

*Workshop Report*

## Peer Review

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# eHEALTH STRATEGY AND ACTION PLAN OF FINLAND IN A EUROPEAN CONTEXT

Helsinki, Finland  
26–27 February 2013



This expert peer review has been facilitated  
by EHTELconnect  
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Peer Review  
eHealth Strategy and Action Plan of Finland in a European Context

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## **Peer review eHealth Strategy and Action Plan of Finland in a European Context**

### **Foreword**

Finland has been eHealth forerunner with a long history of digitalized health care information. We are now implementing national eHealth solutions which will make standard format patient and medication information available for patients and health care professionals.

EU and OECD have been doing surveys on eHealth development and policy within EU countries, Finland has regularly been one of the top countries. Next survey will be published within few months. At this phase of national development minister of Health and Social Services Maria Guzenina-Richardson wanted to get a more focused expert view based on wider material and deeper understanding that is possible with these more general questionnaires. This review will be used also with eHealth strategy process.

I would like to thank THL for arranging this review process and EHTEL experts for their valuable comments and the time they devoted to this work.

*Päivi Sillanaukee  
Permanent Secretary  
Ministry of Social Affairs and Health*

On behalf of THL we wish to thank EHTEL for its valuable contribution and for placing its network of such diverse expertise in eHealth at the disposal of the Finnish eHealth system. The input of the recognized international EHTEL experts in this very constructive panel was priceless. We also wish to express our gratitude to the Ministry of Social Affairs and Health Finland for making this review possible. We are grateful to the experts from the Health Insurance Institution Finland (Kela) for their contribution to the workshop.

The results of the review will not only be exploited in governmental policy outlining on the strategic level of eHealth and eWelfare in Finland but also in the refinement of the new role of THL, in which it has assumed operational leadership in the deployment of eHealth services. Furthermore, these messages from the international eHealth community conveyed to us by the reviewers shall be dealt with also among professionals at all levels of the Finnish health and social welfare system.

*Päivi Hämäläinen, Director of Department  
Information Department  
THL – National Institute for Health and Welfare*

*Vesa Jormanainen, Chief of Unit  
Information Department  
THL – National Institute for Health and Welfare*



## Background and Peer Review Mandate:

The Ministry of Social Affairs and Health of Finland initiated an expert peer review of the eHealth Strategy and Action Plan of Finland and its positioning in international policy discussions at European level. This meeting report aims at providing useful content for the public authorities of Finland in their elaboration of various national strategies and plans. This review is facilitated by EHTEL in the context of the EHTELconnect service package that the Association offers to its Members. EHTELconnect is intended to enable access to information, experience and expertise across the eHealth domain for EHTEL members.

## Participants at the Peer Review Workshop

### European eHealth Experts (in alphabetic order):

Tom Christensen	Deputy Director, Helsedir, Norway
Georg Heidenreich	Standardisation expert, Siemens, Germany
Jacob Hofdijk	Director, Casemix, Netherlands
Ehud Kokia	Immediate past Director-General of the Hadassah Medical Organization, Israel
Mats Larson	Owner, Bilthong AB, Sweden
Luc Nicolas	Senior Projects Manager, Federal Public Service Public Health, Belgium
Jan-Eric Slot	CEO, IHTSDO, Denmark
Jacqueline Surugue	President of FIP, Centre Hospitalier Georges Renon, France
Eddie Turnbull	Director for eHealth, NHS, Scotland, United Kingdom

### Moderator

Madis Tiik	CEO, Hekardi Ldt, Estonia
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### EHTEL Team (in alphabetic order):

Marc Lange	EHTEL Secretary General
Stephan Schug	EHTEL Chief Medical Officer (Rapporteur)
Diane Whitehouse	EHTEL Expert (Rapporteur)

### Finnish Delegation Experts (in alphabetic order):

Tellervo Alanära	Senior Planning Officer (THL)
Minna Angeria	Project Manager (THL)
Viveca Bergman	Development Manager (THL)
Mikko Huovila	Development Manager (THL)
Konstantin Hyppönen	Senior IT-specialist, Social Insurance Institution of Finland (KELA)
Hannu Hämäläinen	Ministerial Adviser (MoSH)
Päivi Hämäläinen	Head of Department (THL)
Marko Jalonen	Senior IT-specialist, Social Insurance Institution of Finland (KELA)
Vesa Jormanainen	Head of OPER Unit (THL)
Anne Kallio	Development Manager (MoSH)
Maritta Korhonen	Development Manager (THL)
Jarmo Kärki	Development Manager (THL)
Tiina Palotie-Heino	Head of Unit (THL)
Jari Porrasmaa	Consulting Officer (MoSH)
Jari Suhonen	Project Manager (THL)

## EXECUTIVE SUMMARY

In early 2013, the Ministry of Social Affairs and Health of Finland requested an expert peer review of the Finnish eHealth Strategy and Action Plan. It was organised by the European Health Telematics Association (EHTEL<sup>1</sup>) in the context of the EHTELconnect<sup>2</sup> service package. The meeting took place in Helsinki, Finland, on 26/27 February 2013. Finnish plans and achievements were introduced by 15 Finnish presenters from the Ministry, the National Institute for Health and Welfare (THL) and the Social Insurance Institution of Finland (KELA). The peers – invited and coordinated by EHTEL – were ten senior experts from a range of European, and nearby, countries, including three members of the EHTEL team.

This report summarises the proceedings of the peer review meeting and its conclusions. The document is structured as follows: This executive summary lays out the key messages and is supported by summaries of all parts of the report. The full report starts with a small section ("i") on its scope – also providing a significant disclaimer – and continues with an introduction (Chapter 1) outlining the aims of the peer review meeting and its methodological approach. Chapter 2 describes the organisation and financing of Finland's healthcare system. Chapter 3 examines the Finnish health and social care system's policies and governance and relevant legal and regulatory frameworks. Chapter 4 describes the eHealth architecture and its application to social care. Chapter 5 examines patient eServices, also in relation to a wider eGovernment perspective. Chapter 6 offers some insights into health professional views on eHealth, particularly in the domain of ePrescribing. Chapters 7 and 8 assess the foundation of interoperability, i.e., use of standards, structured data, and coding services. Chapter 9 highlights registers and secondary data use. The report's conclusions are given in Chapter 10 using the structure of a strengths, weaknesses, opportunities, and threats (SWOT) analysis. This analysis distils the expert peer reviewers' lessons learned at the review, and highlights the main opportunities for progressing Finland's health and social care domains through a well-conceived eHealth deployment.

### Aim

The Ministry of Social Affairs and Health of Finland initiated this two-day expert peer review of the eHealth Strategy and Action Plan of Finland in order to better understand its positioning vis-à-vis international policy discussions at European level. The workshop's aim was to assist the Finnish authorities in streamlining their strategy, legislation and deployment of the Finnish eHealth Infrastructure and Services (KanTa), including the National Archive of Health Information (eArchive).

The workshop covered eight aspects of Finland's health and social care. These eight domains of activity were presented systematically to the visiting peer review group. The subjects covered ranged from a general overview (to permit a clear understanding of the Finnish system and approach), to more organisational and user-related perspectives, and more technical issues such as standards, structured documentation and secondary data. The presentations were on: the healthcare system of Finland, its organisation and financing; policies, governance and legislation; Finnish national eHealth architecture and its extension to social care; patient and citizen eServices in health and social care; a user organisation perspective; the use of stan-

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<sup>1</sup> EHTEL, the European Health Telematics Association is a multi-stakeholder organisation, based in Brussels, Belgium. Its members include European health and social care authorities (cf. <http://www.ehtel.eu>).

<sup>2</sup> The association has a service for its members called EHTELconnect: it involves peer reviews of the eHealth services offered around Europe (cf. <http://www.ehtelconnect.eu>).



dards; structured documentation and terminology work; and secondary data. After each presentation, the peer reviewers had the opportunity to comment critically on the presentations. A summary of the presentations follows.

### **The healthcare system of Finland: its organisation and financing**

The 2011 report on *Socially Sustainable Finland 2020* formed the basis for this presentation. It included details on the country's financing model of its primary care and secondary care health domains. Finland has a system of universal benefits and financing. Like the other Nordic countries, the health system is based on a common taxation system. Demographic changes are affecting both the people of Finland as well as the country's health personnel. This ageing challenge affects Finnish income security, social and health care services, and the prevention of various health problems and risks.

Comments from the peer reviewers related to Finland's commitment to equality of access to health and care, the country's use of data on diagnosis groups, and the future potential of adding a number of performance measures.

### **Policies, governance and legislation**

There are many overlapping policies in Finland; hence, the challenge of implementing eHealth is a considerable one. A number of questions are currently being posed by the Ministry of Social Affairs and Health of Finland around the potential use of open data, information exchange, third party use, knowledge management, and usability. In historical terms, Finland has moved from a series of information systems "islands" to a more systematised approach. While the system caters for flexibility at a local level, it creates a highly structured and centralised information repository – that includes lifelong electronic health records for all Finnish patients.

Comments from the peer reviewers related in a positive manner to the incrementalism and flexibility of the Finnish system. Of importance is the need to examine the "big picture", the strategic benefits, the underpinning policies, and the ultimate purposes of eHealth in Finland. The precise motivations and incentives of the three main health stakeholders – decision-makers, healthcare professionals and management, and patients – for using health data will need to be borne carefully in mind. Interest was shown in the degree of centralisation of the approach selected by Finland, and details of the system's components.

### **Finnish national eHealth architecture and its extension to social care**

Planning and analysis for Finland's eHealth architecture started in 2010, and involved an examination of past progress. This investigation was viewed as important for planning purposes. Today, the country's use of various information technology (IT) applications is generally higher than the European mean in both primary health care settings and in secondary care. Finnish health professionals have to use many different systems and interfaces in their workplace. For example, a total of seven different electronic health record systems are used. The main focus for future work between 2011-2016 is eAccess for citizens, an eArchive, ePre-

scribing, and the patient care summary. Provisional systems have been implemented on certain installation sites.

Comments from the peer reviewers related particularly to the governance, financing, and organisation of the eHealth architecture system. More precise questions concentrated on the change management system, legacy systems, certification, work organisation and ergonomics, and access and retrieval.

### **Patient and citizen eServices in health and social care**

Plans and strategies for using IT for social welfare and health care have existed in Finland for nearly 20 years. Details were offered about the ways in which patient access services in KanTa are organised, and about the SADe programme, where the long-term vision is to help citizens to take responsibility for their own well-being and prevent various health problems.

Questions posed by the peer reviewers related to the notions of patient consent, access management (opt-in/opt-out), the usage of health data by healthcare providers, and the use of smart cards for health professionals.

### **User organisation perspective**

The inclusion of professional users' perspectives and requirements was described using the setting of the Finnish ePrescribing service. The focus was on the public and private sectors from the perspective of two sets of stakeholders, physicians and IT management. ePrescribing use differs in the various areas of Finland. The system has developed substantially over the past three years, between 2010-2013. In March 2013, on average, in Finland 66% of hospital districts are using ePrescribing. In the country, this systematic approach to the introduction of ePrescribing is very much appreciated. A number of risks have, however, been perceived. They relate to specifications, timetabling, usability, and acceptance of structured documentation. Finland is working to manage and mitigate these challenges.

Questions and observations made by the peer reviewers fell into several categories: the relationship of the Finnish situation with the international context; the business side of implementation and incentives/motivation; the technology solutions sought; and the opinions of physicians, pharmacists, and patients.

### **The use of standards**

The Finnish standardisation process was covered from the perspective of the solutions chosen or implemented and their relationship with international interoperability standards. Several aspects were introduced. They included Finland's national code server (established from 2002 onwards); Finland's role in the European epSOS large-scale pilot; and the goal of establishing a cross-border ePrescription pilot with Sweden.

Peer reviewers noted that Finland adopts international standards effectively, and is involved in meaningful international activities. Finnish extensions to standards do not block interoperability. Within its work in epSOS, Finland is moving towards the use of Integrating the Healthcare Enterprise (IHE) profiles. Particularly with regard to Finland's eArchive, it was felt that in allowing the tracking of events and record contents through to outcomes, it could act as a rich source of analysis – in effect, revealing a patient's journey through various points of contact and service.

### **Structured documentation and terminology work**

Finland has a long tradition in defining life-long, structured health records. This work was covered from the point of view of THL, the relevant national organisation. Finnish structured documentation and the terminology work chosen or implemented were presented. The ways in which the patient summary and the national archive will be handled from 2014-2016 were also introduced. Finland has a roadmap that defines the documentation and terminology work that is needed by 2016. Using and adapting the relevant international standards, Finland has defined a clear-cut structure for the patient summaries to be copied to the eArchive life-long electronic health record.

The peer reviewers understood the patient summary as the ideal basis for integrated care. They proposed the updating of the name of the eArchive e.g., to “Living Archive” or a name that is closer to the notion of an active, life-long electronic health record.

### **Registers and Secondary data**

THL is the national organisation that is also responsible for health statistics, e.g., on social and health services, alcohol and drugs, social protection and health expenditure. It organises the registration of health data, analyses it, publishes the data, and interacts with the various responsible international organisations such as the World Health Organisation. Finland has many different health registers, the oldest one being for cancer. In the context of the expert review, two registers deserved special attention: the HILMO hospital discharge register, and the AvoHILMO register of primary care visits. Both could provide essential data and insight into the healthcare changes induced by the roll-out of the eKanta/eKansa approaches.

The peer reviewers offered many observations related to the registers and their data quality; the targeting of health care provision for those who are really in need of it; pseudonymisation; patient safety and attention to medication errors; benefits and outcomes of the data; and measurement, and performance and quality indicators.

### **SWOT analysis**

The list of observations from the different peer reviewers attending the meeting has been categorised according to a SWOT (strengths, weakness, opportunities and threats) analysis framework. Proportionally speaking, far more strengths and opportunities were perceived than weaknesses and threats.

## Strengths

Finland is at a world-level benchmark in terms of eHealth.

- There is a strategic change programme occurring in Finland that provides a compelling vision of integrated healthcare.
- Finland's way of bringing health and social care together provides an excellent setting for other countries to start thinking about re-design of the social and health care systems.
- Two Finnish sub-systems are particularly impressive: they are the ePrescribing initiative and the registries/secondary data collections.
- Three aspects of the Finnish process are noteworthy: these are the early start made by Finland; the general overcoming of resistance to change; and the system's timeliness and responsiveness.
- Finland has successfully established a wide diversity of fit-for-purpose components in terms of its eHealth support for its health and social system."

## Weaknesses

- The experts had expected to hear more about how Finland justifies its investment and expenditure on eHealth, and explanation of how the country measures the benefits of its system and ensures maximum adoption by clinicians and citizens.
- There appears to be insufficient focus in Finland on the context of care itself, and on the services such as new care pathways, chronic disease management, and patient empowerment which will contribute to the necessary modernisation of the health care system.
- Of particular concern is how to get healthcare practitioners to act as coaches and guides to support health care improvement ("clinical champions"), working with "communities of patients" or "communities of providers".
- Focus is needed e.g., on what the health system overall is attempting to achieve, and on what the crucial policy and political decisions are that underpin any of the choices of IT-based health systems and technologies.

## Opportunities

- **Policy, governance, and organisation**  
Find the disruptive innovation element of the health process; Focus on the creativity of the actors involved, and the incentives that the actors require to act; Build on the various components of the system. All the various components in the system(s) mean that Finland is "sitting on a gold mine!"
- **Leadership, business and benefits**  
Consider Finland's leadership position with regard to the transformation of health and care systems; Document the clinical effects of changes to the system; Measure the quality of health outcomes; Adapt quantitative indicators.
- **Opportunities for EHTEL and/or for Finland and EHTEL working together**  
Finland could showcase more widely its eHealth solutions to other countries in Europe. Together or in parallel – EHTEL could help to build and expand the peer review scheme and model; Showcase the Finnish solutions; Compare and contrast Finland's approach to those of other countries.

## Threats

- Aspects of data overload, privacy and security were identified by the peer reviewers as important, as too was eIdentity. The main messages with regard to areas to which the Finnish authorities need to pay particular attention were as follows:
- Pay even more attention to timeliness and responsiveness; Pay attention to the risk of data overload; Be aware of possible threats to the information system; Consider alternative approaches for identification, health data, legacy systems and interoperability; Consider various technological and organisational design issues, e.g., generic eID, and the roles of public authorities and private vendors.

## **Conclusions**

Finland has been involved in long-term development of its eHealth systems and services, developing from a mainly localised approach towards a more national-level approach that maximises the benefits of local ownership and flexibility. It is operated within an over-arching structure of information sharing and standardisation. There has also been an impressive degree of regionalism and local democracy. Finland has managed to track its eHealth work systematically over time. Hence, its authorities are able to see clearly the trends that have developed over a 30-year period. The basic openness, trust, and transparency apparent in Finland makes it a very helpful setting in which to develop eHealth systems.

Finland introduced digital documentation quite early. Health care quickly became paperless. Since Finland's "first generation" tools have now reached their limits, the country has to move to a next generation of services. Finland is therefore now in a good position to become an early adopter of innovative and further new concepts and methodologies.

Of clear strategic opportunity are the country's health and social care policy, governance, and organisation, its leadership, and the potential business and health/care benefits. It could certainly showcase more widely its eHealth solutions to other countries!

## SCOPE AND DISCLAIMER

This brief overview outlines the scope of this report. It also identifies some reservations with regard to the report content (disclaimer).

**Scope of this report:** This report is intended to be a public document that may be published by either the Ministry of Social Affairs and Health of Finland or by the National Institute for Health and Welfare (THL). The report's aim is to assist the Finnish authorities in streamlining their strategy, legislation and deployment of the Finnish eHealth Infrastructure and Services (KanTa), including the National Archive of Health Information (eArchive). With this aim in mind, the report provides a high-level description of the Finnish health and care plans and the current implementation of the system, accompanied by targeted feedback from an international group of eHealth experts.

A brief overview of the main elements of the Finnish health and social care systems, and the supporting eHealth, presented by the Finnish authorities is summarised in each section of this report. Following this the feedback, comments, observations, and comparisons made by the experts present are captured. A series of observations, gathered from comments made by the visiting European eHealth experts and the members of the EHTEL team, is presented at the end of the report. Several additional individual interviews are provided in annex.

**Disclaimer:** The EHTELconnect expert peer review is called a “review” rather than an “evaluation” or “benchmarking”.

This 26/27 February 2013 expert peer review exercise in Finland was not intended to undertake either a scientific evaluation based on a robust and well-established methodology or to benchmark Finland specifically against other countries. Where possible, however, attempts have been made to compare and contrast the Finnish experiences with those of other European countries and their neighbours. This is represented by examples or anecdotes described by the European eHealth experts who were present at the review.

Finland is currently in a process of reorganisation of health and social care: One option under debate in the government planning is to reduce the number of the municipalities involved while maintaining the responsibilities.

# 1 PURPOSE AND OBJECTIVES OF THE MEETING AND STRUCTURE OF THE DOCUMENT

The Ministry of Social Affairs and Health of Finland requested an expert peer review of the eHealth strategy and Action Plan of Finland, organised by the European Health Telematics Association (EHTEL) in the context of the EHTELconnect service package. This took place against the background of the January 2011 launch of Finland's *Socially sustainable Finland 2020. Strategy for social and health policy*.<sup>3</sup> The meeting took place in Helsinki, Finland, on 26/27 February 2013.

Short descriptions of each of the presentations made by personnel from the Ministry of Social Affairs and Health of Finland and the National Institute for Health and Welfare (THL) are given in this report, so as to facilitate an understanding of the Finnish health and care system on the part of readers who were not present at the expert peer review meeting.

The expert peer review constitutes a kind of "second opinion". The exercise provides a diverse range of feedback from eHealth experts who work in a variety of fields throughout the European Union. The bodies represented by experts included public health authorities, technology companies, standardisation and similar bodies, and hospitals.

Overall, the experts expressed their appreciation of the comprehensiveness and the quality of the material provided to them as visitors. The outcome of the review meeting is this meeting report.

The document is structured in the following way: this introduction outlines the aims of the peer review meeting and its methodological approach. Chapter 2 describes the organisation and financing of Finland's healthcare system. Chapter 3 examines the Finnish health and social care system's policies and governance and relevant legal and regulatory frameworks. Chapter 4 describes the eHealth architecture and its application to social care. Chapter 5 examines patient eServices, also in relation to a wider eGovernment perspective. Chapter 6 offers some insights into health professional views on eHealth, particularly in the domain of ePrescribing. Chapters 7 and 8 assess the foundation of interoperability, i.e., use of standards, structured data, and coding services. Chapter 9 highlights registers and secondary data use.

The report's conclusions are given in Chapter 10 using the structure of a strengths, weaknesses, opportunities, and threats (SWOT) analysis. This analysis distils the expert peer reviewers' lessons learned at the review, and highlights the main opportunities for progressing Finland's health and social care domains through a well-conceived eHealth deployment.

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<sup>3</sup> [http://www.stm.fi/c/document\\_library/get\\_file?folderId=2765155&name=DLFE-15321.pdf](http://www.stm.fi/c/document_library/get_file?folderId=2765155&name=DLFE-15321.pdf) The report was published in English on 25 February 2013. Accessed 27 March 2013

## 2 THE HEALTHCARE SYSTEM OF FINLAND: ITS ORGANISATION AND FINANCING

*Socially Sustainable Finland 2020* is a strategy document published by Finland in January 2011. This clear and informative introductory presentation was based substantially on the documentation provided by this policy document.

### 2.1 INTRODUCTION BY THE FINNISH DELEGATION

- Hannu Hämäläinen, Ministerial Adviser, Ministry of Social Affairs and Health of Finland

cf. doc Fin Peer Review Day 1-1 Hannu Hämäläinen MoSH Healthcare System Introduction.pdf

Finland has a system of **universal benefits and financing**. As Mr Hämäläinen said, "Finland's constitution states that everyone [in the country] has the right to enough social and health care services when they need it." However, today the current economic situation perhaps poses difficulties to providing that universalism.

In Finland – like the other Nordic countries – the health system is based on a **common taxation system**. Five years ago, in 2008, the average EU27 expenditure on social protection was 26-27 % of the gross domestic product (GDP). Finland was spending exactly that amount. However, it now spends somewhat less than the mean amount on health and social protection as determined by the Organisation of Economic Co-operation and Development (OECD).

#### 2.1.1 Demographic challenges affecting health personnel and the people of Finland

All the European Member States are now experiencing **similar challenges** to Finland. In this sense, "[Finland] is in no way different from the other Member States".

One of the subjects pursued jointly by the 27 members of the European Union is **active and healthy ageing**. Finland too is in a period of rapid large-scale demographic change. In the 1940s and 1950s, there was a heavy post-Second World War baby boom which has now resulted in a very fast ageing process. By 2050, Finland will have added 10% to its social expenditure, "but this is something which not everyone wishes to see happen."

In Finland, as Mr Hämäläinen announced, "Surveys show that people are living well and have a good functioning capacity". At the same time, overall, "the [Finnish] are satisfied, and people think the health and social services are good." ... "About 80-85% of those who responded to a 2007 survey, think that [the health system] is good", and Finland's hospital services are good. The most substantial difficulties are encountered by Finnish people mainly in the last two or three years of their lives. This "compression of disease" has been achieved as a result of better health maintenance.

In Finland, there are three basic elements to this ageing challenge: **income security, social and health care services**, and the **prevention of various health problems and risks**.



## 2.1.2 Financing and Finnish municipalities

At the **municipal level**, there are more and more people who are working in specialised health care, and fewer people are employed in primary care or in elderly care. During the last 5-10 years, specialist health care has received substantially more resources, while primary care has not been subject to the same attention. The average age of people working in health and social care in Finland has been maturing – in 2009, the average of personnel was around 45 years old. Many employees will be retiring shortly. Since Finland has a diminishing amount of manpower, it needs to introduce more effective ways of providing health and care services. The carefully managed introduction of **information and communication technology (ICT) tools and services** will act as a key enabler for this more effective provision of services.

On **financing** in somewhat more detail: "Finland has one of the most decentralised social and health care systems in the whole world. The local authorities are autonomous." Public services are funded mainly by tax revenues collected by the state and municipalities.

Currently, 201 authorities are responsible for organising primary health care and specialised medical care in 320 **municipalities**. Each municipality has on average around 6,000 inhabitants (ranging from less than 1,000 to 600,000) whereas, in many other European countries, the average population of an equivalent administrative area is about 200,000 people.

The municipalities are in charge of organising all Finland's healthcare services. They have either formed cooperatives to produce and provide these services together, or they can have them provided by the private sector.

**Primary health care** is provided in municipal health centres. Every municipality has to belong to a hospital district, but has the ability to choose which one (changes are rare). Employers organise preventive care. There is guaranteed access to care, with a delay of between three and six weeks depending on the type of illness. "We are paying 16-25 cents on every euro on health, depending on which municipality we live in and depending on the industry there." ... "Client charges provide about 5-10 % of the costs."

**Secondary health care** is also tax funded by the municipalities. Each municipality is required by law to belong to a hospital district. Hospital districts are part of the public system and are owned by the municipalities. In addition, state revenues are given by the central government to municipalities and can be used for primary or secondary care or something that is not health care at all, i.e. the funds are not ear-marked. They are based on the size of the population, the number of employees, and the specific regions. The municipalities can decide what they wish to do with these funds: they can use the funds to build either "an ice hockey rink or a care centre". For example, with regard to secondary care, the municipalities can decide whether they will use the municipally owned hospitals or whether they will purchase care from private providers. However, most of the municipalities mainly rely on their own hospital district for the majority of their specialised care. Research and education funds go directly from the state to the university hospitals.

Four out of five **health services are provided publicly** in Finland, whether this is in terms of personnel or general costs. The situation is somewhat different in some areas of social care, where municipalities purchase many services (like homes for the elderly) from private providers instead of providing their own public provider organisations. So, for the citizens, the social care services are viewed as public services while they are nevertheless produced by private providers.

Thus – while private social care is everywhere – **private health care is available in all urban areas and most particularly in the bigger cities**, for example, in the capital, Helsinki.

### 2.1.3 Changes in government programmes

In Finland, **social care and health care often work closely together** at both the Ministry and municipal levels; this may even be described as being "integrated". The focus is ultimately on the **client**.

The **current government programme** of Finland's Prime Minister, Jyrki Katainen, dated 22 June 2011, has a strong focus on high-quality and effective social and health care services.<sup>4</sup> However, Finland is now "really at the doors of a huge change in social and health care" complete with municipal reforms and decisions on exactly how services are provided.

The Ministry of Social Affairs and Health of Finland is especially involved with upcoming challenges and changes. At the beginning of March 2013, the Ministry of Social Affairs and Health of Finland was to receive reports from five Finnish regions offering **proposals for what health care will be like in Finland in the future**. Indeed, after the peer review visit, on 19 March 2013, an expert task force delivered a report to the Finnish Minister for Health and Social Care<sup>5</sup>.

## 2.2 COMMENTS AND OBSERVATIONS

In terms of health organisation and financing of the Finnish health and social care system, the visiting expert peer reviewers' comments fell into three main areas. These related to the Finnish commitment to equality of access to health and care, the use of diagnosis groups, and the future potential of adding a number of performance measures.

First, the relationship between the **commitment to equality** in Finland, in terms of equality of levels of diagnostic procedures, therapies and health outcomes (as opposed to simply equal rights to access to the healthcare system), was of interest to the experts present. Questions were posed particularly with regard to the quality of health care and its outcomes, and results for people resident in remote parts of the country. Finland is apparently currently exploring this particular challenge, especially with regard to small, isolated hospitals. So too are its neighbouring countries, Denmark and Sweden.

Second, considerable attention was paid to the way in which **diagnosis groups** are used in Finland's health system. In some geographic locations, for example the Helsinki area, diagnosis groups are used to influence the payment system. However, the Finns use diagnosis groups largely as a means of benchmarking and analysis rather than as a way in which to fund specific areas of healthcare.

Third, enquiries were made with regard to Finnish **performance measures** in the health care field vis-à-vis such items as waiting times for hospital access, and the effect that this has both on health outcomes and on patient satisfaction/perception of quality. The Finnish authorities are developing quality indicators, which would detect any considerable differences among health service providers with regard to the services delivered and outcomes achieved for patients.

Finally, a number of general, **clarificatory questions** were posed around the cost and organisation of services, particularly relating to the way in which the healthcare component of GDP is calculated in Finland; the country's distinction between acute care and emergency care; its focus on public sector care; the percentage of private care available; and the way in which general practitioners act as gatekeepers for referrals between the Finnish primary care and secondary care levels.

<sup>4</sup> <http://valtioneuvosto.fi/hallitus/hallitusohjelma/pdf/en334743.pdf> Accessed 27 March 2013

<sup>5</sup> <http://www.helsinkitimes.fi/finland/finland-news/domestic/5728-experts-find-common-ground-on-health-care-reform.html> 19 March 2013 Accessed 27 March 2013

## 3 POLICIES, GOVERNANCE AND LEGISLATION

This section covers the Finnish eHealth and welfare policies and governance. It does so against the background of input from both the Ministry of Social Affairs and Health of Finland and the THL.

### 3.1 INTRODUCTION BY THE FINNISH DELEGATION

- Päivi Hämäläinen, Head of Department (THL) and Anne Kallio (Development Manager (MoSH))

cf. doc Fin Peer Review Day 1-3 Päivi Hämäläinen Governance eHealth and eWelfare.pdf

cf. doc Fin Peer Review Day 1-4 Anne Kallio National eHealth and eSocial development in Finland.pdf

#### 3.1.1 Background from the perspective of the ministry

There are many **different overlapping policies** in Finland. Previously, Finland did not see information society policy as a single strategy or programme. Between 2002 and 2007, many different developments were taking place inside various Finnish governmental programmes. Indeed, according to its officials, if Finland were to have started its initiatives with information technology (IT) from scratch today, the country would not have acted in the same way as it did in the past.

For the Ministry of Social Affairs and Health in Finland "**the elephant is big**" – the challenge of implementing eHealth is a considerable one. Changes in legislation often need to be undertaken to modify an existing implementation timetable, e.g., with regard to ePrescriptions and structured data. Improving an existing system is difficult. Standardisation work is especially demanding. Big challenges remain such as making databases simpler, auditing the various systems, and handling data in registries. On top of this, in their everyday lives health professionals are accustomed to handling very usable information systems, and they have similar expectations of the software that they want to use in their professional contexts.

Today, with regard to **eHealth**, the Finnish health authorities report that they are asking themselves such **questions** as:

- How is "open data" relevant to the Finnish national repository?
- Is information exchange feasible between KanTa and people's personal health records?
- What happens if data is sold on to a third party or a company
- Can usability and process support be guaranteed in terms of electronic medical records (e.g., with both official data and also patient-entered data)?
- Is it possible to shift from available data and information to knowledge management?
- Can health professionals actually be satisfied with IT?

#### 3.1.2 Background from the perspective of the National Institute for Health and Welfare

In historical terms, Finland has been moving from a situation of islands of information systems to a **more systematised approach**. This systematic approach is aimed at creating incre-

mentally **a potentially somewhat unique situation** in European terms. While it caters for flexibility at a local level, it creates a highly structured and centralised information repository – constituting lifelong electronic health records for all Finnish patients. All service providers and suppliers must contribute and conform to this system.

In the 1980s, people involved with the health system in Finland started to develop local electronic patient records. Finland has had an official **eHealth strategy** since 1996: it contains a large number of details which would still be relevant today. It necessitated experimental legislation which permitted the sharing of data.

Finland has been working on **eSocial services** since 2004. However, the country does not yet have any legislation on it, and the work has so far not moved towards an implementation phase.

In 2006, a political decision was taken to develop **a national IT architecture**.

In 2007, the **Finnish National Archive of Health Information (KanTa) legislation** was passed. As a result, the Social Insurance Institution of Finland (Kela) – given its long tradition of trust in Finnish society – was selected as the hosting organisation and technical provider for the new digital services to the whole of Finland.

In 2010–2011, the very first **ePrescribing and eArchiving trials and pilots** were run: some municipalities tested sending data into the archiving systems. It generated a volume of complaints on the part of physicians (who found it complicated to extract data out of the system, since the information is scattered – depending on where the patient visits the general practitioner or the hospital).

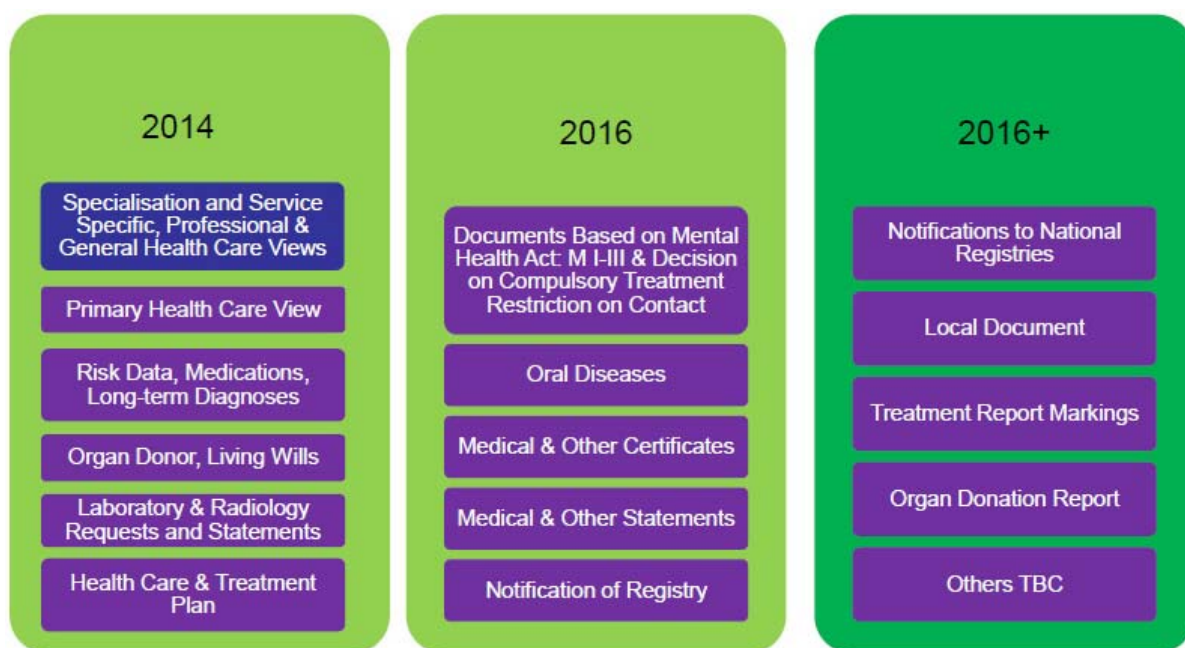
In 2011, new legislation was formulated which permitted – inter alia – **patients to opt out** of the system. This new solution is much easier to handle than the obligatory opt-in foreseen in the former legislation (2007). Nevertheless, the manifold updates defined by the 2011 legislation imply many changes to be made to IT systems and have thus slowed down the implementation of the full approach a little, which is being introduced by the OPER unit in the National Institute for Health and Welfare (THL). It is described in more detail below.

The earlier legislation (2007/2011) defines the organisational and structural framework of the new services, i.e. the national lifelong electronic health record system (eArchive). In addition, the Decree on Nationwide Health Care Information System Services (decree 165/2012) defines the key milestones for the data to be entered, i.e. it prescribes **when** each part of the medical records should be entered into the national archive service.

The seven main elements of the Finnish eHealth architecture design are:

- Shared structured (standardised) electronic patient records
- National eArchive for the electronic patient records
- Central consent management
- eAccess for the patients
- ePrescription system (in operation in public health care)
- Patient Care Summary
- Information Management System (a new element which was added in 2011).

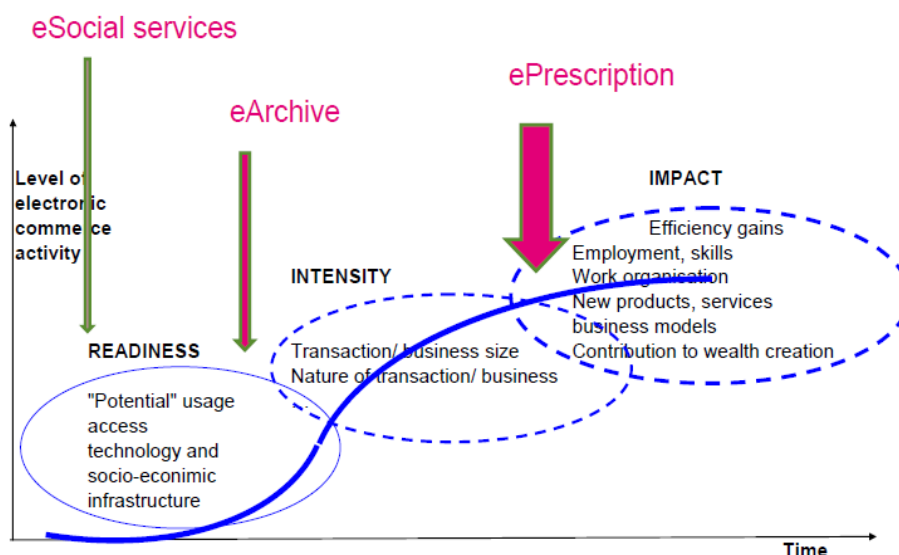
The data milestones are included in decree (165/2012). They include the times at which various types of content are to be included in the archive. The milestones are 1 September 2014, 1 September 2016 and “after 1 September 2016”. They are demonstrated by figure 1 below.



**Figure 1:** The content foreseen to be “e-archived” at the milestones 2014, 2016 and after 2016 [Source: PowerPoint presentation on 27 Feb 2013 by P. Hämäläinen and H. Virkkunen, cf. section 8]

Until the KanTa system is in full operation, patient data exchange will take place in a "business as usual" way on a regional level, but with no national data exchange possibilities. After **spring 2014**, when **upcoming legislation** has been introduced in Finland, patients will be able to visit and use services in other hospital districts. This will certainly necessitate patient data exchange.

The **S-curve model** (cf. figure 2), indicates the levels of readiness, intensity, and impact that Finland has reached with its eArchive, ePrescription, and eSocial Services applications.



**Figure 2:** Three of Finland's applications portrayed according to an S-curve model of technology adoption [Source: S-curve model for technology adoption with evaluation focus in different phases (OECD 2005, p223 , adaptation by Päivi Hämäläinen)]

Of some importance is the capacity to build a set of indicators that measure capacity-building, the means to change processes, the means to promote care outcomes, and the means to measure impacts on both patients and the healthcare system (cf. table 1 below).

**Table 1:** Measuring the deployment of Finland's eHealth system – possible indicators  
[Source: PowerPoint presentation by Päivi Hämäläinen on 26 February 2013]

Types of indicators	Tools/capacity building	Means to change processes	Means to promote outcome of care	Impact on the patient and the health care system
<b>Examples from the Finnish survey</b>	<ul style="list-style-type: none"> <li>• Use of EHR</li> <li>• Availability of PCs</li> <li>• Computer literacy</li> <li>• Standalone hospital information systems</li> <li>• Digital dictating</li> <li>• Access to internet</li> <li>• Privacy, security, consent, identifiers</li> <li>• Networks</li> <li>• Use of standards and codes</li> <li>• Budget of health ICT</li> </ul>	<ul style="list-style-type: none"> <li>• Teleradiology</li> <li>• eReferrals</li> <li>• eDischarge letters</li> <li>• ePrescription</li> <li>• eLaboratory</li> <li>• Patients access to EHR and secure communicating</li> <li>• Electronic booking</li> <li>• Web sites for patients</li> </ul>	<ul style="list-style-type: none"> <li>• Sharing patient summary or whole EHR</li> <li>• Decision support tools</li> <li>• Telemonitoring</li> <li>• Personalized patient portals</li> </ul>	<ul style="list-style-type: none"> <li>• Changes in cost of health care</li> <li>• Changes in provided care</li> <li>• Quality, access and cost effectiveness</li> <li>• Changes in care outcome (of chronic illnesses)</li> <li>• Level of patient safety</li> <li>• User satisfaction</li> </ul>

### 3.2 COMMENTS AND OBSERVATIONS

Here the comments and questions posed by the European eHealth experts can be classified into two fields: the first is related to the Ministry of Social Affairs and Health, and the second is concerned with the Social Insurance Institution of Finland (called Kela).<sup>6</sup>

The general eHealth approach appears to be **long-term, incremental**, and sufficiently **flexible** to be adaptable to changes. It has been modified several times over the lifetime during which it has been operational. In terms of these high-level changes to the Finnish health and social care systems, a certain number of comparisons were made with similar policy-related shifts in direction e.g., in the **Swedish healthcare system**.

The peer reviewers perceived the need to see the "**big picture**" in terms of changes being proposed to the Finnish health and social care system and the **strategic benefits** that would be achieved. It was felt that a focus on the **underpinning policies** behind the technological and organisational tools was needed.

The Finnish authorities were encouraged to consider **a shift from data to information and, ultimately, knowledge**.

At times, however, the visiting peer reviewers found it difficult to understand the **ultimate purpose** why data is being shared, e.g., in terms of supporting clinical pathways or enabling new process of care.

The precise **motivations and incentives** of the three main health stakeholders (e.g., decision-makers, healthcare professionals and management, and patients) for using KanTa will

<sup>6</sup> <http://www.kela.fi/in/internet/english.nsf> Accessed 27 March 2013

need to be borne carefully in mind. For example, if the plan is to evolve towards **integrated care**, there will need to be clear definitions of roles and responsibilities. Equally, the peer reviewers considered **governance and surveillance** issues to be important.

It was clear to the peer reviewers that changes in the Finnish health and social care system would affect substantially the **work of Finnish healthcare professionals**, and particularly the roles of clinicians. Nurses' roles too will be subject to modification. Any shift towards **patient ownership and patient management of data** is likely to modify the doctor/patient role(s).

Organisationally, the question was raised about what were **the appropriate organisations** in the Finnish system to oversee, operate and further develop the KanTa services in the long-term.

The degree to which there had been **public debate and dialogue** on all of these matters was also of interest to the reviewers.

There were also three sets of diverse questions with regard to the **degree of centralisation of the approach** chosen by Finland, the **choice of information (IT) systems**, and **finer – often systems, organisational, or technical – details** with regard to the system itself.

First, there was also curiosity about why the neutral term **eArchive** had been chosen for a life-long electronic health record system. The peer reviewers later suggested alternative phrasing for this "archive" (see sections 8 and 10 of this report). Second, they queried why a **centralised approach** to the design of the system had been used originally. Third, they wondered about the range of **choice of IT systems**. In fact, at least seven IT companies are contracted to individual municipalities in Finland. Fourth, a number of clarificatory questions were posed about **the system, and its organisational and technical details**. These covered the actual location of the "archiving" system – a large computing centre – in Kela, its relationship with cloud computing, and the expected length of time of data storage (i.e., for the duration of a person's lifetime, plus 12 years following death). In Finland, in addition, the personal data of people born on particular days of a given month, is kept "forever" for longitudinal research purposes). There were also queries about the length of time since the national "archiving" system was developed, and its principles with regard to opt-in and opt-out measures.

## 4 FINNISH NATIONAL EHEALTH ARCHITECTURE AND ITS EXTENSION TO SOCIAL CARE

KanTa denotes the Finnish national eHealth architecture of which the core infrastructure has been implemented. KanSa, the extension of this architecture to Finnish social care, is in planning phase.

The **National Institute for Health and Welfare** (THL) has 1,200 personnel. OPER is its unit for the operational management of health and welfare information in Finland. This presentation was made from the perspective of its head, Dr Vesa Jormanainen. There are 20 persons in the OPER unit, and staff members have and come from different backgrounds, disciplines, and communities.

### 4.1 INTRODUCTION BY THE FINNISH DELEGATION

- Vesa Jormanainen, Head of OPER Unit (THL)

cf. doc Fin Peer Review Day 1-2 Vesa Jormanainen eHealth architecture KanTa - extension KanSa.pdf

Planning and analysis for the national **eHealth architecture** started in 2010, and involved an examination of past progress. This investigation was viewed as important for planning purposes. The approach focused on both on the **professional user needs** and the **administrative and healthcare demand side** of health-IT systems. The user side comprises various domains of professionals (with many actors playing several different roles).

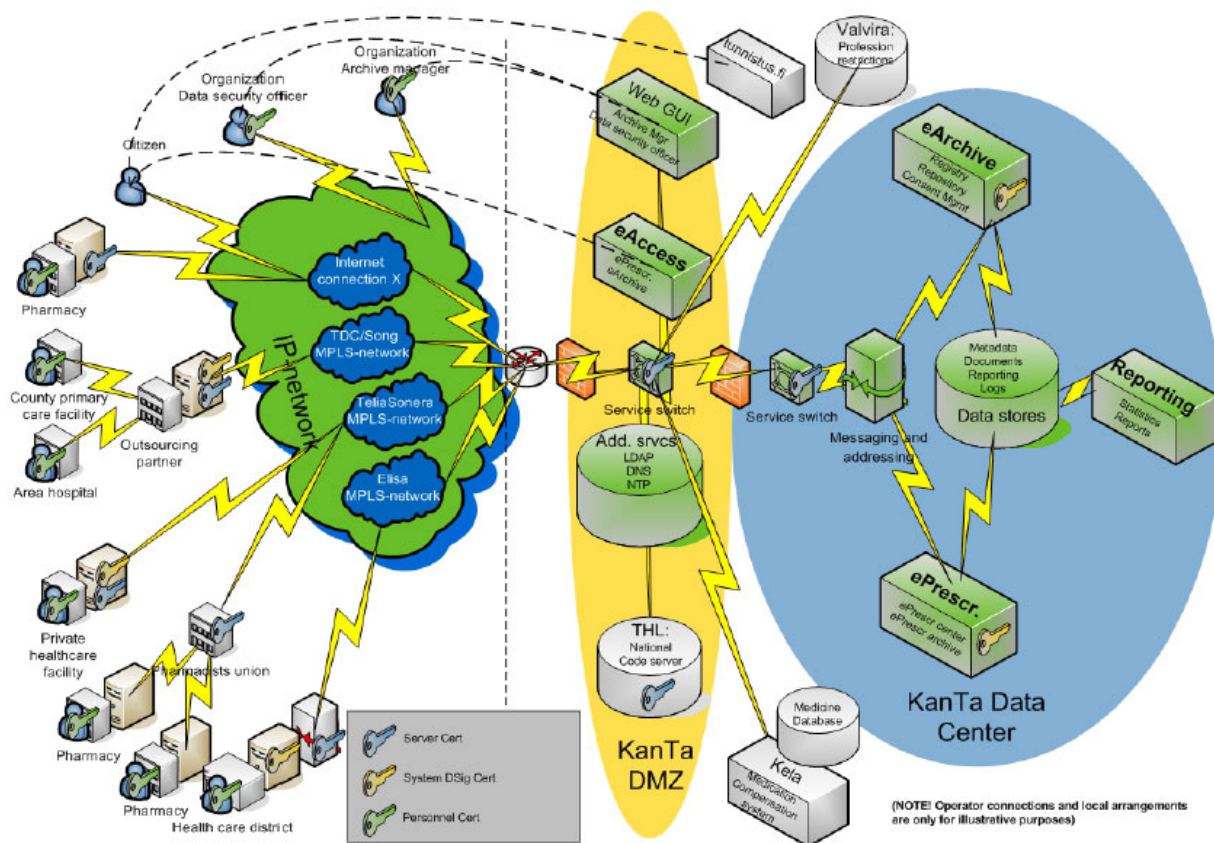
Finnish physicians work, at the same time, in both the public and the private health care systems. Thus, in their work, health professionals have to use **many different systems and interfaces** in their workplace, depending on the actual patient with whom they are dealing and the IT-system of the care provider. They may even have to use two or more interfaces for the same client. Certainly, physicians need currently to learn to use new systems or new items of software. Indeed, there are between 15-20 different major systems in operation throughout Finland.

The Finnish health and social care system can be described as one of "the world's most decentralised health systems", which is quite widely geographically "scattered". As a result, a considerable diversity of IT systems are used. This raises **the risk of sub-optimisation of provision and care**, e.g., when patients travel from place A to place B and where different IT products or solutions are used.

A total of seven different electronic health record systems are used: Five in public primary care and four in public hospital-based specialised medical care (while two systems are used in both settings). Local decision-makers have been able to use their influence with regard to the choices of system and IT equipment that they have made.

All the different electronic health record systems in the primary sites (in both primary care and hospitals) will be connected to the national infrastructure. A network view of the system architecture is provided in figure 3 below. For a complementary view on the systems' services, demonstrating the data flows and building blocks, please refer to figure 9 in section 7 (standards) of this report. As already mentioned, the KanTa system will also function as a technical basis and an architecture model to support social care (KanSa).





**Figure 3:** Network view of the KanTa architecture  
[Source: Marko Jalonen, Kela]

The system consists of both a **central part** – which is ready to use – and other more **decentralised components** to connect to primary systems at the healthcare sites.

The **investment cost** for the central system has been €5-38 million. The decentralised element of the system is, however, not yet ready. Costs have been calculated for the ten-year, 2004–2014, time span. In 2010, the cost estimation was of €200 million for the full KanTa system – comprising €100 million for the central system, and €100 million for all the partners needing to join (including private partners).

The first components of the **eArchive** have been in operation for some two years already.

**ePrescription** implementation started in 2007 and the first organisation started to use ePrescriptions in 2010. The plan for deployment of ePrescription take-up has been based on hospital districts. The current situation is discussed in detail in section 6. Nearly 70% of prescriptions from the organisations that have joined are electronic, but the total national figures are much lower because the private sector is not yet involved.

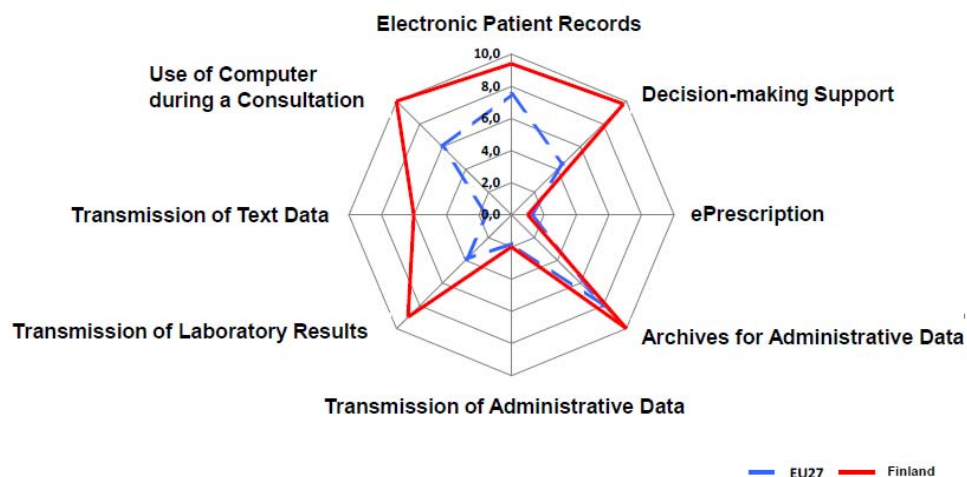
In 2010, a European Commission study was undertaken, and published in 2011, on eHealth benchmarking in acute and secondary care.<sup>7</sup> It investigated the status of IT use in all 27 European Union member states as well as Croatia, Iceland and Norway. Finland has assessed its own status independently: it used a similar **measurement system** to this 2010–11 study to investigate its own usage of eHealth.

This **assessment** shows the country's use of various applications to be higher generally than the European mean in both primary health care settings and in secondary care. The exceptions

<sup>7</sup> European Commission (2011) *Benchmarking eHealth Deployment in Europe*. eHealth Benchmarking III. Deloitte & Ipsos Belgium.

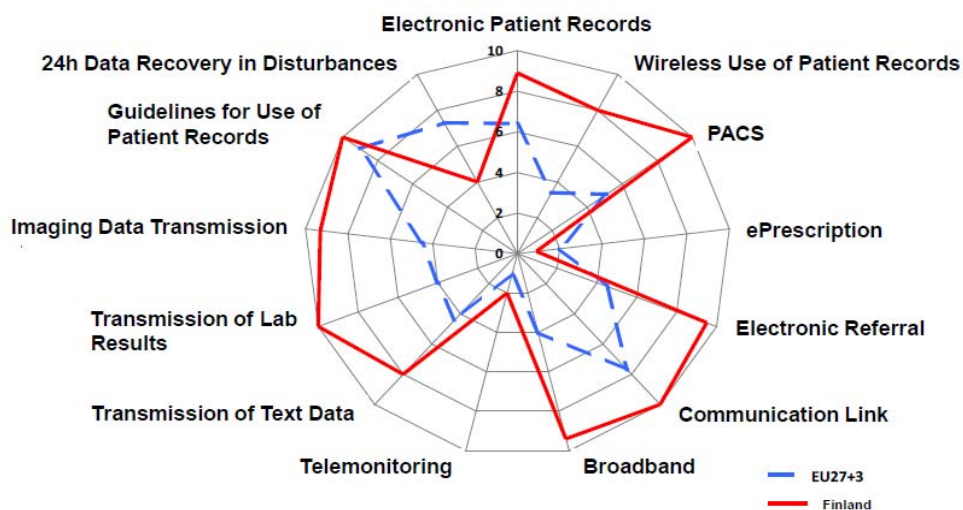
in specialist health care are ePrescription (which was therefore lower in 2010), and 24-hour access to administrative data.

### Finland in an International Comparison: Primary Health Care



**Figure 4:** Finland in an international comparison - primary health care, situation of early 2011. [Source: Unpublished preliminary data by Reponen J, Kangas M, Winblad I, University of Oulu, FinnTelemedicum]

### Finland in an International Comparison: Specialist Health Care



**Figure 5:** Finland in an international comparison - specialist health care, situation of early 2011. [Source: Unpublished preliminary data by Reponen J, Kangas M, Winblad I, University of Oulu, FinnTelemedicum]

Finally, what work is planned for the OPER unit between 2011–2016? The main foci, in alphabetic order, are **eAccess for citizens**, an **eArchive**, **ePrescribing**, and the **patient care summary**. The systems have started to be implemented on certain installation sites.

## Timetable 2010–2016

		OPER						
		2010	2011	2012	2013	2014	2015	2016
<b>ePrescription</b>			(31.03.2011)	31.03.2012	31.03.2013	31.03.2014		
Pharmacies: obligatory to connect		19.05.2010	-----	31.03.2012	-----	-----	-----	-----→
Public Health Care: obligatory to connect		20.05.2010	-----	-----	31.03.2013	-----	-----	-----→
Private Health Care: obligatory to connect						31.03.2014	-----	-----→
<b>eArchive</b>			(31.03.2011)			31.08.2014	31.08.2015	
Public Health Care: obligatory to connect			15.11.2011	-----	-----	31.08.2014	-----	-----→
Yksityinen th: obligatory to connect			-----	-----	-----	-----	31.08.2015	-----→
<b>eAccess for Citizens</b>			(31.03.2011)					
ePrescriptions: eAccess service open for use		19.05.2010	-----	-----	-----	-----	-----	-----→
eArchive: eAccess service open for use			15.11.2011	-----	-----	-----	-----	-----→
<b>Patient Care Summary for Healthcare Professionals</b>						31.08.2014		31.08.2016
Phase 1: obligatory				-----	-----	31.08.2014	-----	-----→
Phase 2: obligatory				-----	-----	-----	-----	31.08.2016

**Figure 6:** OPER timetable 2010-2016  
[Source: Vesa Jormanainen, THL]

## 4.2 QUESTIONS AND OBSERVATIONS

The peer review experts were particularly interested in the **governance, financing, and organisation of the eHealth architecture system**. For example, their questions related to whether the entire system had been developed using public funding, and what precisely the investment cost had covered.

The **change management** system, and how health professionals have been encouraged to adopt the system was viewed with some interest, as was the system by which local decision-makers can select particular electronic tools. Scotland, it was noted, for example, holds centrally a framework list of key systems for primary and secondary care from which the local health organisations can choose. Agreements have been reached in Scotland with the regional health boards to converge on a strategic set of clinical and administrative systems.

A number of questions posed by the reviewers related to **legacy systems** and how they are handled, and whether the fact that the systems have been modified over time has posed difficulties (or not). Whether the Finns are working on **certification** was also of interest. Some of the reviewers questioned the feasibility of having **so many IT system suppliers** that are able to modify their systems in the desired timeframe so as to exchange data in the standard forms specified.

The peer review experts queried the manner in which the electronic medical records have been built, and their implications, for general practitioners, in terms of **work organisation and ergonomics**. Electronic medical records standards could contribute positively to the **evolution and certification of systems**. Section 7 of this report on standardisation expands on these concepts.

Since there appears to be such a large amount of data monitoring in Finland, several questions about **access and retrieval** were posed.

## 5 PATIENT AND CITIZEN ESERVICES IN HEALTH AND SOCIAL CARE

### 5.1 INTRODUCTION BY THE FINNISH DELEGATION

- Minna Angeria, Project Manager (THL)
- Jari Suhonen, Project Manager (THL)

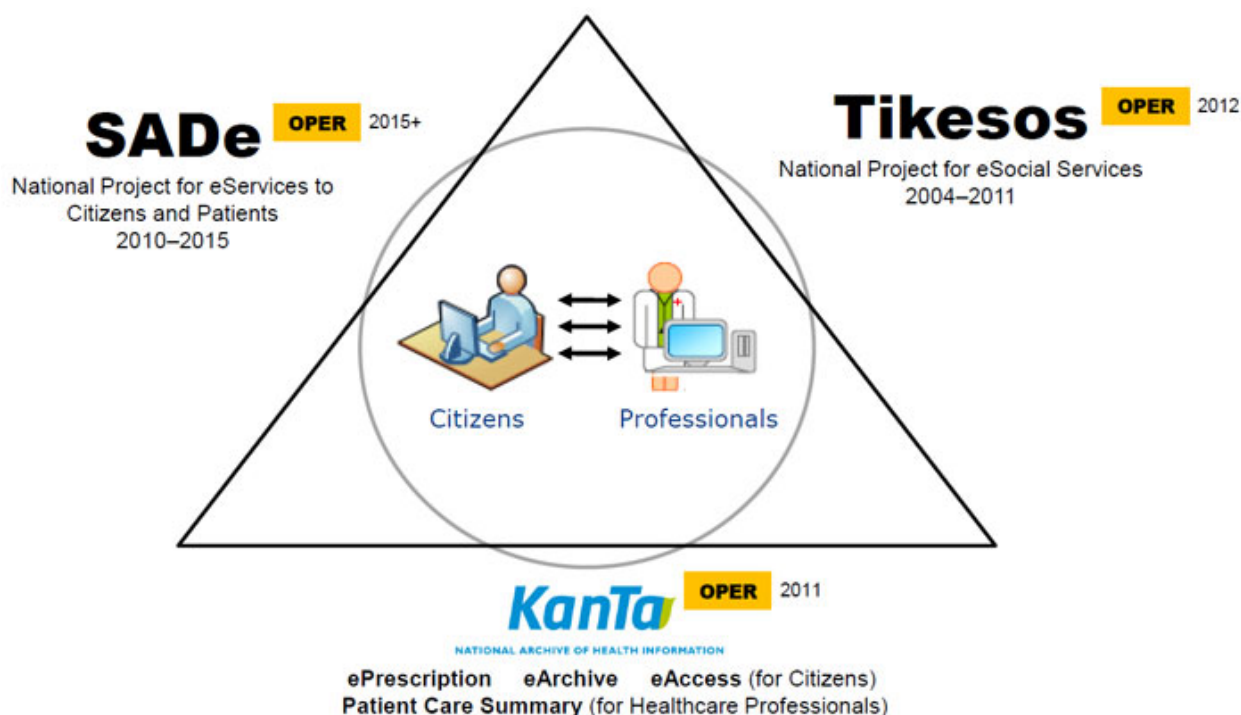
cf. doc Fin Peer Review Day 1-5 Minna Angeria - Jari Suhonen SADe Patient and Citizen eServices.pdf

**Plans and strategies** for using IT for social welfare and health care have existed in Finland for nearly 20 years. The overarching goals are to improve and increase:

- the availability, quality and efficiency of social welfare and health services,
- clients' independent initiative and participation, and
- health awareness and empowerment of the clients.

With regard to health and healthcare, this part of **Finland's citizen eServices (SADe) programme** has its focus on two elements, i.e. to define and provide digital means to foster citizens' participation and the development of electronic services in social welfare and health care.

In the framework of the peer review, the emphasis was on **citizens' and patients' access to their health data and services** in the KanTa framework. The third part of the triangle (cf. figure 7) on the National development for eSocial Services (the former Tikesos project) was not further detailed.



**Figure 7:** Triangle of the patient and citizen eServices in Finnish health and social care [Source: Vesa Jormanainen, THL]

The SADe program is driven by the Ministry of Finance in co-operation with other ministries. The Ministry of Social Affairs and Health is responsible for the social and healthcare part of

the SADe project. So far, SADe-related services are offered on a **voluntary basis by municipalities** to their citizens. There is thus a huge difference between SADe and KanTa (which is compulsory by legislation and is being rolled out nation-wide). In the long run, the development of healthcare legislation is geared to further strengthening the client's position as is evident in the recent Finnish Health Care Act. The full "Action Programme on eServices and eDemocracy" (SADe) is financed for the period 2009-2015 by the Ministry of Finance. It promotes citizens' eServices in some non-health-related fields of society too.

#### **The Patient Access services in KanTa:**

The eServices for Health in KanTa foresee **patient access** (*eKatselu*) to various services, particularly electronic prescriptions (drug purchases, prescriptions, printed summaries of prescriptions, and user log records) and electronic health records (diagnoses, imaging data, laboratory results, medication data, referral and discharge information, and treatment periods).

The security infrastructure of the service provides strong **electronic identification** for all users. The users log in either by using Internet banking IDs (nearly all adults in Finland have this) or national eID cards (these are smart cards with certificates), which are used less frequently. An extension supports the use of digital certificates for health professionals. The services are hosted and maintained by the Social Insurance Institute of Finland (Kela).

The access to personal health data is also used to manage **consent** in the KanTa system. When consent is given (via an opt-in), it is usually unlimited. However, it may be limited to certain types of data (such as the period and the provider). Health professionals can prevent or postpone the display of data to the patient, e.g. in terms of life-threatening diseases. Patients can also monitor access to their data through an **audit facility**.

Finally, the patient access system is used to **register organ donation, wills, and living wills**.

#### **The SADe programme:**

**In the SADe programme there are other themes addressed by the Finnish service portfolio** for the social and health sectors to promote the health and welfare of families with children and prevent social exclusion. For example, they are oriented towards both children and older adults. On one hand, this includes the prevention of child obesity, inactivity, and excessive playing of computer games. On the other hand, it promotes the health, welfare and capacity of elderly people, e.g. by preventing memory disorders, and falls.

The **long-term vision** is to help citizens to take responsibility for their own well-being and prevent various health problems. It is intended to do this by using the Internet as the citizen's personal trainer. This will involve the use of virtual medical examinations, personal data to create instructions, or the provision of treatment programmes that promote health and well-being. It will also encourage citizens to follow instructions and offer them rewards in terms of the positive monitoring of follow-up and results. A virtual service instructor would guide a citizen to the appropriate service provider on the basis of the need for service, quality, and comparative data.

## 5.2 QUESTIONS AND OBSERVATIONS

**Patient consent** was the first issue addressed by the European eHealth experts, i.e., whether the use of electronic health records can be refused by patients. This option is no longer possible in Finland, since the use of paper records has been discontinued. Yet a patient could refuse the sharing of his or her records by one health care provider with other health professionals. In any case, the acceptance of the Finnish population for both KanTa and the healthcare registers is quite high.

The granularity of the **access management** allows a patient to refuse the sharing of data related to a particular encounter with healthcare providers. A patient will of course receive explanations on the risk that can result from this opt-out. As in other European countries, access rights to patient data are based on the "need to know". In practice, contact with a health care organisation legitimates a three-month access period – respecting, of course, any existing opt-outs. Special rules are applied for data related to psychiatric diseases.

**Usage of any health data** is by legislation limited to healthcare (treatment) and health surveillance.

Responding to an expert's question, the point was also made that **patients' access to their health data** (cf. the eAccess element in KanTa ) is about to trigger a change of behaviour in healthcare providers way of documenting appointments and diagnoses. Indeed, Finland can already observe groups of healthcare providers that are starting to discuss their documentation approach.

The European eHealth experts also asked questions about the **use of smart cards for health professionals**. The main benefit of using cards seems to be the support for physicians working in different settings as part of their daily routine. A nation-wide defined system of card certificates eases the process of adhering to permissions based on the professional role and the work (healthcare) context. Future technology changes may enable updates to the current system, i.e., using banking cards in Finland for other health-related purposes and introducing new, mobile technologies. Adding or changing technologies must then also involve alternative methods for signing electronic prescriptions: currently the use of smart cards with physicians' certificates is binding for the issuance of ePrescriptions in a legally valid form.

## 6 USER ORGANISATION PERSPECTIVE

### 6.1 INTRODUCTION BY THE FINNISH DELEGATION

- Maritta Korhonen, Development Manager (THL)

cf. doc Fin Peer Review Day 2-4 Maritta Korhonen User Organisation Perspective.pdf

The inclusion of **professional users' perspectives and requirements** was described using the setting of the Finnish ePrescribing service.

The focus was on the **public and private sectors** from the perspective of **two sets of stakeholders**, physicians and IT management. The facts and figures cited were totally up-to-date; they were taken from meetings held in the largest areas of Finland on February 4, 2013.

**ePrescribing** use differs among the various areas of Finland. The system has developed substantially over the past three years between 2010-2013. In March 2013, on average in Finland, 66% of regions are using it.

Data on a total of 50,000 new prescriptions is fed into the system every day; the **volume of prescriptions** is growing at least along the same lines.

At present, the organisations and individuals using ePrescriptions appear to be quite satisfied. This is due largely to the degree of joint **planning** that has been undertaken in the system's implementation. The country has an action plan that covers implementation, piloting and auditing, and implementation. It shows – at each stage of activity – what will happen next in terms of implementing ePrescriptions.

This **systematic approach** is very much appreciated within Finland, and is viewed as being especially of assistance to the private sector and the IT vendors. Planning meetings are currently being held in which the healthcare organisations and the vendors meet together, thus enabling them to cooperate. The strict planning timetables are also viewed as good for the health organisations involved.

A **number of risks** were, however, perceived. They related to specifications, timetabling, usability, and acceptance of structured documentation. Finland's answers to the management and mitigation of these risks have included **two plans**: a clear testing plan and an implementation plan. Cooperation with users and vendors has been developed, and there has been concentration on the development of appropriate guidelines and training.

As of February 2013, the views of clinicians and IT management vis-à-vis ePrescribing were quite positive. These have been identified by the Finnish authorities as:

**From the doctor's viewpoint:** On the one hand, ePrescriptions are always readable, easily locatable, and cannot be falsified. ePrescribing is faster; there is no need for the use of phone calls. All of a patient's medication can be seen in one place. Patient safety is therefore improved. eAccess is a possibility on the patient's part, which leads to patient empowerment.

On the more technological side, both the technology and the software work well, and now provide tools for cooperation with primary care, secondary care, and pharmacists. As one doctor has said, "[This is] a huge step exactly into the right direction."

**From the IT management's viewpoint.** There is a good action plan, schedule, and guidelines. The new services are useful, and there is increasing use of both national services and national specifications. This initiative develops a good comfort level with new ways of cooperating. It is helping to develop "a culture of project work". It also encourages an understanding of the importance of data integrity.

Overall, health care providers desire a **national architecture and clear leadership!** This level of direction is expected from both the Finnish Ministry of Social Affairs and Health as well as from the National Institute for Health and Welfare, including OPER.

Of course, some critical questions remain as to whether there is **sufficient time and money** available to achieve all the plans that have been set out. These are issues which need to be addressed.

## 6.2 QUESTIONS AND OBSERVATIONS

The European eHealth experts had a number of questions and observations that fell into several categories: the relationship of the Finnish situation with the international context; the business side of implementation and incentives/motivation; the technology solutions sought; and the opinions of physicians, pharmacists, and patients.

**International and national levels:** Two sets of questions were explored. The first set was the benefits of getting involved with **European Union-level initiatives** (and international) around ePrescribing, such as engagement in the epSOS, large-scale pilot initiatives.<sup>8</sup> The second was the extent to which **Finnish society itself is benefiting directly** from the shift towards new eHealth services like ePrescribing.

**Organisations and users:** The ways in which, in addition to more obvious large international corporations, **smaller-scale organisations** such as small- and medium-sized enterprises could enter the national service were discussed. There was a brief examination of the **methods used to motivate users** to join the system e.g., through changes to the legislation, diverse forms of social control, and tight project management and timetabling.

**Technology:** On the technology side, the existence of **cloud-based solutions** were queried and the way in which this can be attractive for such occupations, professions, and organisations as e.g., nurses, occupational therapists, and small private health care organisations (here, the example of Belgium was cited). A number of items were also explored with regard to frequency and regularity of **software updates** and various methods of managing this (examples were again cited by the Belgian eHealth expert) as were the benefits of having external service releases with scheduled and planned approaches (e.g., in the case of such international products and services offered by the Mozilla Foundation).

**Physicians, pharmacists, and patients:** A number of issues in the ePrescribing field were of keen interest in terms of questions surrounding hospital pharmacists and clinicians. There is considerable value to the **continuous updating of information towards prescribers** when prescriptions are collected at pharmacies (dispensation), since this enhances **patient compliance** and optimises drug related plans and decision making. While such updates would be delivered via the ePrescription server to the health professionals there would be an added value for a separate list of drugs to be collected by patients at pharmacies (see the ensuing commentary on comprehensive medication lists).

Several questions were posed from the perspective of a **pharmacist**, whether this was as a hospital pharmacist or as a community pharmacist on the high street, e.g., the availability, within the ePrescribing system, of a **comprehensive medication list** that could include over-the-counter or non-prescribed drugs, and natural products leading to counter-reactions.

The specific linkage of the ePrescribing application to **patient health records** was also explored, as well as any association between the Finnish National Archive of Health Information (KanTa) and patient health records. It was felt strongly that **patients** should also be active contributors to the whole process.

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<sup>8</sup> <http://www.epsos.eu> Accessed 28 March 2013



## 7 THE USE OF STANDARDS

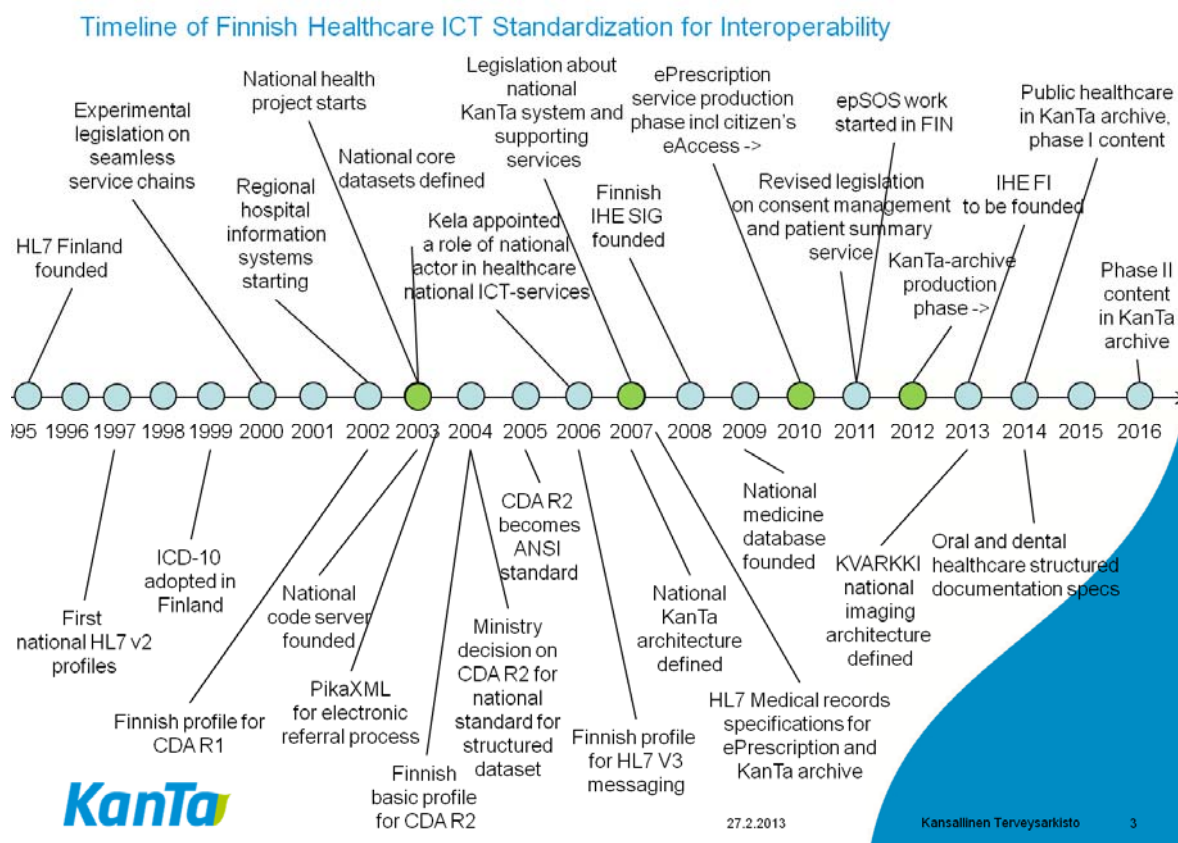
This section covers the Finnish standardisation process, starting out with the solutions chosen or implemented and their relationship with international interoperability standards.

### 7.1 INTRODUCTION BY THE FINNISH DELEGATION

- Konstantin Hyppönen, Kela (The Social Insurance Institution of Finland)
- Marko Jalonen, Kela (The Social Insurance Institution of Finland)
- Jari Porrasmaa, MoSH (Ministry of Social Affairs and Health)

cf. doc: [Fin Peer Review Day 2-1 Jalonen Hyppönen Porrasmaa KanTa\\_Standards and Interoperability.pdf](#)

This joint presentation by Kela, the Social Insurance Institution of Finland, and the Ministry of Social Affairs and Health provided an overview of two aspects of standardisation in Finland. First, it covered the **history and timeline** of Finnish Healthcare ICT Standardisation, Standards and infrastructure services applied in the current National Healthcare ICT System Architecture. Second, it showed how **standards are managed**, e.g. deriving localised standards and organising testing and approval processes. Against this backdrop, the participation of Finland in the European epSOS large-scale pilot on selected cross-border eHealth services was seen as an interesting test case for the robustness of the interoperability enablers in the Finnish system. Figure 8 (next page) demonstrates the long and **systematic planning and implementation** around standards since 1995, the year of the foundation of the HL7 user group for Finland. By 2008, Finland had launched a National Special Interest Group around the Integrating the Healthcare Enterprise (IHE) context and plans to approach IHE officially in 2013. Finland has meanwhile founded a full national chapter of the IHE organisation (the contact person is Jari Porrasmaa, one of the presenters, who works at the Ministry of Social Affairs and Health, and is hence in a key position for planning purposes).



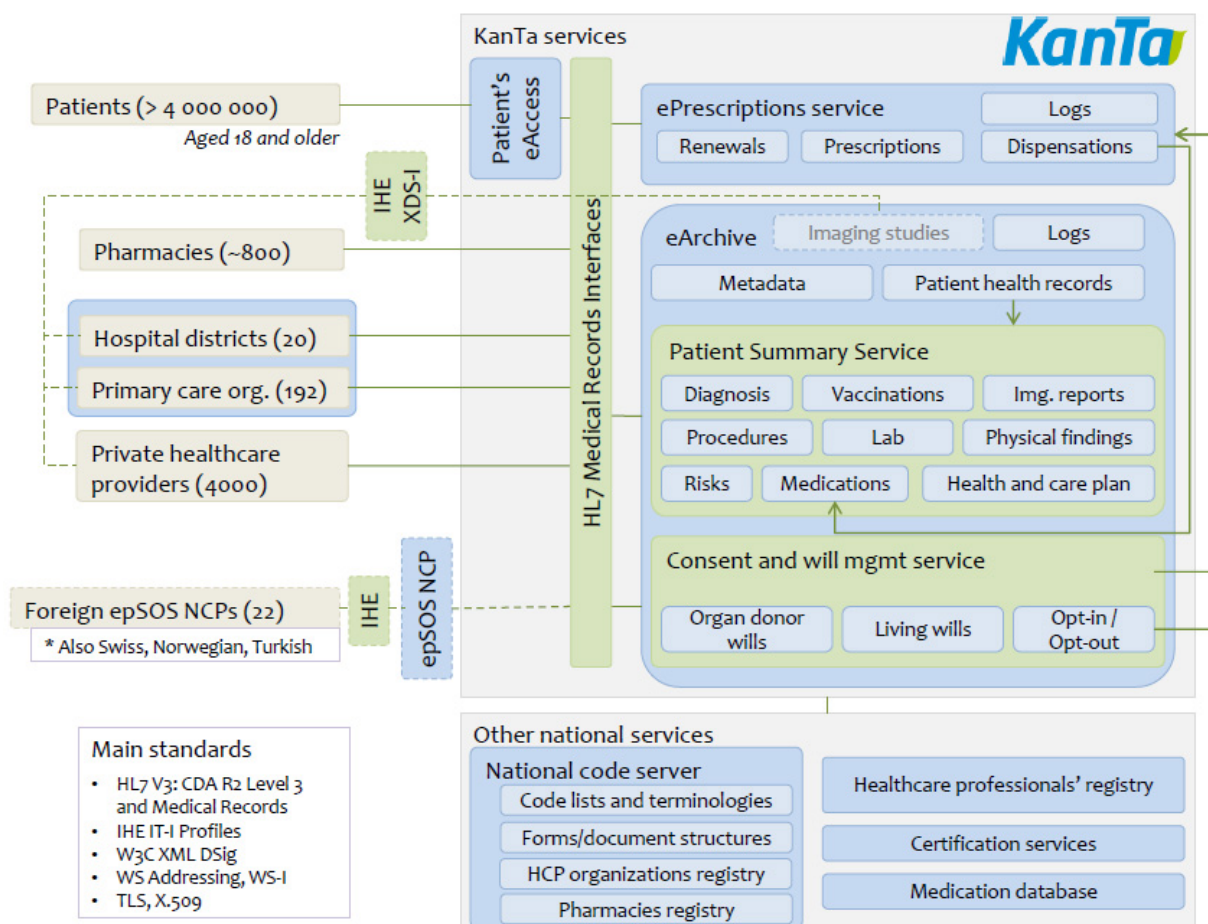
**Figure 8:** Timeline of Finnish Healthcare ICT Standardisation for Interoperability  
[Source: Konstantin Hyppönen, Marko Jalonen and Jari Porrasmaa]

Figure 9 (next page) provides a comprehensive view on services, interfaces, documentations and standards of the **Finnish eHealth infrastructure**.

It becomes evident, even through a quick glance, that the national architecture has been developed completely on the basis of **well-accepted international standards and profiles** like HL7 v3 (including CDA R2, W3 XML for digital signatures and a x.509 certificate based infrastructure for the ISO 7816-\* compliant smart cards). DICOM for imaging and Object Identifiers (OIDs) are also in use. The adaptation of the IHE XDS profile family for cross-enterprise data sharing is under development

PikaXML – used for referral-report process automation – is a non-standard XML format, based on the Medcom (Denmark) MEDDIS profile (and is thus an EDIFACT standard).

A notable achievement is Finland's **national code server** which was established from 2002 onwards. Based on the country's longstanding engagement to standardisation, it was noted that **semantically adequate conversions of structured data are possible between Finnish and international profiles**. The KanTa production phase is supported by dedicated testing and approval processes. Finland has **national test cases/patient stories**, and these are continuously developed for interoperability testing.



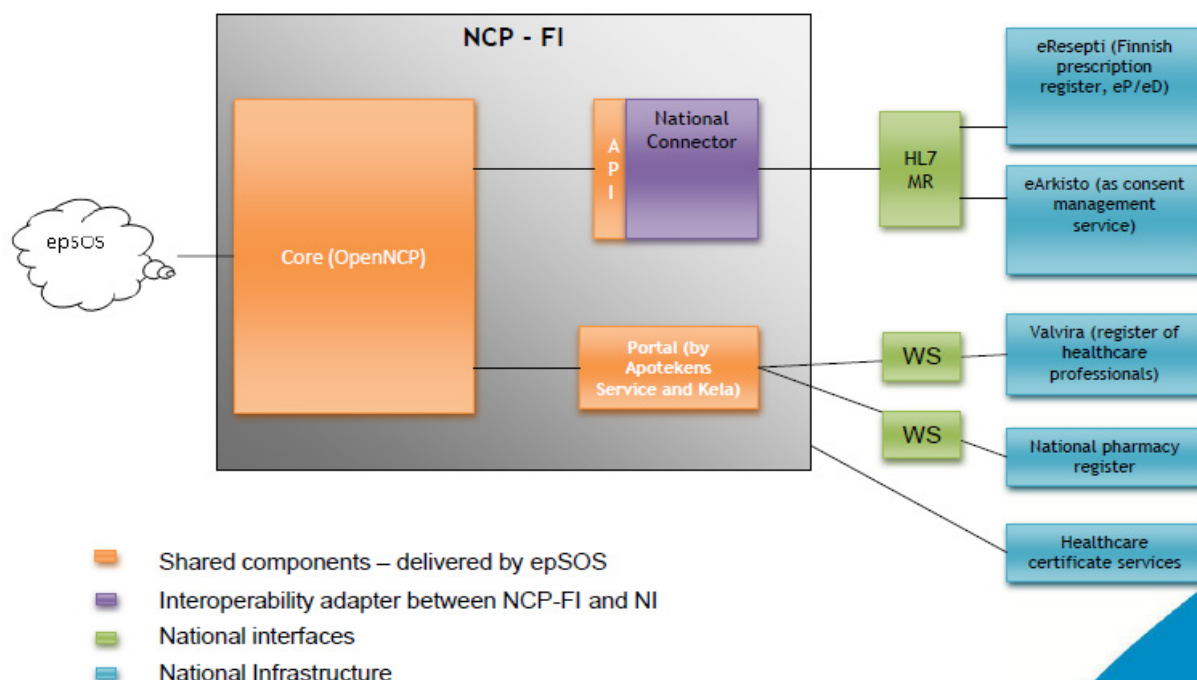
**Figure 9:** KanTa – Schematic View – Highlighting infrastructures services, interfaces and standards

[Source: Konstantin Hyppönen, Kela]

Konstantin Hyppönen, one of the speakers, serves as epSOS technical lead for Finland. The country joined epSOS in 2011. A main goal was to establish a **cross-border ePrescription pilot with Sweden**: The planned pilot accommodates patients in the north of Sweden and Finland (in the Torne valley) who can obtain medicines from both countries. The ePrescription pilot will allow Finland and Sweden to participate in pan-European testing and other work. Finland qualified as a pre-pilot for testing as Country A (ePrescription sender), and it was also getting ready in March 2013 to start testing as Country B (ePrescription dispenser).

epSOS is understood to act as a test-bed for **mapping the Finnish architecture to international standards**. The test is reported as having been successful, with the country having demonstrated a robust standards-based system. Good support infrastructure and collaboration was also noted between the various Finnish national authorities (such as Kela, THL, Population Register Centre, Finnish Medicines Agency, Pharmaceutical Information Centre, and the National Supervisory Authority for Welfare and Health), which can acquire certificates and OIDs easily.

Figure 10 (next page) indicates the way in which the epSOS pilot is connected with the Finnish National Contact Point and, internally, standards are used in the contacts with the various Finnish internal applications, particularly for registers such as ePrescriptions, health-care professionals, and pharmacies.



**Figure 10:** Connecting epSOS and the Finnish Infrastructure via the National Contact Point-Finland (NCP-FI)  
[Source: Konstantin Hyppönen, Kela]

## 7.2 QUESTIONS AND OBSERVATIONS

The questions raised by the experts dealt mostly with requests for clarifications. These clarified understandings have already been implemented in the text in the body of this written report.

Among the main observations and lessons learned, the European eHealth experts noted that:

- Finland tries to **adopt international standards** and to follow what is happening internationally. However, Finland does not go for the freshest initiatives. Rather, it tries to use what is feasible and what is rational. So far, the choices of standards have been generally well-grounded.
- **Finnish extensions to standards do not block interoperability.** Those extensions that have been adopted are allowed by the standards.
- Within its work inside epSOS, Finland is **moving towards IHE profiles**. This is currently established via THL and Kela that are jointly undertaking a proof of concept on the case of KanTa. It has been prepared through studies that run in various Finnish universities, funded by the Finnish Funding Agency for Technology and Innovation (Tekes).
- Finland could consider hosting the next **IHE Connect-a-thon**. This proposal for the next Connect-a-thon has now been taken up.

One particular view was that all **standard development and implementation work should be guided by the priority health problems**. Finland responded that the patient summary is seen as being comprehensive enough to cover all diagnoses and the necessary data for the diagnoses.

There were three further opinions expressed, all related to fine tuning the scope or just the name being used for the KanTa services: First, it was felt that the **eArchive** had been planned as a **largely passive service**. Second, it was thought that it had been designed to work as a

straightforward, albeit extremely large, repository which would hold all the medical records for a single individual in a single place so as to allow access by any provider (and the individual) at the point of care when required. Third, it was considered that it could also be used to support **an active service**, i.e. ,the eArchive could be used as a life-long electronic health record – in other words, it can be an individual **data warehouse for health challenges**. Thus, the act of storing a record in the eArchive could be an event in a series of workflows that could initiate subsequent actions. The eArchive could act as an extremely rich source of analysis allowing the tracking of events and record contents through to outcomes – in effect, revealing a patient’s journey through various points of contact and service.

## 8 STRUCTURED DOCUMENTATION AND TERMINOLOGY WORK

This section covers the Finnish structured documentation and terminology work chosen or implemented from the point of view of the relevant national organisation.

### 8.1 INTRODUCTION BY THE FINNISH DELEGATION

➤ Päivi Hämäläinen, Head of Department (THL)

cf. doc: [Fin Peer Review Day 2-2 P Hämäläinen H Virkkunen Structured documentation - terminology.pdf](#)

Finland has a long tradition in defining life-long, structured health records. Back in the 1980s, the Association of Local and Regional Authorities designed a **set of paper health records** for both primary care and specialised care, and they became widely used. In the various departments of each hospital, the documentation sheets had the same structure, e.g. for laboratory and x-ray results. A general practitioner's record was kept life-long within the same health care centre. The same idea of content standardisation was continued with the national terminology and code server. It started to operate in 2004 at STAKES – the predecessor of THL.<sup>9</sup> Given this reference, vendors have had a considerable time-period through which to get involved in this process, since the relevant information has been around for a long time.

In 2007–2008, there was a revision in the requirements with regard to what data has to be kept in the life-long health record. Additional projects took place in THL during 2009–2011. During the process, it was not clear who had the mandate to define the obligatory standards. Since 2011, however, **THL is entitled to create these definitions on behalf of the health care sector**. It is not yet able to do this for the social care sector, however. The work is led within THL by OPER: OPER defines and implements obligatory structures for health care and recommended structures for social services.

THL is responsible for conducting **walkthroughs of all types of data** to prepare the specifications for data to be stored in the national archive. In the long run, all patient data (including x-rays, i.e. imaging data) will be stepwise subject to specifications that will enable them to be stored in the archive. THL is organising and running many **specialists' working groups** to prepare these specifications. As part of the terminology work, there is also a plan regarding SNOMED-CT, i.e. that Finland will join IHTSDO.

The National Code Server – founded in 2004 – is a key instrument to cross-link and harmonise codes and terminologies that are needed for a reusable digital documentation of health-related problems and conditions. Moreover, the terminology server pursues the harmonisation with international coding systems as an overarching aim. This includes the potential use of SNOMED CT as one reference terminology.

Decree (165/2012) defines quite explicitly the content of and the timeline for the **National Patient Care Summary**, i.e., the structured information that is essential to the health administration and the medical treatment of the patient (cf. sub-section 3.1.2 for more detail on the content of the decree):

The patient summary comprises:

➤ [2014] Personal data of the patient including medical notes

<sup>9</sup> On 1 January 2009, STAKES and another institution merged to form the THL.

- [2014] Procedures and imaging examinations that have been entered using procedure classification codes
- [2014] Laboratory results
- [2014] Diagnoses
- [2014] Information on medical risk factors
- [2016] Medication
- [2016] Vaccinations
- [2016] The most important physiological measurement results entered as structured documents
- [2016] The plan concerning the examination, treatment or rehabilitation of the patient, or other similar plan (national archiving obligatory 2014).

The years 2014/2016 indicate the start-date at which **national archiving becomes obligatory**.

Four other data sets (cf. figure 1, page 6) to be sent to the eArchive life-long electronic health record in the first phase (obligatory from 1 September 2014 onward), include:

- Expressions of will concerning organ donation, treatment, and the patient concerning his/her treatment;
- Documents of patient's consent and prohibition of the disclosure of the patient records and information given to the patient concerning disclosure of patient records;
- Contact and other personal data of the patient;
- The first part of the patient care summary: diagnosis, procedures, risk factors, laboratory results, imaging examinations, and the health care plan.

## 8.2 QUESTIONS AND OBSERVATIONS

Discussion among the European eHealth experts and the Finnish team clarified the status of the situation as it is today.

The experts viewed as impressive how Finland has managed to mandate such **a wide set of actions and standards**, and fully expects all organisations (both public and private) to comply with these by the dates specified. Finland is assured that, once requirements have been “decreed” then they must be met which will guarantee that vendors will comply with a post-contract mandate, and by the times required. The Finnish authorities do not anticipate that international vendors may choose to leave the market rather than introduce these changes.

Finland has **a roadmap** that defines the work needed by 2014/16. Some of this work has already started. Content and definitions should be ready about three years before the dates required in the actual legislation. THL is satisfied that it can finalise the work intended for 2014 already in 2013. Some of the 2014 deadlines may, however, be a bit tight.

The various **vendors** have found that the specifications/definitions for work to be done are not precise enough: the specifications need to be re-defined, and there is much minor level work involved. National collaboration on how things are to be done is on-going. Interested health care organisations participate in **workshops** that are open for all the interested parties, including vendors. The formal part of this work is handled by several **clinical and medical groups**. From a recently held survey, THL knows how many primary care centres in districts are working on these issues. For specialist care, the involvement is very high, and all the districts are involved. Primary care has been a little bit less active.

Finland has established **ICD10** in specialist care and most private applications. Some medical domains are much lower e.g., around 30 %. ICD10 is important for: e.g., patient care; scientific research/quality analysis, statistics, and administration. It can be used for regional health statistics and many other analyses.

Using and adapting the relevant international standards, Finland has defined a **clear-cut structure for the patient summaries to be copied to the eArchive life-long electronic health record**. The European eHealth experts understand the patient summary as the ideal basis for **integrated care**. This is supported by the idea of making the treatment plan one part of the data in the central storage. As also suggested by the experts, the plans will in the future be used for **defining workflows**.

Given all this usage in support of active healthcare, the European eHealth experts proposed to update the name of the archive e.g. to "**Living Archive**", or a name that is closer to the notion of an active, life-long electronic health record. (In making this statement, the reviewers may not have been aware of all the implications of the current Finnish legislation, that also uses terminology like "**active health record**" or "**patient-centric data**".)



## 9 SECONDARY DATA

### 9.1 INTRODUCTION BY THE FINNISH DELEGATION

- Päivi Hämäläinen, Head of Department (THL)

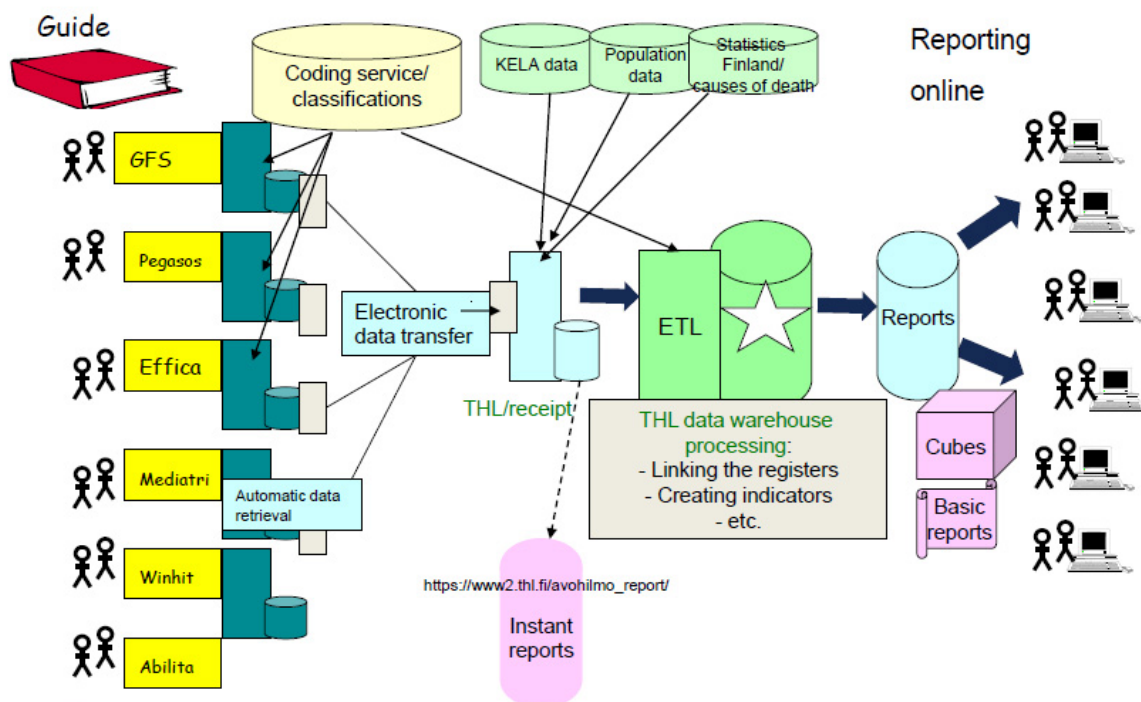
cf. doc    Fin Peer Review Day 2-3a Päivi Hämäläinen Secondary use (1) data  
depositories.pdf  
Fin Peer Review Day 2-3b Päivi Hämäläinen Secondary use (2)  
AvoHILMO.pdf

THL is the national organisation that is also responsible for **health statistics**, e.g. on social and health services, alcohol and drugs, social protection and health expenditure. It organises the registration of the data, analyses it, publishes the data publicly, and interacts with the various responsible international organisations, such as the World Health Organisation. Finland has many different registers, the oldest one being for cancer.

In the context of the expert review, **two registers** deserved special attention since they can support the monitoring of changes to health care provision associated with the further deployment of the KanTa national health IT infrastructure:

- HILMO hospital discharge register. The mandatory reporting comprises specialist hospitals and local (general practitioner-run) hospitals in the private and public sectors and all types of care. It was extended to institutional care in social services (especially elderly care) from 1998 onwards.
- AvoHILMO register of primary care visits. This register has been in existence since 2011. If the General Practitioners use the electronic system, data is automatically extracted.

The **AvoHILMO Register** (cf. figure 11, next page) allows to plan, monitor and compare services at a local level for many purposes such as verifying the guaranteed access to treatment and monitoring the level of health examinations. It also supports the production of epidemiological data (e.g. on injuries and epidemics) for national/international statistics. Taking into account the method of generating registry data through automatic extraction from health IT systems that are being used for routine healthcare, AvoHILMO may be seen as a prototype for future register operation based on the National eArchive of health Information.



**Figure 11:** The AvoHILMO register receives data via automatic data retrieval in primary care

[Source: PowerPoint presentation by P. Hämäläinen]

## 9.2 QUESTIONS AND OBSERVATIONS

Following this presentation, the eHealth experts present offered more observations than posed questions. Many of the observations were related to processes being undertaken in either other European Member States or at the European level as a whole.

The **data quality** of the registers and corresponding medical statistics is dependent on precise documentation in terms of structured data. **Adequate feedback** on data quality and relevant clinical information can support this goal. **Support of criteria-based documentation** of classifications and procedures in the electronic medical record systems themselves or **the establishment of an integrated rule-based national coding module** could be considered. Norway has, e.g., a strategy of this sort, in which there are plans to implement a criteria-based national coding model with quality indicators.

The use of registers and secondary data stimulated a lively discussion, e.g., on **linking registers** for research to check the completeness of the linked registers or to set up “joined registers”.

**Registries** can offer support to **target health care to those who are really in need of it**. The focus should be on patient registries that are close to patient records, e.g. in the form of adjusted clinical groups (ACGs); and to manage healthcare management. **According to the 2005 Luxembourg declaration on patient safety,<sup>10</sup> registers should also set up to record medication errors**. In France, hospitals record all adverse events in relation to medication.

The legislation for Finland foresees that in future all the **purpose-specific registries** will be fed from the eArchive (cf. the AvoHILMO example above). The new documentation system will also account for an updated HILMO data structure. THL would already like to **organise**

<sup>10</sup> [http://ec.europa.eu/health/ph\\_overview/Documents/ev\\_20050405\\_rd01\\_en.pdf](http://ec.europa.eu/health/ph_overview/Documents/ev_20050405_rd01_en.pdf) Accessed 27 March 2013

**the registers more efficiently.** It believes that the best approach would be to set up a single register that would combine the data in all the other registers.

However, **Finnish legislation on registers is very strict:** combining the data sources would only be allowed in order to produce specific health statistics. While the “EHR 2015” dataset would hold all the necessary medical data for a single multi-purpose register, **this data will not be sufficient** for the envisaged multi-purpose register since additional organisational data must be sent to the registries.

Work may also be needed on **pseudonymisation** to comply with the upcoming European regulation on data protection that may require Finland to institute more privacy and data protection vis-à-vis its citizens/ patients.

On a more general note, the reviewers were also interested in learning what **benefits or outcomes** would be delivered through each of the phases of work described. Although the capabilities that would be delivered were explained, **the benefits that would be achieved from them were not covered in any detail.** This raised the importance of the topic of **measurement, and performance and quality indicators.** Despite the impressive demonstration of reporting systems – like AvoHILMO – it was not clear how the Finnish authorities will achieve evidence on e.g. efficiency savings from the high levels of investment that have been made (for example, for ePrescribing cf. section 6 of this report).

## 10 SUMMARY OF EXPERIENCES AND LESSONS LEARNED

### SWOT ANALYSIS



This section draws on the feedback captured in the concluding session of the EHTELconnect peer review workshop. The section reflects on the various circumstances experienced by Finland in terms of its health and social care systems. The list of observations from the different peer experts attending the meeting have been categorised according to a SWOT analysis<sup>11</sup> framework (strengths, weaknesses, opportunities and threats). Proportionally speaking, far more strengths and opportunities were perceived than weaknesses and threats, i.e. a set of issues or questions that might be considered by the Finnish authorities in more detail.

Overall, the expert peer reviewers valued greatly the visit and its content, and the opportunity to learn more from the Finnish context.

Finland has been involved in **long-term development** of its eHealth systems and services, developing from a mainly localised approach towards a more national-level approach that maximises the benefits of local ownership and flexibility, but operates it within an overarching structure of information sharing and standardisation. Finland has managed to track its eHealth work systematically over time. Hence, its authorities are able to see clearly the trends that have developed over a broadly 30-year period. The basic **openness, trust, and transparency** apparent in this particular Nordic country makes it a very helpful setting in which to develop eHealth systems. There has also been an impressive degree of **regionalism and local "democracy"**.

Finland has quite early introduced digital documentation and health care became paperless in many domains. While the "first generation" tools have now reached their limits, Finland has to move to a next generation of services. Here again, Finland has the opportunity to be an early adopter of current concepts and methodologies.

There is one limitation on the "level of observation" to be kept in mind when reading the SWOT analysis: Overall, the presentations made were considered by the peer review experts to be comprehensive and detailed. However, they could have been improved in two areas. First, throughout the series of presentations, **no precise "case studies"** were discussed in any detail. Second, there were **no presentations from senior clinicians or more local operational managers** (such as domain experts and champions) who could present the actual purposes underlying the substantial investments made in terms of either operational or clinical outcomes.

### 10.1 STRENGTHS

In terms of its strengths, Finland was praised for the following:

**World-level:** Finland is at a world-level benchmark in terms of eHealth.

**Compelling vision, strategic change, and appropriate legislation:** There is a strategic change programme occurring in Finland that provides a compelling vision of integrated

<sup>11</sup> The drawing has been extracted from an article on Wikipedia on SWOT analysis ([http://en.wikipedia.org/wiki/SWOT\\_analysis](http://en.wikipedia.org/wiki/SWOT_analysis))

healthcare. It has consisted of two parts. It is in part a legislative programme, to meet the challenges of societal change and financial pressure, and in part, an imperative for modernisation so as to meet the expectations of health workers and citizens.

**Health and social care together:** Finland's way of bringing health and social care together provides an excellent setting for other countries to start thinking about their own re-design of the social and health care system.

**Two sub-systems are particularly impressive: they are the ePrescribing initiative and the registries/secondary data collections:** ePrescribing has a long history in Finland, and there appears to have been some important progress in this field. Overall, the quantity, timeliness and quality of health data entered and collected in Finland is impressive.

**Three aspects of the process are noteworthy:** These notable elements are the early start made by Finland, the general overcoming of resistance to change, and the system's timeliness and responsiveness. Finland's capacity to move forward over time and to make progress, based on agreed approaches and standards (even prior to the widespread introduction of IT), has been important. Finland's ability for example, to overcome resistance from physicians as a result of thorough education means that the country is one step ahead of several other countries. The general timeliness and responsiveness of the system is to be admired.

**The comprehensive number of components to the digital system:** Finland has a wide diversity of components in terms of its eHealth support for its health and social system. Almost all records are "electronic from birth". Today, the country has direct access to a source of either valuable information or resources, particularly when taking into account the long history of registers and secondary use of data from routine health care. This means that it is sitting on a metaphorical "gold mine".

## 10.2 WEAKNESSES

The workshop identified a few weaknesses with respect to:

**Return-on-investment and on benefits analysis:** The experts had expected to hear more about how Finland justifies its investment and expenditure on eHealth, and explanation of how the country measures the benefits of its system and ensures maximum adoption by clinicians and citizens.<sup>12</sup> They also underlined that the clinical impact of KanTa should be assessed and monitored.

**The context of care:** Appeals were made to concentrate on the context of care itself, on the services such as new care pathways, chronic disease management, patient empowerment which will contribute to the necessary modernisation of the health care system.

**The proactive role of healthcare practitioners (clinical champions):** Particular concern was expressed with regard to getting healthcare practitioners who should act as coaches and guides to support health care improvement, working with "communities of patients" or "communities of providers".

**The policy behind the tools:** It was said to be absolutely important to focus on what the health system overall is attempting to achieve, and on what the crucial policy and political decisions are that underpin any of the choices of IT-based health systems and technologies. The focus should be on the health care process.

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<sup>12</sup> This may be due either to this not forming a sufficient part of the Finnish system in its own right or it simply featuring less as an aspect of the workshop than had been anticipated.

## 10.3 OPPORTUNITIES - FOR FINLAND AND THE FINNISH HEALTH AND CARE SYSTEMS

Three sets of opportunities were outlined by the expert peer reviewers. They relate to the possibilities evident for Finland as a country and its health and social care system as well as for the EHTEL organisation and EHTELconnect package.

### 10.3.1 Policy, governance, and organisation

**Find the disruptive innovation element of the health process:** The views of former Finnish prime minister, Mr Esko Aho, were quoted (back) to the Finns with regard to examining the possibilities to effect positive disruptive innovation in the Finnish health/social care system. In this regard, Mr Aho had spoken publicly at a responsible research and innovation conference which took place in Dublin, Ireland on 25/26 February 2013 at which one of the eHealth experts had been present.<sup>13</sup>

**Focus on the creativity of the actors involved, and the incentives that the actors require to act:** Appeals were made to work with the creativity of the decentralised, local actors/stakeholders; and to create appropriate incentives for each of the three major stakeholders (policy-makers, physicians, and patients). Examples of the various incentives that could be considered are offered briefly in footnote but also in more detail in Annex 3 of this report.<sup>14</sup>

Build on the various components of the system: It was thought that all the various components in the system(s) mean that **Finland is "sitting on a gold mine!"**

### 10.3.2 Leadership, business and benefits

**Consider Finland's leadership position with regard to the transformation of health and care systems:** Finland needs to examine various "grand design" issues, using systems that slice through different organisational silos.

**Document the clinical effects of changes to the system:** The documenting of all the clinical effects will be really useful. In terms of access to resources, Finland needs to document the health outcomes achieved e.g. for the sickest patients and those in most need of treatment.

**Measure the quality of health outcomes:** Several peer reviewers mentioned the value to concentrate on the quality of the health outcomes resulting from the Finnish health system, and especially in different regions and localities.

**Adapt quantitative indicators:** Consider the use of data indicators to e.g., register all adverse events occurring in the system, and use them to pinpoint successful decreases in negative occurrences.

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<sup>13</sup> See European Intersectoral Summit on Research and Innovation (EISRI). 25/26 February 2013. Trinity College, Dublin, Ireland. <http://eisri2013.wordpress.com> Accessed 27 March 2013.

<sup>14</sup> Listed here are possible incentives for three stakeholder groups.

*Patients:* Empower patients through provision them with 24/7 access to results and information about treatment(s).

*Physicians:* Enable benchmarks that ensure that physicians can work in and with an eHealth system can enable them to focus on the *real* patients who need *real* treatment.

*Policy-makers, leadership or management:* Offer solutions to the next steps to putting in place a healthcare system that not only brings citizens better healthcare but in which it is also possible to see clear improvements in designated targets every three, five or seven years.

### 10.3.3 Opportunities for EHTEL and/or for Finland and EHTEL working together

It was thought that Finland could showcase more widely its eHealth solutions to other countries in Europe, and that – together or in parallel – EHTEL could help to build and expand the peer review scheme and model:

**Showcase solutions:** Finland could show more widely its eHealth solutions – starting e.g. with the ePrescribing services – to European Member States, industry, and EHTEL members.

**Compare and contrast Finland's approach to those of other countries:** Compare and contrast Finland's eHealth system and services to e.g., more federated approaches.

Expand the (EHTEL) peer review scheme and model: EHTEL could take the opportunity to build further on this type of scheme/model e.g., with cases from other countries and regions. This kind of peer review meeting was perceived as very fruitful from the perspective of all three parties present: the Ministry, the competence centre (THL), and the peer reviewer attendees.

## 10.4 THREATS

Aspects of data overload, privacy and security were identified by the peer reviewers as important, as too was eIdentity. The reviewers also drew attention to occasional, but dramatic, unexpected or unanticipated consequences.

**Pay even more attention to timeliness and responsiveness:** Since demand for data is only likely to increase on the part of citizens and patients, more attention needs to be paid by the health providers to their degree of timeliness and responsiveness in terms of service provision.

**Pay attention to the risk of data overload:** The volume of data prevalent in the Finnish system in terms of its complexity may lead to a risk of overload of information. Such information overload, often out of context, might act as a threat to effectiveness and efficiency when eHealth services are fully implemented. In Norwegian legislation, for example, the expression “necessary and relevant” is used in the context of documentation and sharing of information.

**Be aware of possible threats to the information system:** The value and sensitivity of the data held inside the various Finnish health and care systems mean that they may be vulnerable to forms of hacking and intervention. Researchers such as Nassim Nicholas Taleb have spoken of the risks posed by “black swans”.<sup>15</sup> Increasingly, the term “grey swans” is used for more identifiable risks.<sup>16</sup> Clearly, the Europe-wide trend to pay more attention to the importance of risk management, security, and patient safety should be taken in continuous consideration.

**Consider alternative approaches for identification, health data, legacy systems and interoperability:** A considerable set of technically-related points were made. These are described in detail in Annex 2 of this report, in a short report sent after the workshop by one of the attending peer review experts.

**Consider various technological and organisational design issues:** Here are some concerns that are inspired by recent European debates.

- a) **Generic eID:** One could consider alternatives for the smart card use of healthcare professionals (e.g., Why is a specialised card needed? Are there other means to access registries?).

<sup>15</sup> Nassim Nicholas Taleb (2008) *The Black Swan. The Importance of the Highly Improbable*. Penguin.

<sup>16</sup> PriceWaterhouseCooper (PWC) <http://www.pwc.co.uk/governance-risk-compliance/publications/risk-practices-black-swans-turn-grey-the-transformation-of-the-risk-landscape.jhtml> Accessed 27 March 2013

- b) **The roles of public authorities and private vendors.** Some consideration should be given to investing in the "middle layers" and developing appropriate guidelines and/or regulations for this. The possibilities of a shift towards the private sector should be kept in mind.



**Figure 14:** Family photo: European experts, Finnish delegation, moderator and EHTEL team



## ANNEX 1: PROFILES OF THE INVITED EXPERTS

The experts are listed in alphabetic order of their employers' organisation.



**Mats Larson**  
**Bilthong AB, Sweden**

**Mats Larson** has been active in healthcare since 1973 and has held managerial positions in regional and national healthcare in Sweden. He served as Hospital Manager during 10 years and has actively worked with hospital revitalisation-programmes as well as mergers.

He holds degrees from the University of Stockholm, Gothenburg Business School as well as a Masters-degree in Information Management from the Erasmus University in Rotterdam.

Mr Larson has been president of EHTEL – European Health Telematic Association as well as treasurer of EHMA – the European Health Management Association. From 2000–2004 he was CEO of Carelink – a public company set up to promote national eHealth solutions. Carelink received the first EU eHealth award for ground-breaking eHealth solutions in 2002. In 2004 Mr Larson joined Oracle as Senior Business Development Director for healthcare.

From 2008 he has been CEO of Bilthong AB – with consultancy activities in Europe and South Africa. Bilthong has also served as advisor to the government of Greece (2012) and is currently supporting the Swedish governments' participation in the World Economic Forum (2012–13).

Since 2008 Mr Larson is the Chairman of the Board of the Swedish Medical Products Agency and serves on other boards in the Nordic countries.



**Jacob Hofdijk**  
**Casemix, The Netherlands**

**Jacob Hofdijk** is Partner in Casemix: “the Implementation Engineers” on systems to measure health care based on sound and healthy information.

He holds a degree as a Master in Business Economics at the Rijks Universiteit Groningen (1969–1973)

In May 1974 he started his career in health care at the University Hospital Leiden with the development of the BAZIS Integrated Hospital Information System.

Hofdijk has been president of EFMI, the European Federation of Medical Informatics, and secretary at the Patient Classification Systems International Association.

Since 1979 he has been involved in measuring health to help support clinical care processes, from both the perspective of process, quality, outcome, and cost.

From 2009-2012 he elaborated together with the stakeholders the Integrated Care (INCA) model to introduce the multidisciplinary approach to the delivery of individualised care based on care standards.

Hofdijk is leading the “Village of the Future” concept, which focuses on the integration of social and health care. The leading principle is to link IT with empathy, by the introduction of a Blue Line defining technological, semantic and systems interoperability, the expectation of the citizens and patients, and the incentive framework to support this change.



**Marc Lange**  
EHTEL, Belgium

**Marc Lange:** has a Master in Law, option business and European Law. He is Secretary General of EHTEL (European Health Telematic Association) since 2005.

EHTEL is a European think-tank on eHealth in Europe, which gathers representatives of all those stakeholders, from everywhere in Europe, who are committed to deploy eHealth and Telemedicine services in the field. Thanks to his position in EHTEL, Marc Lange has a global understanding of the state of affairs in eHealth in Europe and beyond.

He has been involved in European ICT projects for the public sector (i.e. social security, customs and indirect taxation, legal identity, health systems) since 1992 and has therefore a long experience in supporting EU Member States and the European Commission in coordinating the deployment of their national projects and in facilitating expert sharing of experience and good practices in a multi-disciplinary environment.



**Dr Stephan Schug**  
EHTEL, Belgium

**Dr Stephan H Schug MD MPH,** acts as Chief Medical Officer of EHTEL and has a long track record in European eHealth and telemedicine with a focus on interoperability and clinical services. Since 1999, he supports the strategic development of EHTEL as a multi-stakeholder platform, e.g. through working group support and event management. As Editor-in-Chief he is also responsible for the content of newsletters, briefing papers and the association's websites. He is or has been involved into European projects with a strategic dimension for eHealth interoperability like CALLIOPE, the eHealth Governance initiative (eHGI), SUSTAINS and Antilope as well as for telemedicine like RENEWING HeALTH, United4Health and the MOMENTUM telemedicine network. With IQmed in Frankfurt/Main, Stephan provides policy and project support with an EU dimension to eHealth actors in Germany, e.g. for the eHealth platform of North-Rhine Westphalia and the ZTG GmbH. As Managing Director of DGG e.V. - Forum for eHealth and AAL - he is involved in educational activities like TELEMED and professional qualification in eHealth.



**Diane Whitehouse**  
EHTEL, Belgium

**Diane Whitehouse** works with EHTEL on issues related to telehealth, and integrated care (around active and healthy ageing). She is a founding partner of the UK-based business partnership, The Castlegate Consultancy, which focuses on research, policy, and deployment in eHealth, eGovernment, and eInclusion.

Diane previously worked for several years in eHealth and eInclusion in the European Commission. Her prior career history involves periods spent in academe, human rights, and publishing.

She has edited a number of books on society and technology, including on eHealth. She is currently co-Vice Chair of the International Federation for Information Processing (IFIP) technical committee on ICT and society, and Chair of IFIP's working group 9.2 on social accountability of computing.



**Jacqueline Surugue**  
**Centre Hospitalier**  
**Georges Renon, France**

**Jacqueline Surugue** is the president of the hospital section of the Federation Internationale Pharmaceutique (FIP) and immediate past president of the European Association of Hospital Pharmacists (EAHP).

She got involved in IHE Europe Steering Committee and the IHE Pharmacy Group in 2007 and, from 2009, was elected and presently re-elected for a second mandate as co-Chair for Users for both the Group and the Committee.

She is a lecturer in Pharmacy at the University of Angers and an elected member at the French National Order for Pharmacists. She currently is Chief of the Pharmacy Department of Centre Hospitalier Georges Renon, a 1,200-bed hospital in the city of Niort (Deux Sèvres).

In December 2008, she was awarded by the American Society of Health systems Pharmacists the esteemed Donald E. Francke Medal for her merits on an international level, and in June 2009, received the distinction of "Chevalier de la Légion d'Honneur" in France.



**Luc Nicolas**  
**Federal Public Service for**  
**Public Health, Belgium**

**Luc Nicolas** is a political sciences and economics graduate.

He has studied several years of Mandarin in the People's Republic of China before working during sixteen years for the medical humanitarian organization "Doctors Without Borders - Médecins Sans Frontières" both in the field and at its headquarters as Operations Regional Coordinator.

He is now expert for the Health Care Administration of the Federal Belgian Ministry of Social Affairs and Public Health in charge of the development of the Health Care Informatics and Telematics in the country, and is member of various national and international working-groups for the promotion and the coordination of Information Technology implementation in Public Health sector. He is in the Health Care Informatics, Telematics & Communication Unit.



**Tom Christensen**  
**Helsedir, Norway**

**Tom Christensen:** Born 1955. Married, 4 grown up children. MD 1981. Specialist in General Medicine 1989. PhD 2009. Primary and hospital care 1981–2000, different e-health projects, Norwegian centre of electronic patient records NTNU 2000-9. Project leader of ELIN (Electronic communication in Primary Care) 2002–07.

Medical responsible of the Norwegian e-Prescription project 2007–2009. Managing director at KITH 2009-2012, Head of department of standardization, Norwegian Directory of Health 2012–2013.

Special interest in standardised and accurate medical documentation in EMRs including coding and terminologies, quality standards and reporting to health registers. Process and decision support.

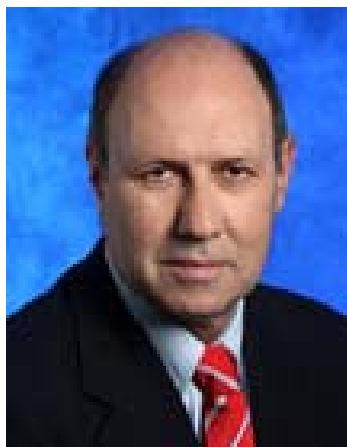


**Jan-Eric Slot**  
**IHTSDO, Denmark**

**Jan-Eric Slot** is the Chief Executive Officer at IHTSDO.

The vision of IHTSDO is to acquire, own and administer the rights to SNOMED CT and other health terminologies and/or related standards, and other relevant assets (collectively, the "Terminology Products") and to develop, maintain, promote and enable the uptake and correct use of its Terminology Products in health systems, services and products around the world and to undertake any or all activities incidental and conducive to achieving the purpose of the Association for the benefit of the Members.

Jan-Eric Slot has served previously as the CIO at the Academic Medical Centre at the University of Amsterdam, where he still lectures in IT Governance and is an editor of the HITE (Hospital Information Technology Europe) publication. Before joining the university Jan-Eric held a variety of senior positions in health related IT companies in Europe and the US. He attended medical school in Amsterdam and also holds Masters degrees in Information Systems and Business Administration and is fluent in several European languages.



**Prof. Ehud Kokia**  
**immediate past Director**  
**General of the Hadassah**  
**Medical Organization**

**Prof. Ehud Kokia, MD, MHA** is the immediate past Director General of the Hadassah Medical Organization. Prior to his appointment at Hadassah, Prof. Kokia was the CEO of Maccabi Healthcare Services. Prof. Kokia spent 17 years at Maccabi, beginning at the district level and having served in several key positions within the organization.

Prof. Kokia received his MD degree in 1974 from the Sackler School of Medicine, Tel Aviv University. Following a rotating internship at Sheba Medical Center at Tel Hashomer, Prof. Kokia served as a physician in the Israel Defense Forces. Upon completing his army service Prof. Kokia did his residency in the Department of OB-GYN at Sheba Medical Center. He then returned to active military duty as a Commander in the Israeli Air Force. Prof. Kokia is a graduate of the US Naval Flight Surgeon Course at the Naval Aeromedical Institution (NAMI) in Pensacola, Florida where he also worked on the Off Vertical Rotation Chair research project.

Prof. Kokia was a research fellowship at the University of Maryland at Baltimore's Department of OB & GYN in the Division of Reproductive Endocrinology. In 2001 he earned his Masters' degree in Health Administration from Ben Gurion University of the Negev.

Prof. Kokia has authored more than 75 scientific publications.



**Madis Tiik**  
**Hekardi, Estonia**

**Madis Tiik** is a Medical Doctor. He completed his studies at Tartu University with specialisation in family medicine in 1999.

In 2003 he earned a diploma in Public Health at the Nordic School of Public Health.

From 2001-2003 he studied IT management in Estonian Business School.

In December 2012 he successfully defended his PhD thesis "Access rights and organizational management in implementation of Estonian Electronic Health Record system" in the Tallinn University of Technology.

Since 1998 Madis Tiik has been working as family doctor. He was the chairman of The Estonian Society of Family doctors from 2001-2008. Madis Tiik is also the author of several papers, articles and lectures and has delivered keynotes in several international e-health conferences.

He was also one of the key persons developing new public service - the Call-centre 1220 - Family Doctor's advice line which is a round-the-clock service of family doctors and nurses providing medical advice to citizens (2004).

He has been involved in eHealth development projects in Estonia from the beginning in 2005 and since 2007-2011 he was a Member of the Management Board of Estonian eHealth Foundation where he has formed a strong team of professionals around him. As medical doctor with strong knowledge in IT he provides professional expertise to ensure the Estonian Electronic Health Record services serve the best interests of medical staff and patients. In recent years he has also counselled several foreign e-health related institutions and has actively contributed to the Estonian eHealth Foundation's work as the national e-health competence centre.

In September 2012 he started work as a senior adviser to Finnish the innovation fund, advising on eHealth integration and self-care service development projects.



**Eddie Turnbull**  
**NHS Scotland, United Kingdom**

**Eddie Turnbull** is currently Director for eHealth, NHS, Scotland. He was previously the Head of eHealth Technical Strategy for The Scottish Government. Eddie has worked for The Scottish Government for over 30 years, either in a direct ICT leadership role or in a corporate /customer services management capacity. Over these years he has directed a number of large national programmes with ICT as the major enabler.

His current role is to ensure that eHealth activity across NHS Scotland is coordinated and supports the delivery of healthcare, and the change and improvement agendas set out by the Scottish Government.

With colleagues from Health Boards, Local Authorities, and the Scottish Government, he is contributing to the development of a strategy, and a set of underlying principles, that will enable better interoperability and joined-up working between healthcare partners.

The overarching aim is to support Health and Social care integration policy and the four pillars of Scotland's public sector reform agenda. He is actively involved in a number of Scotland's wider strategic digital initiatives, and is a member of the British Computer Society.



**Georg Heidenreich**  
**Siemens, Germany**

Since 2005 **Georg Heidenreich** is the Health care IT Standards expert in Siemens Healthcare Standards & Technology department. In that position Georg is also national delegate towards IEC 62A, HL7 Germany board member, vice-chair of the COCIR Healthcare IT committee, chair of IHE (Integrating the Healthcare Enterprise) Germany Association, and chair of the national Medical Informatics – Interoperability standards team at DIN, Berlin.

As a Software Engineer and Software Process expert Georg participated in various Medical Device development projects in Siemens Healthcare. At Erlangen-University Georg lectured on Software Design as well as Software Architecture.

A computer scientist by training, Georg started his career in consulting industries in designing and implementing software development workstations. After finishing a research cooperation between Develop-Group mbH and the Erlangen-Nuremberg university, Georg received a doctoral degree in engineering.

## ANNEX 2: REPORT BY GEORG HEIDENREICH (28 FEBRUARY 2013)

The approach of STM and THL towards establishing Finland's eHealth system in many aspects already implements best practice, and little has to be added.

Despite some user complaints about specific aspects of technology, there is considerable public support for ICT solutions for health care in Finland. The standardisation mandate for THL – assigning a responsibility for development and deployment of interoperability standards – seems to be a cornerstone for the notable success of eHealth applications. For some aspects more legislation may be required to support the huge efforts that have been taken by STM, THL, KELA and other players.

In that situation, the following remarks just focus on a few selected observations regarding technology.

### **Question 1 "How openly can de-identified health data be managed"?**

There are many advantages in having healthcare-related data available on more or less “open” platforms, and de-identification is an important measure to protect privacy of the individual data subjects (“patients”).

One important note has to be made: A third party's “innocent” data i.e. for scheduling or logging may be joined together with de-identified health data resulting in a patient ID disclosure. As an example, a Radiology-Information System (“RIS”) work-list has a patient name and a timestamp which can be used to map timestamps in patient images (such that via the timestamp the patient name can be retrieved from the RIS work list so that the whole record would be re-identified). Similar “joins” are possible through log files, doctor's visit logs etc. As a result de-identified data can only be “opened” after a very careful analysis of re-identification loopholes using links to other databases.

### **Question 2 “How to handle patient-entered non-validated health data in an EHR system?”**

In critical care situations any hint on health findings may help medical professionals in diagnosis and treatment. And there are more reasons why patients may wish to enter their own findings into their EHRs.

Any record with such “informal” health information shall have a field for professional authentication purposes, while an empty “authentication” field would have the record be interpreted as “non-validated” data – be it from a patient or other source without medical confirmation. Professionals would continue entering data and authenticating these new records. Patient-entered data would not have such an authentication entry, but can be authenticated after medical validation by some later authentication. Electronic signatures in a general sense are a typical technical basis for such authentication fields.

### **Question 3 “How to migrate data from legacy systems?”**

Without a detailed look at specific (internal) data schemata of legacy systems it would take too many assumptions to explain a particular approach.

In general, from a health care quality point of view, it seems quite risky to abandon any existing patient-specific health data. Any patient data available electronically may be useful for some future health care.

In the case when the extraction of appropriate data sets from the legacy systems is not easy and if such system operations can be continued for the time being, one interoperability option would be to operate an additional national lightweight-index server with entries just listing visit metadata (like e.g. the time, organization and patient-ID) that then can be used to narrow down specific access to the real health care “payload” data in the respective local legacy database records. Any healthcare professional could easily browse that index and focus on whatever (s)he considers important for the current patient encounter. Note that the metadata in the index would be more valuable with clinical information (such as an ICD-code) in it, but on the other hand would require more privacy protection measures.

If operating the legacy system is not possible anymore, the extraction of health data is required on a per patient basis, for a full migration supporting the original data format as far as possible. Based on standardised XML/HL7, “wrapping” structures may be used as the context of such extracted data, which is then represented in nested XML/HL7 elements, if necessary via base64-encoded strings. For consistency reasons, it is not recommended to continue entering original data into the old format system after such a migration. The same metadata recommended for the above index server would be useful (for search and retrieval) as explicit mark-up in such structured XML/HL7 containers. Preserving the original data lowers the risk of errors and losses during migrating the medical patient data while the structured wrapper provides flexibility for use in various (future) IT-systems.

#### **Question 4 “What can be done to improve interoperability of health care IT systems?”**

The current situation – with political support and an existing standardisation mandate for THL – is extremely favourable. However, large data assets exist in legacy databases and regional/local system vendors are trying to maintain their business cases.

Legacy system integrators as well as future system’s designers need good guidance on how to develop interfaces that meet the purpose of the interface standards, as intended by THL. Some typical practices from IHE for that purpose are:

- a) Stakeholder participation when drafting technical (standard) specifications. (The presentations indicate that this is already being practiced by THL.)
- b) Easy availability of specifications to vendors. (Presentations by THL indicate “free” use already.)
- c) Definition of use-cases at the health care level, in order to explain the intention of some technical system to the potential users together with prosaic interface information model guidelines (written in natural language) as the basis for communicating the rules for interoperability to implementers. In order to achieve something like “semantic” interoperability, it is not enough to explain interfaces at the technical level – instead the use and intention of messages and records as wells as identifiers for documents, records and subjects must be explained with respect to the use-cases and at the application (i.e. the health care) level.
- d) Conformance testing events – to give feedback to the vendors and confidence to the users of IT solutions. For that purpose, the THL-published specifications should have acceptance criteria for interface conformity with them and vendors shall be invited to test their implementations in a transparent way during national “plugfest” (or “Connect-a-thon”) events.



**Summary (G. Heidenreich)**

The presentations by THL and the Health Ministry showed one of the most advanced national eHealth systems worldwide, both in terms of functionality as well as coverage and usage. The clear governance for policies, standards and other technology foundations seems to be one reason for that success. However the responsible and strategic handling of health care data in regional/local legacy systems very much depends on more political support and maybe expanded legislation.

## ANNEX 3: REPORT BY EHUD KOKIA, ISRAEL (11 MARCH 2013)

I would like to start by thanking you and the organizing committee for inviting me to this important and interesting workshop. I hope that I was able to contribute to this workshop.

As for the remarks regarding the development of [eHealth] in Finland:

We must all remember that health IT is only a major and important tool that enable the leaders to accomplish their strategy and policy, but it is not a replacement for a sound policy and strategy.

The system in Finland is an established system that is working for many years. It is far beyond the implementation stage regarding the physicians. However, because the system was built [t] “bottom up” there are various software and various vendors, so there is a lack of uniformity.

It is important to mention that the Finnish citizens are satisfied from the health system.

Another big advantage is the close relationships between the health system and the social care system. This is something that is not common in many places.

The fact that the responsibility for the health system is on the municipalities is, as I see it, a disadvantage because it is very hard to become professional when you have to deal with 6,000 citizens.

The Finnish health system is right now in the “data” stage, and [the] big advantage is to make the big leap to the “knowledge” stage.

I can recognise three main stakeholders in the Finnish health market: the patients, the health care professionals (mainly the physicians), and the [organisations] (mainly the government).

In order to upgrade the system there should be an added value for every one of the three parties.

**The patients:** Empowerment regarding knowledge on the system and the services, better services: The option to make electronic visits to physicians, the option to receive your blood test on the same day on your computer, to get information about your drugs purchase, about physicians’ visits and the ability to handle your personal health record.

**The physicians:** Tools that will enable them to give better treatment, tools to focus on the really sick patients, to make the system more user friendly, and to be able to receive benchmarking regarding performance.

**The [organisation/government]:** The ability to lead and direct the future directions of the health system, to measure the effectiveness of the system. To build performance indicators in the clinical quality world, the perceived quality (satisfaction), and the economic indicators, the ability to bridge the gap in the world of inequality. To build registries.

We must give a lot of thinking to [mHealth], taking into account the fact that Finland is a leading country regarding smart phones.

**In summary:** Finland is standing at a very good starting point and should step up for the next major improvement.