

# 21 paths to a Frictionless Finland

Report of the ICT 2015 Working Group

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Report of the ICT2015 Working Group

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<b>Tiivistelmä   Referat   Abstract</b> <p>In April 2012, Minister of Economic Affairs Jyri Häkämies set up the ICT 2015 working group, chaired by Board Chairman Pekka Ala-Pietilä. The working group was tasked with preparing a strategy to alleviate the impacts of the sudden structural change experienced in the ICT industry, alongside reforming the information and communications technology industry and increasing its competitiveness. During its work, the group expanded its perspective and approach to cover broad-based application of ICT in all industries and within the public administration.</p> <p>The ICT 2015 group submitted its report to Minister of Economic Affairs Jan Vapaavuori and Minister of Labour Lauri Ihalainen on 17 January 2013. As illustrated in the report, the “21 paths to a Friction-free Finland” establish a roadmap for long-term efforts to make Finland a leader in information technology applications over the next 10 years. The report contains proposals for measures to be carried out in 2013. New measures will be decided on over the coming years, taking account of the results achieved and changes in the world.</p> <p>The working group makes the following crucial proposals for the initial stage:</p> <ol style="list-style-type: none"><li>1. Building a common national IT service architecture. Harnessing of this common architecture will enable easier creation of services across organisational boundaries.</li><li>2. A ten-year research, development and innovation programme, ICT 2023. This programme would bring together key actors in the sector, such as universities, research institutions, companies and funding agencies.</li><li>3. A new financing programme to ensure sufficient funds for start-ups and companies in the growth phase.</li></ol> <p>To ensure the rapid implementation of the working group’s proposals, on the day of the report’s submission the Prime Minister’s Office established an ICT expert group, chaired by State Secretary Olli-Pekka Heinonen-</p> <p>More than 250 experts working in various industries across Finland participated in the work of the ICT 2015 group. Several of the measures outlined in the report are based on suggestions obtained from these experts. Industry clusters and regional ecosystems will also play a key role in practical efforts to make Finland a leading country in information technology applications.</p> <p>Contact person within the Ministry of Employment and the Economy: Enterprise and innovation department/ Tapio Virkkunen, tel. +358 29 506 0077</p>	
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**Dear reader,**

Nine months can be either a short or a long time. It is a long time to wait for concrete action, but a short time in which to seek meaningful answers to the broad challenges set by the economic and technological revolution affecting the whole of our society. The ICT 2015 Working Group has now been at work for nine months. During this time, a great deal of base data and input has been required and received, thanks to the approximately 250 persons who have performed volunteer work to help us meet the challenge we faced.

On the other hand, nine months has seemed like a short time in which to gain an in-depth understanding of the vital actions required in 2013, if we are to maintain maximum momentum and impact. Certain measures, whose time will perhaps come later, were cut from the report. We may also have filtered out some measures that should have been included at this stage. The working group's vision of the issues that require action has been encapsulated in the 21 paths presented in this report.

However, this final report of our working group is but the opening salvo in terms of the action needed. It defines something that is more of a process than a project, a process in which the reins will be held by the Government's ICT Expert Group, which will expedite the measures in question and propose new ones. A body has been proposed to take charge of implementing such proposals in practice, ensuring that someone has ownership of the measures. The establishment of the expert group will be accompanied by a website for comments and new proposals. This will ensure a flexible and self-adjusting process that is capable of learning.

The working group has written its report in a manner that allows readers to gain an overall impression by reading the introductory Chapter 1, "Frictionless Finland as a Goal", and the results chapter, Chapter 7 or "21 Paths to a Frictionless Finland". Chapter 2 describes the current economic environment, as well as the challenges involved in achieving growth and the related opportunities. This chapter also describes the various 'gravitational factors' that encourage companies to invest in Finland. In chapters 3-6 we describe the measures proposed by the working group. These proposals consist of projects of varying scope. Achieving a turnaround to growth requires a multitude of acts, among which even small ones will be important.

We would like to extend our heartfelt thanks to everyone who volunteered to help us meet this remarkable challenge. The secretariat has been closely involved in the work, and the steering group set for the project made a vital contribution.

13 January 2013

PEKKA ALA-PIETILÄ  
*Chair of the ICT 2015 Working Group*

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## Finland in international comparison

- World's most innovative country (R.Florida)
- World's second-best operating environment for ICT companies (BSA)
- Fourth-best digital economy in the world (Economist Intelligence Unit)
- Least corruption in the world (Transparency International)
- Third-most competitive economy in the world (World Economic Forum)
- World's least failed state (Failed States index, Fund of Peace)
- State providing the ninth-best service on the Internet (UN)
- World's third-most networked country (World Economic Forum)
- Best country in the world (Newsweek)

# 1. Frictionless Finland

**The world's most innovative country will improve the prerequisites for digital business even further. Finland will launch an ICT programme to renew infrastructure, the funding system, competence and operating methods. This will ensure that Finland remains the leading country in ICT competence and an attractive product development environment for companies, where public services are customer-oriented and frictionless.**

Finland is boosting the generation of digital business through a programme that will improve the preconditions for conducting business in several ways. To date, the ICT revolution has mainly been apparent in the increased power and proliferation of devices. Only the very first waves of digital services that will simplify the lives of citizens and companies have reached the shore.

Finland will be among the first to jump in and build that wave of digital services. However, renewal is about much larger things than just the ICT industry. Above all, it is a question of a union between the old and the new – the capacity to exploit ICT in diverse ways in order to enhance operations.

It is Finland's goal to increase service capacity across industries and the public sector, through the use of digital solutions. Ministries and other public-sector actors are strongly committed to the development programme; however, the state does not intend to 'pick a winner', but rather to create universal prerequisites for growth.

The diverse ICT competence in Finland has given birth to many international success stories, such as Nokia and Angry Birds. In addition, this competence has attracted the R&D activities of companies such as Ericsson, Intel, Electronic Arts, Huawei and Samsung to Finland within a short period of time.

This ICT programme, created to enhance growth, will further accelerate innovation and the growth of companies. The development steps of the ICT programme, including corporate subsidies, are open to all companies, regardless of ownership. Thus, global companies will also be able to benefit from demonstrably the world's best innovation environment when they land in Finland to develop their own and their networks' operations.

## **FROM GOOD OPERATING CONDITIONS TO THE BEST**

The theme of the ICT programme is Frictionless Finland, which offers the best preconditions for the creation of competitive business that generates well-being. Frictionlessness is vital in the Internet economy, where new business ideas are created and spread faster than ever before.

Successful renewal requires an operating method that enables long-term goal-setting and rapid implementation. Our nation has already taken the first measures,

but in the coming years new ones must be decided on that take into account the results achieved and changes in the operating environment.

A critical mass of renewal measures, proceeding consistently in the same direction, is required to reach the programme's objectives. For this reason, the Frictionless Finland programme includes 21 mutually supportive paths on which Finland must advance decisively and rapidly. Four critical paths will build the foundation:

- **Construction of a national service architecture.** This measure facilitates the creation of services across organisational boundaries, reducing redundant work and improving customer service.
- **Ten-year research, development and innovation programme ICT 2023.** This programme brings together key parties such as universities, research institutes, companies and funding providers.
- **A diverse funding programme** that will comprehensively cover the funding needs of start-ups and growing companies.
- An operating method that will enable long-term goal-setting and rapid implementation. To define this path in a more concrete manner, the working group has proposed **that an ICT Expert Group be established under the Prime Minister's Office**, with the intention of operating across parliamentary elections and administrations. The task of the expert group is to monitor and expedite the implementation of measures, create a basis for self-steering operations and maintain a networked operating method.

The ICT 2015 Working Group operates with a ten-year perspective. However, no-one can foresee what measures may be required of Finland even just a few years down the road. Therefore, this report presents the first steps for 2013 on each of the 21 paths. The Government's ICT Expert Group and the network that will form around it will, for their part, roll out new measures over the coming years.



## 2. Competitiveness of companies and the public sector in the Internet economy

**The field of competition in the digital economy has changed rapidly. Finland will respond to this change by investing in the relevant competences, whose role is emphasised in the growth decisions made by companies.**

In the digital economy, the logic of creating and 'snatching' value has changed over the course of the 2000s. Sectoral boundaries have blurred and the competitive situations of companies have shifted.

Products and services have become more closely intertwined than ever before. The combinations of services and products in the digital economy are practically endless, as are the numbers of companies producing these services and products. Thus, competition between business ecosystems consisting of several companies has become more and more prevalent.

The convergence of telecommunications, the Internet, television and content has advanced to the stage, where it becomes hard to draw a line between the various technologies. For example, mobile telephones are only one of several potential terminal devices for using services and applications on global networks.

European ICT companies have lost ground to American and Asian companies. Companies with their own ecosystem based on operating systems or applications and services, a strong consumer brand and direct contact with consumers have the strongest positions.

In this new competitive situation, Finnish ICT companies have prospered by specialising even further in fields such as digital infrastructure construction. For example, Nokia Siemens Networks has cutting-edge competence in fourth-generation network technology.

Prospects for Finnish companies are frequently linked to creating application platforms and services for narrow, specialised fields in the global market.

### Case: Billion-euro business from microsystems

Microsystems used in cars, health care technology and mobile devices, among other applications, have created a business worth nearly one billion euros to Finland. The use of MEMS (Micro Electro Mechanical Systems) microsystems has increased rapidly following the proliferation of smart devices.

Microsystem development began in Finland as early as the 1970s. At the turn of the millennium Nokia's investment in research and product development in the field hastened the development of competence.

VTT's MemsCat project encourages start-ups to develop innovations based on microsystems. The project also encourages industrial companies to exploit microsystems.

Embedded, sensing microsystems are required in ever increasing numbers, both in consumer products and in society generally.

### INDUSTRY EXPLOITS INTELLIGENCE

In other sectors of the economy, two great opportunities exist for making use of digital technology: (1) integrating digital technology and services with industrial products and (2) using digital technology to manage global value chains.

Services integrated with industrial products nearly always require digital applications. A study carried out by the Research Institute of the Finnish Economy ETLA indicates that approximately one third of Finnish industrial exports consists of software-reliant products.

In-company services, such as planning, R&D, design and various head office services, can also be separated into their own functions using information and communications technology. These are typically high value-added and well-paid tasks that countries and regions compete over. These functions also create intellectual capital.

### COMPETENCE ON OFFER FOR GLOBAL COMPANIES

As Finland is aiming at new economic growth, it is vital to recognise the factors that are important to companies with different backgrounds in the digital economy.

More and more often, international competition occurs between whole business ecosystems. A business ecosystem here refers to a comprehensive whole in which several actors complement each other's competences. A competitive ecosystem must contain a diverse selection of competences. In an interview for Harvard Magazine, Professor **Rosabeth Moss Kanter** stated on the enriching of business ecosystems:

'Four issues strike me as key: turning ideas into enterprises; linking small and large businesses; better connecting education to jobs; and encouraging cross-sector collaboration.'

The report 'Suuri siirtymä' (the Great Transfer), compiled by the Finnish Innovation Fund Sitra, puts the premise concisely: 'Where to find new information that complements the company's own competence and enables innovation is one of the fundamental questions considered in the information and innovation strategies of companies.'

In the ICT sector, Finland has turned out to be that place, as shown by companies such as Ericsson, Intel, Electronic Arts, Huawei and Samsung bringing R&D activities to Finland.

The measures proposed by the working group emphasise the long-term development of competence, so that Finland can reach the top in crucial competence areas and create operating methods that expedite the application of that competence in companies.

### **MORE GROWTH COMPANIES AND STARTUP SPIRIT**

Business based on Internet technologies is only at the beginning of its life span. Entrepreneurship, willingness to take risks and companies that aim at global markets are required.

There are considerably fewer small companies and startup companies in the ICT sector in Finland and Europe than in the US.

The international Global Entrepreneurship Monitor (GEM 2012) shows that it is easy to create business in Finland and the degree of economic freedom in the country is high. The state also offers diverse incentives for entrepreneurship. According to the report, Finnish entrepreneurs nevertheless seek less growth, internationalisation and venture capital than companies in other countries.

The small Finnish domestic market presents a challenge for startup companies looking for rapid growth. Thus, these companies aim for the international market as soon as they are born. This makes obtaining top-level sales, marketing and productisation competence a challenge, in addition to obtaining funding in the early stages.

The ability of the Finnish higher education sector to produce top experts is therefore one of the most important enablers of growth in the ICT sector.

### **INTERNATIONAL COMPANIES ARE INTERESTED IN COMPETENCE CLUSTERS**

From the perspective of foreign companies, Finland's strengths include the level of education, technological competence, a functioning and stable society and the proximity of the Russian market.

The comments of international companies' managers in Finland show that more significant competence clusters need to be created in Finland. Creating a strong business ecosystem or competence network requires R&D resources, multisectoral competences, and private and public demand for innovative products.

High-quality regulation and standards that promote innovation are also required. This, in turn, demands seamless cooperation between the private and public sectors.

In the 1990s, Finland was able to create a world-class business ecosystem for the development of mobile technology. Today, Finland must do the same in the application of ICT by exploiting that expertise in mobile devices, in which the country has an advantage in relation to many other regions.

**Foreign companies in Finland:**

- Approximately 3,000 companies with international ownership operate in Finland.
- The turnover of these companies accounts for roughly one fifth of total corporate turnover, i.e. slightly more than EUR 70 billion.
- These companies employ approximately 215,000 persons, i.e. 15 per cent of the private-sector workforce.
- The amount of foreign investment in Finland is more than 30 per cent of the GNP, which is slightly more than the average for OECD countries.

**THE PUBLIC SECTOR SUPPORTS COMPETITIVENESS**

The competitiveness of the public sector has a significant influence on the ability of companies to develop. For this reason, the choices made by political decision-makers have an impact on the level of complexity of the national economic structure.

International competitiveness studies indicate that education, and basic education in particular, is of high quality in Finland. Finland has excellent engineering education and expertise in processes. Finland also ranks among the best countries in many sectors of competitiveness. Areas in need of development include infrastructure and productivity.

The public sector in Finland has improved its pace in exploiting ICT, which is vital for competitiveness. In the UN's most recent eGovernment survey, Finland moved up to ninth in the ranking of countries' willingness and capacity to use ICT, a rise of ten places.

The Public Sector ICT Strategy published in the autumn of 2012 seeks to answer the demands of modern administration. The implementation of this strategy is of the utmost importance.

The Boston Consulting Group's analysis of the roles of governments in Internet policy stresses that the gap between highly networked countries and those lagging behind is growing. According to the survey, Finland ranks among the best, in seventh place.

### 3. Efficient infrastructure creates a foundation for growth

**The revolution in production structures inevitably creates a gap where social structures continue to support the previous stage, even though the new one is already being born. Finland must renew its ICT infrastructure to open space for the new business.**

According to the UN's E-Government survey, many member states are moving from a dispersed organisational model serving one purpose to a centralised structure, where governments function as a single whole. Citizens and companies can thus obtain services from a single point, regardless of the organisation that produces the service. At the same time, administration becomes more efficient.

In Finland, the independence of ministries and autonomy of municipalities has led to a fragmented service architecture. However, building an efficient ICT infrastructure is possible under the current legislation. The process is supported by the Data Administration Act that entered into force in 2011, providing for a possibility to steer the interoperability of all public-sector information systems.

The current, fragmented information system landscape can be replaced with a national service architecture, as has been done in Estonia. In the current operating environment, the same things are being done in several places, and there is no way to exploit information across organisational boundaries.

One of the most crucial steps in the creation of an efficient ICT infrastructure will be the creations of a comprehensive national electronic identification system.

#### **The ICT2015 working group's proposal for the year 2013**

##### **Building a uniform, national service architecture (path 1, critical)**

The data in systems created for different functions will be available through open interfaces to all systems that need it. Each separate system manages its own data and ensures that the data required by other systems is available through a delivery platform, in real time and in the correct format.

#### **IMPLEMENTATION OF REAL-TIME DATA**

Automating the data flow between companies and public administration would reduce the need for routine work and increase the amount of up-to-date information.

Electronic invoicing has spread faster in Finland than in other countries. As the next step, it would be vital to automate the delivery of data such as salary payments, VAT reports and accounting data from companies to the authorities.

These measures are estimated to enable Finnish companies alone to save more than four billion euros annually. Significant savings would also be created in the private sector, the prevention of the grey economy would be enhanced, and Finland would be able to influence EU harmonisation of the industry and the creation of global standards.

#### **ICT 2015 working group's proposal for the year 2013**

##### **Building the infrastructure required by the real-time economy of companies (path 2)**

Automate in-company data flows and data flows within public administration in order to reduce the need for routine work, improve risk management and increase the availability of real-time data.

We need to create a capacity for public-sector actors to receive data using the state's existing, centralised solutions as far as possible. The receipt of real-time data must be achieved as rapidly as possible, without major changes to the current systems of authorities. This would provide the SME sector with an early opportunity of switching to automated and real-time digital tools for use in financial monitoring, accounting and reporting processes.

#### **EVEN BETTER CONNECTIONS**

##### **Promoting the digital service economy requires fast connections free of disruptions.**

The growth of new digital services in Finland demands an increase in connection speeds and improvement in the reliability of both fixed and mobile broadband connections. For this reason, Finland's digital infrastructure needs determined further development.

Finland should also improve its international connections in order to enhance the operating conditions of knowledge-intensive industries.

The construction of a direct undersea cable connecting Finland and Germany will be investigated for the purpose of securing Finland's international data connections. The situation of the project for an undersea cable running through the North-East Passage will be examined at the same time. The aim is that by joining this connection Finland could function as a data connection hub between Europe and Asia.

## ICT 2015 working group's proposal for 2013

### Consolidation of mobile and fixed ICT infrastructures (path 3)

- In accordance with the act passed by Parliament in late autumn 2012, The Ministry of Transport and Communications will auction licences in early 2013 for mobile use of the broadband 800 MHz frequency range.
- The Ministry of Transport and Communications and the Finnish Communications Regulatory Authority FICORA will investigate the possibility of granting test frequencies in the 700 MHz and above 3 GHz frequency ranges for institutes of higher education and companies.
- Through international negotiations, the Ministry of Transport and Communications will promote the adoption from 2017 of the 700 MHz frequency range for mobile use.

## NATIONAL EFFORT FOR UTILISING OPEN DATA

### **Finland has the opportunity to develop into a global pioneer in the utilisation of open data and data masses.**

Data is raw material comparable to natural resources, and its processing and utilisation has enormous potential for developing new services and business.

Opening public-sector data stores would entail considerable economic benefits. Examples of public-sector data stores include geographic information, statistics and data produced in research projects funded by the public sector.

At present, there are several mutually supportive projects under way in the public sector, with a common vision of 'Finland as the world's most intelligent system (KIDE) and an internationally attractive location for data and its related development environments'.

The Finnish Funding Agency for Technology and Innovation Tekes and the Academy of Finland are channelling funding into the research and development of open data and data masses. Creating expertise in the sector requires investments in data analysis and increasing expertise in algorithms at all tiers of education and in science policy.

## ICT 2015 working group's proposal for 2013

### Creation of an open data ecosystem (path 4)

- A cooperation network for open data, composed of key actors, will be created and a director with overall responsibility, core team and support group appointed for the network. A data-opening programme will be launched under the direction of the Ministry of Transport and Communications.
- The functionality of legislation and regulations with regard to utilisation of open data will be ensured.
- An expert pool and developer model in accordance with Code4Europe will be created – consisting of data experts, entrepreneurs, public servants and developers – from which agencies and organisations can recruit competence for fixed periods for the implementation of projects.
- Tekes will launch a fast and agile funding programme (based on DiGiDemo) for SMEs.



## 4. Finland to the top tier of competence

**Finland must respond to new needs by developing clusters of relevant competences to encourage investment. The employment opportunities for unemployed people must be improved by providing further training.**

In its international survey, the human resources company Manpower states that one in three employers have difficulty in filling open positions, despite the large unemployment figures. According to the survey, there is an increasing need for precisely ICT competence.

For companies of all sizes, the availability of competence is a key reason for investing in a country. As for employees, competence opens new employment opportunities. In the digital economy, the significance of competence teams and networks is emphasised alongside individual competence. Companies want to become established in countries with competence networks in addition to top experts. Competence clusters also attract new experts to them.

Such clusters of competence have existed in Finland for more than a decade in the mobile and forest industries. This needs to be repeated for the digital economy.

The ICT 2015 working group has identified the following areas of development related to technological competence that are required for Finland's success.

- Development of in-depth data-processing expertise (Computer Science)
- Ensuring the creation of critical clusters of competence in key technologies, including digital services and content, gamification, data security, mobility and big data
- Creation of an efficient chain of research, application, productisation and commercialisation
- Taking account of ICT in the development of general education policy

To support people left unemployed by the structural change, measures are required to prevent the disappearance of competence as a result of dismissals and lay-offs.

### **DEVELOPMENT OF IN-DEPTH COMPETENCE IN DATA PROCESSING**

In order to develop an internationally competitive, ICT-intensive product, a company must have a core team of in-depth ICT experts. Critical areas of competence include algorithm design, discrete structures and the principles of programming languages.

For this reason, a national programme is needed to reinforce the development of a foundation of competence in institutes of higher education. The programme must expedite the transfer of competence from universities and universities of applied sciences to companies, in order, correspondingly, to expedite the development of ICT-intensive products and services.

The open and international recruitment of key personnel has a vital role in the development of the research and teaching activities of universities.

### **ICT 2015 working group's proposal for 2013**

#### **Combining forces for the ten-year ICT 2023 research, development and innovation programme (path 5, critical)**

To improve the level of ICT competence, an extensive, ten-year programme is required to combine the separate measures into a cohesive whole. The ICT 2023 programme concentrates on subjects whose implementation would not be possible without close cooperation in innovation activities between different actors.

The RDI (Research, Development and Innovation) programme will consist of powerful, networked spearhead projects in key areas of competence. These spearhead projects will be launched immediately and targeted at strategic areas of competence defined and identified by the ICT 2015 working group. The group of projects will be supplemented at a later date. The spearhead projects will develop competence across sectoral boundaries, taking account of the needs of users, service innovations and new business models. International cooperation is a material part of the RDI programme.

### **FINLAND AS A PIONEER OF DIGITAL SERVICES**

In order to become an exporter of digital services and content, Finland must develop competence through both research and practical action. Cloud services are a key area of competence that must be developed rapidly, since our current competence base in them is narrow. Nevertheless, Finland is in the forefront of cloud service use in Netbank operations and electronic invoicing.

The digital services opened in the public sector, such as the decision to digitalise the services of ministries, play a crucial role. Similarly, the first municipalities are well on the way toward digitalisation.

## ICT 2015 working group's proposal for 2013

### Digital services and content (path 6)

#### **The digitalisation of municipal services**

Municipalities face an acute need to improve productivity and the quality of service through digitalisation. The municipality pilot project being created will identify a group of concrete services whose digitalisation will have the most rapid and significant effect on the economy and benefits obtained by customers.

#### **Digital logistics data management**

A development programme for flexible and compatible product, project and payment data solutions will be launched. The goal is to develop solutions whereby the data will exist in compatible format throughout the logistics chain. The purpose is to enhance and increase productivity across the entire value chain.

#### **Launching of the Forge cloud service laboratory and the first pilot projects**

A cloud service laboratory will be launched in Finland and service design laboratories created for various sectors.

## EVERYTHING WILL BE GAMIFIED

Gamification and game interface forms can improve the usability of digital services in all industries. For this reason, making the gamification competence of the games industry available to other industries and service industries is a vital part of improving competitiveness.

A lack of competent people has already created a bottleneck in the burgeoning games industry. The challenge will only get bigger, as the number of companies in the industry is increasing rapidly and the competence is also needed outside the games industry. For this reason, the working group proposes increasing and developing education in the sector, and gamifying companies and public administration through pilot projects.

## ICT 2015 working group's proposal for 2013

### Games and gamification (path 7)

#### **Increasing the amount and quality of training for the games industry to meet the need**

Cooperation between institutes of higher education must be developed in order to improve the quality and availability of training for the games industry.

## **DATA SECURITY IS VITAL**

Increasing reports of attacks against information systems underline the importance of competence in data security. An internationally attractive cluster of data security experts, companies, services and research must be created in Finland.

Finland's level of competence in data security ranks among the elite in Europe, but the existing base of competence is narrow and does not correspond to the needs of the future. Finnish data security companies are mostly growing, young and small. There are more than 50 companies in the industry, employing over 2,000 people. An immediate recruitment need of a few hundred employees has been estimated to exist in the industry, but a lack of competence and the small size of the companies present bottlenecks to growth.

### **ICT 2015 working group's proposal for 2013**

#### **Data security (path 8)**

##### **Increasing data security training and research**

Institutes of higher education in the field will focus their resources on creating data security competence and on business-oriented research.

##### **Foundation of a cyber security centre**

In addition to its principal task (monitoring and investigating breaches of cyber security and supporting the authorities), the new centre should also be able to function as a partner for Finnish data security companies in developing new solutions. The ground-breaking solutions thus created would enable the development of a new export industry in addition to creating a secure, reliable electronic operating environment.

## **POLE POSITION IN MOBILITY MUST BE MAINTAINED**

Mobile technology can bring wireless solutions that increase productivity and intelligence to new sectors, through combining and networking devices.

A major business ecosystem including companies, with Nokia and Nokia Siemens Networks as major locomotives, universities, Tekes, VTT and numerous other actors, has been created around mobile competence in Finland. Finland must be able to offer the best training in data communications and network technologies, enabling continuity of research in the sector and supporting the flexible employment of students after graduation.

The overall goal is the creation of a competitive business ecosystem based on competence in data communications and network technologies in Finland.

## **ICT 2015 working group's proposal for 2013**

### **Mobile competence (path 9)**

#### **Launching a multi-year R&D project in the sector**

Areas of focus for the project will include services based on cloud calculation and data analytics, development of next-generation networks, combining mobile technology with other Finnish pioneer technologies (such as multimedia and sensor technologies) and extending mobility to new sectors of society and industry, enabling the implementation of major new solutions.

#### **Increasing academic research**

A multi-year research programme implemented by the Academy of Finland will be launched.

## **MORE BIG-DATA COMPETENCE**

The applications of big data include analysing the buying behaviour of customers, smart energy networks and the prevention of disease. Finnish competence in big data is narrow, even though top expertise exists in certain fields.

Big data is integrally connected to Finland's other critical key competence areas. As experts in data communications, we are used to processing large amounts of data. Data security is paramount in all big data-type applications, and the integration of the kernels of data mined from data stores requires solid competence in software and data processing. In the public sector, opening data stores, creating a common ICT service architecture, and the traditionally smooth cooperation between the public and private sectors open intriguing opportunities.

## **ICT 2015 working group's proposal for 2013**

### **Big Data (path 10)**

#### **Launching a development project for developing big-data competence**

Tekes and the universities will join with companies to take the lead in developing big-data competence.

#### **Increasing training and research in big data**

The institutes of higher education in the field will focus their resources on creating big-data competence and on business-oriented research.

## **CREATION OF AN EFFICIENT CHAIN OF RESEARCH, APPLICATION, PRODUCTISATION AND COMMERCIALISATION**

Rapid changes in competence requirements increase the need for cooperation between institutes of higher education and companies. Educational institutes need to be aware of the types of competence required by companies. Similarly, companies need to keep up with the new competences created in educational institutes.

Cooperation is required on several levels, to ensure the flow of information from top research to teaching and the business world, and vice versa. Mere research cooperation will not suffice; rather, the competence created through such cooperation must be transferred to commercially successful products. At the same time, companies must realise the importance of basic research, which must not be jeopardised by short-term needs.

### **ICT 2015 working group's proposal for 2013**

#### **Creation of an efficient chain of research, application, productisation and commercialisation (path 1)**

##### **The development of new types of cooperation programmes**

An operating model in which training, research and product development function in close cooperation must be put into practice. Tekes will launch a Postdoc in Residence programme to help medium-large and small companies gain access to in-depth expertise by employing postgraduates in the field. The Internship programme, on the other hand, will bring companies and Master's Degree Programme graduates together.

## **PROMOTING GENERAL EDUCATIONAL POLICY**

Competence and capacity in the ICT sector must be developed in Finland on many levels, in order for citizens to acquire the skills required in a digital society. According to estimates, 90 per cent of today's professions require at least a basic grasp of ICT.

However, in his work 'The E-Skills Manifesto', Don Tapscott maintains that there is a widening gap between what is required by the digital revolution and what the workforce actually knows and can do, everywhere in Europe. In its digital agenda, the European Commission predicts that there will be up to a million unfilled ICT positions in Europe in 2015 due to a lack of competent employees.

### **ICT 2015 working group's proposal for 2013**

#### **Promotion of general education policy (path 12)**

##### **Anticipation of labour and competence requirements**

The results of anticipation must be rapidly converted into decisions in order to enable the agile development of education. To ensure the ability to react, a more functional cooperation model is required between anticipation, the parties deciding on matters related to education, and the providers of education.

##### **Internet-age needs of the National Core Curriculum for Basic Education**

The working group proposes that the work to renew the basis of the National Core Curriculum for Basic Education should take more account of the significance of competence, learning and thinking. In addition, the National Core Curriculum should strengthen the capacity and motivation for studying mathematical subjects and the natural sciences. It is also increasingly vital to ensure that pupils gain the basic skills needed to take advantage of digital services.

### **PROMOTION OF TARGETED EDUCATIONAL POLICY IN CONDITIONS OF SUDDEN STRUCTURAL CHANGE**

The structural change of the ICT industry has eliminated more than 14,000 jobs in Finland in the last few years. Approximately 60 per cent of those who lost their jobs have gained new employment. The rapid employment measures undertaken by Nokia and the authorities have significantly mitigated the unemployment problem. The fast response of international and domestic companies to the sudden availability of competent labour has expedited re-employment, particularly for ICT professionals.

### **ICT 2015 working group's proposal for 2013**

#### **Promotion of a focused educational policy in conditions of sudden structural change (path 13)**

##### **Tailoring retraining for the needs of companies and employees**

The acquisition of training must be made more agile. Spirit ICT Future is a retraining project involving several companies in the Pirkanmaa region. The programme offers rapid training, for example, to complement the competence of unemployed ICT employees for meeting the requirements of their new employer. The training promotes the strategic renewal of companies by complementing the competence of existing employees. This operating model will be replicated in other regions.

**Complementary training at institutes of higher education**

A survey will be launched into the possibilities and obstacles for institutes of higher education for offering complementary training or new specialisation courses for various industries in the growth areas defined by the working group.

**Deductibility of language training for non-Finnish speakers**

Vocational training in Finnish or Swedish for employees who speak a language other than Finnish, Swedish or Sami as their native language should be regarded as promoting professional competence and thus be made eligible for tax deductions.



## 5. Funding gap must be filled and investments secured

**To expedite growth, it is necessary to ensure adequate funding for innovative companies. In the same vein, taking risks must be made more viable and attractive in Finland.**

To expedite growth, it is vital to ensure funding and the prerequisites of growth for companies that create new business and growth. Public and private capital must cooperate in an open-minded fashion. Both the availability of venture capital in the early and growth stages of companies and risk funding are crucial.

Mobilising private funding on market terms is the key. For this reason, private risk-taking and the development of the venture capital market must be encouraged in Finland.

In addition to large companies, the Finnish business ecosystem requires 1) 'a seedbed for innovation', i.e. small, innovative technology companies that create employment; and 2) growth companies that invest heavily in product development and aim at becoming global leaders.

### **FUNDING FOR GROWTH AND INTERNATIONALISATION THROUGH VENTURE CAPITAL**

The objective of the measures for developing the venture capital market is to grow both domestic and foreign investment in seed-stage and growth-stage companies.

The creation of new, asymmetrical private capital funds for seed-stage and growth-stage companies is crucial.

In the venture capital market, the objective is to safeguard the funding activities of new VC funds that invest in Finland, to encourage more active fund participation in early-stage development work, to realise growth-funding rounds in companies (A and B funding rounds) and to concentrate on the internationalisation of companies.

#### **ICT 2015 working group's proposal for 2013**

##### **Funding programme to cover the needs of early-stage and growth-stage companies (path 14, critical)**

##### **Launching a funding programme for early-stage and growth-stage companies**

The working group proposes the implementation of a comprehensive funding programme created in cooperation between the state and private funding providers, with the objective of improving the funding situation of early-stage and growth-stage companies. Ensuring adequate funding requires an annual investment of EUR 60–100 million, with the state producing 40 per cent and private investors the remaining 60. Of these programme funds, 40 per cent will be allocated to seed-stage and early-stage funding and 60 per cent to funding growth companies.

### **Developing the seed-stage and early-stage venture capital market**

As part of the overall programme, public-private funds (in the aforementioned ratio) will be established with different profiles and operating in different sectors. The public sector will ensure long-term investment and sufficient incentives for holding companies. The fund must make its investments on market terms. These funds will operate on an asymmetrical principle, according to which the state will be satisfied with a lesser profit than private investors. The EU regulations on state subsidies must be taken into account in applying the asymmetrical principle. It is vital that Tekes be adequately resourced for investment in the funds.

### **Development of growth-stage venture capital markets**

Growth-stage venture capital markets can be developed through measures such as establishing the FoF Growth II fund. The fund must be implemented to an extent sufficient for ensuring an overall public-private annual investment of EUR 40–60 million in VC fund investments in growth funds. The fund must make its investments on market terms, and the investments must be categorised as private capital. It is vital that Finnish Industry Investment Ltd be adequately resourced for investment in the funds.

## **ENSURING THE AVAILABILITY OF LOAN FUNDING REQUIRED FOR INVESTMENT IN GROWTH**

In the growth stage, companies need loan funding for their investments and for working capital. At present, the official Export Credit Agency, Finnvera, can grant both loan funding and guarantees for loans granted by banks. Due to the structural change under way, Finnvera's funding mandate has been expanded by a Ministry of Employment and the Economy decree.

For several reasons related to the structural development of the financial markets and due to overall economic trends, the loan funding granted by banks to SMEs has dried up to a significant degree, even though the prerequisites for state involvement have been expanded.

### **ICT 2015 working group's proposal for 2013**

#### **Measures for increasing the viability of investment and taking risks (path 15A)**

Implementation of bonds for SMEs. To ensure the availability of loan funding for growing companies, the working group proposes that Finnvera should launch a new system of bonds for SMEs. In the current financial-market situation, the availability of bonds would diversify the syndication and division of risk between loan instruments and funding providers. This practice would thus also improve the prerequisites of banks for granting loan funding.

## INVESTMENT AND PRODUCT DEVELOPMENT TO FINLAND VIA AN INNOVATION BOX

Intellectual property rights are easy to transfer from one country to another, since changing their country of ownership is a simple process. A tax incentive for innovation – an innovation box – seeks to persuade companies to maintain their intellectual property rights in or transfer them to a particular country. A lower tax rate than the standard corporation tax is applied to income from innovations.

The working group considers it vital that an internationally competitive innovation box should be quickly created in Finland. The innovation box must encompass as many types of intellectual property rights as possible, in order for the incentive to be sufficient to keep intellectual property rights in and attract them to Finland, and to provide effective incentives for companies to commercialise their inventions.

### **ICT 2015 working group's proposal for 2013**

#### **Measures for increasing the viability of investment and taking risks (path 15B)**

##### **Creating a tax incentive for innovation**

A tax incentive for innovation (innovation box) must be created in Finland, according to which income derived from innovations will be taxed at a significantly lower tax rate (8-12%) than the standard corporation tax.

The lower tax rate should be levied for income from all major types of intellectual property rights.

## 6. Innovation and growth through new operating methods

**In the digital world, new innovations require operating methods that emphasise speed, cooperation and an experimental attitude. These same characteristics are required for managing sudden structural changes.**

The ability to compete in the digital world requires new kinds of operating models, both within companies and in the public sector. New operating methods are necessary because innovations need to be created faster than before, and networks consisting of greater numbers of actors are required to create innovations.

The requirement for networking and speed applies first to companies competing in the international market. However, the same requirement applies to the whole of society for three reasons. Companies cannot adopt a new kind of operating model if the rest of society operates according to old models. In addition, the public sector is often a key partner in the networks where innovations are made. It is also important to understand that new operating models will also enhance the working of the public sector and improve public services.

Speed, cooperation and an experimental attitude are also important when problems caused by sudden structural changes need to be solved.

The ICT 2015 working group makes proposals that aim at

- Innovativeness in the development of public services
- Bringing different competences together and creating new kinds of business ecosystems
- Untangling the knot of corporate services and simplifying legislation; and
- Expediting operations without sacrificing long-term development.

### **PIONEERING PUBLIC SERVICES**

A great need to enhance and improve services through digital solutions exists in the public sector. Public services should be developed in cooperation between the public and private sectors. Public service procurement could function as a locomotive for innovation in situations where new technology can be integrated with a service.

In such situations, pilot projects are an important operating model that combines the rapid launching of operations with risk limitation. Using pilot projects, the customer and supplier can create entirely novel services and processes, untested by others.

A culture of experimentation can bring great benefits. The public sector will receive innovative solutions that improve the quality of service and make it more efficient. Companies, for their part, will obtain references, which are of the utmost importance, particularly in the export market.

## ICT 2015 working group's proposal for 2013

### [Pioneering public services \(path 16\)](#)

#### **Creation of a precommercial pilot model for the public sector**

An operating model will be developed for the precommercial stage where, for example, municipalities can present problems to companies, who then look for new solutions to the problem. This model will be created through a pilot project, replicated and disseminated for use in public-sector organisations, while ensuring the maintenance and further development of the services.

#### **Elimination from public procurement of clauses discriminatory to SMEs**

The working group proposes that the terms and conditions of public procurement be modified to open doors for innovation.

#### **Creation of a social and health care services procurement development centre**

In accordance with the ICT 2015 working group's proposal, funding for the establishment of a social and health care services procurement development centre was granted in the supplementary budget approved in the autumn of 2012. The centre will function as a development community for shared operating methods and a cooperation and service design forum for customers and ICT suppliers.

## **PROMOTION OF COLLISION AND BUSINESS ECOSYSTEMS**

The birth of new innovations requires various competences to come together on more levels than is currently the case. Operating models that expedite the expansion of cooperation within and across industries must be developed in Finland.

In the global operating environment, the parts of national, regional and local business ecosystems must be capable of connecting to international networks. This can only be achieved by ensuring the world-class quality of the business ecosystem and the relevant competence built around it.

Colliding can be carried out in environments where the encounters would naturally occur. Collisions thus occur naturally within regions or industry networks.

On the other hand, combining the competence of people left unemployed from the Nokia cluster requires acute solutions that make use of business ecosystem and collision models.

## ICT 2015 working group's proposal for 2013

### [Collision and network projects \(path 17\)](#)

## **Regional network projects**

The aim of the Innovative Cities (INKA) programme being prepared by the Ministry of Employment and the Economy is to encourage the creation of internationally attractive innovation hubs in Finland. Currently under preparation, this programme focuses on large urban regions that are being challenged to create new, expertise-based business development environments and forerunner markets.

Supporting the birth of regional clusters of competence. Regions will be encouraged to build competence clusters in which the parties reinforce each others' competence around existing actors. The improvement of regional competitiveness will be supported through competence programmes that aim at creating new business successful at the national level.

The development of an open-systems competence cluster as a pilot project. Clusters of digital competence will be developed by implementing expertise programmes in the fields of general architecture, large-system management, and open, scaling service systems.

Expertise programmes will be implemented in a few select areas of special expertise that will facilitate the implementation of overall solutions:

- General architecture solutions and strategies and the joint design of service business and technical solutions
- Technological management, optimisation and implementation of large systems
- Open and scaling service system, data security and information management development models and user-oriented innovation activities

## **Industry-specific colliding**

### **Investigation of the preconditions for building new digital ecosystems**

Electronic health care technology and intelligent services for the elderly present considerable opportunities for growth due to the changing age structure of the population. During 2013 we will investigate whether a group of companies and research institutes interested in creating a wider development programme could be formed around these themes.

### **Development of digital training business**

Colliders for the training business and ICT sector will be piloted in Jyväskylä, Tampere and Oulu. In addition, the University of Turku, City of Salo and local companies have launched a development project in this field. Many finished products and service solutions and much content in both sectors exist in these cities, but their cooperation potential has not been tapped.

## Collisions in times of structural change – acute solutions for the Nokia cluster’s problems (path 18)

### **Productisation of the freed-up ICT competence into exportable form**

Many countries have a shortage of ICT experts and many such experts are currently unemployed in Finland due to the structural change. A practical example of this is the market analysis conducted in Germany and Switzerland as part of the ICT 2015 working group’s work. The analysis shows that productisation of mobile interface expertise for the Android/Google cluster would create instant opportunities. Longer-term potential for demand for ICT expertise exists in the Swiss and German engineering industries.

The working group proposes the following measures to improve the ability of companies to create globally marketable product and service concepts:

- **Conversion training for mobile experts.** Conversion training in global product marketing and a project work agreement programme to orient experts rapidly in the field, from mobile telephones to new industries.
- **‘From first account to multiple accounts’ funding model.** New funding models to support the sale of products and services simultaneously to several customers and markets.
- **Dynamic ‘Finnish Project Offices’.** Finnish Project Offices will be established in select, industry-specific customer clusters in target markets.

### **Kaato – bringing global companies to Finland**

The supplementary budget of 2012 granted funds for the international marketing of Finland as an attractive target for ICT investment.

## **SIMPLIFYING THE TANGLE OF SERVICES AND LEGISLATION**

Industrial and commercial organisations have spoken against the dangers of over-regulation for years. Another significant cause of concern are rapid changes to regulations. A stable environment is the best way to ensure continuity of investment, and thus the healthy development of business. This requires an ongoing dialogue between the authorities and actors in industry and commerce.

Finland has many strengths related to the functionality of society’s basic infrastructure, safety, reliability and the low level of corruption. On the other hand, these very same strengths may lead to over-regulation and excessive caution, seeking to avoid mistakes and play it safe, as well as an unwillingness to take risks.

## **ICT 2015 working group's proposal for 2013**

### **Simplifying the tangle of services and legislation (path 19)**

#### **Simplifying the tangle of SME services**

At present, a variety of regional and national projects produce a confusing tangle of incubator, startup and acceleration services. The Kasvun Tehoketju (Power Chain of Growth) project clarifies the service chain and enhances operations from the customers' perspective.

#### **Lowering the spinoff threshold through clarifying legislation and taxation**

Clarifying legislation and taxation can significantly increase the interest of employees in entrepreneurship and the opportunities for companies to finance or support the commercialisation of products and services that fall outside their core area of business in companies established by their employees.

#### **Making data centres eligible for energy tax returns**

The proliferation of cloud services will require ICT companies to build more data stores. Finland has an excellent opportunity of attracting these data centres due to the stability of the operating environment. However, Finland would need to draw up a data centre strategy. As part of this strategy, the ICT industry should be granted the right to energy tax returns, already held by other industries.

#### **Growing the digital business ecosystem through changes to VAT**

The production and selling of digital products and services must be made attractive and competitive in Finland. We should examine the possibility of VAT reliefs for products purchased from online stores.

## **RAPID IMPLEMENTATION AS PART OF LONG-TERM DEVELOPMENT**

Speed does not mean running faster. The important thing is to find more intelligent operating models in all sectors of society, in order to produce results more rapidly.

In addition to rapid operating models, a culture of long-term operations needs to be created in Finland. This is vital for a number of reasons. The investment threshold of companies will be lowered if they can rely on matters such as the stability of legislation. Great social changes, such as the transition to a digital economy, also require long-term activity that is nevertheless capable of reacting to changes.

For this reason, the ICT 2015 working group first proposes action that aims at expediting the construction and long-term development of a digital foundation.



## ICT 2015 working group's proposal for 2013

### Rapid implementation (path 20)

#### **Expediting the digitalisation of the public administration's services**

According to the Government Programme, each ministry must prepare an intelligence strategy, with the objective of developing the public administration's electronic services through pilot projects. The growth of the entire Finnish economy and its productivity will thus be promoted through digital services. The practical implementation of these projects must be ensured.

#### **Development of a subsidised 'leased CIO' programme**

The CIO in Residence programme offers ICT advisers to SMEs outside the ICT sector for a set period (e.g. 1-6 months) to spar the company's management group.

#### **An electronic business expertise programme**

An online sales and marketing ability development programme will be implemented for SMEs. This programme will make Finnish companies pioneers in Internet-based online business.

### Long-term development (path 21, critical)

#### **Establishment of an ICT Expert Group in the Prime Minister's Office**

The working group proposes that an ICT Expert Group be established within the Prime Minister's Office. The group will be chaired by the State Secretary, with key persons from the parties responsible for implementation as members. The group's task will be to monitor progress towards the goal of a Frictionless Finland, to expedite implementation, to integrate measures across administrative boundaries, to issue recommendations and proposals on a rolling basis, and to maximise impact. Another core task of the expert group will be the promotion of networked activities.

#### **Ensuring the implementation of the measures in urban areas**

Networked groups at the level of cities or urban regions will be appointed to support and act as partners to the national ICT Expert Group, in order to ensure the practical implementation of the city- or region-level measures for creating expertise-intensive jobs. The cities' directors of economic development will be responsible for convening and leading these groups (the Helsinki metropolitan area, Oulu, Mikkeli, Tampere and Salo).

#### **Launching market and competitor monitoring, implemented by Tekes**

To support the ICT Expert Group, a market and competitor monitoring unit will be established in Tekes. The unit's task will be to provide the ICT Expert Group with the required critical advance data and base data on the speed of development in key competitor states, in order to determine the annual measures required.

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*Research funding* [www.tekes.fi](http://www.tekes.fi)

<http://ict2015.fi>

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<b>Julkaisun nimi   Titel   Title</b> 21 polkua Kitkattomaan Suomeen – ICT 2015 -työryhmän raportti	
<b>Tiivistelmä   Referat   Abstract</b>  Elinkeinoministeri Jyri Häkämies asetti huhtikuussa 2012 hallituksen puheenjohtaja Pekka Ala-Pietilän johdolla toimivan ICT 2015 -työryhmän. Ryhmän tehtävänä oli valmistella strategia ICT-alan äkillisen rakennemuutoksen vaikutusten lieventämiseksi sekä tieto- ja viestintäteknologiatoimialan uudistamiseksi ja kilpailukyyn lisäämiseksi. Työn aikana ryhmä laajensi tarkastelunäkökulmaa kattamaan ICT:n laaja-alaisen soveltamisen kaikilla toimialoilla ja julkisessa hallinnossa. ICT 2015 -ryhmä luovutti raporttinsa elinkeinoministeri Jan Vapaavuorelle ja työministeri Lauri Ihalaiselle 17.1.2013. Raportissa kuvatut ”21 polkua Kitkattomaan Suomeen” määrittelevät tiekartan 10 vuoden pitkäjänteiselle työlle Suomen nostamiseksi tietotekniikan soveltamisen kärkimaaksi. Raportti sisältää toimenpide-ehdotukset vuodelle 2013. Seuraavien vuosien aikana päätetään uusista toimista, joissa huomioidaan saavutetut tulokset ja ympäröivän maailman muutokset. Työryhmän kriittiset ensivaiheen ehdotukset ovat: 1. Yhtenäisen kansallinen IT-palveluarkkitehtuurin rakentaminen. Yhteisen arkkitehtuurin avulla palveluita voidaan luoda nykyistä helpommin yli organisaatorajojen. 2. Kymmenen vuoden tutkimus- kehitys- ja innovaatio-ohjelma ICT 2023. Ohjelma kokoa yhteen alan keskeiset osapuolet kuten yliopistot, tutkimuslaitokset, yritykset ja rahoittajat. 3. Uusi rahoitusohjelma, jolla varmistetaan aloittavien ja kasvuvaiheessa olevien yritysten riittävät rahoitusmahdollisuudet. Työryhmän ehdotusten nopean toimeenpanon varmistamiseksi valtioneuvoston kanslia asetti raportin luovutuspäivänä valtiosihteeri Olli-Pekka Heinosen johdolla toimivan ICT-asiantuntijaryhmän. ICT 2015 -työhön osallistui yli 250 asiantuntijaa eri toimialoilta ja eri puolilta Suomea. Useat raportin toimenpiteistä perustuvat näiltä asiantuntijoilta tulleisiin ehdotuksiin. Myös käytännön työssä Suomen nostamiseksi tietotekniikan soveltamisen kärkimaaksi toimialaklusterit ja alueelliset ekosysteemit ovat keskeisessä roolissa.  Työ- ja elinkeinoministeriön yhteyshenkilö: Elinkeino- ja innovaatio-osasto/Tapio Virkkunen, puh. 029 506 0077	
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<b>Julkaisun nimi   Titel   Title</b> 21 vägar till ett friktionsfritt Finland. Rapport från arbetsgruppen ICT 2015	
<b>Tiivistelmä   Referat   Abstract</b> Näringsminister Jyri Häkämies tillsatte i april 2012 arbetsgruppen ICT 2015 under ledning av styrelseordförande Pekka Ala-Pietilä. Gruppen hade till uppgift att bereda en strategi för att lindra konsekvenserna av den plötsliga strukturomvandlingen inom ICT-branschen och omdana branschen samt öka konkurrenskraften. Under arbetets gång utvidgade gruppen sitt granskningsperspektiv till att omfatta en bred tillämpning av ICT i alla branscher och inom den offentliga förvaltningen. ICT 2015-gruppen överlämnade sin rapport till näringsminister Jan Vapaavuori och arbetsminister Lauri Ihalainen den 17 januari 2013. De "21 vägar till ett friktionsfritt Finland" som beskrivs i rapporten bestämmer färdplanen för ett 10-årigt långsiktigt arbete för att lyfta fram Finland till ett ledande land inom tillämpningen av informationsteknik. Rapporten innehåller åtgärdsförslag för år 2013. Under de följande åren fattas beslut om nya åtgärder där de uppnådda resultaten och förändringarna i omgivningen beaktas. Arbetsgruppens kritiska förslag i det första skedet är följande: 1. Uppbyggnad av en enhetlig nationell IT-servicearkitektur. Med hjälp av en gemensam arkitektur blir det möjligt att lättare än nu skapa tjänster över organisationsgränserna. 2. Ett tioårigt forsknings-, utvecklings- och innovationsprogram ICT 2023. Programmet sammanför de centrala parterna inom sektorn, såsom universitet, forskningsinstitut, företag och finansärer. 3. Ett nytt finansieringsprogram, som ska säkerställa tillräckliga finansieringsmöjligheter för nystartade företag och företag i tillväxtfasen. För att säkerställa ett snabbt verkställande av förslagen tillsatte statsrådets kansli samma dag som rapporten överlämnades en ICT-expertgrupp under ledning av statssekreterare Olli-Pekka Heinonen. I ICT 2015-arbetet deltog över 250 experter från olika branscher och olika delar av Finland. Flera av åtgärderna i rapporten baserar sig på förslag som kommit från dessa experter. Också i det praktiska arbetet för att lyfta fram Finland till ett ledande land inom tillämpningen av informationsteknik har branschklustren och de regionala ekosystemen en framträdande roll.  Kontaktperson vid arbets- och näringsministeriet: Närings- och innovationsavdelningen/Tapio Virkkunen, tfn 029 506 0077	
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# 21 paths to a Frictionless Finland

## Report of the ICT 2015 Working Group

The ICT 2015 group submitted its report to Minister of Economic Affairs Jan Vapaavuori and Minister of Labor Lauri Ihalainen on 17 January 2013. The “21 paths to friction-free Finland” establish a roadmap for long-term efforts to make Finland a leader in information technology applications over the next 10 years. The report contains proposals to be carried out in 2013. New measures will be decided in the coming years.

The key proposals to include:

1. Building a common national IT service architecture that enables building services across organizational boundaries.
2. A ten-year research, development and innovation programme that brings together universities, research institutions, companies and funding agencies.
3. A new financing programme to ensure sufficient funds for start-ups and companies in the growth phase.

To ensure the rapid implementation of the proposals, the Prime Minister’s Office established an ICT expert group that is chaired by State Secretary Olli-Pekka Heinonen.

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