraries and one-stop public service points.

In academic research the information society has not received the attention it warrants. Besides technological research, more work is needed in the fields of legal, commercial, social scientific and behavioural research.



Necessary actions:

1 Incorporate ICT use as an integral part of learning at school as well as basic and supplementary teacher training. Incorporate the civic and media skills needed in the information society as an integral part of the Finnish education system.

2 Put into practice the results of the joint public and business sector project on ICT in Schools and launch measures for information society development in education.

3 Scale up investment in applied ICT know-how and give it a more prominent place in curriculum design throughout tertiary education.

4 Give all individuals equal opportunities to use e-services. This shall be ensured by providing training and free access to terminals at public service points. Provide assistance and practical advice on ICT use to people throughout the country.

5 Take separate measures to ensure that fast broadband connections are available in educational institutions, libraries and at public service points.

6 Encourage and obligate decision-makers and officials to create opportunities for process and social innovations through taking active part in dialogue with citizens. Redefine job descriptions and encourage individual initiative and experimentation in the social media.

7 Incentivise people to participate in decision-making in society and support the development of social online services or environments.

8 Allocate resources to universities and the Academy of Finland for basic and applied research into the service and knowledge economy, ICT and other lines of work promoting the development of the digital society. Coordinate projects to strengthen the input of Tekes and Academy of Finland programmes and to promote the international actions of Centres of Science, Technology and Innovation (ICT SHOK).

9 Bring VAT rates for e-learning materials in line with those for printed materials in order to promote the wide-scale production and use of digital learning materials.

Reforming management and coordination

**Objective:
From silo management to interactive cooperation**

Information management is becoming ever more important with the advance of digitisation. It is crucial that operational efficiency is improved through better coordination of organisational, technical and economic entities and by challenging existing practices. It is necessary for all to pursue a common vision with a view to increasing productivity and quality by reforming current practices.

To achieve the objectives that have been set here, it is necessary that the various sectors have a common perception of priority areas of development, even though their roles and functions differ. Cooperation is effective if there is a clear division of responsibilities and tasks, but actions and processes are well coordinated. Common processes and innovative procurement practices make it easier to identify and plan suitable IT solutions, for example. The organisation's operations are not dictated by technology to the same extent if it has an open development environment and a staff that supports this openness.

The transition to an open and networked culture requires that traditional administrative thinking is discarded in favour of open interaction and cooperation. For example, public administration must involve and consult all stakeholders so that the impacts of decisions taken are understood and so that there is a real commitment to change. Development actions must always be followed through into practice.

Management must now recognise that the best way to meet the challenges from socio-economic structural change is to take advantage of digital technologies. This must be supported by means of legislation. In order for change and reform to be possible, it is imperative that key decision-makers and stakeholders have a better understanding of the digital economy.

A commitment to overall solutions requires joint reform projects and the definition of operational needs at the level of society as a whole. Project management must insist on the achievement of practical impacts and on following through implementation instead of long drawn out programme planning. New

management calls for a radical push to customer orientation and to introducing new practices both at the level of strategic coordination and operations.

Organisations must adopt an open process of innovation as part of their mission with a view to identifying and coordinating new innovations. Steps are also needed to develop flexible funding and procurement instruments. Existing best practices shall be identified as the basis for standards and for further development in joint forums among businesses and the public sector. Project and pilot operations must be incorporated as part of the same drive towards a common objective.

The current administrative system is based on top-down mechanisms of control and a strong position of self-government. It is thought that silo-like government is preventing effective service development. It is crucial that central government, local government, the third sector and businesses search out new practices that cut across organisational boundaries so that they can move towards customer-driven service production and optimised costs.

Information society policy and its implementation require greater continuity. At the same time, needs for change must be responded to more quickly in this policy field. The management of digital development must be secured by radically changing the current system that is based on general coordination and sectoral responsibilities. We also need to improve strategic agility. These challenges mean flexible planning and prioritisation, a commitment to the jointly expressed vision and a transfer of resources in line with fast changing needs. The key is the ability to understand the bigger picture and to act accordingly.

All strategy work must pay close attention to the opportunities offered by ICT. Indeed every stakeholder in the public and private sector should create an ICT strategy to steer its own operation. Coupled with shared objectives and management of change, these strategies should also cut across sectoral service and information structures.

Necessary actions:

1 Create a cross-sectoral organisation for the management and coordination of the information society based on shared, user-oriented practices. Equipped with an adequate mandate and adequate resources, this organisation shall assume responsibility for delivering the objectives of the Digital Agenda.

2 Make all administrative sectors accountable for the implementation of the digital strategy in their respective fields and link them under a direct management structure at the highest administrative and political decision-making level.

3 Create a model for the development of public information management that includes the comprehensive analysis and construction of strategy, practices, governance and organisation.

4 Develop management of change as part of the public sector management systems, paying special attention to the

needs for grassroots involvement and the achievement of overall benefits at the social level. Launch a Knowledge Academy to promote collaboration and knowledge about the digital economy in public administration.

5 Ensure seamless cooperation between ICT strategies, the management system and selected priority projects. Put into practice and share results from priority projects.



ANNEX 1

Technological future

- The development of technologies is a value-based process that starts out from people's needs. In addition to this focus on user orientation, it is important to emphasise the connections of technological innovations with their commercial application and with the new services created.
- Ecological values are set to gain increasing importance in technology development. Green ICT creates eco-efficiency and potential for growth.
- Making changes to existing basic technologies and promoting and disseminating new technologies are slow processes. Steps are needed to strengthen the ability of individuals and organisations to identify appropriate solutions.
- Technologies create digital continuity, i.e. time and place are increasingly irrelevant. Mobile media will continue to gain in significance.
- Continuous, ongoing interaction with ever wider communities is set to increase. The use of social media will continue to grow.
- Information management will gain increasing importance. Search engines have information power.
- Increasing memory capacities and lower prices will contribute to the closer merging of the digital and physical worlds.
- Interface design will increase the usability of services and improve functions related to the use of audio(visual) information.
- Cloud computing will significantly change ICT production. Services are produced and contents retrieved online, with users hand-picking the services they need.
- As a result of service and information profiling the management of privacy protection and identity will gain increasing significance.
- Cognitive or smart technology will pave the way to modelling humans and the world and eventually to creating the digital self and other structures.

ANNEX 2

A new paradigm of user orientation

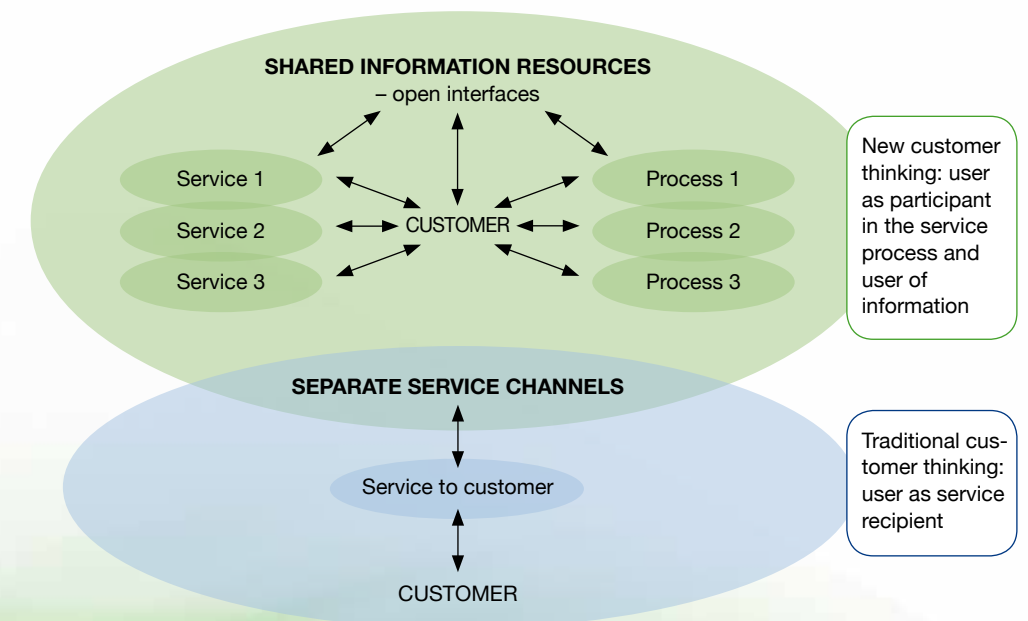
The new paradigm of user orientation does not regard people simply as passive recipients of services, but as being actively involved in creating and shaping those services.

Digital services in particular can be designed in such a way that the customer can make use of existing information resources and assume an independent role in producing services. Another important line of development is in systems that can anticipate user needs for certain services, such as day care services or getting a new passport.

It follows that the traditional definition of the service process must also be updated, as access to information will make certain parts of that process redundant.

Services provided at a distance and interactive virtual services coupled with physical services will also increase the flexible use of services, and services can be better designed to fit the customer's life situation.

Change in customer paradigm



ANNEX 3

Creating the Digital Agenda: the process as it unfolded

September 2006	National Information Society Strategy for 2007–2015 is published.
June 2007	Government appoints Ubiquitous Information Society Advisory Board to oversee implementation of the Information Society Strategy.
January 2009	Advisory Board draws attention to the need for new strategic directions and practices and for an extension of the current time perspective.
March 2009	Government issues a statement which says that the National Information Society Strategy shall be revised and updated by the end of 2010. The first Information Society Day is celebrated in Helsinki, with talks given on future directions in the development of the information society from the point of view of both the public and private sector.
April 2009	Preparatory strategy work includes a review of the corresponding strategies of other EU countries, the United States, Japan and Korea.
May 2009	The Advisory Board conducts preliminary debate on the drafting of a national strategy and decides to continue the process.
September 2009	The Advisory Board conducts a discussion on the objectives of the national Information Society Strategy. The Ministry of Transport and Communications launches an online interview on the key challenges and opportunities of information society and communications policy. The results are used in developing a framework for the strategy. The Minister for Communications, Ms Suvi Lindén gives a talk about the ongoing strategy work at the annual municipal fair.
October 2009	The Finnish Innovation Fund Sitra takes charge of the development of visions.
November 2009	Workshops get under way and identify key themes for the strategy: <ol style="list-style-type: none">1. Civic skills and the prevention of marginalisation2. Reforming the role of central government3. Development based on user needs for e-services4. Access to information as basic social infrastructure5. Ecological factors in service production and systems6. Development of innovations <p>A joint workshop is organised with Tekes to chart trends in technological development and to structure new ideas. Advisory Board reviews the advances made in strategy work and the results of the workshops.</p>
December 2009	The themes are published and opened for discussion and debate on the Advisory Board website, Facebook and otakantaa.fi, the Government's discussion forum. Work on the development of visions and the description of the next stage of the information society is continued in collaboration with Sitra.
January 2010	Themes are elaborated and grouped into four clusters in thematic workshops: <ol style="list-style-type: none">1. Role of information as basic social infrastructure2. User-driven electronic services and innovation3. Equal information society development: civic skills and prevention of marginalisation4. Sustainable development: ecologically, economically and socially balanced development.

	Horizontal themes: productivity, leadership, openness and trust. Strategy work introduced and discussed in Oulu and feedback obtained from local stakeholders.
February 2010	Advisory Board Secretariat discusses progress of strategy work and encourages ministries to contribute. It is stressed that the strategy should not be seen primarily as an administrative instrument, but rather as a contract and a set of guidelines for cooperation to which all can commit themselves. The Advisory Board receives an overview of the four thematic clusters and the preliminary objectives. Special emphasis is placed on productivity potential.
February 2010	Minister of Communications, Ms Suvi Lindén gives a talk on strategy work at the 2010 Communications Forum.
March 2010	Workshops formed around the four themes meet on two occasions to elaborate on the content of the strategy. Based on the results of the thematic workshops the objectives and means of the strategy are elaborated. Second National Information Society event held in Helsinki, where the general public are informed about the strategy. IBM joins forces with Sitra and MINTC to organise an event where students can contribute ideas related to the strategy and its themes.
April 2010	Writing teams appointed after the workshops get down to writing the strategy texts under their respective themes.
May 2010	The Advisory Board Secretariat revises the strategy text and discusses and deliberates its focuses. The Advisory Board agrees that the content of the strategy and its means and objectives shall be further elaborated and specified by public officials. Voluntary Advisory Board members form a sparring team to support this work.
June 2010	The sparring team meets to discuss and elaborate on the focuses of the strategy, including the challenges from demographic ageing and productivity. The text is further revised in a Ministry team in line with these focuses.
July 2010	Work is continued at the Ministry to structure and revise the text. The text is organised around the structure of challenges vs. necessary preconditions.
August 2010	Version 2.0 of the strategy is opened for public comment on the Advisory Board website, Facebook and otakantaa.fi, the Government's discussion forum.
September 2010	The Advisory Board approves the structure of the strategy and discusses themes and focuses to be identified as priority projects.
October 2010	The strategy text is finalised. The Digital Agenda is submitted to the Advisory Board and included as part of its report to Parliament.
November 2010	The Digital Agenda is submitted for discussion by a ministerial group for communications policy and subsequently submitted as a Government report to Parliament.
December 2010	The Digital Agenda is published in printed format. The project website describes the contents of the agenda and what it means in people's everyday life (www.arjentietoyhteiskunta.fi).

ANNEX 4

Advisory Board members

Chairman

Ms. Suvi Lindén, Minister for Communications, Ministry of Transport and Communications

Deputy Director-General

Ms. Taru Rastas, Ministerial Adviser (Kristiina Pietikäinen, leave of absence 1.9.2010-), Ministry of Transport and Communications

Vice Secretary-General

Mr. Markku Tuhkanen, Ministerial Adviser (Päivi Antikainen, leave of absence 1.1.2010-), Ministry of Transport and Communications

Members

Ms. Tuija Brax, Minister of Justice, Ministry of Justice
Deputy member Mr. Pekka Nurmi, Director-General

Mr. Tapani Tölli, Minister of Public Administration and Local Government, Ministry of Finance
Deputy member Mr. Juhani Turunen, Permanent Undersecretary of State

Ms. Paula Risikko, Minister of Health and Social Services, Ministry of Social Affairs and Health
Deputy member Mr. Vesa Rantahalvari, State Secretary

Mr. Stefan Wallin, Minister of Culture and Sport, Ministry of Education
Deputy member Mr. Marcus Rantala, State Secretary

Ms. Heljä Misukka, State Secretary, Ministry of Education
Deputy member Mr. Sakari Karjalainen, Director-General

Mr. Antti Pelttari, State Secretary, Ministry of the Interior
Deputy member Mr. Kaarlo Korvola, Head of Information Management

Ms. Riina Nevamäki, State Secretary, Ministry of Employment and the Economy
Deputy member Mr. Petri Peltonen, Director-General

Mr. Juhapekka Ristola, Director-General, Ministry of Transport and Communications
Deputy member Ms. Asta Virtaniemi, Director of Media and Communications Services Unit

Mr. Yrjö Benson, State IT Director, Ministry of Finance

Mr. Erkki Böös, Executive Vice President, OP Bank Group

Ms. Rauni Hagman, Director-General, National Board of Patents and Registration

Mr. Bo Harald, Head of Executive Advisers, TietoEnator Corporation

Mr. Antti Holmroos, Senior Government Adviser, IBM

Mr. Mika Koskinen, Business Manager, Fujitsu

Mr. Jorma Härkönen, Director, MTV Oy

Ms. Heli Jeskanen-Sundström, Director-General, Statistics Finland

Ms. Piia-Noora Kauppi, Managing Director, Federation of Finnish Financial Services

Mr. Timo Kietäväinen, Deputy Managing Director, Association of Finnish Local and Regional Authorities

Mr. Ossi Kuittinen, Director, Strategic Renewal, Finnish Innovation Fund Sitra

Ms. Mirjami Laitinen, Director-General, National Board of Taxes

Mr. Timo Laitinen, Director-General, State Treasury

Mr. Markku Markkula, Chairman of the Board, Finnish Information Society Development Centre Tietke

Mr. Veli-Matti Mattila, CEO, Elisa Group

Ms. Annika Nyberg-Frankenhaeuser, Director, Finnish Broadcasting Company YLE

Ms. Sirpa Ojala, Managing Director, Digita Oy

Mr. Erkki Ormala, Vice President, Nokia Corporation

Mr. Petri Parvinen, Professor, Helsinki School of Economics

Mr. Matti Pennanen, Mayor, City of Oulu

Mr. Matti Puhakka, Director, Social Insurance Institution of Finland KELA

Mr. Ari Rahkonen, Managing Director, Microsoft Oy

Mr. Jari Renko, CIO, Hospital District of Helsinki and Uusimaa

Mr. Aatto J. Repo, Adjunct Professor, Helsinki School of Economics

Mr. Veli-Pekka Saarnivaara, Director General, Finnish Funding Agency for Technology and Innovation Tekes

Mr. Karri Salminen, Director, Logica

Ms. Paula Salonen, Director, If Oy

Ms. Katri Sipilä, Managing Director, Finnish Composers' Copyright Society Teosto

Mr. Timo Soininen, Managing Director, Sulake Corporation Oy

Mr. Juhani Strömberg, Senior Vice President, Itella Corporation

Mr. Reijo Svento, Managing Director, Finnish Federation for Communications and Teleinformatics

Mr. Ville Tolvanen, Chairman of the Board, Darwin

Ms. Marja-Leena Tuomola, Director R&D, Sanoma News

Mr. Juha-Pekka Weckström, CEO, TeliaSonera Finland Corporation

Ms. Marita Wilska, Consumer Ombudsman, Consumer Agency

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www.arjentietoyhteiskunta.fi