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DIRECTORATE-GENERAL FOR INTERNAL POLICIES

POLICY DEPARTMENT A
ECONOMIC AND SCIENTIFIC POLICY

Economic and Monetary Affairs

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e-Health

WORKSHOP

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DIRECTORATE GENERAL FOR INTERNAL POLICIES

POLICY DEPARTMENT A: ECONOMIC AND SCIENTIFIC POLICY

WORKSHOP

e-Health

Brussels, 24 September 2013

PROCEEDINGS

Abstract

This report summarises the presentations and discussions at the Workshop on e-Health, held at the European Parliament in Brussels, on Tuesday 24 September 2013. The workshop was held in view of the finalisation of the ENVI Committee's Own Initiative Report on the e-Health Action Plan 2012-2020 – Innovative healthcare for the 21st century', which will serve as a basis for the adoption of a European Parliament resolution. The workshop was hosted by MEP Ms Pilar AYUSO (EPP, ES), Rapporteur of the ENVI Committee's Own Initiative Report, and MEP Ms Jill EVANS (The Greens/EFA, UK), MEP Mr James NICHOLSON (ECR, UK), MEP Ms Antonyia PARVANOVA (ALDE, BG), and MEP Mr Claudiu C. TĂNĂSESCU (S&D, RO) who contributed to the Own Initiative Report as Shadow Rapporteurs.

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LIST OF ABBREVIATIONS

CPME	Standing Committee of European Doctors
DG CNECT	Directorate General for Communications Networks, Content and Technology
DG SANCO	Directorate General for Health and Consumers
DG RTD	Directorate General for Research and Innovation
EC	European Commission
EDPS	European Data Protection Supervisor
EHR	Electronic Health Record
ENVI	Environment, Public Health and Food Safety
EP	European Parliament
EPF	European Patient Forum
EPHA	European Public Health Alliance
epSOS	European Patients Smart Open Services
ERN	European Reference Network
EU	European Union
EUR	Euro
EUROREC	European Institute for Electronic Health Records
GDP	Gross domestic product
HCQI	Health Care Quality Indicator
HIMSS	Healthcare Information and Management Systems Society
ICT	Information and Communication Technologies
IMIA	International Medical Informatics Association
IT	Information Technologies

MEP	Member of the European Parliament
mhealth	Mobile health
NathCare	Networking Alpine Health for Continuity of Care
OECD	Organisation for Economic Co-operation and Development
PPIP	Public and Private Investment Partnership
R&D	Research and development
Semantic Health Net	Semantic Interoperability for Health Network
SMEs	Small and medium enterprises
Sustains	Support Users to Access Information and Services
WHA	World Health Assembly
WHO	World Health Organization

EXECUTIVE SUMMARY

On 24 September 2013, the Committee on Environment, Public Health and Food Safety (ENVI) of the European Parliament held a workshop on 'eHealth'. The workshop was hosted by Ms Pilar AYUSO (MEP), Rapporteur of the ENVI Committee's Own Initiative Report on the 'eHealth Action Plan 2012-2020 – Innovative healthcare for the 21st century' and by Ms Jill EVANS, Mr James NICHOLSON, Ms Antonyia PARVANOVA, and Mr Claudiu C. TĂNĂSESCU (MEPs), who contributed to the Own Initiative Report as Shadow Rapporteurs.

In her opening statement Ms Pilar AYUSO briefly introduced the five parts of the workshop. She mentioned that the workshop was held in view of the finalisation of the ENVI Committee's Own Initiative Report on eHealth, which was scheduled to be presented to the ENVI Committee in November. The findings of the Own Initiative Report will be fed into the European Parliament resolution on eHealth.

The first part of the workshop chaired by Ms Pilar AYUSO focused on 'The current eHealth situation in Europe'.

The European Commission's position on eHealth and its perspectives and challenges were presented by Mr Benoit ABELOOS, from DG CNECT and Mr Jerome BOEHM, from DG SANCO. Mr Abeloos focused his presentation on the objectives of the eHealth Action Plan 2012-2020, which are the improvement of the interoperability of eHealth services, the support of research and innovation, the wider use of eHealth and the promotion of international cooperation. Mr Boehm stressed the importance of eHealth in ensuring patient satisfaction and improving healthcare services. He referred to the European Commission's key role in fostering research, encouraging Member States to coordinate and exchange practices, involving stakeholders in decision-making processes and making progress on health data protection.

The Member States' perspective was introduced by Mr Juan Fernando MUÑOZ MONTALVO, from the Information Technology Spanish Ministry, who focused his presentation on the eHealth situation in Spain. He pointed out the current challenges faced by health systems and then demonstrated how they could be solved by the application of eHealth services, including by electronic health records and electronic prescriptions.

Ms Jilian ODERKIRK, representing the Organisation for Economic Co-operation and Development (OECD) gave an overview on the use of eHealth technologies in 25 OECD countries. Her presentation highlighted the main challenges (e.g. balancing data privacy and access to data) and success factors (e.g. effective data privacy and security measures) for the implementation of electronic health record (EHR) systems.

The next speaker, Ms Diana ZANDI from the World Health Organization (WHO), spoke on the global and regional challenges for the development of eHealth and on the priority areas of WHO policies on eHealth (e.g. policy and governance, standardisation and interoperability, evidence building, etc.). She also stressed the potentials of eHealth in addressing cross-border concerns, such as environmental exposures.

The second part of the workshop was hosted by Ms Jill EVANS (MEP), who highlighted, through the example of a Welsh innovation centre, the potentials of eHealth in reducing costs and improving citizens' quality of life.

The potentials of eHealth at a national level were described by Mr Raul MILL, representing the Estonian eHealth Foundation. Estonia is ranked first in implementing and adopting eHealth solutions, due to its good IT infrastructure and digital processing systems in place, which allow the central eHealth system to collect data on e-prescriptions, e-certificates, digital images, etc. Estonia will continue on this path with more focus given to the interoperability of systems and the enhancement of data exchange.

eHealth in ambulatory care was presented by Ms Siri BJØRVIG from the Norwegian Centre for Integrated Care and Telemedicine. She emphasised that new technologies, such as eHealth records, could not only improve the quality of healthcare services, but also provide reliable data to both patients and decision-makers.

Dr Vincent MONCHO MAS's presentation focused on the benefits of eHealth technologies for hospitals. He was representing the Spanish Marina Salud Hospital, which is an institution using modern ICT technologies. He stressed that the use of efficient and modern technologies provides cost-benefits and improves citizens' quality of life.

The role of eHealth in easing the transition of healthcare systems was described by Prof. Dr. Antoine GEISSBÜHLER from the International Medical Informatics Association and University of Geneva. He highlighted that eHealth could offer solutions to pressing healthcare challenges by providing cost- and resource-efficient solutions and reliable data for decision-makers. In order to make the best use of eHealth technologies it is of outmost importance to empower citizens, ensure semantic interoperability and invest in capacity building and in transnational projects similar to epSOS and Alpine Space.

The third part of the workshop, chaired by Mr James NICHOLSON (MEP) focused on the opportunities offered by EU funded projects on eHealth.

Ms Nathalie CHAZE, from DG SANCO, focused her presentation on the Directive on Cross-Border Healthcare, which encourages Member States to cooperate in the form of European Reference Networks. These Networks are pools of healthcare providers sharing knowledge and information with the aims of improving clinical diagnostics and access to highly specialised care.

As an example of on-going eHealth projects, Prof. Dr. Georges DE MOOR from Gent University presented the SemanticHealthNet project, which is developing a semantic interoperability model that links different EHR systems. Semantic interoperability contributes to improved patient-centred care and clinical and biomedical knowledge sharing.

Ms Lisa HAGBERG from the Swedish Association of Local Authorities and Regions described the EU's epSOS project, which aims at ensuring the safe, secure and efficient medical treatment of citizens travelling across Europe. To achieve these aims, the project develops a practical eHealth framework and ICT infrastructure securing the access of healthcare professionals to patient health information.

The fourth and fifth parts, hosted by Mr Claudiu C. TĂNĂSESCU (MEP) focused on innovative health technologies and the voice of patients and professionals, respectively. Mr TĂNĂSESCU excused Ms PARVANOVA for not being able to chair the fourth panel.

The potentials (e.g. cost-efficiency, improved healthcare services) and trade-offs (e.g. data protection concerns) of eHealth technologies were explained by Mr Hartmut SCHAPER, representing Siemens Healthcare. He argued for a flexible legal framework that can adapt to the new privacy challenges brought by new technologies and allows patients to make informed choices.

Mr Ray PINTO, representing Microsoft, demonstrated the potentials of eHealth in reducing costs and improving the lives of citizens through some real-life examples. He emphasized the creative developments done in this field by both multinational companies and SMEs.

The patients' voice was introduced into the discussion by Ms Nicola BEDLINGTON from the European Patient Forum, who presented the results of a recent project 'The Chain of Trust'. The two-year project, collecting the views of patients and health professionals, ended with the conclusion that patients and health professionals need user-centric eHealth services instead of technology-driven ones. She stressed the importance of enhancing the self-confidence of patients and health professionals in using new technologies and the deepening of the relationship between patients and health professionals through the use of eHealth services.

Mr Sascha MARSCHANG representing the European Public Health Alliance highlighted the potentials of eHealth in reducing inequalities and called on decision-makers to strengthen the link between these two health policy objectives. He also referred to new technologies, such as mobile applications, as useful tools for professionals and patients if used with caution.

The last speaker, Dr Konstanty RADZIWILL from the Standing Committee of European Doctors gave a presentation on the new challenges linked to eHealth. He emphasised that despite the potential benefits of eHealth, utmost importance should be given to the patient-doctor relationship, which is based on personal contacts and the respect for patient privacy. He also called for more education and legal certainty in this field.

1. LEGAL AND POLICY BACKGROUND

The concept of eHealth made its first appearance in scientific and policy literature at the end of the 1990s. Despite its novelty, the potentials of eHealth are widely acknowledged[1]. EHealth is defined by the WHO as a transfer of health resources and healthcare by electronic means[2]. It covers three main areas: notably the delivery of health information to health professionals and patients through the internet or other means of telecommunications; the use of information technologies (IT) to improve public health services; and the application of e-commerce and e-business practices in health systems' management[3].

Despite access to healthcare being recognised as a fundamental right, Member States struggle to provide equal and high quality services to their citizens. Moreover, the public health expenditure of EU Member States continues to rise. In 2010, the Member States spent 7.2% of their national GDP on public health, which is almost 2% more than in 1990. Long-term projections also show public health expenditure rising, which is mainly due to Europe's ageing population, the impacts of financing the treatment of chronic diseases, the increased mobility of patients and health professionals and the growing expectations of citizens for high quality services. In this context and in particular during the time of the current economic crisis, the resort to eHealth solutions is seen both as a way to make healthcare services more efficient (and therefore save costs) and as an opportunity for market development[4]. eHealth can improve the efficiency of national healthcare, by e.g. decreasing administrative costs, facilitating working processes, providing easier and faster access for patients and health professionals to health data[5]. eHealth has a great potential for growth. The global telemedicine market grew from $9.8 billion in 2010 to $ 11.6 billion in 2011. Projections show that the market will continue to expand to $27.3 billion by 2016[6]. The benefits of eHealth have been long acknowledged by the EU and its Member States. In 2004 the European Commission adopted the first eHealth Action Plan[7] setting three target areas: namely the identification of common challenges and the creation of the right framework to support eHealth; the start of pilot actions to better benefit from eHealth; and the promotion of the sharing of best practices. Following the adoption of the Action Plan, several policy measures were adopted, namely the EC Recommendation on cross-border interoperability of electronic health records (EHR) systems[8] and the EC Communication on the benefits of telemedicine[9].

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1 Legally eHealth- Putting eHealth it its European Legal Context, Study Report March 2008, available at: http://www.epsos.eu/uploads/tx_epsosfileshare/Legally-eHealth-Report_01.pdf.
2 Website of WHO on eHealth, available at: http://www.who.int/trade/glossary/story021/en/.
3 ibid.
4 Communication from the Commission, eHealth Action Plan 2012-2020 - Innovative healthcare for the 21st century, COM(2012) 736 final, available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0736:FIN:EN:PDF.
5 eHealth Action Plan 2012-2020: Frequently Asked Questions, available at: http://europa.eu/rapid/press-release_MEMO-12-959_en.htm.
6 idem. eHealth Action Plan.
7 Communication from the Commission, eHealth - making healthcare better for European citizens: an action plan for a European e-Health Area, COM (2004) 356 final, available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2004:0356:FIN:EN:PDF.
8 Commission Recommendation on cross-border interoperability of electronic health record systems (C(2008) 3282), available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:190:0037:0043:EN:PDF.
9 Communication from the Commission on telemedicine for the benefit of patients, healthcare systems and society, COM(2008)689 final, available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0689:FIN:EN:PDF.

The former document aims at allowing the cross-border exchange of health data to an extent necessary for legitimate medical and healthcare purposes. The latter Communication proposes strategic actions for the expansion of the use of telemedicine in the EU. In addition to the above, several projects have been financed by the EU in the area of eHealth, including the epSOS project (Smart Open Services for European Patients) which aims to design, build and evaluate an interoperable service infrastructure for the use of EHR in Europe[10]. The on-going SemanticHealthNet project[11] (Semantic Interoperability for Health Network) also aims at optimising patient care by the improvement of the interoperability of health networks. The importance of interoperability is also acknowledged in the ICT Standardisation Work Programme[12], aiming at developing standards relevant to eHealth.

The EU's commitment towards eHealth was reinforced by the adoption of the Europe 2020 Strategy[13] and in particular by one of its flagship initiatives, the Digital Agenda for Europe[14]. One of the strategic actions set by the Digital Agenda is the deployment of eHealth technologies to '*improve the quality of care, reduce medical costs and foster independent living, including in remote places'*. The potentials of eHealth in the improvement of citizens' life and as a new area for growth have been stressed by both the European Parliament in form of resolutions[15] and the Council[16].

In 2011, the EU adopted Directive 2011/24/EU[17] on Cross-Border Healthcare, which aims at clarifying patients' rights, guaranteeing the safety, clarity and efficiency of cross-border care and promoting the cooperation between Member States. To facilitate such cooperation, the Directive sets up a Network of national authorities responsible for drawing up guidelines in the area of eHealth. In 2012, the European Commission adopted the second EU Action Plan on eHealth, setting strategic actions for the removal of barriers that hinder the wider use of eHealth. The barriers identified include the lack of confidence in and the lack of interoperability between eHealth solutions, the lack of evidence proving the cost-efficiency of eHealth, lack of legal clarity in particular with respect to data protection and health reimbursement, etc. The European Parliament's ENVI Committee is currently preparing an Own Initiative Report reflecting on the second EU Action Plan on eHealth, the results of which will be fed into a European Parliament resolution[18].

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[10] More information on the epSOS project is available at: http://www.epsos.eu/home/about-epsos.html.
[11] More information on the SemanticHealthNet project is available at: http://www.semantichealthnet.eu/index.cfm/news/.
[12] 2009 ICT Standardisation Work Programme, available at: http://ec.europa.eu/enterprise/sectors/ict/files/wp2009_en.pdf.
[13] Communication from the Commission, Europe 2020, A Strategy for smart, sustainable and inclusive growth, COM (2010) 2020 final, available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF.
[14] Communication from the Commission, a Digital Agenda for Europe, COM(2010) 245 final/2, available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0245:FIN:EN:PDF.
[15] European Parliament Resolution on the Internet of Things, 2009/2224(INI), available at: http://www.europarl.europa.eu/oeil/popups/summary.do?id=1094979&t=d&l=en.
[16] Council Conclusions on Safe and Efficient Healthcare through eHealth, available at: http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/lsa/111613.pdf.
[17] Directive 2011/24/EU of the European Parliament and of the Council on the application of patients' rights in cross-border healthcare, available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:088:0045:0065:EN:PDF.
[18] More information on the Own Initiative Report is available at: http://www.europarl.europa.eu/oeil/popups/ficheprocedure.do?lang=en&reference=2013/2061(INI).

2. PROCEEDINGS OF THE WORKSHOP

2.1 Introduction

2.1.1 Welcome and opening – Ms Pilar AYUSO (MEP)

In her opening statement, Ms Pilar AYUSO mentioned that the workshop was held in view of the finalisation of the ENVI Committee's Own Initiative Report on the Commission Communication of 6 December 2012, on the 'eHealth Action Plan 2012-2020 – Innovative healthcare for the 21st century'[19]. The Own Initiative Report, scheduled to be presented to the ENVI Committee, will serve as a basis for the adoption of a European Parliament resolution on eHealth. Ms Ayuso briefly introduced the five parts of the workshop and presented the chairs of each part. She also thanked the chairs for their valuable contribution to the Own Initiative Report.

2.2 The current e-Health situation in Europe

2.2.1 The position of the European Commission: perspectives/challenges

Mr Benoît ABELOOS, Policy Officer, DG CNECT, EC

Mr Benoit ABELOOS focused his presentation on the eHealth Action Plan 2012-2020. He first referred to the timeliness of presenting the eHealth Action Plan to the European Parliament, given that the ENVI Committee was about to finalise its opinion on the plan. He first presented the rationale of the Action Plan: to reflect the progress made so far; to ensure better policy coherence between health policy and development; to enhance the cooperation between DG SANCO and DG CNECT; to scale up eHealth for the empowerment of patients; to enhance efficiency and innovation in healthcare; and to contribute to more growth and jobs.

The objectives behind the adoption of the Action Plan were also mentioned. These are: developing eHealth to respond to key health challenges, for example those posed by an ageing population and the increase of chronic diseases; supporting the reform of healthcare systems; unlocking innovation; empowering patients and responding to the legal issues of interoperability. Mr Abeloos also described the operational objectives of the Action Plan, which are the development of better and wider interoperability between eHealth services, the support of research development and innovation, the facilitation of the wider deployment and uptake of eHealth and the promotion of international cooperation.

Concerning the interoperability of eHealth services, he stressed that the EC was planning to propose an eHealth interoperability EU Framework by 2015. To support the preparation of this legal initiative, the EC has launched several studies and research projects such as epSos, Semantic HealthNet and the eHealth Network of Member States.

[19] idem. eHealth Action Plan.

He also pointed out that the assets developed under the Connecting Europe Facility Funding[20] will support the achievement of wider interoperability.

With respect to legal clarity, he stressed that data protection was a major concern for eHealth, thus the EC was planning to prepare guidance on how to apply EU data protection law in the area of eHealth after the adoption of the Data Protection Regulation[21]. He mentioned that the EC has already prepared a Staff Working Paper on the legal issues linked to telemedicine[22], and will publish by the end of 2013 a Green Paper on mobile health. The Green Paper, which will be accompanied by a Staff Working Document on the legal framework applicable to health and wellbeing applications, will launch a debate on possible EU legal and policy options.

With regard to research and innovation, Mr Abeloos explained that the EC was financing several projects on eHealth through the Horizon 2020 programme[23]. A specific focus is on virtual examinations of the body in order to test a new therapy 'in silico' rather than 'in vivo/in vitro'.

He stressed that a wider deployment of eHealth technologies will be ensured through the Connecting Europe Facility, the cohesion policy, the European Innovation Partnership on active and healthy ageing[24], and the development of digital literacy such as the publication of clinical practice guidelines on eHealth for nurses and social care workers.

With respect to international cooperation on eHealth, he mentioned that the EC will continue to collaborate with the OECD and WHO on benchmarking studies and data collection. He then stated that there was an EU-US Memorandum of Understanding[25] signed in December 2010 on eHealth and that within this framework a roadmap[26] was published on eHealth interoperability and Information and Communication Technologies (ICT) skills in June 2013.

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[20] The Connecting Europe Facility provides seed funding and technical assistance for broadband infrastructure and services projects. More information on the financial facility is available at: http://ec.europa.eu/digital-agenda/en/connecting-europe-facility.

[21] The proposal for the Regulation on the protection of individuals with regard to the processing of personal data and on the free movement of such data (General Data Protection Regulation, COM(2012) 11 final, is available at: http://ec.europa.eu/justice/data-protection/document/review2012/com_2012_11_en.pdf.

[22] Commission Staff Working Document on the applicability of the existing EU legal framework to telemedicine services, SWD(2012) 414 final, available at: https://ec.europa.eu/digital-agenda/en/news/commission-staff-working-document-applicability-existing-eu-legal-framework-telemedicine.

[23] More information on the Horizon 2020 Programme is available at: http://ec.europa.eu/research/horizon2020/index_en.cfm.

[24] The European Innovation Partnership on active and healthy ageing is a partnership of private and public stakeholders that work together to promote successful social, process, technological and organisational innovation. More information on the partnership is available at: http://ec.europa.eu/research/innovation-union/index_en.cfm?section=active-healthy-ageing&pg=about.

[25] The Memorandum of Understanding between the United States Department of Health and Human Services and the European Commission on Cooperation Surrounding Health Relation Information and Communication Technologies is available at: http://ec.europa.eu/digital-agenda/en/news/memorandum-understanding-eu-us-ehealth.

[26] Transatlantic eHealth /health IT Cooperation Roadmap is available at: http://ec.europa.eu/digital-agenda/en/news/transatlantic-ehealthhealth-it-cooperation-roadmap.

Mr Abeloos finally presented the governance aspects of eHealth by describing the role of the eHealth Network[27] and the eHealth Governance Initiative[28]. He explained that these networks and initiatives are supported by projects such as epSOS[29] and SemanticHealthNet[30], and bodies such as the multi-stakeholders' platform on ICT standardisation[31].

As a conclusion, he outlined that the Action Plan responded to the current budgetary constraints caused mainly by Europe's ageing population and the increasing expectation of the citizens, to the need for more patient empowerment and to the necessity of promoting eHealth innovation for better and more sustainable healthcare. He stressed that eHealth has great growth potential as it offers business opportunities in Europe and beyond.

Mr Jerome BOEHM, Team Leader, DG SANCO, EC

Mr Jerome BOEHM started by explaining that from a public health point of view, eHealth must be seen as an instrument that is beneficial for the patient and could improve the efficiency of the Member States' health systems. To ensure that the EU does not lag behind the US, eHealth as an innovative tool needs to be supported. Mr Boehm pointed out that eHealth is an important but difficult topic that requires a change of mind-set from all actors (Member States, health practitioners, patients and industries).

To emphasise the importance of eHealth, the EU has set strategic objectives in the eHealth Action Plan and adopted the Directive on cross-border healthcare. With respect to future developments, he stressed the importance of EU level actions and commitments. In this context, he stated that the Commission's role in the field of eHealth is to foster research, push the Member States for more actions, enhance exchange of practices between Member States, involve stakeholders in the decision-making processes and to make progress on health data protection for better deployment and interoperability. He stressed that the Commission's primary focus is on the European dimension of eHealth such as on the cross-border exchange of data for emergency care (e.g. allergies, blood group) but also for planned care (e.g. exchange of expertise in different Member States on rare diseases), the development of e-Prescription to secure treatment in different Member States and the promotion of telemedicine instruments (e.g. diagnosis).

As a conclusion he highlighted the need for the mapping of new emerging risks and opportunities in eHealth. Among the risks, he referred to the data protection concerns linked to the development and use of eHealth data.

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[27] The eHealth Network, consisting of national authorities, was set up with the objective of ensuring the interoperability of cross-border eHealth services. More information is available at: http://ec.europa.eu/health/ehealth/policy/network/.

[28] The eHealth Governance Initiative aims at establishing a governance structure for eHealth in order to ensure the continuity of healthcare. More information on the initiative is available at: http://www.ehgi.eu/default.aspx.

[29] http://www.epsos.eu/.

[30] http://www.semantichealthnet.eu/.

[31] The European Multi-Stakeholder Platform on ICT Standardisation was set up by the EC as a body advising on matters related to the implementation of ICT standardisation. More information is available at: http://ec.europa.eu/digital-agenda/en/european-multi-stakeholder-platform-ict-standardisation.

2.2.2 The e-Health in Spain: a strategy for a decentralized National Health Service

Mr Juan Fernando MUÑOZ MONTALVO, General Adjoin vice-director, Information Technology, Spanish Ministry, Spain

Mr Juan Fernando Muñoz Montalvo started his presentation by describing the healthcare system in Spain where the regions have their own healthcare systems. The role of the State is mainly to ensure coordination and equality between the regions. Given this decentralised structure, it was of outmost importance for ensuring the efficiency of healthcare to establish interoperable systems. He mentioned that the Spanish strategy was to interconnect all the healthcare 'islands' (e.g. between the regions, between hospitals) to be able to share data and to include all players such as patients, insurance companies, laboratories into integrated national healthcare services. To develop such strategy an organisational agreement was adopted between the State and the regions in 2005 that led to the set-up of three consecutive plans (2006-2016) representing an investment of EUR 500 million in eHealth. He stressed that while establishing eHealth systems, Spain built on existing systems and information exchange channels between the regions.

The second part of Mr Muñoz Montalvo's presentation focused on the description of the main eHealth projects in Spain, namely the projects on unique identification system, eHealth records, E-prescription. Concerning the unique identification system he stressed that before there had been 17 different identification systems in place, which were now replaced by a single database. This database is based on the principle that each citizen has one identification number. All clinical information of patients is linked to this unique identification number. He mentioned that the implementation of this identification system took almost 10 years and ended in 2011 with 44 million people now being registered.

With respect to EHR, he mentioned that the setting-up of the system was preceded by a negotiation of almost one year between all actors and regions. The negotiation ended with an agreement defining the scope of EHR (e.g. content, access by professionals, control of access by patients). EHR is currently used in 12 regions and covers the health data of almost 19 million patients. It captures the results of about 3 million professional consultations and 30,000 patient consultations per month. This system allows Spain to actively participate in European projects, such as epSOS.

With regard to e-prescriptions he underlined that Spain followed the same approach as for the development of EHR (i.e. negotiations resulting in an agreement). In July 2013, almost all prescriptions were exchanged electronically. The new system has allowed for the tracing of the expenditure on medical products.

Mr Muñoz Montalvo continued by referring to future projects which will focus on dependency management and mobile applications.

In his concluding remarks, Mr Muñoz Montalvo outlined that the use of eHealth in Spain contributed to the sustainability of healthcare services and enabled the national healthcare system to be integrated while respecting the autonomy of the regional systems. He finally added that eHealth in Spain also contributed to the support of healthcare services in less developed regions.

2.2.3 E-Health investment: The use of information and communication technologies (ICT) for health

Ms Jillian ODERKIRK, Senior Economist and Policy Analyst, Health Information Infrastructure Project, Health Division, OECD

In her opening statement Ms Jilian ODERKIRK said that in 2010 OECD health ministers called for the improvement of national information infrastructures to provide evidence for the improvement of healthcare quality and for the more effective use of health data that have already been collected. This ministerial level meeting was the starting point for the OECD to gather eHealth data and report on new eHealth solutions. There were two prerequisites for the transfer of health data to work. Firstly it was necessary to collect and store the data of individual patients. Second it was important to collect data with respect to the whole duration of patient care. This latter point was of particular importance in linking care to outcomes. These prerequisites often required data linkages as only a few databases had all of the information needed. These linkages could be provided by the use of eHealth records. She defined eHealth recording systems as longitudinal electronic records of individual patients that contain or virtually link together records from multiple electronic medical records which can then be shared (interoperable) with the aim of improving the quality, safety and efficiency of healthcare.

Ms Oderkirk then presented the stage of development and use of eHealth records in the 25 OECD countries based on the result of the OECD Health Care Quality Indicator (HCQI) 2012 country survey[32] with a focus on the 15 European countries that responded to the inquiry. It was mentioned that in 11 of these European countries more than 70% of doctors and hospitals were using eHealth records, 12 countries implemented national plans on eHealth records and in eight countries there were exchanges of eHealth records among doctors and hospitals including medications, lab tests and images. She pointed out that 18 of the 25 OECD countries have defined a minimum data set for eHealth records.

She then explained that eHealth records are useful tools for scientific research because they enable one to stratify patients into groups that share common characteristics, to identify the treatment pathways that are effective for different types of patients, to combine this with bio-bank data, to further stratify the patients and discover personalised and effective drugs and to efficiently select large and homogeneous groups of patients for clinical trials of new therapies. eHealth records could support inter alia timely and accurate post-market surveillance for adverse drug events, reduce costs and increase outcomes and enable physicians in identifying the most appropriate care.

Ms Oderkirk continued by describing how the 15 countries that responded to the OECD survey have planned and implemented the use of eHealth records data in Europe. OECD member countries had different opinions on the future use of eHealth records for national healthcare quality monitoring (i.e. five very likely, ten likely, four unsure, two unlikely and three very unlikely to use eHealth records). She underlined that too few countries were harnessing value from their data for performance monitoring.

Following she highlighted the challenges related to the development of records such as balancing data privacy and access to data, the reluctance of patients to share data, the lack of standards for content and interoperability, the lack of skilled resources, the reluctance of

[32] More information on the OECD Health Care Quality Indicator Survey is available at: http://www.oecd.org/health/health-systems/healthcarequalityindicators.htm.

health professionals to use them and data quality problems. She concluded with listing potential success factors for the deployment of eHealth records which include: the set-up of strategic planning, effective data privacy and security measures, legislation enabling secure data sharing and engagement with citizens, businesses and health sectors.

2.2.4 Shared challenges in eHealth at the regional and global level

Ms Diana ZANDI, e-Health Unit, World Health Organization

M Ms Diana ZANDI presented the WHO policy developments on eHealth and stressed that the WHO as a global health agency promotes the evidence-based use of information and communication technologies in health systems and services. She added that WHO has adopted several resolutions both at the global (e.g. WHA 66.24. on standardisation and interoperability[33]) and regional levels (e.g. WHO America Region 2011[34]).

During the second half of her presentation Ms ZANDI described the priority areas of WHO on eHealth (i.e. policy and governance, standardization and interoperability, evidence building, eHealth trends and uptake, capacity building through eLearning, networking and South-South cooperation, and national strategies). While outlining the global context for eHealth developments, she considered that eHealth could address cross-border concerns such as environmental exposure, disease outbreaks, food and drug safety events, the growth of online health information and services and immigration, if common regional and global approaches were taken. Finally she identified important shared challenges such as an enabling policy environment for eHealth, the implementation of standards that are critical for data sharing, consumer protection related to 'health internet', unsafe practices or criminal activities and governance issues related to the use and reuse of health data.

Ms ZANDI then underlined the necessity of developing a suitable policy framework that allows for the use of eHealth. To this end countries should set up: national eHealth strategies and roadmaps; develop evidence building through global surveys; eHealth databases; best practices; and promote capacity building and training. Here she flagged the need to properly evaluate eHealth services. With respect to standards she stressed that they should be the core components of national eHealth strategies as they are critical to data sharing at national, regional and global levels. On consumer protection issues she emphasised that there was a need for proper governance of health-related global domain names (e.g. '.health') and that it was essential to ensure secure online management of health data and to increase trust in eHealth tools and health services as called by the WHA resolution in May 2013[35]. With regard to governance she highlighted that the capture, share, use and reuse of health data have been recently discussed at the Summit on Trustworthy Use of Data for Health but a consensus has not yet been reached on the research process on big data, which is necessary to improve transparency, accountability and quality.

[33] The Resolution of the World Health Assembly on eHealth standardization and interoperability is available at: http://apps.who.int/gb/ebwha/pdf_files/WHA66/A66_R24-en.pdf.
[34] Resolution CD 51.R5, Strategy and Plan of Action on eHealth is available at: www.paho.org/hq/index.php?option=com_docman&task.
[35] idem. Resolution on eHealth standardization and interoperability.

2.3 e-Health better care at lower cost

The second part of the workshop was hosted by Ms Jill EVANS (MEP), who highlighted, through the example of a Welsh innovation centre, the potentials of eHealth in reducing costs and improving citizens' quality of life.

2.3.1 The Estonian experience

Mr Raul MILL, Member of the Management Board of the Estonian eHealth Foundation, The task force for the EC, Estonia

Mr Raul MILL representing the Estonian eHealth Foundation[36] highlighted that Estonia, according to a recent report published by the OECD and the European Commission, is ranked first in implementing and adopting eHealth solutions. This is due to the fact that e-solutions are widely used by Estonians. A big variety of services, including healthcare services, are available online due to the X-Road model, which is a network connecting private and public sector databases and services.

The second part of Mr Mill's presentation focused on the use of eHealth technologies in the Estonian healthcare sector, which consists of 30 hospitals and 512 family doctors. The total healthcare expenditure in 2011 was 5.9% of the total national GDP, which equates to EUR 944.6 million per annum. The total eHealth expenditure is EUR 12 million, which is relatively low compared to the expenditure of other countries, such as Finland with a total eHealth expenditure of EUR 203 million. EHealth became one of the priorities for Estonia's healthcare policy in 2000. Following two years of preparation, in 2005 the Ministry of Economic Affairs allocated structural funds for the setting up of four eHealth projects on Electronic Health Records (EUR 1.6 million), Digital Restoration (EUR 0.2 million), Digital Images (EUR 0.2 million) and Digital Prescriptions (EUR 0.24 million). In 2005, the Estonian eHealth Foundation was established with the aims of developing and managing Estonia's health information system. Mr Mill concluded this historical overview by saying that the health information system became operational in 2008.

Mr Mill then gave an overview of the usage of eHealth tools by saying that currently 94% of issued prescriptions are e-Prescriptions, 90% of the hospitals use digitalised discharge letters, 95% of case summaries are sent to an online database and the health data of about 80% of Estonia's population is digitalised. He also said that following a slow start, now about 180,000 health professionals use an online tool for retrieving medical documents. It was noted that the number of patients using the centralised patient portal is not as high as expected, however subscribed users tend to use this tool more and more. The patient portal is a gateway for patients to see all their medical documents through a central system. The central system managed by the eHealth Foundation receives data from eight software systems managed by health service providers. With respect to the structure of the health information system Mr Mill noted that the system consists of three levels, notably the central level, the data exchange level and the institutional level.
Mr Mill also provided an inventory of all e-Health services in Estonia, including both on-going (e.g. eConsultation, digital registration, eAmbulance) and planned services (e.g. services for homecare, eLearning services) as well as services that are currently under development (e.g. Services for social insurance funds).

[36] The website of the Estonian eHealth Foundation is available at: http://www.e-tervis.ee/index.php/en/index.php.

She also emphasised the importance of standards in enabling the interoperability of health information systems. The eHealth Foundation is responsible for the management of the use of health informatics standards.

In his concluding remarks, Mr Mill referred to the future direction of Estonia's healthcare policy, by stating that ensuring better services is crucial. To achieve better services, there is a need for: the faster input of data (e.g. through voice recognition); faster and better outputs (e.g. better graphical solutions);the development of a single sign on system (e.g. single entry interface); and the use of independent hardware and software solutions. Mr Mill also emphasised the importance of international cooperation by referring to the benefits of current projects, such as epSOS, Sustains or Momentum.

2.3.2 e-Health records in Ambulatory Care

Ms Siri BJØRVIG, Manager Personal Health Systems, Norwegian Centre for Integrated Care and Telemedicine, (WHO Collaborating Centre for e-Health), Norway

Ms Siri BJØRVIG talked about the important role played by new technologies, such as eHealth records, in improving the quality of healthcare services. She started her presentation with a real-life example illustrating the benefits of new technologies in scarcely populated regions. A few years ago a group of students were attacked by a polar bear in an area located far from bigger cities. The injured students were stabilised in a small hospital, where the doctors treated them with the online support of a specialist team from the University Hospital of Tromsø.

Ms Bjørvig represented the Norwegian Centre for Integrated Care and Telemedicine (Centre)[37], which is a centre of researchers and experts in charge of gathering, producing and disseminating knowledge about telemedicine services. The Centre was established in the 1980's and since 2002 it has been operating as a collaboration centre of the WHO.

The Centre operates in accordance with the Government's ICT objectives in healthcare, which are the provision of easy and secure access of patients and professionals to health data and the creation of accessible data for quality improvement, health monitoring, management and research. To achieve these objectives, the Norwegian Government is currently developing a suitable legislative framework.

Ms Bjørvig continued by describing the key challenges for the use of eHealth, which are the existence of many independent organisations providing healthcare services (e.g. 4,100 general practitioners, 70 hospitals), the variety of IT systems used by the different actors, the lack of integration between the IT systems and the reluctance of health professionals and patients to use new technologies. According to Ms Bjørvig, these issues must be addressed in the future. eHealth technologies and in particular eHealth records should be used not only as documentation tools recording patient data, but also as tools allowing both patients and health professionals to access data any time and from anywhere. eHealth data should be shared and the participation of patients in eHealth services should be ensured. Ms Bjørvig concluded by saying that structured data could help us personalising healthcare services and may provide useful information for decision-makers.

[37] The website of the Norwegian Centre for Integrated Care and Telemedicine is available at: http://www.telemed.no/.

2.3.3 The e-Hospitals

Dr Vicent MONCHO MAS, Hospital Marina Salud, Denia, EMRAM stage 7 hospitals, Spain

Dr Vincent MONCHO MAS's presentation focused on the description of 'e-Hospitals'. Prior to describing the main characteristics of e-Hospitals, he introduced the Spanish Marina Salud Hospital, as a modern hospital which follows the innovative approach of public and private investment partnership (PPIP). The partnership allows private entities to provide public services (e.g. healthcare services) with the condition that the costs of such services are co-financed by the private entities themselves and the state. The Hospital is also modern in a sense that it uses innovative information communication technologies.

Dr Moncho Mas explained that new technologies increase the efficiency of hospitals, as they make clinical processes easier and faster and contribute to attaining health policy objectives at a lower cost. To this end, all paper-based clinical data have been transferred into Electronic Health Records (EHR) at the Marina Salud Hospital. The concept of EHR refers to the digitalised health information of patients, including e.g. the medical history, laboratory test results, clinical images, etc. of patients.

Whilst implementing new technologies, hospitals may face challenges, including those posed by the insufficient institutional and regulatory frameworks as well as the reluctance of changing well-established business practices and patient behaviours, the lack of technologies and tools. Despite these challenges, hospitals should explore the opportunities that technologies offer, as this is the only way to maintain the quality of healthcare services while reducing its costs. Dr Moncho Mas said that EHR is a starting point for improving quality and achieving cost-efficiency.

Dr Moncho Mas emphasised that only improved EHR systems are efficient. According to a benchmarking model developed by the Healthcare Information and Management Systems Society (HIMSS)[38] the benefits of EHR (e.g. improved quality of care, patient safety, operational efficiency) are only evident at Stages 6 and 7 (see slide 8 of the presentation, Annex III). In 2011, the Marina Salud Hospital became a Stage 6 hospital, as it adapted US best practices to the needs of the hospital and ensured that all nurses and physicians used EHR systems. In 2012, after demonstrating the superior implementation of EHR and in particular its use as a clinical decision support system (e.g. EHR decreased the number of unnecessary Tx X-ray procedures), the hospital achieved Stage 7.

Dr Moncho Mas then demonstrated that eHealth technologies can improve the workflow of hospitals. In this context, he mentioned that nurses save time by the use of EHR as 50% of the nursing discharge reports can be filled out automatically. Standardised electronic wound care plans, electronic emergency department tracking boards were also mentioned as examples of beneficial eHealth technologies. Dr Moncho Mas also emphasised the benefits of new technologies for physicians, who can access structured clinical information from anywhere, allowing them to provide follow-up care the patients also form home.

Dr Moncho Mas concluded by repeating that EHR and other eHealth technologies can improve the efficiency of healthcare, as they can contribute to the achievement of health policy objectives at lower cost.

[38] Description of the current HIMSS scores is available at: http://www.himssanalytics.org/home/index.aspx.

2.3.4 e-Health: easing the transitions in healthcare

Prof. Dr Antoine GEISSBUHLER, President of IMIA, Professor of Medical Informatics at Geneva University School of Medicine and Director of the Division of the Medical Informatics at Geneva University Hospitals, Switzerland

In his introduction Prof. Dr Antoine GEISSBÜHLER highlighted that eHealth could offer solutions to pressing healthcare challenges, including the challenge of providing equal access to quality healthcare services. A study conducted in 1993[39] already showed that the use of computers at work can reduce costs and resource utilisation. It took almost 20 years to reach the same conclusion with respect to the use of eHealth technologies[40]. Prof. Dr Geissbühler emphasised, by reference to a third study on 'e-iatrogeny'[41], that the expected benefits can only be achieved through the careful use of eHealth technologies. Without careful implementation, eHealth could increase mortality[42].

The second half of Prof. Dr Geissbühler's presentation focused on the benefits of eHealth technologies. First, he referred to the importance of eHealth data in gathering information and knowledge, which can be transferred into better decisions and actions. Relevant data can be produced by various tools, including the Electronic Health Record, Electronic Order Entry, Electronic Care Planning and documentation etc. The most advanced hospital information systems allow health professionals to follow patients in real time and track their state of health and if needed generate real-time alerts.

Prof. Dr Geissbühler then said that the real challenge remains to translate the information gathered via the new technologies into better decisions. By addressing this challenge, the quality of healthcare services could be improved and optimised and cost-savings could be achieved. As an example to the benefits of transforming data into decisions, he referred to the use of health data in determining and following the clinical pathway[43] of patients.

According to Prof. Dr Geissbühler, eHealth tools should be used within and across institutions as well as during the whole duration of care and in particular during 'transitional care'. Transitional care may potentially harm patients, as during this phase patients change healthcare settings and professionals. To overcome the risk posed by transitional care, hospitals aim to improve the continuity of care. In Geneva, for example, the University Hospital has implemented a health information exchange system, which consists of shared dashboards, electronic patient summaries and shared treatment plans.

Prof. Dr Geissbühler then continued by saying that the transition towards more effective healthcare is only possible if all actors, including both healthcare professionals and patients, are informed about the new technologies. Empowering patients with information (i.e. patient informed care) is crucial for the effective functioning of healthcare.

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[39] Tierney WM, Miller ME, Overhage JM, McDonald CJ. '*Physician inpatient order writing on microcomputer workstations. Effects on resource utilization*', JAMA. 1993 Jan 20;269(3):379-83. Available at: http://www.ncbi.nlm.nih.gov/pubmed/8418345.

[40] Amarasingham R, Plantinga L, Diener-West M, Gaskin DJ, Powe NR. *'Clinical information technologies and inpatient outcomes: a multiple hospital study'*, Arch Intern Med. 2009 Jan 26;169(2):108-14. doi: 10.1001/archinternmed.2008.520. Available at: http://www.ncbi.nlm.nih.gov/pubmed/19171805.

[41] E-iatrogeny means that by reckless the application of health information technology patients could be harmed.

[42] Han YY, Carcillo JA, Venkataraman ST, Clark RS, Watson RS, Nguyen TC, Bayir H, Orr RA. '*Unexpected increased mortality after implementation of a commercially sold computerized physician order entry system*.' Pediatrics. 2005 Dec;116(6):1506-12. Available at: http://www.ncbi.nlm.nih.gov/pubmed/16322178.

[43] Clinical pathway is an evidence-based plan for patient care. Source: http://medical-dictionary.thefreedictionary.com/.

To empower all actors with information it is important to understand the potentials of using new technologies, including social web tools (e.g. online forums, online alerts, newsfeed) and new applications. The importance of ensuring the interoperability of these new tools was also emphasised.

Prof. Dr Geissbühler highlighted the importance of trans-national, regional and inter-regional projects, such as Alpine Space, Alias, NathCare or epSOS. These projects could assist national governments in developing their own eHealth strategies.

In his concluding remarks, Prof. Dr Geissbühler summarised the main challenges, which are the fostering of trust in new technologies, empowering citizens and professionals with information, ensuring the technical and semantic interoperability of new technologies and investing in capacity building.

2.4 Developing funded european projects

2.4.1 European Reference Networks (Directive on Cross-border Healthcare) and the key role of e-Health

Ms Nathalie CHAZE, Head of Health Care Systems Unit, DG SANCO, EC

Ms Nathalie CHAZE provided a broad summary of the Commission's role in the area of eHealth with a specific focus on the European Reference Networks. She started with a brief description of the Directive on Cross-Border Healthcare which aims at enabling patient mobility and facilitating the patients' choice of receiving healthcare in another Member State. Patients have the possibility to move from one country to another, choose healthcare providers that better suit their needs and receive treatments in countries other than their own. Once the patients return to their home country, they should be reimbursed for the treatments received.

The second part of Ms Chaze's presentation focused on the 'cooperation chapter' of the Directive, establishing a number of partnerships between Member States' healthcare providers so that hospitals and specialised treatment centres could cooperate for the benefit of patients. One of these partnerships is the European Reference Network (ERN). This network brings together, on a voluntary basis, healthcare providers across Europe, hospitals and specialised centres. ERN aims to connect healthcare providers, pool knowledge together and share information on the diagnosis and the delivery of treatment for all patients with rare or very complex diseases. Treating rare and complex diseases requires a particular concentration of expertise, which is scarcely available in the patients' home country. She highlighted that there are only a few knowledgeable experts in Europe treating rare and complex diseases, whereas affected patients are everywhere. Therefore, one of the most important aims of ERN is to facilitate the mobility of expertise and ultimately the access of patients to experts. In referring to the enhanced mobility of patients Ms Chaze highlighted that this does not only refer to physical mobility, i.e. patients moving from one country to another to receive treatment, but also to virtual mobility, i.e. experts sharing knowledge and information. eHealth plays an important role in facilitating these mechanisms. For example, eHealth is the only possible way to ensure that experts located in different hospitals and specialised centres across Europe share information and cooperate.

Ms Chaze then explained that ERN is instrumental in sharing information with patients and knowledge. Experts have the possibility to share samples for a secondary diagnosis, or even when they are all connected via electronic media they could discuss and share views and assess the results of tests in real time. The Network could also be used for providing training between the different centres.

This year two projects have been piloted under the ERN, one on rare paediatric cancer and another on myoclonic epilepsy. Both pilots concern diseases which could only be treated by specialists. The sharing of knowledge on the treatment of these diseases plays a key role, especially during the diagnostic phase which is the most challenging part of the treatment. These pilot projects are important to understand how cooperation among experts, through the use of eHealth, could help to give the right diagnosis and therefore result in the right treatment.

In her conclusions, Ms Chaze highlighted that there is greater need for collaboration between health providers. The European Commission has started the process of improving cooperation. The two pilot projects help to understand what the needs of cross-border healthcare providers are beyond the usual interoperability and semantic issues related to the translation of data. The EC is in the process of identifying the needs through the assessment of real-life cases. It is aiming to set up an IT platform operating as a one-stop-shop, which would combine different registries and health information into one single platform. This platform could be shared between a number of healthcare providers. This would be a very useful tool for experts to share information, and would contribute to the improvement of the citizens' quality of health by offering data for setting the right diagnosis and the best treatment. The EC would also try to develop a suitable legislative framework to make sure that eHealth is really beneficial for patients.

2.4.2 The road towards the effective use of data in health

Prof. Dr Georges DE MOOR. SemanticHealthNet project (FP7) partner. Head of Department Medical Informatics and Statistics, Gent University, EuroRec Board Member, Belgium

Prof. Dr Georges DE MOOR started his presentation by stating that the issue of semantic interoperability is the main obstacle for developing and deploying eHealth. Semantic interoperability is necessary as the difficulty of using healthcare data in an effective way increases in a context where data sources are multiplied and fragmented. Healthcare is facing a new landscape where different information sources can be found, including electronic health records, data coming from mobile devices, social networks, population registries, as well as clinical trial data. In addition to medical data, environmental data, and genomic data, there is becoming available data from bioscience. It is essential therefore to ensure the interoperability of these different data sources.

Trends in Electronic Health Records (EHRs) demonstrate that data are becoming more and more patient centred, multi-professional, dispersed and virtual. These records tend to be accompanied with metadata; the context in which data sits is thus complex. Consequently the adoption and improvement of the interoperability of EHRs, as a decision support tool for medical doctors, has become a major focus of European policies, strategies and investments (e.g. development of semantically interoperable patient summary and ePrescription services). Interoperability may enhance patient-centred care and advanced medical research.

Prof. Prof. Dr De Moor explained that the main challenge for the concept of semantic interoperability is to ensure that clinical information is communicated between different EHR systems in a way that allows for the comprehensive understanding of health data by the receiving systems, including by health professionals and patients at the local level.

The second part of Prof. Dr De Moor's presentation focused on the description of drivers behind the development of integrated EHRs and semantic interoperability. Integrated and interoperable EHRs serve as decision support tools for healthcare providers. Providing evidence to healthcare providers plays an important role, given the complexity of current healthcare systems (e.g. patients treated across the borders, care provided from multiple locations). Another driver behind the development of semantic interoperability is the importance of health data in medical research. Prof. Dr DE MOOR then described the challenges for developing interoperable systems. First, he underlined that there are 23 different official languages in Europe. Moreover, information used in electronic health systems is presented in a narrative and unstructured way. The existence of many different concepts and terminologies in medicines and healthcare is also seen as a barrier for developing interoperability.

In the light of this complex scenario, Prof. Dr De Moor highlighted the central issue for ensuring semantic interoperability, which relates to the question of representing and converting concepts from a 'human understandable form' to a 'computer processable form'. To translate the concepts, it is of particular importance to establish semantic interoperability schemes, such as detailed clinical models and clinical archetype templates. In this context the importance of guidelines, including of personal health guidelines for the use medical applications, and decision support systems was also highlighted.

Prof. Dr De Moor continued by pointing out that the issue of semantic interoperability is not new. In 2011, he coordinated a transatlantic project that also investigated semantic interoperability[44]. The project defined nine strategic actions that needed to be championed as a global mission. These objectives were to 1) Establish good practices; 2) Support translations; 3) Track key technologies; 4) Harmonise standardisation efforts; 5) Support education; 6) Ensure quality; 7) Scale up semantic resource development; 8) Design for sustainability via business models and cost-benefit analysis; and 9) Strengthen leadership and governance.

Prof. Dr De Moor also presented the SemanticHealthNet project, as a network of excellence project, which started in December 2011. It directly involves expert clinicians in an organisational and governance process aimed at developing a semantic interoperability model for clinical and biomedical knowledge sharing. The experts' role is to help define interoperability models needed in different specified areas of medicine. Its ultimate aim is to ensure that EHR systems are optimised for patient care, public health and clinical research across healthcare systems and institutions. Provided that a global and singular representation of each distinct clinical expression is not realistic and even not desirable, the aim of the project is to leverage a clinically driven work plan that could broaden access to coherent and quality-assured semantic resources. SemanticHealthNet captures the needs of clinicians and public health experts for evidence-based, patient-centred integrated care.

[44] More information on the transatlantic project called ARGOS is available at: http://ontology.buffalo.edu/smith/articles/Argos_Semantic_Interoperability.pdf.

SemanticHealthNet sustainability activities include the design of an overall infrastructure which consists of a virtual platform and services that can publish or reference resources and manage their maintenance. In the long run, the project also aims at ensuring that all EHR systems and public health systems use and adopt semantic interoperability resources.

Prof. Dr De Moor was also representing EUROREC[45], which is a not-for-profit organisation, promoting in Europe the use of high quality Electronic Health Record systems. EUROREC, a certifying body, deals with the harmonisation of the certification of electronic health system records and medical software all over Europe. In doing so, a business plan for certifying the semantically interoperable systems on the basis of very specific criteria has been developed.

In his conclusion, Prof. Dr De Moor highlighted the importance of liaising with industry, professional bodies, ministries, insurers on business drivers in order to foster the rapid adoption of semantic interoperability resources and the certification of such systems.

2.4.3 epSOS: From strategies to services – eHealth as the enabler for cross-border healthcare

Ms Lisa HAGBERG, epSOS European Project. Swedish Association of Local Authorities and Regions/Sveriges Kommuner och Landsting (SALAR), Sweden

Ms Lisa HAGBERG highlighted the greater need for mechanisms in the eHealth systems that enable the exchange of information across borders. She acknowledged the importance of the Directive on Cross-Border Healthcare in enabling the provision of cross-border health. eHealth is a tool through which it can be ensured that clinical information follows the patients regardless of where they are located.

Ms Hagberg then continued by presenting the scope and objectives of the epSOS project. The epSOS - European Patient Smart Open Services – is a large scale pilot project of the European Commission and Member States in the eHealth domain. The project started in 2008 with a total of 12 Member States and industry teams collaborating together. In 2011 the project went through an extension both in the scope and in the participating nations, with a total of 25 countries collaborating in the project, including three non-EU countries.

The overall aim of epSOS is to provide cross-border services that are safe, secure and offer efficient medical treatment for citizens when travelling across Europe. The project focuses on the development of a practical eHealth framework and an ICT infrastructure that enables secure access to patient health information across the different European healthcare systems. The project builds on existing national health solutions and projects, and uses experience from all participating countries.

Ms Hagberg then described the main achievements of the projects so far, which are the development of interoperable patient summaries and e-prescription services across borders. Six participating nations are also involved in pilot operations, which aim at exchanging information amongst them. The project has assisted the European Commission in providing all EU Member States, through the EU eHealth Network, with a non-exhaustive list of data to be included in a patient summary.

[45] More information on EUROREC is available at: http://www.eurorec.org/.

She then explained in more detail what the activities of the project are to achieve its overall objective. One of the activities was to define the type of information necessary for developing e-prescriptions and patient summaries. It was also necessary to investigate the type of data necessary for the provision of safe, sure and efficient health services. The project also developed specific requirements for accessing health data (e.g. who should access it, at what time and in what scenario). Ms Hagberg explained that translation models were also important so that health professionals could access the information in their national language regardless of where the information was originated.

Ms Hagberg described the areas where epSOS brought added value. She cited countries like Greece, Slovenia and Croatia that have used the epSOS's results to develop and then improve their national health services. Some countries with more mature eHealth systems in place (e.g. Sweden and Denmark, which already had e-prescription services) have benefitted from the project's output by testing their e-services against an interoperability framework. The project allowed for the sharing of experience between different countries and for looking at new standards to be followed for improving existing standards.

Ms Hagberg then outlined the major challenges that still exist in the field. These relate principally to the deployment of e-services on a larger scale. She also stressed that political decisions are necessary for the revision of the scope of the project in a long-term. In this vein, she acknowledged and supported the on-going work carried out by the European Commission on the eHealth Action Plan.

Ms Hagberg concluded by describing the future steps for the implementation of the project and for ensuring the sustainability of its services over time. These include the exploitation of opportunities offered by the development of an Open Source to make sure that the results are and remain available and that there is a platform for experts to exchange good practices. The project will therefore continue to engage in political discussion within the EU and in each Member State in order to achieve sustainability.

2.5 Innovative health technologies: The entreprise and industry initiative

The fourth part of the workshop focused on innovative health technologies. It was introduced and chaired by Mr Claudiu C. TĂNĂSESCU (MEP).

2.5.1 e-Health solutions in European healthcare systems

Mr Hartmut SCHAPER, Senior Vice President Health Services International at Siemens Healthcare

Mr Hartmut SCHAPER first underlined that healthcare systems in Europe and worldwide face the challenge of keeping the balance between cost-effective and quality services. eHealth provides solutions to this challenge as it offers better outcomes at lower cost. It is beneficial for patients, who due to eHealth solutions may receive better, cheaper and more timely care. ehealth allows for the provision of care in the right care settings and reduces re-admission rates. It also improves the quality of clinical trial operations and contributes to the development of transparent work processes. Mr Schaper stressed that unified access to data plays a key role in improving healthcare. Health data allow for reaching conclusions on the health status of the population and of individuals and on the effectiveness of healthcare.

Mr Schaper then acknowledged that eHealth has trade-offs, which could be overcome only by the adoption of the right policies and legislative measures. One of the trade-offs mentioned is data protection. Data can contribute to better care, as the more information health professionals have the more personalised care they can provide to their patients. Despite this benefit, patients are concerned by the security of their data. To overcome this trade-off he advised having a flexible legal framework which provides access to data within a protective framework and allows patients to decide on the amount of data generated and made publicly available. The applicable legal framework should also enable healthcare providers to choose the legal option that best serves the purpose of optimal implementation (for example when cooperating with other health care providers). Moreover an optimal legal framework would allow for innovation.

Following this, Mr Schaper gave examples of eHealth solutions developed by Siemens. He presented the example of the Hamburg-Eppendorf University Hospital supported by Siemens in the achievement of Stage 7 eHealth technologies. Stage 7 is awarded to hospitals that efficiently use eHealth technologies and thereby achieve paperless systems. The Hamburg-Eppendorf University Hospital was the first European Hospital that received this award in 2011. The eHealth solutions allowed the hospital, for example, to adapt their processes and data very quickly during the Escherichia coli crisis in Germany and provide better responses.

Other eHealth solutions mentioned were the medical image transfer programme developed for a remote region in Denmark a well as an electronic patient record system implemented in Austria, and a programme developed for the monitoring of patient pacemakers in Sweden. These technologies allow patients to save money on long-distance travel and healthcare professionals to spot potential problems early on, thus preventing complications and enhancing the efficiency of healthcare systems.

Mr Schaper concluded by repeating the importance of continuing the digitalisation of European hospitals. Digitalised hospitals remain the building blocks towards continuous care delivery and shared knowledge and are the tools for ensuring patients' empowerment. Smart eHealth solutions will contribute to the development and use of personalised care. He underlined the willingness of Siemens to keep engaging with the policy makers in the development of eHealth solutions for the future. Last but not least, Mr SCHAPER argued for continuous investment in the eHealth industry, which will keep Europe at the leading edge of technological innovation.

2.5.2 The Role of Technologies towards healthier citizens in healthier cities

Mr Ray PINTO, Senior Government Affairs Manager, Microsoft Europe

Mr Ray PINTO, representing Microsoft, gave an overview of the innovation actually happening in the field of eHealth. He first pointed out that a lot of these creative developments were done by very small companies.

He then drew attention to the fact that due to Europe's growing urbanisation, healthcare challenges, such as pandemics, need to be addressed at local and city levels. This has been acknowledged by many cities across Europe and the industry, which resulted in the creation of the 'Coalition of Partners for Healthier Cities'.

Different companies work together on this partnership with cities and local health authorities with the aim of identifying, prioritising and scaling technology solutions with the greatest benefits for cities[46].

Mr Pinto then presented different eHealth technologies that improve citizens' quality of life. The first technology mentioned was the Natural User Interface. These interfaces allow patients and health professionals to use and interact with new technologies in a natural way. One example here is using a telephone to scan the skin.

To illustrate this further, he explained how one of Microsoft's products, originally designed as a motion sensor for games became, due to a user-led innovation, an eHealth application. Microsoft instead of prohibiting user innovation decided to encourage it. The results of some of these innovations were also presented by Mr Pinto.

He showed how, by using a camera device on a motion sensor, the Basque Sanitary Service was able to reduce the number of patients returning to the hospital by 23%. Another example showed how surgeons could control medical images on the screen through hand movements without the need to remove their gloves, gaining precious time during surgery. Devices could also be used to help rehabilitate stroke affected patients. In Croatia, a camera was developed for following the movement of children with cerebral palsy, including when they are lying on the ground, which made it possible for them to interact with other children and play.

2.6 The voice of patients and professionals

The last part, chaired by Mr Claudiu C. TĂNĂSESCU (MEP), was dedicated to the voice of patients and professionals.

2.6.1 The e-Health revolution

Ms Nicola BEDLINGTON, Executive Director of European Patient Forum

Ms Nicola BEDLINGTON with her presentation introduced the patients' and users' perspective into the discussion. She was representing the European Patients' Forum (EPF), which is an umbrella organisation of 61 patients' organisations, covering all disease areas. The objective of EPF is to ensure that all EU patients exercise their right to access to high quality and equitable healthcare that is designed and delivered to meet their needs and preferences. eHealth has been a key priority of EPF in recent years, thus it has been involved in various EU projects (e.g. Renewing Health, Smartcare) and other initiatives (e.g. eHealth Governance Initiative). Ms Bedlington highlighted that eHealth policy objectives cannot be seen separately from other health policy objectives, such as patient integration and empowerment. Ms Bedlington welcomed the European Parliament's work on eHealth and called on the European Parliament to take into account the patients' perspective while adopting the parliamentary resolution on the eHealth Action Plan.

[46] More information on the Coalition of Partners for Healthier cities is available at: http://www.microsoft.com/government/ww/public-services/blog/Pages/post.aspx?postID=226&aID=71.

The second part of Ms Bedlington's presentation focused on EPF's own project, the Chain of Trust[47], which is funded through the EU's Public Health Programme. The project is led by a consortium comprising EPF and other associations representing doctors, nurses, pharmaceutical groups, disability organisations and telemedicine centres. The project, which was running for two years (January 2011-2013), aimed at gathering the views, needs and perceptions of patients, health professionals and pharmacists with regard to the use of telehealth. Ultimately the project aimed at increasing the awareness and understanding of the users' perspective on telehealth amongst patients' and health professionals' organisations and health authorities both at national and European levels.

Ms Bedlington gave an inventory of the issues that the Chain of Trust Project revealed. She grouped the issues into two categories, i.e. human issues and issues related to the incapacity of users. Under the 'human issues' she referred to the development of telehealth technologies adapted to the needs of patients. Patients expressed their lack of trust in the new technologies, which hinders the ultimate aim of deepening the trust between patients and health professionals. Patients also perceived a risk of being treated impersonally and that psychological factors would be neglected. With respect to the incapacity of users, Ms Bedlington said that patients fear the burden of responsibility as they lack the necessary skills. Thus self-confidence has to be supported by training and user-friendly applications.

Ms Bedlington then emphasised that telehealth can only be beneficial if it is seen as a complementary tool and not as a replacement of conventional services. Telehealth services should enhance access to healthcare services and should not exacerbate inequalities. She added that to a large extent the decision on whether to adopt telehealth will depend on to perceived effects of the technologies on patient safety and privacy. Ensuring the support of health professionals and changing their routines were also referred to as a prerequisite for the beneficial use of telehealth. With respect to the benefits of telehealth from the users' perspective, Ms Bedlington highlighted the increased quality of healthcare services (i.e. more personalised, continuous, efficient and responsive care), easier and equal access to healthcare, and improved patient's adherence (e.g. through regular monitoring). From the patients' perspective other advantages of telehealth are patient empowerment (e.g. by facilitating the involvement in care processes), increased quality of life (e.g. by increasing knowledge on symptoms) and economic gains (e.g. by reducing the necessity of travelling).

Ms Bedlington concluded her presentation by repeating the most important drivers for the user acceptance of telehealth. In this context she stressed the importance of developing user centric technologies, which are essential tools for increasing the mutual trust between patients and health professionals. She also emphasised that telehealth technologies should deliver real benefits for patients and provide safe and inclusive healthcare solutions.

[47] More information on the Chain of Trust Project is available at: http://www.eu-patient.eu/whatwedo/Projects/EPF-led-EU-Projects/Chain-of-Trust/.

2.6.2 eHealth- A tool for tackling Health Inequalities in Europe?

Mr Sascha MARSCHANG, Policy Coordinator for Health Systems, European Public Health Alliance (EPHA)

Mr Sascha MARSCHANG in his presentation described the potentials of eHealth in reducing health inequalities and called on decision-makers to strengthen the link between these two health policy objectives. With respect to this latter point, he highlighted the lack of an explicit link between health inequalities and eHealth in most of the EU level policy documents (e.g. EC Communication on health inequalities[48]). It was mentioned that the EU eHealth Action Plan dedicates only one paragraph to this issue. Mr Marschang also summarised the shortcomings of the current legal and policy framework, which include the lack of sufficient data protection rules, the unequal access of citizens to healthcare services and unequal opportunities for service providers, etc.

He was representing the European Public Health Alliance (EPHA[49]), which is an umbrella organisation of about 90 organisations including patient groups, health professionals, NGOs, disease groups, organisations representing vulnerable groups (e.g. Roma, migrants, elderly). EPHA advocates for more citizen involvement and transparency at EU level political decision-making processes on public health. In accordance with the principles of equality, solidarity and universality, EPHA aims to reduce health inequalities and provide access to health services for all.

Afterwards Mr Marschang's presentation focused on EPHA's activities in the area of eHealth, which include the assessment of the impacts of eHealth on patients and health professionals and of the extent to which the costs of developing eHealth technologies can be offset by public health gains. EPHA is a member of the eHealth Stakeholder Group led by DG CNECT of the EC, and the leader of one of the Stakeholder Group's subgroups dedicated to health inequalities. The activities of EPHA also include the drafting of briefing notes[50] and position papers which provide useful information to policy makers. Amongst the policy papers, Mr Marschang highlighted the one on the eHealth Action Plan 2012-2020[51] which emphasises the need for enhanced patient digital literacy to reduce the uncertainty related to the interaction with machines. The policy paper also highlights that technology should not aim to replace face-to-face contacts between patients and health professionals and should offer reliable and safe solutions.

Mr Marschang then established the link between eHealth and health inequalities by saying that addressing the problems related to the use of eHealth is essential for reducing health inequalities. In this context he referred to the potentials of eHealth in providing healthcare services to all citizens including those who are traditionally excluded (e.g. migrants) or are more vulnerable (e.g. elderly). Addressing the problems linked to eHealth, which were described by other speakers of the workshop, is crucial, as eHealth solutions as they stand today cannot ensure health equality and can even exacerbate it.

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[48] Communication from the Commission, Solidarity in health: reducing health inequalities in the EU SEC(2009) 1396, SEC(2009) 1397, available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0567:FIN:EN:PDF.

[49] The website of the European Public Health Alliance is available at: http://www.epha.org/.

[50] Examples to briefing notes: EPHA Briefing on eHealth, EPHA Briefing on mHealth, available at: http://epha.org/spip.php?article4154 and http://www.epha.org/a/5568, respectively.

[51] Example to position papers: EPHA Position Paper on 2012-2020 eHealth Action Plan, available at: http://v2.epha.org/spip.php?article4562.

The last part of Mr Marschang's presentation focused on mobile health, which is understood 'as the use of mobile and wireless devices to improve health outcomes, healthcare services and health research'[52]. Mr Marschang said that EPHA recently published a briefing paper on mobile health[53], with the aim of supporting the EC in its work of developing a Green Paper on mobile health[54]. Mobile health applications on the one hand offer innovative and easy health solutions, but on the other hand raise safety (e.g. incorrect use of gadgets) and data protection concerns. These concerns could be overcome by increasing e-literacy, which is a complex literacy (i.e. the combination of media, health and digital literacies) requiring the application of both cognitive and behavioural competences.

2.6.3 e-Health new challenges for professionals

Dr Konstanty RADZIWIŁŁ, Immediate past president and Chair of the eHealth Working Group of the Standing Committee of European Doctors, Comité Permanent des Médecins Européens (CPME)

Dr Konstanty RADZIWIŁŁ, representing the Standing Committee of European Doctors (CPME[55]), introduced the voice of health professionals into the discussion. CPME is an organisation representing the interests of national medical associations across the EU. It has been engaged in many activities linked to eHealth. For example, it is a member of the eHealth Stakeholder Group and has been involved in the eHealth Governance Initiative, the Chain of Trust Project, the Momentum Project and has contributed, in form of an opinion, to the adoption of the eHealth Action Plan.

Later on, Dr Radziwiłł's pointed out the benefits of eHealth. The main benefits mentioned are the provision of better access to better quality care, the improvement of communication between patients and healthcare providers, the provision of better working conditions for healthcare providers, the achievement of more efficient healthcare services and the gathering of health data that could be used by decision-makers.

Dr Radziwiłł stated that planning the introduction of eHealth services require taking into account a wide variety of factors and challenges. Firstly the human factors were described, which cover the necessity of education, awareness raising and new technologies adapted to the needs of patients and health professionals. From the doctors' point of view, eHealth should be seen as a tool that deepens the trust of patients in health services.

Considering the novelty of eHealth technologies, Dr Radziwiłł emphasised the importance of constant evaluation. This is possible only on the basis of scientifically and medically sound information, which could be gathered via research. Thus Dr Radziwiłł highlighted the importance of investing in R&D. As far as the technological aspects are concerned the necessity of developing and using interoperable systems were also mentioned. New technologies should aim at providing medically sound information in a manner that ensures the safety and privacy of patients. Data protection rules would contribute to patient safety and privacy.

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[52] Source: EPHA Briefing Paper on Mobile Health, available at: http://www.epha.org/a/5568.
[53] ibid.
[54] More information on the European Commission's Green Paper is available at: http://europa.eu/rapid/press-release_IP-12-1333_en.htm.
[55] More information on the Standing Committee of European Doctors is available at: http://www.cpme.eu/.

With respect to the applicable policy and legislative framework, Dr Radziwiłł underlined the necessity of achieving legal certainty. There are areas, such as professional liability which are not sufficiently covered by applicable laws. In addition to adopting new laws, the current legislative and policy framework could be further improved by the adoption of guidelines both at European and national levels. Finally, Dr Radziwiłł referred to the challenge of reconsidering the reimbursement policies applicable to healthcare.

In his concluding remarks, Dr Radziwiłł urged for keeping the balance between the use of eHealth technologies and conventional healthcare. This balance could contribute to improved quality care and deepen the relationship between patients and health practitioners.

Mr TĂNĂSESCU concluded the last part of the workshop by saying that people are more reluctant to share their data. The development of an appropriate legal framework plays an important role in enhancing the citizens' trust in eHealth, which is a tool for improving the quality of healthcare. As a last remark, he referred to the advantages of enhancing the dialogue between patients and practitioners.

2.6.4 Open discussion

Mr Per JOHANSSON, legal officer from the European Data Protection Supervisor (EDPS) in charge of eHealth, in his contribution thanked all the speakers for highlighting the importance of the fundamental rights of persons to data protection. He also thanked the EC for involving the EDPS in the development of the EU eHealth Action Plan and in various projects. He encouraged the European Parliament, its MEPs, ENVI Committee and Policy Department A to consult the EDPS while forming its own position. Finally Mr Johansson described the activities of the EDPS and drew the attention of the public to some of its recent opinions on the eHealth Action Plan[56] and on clinical trials[57].

2.6.5 Conclusions

Ms AYUSO, in her conclusions first thanked all speakers for their valuable contributions and all shadow rapporteurs for moderating the workshop. She highlighted the benefits of eHealth and the opportunity of addressing any challenges linked to it both at national and European levels. She acknowledged that addressing these challenges may require some efforts, including the efforts of investing more into the education of patients and health professionals, of developing a suitable legal framework and interoperability. With respect to legal certainty, she referred to the need of tackling all the data protection concerns.

[56] Opinion of the European Data Protection Supervisor is available at: https://secure.edps.europa.eu/EDPSWEB/webdav/shared/Documents/Consultation/Opinions/2013/13-03-27_eHealth_Action_EN.pdf.

[57] Opinion of the European Data Protection Supervisor on the Commission Proposal for a Regulation on clinical trials on medicinal products for human use and repealing Directive 2001/20/EC, available at: https://secure.edps.europa.eu/EDPSWEB/webdav/shared/Documents/Consultation/Opinions/2012/12-12-19_Clinical_Trials_EN.pdf.

ANNEX 1: PROGRAMME

WORKSHOP
e-Health

Organised by the Policy Department A-Economy & Science
for the Committee on the Environment, Public Health and Food Safety (ENVI)

Tuesday, 24 September 2013 from 09.00 to 12.30
European Parliament, PHS 7C050, Brussels

AGENDA

Opening Session

09.00 - 09.10
Welcome and opening by MEP Ms Pilar AYUSO, ENVI Committee Rapporteur
Introduction by MEP ENVI Shadows

Part 1
The current e-Health situation in Europe
Chair: MEP Ms Pilar AYUSO

09.10 - 09.25
The position of the European Commission: perspectives/challenges
Mr Benoît ABELOOS, DG CNECT, EC
Mr Jerome BOEHM, DG SANCO, EC

09.25 - 09.35
The eHealth in Spain: a strategy for a decentralised National Health Service
Mr Juan Fernando MUÑOZ MONTALVO, General Adjoin vice-director, Information Technology, Spanish Ministry (ES)

09.35 - 09.45
eHealth investment: The use of information and communication technologies (ICT) for health
Ms Jillian ODERKIRK, Senior Economist and Policy Analyst, Health Information Infrastructure Project, Health Division, OECD

09.45 - 09.55
Shared challenges in eHealth at the regional and global level
Ms Diana ZANDI, eHealth Unit, World Health Organization

Part 2
e-Health: better care at a lower cost
Chair: MEP Ms Jill EVANS

09.55 - 10.05
The Estonian experience
Mr Raul MILL, Member of the Management Board of the Estonian eHealth Foundation, The task force for the EC (EE)

10.05 - 10.15
E-health records in Ambulatory Care
Ms Siri BJØRVIG, Manager Personal Health Systems, Norwegian Centre for Integrated Care and Telemedicine, (WHO Collaborating Centre for e-Health) (NO)

10.15 - 10.25
The e-Hospitals
Dr Vicent MONCHO MAS, Hospital Marina Salud, Denia, EMRAM stage 7 hospitals (ES)

10.25 - 10.35
eHealth: easing the transitions in healthcare
Prof. Dr Antoine GEISSBUHLER, Past-president of IMIA, Professor of Medical Informatics at Geneva University School of Medicine and Director of the Division of the Medical Informatics at Geneva University Hospitals (CH)

Part 3
Developing funded European Projects
Chair: MEP Mr James NICHOLSON

10.35 - 10.45
European Reference Networks (Directive on Cross-border Healthcare) and the key role of eHealth
Ms Nathalie CHAZE, Head of Health Care Systems Unit, DG SANCO, EC

10.45 - 10.55
The road towards the effective use of data in health
Prof. Dr Georges DE MOOR. SemanticHealthNet project (FP7) partner, Head of Department Medical Informatics and Statistics, Gent University, EuroRec Board Member (BE)

10.55 - 11.05
epSOS: From strategies to services – eHealth as the enabler for cross-border healthcare
Ms Lisa HAGBERG, epSOS European Project, Swedish Association of Local Authorities and Regions/Sveriges Kommuner och Landsting (SALAR) (SE)

Part 4
Innovative health technologies: the Enterprise and Industry Initiative
Chair: MEP Ms Antonyia PARVANOVA

11.05 - 11.15
eHealth solutions in European healthcare systems
Mr Hartmut SCHAPER, Senior Vice President Health Services International at Siemens Healthcare

11.15 - 11.25
The Role of Technologies towards healthier citizens in healthier cities
Mr Ray PINTO, Senior Government Affairs Manager, Microsoft Europe

Part 5
The voice of patients and professionals
Chair: MEP Mr Claudiu C. TĂNĂSESCU

11.25 - 11.35
The eHealth revolution
Ms Nicola BEDLINGTON, Executive Director of European Patient Forum (EPF)

11.35 - 11.45
eHealth- A tool for tackling Health Inequalities in Europe?
Mr Sascha MARSCHANG, Policy Coordinator for Health Systems, European Public Health Alliance (EPHA)

11.45 - 11.55
eHealth new challenges for professionals
Dr Konstanty RADZIWIŁŁ, Immediate past president and Chair of the eHealth Working Group of the Standing Committee of European Doctors/ Comité Permanent des Médecins Européens (CPME)

Open discussion

11.55 - 12.25
With the participation of the Committee of the Regions represented by Mr Johan SAUWENS and the DG RTD (EC)

12.25 - 12.30
Conclusions by the Rapporteur, MEP, Ms Pilar AYUSO

ANNEX 2: SHORT BIOGRAPHIEs OF EXPERTS

Mr Benoît Abeloos

As policy officer, Mr Abeloos is in charge of the policy activities of the Health and Well Being Unit of DG CNECT related to interoperability and standardisation and to the Connecting Europe Facility. He wrote the chapter on Interoperability and Standardisation of the eHealth Action Plan. He is also in charge of several eHealth projects in the area of Interoperability and eHRs, including the large scale pilot epSOS, Smart Open Services for European Patients (www.epsos.eu), Network of Excellence in Semantic Interoperability (SemanticHealthNet), Antilope, Trillium Bridge, Granatum, etc. He conducted the study on the eHealth Interoperability Framework. He is also involved in the interoperability and standardisation activities of the eHealth Governance initiative, the eHealth Network and the eHealth Stakeholders' group.

Mr Jerome Boehm

Mr Boehm is an economist. He is working at the European Commission, in the Health and Consumers Directorate General, after having worked as a business manager and as a consultant in the private sector. His work objectives are the followings:

1. to promote EU cooperation on Health Technology Assessment (HTA) in Europe, through the Directive on patients' rights in cross border care;
2. to promote EU cooperation on eHealth, through the same directive;
3. to contribute to the EU position on the health related parts of the 2012 Commission's proposed regulation on data protection.

Mr Juan Fernando Muñoz Montalvo

Mr Muñoz Montalvo holds a Software Engineering Degree and a Master's degree in Systems and Information Technology Management from the Universidad Politécnica de Madrid. He is a Certified Information Systems Auditor (CISA), Certified Information Systems Manager (CISM) and is certified in the Governance of Enterprise IT (CGEIT) issued by the American Information System Audit and Control Association (ISACA).

He has worked on the management and implementation of eHealth systems in Spain since 2002 and has been involved in an eGovernment project (especially eID card) since 1998, having previously worked at the Spanish Data Protection Agency and the Ministry of Defence on matters related to security.

He has been involved in several European research and twinning projects on subjects having to do with eHealth. Moreover he has been a member of international groups dealing with the subject and has also been the representative/project coordinator of some projects on the international exchange of data: epSOS, Trillium Bridge, EXPAND.

Mr Muñoz Montalvo is an alternate Spanish representative in the eHealth Network set up under Article 14 of the Directive 2011/24/EU, on patients' rights in cross-border health care.

Ms Jillian Oderkirk

Ms Jillian Oderkirk is a Senior Economist and Policy Analyst at the Health Division of the Organisation for Economic Co-operation and Development in Paris, France. She leads a project on developing health information infrastructure including the development of electronic health record systems; the use of personal health data for health system performance monitoring and research; and the privacy and data protection challenges associated with the secondary use of data. Ms Oderkirk also leads efforts to model health systems within the OECD including the development of decision-support platforms and health expenditure forecasting methods.

Prior to joining the OECD, Ms Oderkirk had a long career with Statistics Canada in Ottawa, Canada and was the Director of the Health Analysis Division at Statistics Canada from 2006 to 2011. Ms Oderkirk has a Master's Degree in economics from McMaster University, Hamilton, Canada.

Ms Diana Zandi

Ms Zandi is a programme manager in the eHealth unit of the World Health Organization (WHO) in Geneva, Switzerland.

She currently heads up the Health Academy project that uses ICT for health education (eLearning) of the general public which is also expanding to include health workforce training worldwide. She also helps defining the technical aspects and advises on requirements of many WHO eHealth related projects.

Mr Raul Mill

Mr Raul Mill is a Member of the Management Board of the Estonian eHealth Foundation, which is an organisation created by leading Estonian healthcare service providers and the Estonian Ministry of Social Affairs with the aims of promoting and developing national e-solutions.

Mr Mill has experience in working in the medicine, financial and IT sectors. He has been involved in the activities and organisation of both private and public sector organisations. Mr Mill studied medicines, business development and IT. As a CEO of eHealth Foundation, Mr Mill deals with strategic development and partnership.

Ms Siri Bjørvig

Siri Bjørvig is a Section Manager at the Norwegian Centre for Integrated Care and Telemedicine (NST). NST is the world's largest centre for research and development in telemedicine and e-health. The centre has strong interdisciplinary expertise and aims to shape the healthcare of the future. Through user-oriented research and development, NST has contributed to the integration of care between levels in the health sector since 1993. Telemedicine solutions and eHealth give patients easier and better access to health services. Effective collaboration makes the skills and services of health personnel available to more people and contributes to the more effective use of the society's resources.

Ms Bjørvig has been working at the NST since 1998. She is experienced in telemedicine, eHealth and Ambient Assisted Living (AAL). Facilitating processes for financing, delivering and managing several research and development projects at national and international levels, finding innovative approaches to healthcare provision using ICT and implementing these have been her main responsibilities.

Ms Bjørvig has also been a member of several national committees and expert groups forming national policy, especially within the personal health care/AAL area. At international level, she has gained experience while being an evaluator within the AAL Joint Programme.

Currently, she is the Manager of the Personal Health System Section at the Centre, where she manages a group of multidisciplinary advisers in the field. NST is participating in several EU-funded projects and Ms Bjørvig is responsible for the on-going RENEWING HEALTH, MOMENTUM, United4Health, Implementing Transnational Telemedicine Solutions (ITTS) and RemoDem projects. She has an academic degree in Economics from the University of Tromsø.

Dr Vicent Moncho Mas

Dr Vicent Moncho Mas is currently the Director of the Organisation and Information Technologies Department of Hospital de Denia, and a member of the steering committee of Marina Salud S.A. His goal is to change the medical culture, to make adaption to the possibilities offered by new technologies easier and faster.

Dr Moncho Mas participated in the implementation of electronic health record system in the primary care of the region of Valencia with 1,120 primary care centres and with a capita of 5,200,000 patients. He also participated in the redesign and implementation of equipment for data centres of the network in the 23 public hospitals in the Valencian community.

In 2006, he joined the Marina Salud S.A. project in charge of setting up the new hospital in Denia with the aim of having a pioneer hospital in technology and information systems. The hospital opened in February 2009 and in 2012 achieved HIMSS Stage 7, being the first hospital in Spain and the second in Europe to achieve this.

Prof. Dr Antoine Geissbühler

Prof. Dr Antoine Geissbühler is a Professor of Medicine, Chairman of the Department of Radiology and Medical Informatics at Geneva University, Director of the Division of eHealth and Telemedicine at Geneva University Hospitals. He is also the President of the executive committee of the Health-On-the-Net Foundation, and Past-president of the International Medical Informatics Association.
He was trained as a physician at Geneva University where he specialised in internal medicine, then, after a post-doctoral fellowship, became Associate Professor of biomedical informatics at Vanderbilt University. In 1999, he returned to Geneva to take on the responsibility for medical information systems at Geneva University Hospitals. In 2005, his efforts in developing telemedicine and tele-education were recognised by the creation of the UNESCO chair for telemedicine and multidisciplinary teaching, and, in 2010, by the World Health Organization's collaboration centre for eHealth and telemedicine.

Author of more than 130 original scientific publications, his current research focuses on the development of innovative, knowledge-enabled information systems and computer-based tools for improving the quality, safety and efficiency of care processes for local and regional level healthcare information networks. He is also engaged in national level developments, including the adoption of Switzerland's eHealth Strategy. He is also active at the global level as he assists the work of the Health-On-the-Net Foundation (http://www.hon.ch). Moreover he has contributed to the development of a large telemedicine network in developing countries (http://raft.hcuge.ch). He is also leading a project of the Geneva University Hospitals, which focuses on the development of a world-class medical tele-expertise network.

Ms Nathalie Chaze

Ms Natalie Chaze is a lawyer with a specialisation in EU law. Her work at the European Commission started in DG Trade, where she worked on several issues (services, WTO, IPR) for 15 years. Since 2008, Ms Chaze has been working in DG SANCO, Directorate Health, looking after the Directive on application of patients' rights in cross-border healthcare. Natalie Chaze is the head of unit for SANCO D2 Healthcare Systems, with responsibilities including patient safety, quality of care, health workforce and health systems financial sustainability.

Prof. Dr Georges De Moor

Professor Dr. Georges J.E. De Moor studied Medicine and is specialised in Clinical Pathology and Nuclear Medicine at the State University of Ghent (Belgium), where he also obtained in 1994 his PhD in Medical Information Science. He is head of the Department of Medical Informatics and Statistics at the State University of Ghent, Belgium, where he teaches Health Informatics, Medical Statistics, Decision Theory and Evidence Based Medicine.

He is past president of RAMIT (Research in Medical Informatics and Telematics) and has been involved in both European and International Research and Development projects (+95), as well as in Standardisation activities. For seven years, Prof. De Moor acted as the Founding Chairman of CEN/TC251, the official Technical Committee on standardisation in health informatics in Europe. As a result of his research, Prof. De Moor has been founding or co-founding a number of spin-off companies (e.g. MediBridge and Custodix) mainly active in eHealth, including the domain of privacy protection.

In 2004, he was elected President of the European Institute for Health Records EuroRec, (http://www.eurorec.org) which is a de facto body for certification of Electronic Health Record systems in Europe. He is now past-president and member of the board of EuroRec.

Prof. Dr De Moor is also the Head of the Clinical Pathology Laboratory in the Sint-Elisabeth Hospital of Zottegem, Belgium. Prof. De Moor chairs in Belgium and in Europe a number of official Committees related to ICT in Health or to Laboratory Medicine. He has edited twelve books related to ICT in Health and published over 200 articles in scientific journals. In 2005 he was awarded with the International Rory O'Moore Medal (presented by Bertie Ahern, in Dublin) for Health Informatics.

Ms Lisa Hagberg

Lisa Hagberg coordinates the project Smart Open Services for European Patients (epSOS) on behalf of the Swedish Association of Local Authorities and Regions (SALAR) and the Swedish Ministry of Health and Social Affairs. epSOS is a five-year long European project delivering interoperable solutions for exchange of patient summaries and e-prescriptions across Europe. 49 organisations from 25 nations participate in the project.

Lisa has a background in political science. Prior to joining the epSOS project, she worked in the diplomatic missions of both the Swedish and foreign governments.

Mr Hartmut Schaper

In his role as a Senior Vice President of Siemens Health Services (HS) International, Hartmut Schaper is responsible for the healthcare IT business outside the US (basically all healthcare IT with the exception of syngo). Moreover, Mr Schaper drives the Next Generation Healthcare IT initiative across all of Siemens Healthcare.
Hartmut Schaper has more than 25 years of experience in Software and IT, including 12 years at SAP and 4 years as CTO of IXOS AG. Furthermore, Mr Schaper has been a Principal at BCG for 2 years.
In 1986, Hartmut Schaper graduated with a MSc in Mathematics and Computer Science from the University of Warwick (UK).

Mr Ray Pinto

Mr Ray Pinto's primary role is engaging with governments, business partners and non-governmental organisations to better understand the effects of information and communication technology (ICT) industry in addressing the planet's biggest challenges. Mr Pinto leads Microsoft's government policies in the area of environment, energy, education and healthcare policy for the regions of Europe, Middle East and Africa. Microsoft invests in research and development to provide tools and solutions for energy efficiency and protecting and understanding the nature's fragile ecosystems as well as reducing the companies own operational, supply chain and product carbon footprint and resource needs. The company is accelerating technology trends to move healthcare to be more patient centric and preventive to empower people to live healthier lives and to reduce cost for economies. Microsoft has also developed programmes to make education more accessible across diverse populations and cultures and increasing the availability of much needed skills.

Microsoft has initiated an Enabling Technology Coalition for academia, NGOs, government and industry to develop data, methodologies and indicators to better measure the exact nature of the impact of ICTs on these challenges.

Ray is the vice-chair of the BIAC Task Force on Health Care Policy which is an advisory body of industry to the OECD and has a regular blog post on at www.microsoft.eu.

Ms Nicola Bedlington

Nicola Bedlington is British and was born in Kirkcaldy, Scotland. She studied business and human resource management in the UK. She lived for almost 10 years in Brussels, and has lived near Geneva for the last 12 years, recently moving to Vienna.
Nicola was the founding Director of the European Disability Forum, an umbrella organisation uniting over 70 European disability NGOs and National Councils of Disabled People to advocate for the human rights and inclusion of disabled citizens in Europe (1996 to 1999), and prior to this she headed the NGO unit within the HELIOS Programme, a European Commission Action Programme promoting equal opportunities for disabled people (1991-1996).
From 2004 to mid-2006, she was mandated to lead the Environment and Schools Initiatives Secretariat (ENSI), an international government-based network set up by OECD focussing on innovation, action research and policy development in the field of Education for Sustainable Development.

Whilst in Switzerland, she has also worked as an independent consultant/evaluator, specialising in European social and development policy and health advocacy. She joined the European Patients' Forum as its first Executive Director in June 2006.

Mr Sascha Marschang

A dual German and Canadian national, Sascha holds a Master's degree in Communication and Cultural Studies from York University (Toronto). His policy portfolio at EPHA comprises the areas of health tools (eHealth / mHealth, Digital Agenda), health workforce, pharmaceutical policy, health threats, as well as other developments impacting on health systems. He is a member of the eHealth Stakeholder Group led by the European Commission's DG CNECT. He has written a number of articles and briefings on eHealth/mHealth and is particularly interested in their impacts on vulnerable groups.

Prior to EPHA, Mr Marschang worked in different functions at the Government of Ontario, and he also spent several years working and studying in London, England. He speaks fluent English, French and German, with a working knowledge of Spanish and Dutch.

Dr Konstanty Radziwiłł

Dr Konstanty Radziwiłł, MD. PhD. was born in 1958 in Wroclaw, Poland. He graduated from Medical University in Warsaw in 1983.

Since 1984 he has been working as a primary care physician in Warsaw. From 1983 till 1991 he worked also in emergency and occupational medicine; since 2005 he is a lecturer in the Family Medicine Department of the Warsaw Medical University. Since 2010 he has been working also for the Polish Center for Health Information Systems. In 1996 he set up his private practice in family medicine in Warsaw. He is a family medicine specialist. He has finished also Postgraduate Faculty of Bioethics in the Cardinal Stefan Wyszynski University in Warsaw and Postgraduate Faculty of Health Care Economics in the Warsaw University.

He is a member of the College of Family Physicians in Poland and of Polish Society of Family Medicine. He was a president of the Polish Chamber of Physicians and Dentists from 2001 to 2010. Since then he has been a vice-president of the Chamber. From 2010 to 2012 he was a president of the Standing Committee of European Doctors (CPME).

ANNEX 3: PRESENTATIONS

Presentation by Mr Benoît Abeloos


Vision
eHEALTH ACTION PLAN: VISION
TACKLE EHEALTH CHALLENGES RELATED TO:
PERSONAL HEALTH (CHRONIC DISEASE MANAGEMENT, PREVENTION AND HEALTH PROMOTION)
HEALTH SYSTEMS (UNLOCKING INNOVATION, ENHANCING PATIENT-CENTRIC CARE, ENCOURAGING ORGANISATIONAL CHANGES, CROSS-BORDER CARE, UNIVERSALITY, EQUITY...)
LEGAL / MARKET ASPECTS (IMPROVING LEGAL AND MARKET CONDITIONS)


eHEALTH ACTION PLAN 2012 – 2020
OPERATIONAL OBJECTIVES
ACHIEVING WIDER INTEROPERABILITY OF EHEALTH SERVICES
SUPPORTING RESEARCH, DEVELOPMENT AND INNOVATION
ENSURING WIDER DEPLOYMENT & FACILITATING UPTAKE
PROMOTING INTERNATIONAL COOPERATION


Achieving wider interoperability of eHealth services
eHealth Interoperability Framework to be proposed by 2015
Supporting this:
• eHealth Network Work Programme (guidelines and standards endorsement)
• R&I projects and studies (SemanticHealthNet, epSOS, eHealth Interoperability Framework, Antilope…)
• Interoperability testing and certification system
• Maintenance of assets under CEF

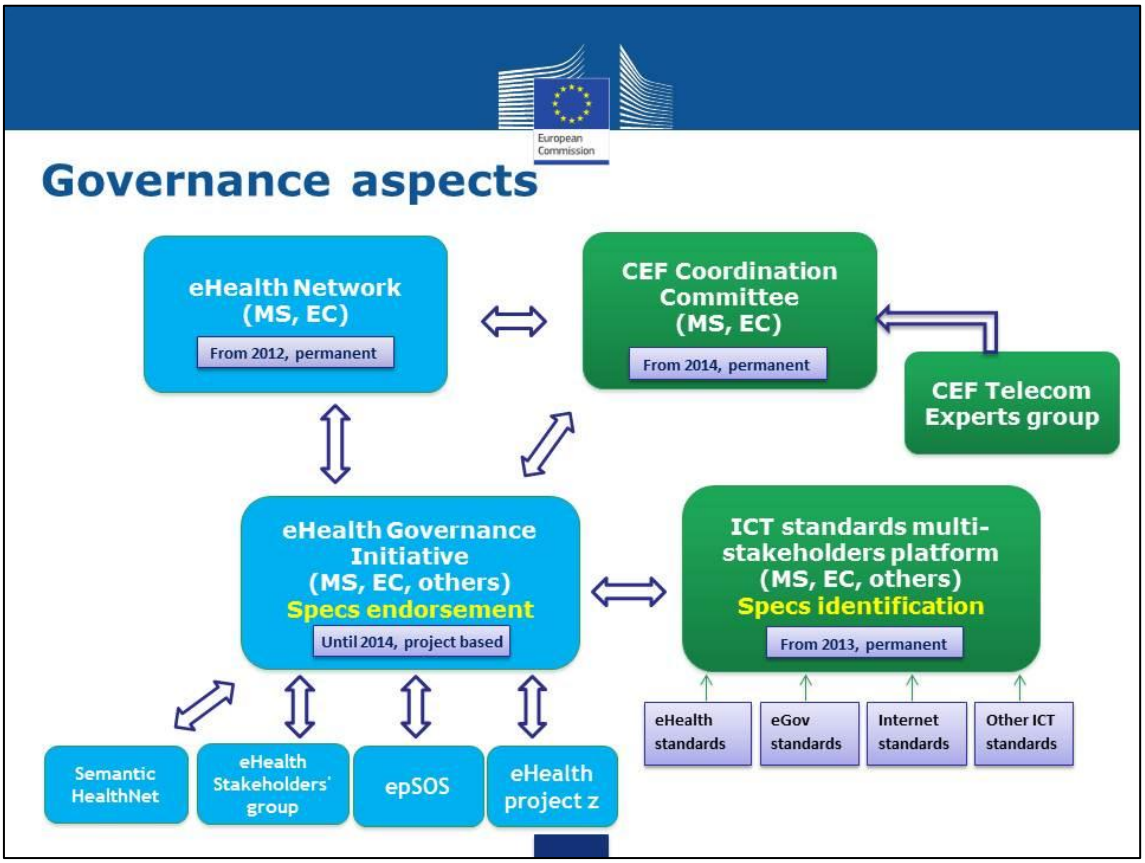

Legal Clarity
• Staff Working Paper on legal issues in telemedicine
• Guidance on how to apply EU data protection law in the area of health data (following adoption of DP regulation)
• Green Paper on Legal Framework applicable to Health & Wellbeing Apps


PURPOSE OF THE GREEN PAPER ON M-HEALTH
• The Green Paper on mHealth will launch a debate among stakeholders on what should be done at EU level to release the potential of mHealth in Europe.
• It will be accompanied by a SWD explaining the legal framework applicable to health and wellbeing apps
→Due before the end of 2013


Research & Innovation
Focus on competitiveness
• Research:
• Health & Wellbeing solutions (user-centric focus)
• Longer-term focus: Virtual Physiological Human…
• Innovation:
• User-driven innovation
• Law incubators
• PCP / PPI
• Piloting


Ensuring Wider Deployment and Facilitating Uptake
• Connecting Europe Facility (CEF) from 2014
• Cohesion policy: broadband access and supporting ICT applications and services
• EIP on Active and Healthy Ageing
• Focus on Digital Health Literacy for professionals and citizens
• Clinical Practice Guidelines for telemedicine services: emphasis on nurses, social care workers


International Cooperation
• Benchmarking and data collection (WHO, OECD …)
• EU-US:
• Memorandum of Understanding signed in Dec 2010
• Published roadmap on eHealth interoperability and ICT skills (June 2013)
• In the frame of the EU-US free trade negotiations


European Commission
Governance aspects
eHealth Network (MS, EC)
From 2012, permanent
CEF Coordination Committee (MS, EC)
From 2014, permanent
CEF Telecom Experts group
eHealth Governance Initiative (MS, EC, others)
Specs endorsement
Until 2014, project based
ICT standards multi-stakeholders platform (MS, EC, others)
Specs identification
From 2013, permanent
eHealth standards
eGov standards
Internet standards
Other ICT standards
Semantic HealthNet
eHealth Stakeholders' group
epSOS
eHealth project z


Conclusion
• Action Plan responds to climate of budgetary constraints of health systems; ageing population; citizens' expectations
• Promoting innovation for: better health and care; transparency and empowerment; more skilled workforce; more efficient and sustainable health and care systems; new business opportunities in Europe and beyond


Thank you
Benoit Abeloos: benoit.abeloos@ec.europa.eu
eHealth
ec.europa.eu/ehealth
Followme!
@EU_ehealth
@EU_ehealthweek
EU.ehealth
Ehealthweek.eu

Presentation by Mr Jerome Boehm


eHealth – why an EU co-operation?
• continuity and quality of care, across borders
• great cross-border potential
• enhance the quality of eHealth research and development
• strengthen the eHealth market
3


How – Some EU instruments for eHealth
1. Implementing Directive on patients' rights
2. eHealth Action Plan 2014-2020
3. Financing under the FP7 and Horizon 2020
4. EU regulation on Standardisation
Draft proposals:
▪ Regulation on eIdentification
▪ Regulation on Data Protection
▪ Green paper on mHealth

Directive on patients' rights in cross-border care

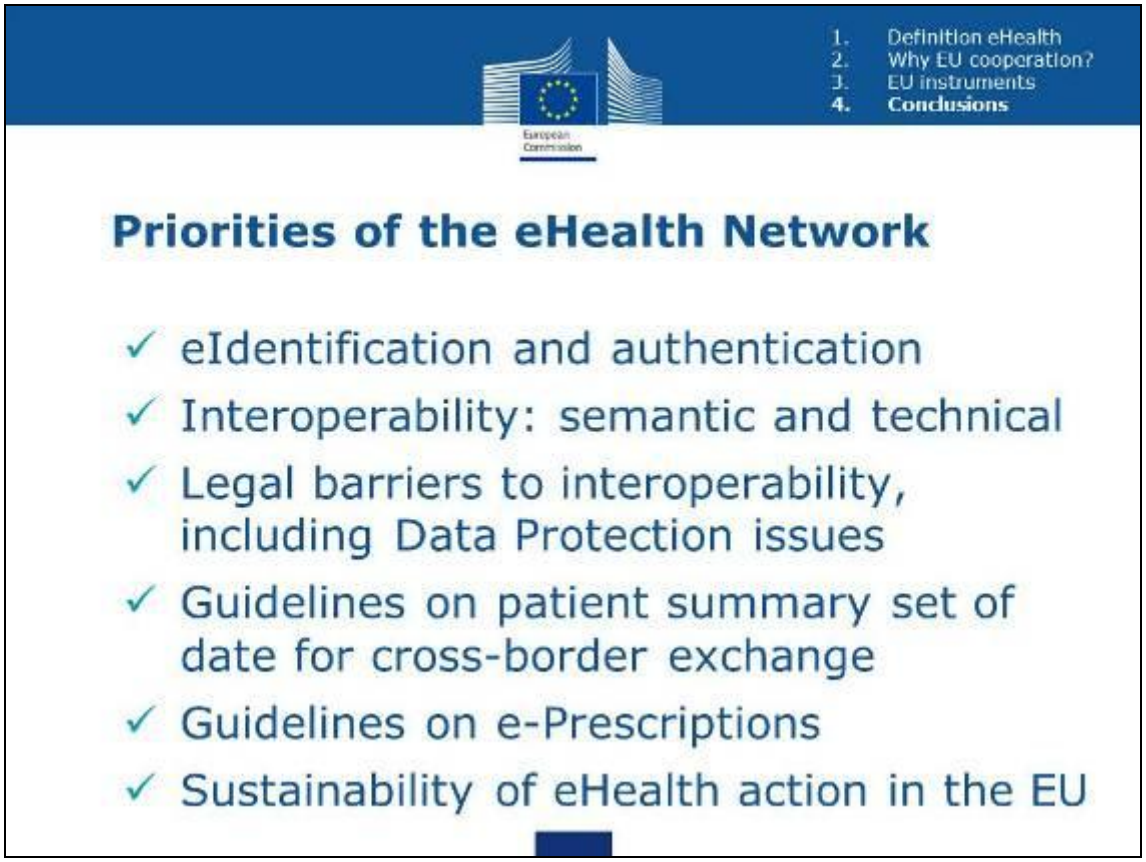
- Implementing act on prescriptions: minimum data to be shared across borders (Art 11)
  - Paving the way to ePrescription
- eHealth Network (Art 14)
  - Common identification (eID) for electronic transferring of health data
  - Guidelines on semantic and technical interoperability
  - Guidelines on non- exhaustive list of data to be included in patient's summary

The eHealth Network A Strategic Tool

Strategic eHealth Network

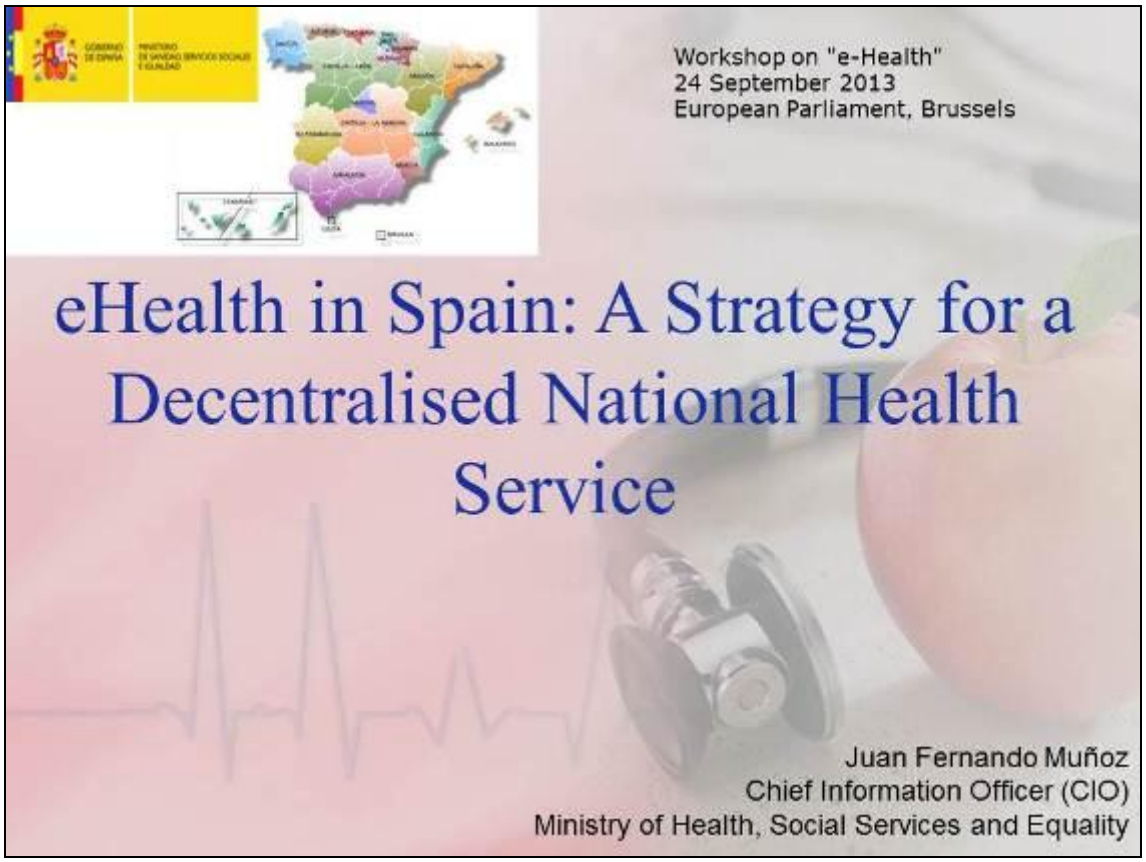
Aim: to **lead** the improvement in cooperation on eHealth, among Member States, based on Directive of patients' rights.

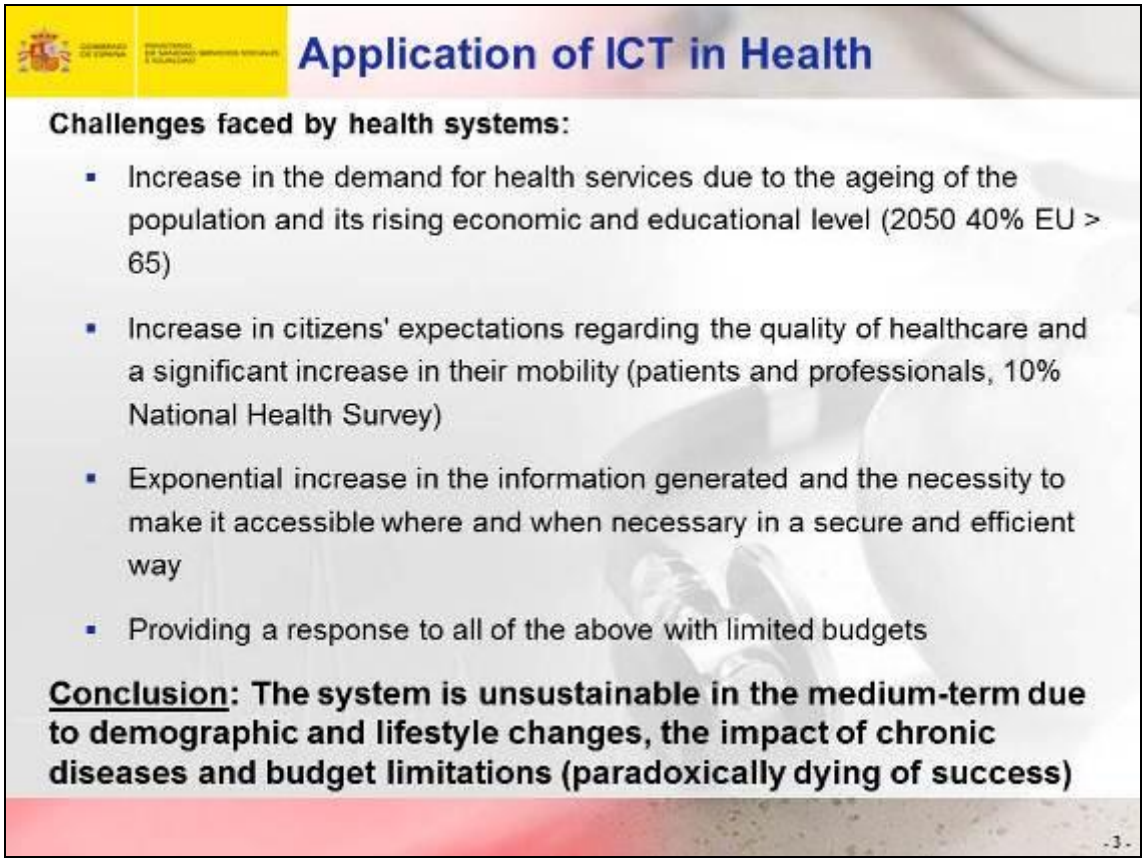
Gives directing on main eHealth developments under the Action Plan, such as interoperability, minimal patient data, ePrescription.


1. Definition eHealth
2. Why EU cooperation?
3. EU instruments
4. Conclusions
European Commission
Priorities of the eHealth Network
✓ eIdentification and authentication
✓ Interoperability: semantic and technical
✓ Legal barriers to interoperability, including Data Protection issues
✓ Guidelines on patient summary set of date for cross-border exchange
✓ Guidelines on e-Prescriptions
✓ Sustainability of eHealth action in the EU


1. Definition eHealth
2. Why EU cooperation?
3. EU instruments
4. Conclusions
European Commission
Conclusions
✓ Commission: eHealth is essential for efficient and sustainable health systems
✓ We need interoperable systems to bear the fruits of eHealth solutions (Single Digital Market)
✓ Health sector to be involved in non-health regulations on standardisation, eGovernance, data-protection, etc.

Presentation by Mr Juan Fernando Munoz Montalvo




Application of ICT in Health
Challenges faced by health systems:
Increase in the demand for health services due to the ageing of the population and its rising economic and educational level (2050 40% EU > 65)
Increase in citizens' expectations regarding the quality of healthcare and a significant increase in their mobility (patients and professionals, 10% National Health Survey)
Exponential increase in the information generated and the necessity to make it accessible where and when necessary in a secure and efficient way
Providing a response to all of the above with limited budgets
Conclusion: The system is unsustainable in the medium-term due to demographic and lifestyle changes, the impact of chronic diseases and budget limitations (paradoxically dying of success)
-3-


Application of ICT in Health
The Response lies in establishing a new healthcare model based on prevention and health systems driven by informed citizens that are actively involved
New model is aimed at:
Patient Safety: continuity of healthcare...
Patient Satisfaction and Focused: access and control of their clinical information, customisation...
Effectiveness: prevention, information, treatment at home,..
Efficiency: sustainability, optimal use of resources, ROI...
Fairness: access, waiting times, doing away with geographic and cultural barriers...
-4-

e-Health as a Response

This model can only be achieved through extensive and appropriate use of ICT, in conjunction with appropriate organisational changes that allow all their potential to be exploited

e-Health is the tool which allows substantial gains in productivity to be obtained TODAY while structural changes are tackled that would allow for a citizen-driven health system to be achieved and respecting the cultural and linguistic diversity of the different health systems.

Response: e-Health

- Patient Safety: Electronic Health Records, ePrescription…
- Patient Focused: Access to their information, ability to hide it, customisation of the information received, chronic patients…
- Effectiveness: Telemedicine, Web of medical information…
- Efficiency: Pooling of demand, management of benefits...
- Access: Remote appointments, Telemedicine, electronic access to clinical information...

-5-

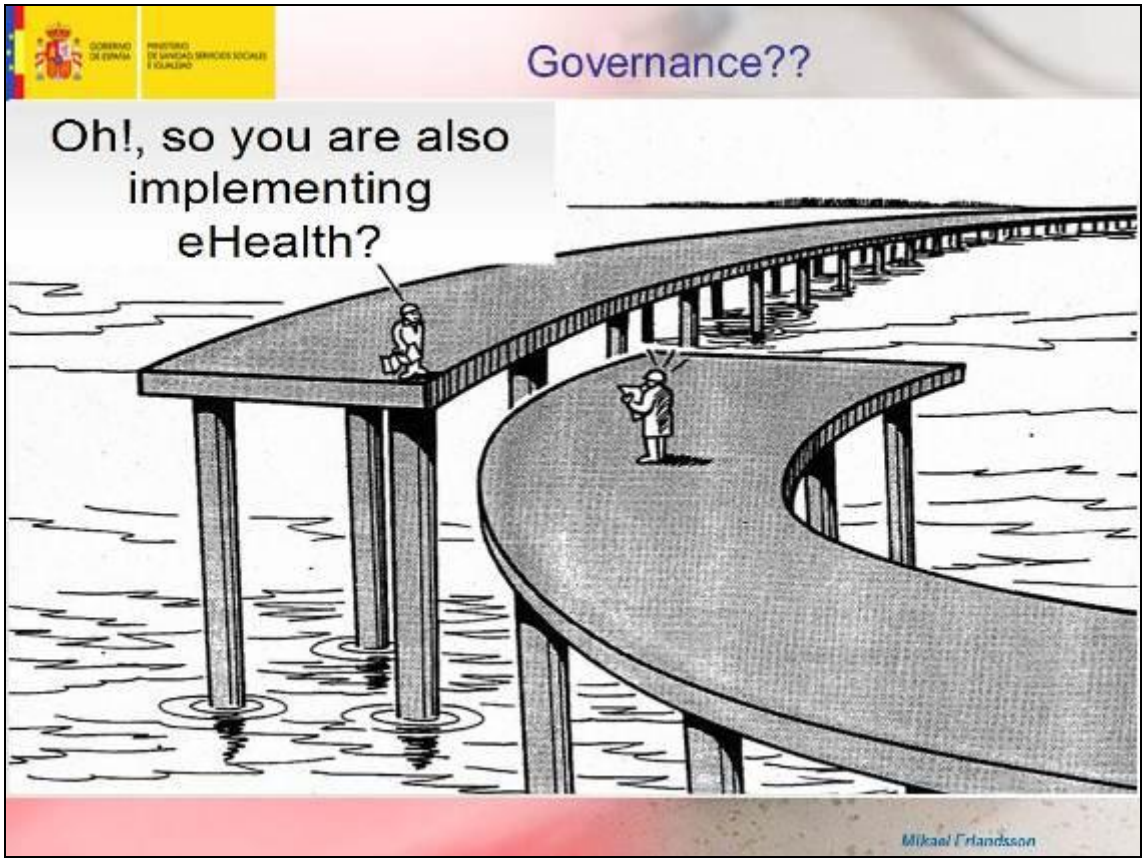
e-Health as Part of the Response

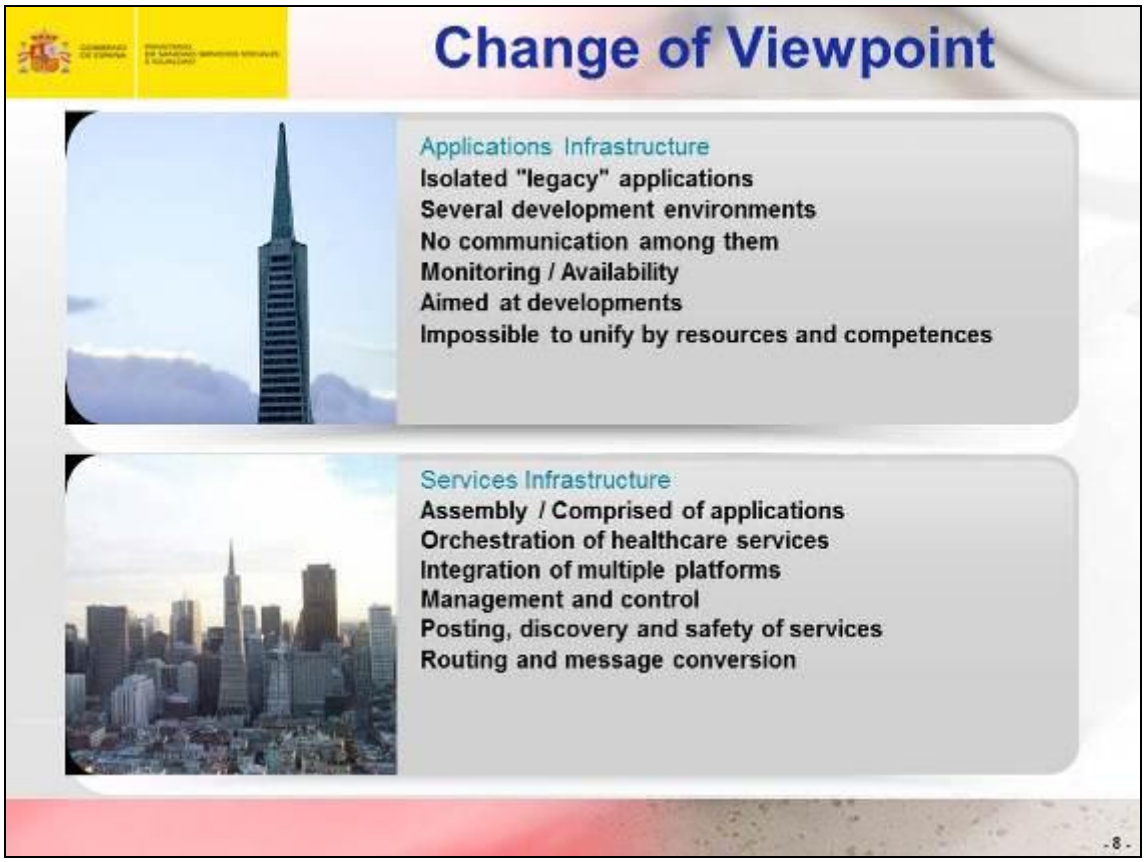
Face to face	Ubiquitous
Reactive medicine	Proactive medicine
Passive patient	Active and informed
Focused on curing	Focused on prevention
Fragmented	Connected and integrated
Generator of data	Intelligent response
Support to dependency	Greater autonomy in social care

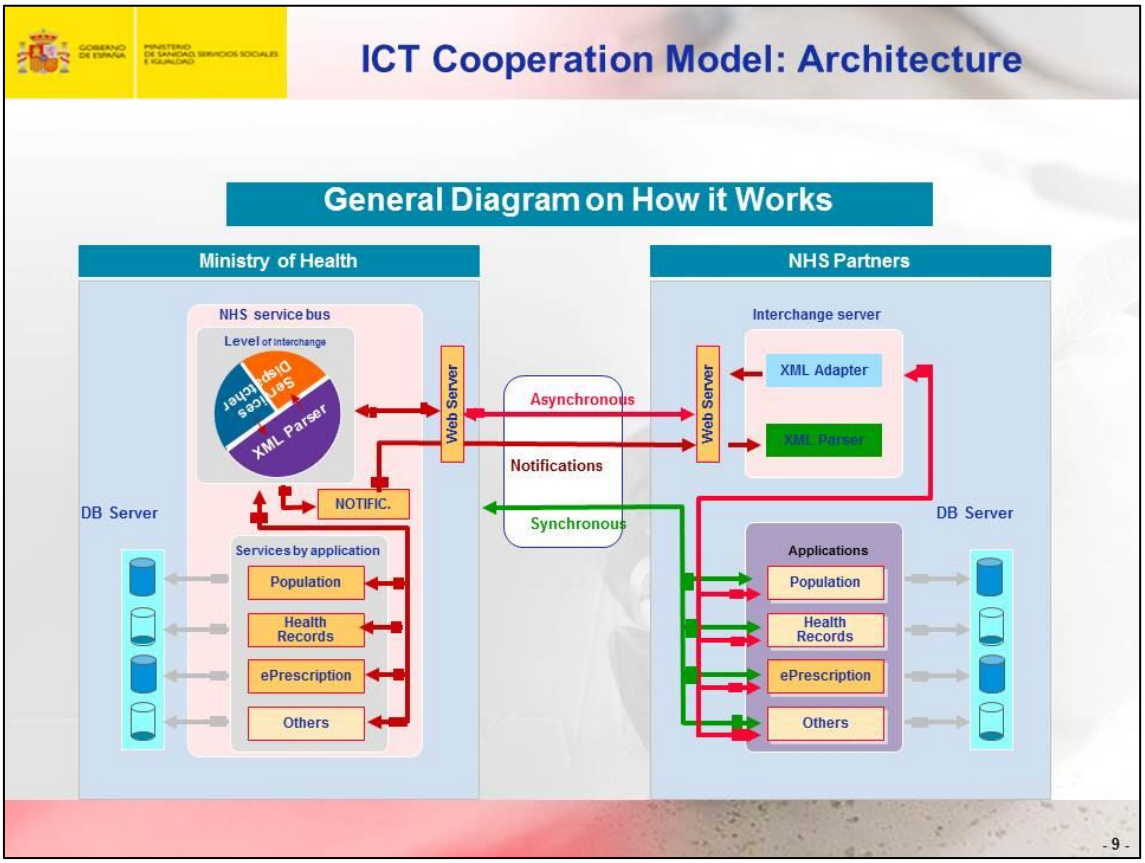
Keys for change

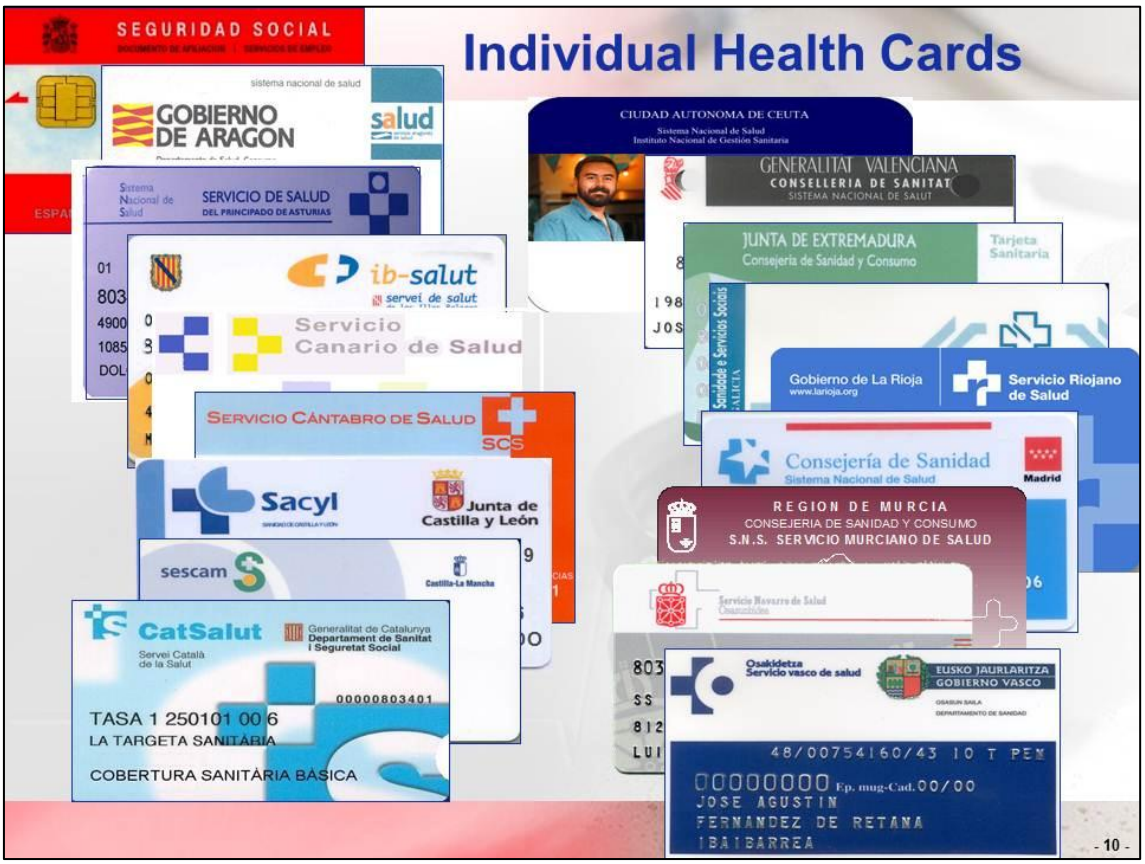
- Restructuring around chronic patients with multiple pathologies (social and healthcare-related)
- Self-care as an essential part of the benefit
- Continuous integrated monitoring across time, places and patient conditions
- Intensive application of ICT for both patients/dependents as well as for professionals

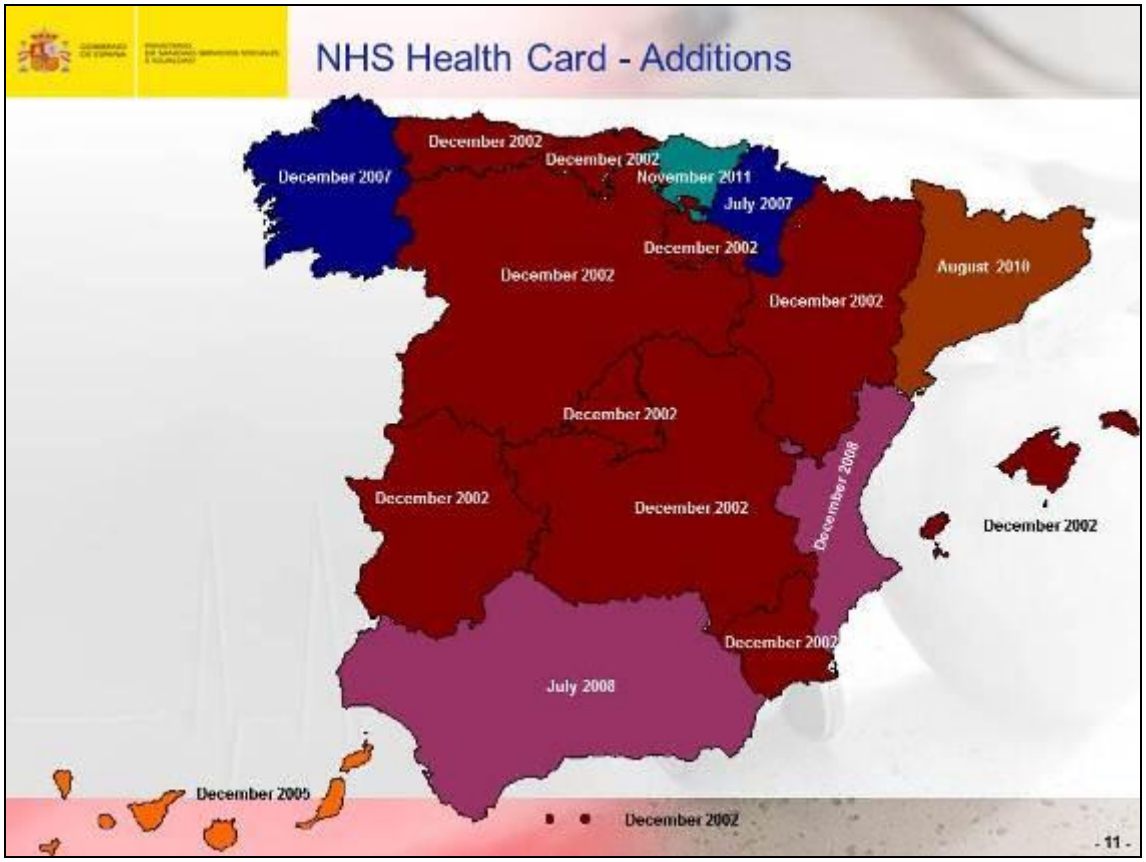
-6-

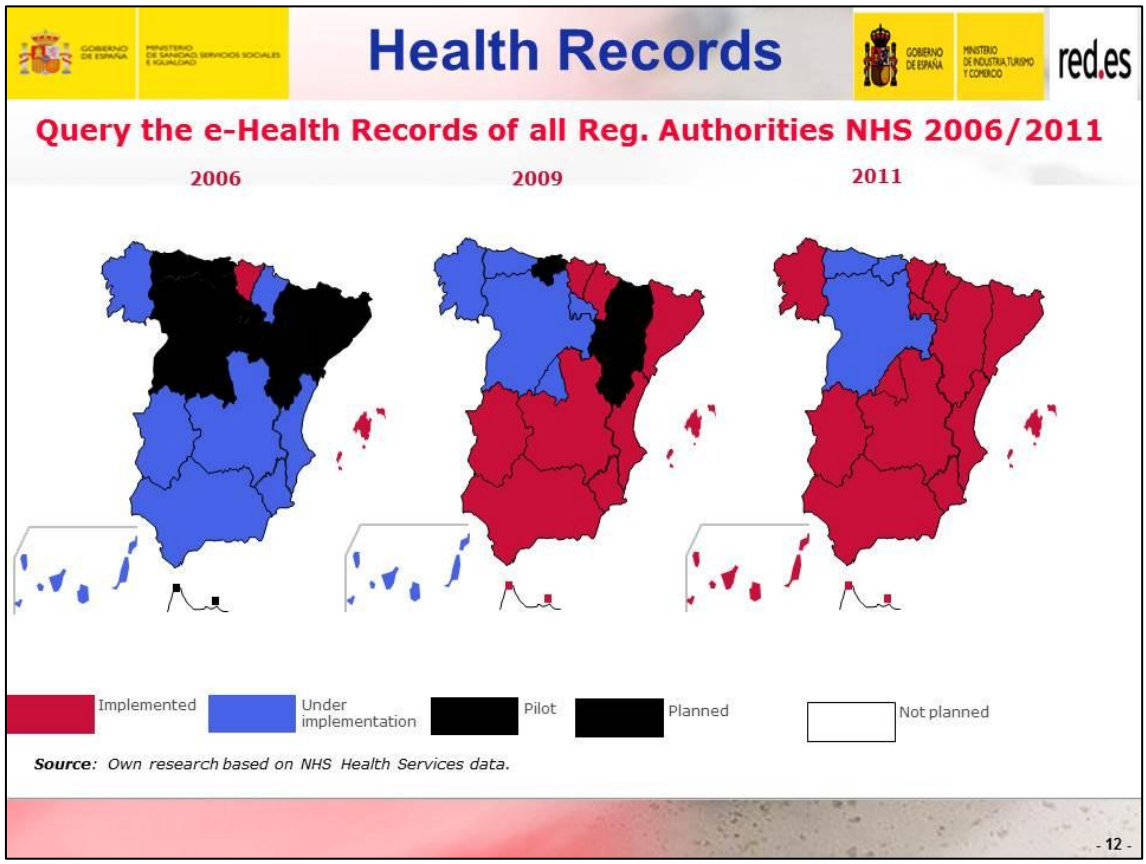

Governance??
Oh!, so you are also implementing eHealth?
Mikael Erlandsson


Change of Viewpoint
Applications Infrastructure
Isolated "legacy" applications
Several development environments
No communication among them
Monitoring / Availability
Aimed at developments
Impossible to unify by resources and competences
Services Infrastructure
Assembly / Comprised of applications
Orchestration of healthcare services
Integration of multiple platforms
Management and control
Posting, discovery and safety of services
Routing and message conversion
-8-


ICT Cooperation Model: Architecture
General Diagram on How it Works
Ministry of Health
NHS Partners
NHS service bus
Level of interchange
Services Dispatcher
XML Parser
Web Server
Asynchronous
Notifications
Synchronous
Interchange server
XML Adapter
XML Parser
NOTIFIC.
DB Server
DB Server
Services by application
Applications
Population
Health Records
ePrescription
Others
- 9 -


Individual Health Cards
SEGURIDAD SOCIAL
GOBIERNO DE ARAGON
salud
SERVICIO DE SALUD DEL PRINCIPADO DE ASTURIAS
ib-salut
Servicio Canario de Salud
SERVICIO CÁNTABRO DE SALUD
Sacyl
Junta de Castilla y León
sescam
CatSalut
Servei Català de la Salut
Generalitat de Catalunya
Departament de Sanitat i Seguretat Social
TASA 1 250101 00 6
LA TARGETA SANITÀRIA
COBERTURA SANITÀRIA BÁSICA
CIUDAD AUTONOMA DE CEUTA
GENERALITAT VALENCIANA
CONSELLERIA DE SANITAT
JUNTA DE EXTREMADURA
Consejería de Sanidad y Consumo
Tarjeta Sanitaria
Gobierno de La Rioja
Servicio Riojano de Salud
Consejería de Sanidad
Madrid
REGION DE MURCIA
CONSEJERIA DE SANIDAD Y CONSUMO
S.N.S. SERVICIO MURCIANO DE SALUD
Osakidetza
Servicio vasco de salud
EUSKO JAURLARITZA
GOBIERNO VASCO
JOSE AGUSTIN
FERNANDEZ DE RETANA
IBAIBARREA
- 10 -


NHS Health Card - Additions
December 2007
December 2002
December 2002
November 2011
July 2007
December 2002
December 2002
December 2002
August 2010
December 2002
December 2002
December 2002
December 2008
December 2002
December 2002
December 2002
July 2008
December 2005
December 2002
- 11 -


Health Records
red.es
Query the e-Health Records of all Reg. Authorities NHS 2006/2011
2006
2009
2011
Implemented
Under implementation
Pilot
Planned
Not planned
Source: Own research based on NHS Health Services data.
- 12 -

NHS Electronic Health Records

SERVICES

For professionals

Access to a patient's data sets and images when the patient requests healthcare

For citizens

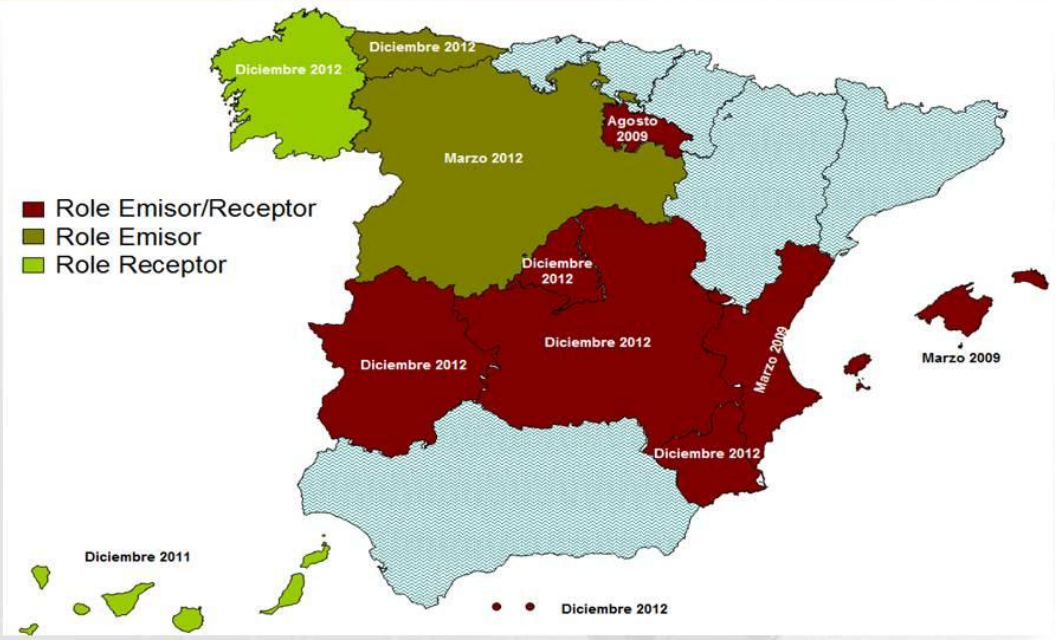
Access to all their health data sets

Data access audits

Possibility of deciding which of their reports can be displayed

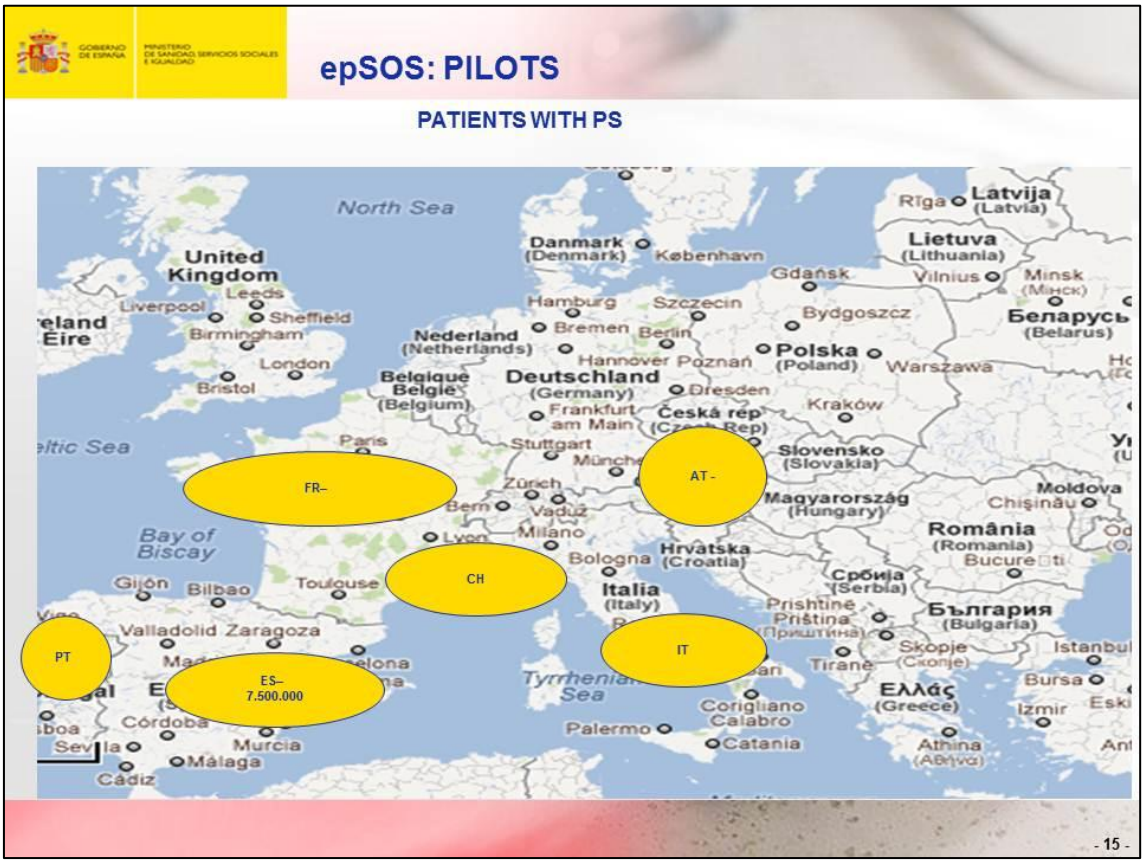
- 13 -

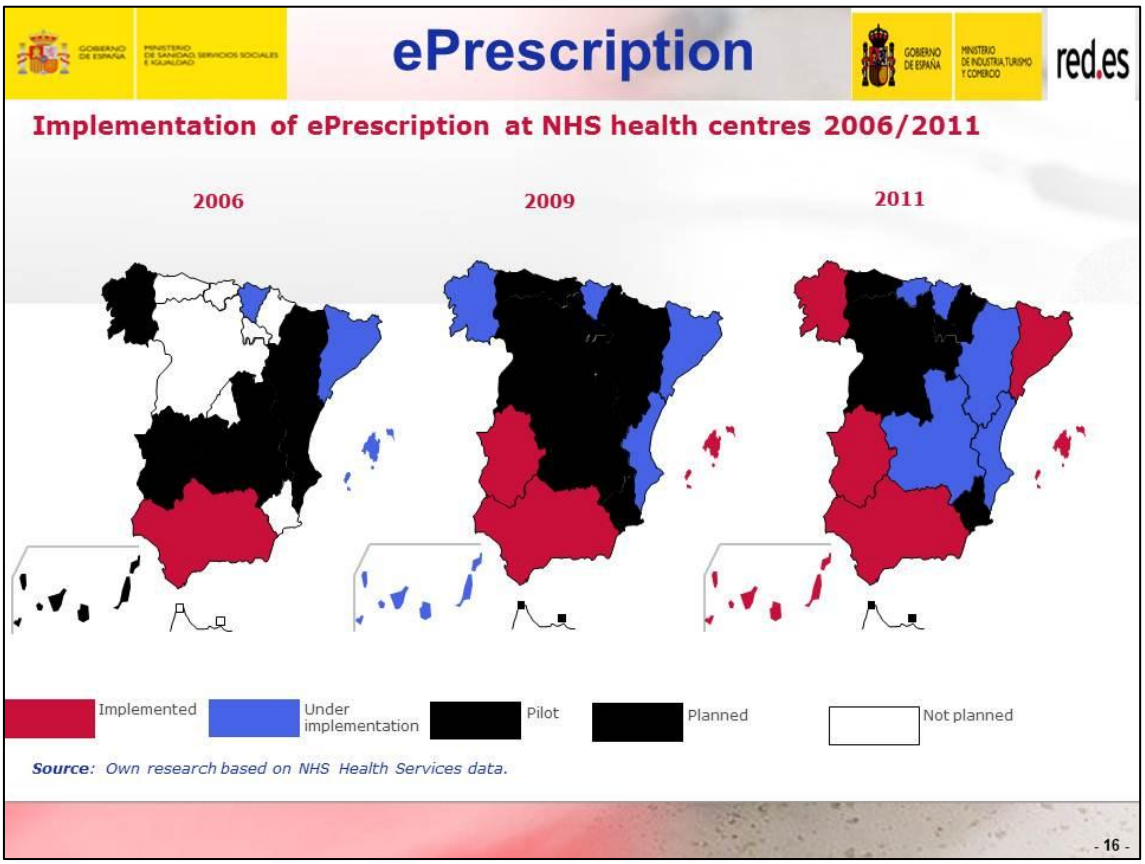
NHS Electronic Health Records

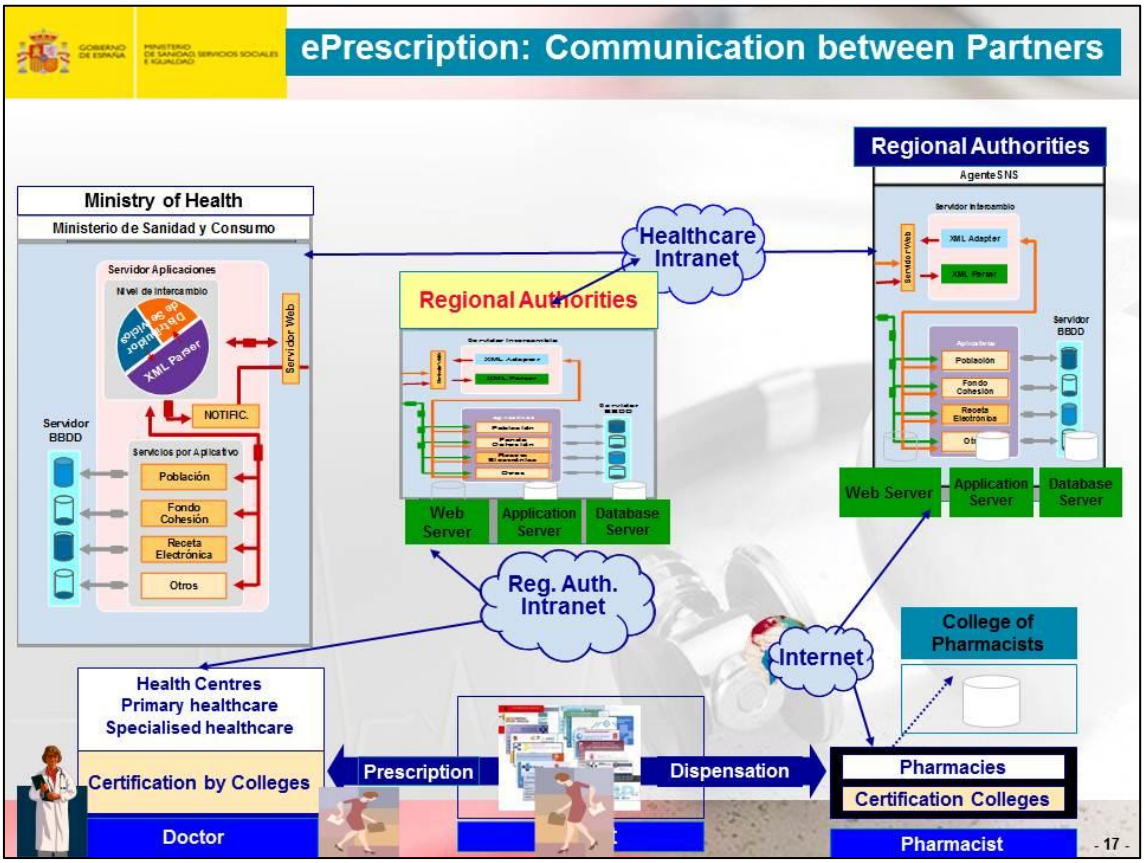


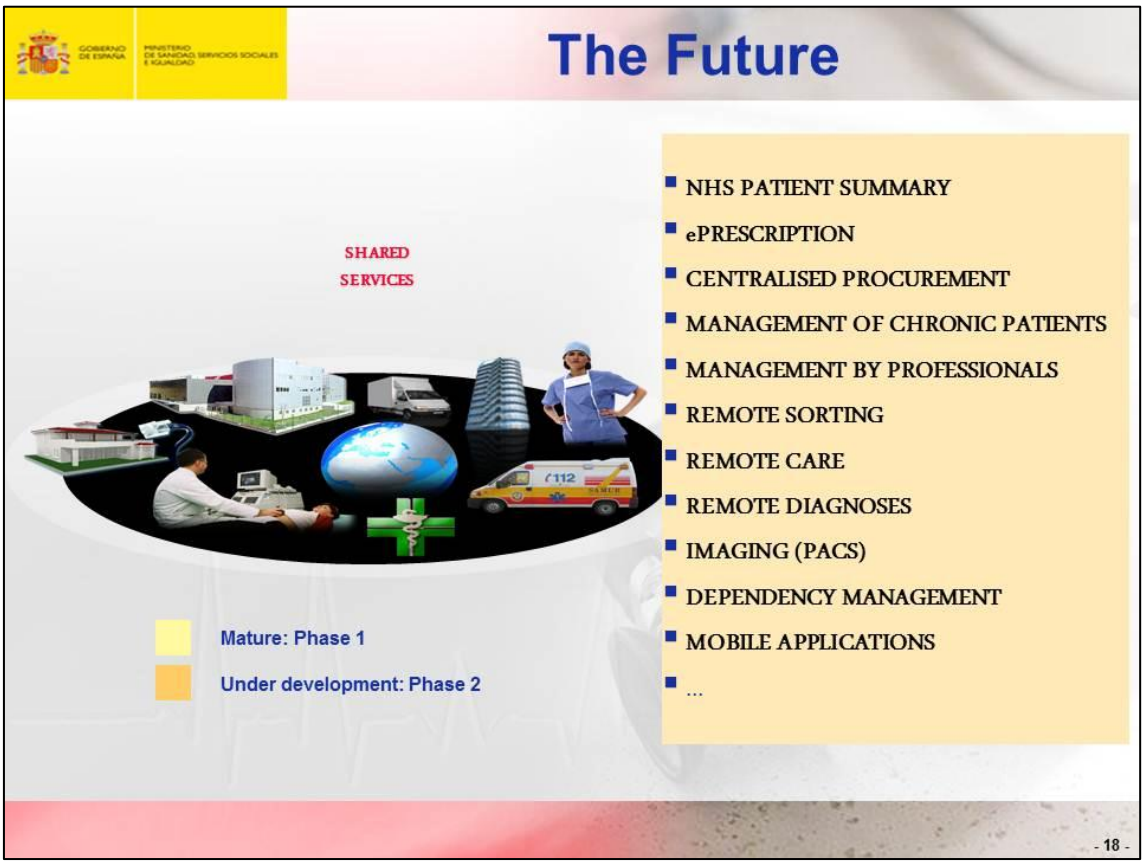
12 Regional Authorities are actively involved in the project
19 million Patients have their clinical information potentially available in other regional authorities
Use July 2013 : 3,000,000 queries by professionals through the Switching Point and 30,000 queries b citizens

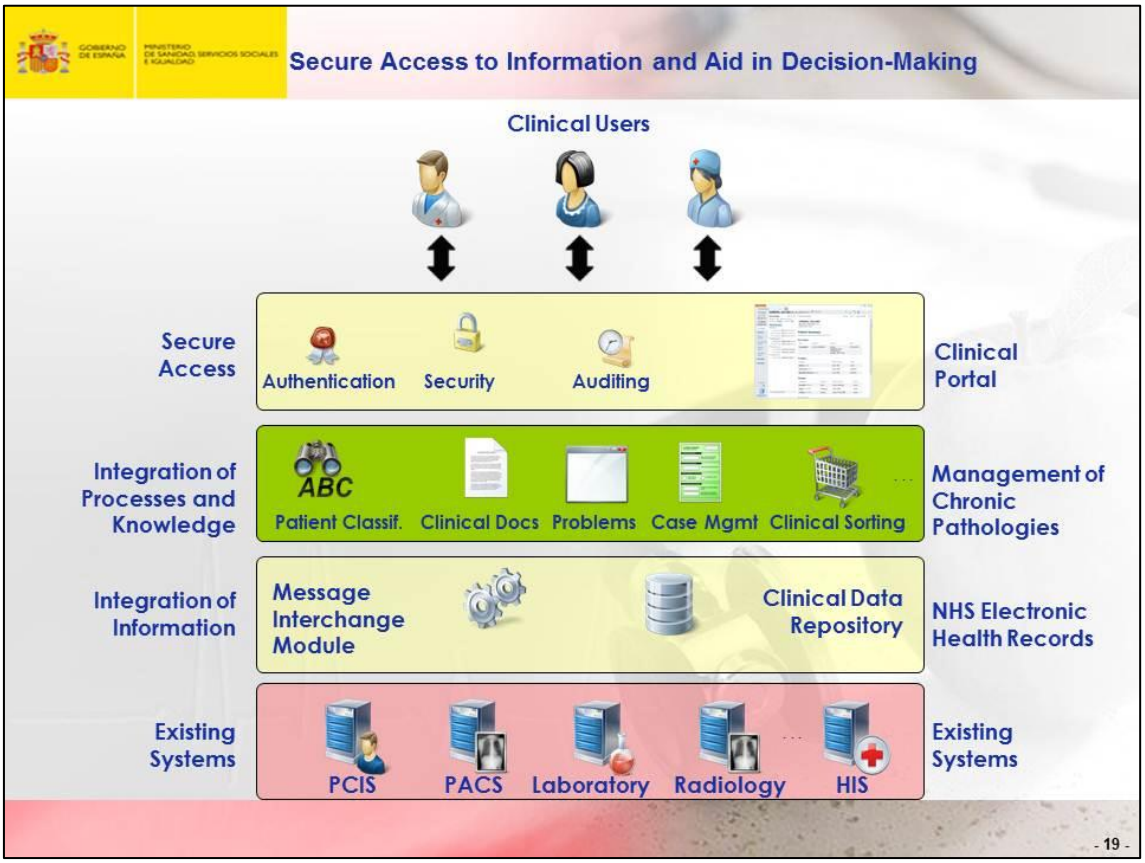
- 14 -

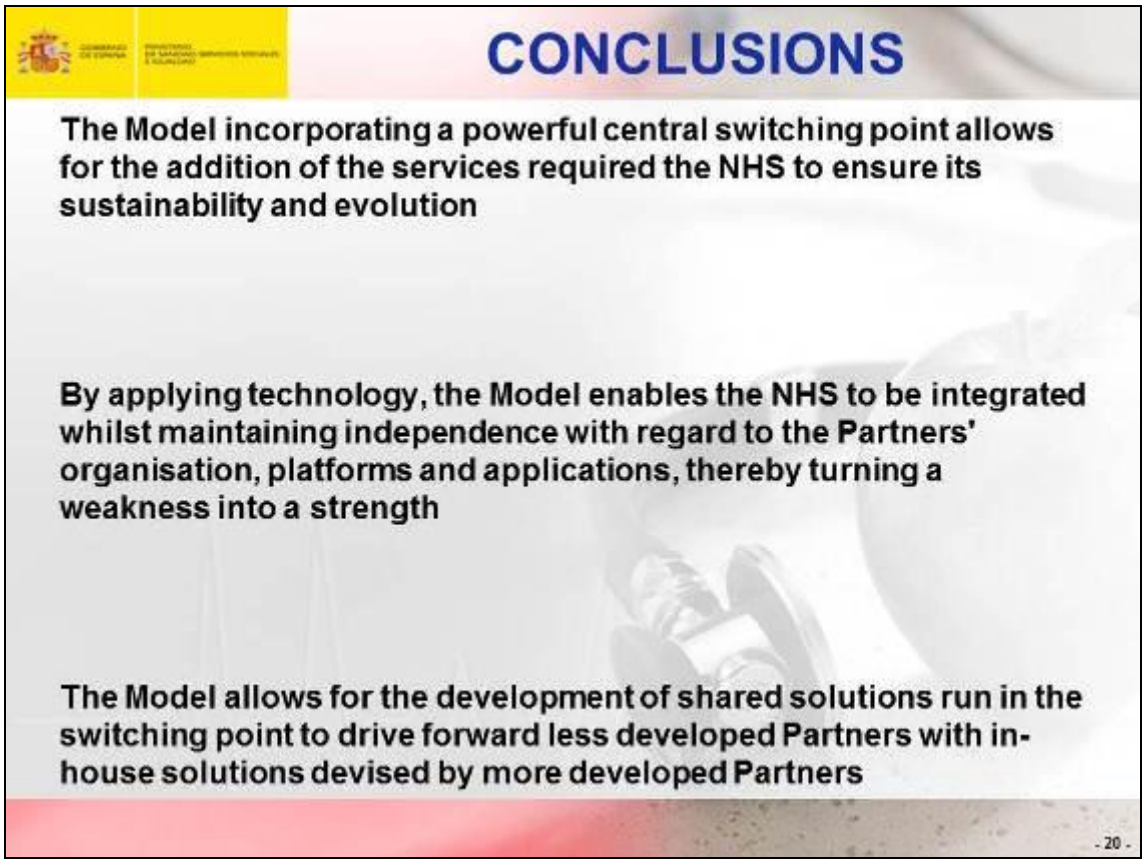

epSOS: PILOTS
PATIENTS WITH PS
North Sea
United Kingdom
Danmark (Denmark)
København
Latvija (Latvia)
Lietuva (Lithuania)
Nederland (Netherlands)
Deutschland (Germany)
Belgique Belgïe (Belgium)
Polska (Poland)
Česká rep
Slovensko (Slovakia)
Magyarország (Hungary)
România (Romania)
Hrvatska (Croatia)
Italia (Italy)
Србија (Serbia)
България (Bulgaria)
Ελλάς (Greece)
Беларусь (Belarus)
Bay of Biscay
Tyrrhenian Sea
FR–
AT -
CH
IT
PT
ES–
7.500.000
- 15 -


ePrescription
red.es
Implementation of ePrescription at NHS health centres 2006/2011
2006
2009
2011
Implemented
Under implementation
Pilot
Planned
Not planned
Source: Own research based on NHS Health Services data.
- 16 -


ePrescription: Communication between Partners
Regional Authorities
Agente SNS
Ministry of Health
Ministerio de Sanidad y Consumo
Servidor Aplicaciones
Nivel de Intercambio
XML Parser
Servidor Web
NOTIFIC.
Servidor BBDD
Servicios por Aplicativo
Población
Fondo Cohesión
Receta Electrónica
Otros
Healthcare Intranet
Regional Authorities
Web Server
Application Server
Database Server
Reg. Auth. Intranet
Internet
College of Pharmacists
Health Centres
Primary healthcare
Specialised healthcare
Certification by Colleges
Doctor
Prescription
Dispensation
Pharmacies
Certification Colleges
Pharmacist
- 17 -

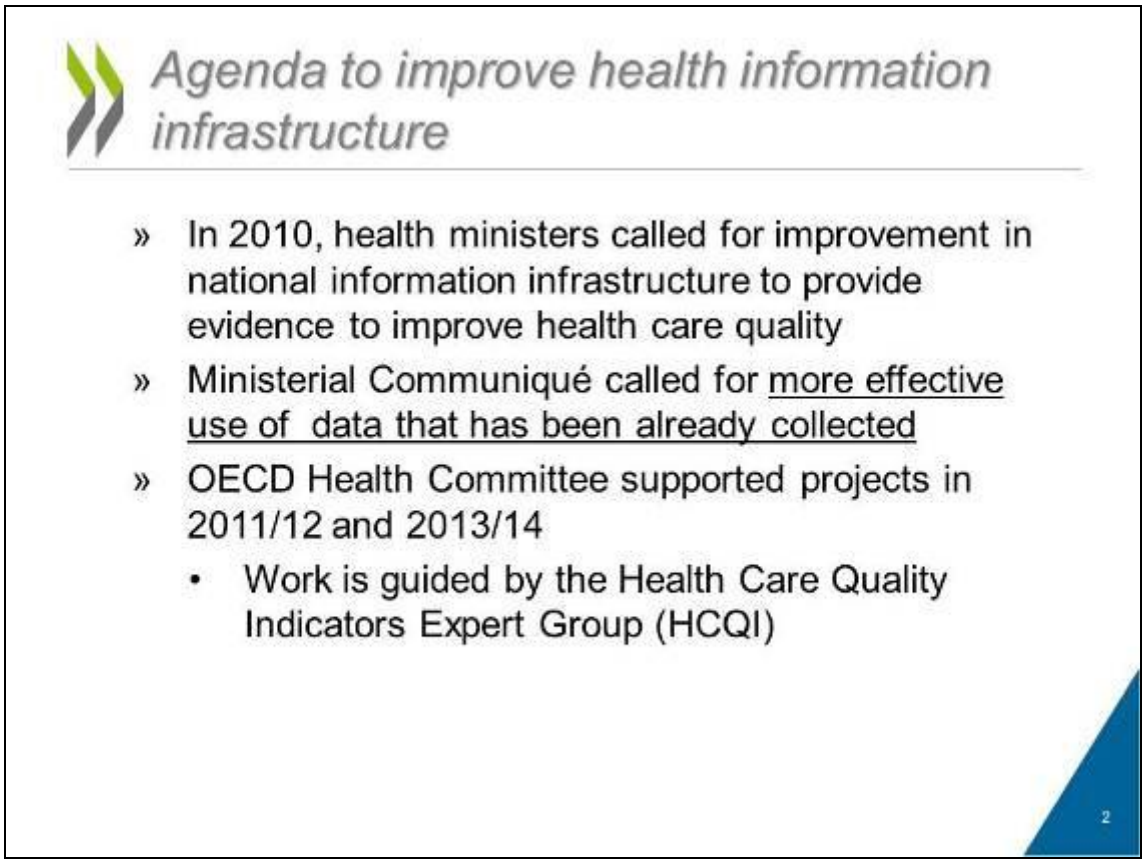

The Future
SHARED SERVICES
Mature: Phase 1
Under development: Phase 2
NHS PATIENT SUMMARY
ePRESCRIPTION
CENTRALISED PROCUREMENT
MANAGEMENT OF CHRONIC PATIENTS
MANAGEMENT BY PROFESSIONALS
REMOTE SORTING
REMOTE CARE
REMOTE DIAGNOSES
IMAGING (PACS)
DEPENDENCY MANAGEMENT
MOBILE APPLICATIONS
...
- 18 -

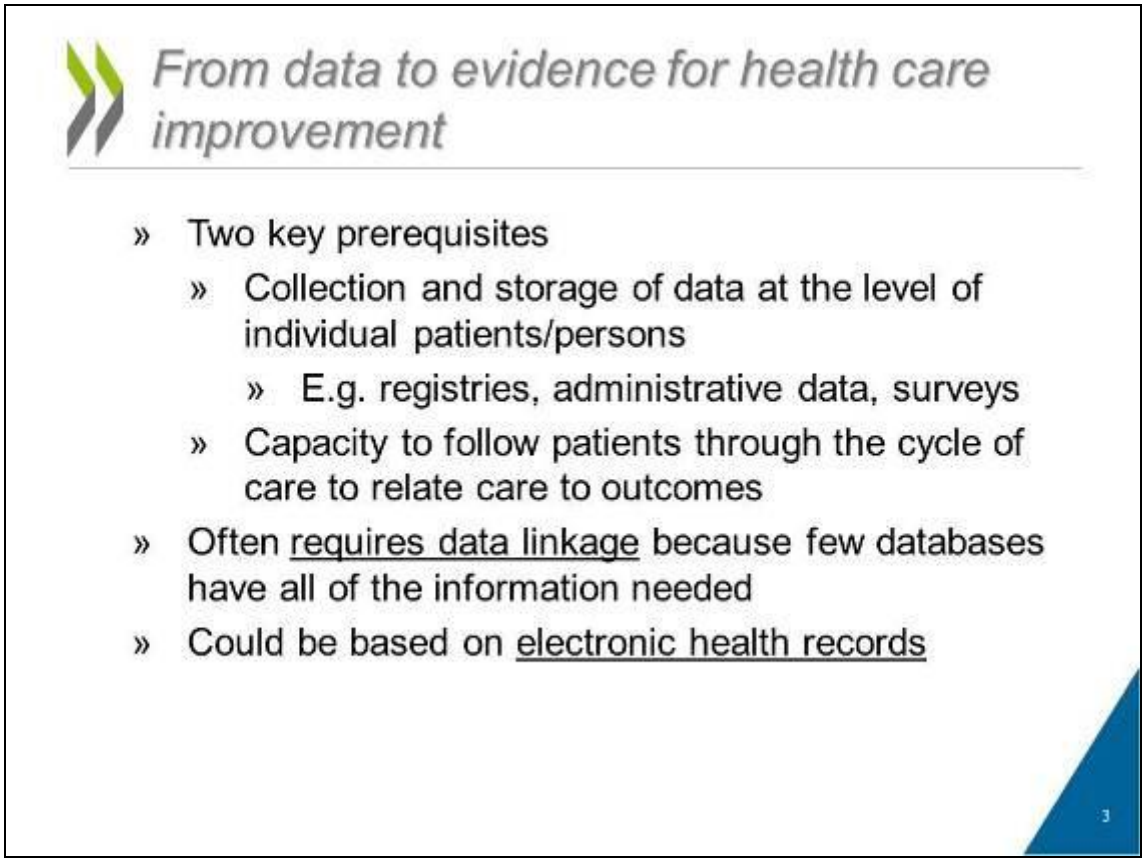

Secure Access to Information and Aid in Decision-Making
Clinical Users
Secure Access
Authentication
Security
Auditing
Clinical Portal
Integration of Processes and Knowledge
ABC
Patient Classif.
Clinical Docs
Problems
Case Mgmt
Clinical Sorting
Management of Chronic Pathologies
Integration of Information
Message Interchange Module
Clinical Data Repository
NHS Electronic Health Records
Existing Systems
PCIS
PACS
Laboratory
Radiology
HIS
Existing Systems
- 19 -

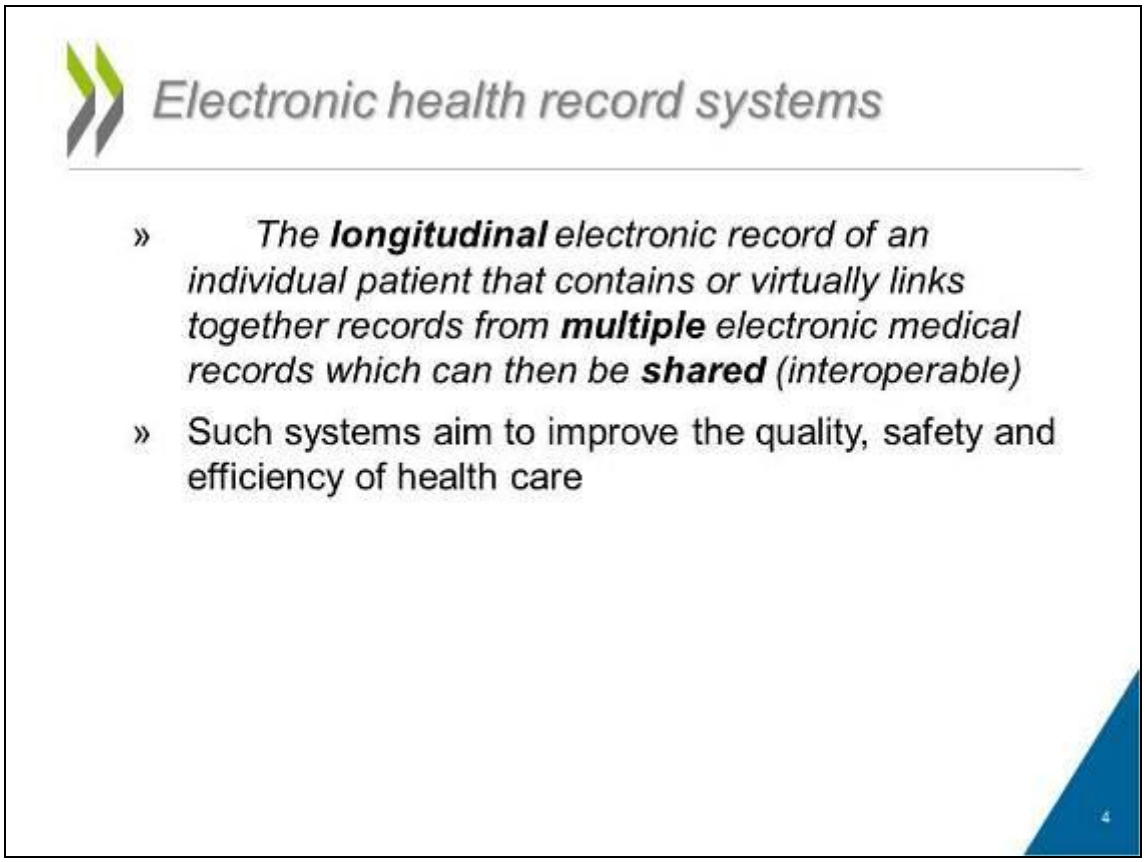

CONCLUSIONS
The Model incorporating a powerful central switching point allows for the addition of the services required the NHS to ensure its sustainability and evolution
By applying technology, the Model enables the NHS to be integrated whilst maintaining independence with regard to the Partners' organisation, platforms and applications, thereby turning a weakness into a strength
The Model allows for the development of shared solutions run in the switching point to drive forward less developed Partners with in-house solutions devised by more developed Partners
- 20 -


THANK YOU VERY MUCH
FOR YOUR ATTENTION !
Juan Fernando Muñoz
Chief Information Officer (CIO)
Ministry of Health, Social Services and Equality
jfmunoz@msssi.es
- 21 -

Presentation by Ms Jilian Oderkirk




From data to evidence for health care improvement
» Two key prerequisites
» Collection and storage of data at the level of individual patients/persons
» E.g. registries, administrative data, surveys
» Capacity to follow patients through the cycle of care to relate care to outcomes
» Often requires data linkage because few databases have all of the information needed
» Could be based on electronic health records
3


Electronic health record systems
» The longitudinal electronic record of an individual patient that contains or virtually links together records from multiple electronic medical records which can then be shared (interoperable)
» Such systems aim to improve the quality, safety and efficiency of health care
4

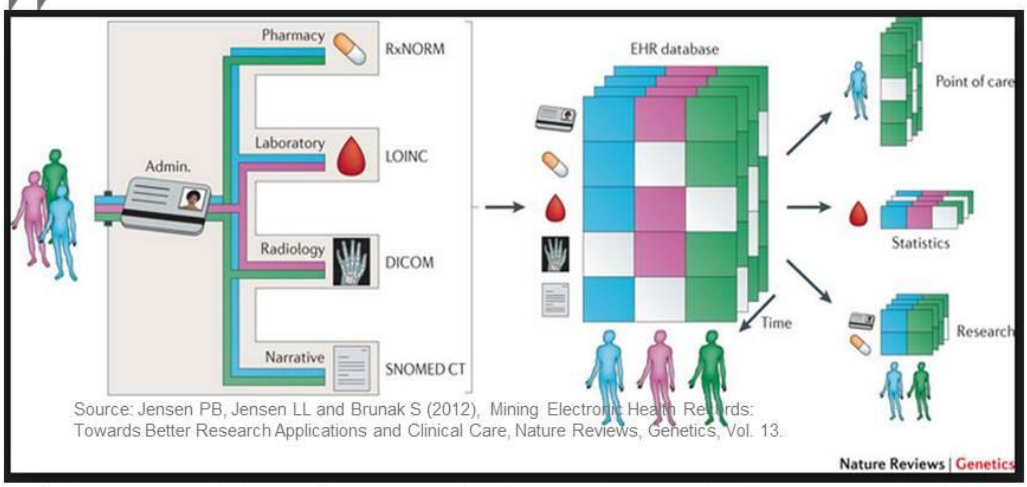
Progress report…

Progress	Europe (15 countries)	Other (10 countries)	Total (25 countries)
70%+ of Doctors using EMRs	11	2	13
70%+ of Hospitals using EPRs	11	4	15
National plan to implement EHRs	12	10	22
Implementation started	12	8	20
Exchange among doctors and hospitals including medications, lab tests and images	8	6	14

Source: OECD HCQI Country Survey, 2012

5

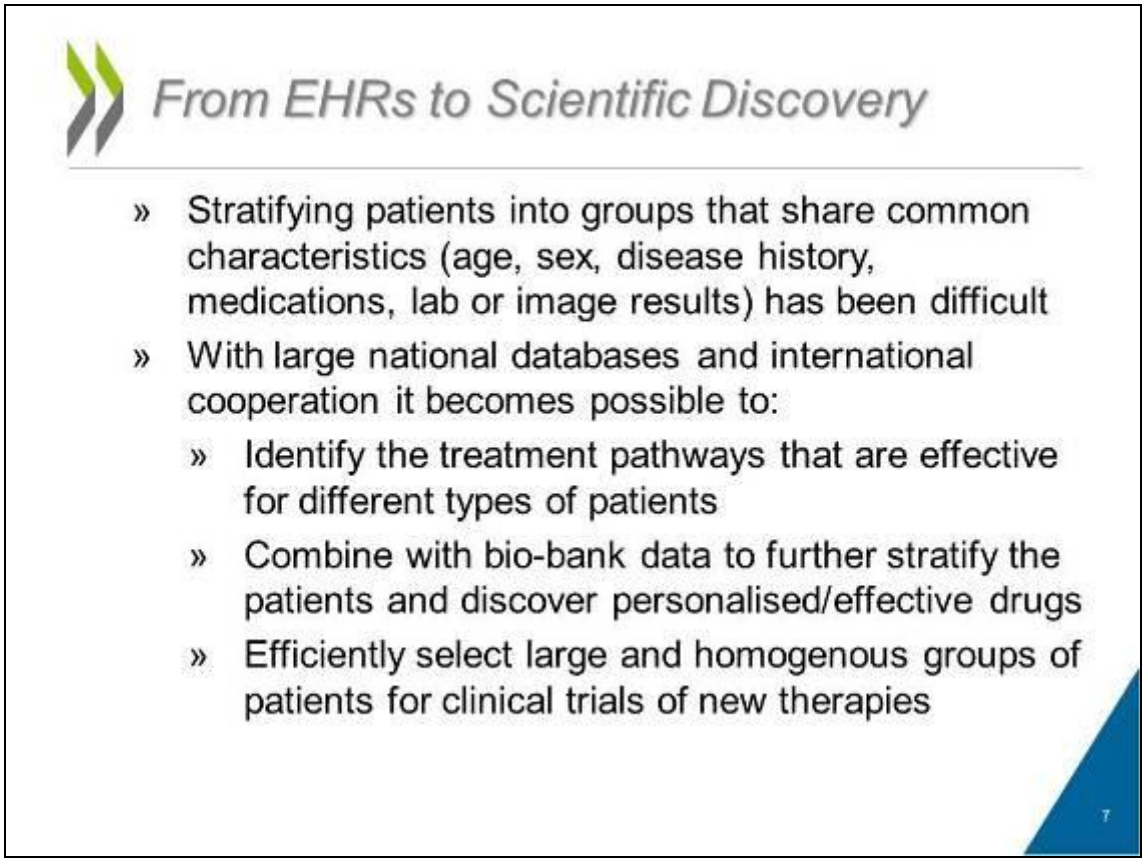
EHR system components

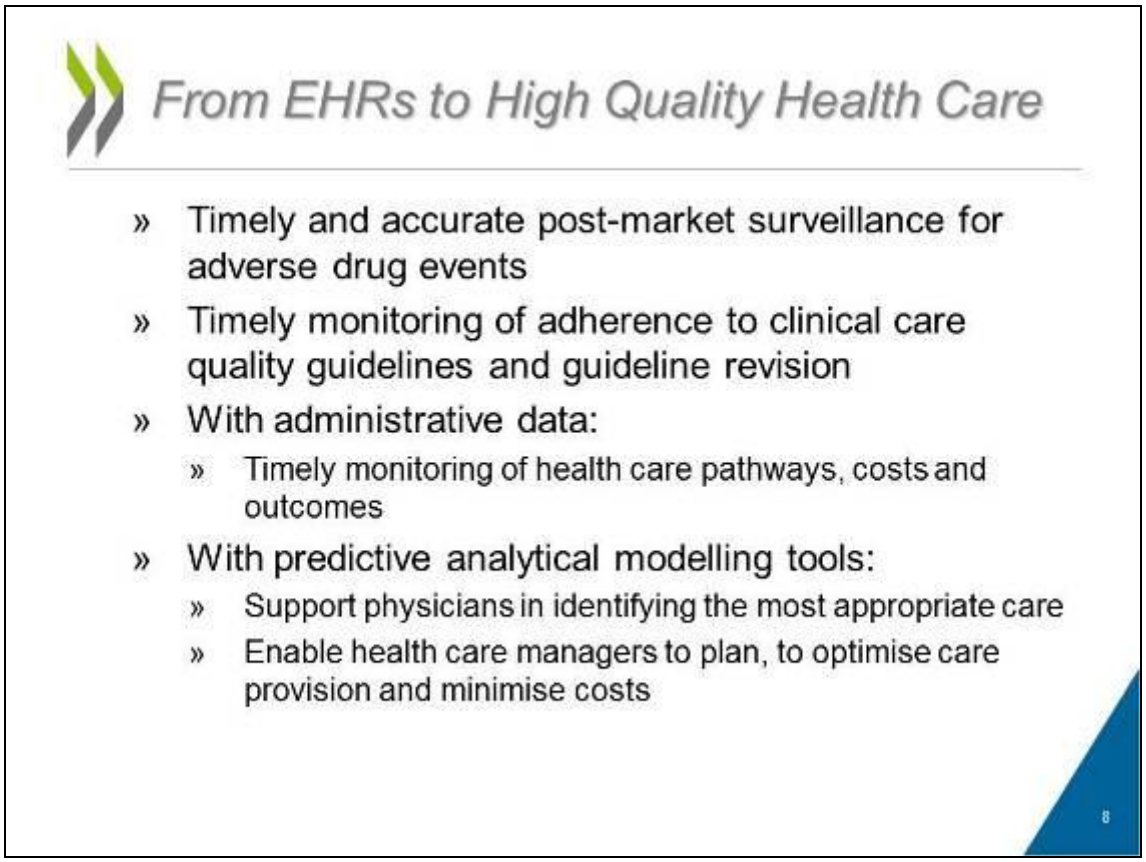


Source: Jensen PB, Jensen LL and Brunak S (2012), Mining Electronic Health Records: Towards Better Research Applications and Clinical Care, Nature Reviews, Genetics, Vol. 13.

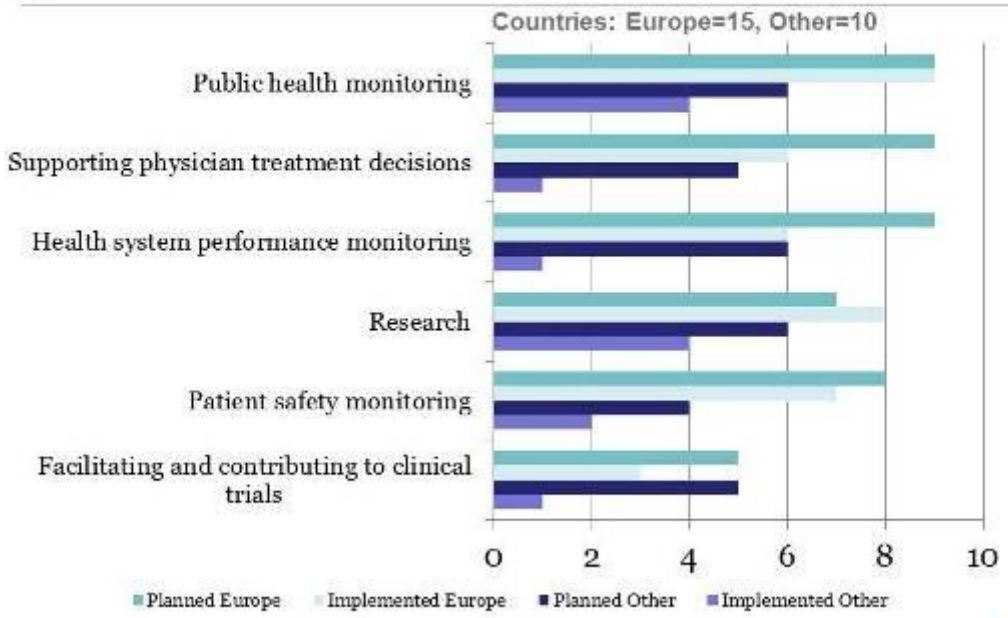
18 countries have defined a minimum data set and most include medications, lab tests and images

6


From EHRs to Scientific Discovery
» Stratifying patients into groups that share common characteristics (age, sex, disease history, medications, lab or image results) has been difficult
» With large national databases and international cooperation it becomes possible to:
» Identify the treatment pathways that are effective for different types of patients
» Combine with bio-bank data to further stratify the patients and discover personalised/effective drugs
» Efficiently select large and homogenous groups of patients for clinical trials of new therapies
7


From EHRs to High Quality Health Care
» Timely and accurate post-market surveillance for adverse drug events
» Timely monitoring of adherence to clinical care quality guidelines and guideline revision
» With administrative data:
» Timely monitoring of health care pathways, costs and outcomes
» With predictive analytical modelling tools:
» Support physicians in identifying the most appropriate care
» Enable health care managers to plan, to optimise care provision and minimise costs
8

Planned and implemented uses of EHR data



Source: OECD HCQI Country Survey, 2012

9

Views about the next 5 years

Over the next 5 years:

How likely is it your country will use any data from EHRs for national health care quality monitoring?

Finland, Indonesia, Israel, Singapore, Sweden, United Kingdom	Very Likely
Belgium, Canada, Estonia, France, Iceland, Japan, Korea, Poland, Portugal, Slovakia	Likely
Denmark, Slovenia, Spain, United States	Unsure
Mexico	Unlikely
Austria, Germany, Netherlands, Switzerland	Very Unlikely

Source: OECD HCQI Country Survey, 2012

10

Beyond EHRs – what about other data?

Too few countries are harnessing value from their data for performance monitoring

	Hospital in-patient data	Primary care data	Cancer registry data	Prescrip-tion medicines data	Mort-ality data	Formal long-term care data	Mental hospital in-patient data
National dataset available…	20	16	18	14	20	16	17
Contains a UPI	15	12	14	12	15	11	12
Contains other identifiers	15	12	17	12	17	12	15
Used for data linkage studies	14	10	14	12	16	11	8
Used regularly for data linkage studies to monitor health care quality	12	4	12	7	12	4	5

Table 1: Number of countries reporting linkable data and reporting data use
Source: OECD HCQI Country Survey, 2011/12

11

Country variation

National health data linkage projects conducted on a regular basis…	Country
With many national databases	Australia, Belgium, Denmark, Finland, France, Israel, Republic of Korea, Sweden, United Kingdom and Australia
With several national databases	Canada, Malta, Norway and Switzerland
With 2 national databases	Cyprus, Portugal, Singapore
None	Japan, Poland, Germany

Source: OECD HCQI Country Survey, 2011/12

12

Challenges

- Balancing data privacy and access to data
- Reluctance to share data
- Lack of standards for content and interoperability
- High prices for data access
- No unique patient numbers to link or track over time
- Data quality problems
- Lack of skilled resources
- Deficits in computing power/ analytic software
- Reluctance of health professionals

13

Success factors

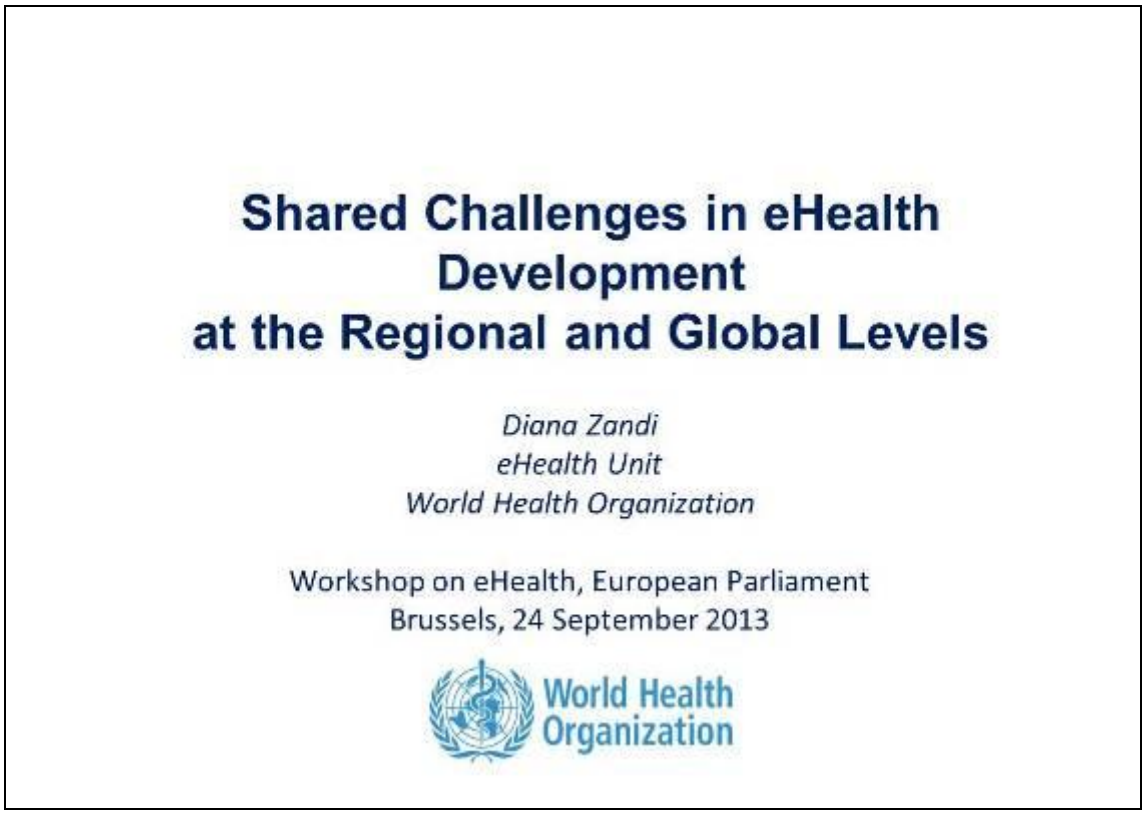
Data governance including…

- Strategic planning
- Legislation enabling secure data sharing, processing and analysis
- Effective data privacy and security measures
- Engagement with citizens, businesses, health sector
- Public communication about data availability and access
- Incentives/investments/grants
- Data utility evaluation and quality auditing
- Data analytic skills in health education/training

14


For more information
Health policy brief and final report (2013):
http://www.oecd.org/els/health-systems/strengtheninghealthinformationinfrastructure.htm
OECD Health Policy Studies
Strengthening Health Information Infrastructure for Health Care Quality Governance
GOOD PRACTICES, NEW OPPORTUNITIES AND DATA PRIVACY PROTECTION CHALLENGES
OECD
15

Presentation by Ms Diana Zandi



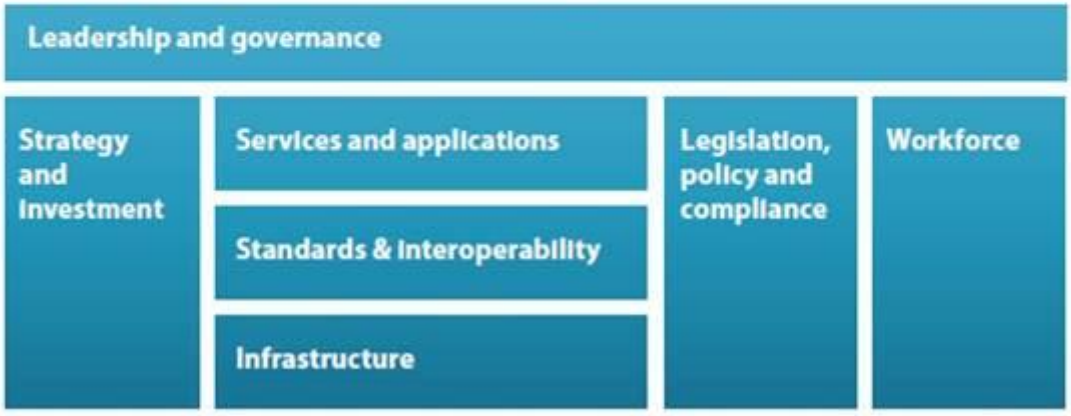
eHealth @ WHO

- The strategic focus of eHealth at WHO is on:
  - policy and governance
  - standardization and interoperability
  - evidence building, eHealth trends and uptake
  - capacity building through eLearning
  - networking and South-South cooperation
  - national strategies

World Health Organization

National eHealth strategies

A national eHealth strategy responds to a country's health situation and goals (including cross-border concerns), and typically includes the following components.



Global context for eHealth development

- Cross-border concerns: What are we facing – to mention a few:
  - environmental exposures
  - disease outbreaks
  - food and drug safety events
  - growth of online health information and services
  - Immigration/movement of population

Consider role of eHealth in addressing these issues

Requires common regional and global approaches

World Health Organization

Some important shared challenges

- The enabling environment
  - eHealth strategy – to include cross border health related issues
  - capacity building & training in all related areas
- Standards
  - application of eHealth standards in national eHealth strategies
  - health data standards at national and subnational levels
- Consumer protection
  - health Internet (.health) – access to reliable health information
  - norms and safeguards – online pharmacies ; child protection on the Internet
- Governance issues
  - capture, share, use and reuse of health data
  - rights, rules and responsibilities

World Health Organization

Shared challenges - policy and enabling environment

- The enabling environment
  - national eHealth strategies and roadmaps
  - evidence building through global surveys, eHealth databases and best practices
  - capacity building & training

World Health Organization

Shared challenges - standards

- Standards – *core component of a national eHealth strategy and critical to data sharing at national, regional and global level*
  - standardization of data elements
  - effective implementation of interoperable health IT and health information standards
    - Data standards for collecting, sharing and reporting on issues for example related food safety, environmental health, pharmacovigilance (drug safety)
    - Defining a minimum data sets for standardized reporting across borders (health emergencies, disease surveillance, etc.)
- WHA resolution WHA66.24 (implementation of health data standardization as part of eHealth systems and services at national and sub-national levels)

World Health Organization

Shared challenges - consumer protection

- Consumer protection
  - health Internet (.health); unsafe practices; criminal activities

  Proper governance and operation of health-related global top-level domain names, including ".health"
- WHA resolution WHA66.24 (May 2013)
  - improve quality of health information on the Internet

  Essential to ensure secure online management of health data, and to increase trust in eHealth tools and health services

World Health Organization

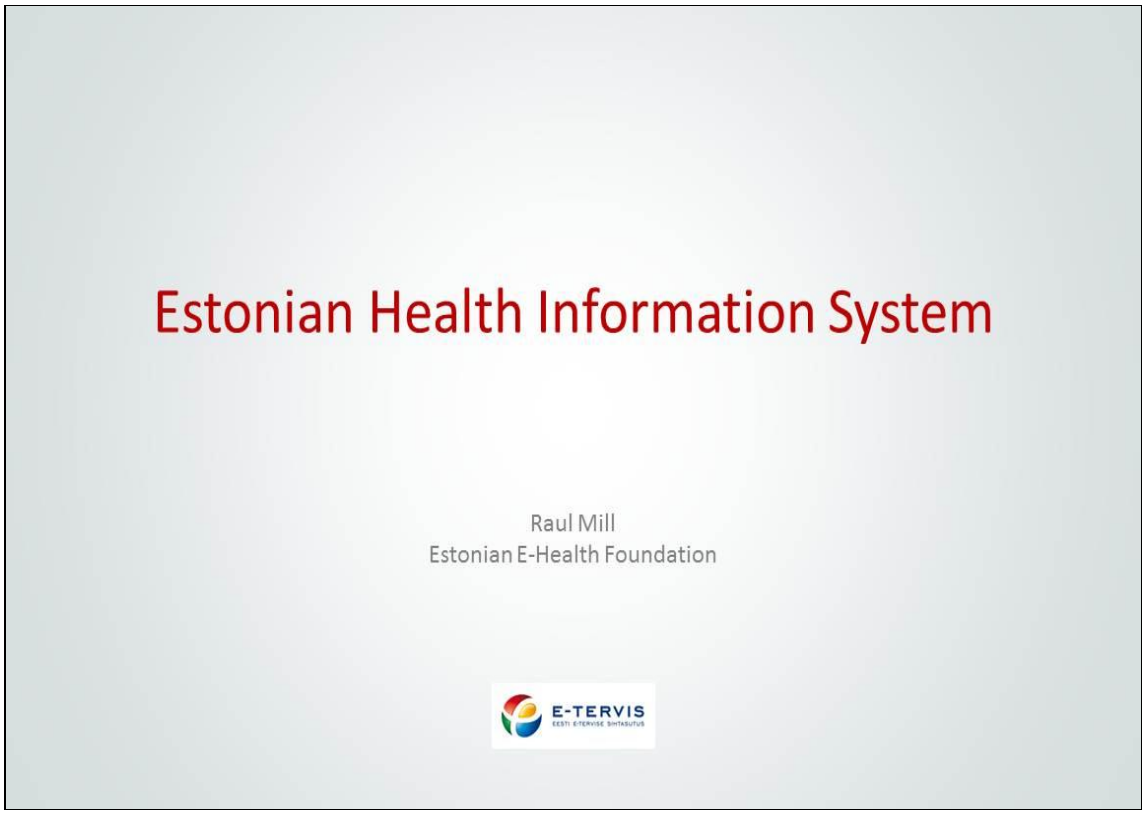
Shared challenges - governance

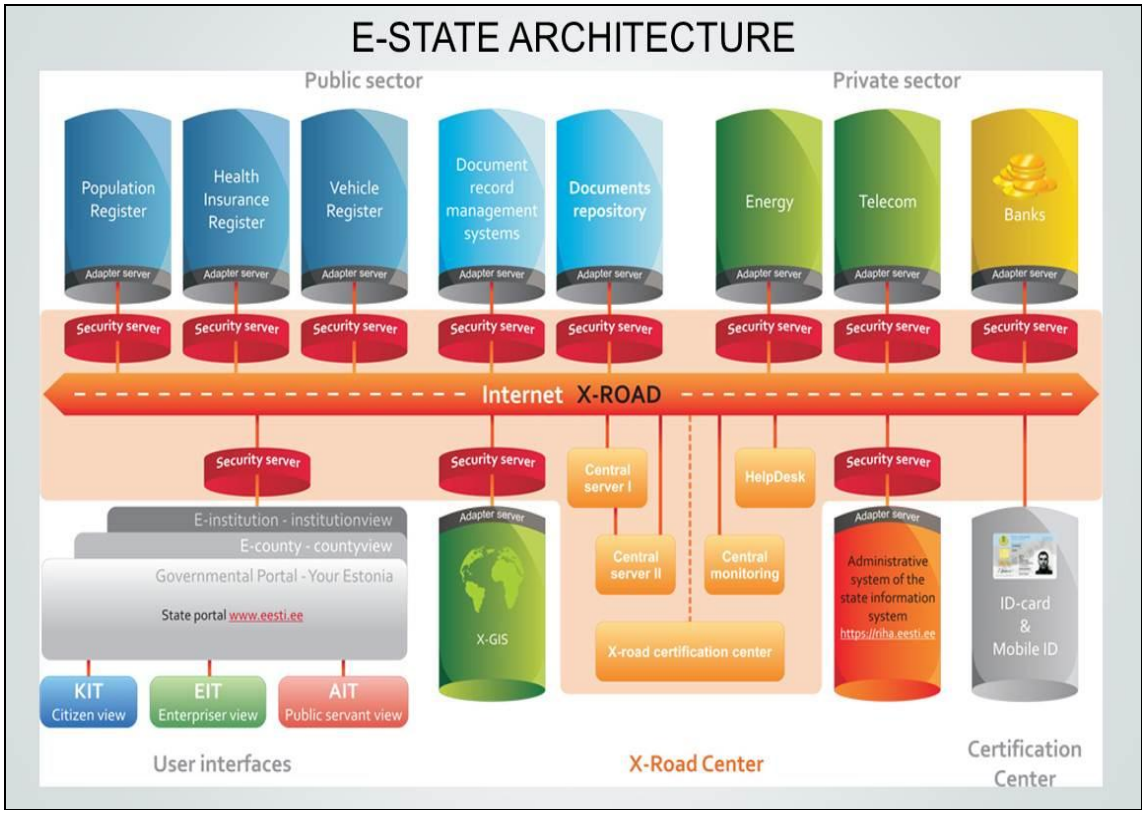
- Governance and policy
  - capture, share, use and reuse of health data
  - follow-up actions on the Summit on Trustworthy Use of Data for Health
  - discuss a consensus process for research on big data to improve transparency, accountability, quality through:
    - methodology and framework for design, conduct, reporting, etc.
    - principles for good practice by industry, academia, other stakeholders

World Health Organization


eHealth @ WHO
THANK YOU
Diana Zandi
zandid@who.int
www.who.int/ehealth
11 | Workshop on eHealth | European Parliament September 24, 2013
World Health Organization

Presentation by Mr Raul Mill




E-STATE ARCHITECTURE
Public sector
Private sector
Population Register
Health Insurance Register
Vehicle Register
Document record management systems
Documents repository
Energy
Telecom
Banks
Adapter server
Security server
Internet X-ROAD
Central server I
HelpDesk
Central server II
Central monitoring
X-road certification center
E-institution - institutionview
E-county - countyview
Governmental Portal - Your Estonia
State portal www.eesti.ee
KIT
Citizen view
EIT
Enterpriser view
AIT
Public servant view
X-GIS
Administrative system of the state information system
https://riha.eesti.ee
ID-card & Mobile ID
User interfaces
X-Road Center
Certification Center


HEALTHCARE IN ESTONIA
30 hospitals
512 family doctors (juridical persons)
Healthcare expenditures 2011
- 5.9% from GDP
- 944.6 mlj. EUR

Background of the Estonian HIE platform

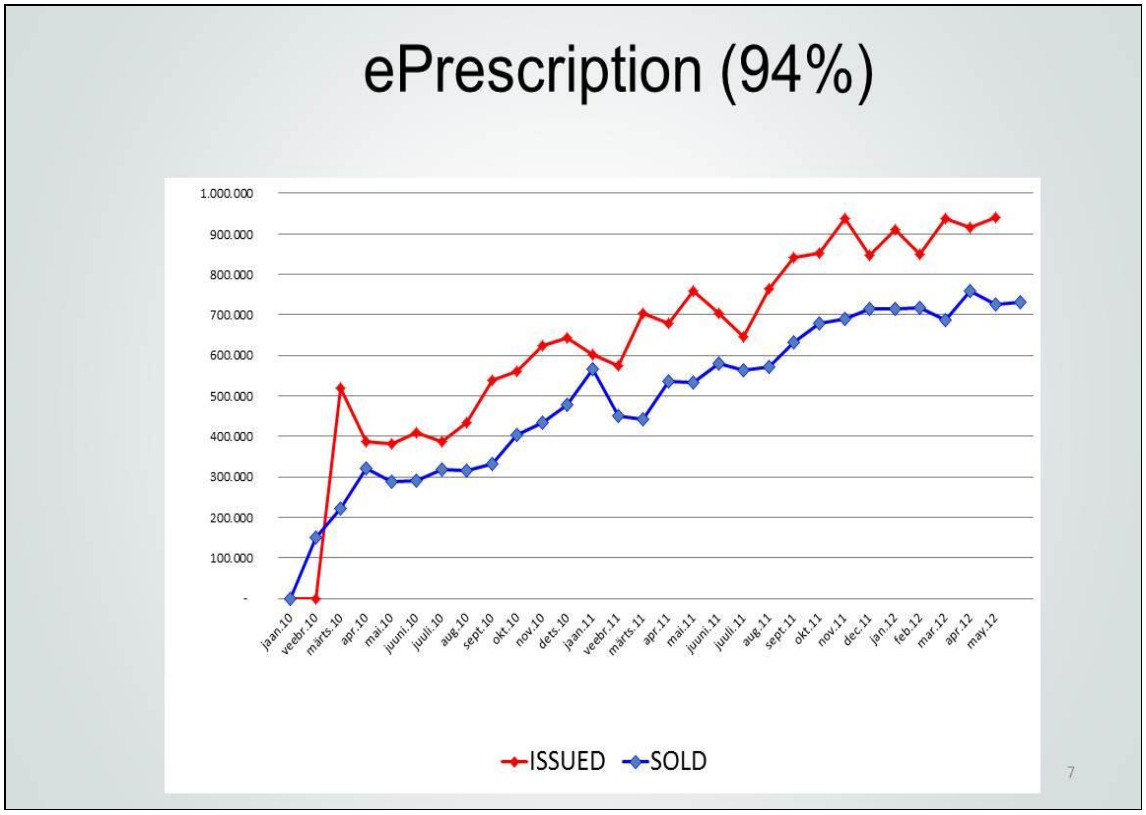
- 2000 start to plan eHealth projects
- 2003-2005 eHealth project preparation
- April 2005 – Ministry of Economic Affairs that coordinates allocation of structural funds made the funding decision for four eHealth projects:
  - **Electronic Health Record** (1.6 mln €)
  - **Digital Registration** (0.2 mln €)
  - **Digital Images** (0.2 mln €)
  - **Digital Prescription** (0.24 mln €)
- 26 October 2005 Estonian eHealth Foundation was established
- 2006-2008 eHealth projects
- December 18th, 2008 the National HIE went in production

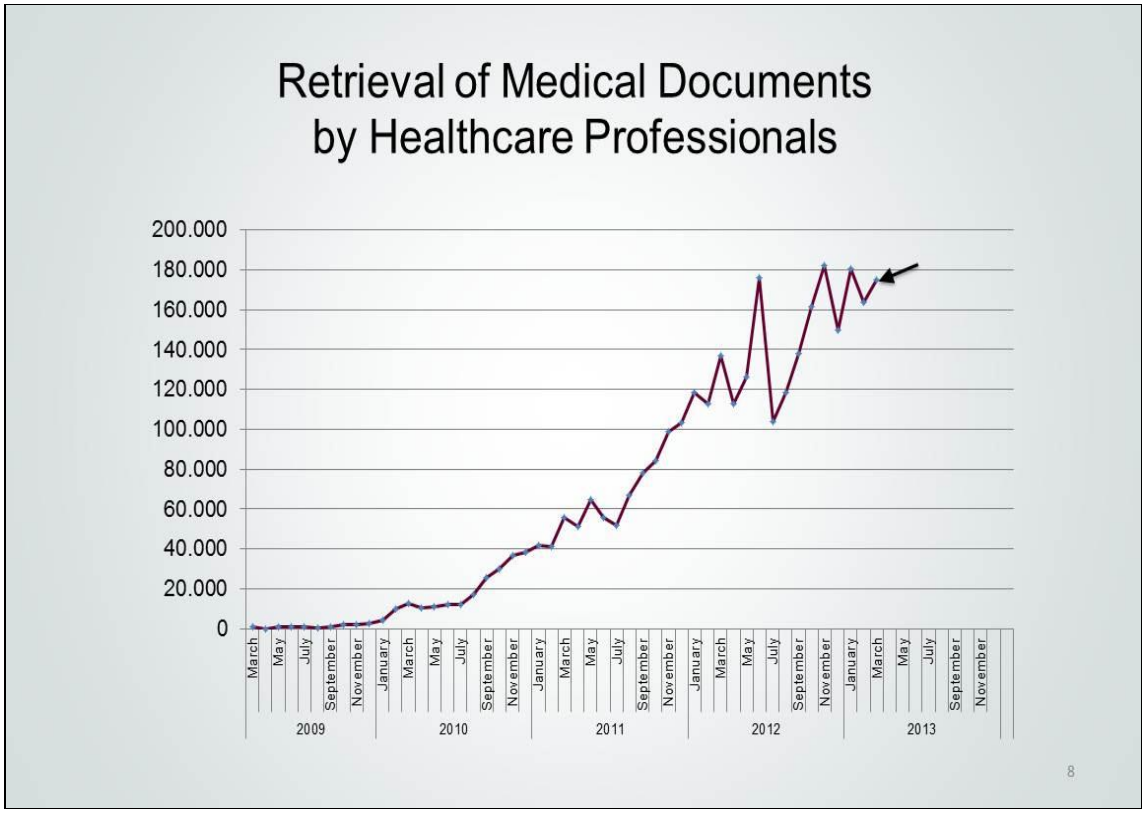
5

Acceptance

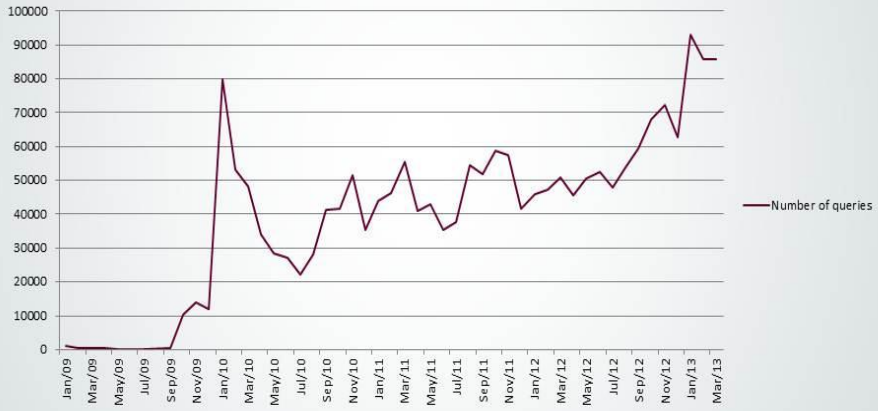
- ePrescription covers 94% of issued prescriptions
- Over 90% of Hospital discharge letters – digitaal
- Over 95% of stationary case summaries have sent to the central DB
- 1 069 075 person have documents (82% of population)

6


ePrescription (94%)
1.000.000
900.000
800.000
700.000
600.000
500.000
400.000
300.000
200.000
100.000
-
jaan.10
veebr.10
märts.10
apr.10
mai.10
juuni.10
juuli.10
aug.10
sept.10
okt.10
nov.10
dets.10
jaan.11
veebr.11
märts.11
apr.11
mai.11
juuni.11
juuli.11
aug.11
sept.11
okt.11
nov.11
dec.11
jan.12
feb.12
mar.12
apr.12
may.12
ISSUED
SOLD
7


Retrieval of Medical Documents
by Healthcare Professionals
200.000
180.000
160.000
140.000
120.000
100.000
80.000
60.000
40.000
20.000
0
March
May
July
September
November
January
2009
2010
2011
2012
2013
8

Patient portal
Number of queries



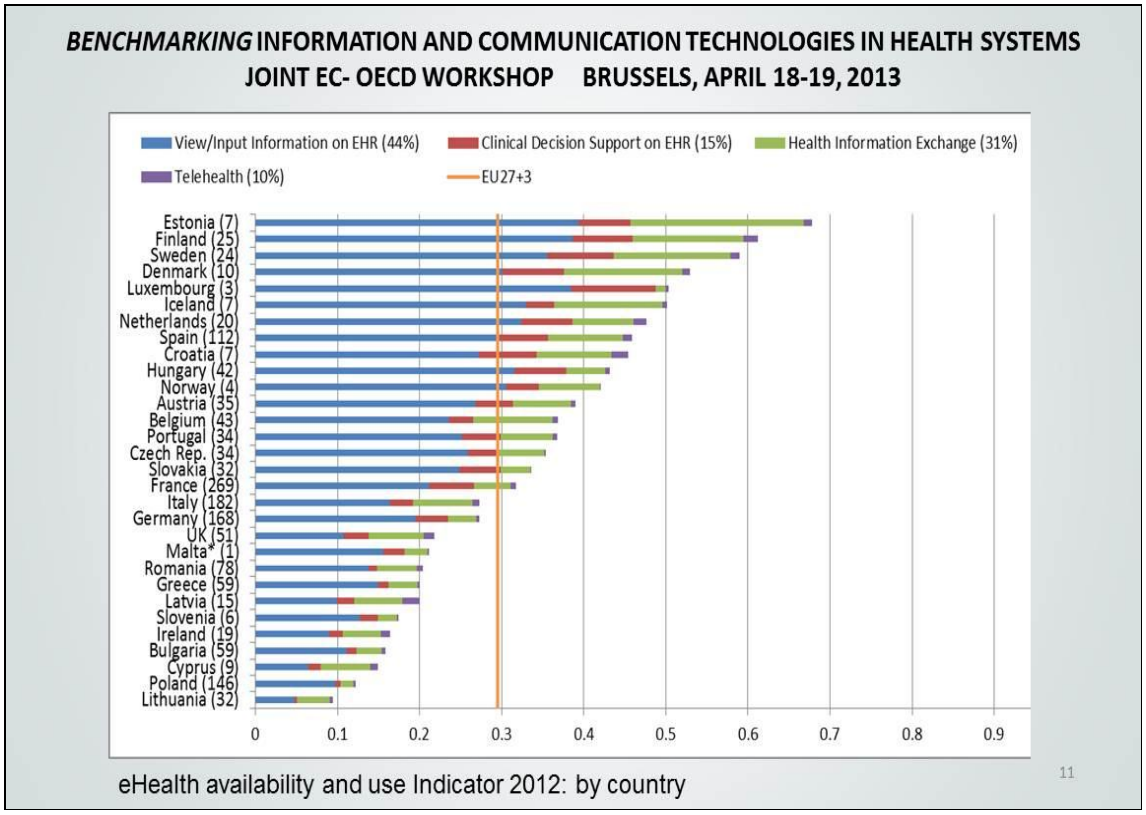
9

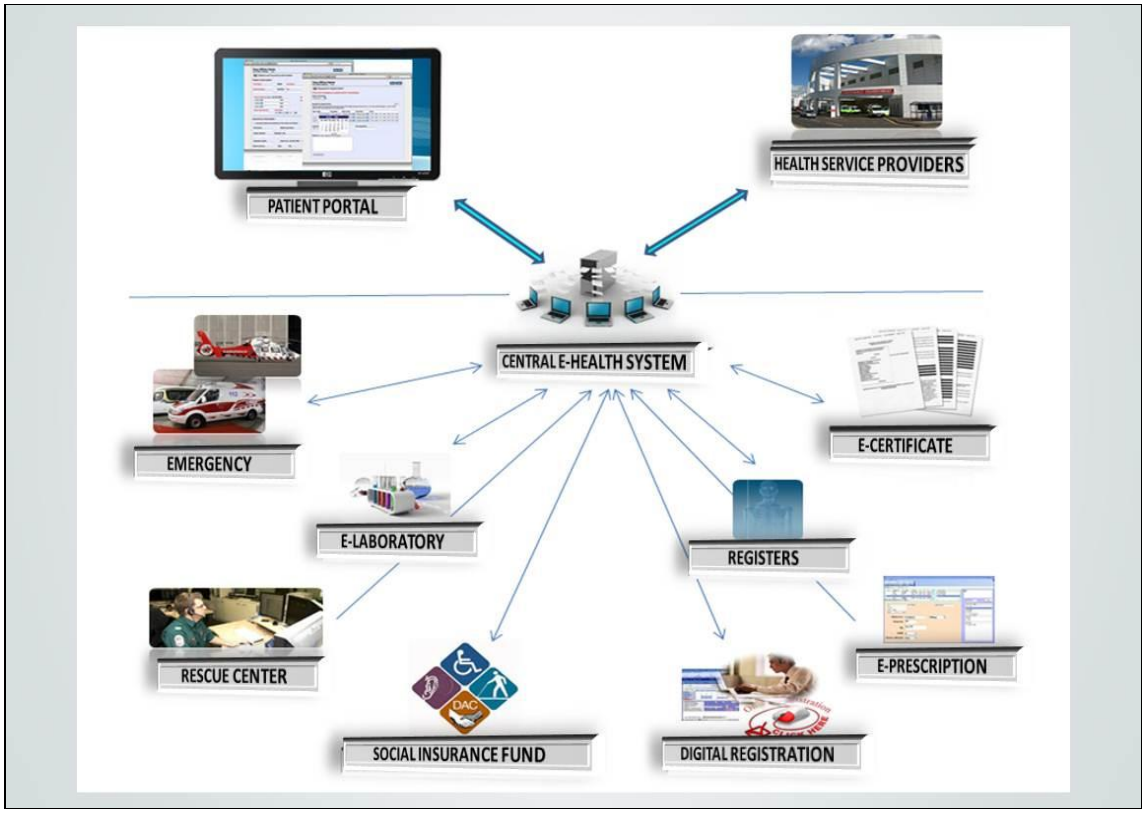
eHealth approximate expenditures

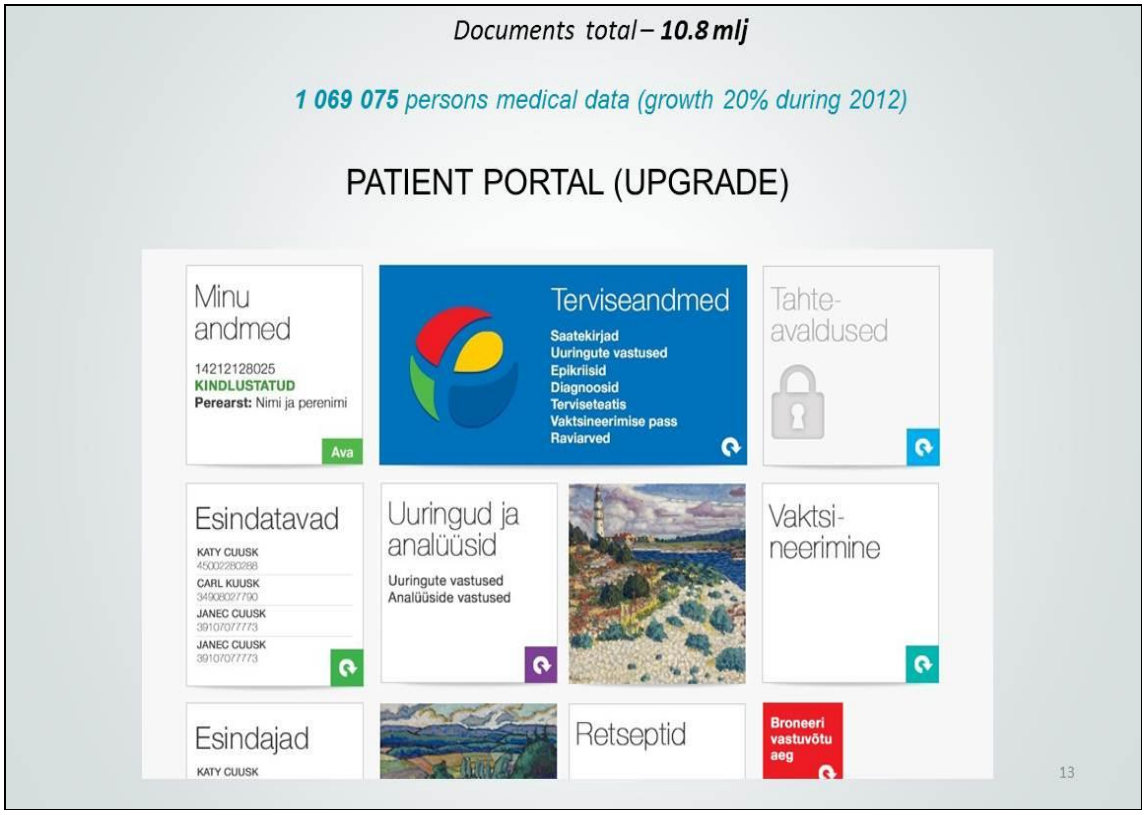
Estonia	12 mil EUR
Ireland	56 mil EUR
Portugal	69 mil EUR
Norway	105 mil EUR
Scotland	117 mil EUR
Denmark	183 mil EUR
Finland	203 mil EUR
Sweden	347 mil EUR
Netherland	430 mil EUR
Spain	713 mil EUR
Germany	1 352 mil EUR
UK	1 980 mil EUR
Australia	4 976 mil EUR
US	30 712 mil EUR

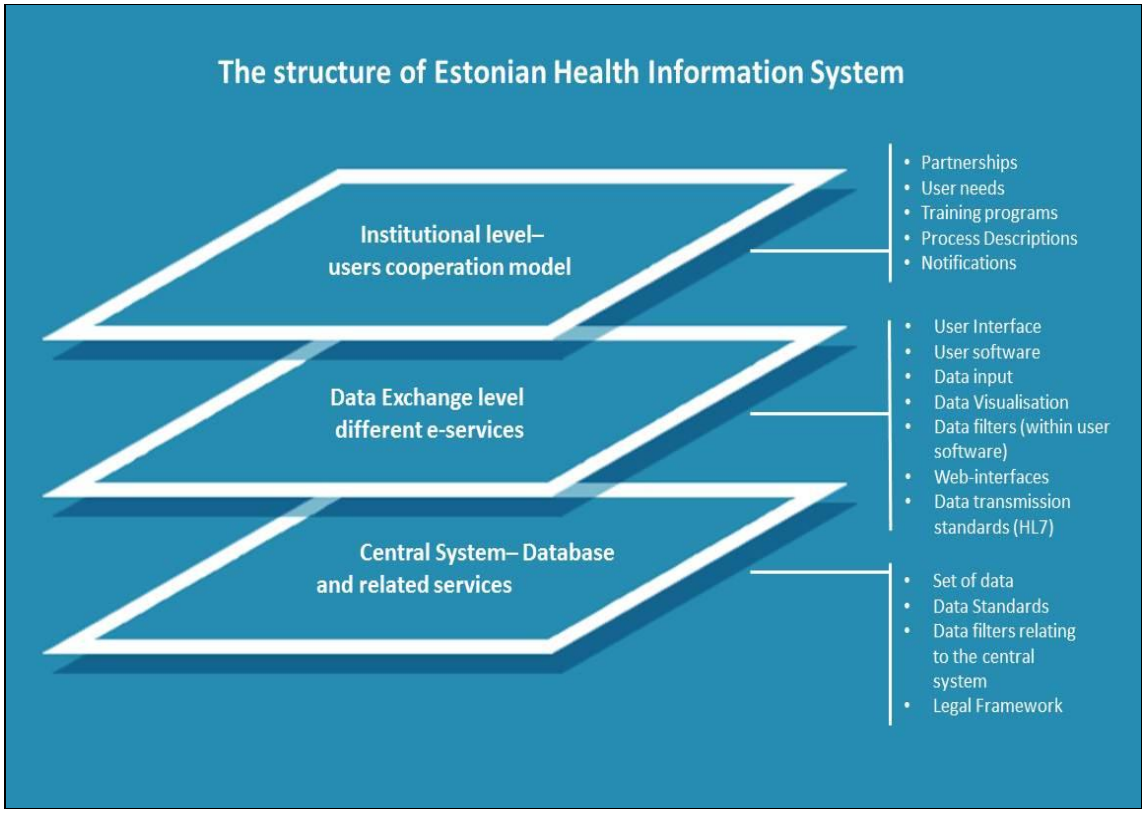
Source: google

10


BENCHMARKING INFORMATION AND COMMUNICATION TECHNOLOGIES IN HEALTH SYSTEMS
JOINT EC- OECD WORKSHOP BRUSSELS, APRIL 18-19, 2013
View/Input Information on EHR (44%)
Clinical Decision Support on EHR (15%)
Health Information Exchange (31%)
Telehealth (10%)
EU27+3
Estonia (7)
Finland (25)
Sweden (24)
Denmark (10)
Luxembourg (3)
Iceland (7)
Netherlands (20)
Spain (112)
Croatia (7)
Hungary (42)
Norway (4)
Austria (35)
Belgium (43)
Portugal (34)
Czech Rep. (34)
Slovakia (32)
France (269)
Italy (182)
Germany (168)
UK (51)
Malta* (1)
Romania (78)
Greece (59)
Latvia (15)
Slovenia (6)
Ireland (19)
Bulgaria (59)
Cyprus (9)
Poland (146)
Lithuania (32)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
eHealth availability and use Indicator 2012: by country
11


PATIENT PORTAL
HEALTH SERVICE PROVIDERS
CENTRAL E-HEALTH SYSTEM
EMERGENCY
E-CERTIFICATE
E-LABORATORY
REGISTERS
RESCUE CENTER
E-PRESCRIPTION
SOCIAL INSURANCE FUND
DIGITAL REGISTRATION


Documents total – 10.8 mlj
1 069 075 persons medical data (growth 20% during 2012)
PATIENT PORTAL (UPGRADE)
Minu andmed
14212128025
KINDLUSTATUD
Perearst: Nimi ja perenimi
Ava
Terviseandmed
Saatekirjad
Uuringute vastused
Epikriisid
Diagnoosid
Terviseteatis
Vaktsineerimise pass
Raviarved
Tahte-avaldused
Esindatavad
KATY CUUSK
CARL KUUSK
JANEC CUUSK
JANEC CUUSK
Uuringud ja analüüsid
Uuringute vastused
Analüüside vastused
Vaktsi-neerimine
Esindajad
KATY CUUSK
Retseptid
Broneeri vastuvõtu aeg
13


The structure of Estonian Health Information System
Institutional level– users cooperation model
Partnerships
User needs
Training programs
Process Descriptions
Notifications
Data Exchange level different e-services
User Interface
User software
Data input
Data Visualisation
Data filters (within user software)
Web-interfaces
Data transmission standards (HL7)
Central System– Database and related services
Set of data
Data Standards
Data filters relating to the central system
Legal Framework

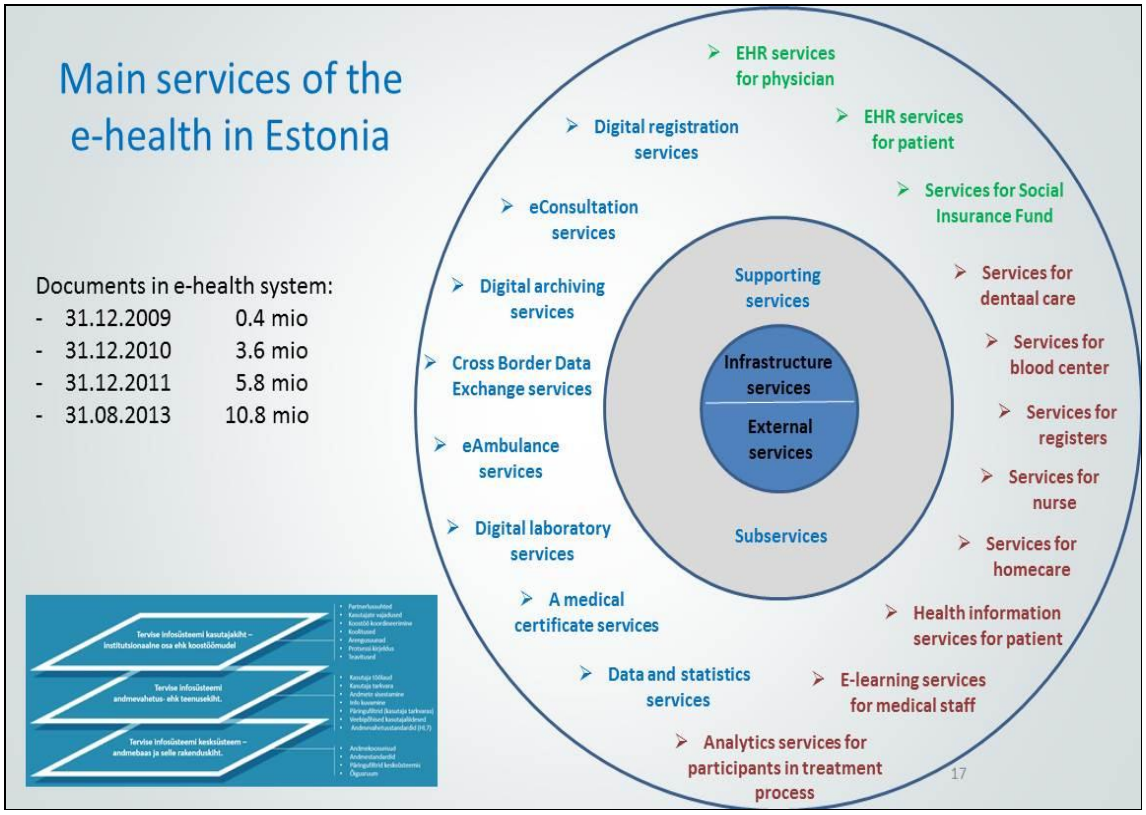
STANDARDS

15

Standards

- HL7 and DICOM (Picture Archive)
- International classification: ICD-10, LOINC, NCSP, ATC
- Estonian eHealth's OID registry
- Local eHealth classificators
  - Published in publishing centre
  - Classificators are regulated by government act https://www.riigiteataja.ee/akt/12910889

16

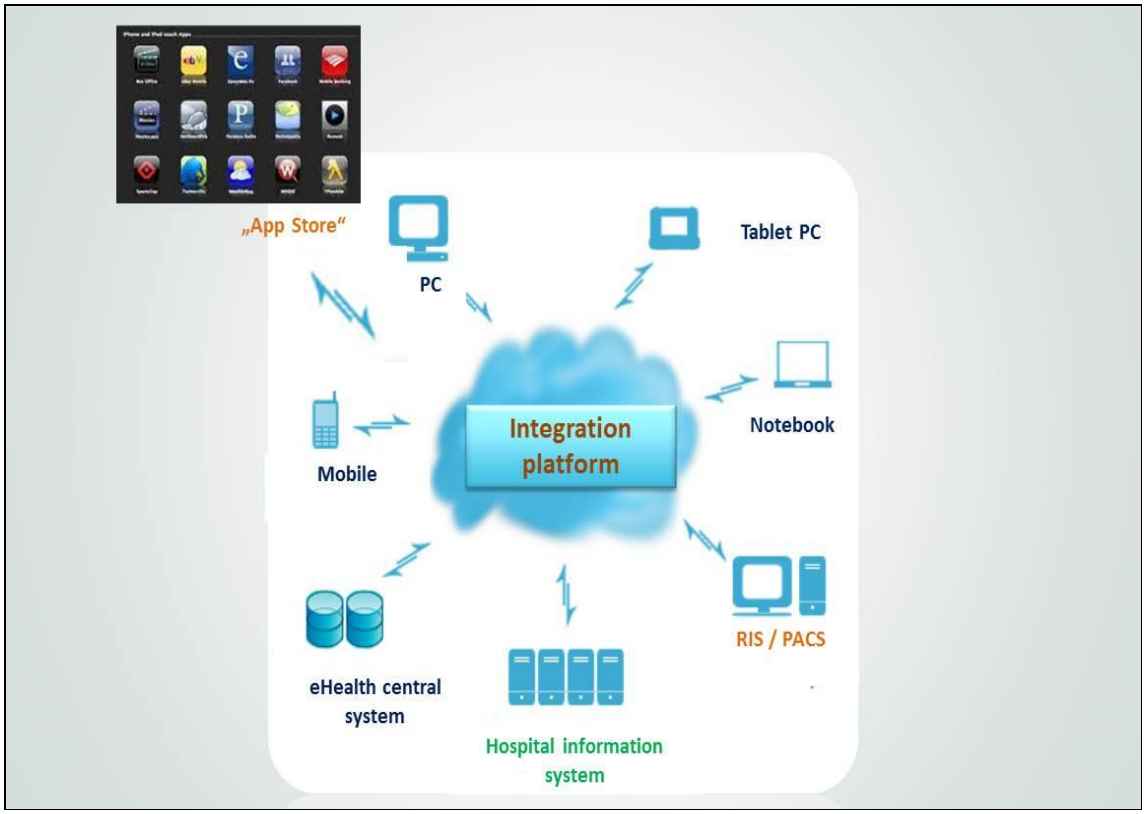

Main services of the e-health in Estonia
Documents in e-health system:
- 31.12.2009 0.4 mio
- 31.12.2010 3.6 mio
- 31.12.2011 5.8 mio
- 31.08.2013 10.8 mio
EHR services for physician
EHR services for patient
Digital registration services
Services for Social Insurance Fund
eConsultation services
Supporting services
Services for dentaal care
Digital archiving services
Infrastructure services
External services
Services for blood center
Cross Border Data Exchange services
Services for registers
eAmbulance services
Services for nurse
Digital laboratory services
Subservices
Services for homecare
A medical certificate services
Health information services for patient
Data and statistics services
E-learning services for medical staff
Analytics services for participants in treatment process
17


CALLING.....
FUTURE OUTLOOK
Connecting health

Better services
Usability & Interoperability

- Faster data input
  - Voice recognition, statistics based text input assistant
- Faster and better output
  - Important information on "one screen"
  - Combining information from multiple sources
  - Graphical solutions
  - Precaching
- Single sign on

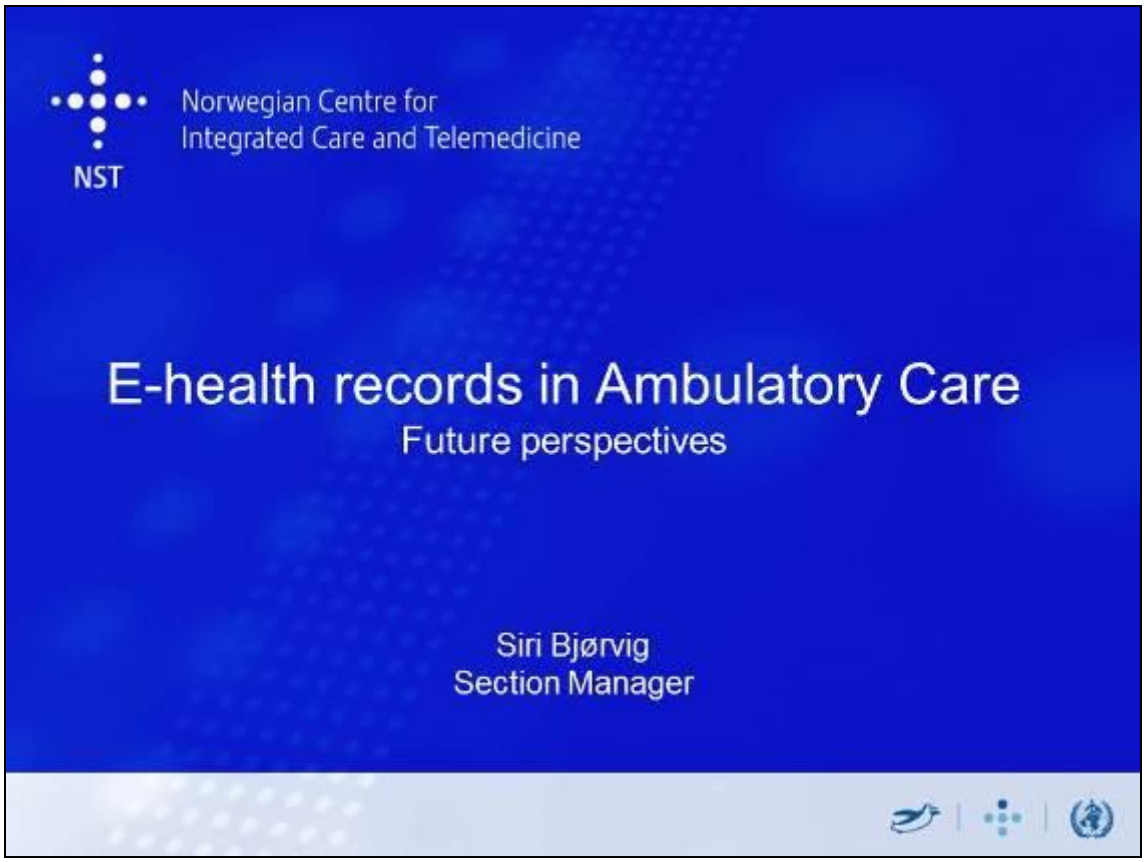
19


„App Store“
PC
Tablet PC
Notebook
Mobile
Integration platform
RIS / PACS
eHealth central system
Hospital information system

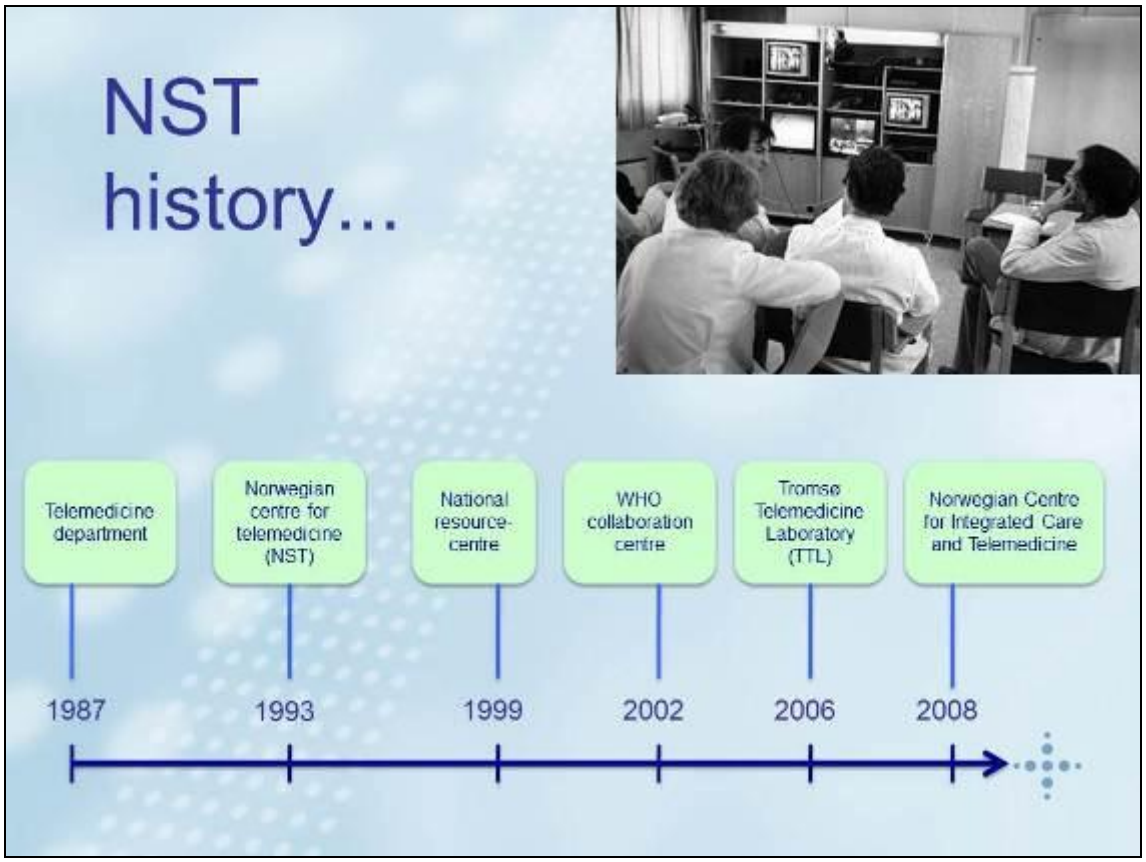

INTERNATIONAL CO-OP
epsos
sustains
momentum
ADVANCING TELEMEDICINE ADOPTION IN EUROPE
22


Thank you!
23

Presentation by Ms Siri Bjørvig




Goal
Provide new solutions and new knowledge within telemedicine and e-health
Facilitate improved cooperation in the health services through research and advisory services


NST history...
Telemedicine department
Norwegian centre for telemedicine (NST)
National resource-centre
WHO collaboration centre
Tromsø Telemedicine Laboratory (TTL)
Norwegian Centre for Integrated Care and Telemedicine
1987
1993
1999
2002
2006
2008

Government's goal

- Health personnel shall have easy and secure access to patient information
- The citizens shall have access to easy and secure digital services
- Data shall be accessible for quality improvement, health monitoring, management and research

NORWEGIAN MINISTRY
OF HEALTH AND CARE SERVICES

One Patient – One Record

Health and care sector in Norway

Population 5 mill

- 250 000 employees in health and care sector

Primary care

- 428 autonomous municipalities
- 4100 GPs (private) in agreement with their local municipality

Specialist care

- 4 regional health authorities, 24 health thrusts, 70 hospitals
- Owned by the government

7 One patient - One record Norwegian Ministry of Health and Care Services

Challenges

- The technological possibilities have not been used
- Many independent organisations
- Many IT systems, little integration

8 One patient - One record Norwegian Ministry of Health and Care Services

Future

- Access
- Sharing
- Participatipation
- Structured data
- Processes
- Decision making

Thank you!
Siri Bjørvig
siri.bjorvig@telemed.no

Presentation by Dr Vicent Moncho Mas

GENERALITAT VALENCIANA
CONSELLERIA DE SANITAT

marinaSalud
Departamento Salud Dénia

e-Hospital in Dénia

Vicent Moncho Mas
CIO Marina Salud

Introduction

marinaSalud
Departamento Salud Dénia

Marina Salud is an avant-garde hospital thanks to its modern open and light architecture design that gives a sensation of tranquility to its patients. It is also a new model of public and private partnership based on per capita financing where the provider is the one assuming the risk. Finally, it is an innovative experience in information technology – one of the basic elements of the company

Angel Giménez Sierra
CEO Marina Salud

GENERALITAT VALENCIANA
CONSELLERIA DE SANITAT

Definition of EHR

marinaSalud
Departamento Salud Dénia

An EHR is an evolving concept defined as a systematic collection of electronic health information about individual patients or populations.

It is a record in digital format that is theoretically capable of being shared across different health care settings. In some cases this sharing can occur by way of network-connections, enterprise-wide information systems and other information networks or exchanges.

EHRs may include a range of data, including demographics, medical history, medication and allergies, immunisation status, laboratory test results, radiology images, vital signs, personal statistics like age and weight, and billing information.

http://en.wikipedia.org/wiki/Electronic_medical_record

GENERALITAT VALENCIANA
CONSELLERIA DE SANITAT

Electronic Health Record

marinaSalud
Departamento Salud Dénia

The electronic medical record involves incorporating the Information Technology and Communication (ICT) at the heart of healthcare. It stops being a record of the information generated in the relationship between a patient and a health care professional and starts to be part of a truly integrated clinical information.

It is accessible, with appropriate limitations, in all cases in which medical assistance is required (emergency, primary, specialty, hospital admissions, etc.)

There are some problems with the conceptualization of the care process and its implementation witch does not clearly show the real impact on the quality of care, morbidity and mortality.

GENERALITAT VALENCIANA
CONSELLERIA DE SANITAT

Efficiency

marinaSalud
Departamento Salud Dénia

In the health world, efficiency refers to the achievement of a health objective at minimum cost.

It is understood that efficiency is when fewer resources are used to achieve the same goal. Or conversely, when more goals are achieved with the same number or fewer resources.

GENERALITAT VALENCIANA
CONSELLERIA DE SANITAT

Paperless office

marinaSalud
Departamento Salud Dénia

The paperless office is an old concept dating back to the 1940s when the idea of the office of the future was proposed. With the advent of personal computers, this idea took on new impetus.

Today, the paperless office is considered an innovative philosophy that allows us to work with the minimum amount of paper by converting all types of documents to digital format.

The implementation process has several barriers to overcome:

- Business processes already established.
- Government regulations.
- Lack of technology and tools.
- The longevity of digital documents.

GENERALITAT VALENCIANA
CONSELLERIA DE SANITAT

Efficiency = Paperless?

marinaSalud
Departamento Salud Dénia

Efficiency <> paperless office

- Electronic processes = paper processes
- No one is more efficient by not having paper processes.

The EHR can be the starting point because:

- We can improve attendance
- We can improve cost efficiency
- We can improve quality

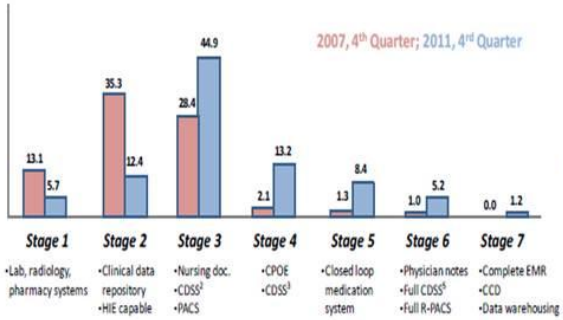
GENERALITAT VALENCIANA
CONSELLERIA DE SANITAT

What HIMSS says

marinaSalud
Departamento Salud Dénia

Very few hospitals have HIMSS stages 6 and 7

Figure 1: Percentage of US Hospitals at Each EMRAM Stage



EMR BENEFITS AND BENEFIT REALIZATION METHODS OF STAGE 6 AND 7 HOSPITALS

Hospitals with advanced EMRs report numerous benefits

The Advisory Board Company | HIMSS ANALYTICS

February, 2012

HIMSS: Healthcare Information and Management Systems Society
EMRAM: Electronic Medical Record Adoption Model

The impact of the EMR is **evident** in stages 6 and 7 (and not in previous ones) in:

- **Quality** of care
- Patient **safety**
- Operational **efficiency**
- **Investment** analysis

The major conclusions from this survey are:

- Hospitals with advanced EMRs have purchased their EMRs for the specific purpose of improving clinical quality and patient safety.
- Hospitals with advanced EMRs explicitly target clinical objectives such as ADE reduction, core measure improvement and other patient safety improvements; they pursue these objectives with a number of explicit benefit realization strategies.
- Hospitals with advanced EMRs report achieving a broad range of benefits from their EMR implementations, including both clinical quality, patient safety and operational efficiencies.
- Hospitals that target specific areas of benefit are more likely to report achieving those benefits.

This survey is the first to report results from a large number of EMRAM Stage 6 and 7 hospitals. These results paint a very different picture than those from other recent studies of hospitals with EMRs across all EMRAM levels, supporting the conclusion that hospitals with more advanced EMRs may be more able and likely to realize substantial benefits.

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2011 two years after

The needs of HIMSS level 6

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Departamento Salud Dénia

HIMSS Level 6

- Physician Documentation and Closed Loop Meds
- Physician Documentation with Clinical Decision Support
- Closed Loop Medication

PHYSICIAN DOC		CLOSED LOOP MEDS
• Structured documentation • Transversal Clinical pathways	▪ CLOSE LOOK TO TRANSVERSAL PROCESS FOR BOTH DOC AND MEDS	▪ Alerts ▪ Closing the 5 rights

FOCUS ON THE SUM OF PARTNER KNOWDLEGE+ LOCAL PROCESS TRANSVERSAL VIEW

THE MUST:

- Physician use of the system: physician adoption 100%
- Nurse use of the system: nurse adoption 100%
- Adaptation of Cerner best practices to local needs
- Demonstrate Benefits

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2012 three years after

Achieve HIMSS level 7

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Departamento Salud Dénia

HIMSS Level 7

- Paperless EMR and Data Driven
- Paperless Validation
- Clinical Decision Support Capabilities
- Entreprise DataWareHouse
- Downtime process

Paperlesss Validation	CDSC	DWH
Exception to ideal workflow determine need for 100 paper scanned	• Dose range checking • Sepsis algorithm • Decrease unnecesary Tx Xray Preop	Conselleria communication: Government reporting: i.e. ED triage time

7x24 Downtime process

THE MUST:

- Clinical teams not only use but TRUST the system. The system belong to the need of Clinical Transformation
- Able to demonstrate the Transformation of Healthcare through results
- To Transform the Healthcare you need a partner that assess you with the best practices understanding your local workflows, needs and differences

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Nursing improvements

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All discharged patients have a nursing discharge report:
- 50% of the report's content is generated automatically saving 5 minutes per report

Continuity of care between departments:
- Avoiding 15 minutes per discharge

Reduced variability in nursing practice:
- Wound care plans: 100% of patients
- Forms: documentation

Reduction of the time dedicated to documentation and tasks of little added value:
- Medications: requisitions and relevant information
- Diets: requisitions

ED Tracking Board :
- Informs us of the patient workload and severity in real time

Records related to quality:
- Falls
- Pressure ulcers
- Urinary tract infections

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Physicians improvements

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Interconsultations and remote follow-up visits are 5% of the total.

Remote home connection for providers on-call remotely reduced physical presence time.

Structured clinical information available anywhere, at any time.

Clinical protocols are integrated in the system.

There is continuity of care between areas.

Operating Room with integration of monitoring devices.

Implementation of process guides in medical orders.

Integration of the prescription with primary care systems.

Process-oriented management reduces variability in clinical practice.

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Other improvements

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Preference cards
- Costs per process.

Autoverification
- 24-hour pharmacist is not required.
- 4 pharmacist.

Tx Xray rule
- Avoids pre-operative X-rays in patients under 60 years of age except pathologies that require them.
- Effect on costs.
- Effect on queue management.

Blood bank management.
- Multi-phase plan for pre-operative consultation.
- Cancellations due to lack of blood have decreased.
- Time between order and surgery has decreased.

Cervical cancer multiorder.
- Alert in case of alarming results.
- Reduced gynecologist time visiting.
- Automated sending of letters in case of normal results.

Scheduling system
- Availability to schedule from any part of the Department (not only the hospital)
- The patient can make an appointment from any location, avoiding travel time
- High specialisation is not required for scheduling appointments
- Simplifies the management of human resources: Higher efficiency due to higher versatility
- Allows providers to schedule appointments
- Allows establishing complex scheduling processes, making several people responsible
- Clinical information related to the appointment

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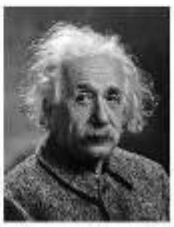
"The definition of insanity is doing the same thing over and over again and expecting different results".

Albert Einstein



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Presentation by Prof. Dr Antoine Geissbuhler

Easing transitions in healthcare

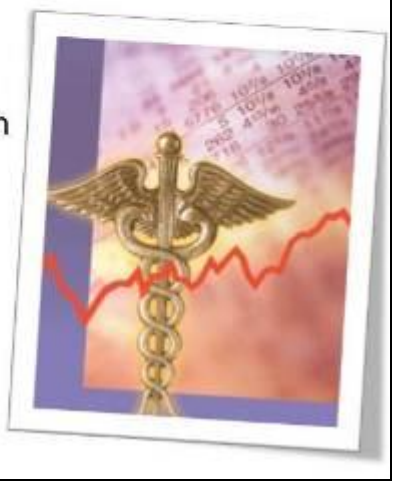
experiences from the Geneva Health Information Exchange and EU projects

Prof. Antoine Geissbühler, MD

Division of eHealth & telemedicine, Geneva University Hospitals
Past-president, International Medical Informatics Association
Board Member, Health On the Net Foundation

Key points

- Most healthcare systems are broken
- Health IT is now expected to fix them
- Institutional healthcare information systems are reaching their limits
- The IT landscape is being transformed by mobile, collaborative, and consumer-driven computing



Supporting evidence is not new

Physician Inpatient Order Writing on Microcomputer Workstations

Effects on Resource Utilization

William M. Tierney, MD; Michael E. Miller, PhD; J. Marc Overhage, MD, PhD; Clement J. McDonald, MD

JAMA, January 20, 1993—Vol 269, No. 3

Conclusions.—A network of microcomputer workstations for writing all inpatient orders significantly lowered patient charges and hospital costs. This would amount to savings of more than $3 million in charges annually for this hospital's medicine

-13%

Outcome improvement is linked to usage

Clinical Information Technologies and Inpatient Outcomes

A Multiple Hospital Study

Ruben Amarasingham, MD, MBA; Laura Plantinga, ScM; Marie Diener-West, PhD; Darrell J. Gaskin, PhD; Neil R. Powe, MD, MPH, MBA

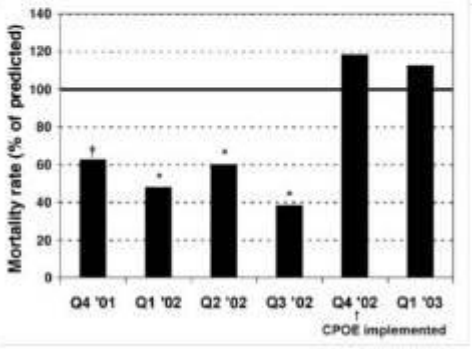
Arch Intern Med. 2009;169(2):108-114

Conclusion: Hospitals with automated notes and records, order entry, and clinical decision support had fewer complications, lower mortality rates, and lower costs.

Careful implementation is important

Unexpected Increased Mortality After Implementation of a Commercially Sold Computerized Physician Order Entry System

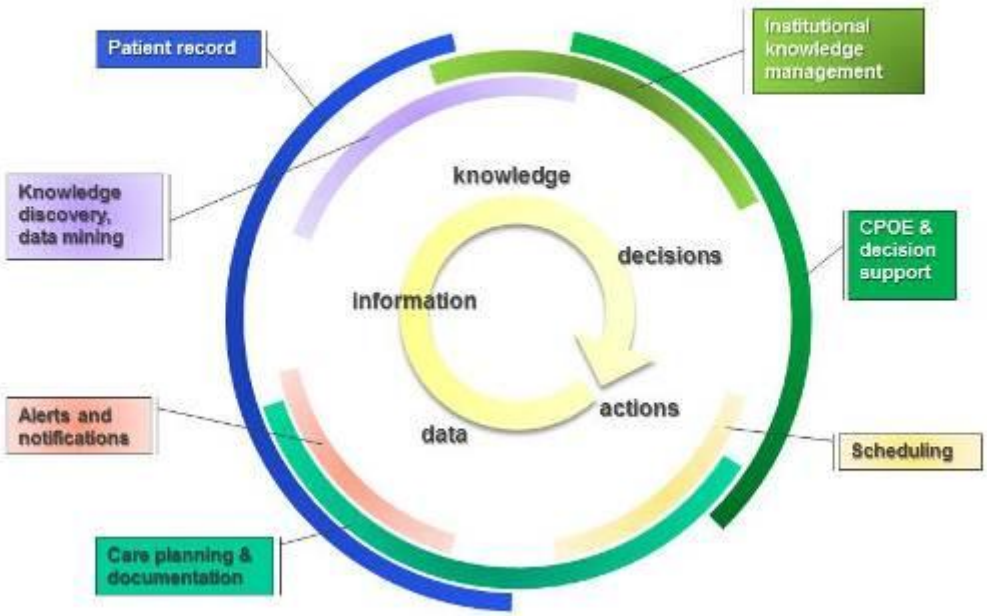
Yong Y. Han, MD*‡; Joseph A. Carcillo, MD*‡§; Shekhar T. Venkataraman, MD*‡§; Robert S.B. Clark, MD*‡§; R. Scott Watson, MD, MPH*‡§‖; Trung C. Nguyen, MD*‡; Hülya Bayir, MD*‡; and Richard A. Orr, MD*‡§



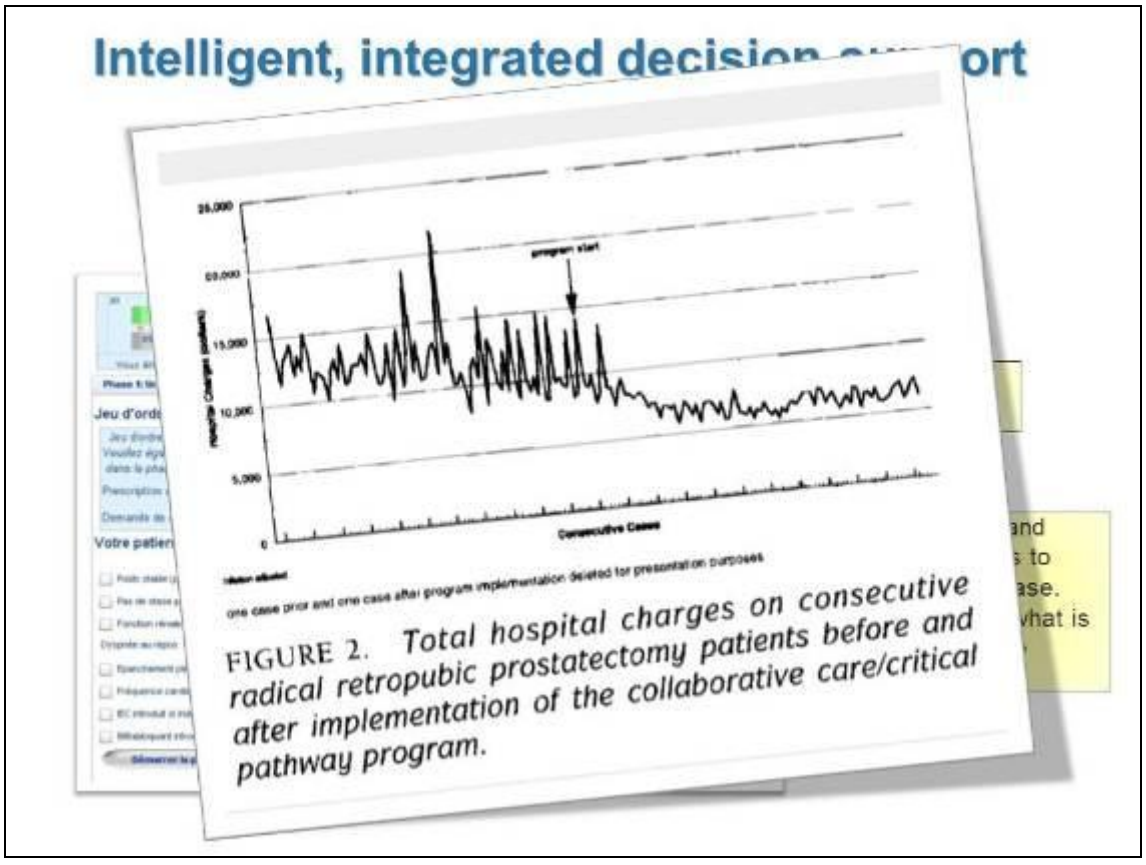
Pediatrics 2005;116:1506-1512

« e-iatrogeny »

Hospital IT: towards learning institutions




Real-time patient flow, logistics


Intelligent, integrated decision
ort
program start
Consecutive Cases
FIGURE 2. Total hospital charges on consecutive radical retropubic prostatectomy patients before and after implementation of the collaborative care/critical pathway program.

But transitions remain dangerous

Lost in Transition: Challenges and Opportunities for Improving the Quality of Transitional Care
Eric A. Coleman, MD, MPH, and Robert A. Berenson, MD

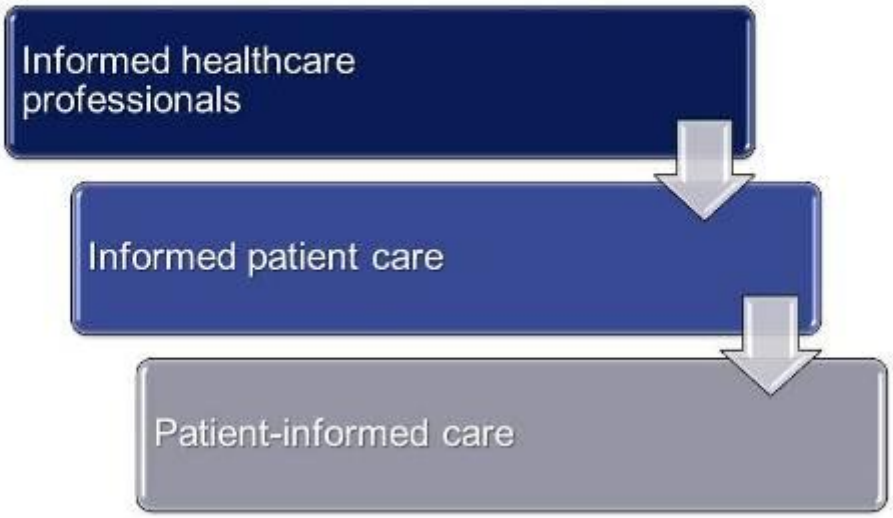
Medical Errors Related to Discontinuity of Care from an Inpatient to an Outpatient Setting
Carlton Moore, MD, Juan Wisnivesky, MD, Stephen Williams, MD, Thomas McGinn, MD

Gaps in the continuity of care and progress on patient safety
Richard I Cook, Marta Render, David D Woods

Improve continuity of care
Geneva Health Information Exchange

- Shared dashboards
  - Care coordination for chronic diseases & complex patients
- Patient summary
- Shared treatment plan
  - Between prescribers
  - In collaboration with pharmacists, home care nurses, and patients

An evolving professional-patient relationship



eHealth 2.0

- Social web tools
  - forums, communities, PatientsLikeMe
  - push: alerts, reminders, eCompliance
- Patient empowerment
  - reputation and trust becomes key
- Collective wisdom competes with established knowledge sources
  - information prescription

The paradigm

- Simple, agile apps
- Mobile, connected
- Context-sensitive
  - Activity, location, vital sign, emotional state…
- Based on robust infrastructures
  - Open architectures
  - Interoperability standards

The Alpine Space

alias

NATHCARE
Networking Alpine Health for Continuity of Care

Europe-wide projects

epsos
EUROPEAN PATIENTS
SMART OPEN SERVICES

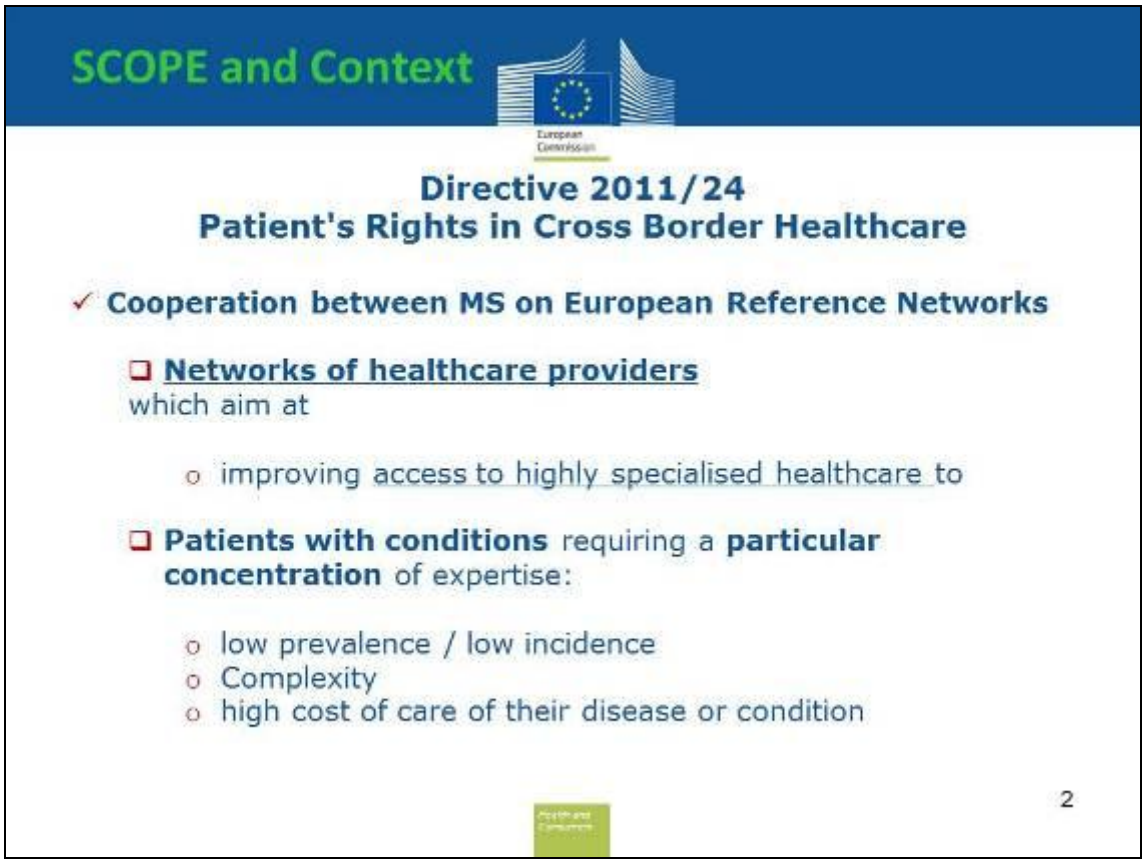
Challenges

- Fostering trust is a central issue
  - For citizens and patients
  - For care professionals
- Towards patient-informed care
  - Truly give the voice to the patient
- Technical and semantic interoperability
  - Across systems, languages and national barriers
  - Interoperability of access and privacy models is key
- Capacity building is essential
  - Certification of health informatics professionals

Thank you for your attention !

ag@hcuge.ch

Presentation by Ms Nathalie Chaze

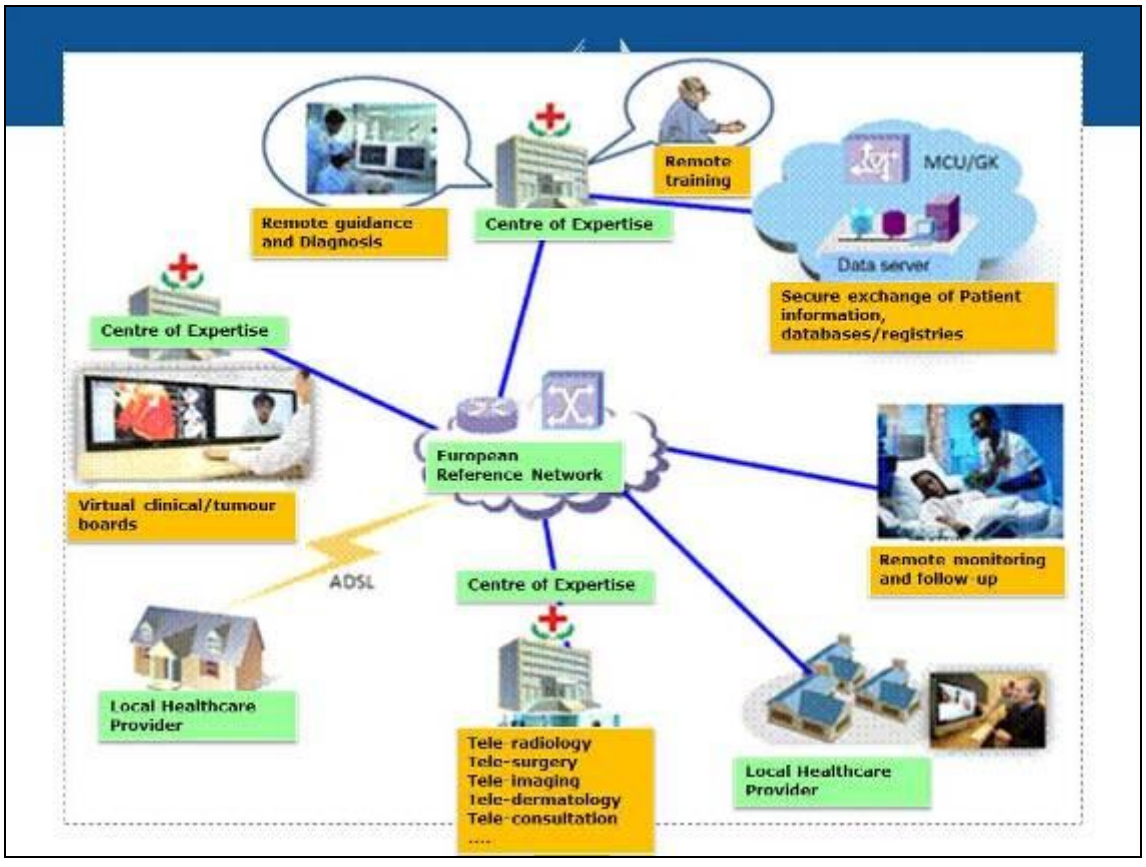


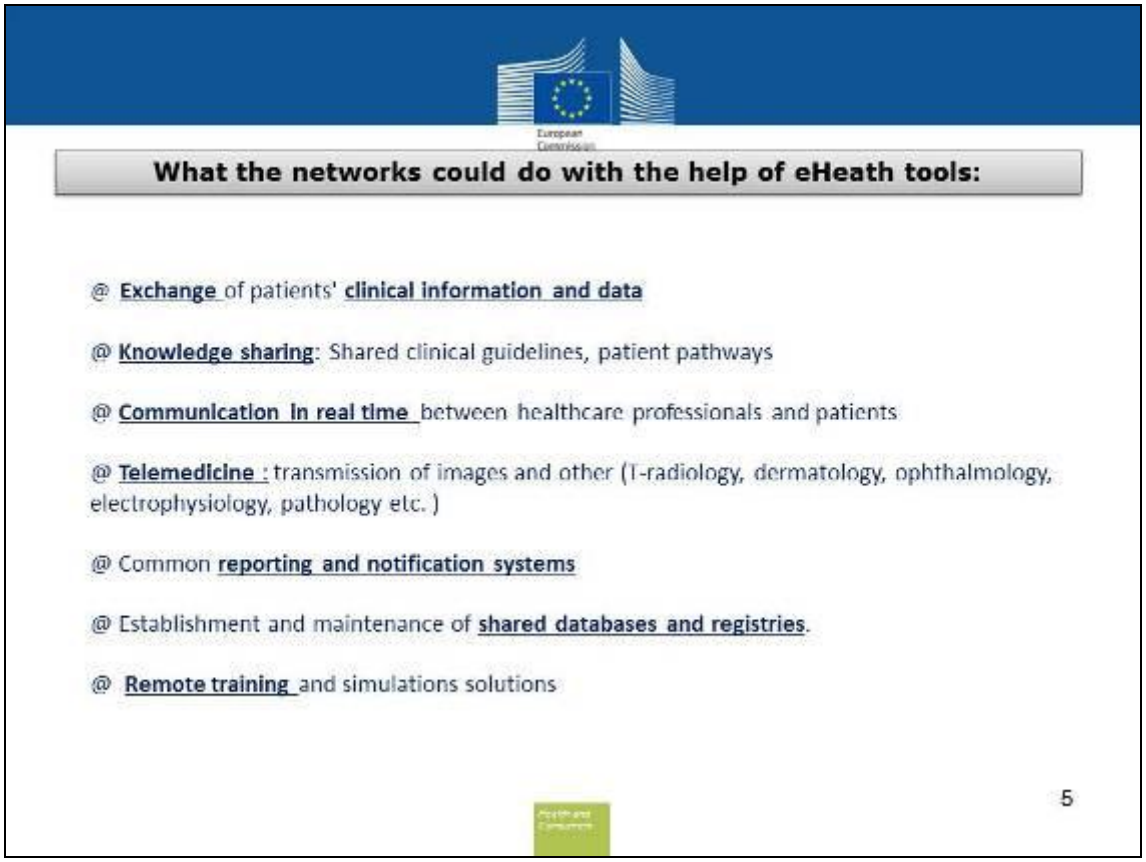
Objectives of the Networks & eHealth

The objectives of the Networks

- ✓ exploiting innovations in medical science and health technologies
- ✓ facilitate mobility of expertise, virtually or physically
- ✓ develop, share and spread information, knowledge and best practice
- ✓ foster developments of the diagnosis and treatment within and outside the networks

3




What the networks could do with the help of eHeath tools:
@ Exchange of patients' clinical information and data
@ Knowledge sharing: Shared clinical guidelines, patient pathways
@ Communication in real time between healthcare professionals and patients
@ Telemedicine : transmission of images and other (T-radiology, dermatology, ophthalmology, electrophysiology, pathology etc.)
@ Common reporting and notification systems
@ Establishment and maintenance of shared databases and registries.
@ Remote training and simulations solutions
5


eHealth solutions and tools to facilitate this project
✓ Identification of needs:
✓ Interoperable and semantically compatible ICT systems
✓ Shared information and management system
✓ Assessing existing and already tested or recognised IT tools
✓ Assessing the Feasibility of the setup of a comprehensive IT platform (one shop approach)
6

Presentation by Prof. Dr. Georges De Moor

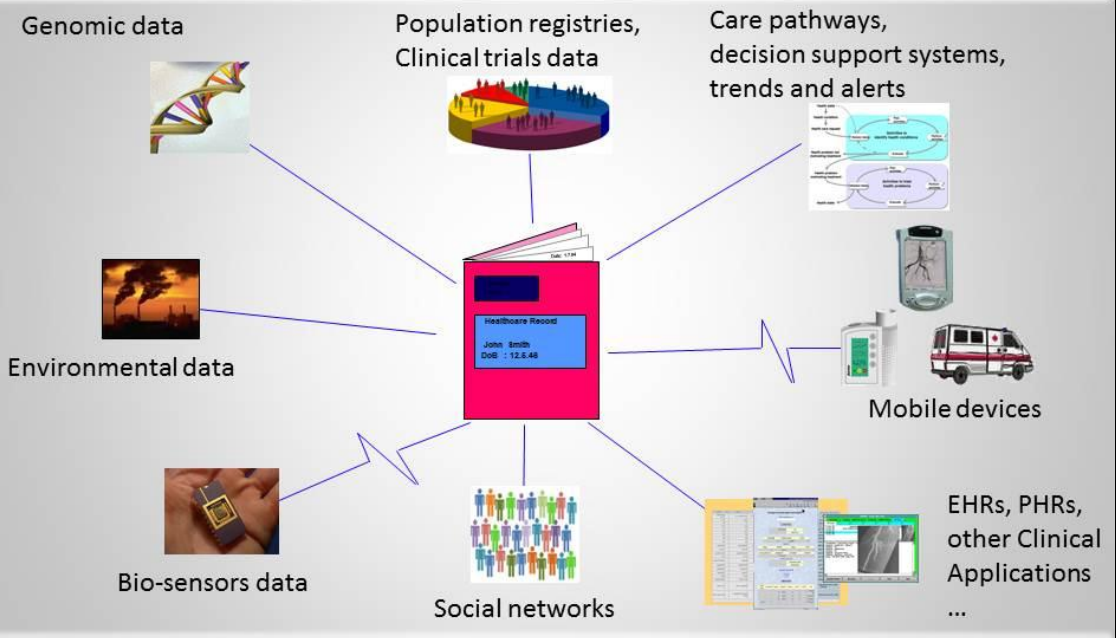
The Road towards the effective Use of Health Data

(the SemanticHealthNet project)

Prof. Dr Georges De Moor
Prof. Dr. Dipak Kalra

RAMIT, Ghent University, Belgium
University College London, UK
The EuroRec Institute

Capture, combine, co-interpret data from diverse Information Sources



Semantic interoperability: key stakeholders

- Patients, patient associations
- Clinicians, professional associations, clinical specialty associations
- Healthcare provider organisations
- Healthcare payers: public health authorities, insurers
- Health ministries
- Public health organisations
- EHR system vendors, medical device vendors, ICT infrastructure vendors, Industry associations
- Pharma, research organisations
- Standards Development Organisations (SDOs)
- The European Commission, ONC, WHO, OECD...

For cross-border patient care, population health, comparisons, surveillance, research, products and services

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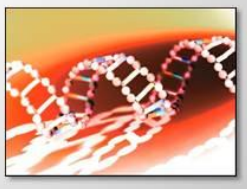
Electronic Health Records (EHRs): trends

- **Patient-centered** (gatekeeper?), life long records
- Multi-disciplinary / **multi-professional** / participative
- Transmural, distributed and **virtual**
- **Structured and coded** cf. semantic interoperability
- More **metadata** (tagging and coding) at a "granular " level
- **Intelligent** cf. decision support, clinical practice guidelines...
- **Predictive** e.g. genetic data, physiological models
- More **sensitive** content (cf. privacy protection!)
- **Personalised**
- **Integrative**



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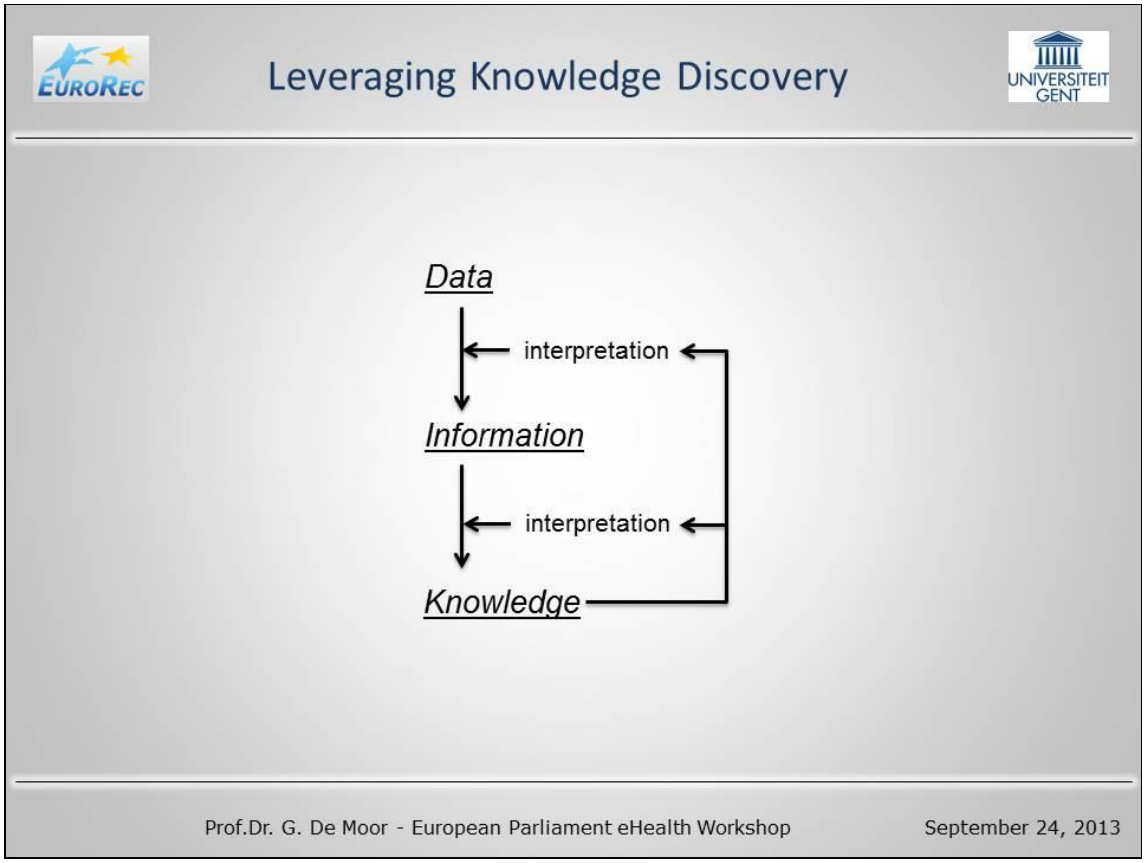
Leveraging Knowledge Discovery
Data
interpretation
Information
interpretation
Knowledge
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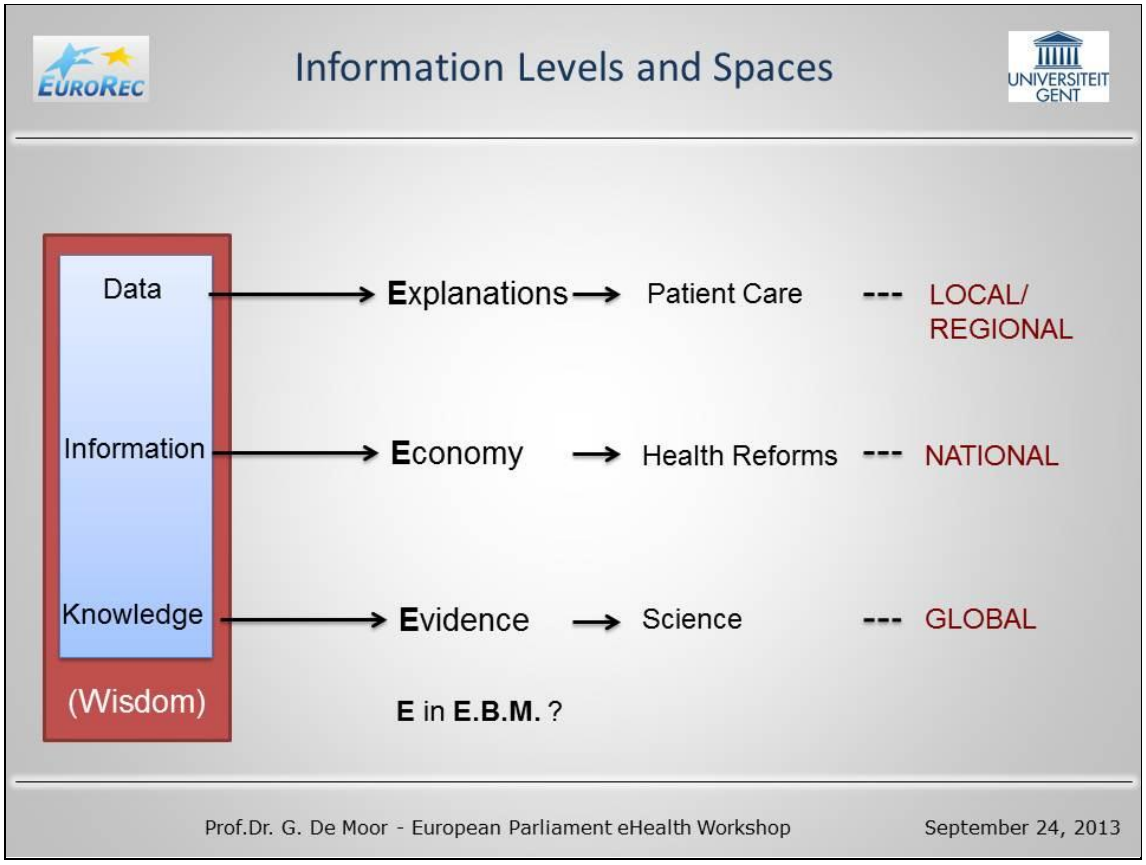
Information Levels and Spaces
Data
Information
Knowledge
(Wisdom)
Explanations
Patient Care
LOCAL/ REGIONAL
Economy
Health Reforms
NATIONAL
Evidence
Science
GLOBAL
E in E.B.M. ?
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Drivers for Semantic Interoperability

- The Drivers for **Integrated EHRs** and **Semantic Interoperability** are:
  - Manage increasingly **complex** clinical (multi professional) care
  - Support collaboration between **multiple locations** of care delivery
  - Deliver **evidence based** health care
  - Need for intelligent **decision support** in medicine
  - Input to and exploitation of **biomedical research**
  - Improve **safety and cost effectiveness** of health care
  - Enrich **population health management** and **prevention**
  - Empower and **involve citizens**

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Semantics in Medicine and Health

- Natural Languages (in Europe: 23 official languages!)
- Structured versus unstructured (narrative) records/messages
- Concepts and relations between concepts (many views!)
- Terms (many medical terminologies!)

- Ontologies
- Information Models (e.g. EHR reference models…)
- Semantic resources (detailed clinical models/ clinical archetypes/ templates)

How to represent and convert "meaning" from a "human understandable" form in a "computer procesable" form?

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Essential needs for Semantic Interoperability

- Guideline and decision support systems, notification and alerting components, and analytic tools need to process integrated health data drawn from multiple EHR systems in a consistent manner
- Intelligent personal health guidelines interoperating with PHRs and EHRs need to support the centering of care on patients
- Health services, insurers and public health bodies need fine grained activity and outcome data to inform service planning, and prevention/wellness programmes
- New generation personalised medicine, underpinned by 'omics sciences and translational research such as the VPH, needs to integrate EHRs with data from research: fundamental biomedical science, clinical and population health research, and clinical trials…

ARGOS: A Trans Atlantic Project

"The adoption, use and interoperability of EHRs has become a major focus of European and US eHealth policies, strategies and investments"

IOS Press: editor Georges J.E. De Moor

Foreword by Herman Van Rompuy - E. Council President

Memorandum of Understanding signed by:
- Neelie Kroes - Eur. Commission Vice-President
- Kathleen Sebelius - Secretary of HHS, US

Policy briefs for Transatlantic cooperation
- Certification of Electronic Health Records in the US & Europe
- **Semantic Interoperability**
- The Virtual Physiological Human
- A Common Approach towards Measuring Adoption, Usage and Benefits of eHealth
- eHealth Informatics Workforce challenges

Semantic Interoperability: Recommendations

Nine strategic actions that now need to be championed, as a global mission

1. Establish good practice
2. Scale up semantic resource development
3. Support translations
4. Track key technologies
5. Align and harmonise standardisation efforts
6. Support education
7. Assure quality
8. Design for sustainability
9. Strengthen leadership and governance

SemanticHealthNet

- European Commission sponsored a Network of Excellence in Semantic Interoperability
  - Dec 2011 to Nov 2014
  - 3m Euro
  - 17 Partners
  - > 40 internationally recognised (clinical) experts

The challenge of semantic interoperability

- A global and singular representation for each distinct clinical expression is not realistic, and may not be desirable
  - different representations might be optimal for different use cases
  - different levels of detail, different levels of granularity, different kinds of data entry options might be suitable for different clinical settings
  - clinical practice is too diverse, and evolving, for such fine grained standards to be set or adopted
  - different cultures, and natural languages, may need to represent clinical meaning differently
  - patients and carers might need to enter and read a different level of jargon from health care professionals

Suspected heart failure caused by ischaemic heart disease

- Three heterogeneous representations of the same statement
- Three different atomic information entities

SemanticHealthNet concept and objectives

- Leverage a clinically-driven work-plan
  - heart failure, exemplifying chronic disease management, evidence based care and shared care: focus on individuals who are patients
  - cardiovascular prevention, exemplifying public health and national / global strategies: focus on populations who are citizens
- Bring together the globally best of breed semantic resource producers including commitment from the top SDOs
- Draw on a rich body of expertise including past EU projects in the EHR, semantics, semantic interoperability, wide-scale record sharing and eHealth governance + the new projects
- Maximise stakeholder engagement and resourced commitment to ensure we focus on usable and useful and affordable solutions
- Robust business approach: people, processes, products, platforms
- Develop a scalable, sustainable, well-governed European Virtual Organisation for semantic interoperability

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Industry "soundbites"

- Slowly but steadily industry is realising the importance of Semantic Interoperability (S.I.), although many don't understand fully what this involves.
- Semantic Interoperability will ... increase the Business Intelligence capabilities and make our systems more competitive.
- Industry lacks a clear growth path and guidance on the implementation of Semantic Interoperability.
- As long as industry is not actively involved in engineering the solution, the whole effort is deemed to fail.
- S.I. will benefit the user much more than the vendor but in the long run it will increase competition and therefore improve the quality and competitiveness of the systems.

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SHNet sustainability activities

- Work with the clinical, public health and patient stakeholders to define a formal process for the governance of semantic interoperability resources
- Design an overall **info-structure** (a virtual platform and services) that can publish or reference resource "bundles" and manage their maintenance
- Specify how EHR systems, public health systems, CRO systems etc. should ensure consistent and verifiable adoption of semantic interoperability resources
- Develop a business plan for **certifying semantically interoperable systems**
- Liaise with industry, professional bodies, ministries, insurers, SDOs on business drivers and incentives to foster rapid adoption of semantic interoperability resources and certification of such systems

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End

THANK YOU!

Prof. Dr. Georges J.E. De Moor

georges.demoor@ugent.be
http://www.eurorec.org

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Background material (14 slides)

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1. Establish good practice

- Develop criteria for assessing the quality of semantic resources
- Establish projects to develop good practice in the design and validation of clinical models bound to terminologies and ontologies and guideline-based pathway models
- Ensure projects are well-grounded and practical relevance to the management of clinical conditions of national and international priority
  - e.g. chronic conditions, like heart failure
  - e.g. population health issues, like childhood obesity
- BUT: still adopting a holistic - not a piecemeal - approach

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2. Scale up semantic resource development

- Develop sustainable approaches to scaling this up across disease areas and stakeholders, importantly with patients
- Showcase convincing cases: successful pilots
- Ensure wide-scale clinical engagement during the design and piloting of clinical models and terminology
- Involve other stakeholders who will create or use health data
- Address wider health system needs and support future research

3. Support translations

- Resources need to be multi-lingual to support cross border shared care, cross-border health planning and global scale research
- Specifically consider the challenges of supporting multiple levels of "clinical jargon" for different stakeholders including patients and caregivers
- Develop and validate mappings amongst the different terminology systems in use by different communities

4. Track key technologies

- Monitor the evolving capability and potential uses of natural-language technologies,
  - including the reliability of such approaches for population-level and patient-level decision making
- Similarly track technology for automatic encoding of free text or diagrammatic data entry

5. Align and harmonise standardisation efforts

- Having understood the clinical modelling that is really needed...
- conduct a gap analysis of
  - interoperability standards
  - informatics tools
  - knowledge representation formalisms
  - clinical content
- which are needed to support this scaling up, including
  - embedding such resources within EHR systems
  - providing formal recommendations to SDOs on the scope and level of detail that is needed and would be usable

6. Support education

- Invest in education that enables clinical and patient/citizen acceptance, creation and use of knowledge-rich EHRs
  - to create good quality (faithful, accurate) and re-usable information
  - to better trust and use information from external sources
  - to take better advantage of semantically interoperable systems and services
- Grow capacity in health informatics expertise including in semantic interoperability

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7. Assure quality

- Support research efforts on
  - what parts of, and how much of, a health record is useful to structure/code/make interoperable: focus on benefits versus effort
  - the quality assurance of semantic resources when used together: clinical and technical validation
- Collaborate across countries on
  - common conformance criteria for systems and system components
  - practical methods for testing interoperability (e.g. for vocabularies, ontologies)
  - validating the correctness and consistent usability of solutions (including human factors)

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8. Design for sustainability

- Develop and align with a business model to justify strategic investments in this field
- Understand the value propositions (ROI) for key stakeholder groups and decision makers, including
  - clinicians, patients, residents, caregivers
  - EHR system vendors
  - healthcare provider organisations
  - health authorities
  - insurers
  - academic, bio-science and pharma research
  - standards developers
- Find win-wins and relevant incentives

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9. Strengthen leadership and governance

- Strong leadership within and across all relevant stakeholders will be essential to drive these actions and oversee benefits realisation
- In the longer term a governance organisation needs to be nominated
  - to support, co-ordinate and quality manage the future development of semantic interoperability resources for health
  - to develop an action plan for future research and educational investments

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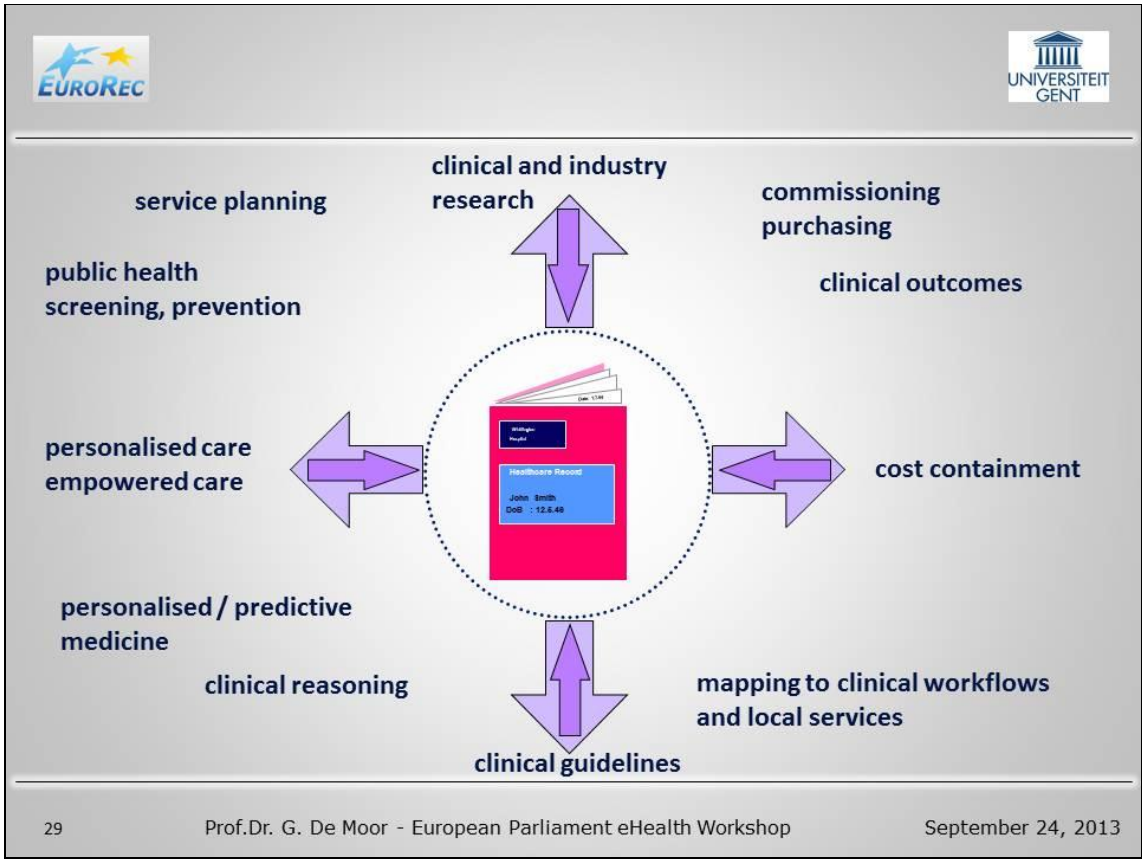
clinical and industry research
service planning
commissioning purchasing
public health screening, prevention
clinical outcomes
personalised care empowered care
cost containment
personalised / predictive medicine
clinical reasoning
mapping to clinical workflows and local services
clinical guidelines
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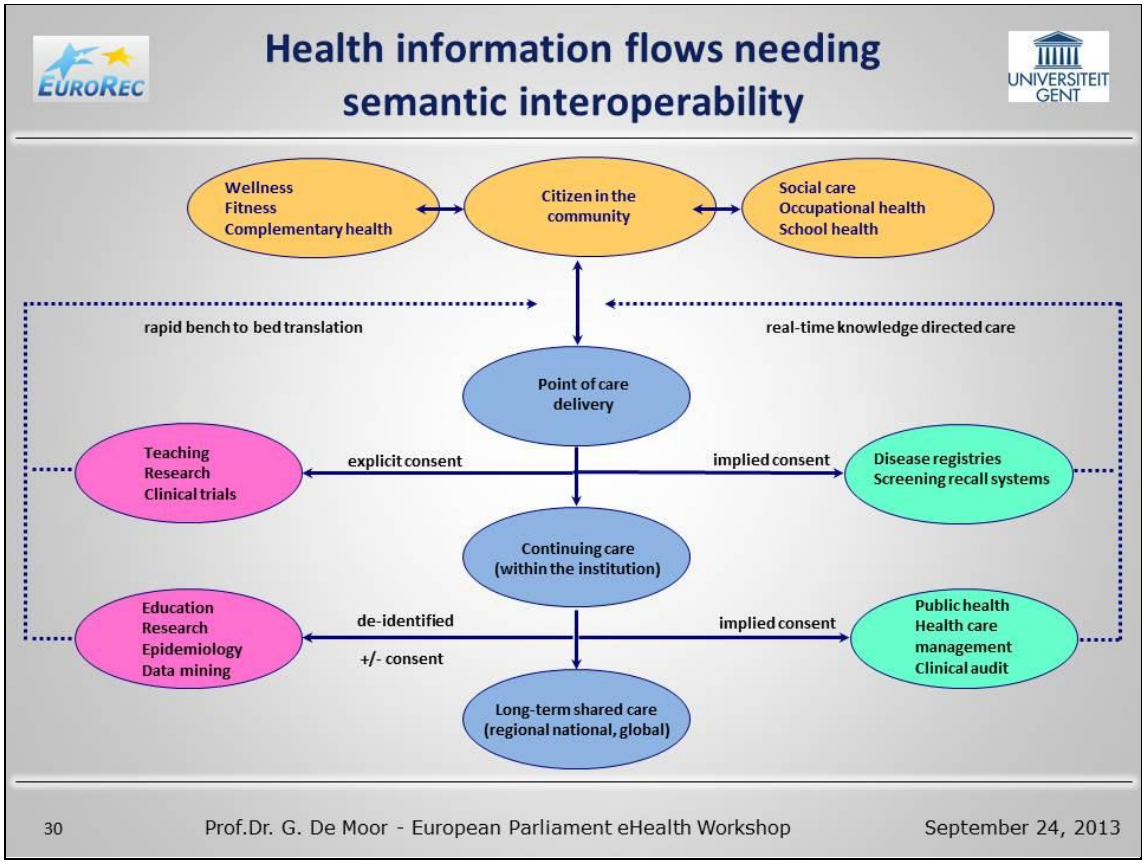
Health information flows needing semantic interoperability
Wellness
Fitness
Complementary health
Citizen in the community
Social care
Occupational health
School health
rapid bench to bed translation
real-time knowledge directed care
Point of care delivery
Teaching
Research
Clinical trials
explicit consent
implied consent
Disease registries
Screening recall systems
Continuing care (within the institution)
Education
Research
Epidemiology
Data mining
de-identified
+/- consent
implied consent
Public health
Health care management
Clinical audit
Long-term shared care (regional national, global)
30
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Artefacts used to represent clinical meaning

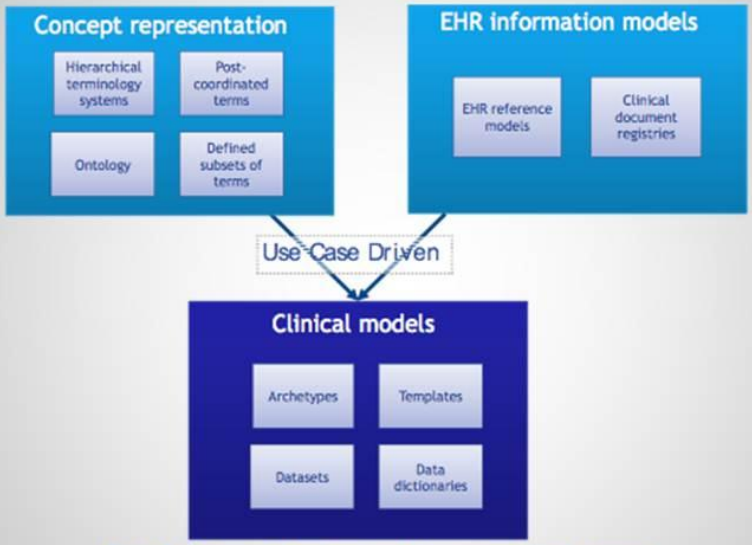

Figure 5 - Overview of artefacts used to represent clinical meaning

Source: The Vision of the eHealth European Interoperability Framework (2013), Deloitte and DG Connect

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An example case for investing in interoperable EHRs

- 80% of EU spending on healthcare goes on the chronically ill
- Cardiovascular diseases alone cost the EU Economy €192 billion annually and accounts for 57% of healthcare costs
  - contributes to 21% of productivity losses and 42% of deaths in the EU
- A recent study across 3 EC countries showed that home tele-monitoring pilots have delivered
  - 26% reduction in hospital days per patient
  - 10% overall cost savings through nurse remote support
  - 15% improved survival rates

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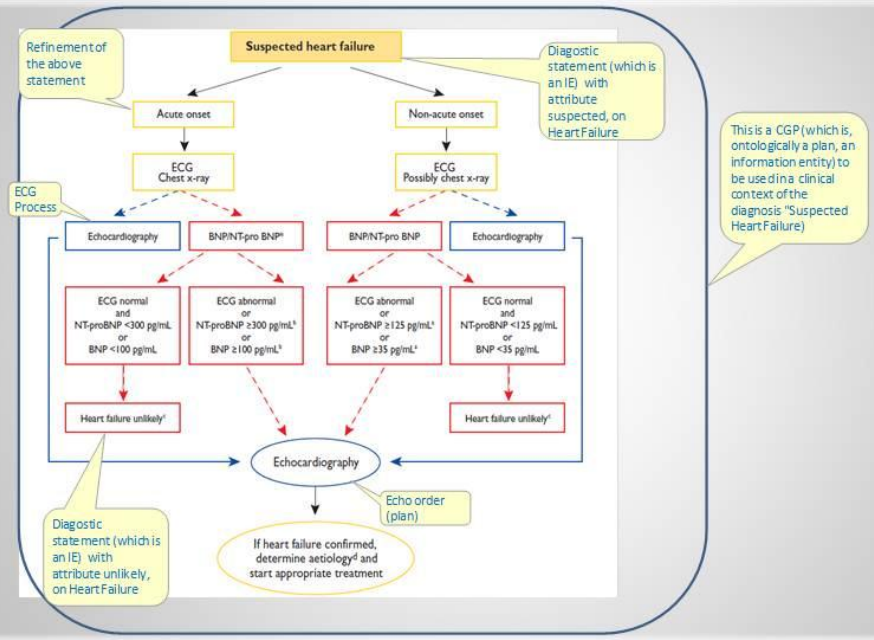
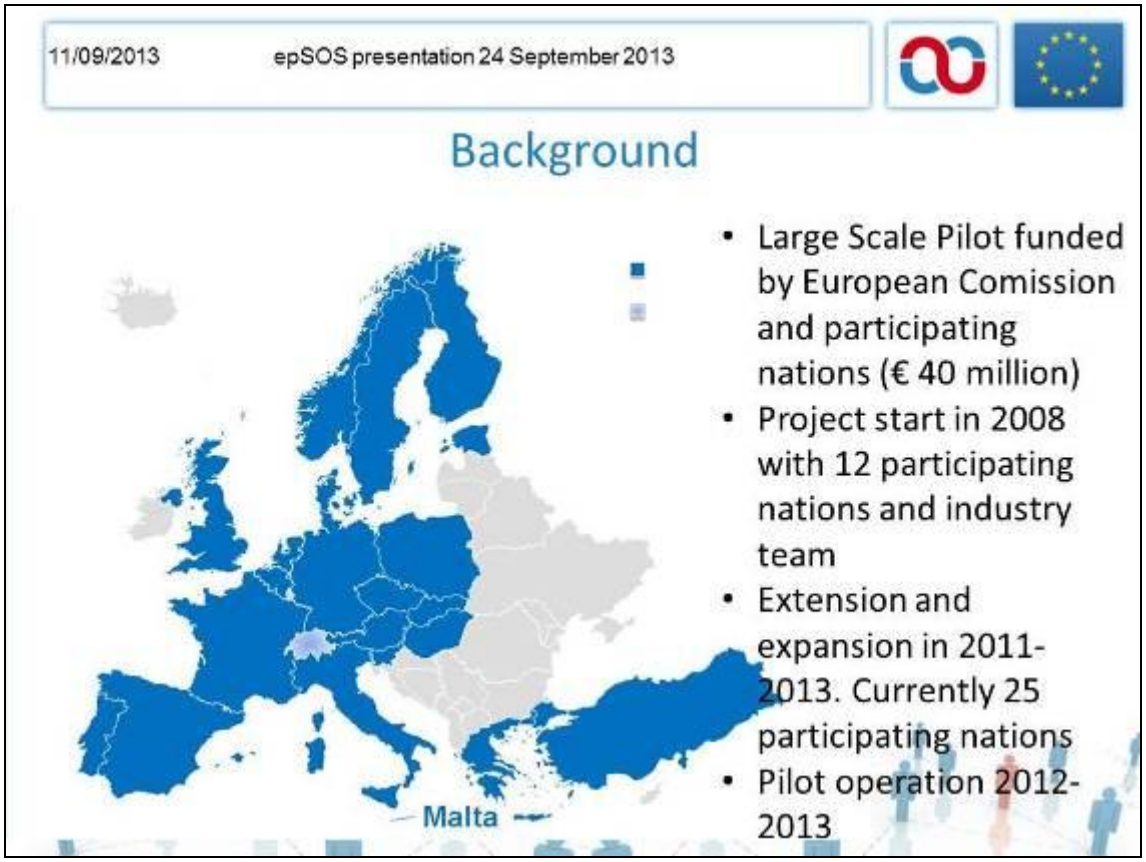
Semantic interoperability resource priorities

- Widespread and dependable access to maintained collections of coherent and quality-assured semantic resources
  - clinical models, such as archetypes and templates
  - rules for decision making and monitoring
  - workflow logic
- which are
  - mapped to EHR interoperability standards
  - bound to well specified multi-lingual terminology value sets
  - indexed and correlated with each other via ontologies
  - referenced from modular (re-usable) care pathway components

Example of a Representation of a Clinical Practice Guideline



Presentation by Ms Lisa Hagberg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Background
Malta
• Large Scale Pilot funded by European Comission and participating nations (€ 40 million)
• Project start in 2008 with 12 participating nations and industry team
• Extension and expansion in 2011-2013. Currently 25 participating nations
• Pilot operation 2012-2013


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Page 4
Scope and Aim
• Provide concrete cross border services that ensure safe, secure and efficient medical treatment for citizens when travelling across Europe
• Focus on services close to the patient:
– Patient summary
– ePrescription and e-dispensation
• Build on existing national eHealth projects and use experiences and knowledge from all Member States


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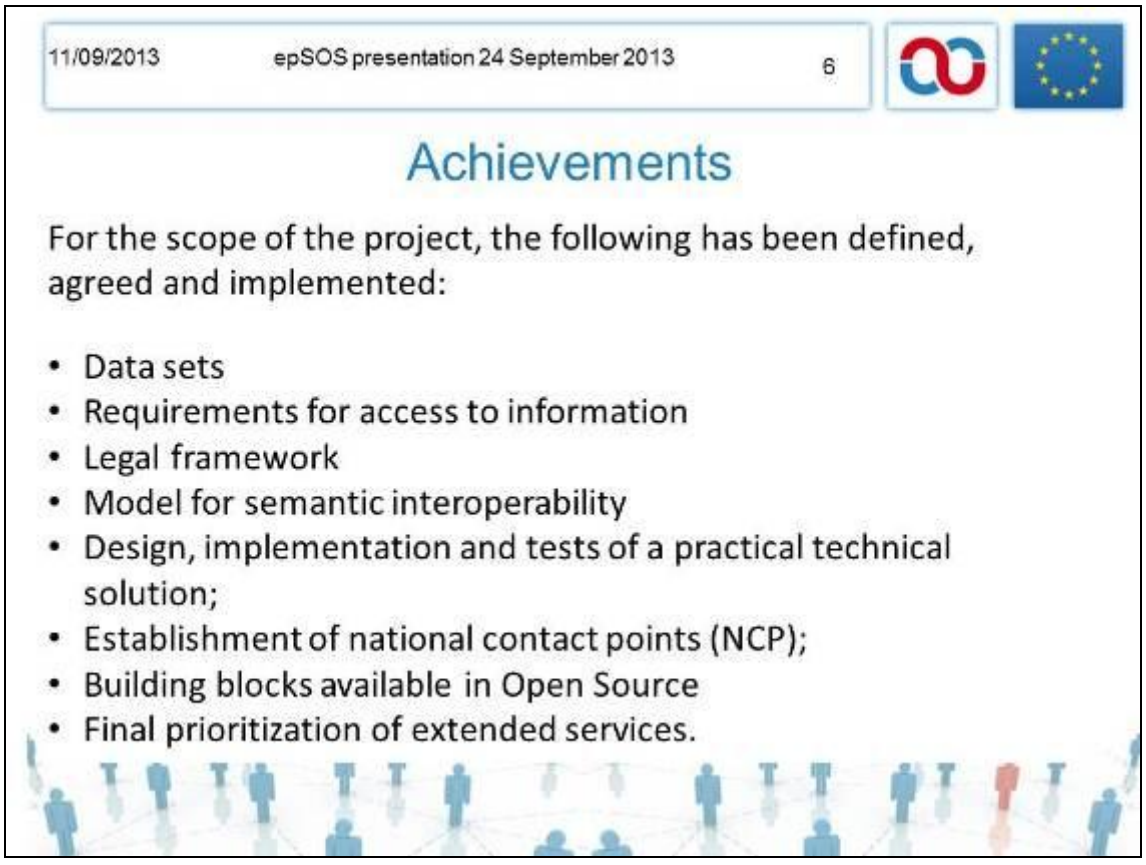
5
Main Achievements
• Services for exchange of ePrescriptions and patient summaries in cross-border setting.
• Currently six participating nations in live mode, more on the way
• Support to the EC in providing all EU MS, through the eHealth network, with a non-exhaustive list of data to be included in patient summary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6
Achievements
For the scope of the project, the following has been defined, agreed and implemented:
• Data sets
• Requirements for access to information
• Legal framework
• Model for semantic interoperability
• Design, implementation and tests of a practical technical solution;
• Establishment of national contact points (NCP);
• Building blocks available in Open Source
• Final prioritization of extended services.

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Added value

In addition to the concrete achievements, epSOS:

- Supports overall eHealth progress and convergence in Europe
- Tests national solutions against an interoperability framework.
- Contributes to standards and profiles
- Provides practical and theoretical experience of cross-border services which has supported related processes

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Status of pilot operations


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Pilot plans 2013
Patient summary service
• Estonia, Hungary, Luxembourg, Malta, Portugal, Slovenia, and Turkey (7)
ePrescription service
• Croatia, Denmark, Finland, Hungary, Spain and Sweden (6)


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Challenges & Opportunities use of services
• Large scale deployment necessary to generate the use of service
• Use of services necessary to motivate large scale deployment
• Catch 22 – creates a need to revise project strategies based on reality
• Political decisions are necessary


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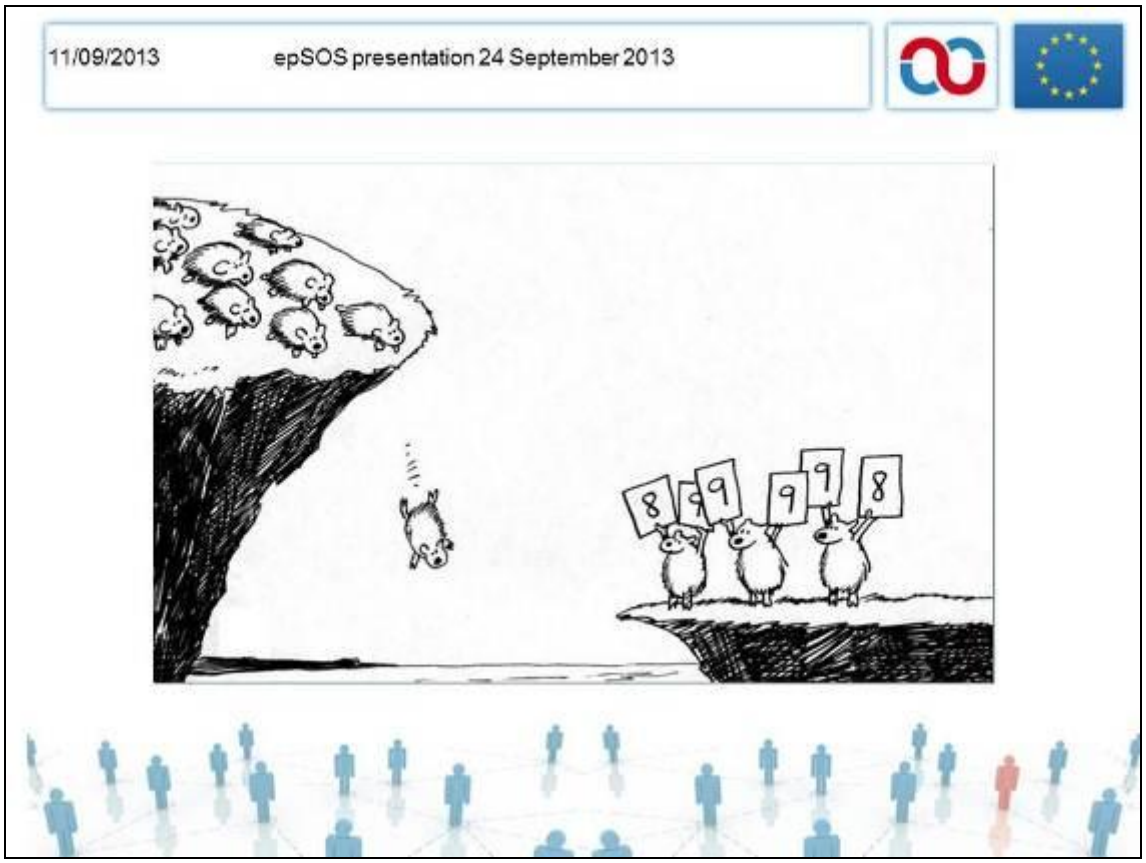
Working towards sustainability
• Focus on open source – supporting market opportunities
• Close ties and cooperation with the policy level
• Engagement with SDOs, PDOs, industry and other stakeholders
• Exploiting the potential provided by the epSOS network in defining good practices and reusability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9
8


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What to expect in the future
• Continued interest in participation from new countries
• epSOS services integrated in national infrastructure - services here to stay
• Work continues based on epSOS. For example, Nordic ministerial eHealth cooperation continues to build on project results
• Ongoing political, strategic and practical discussions within the EU and its members to enable sustainability of project achievements


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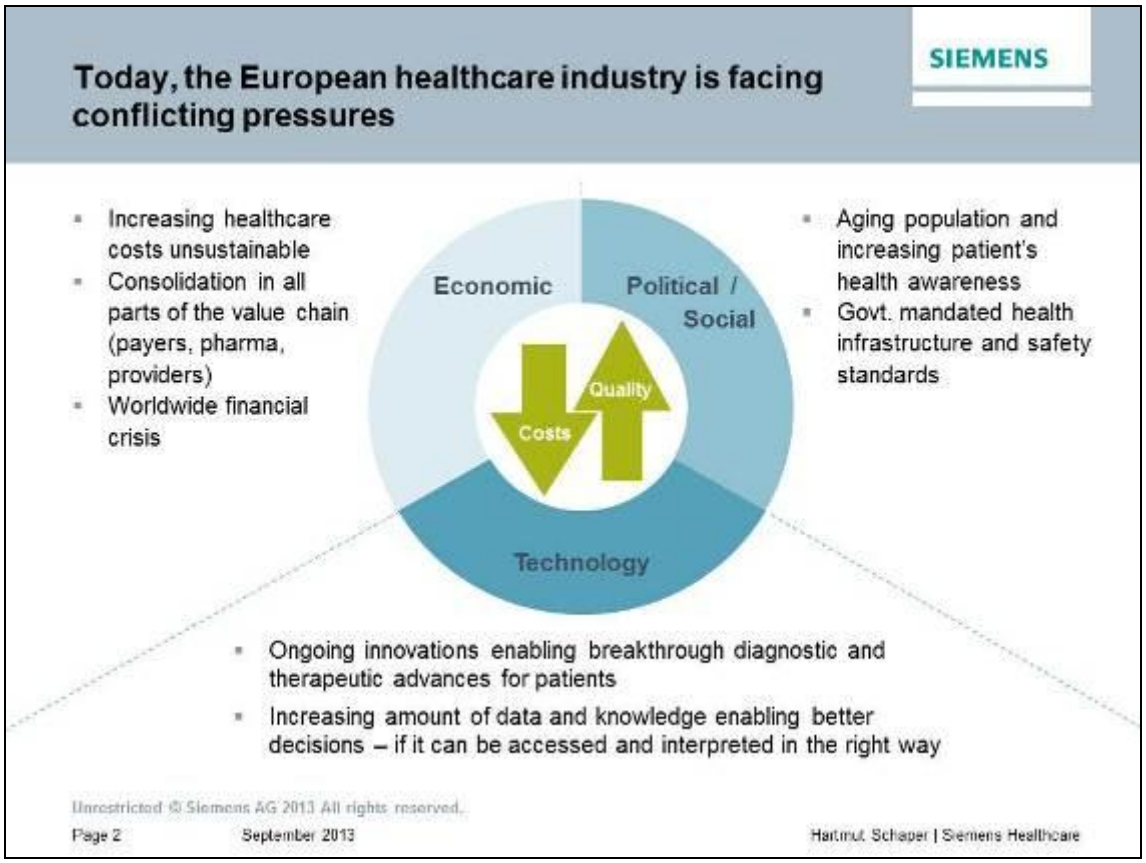
Thank you for your attention!
epsos

Presentation by Mr Hartmut Schaper



e-Health can be a key lever to address these challenges

SIEMENS

1	Right Living	▪ Targeted disease prevention ▪ Data-enabled adherence programs
2	Right Care	▪ Alignment around proven pathways ▪ Coordinated care across providers
3	Right Provider	▪ Giving care in the right care setting ▪ Reducing re-admission rates
4	Right Value	▪ Payment innovation and alignment ▪ Provider performance transparency
5	Right Innovation	▪ Accelerating discovery in R&D ▪ Improving clinical trial operations

→ Enabled by e-Health

The exploding amount of patient-related data offers the chance to continually improve care

SIEMENS

- Making data from different sources available across departmental and sectorial borders in a secure way needs to be the base infrastructure
- Generating and accessing knowledge out of this data becomes even more important – for single patients (personalized medicine) as well as for whole populations (care management)
- Efficient collaboration beats isolated optimizations – already practiced today in oncology (e.g. tumor boards) but should and can be extended based on the right infrastructure and knowledge

The patient needs must be the center of all critical trade offs

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Optimal patient care

Maximum of information about patient improves quality of care

Data privacy

Minimum of information about patient protects privacy

EU-wide framework for standards should define boundary conditions

- The patient should have options to choose the right amount of data generation and access within a protective enough framework
- Providers should have options to choose the optimal implementation (e. g. managed services, cooperation with other care providers) within a flexible enough framework

New technologies will continue to optimize care … in the right regulatory framework

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Big data and advanced analytics

Mobility and augmented reality

Remote monitoring and telehealth

Cloud computing

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Siemens e-Health approach

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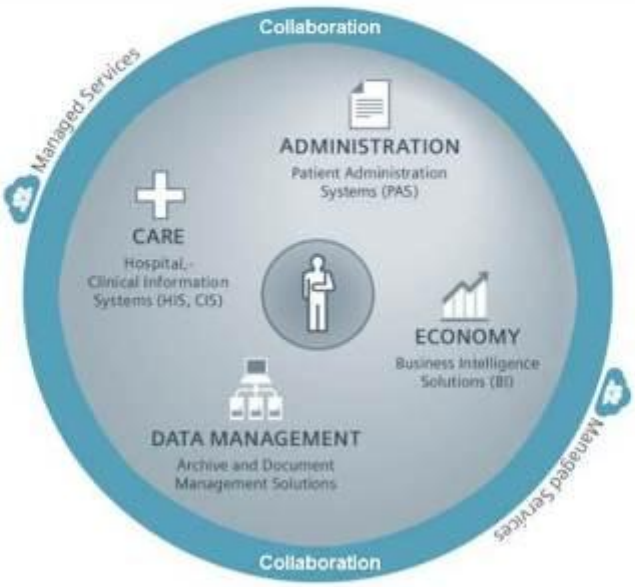
Siemens portfolio covers all major e-Health topics based on the patient's needs



In Germany, Siemens' e-Health solutions enable a paperless hospital through innovative IT

SIEMENS

Hamburg-Eppendorf University Hospital (UKE), Germany

UKE: no paper in use any more:

- Provides a consistent workflow-supporting Electronic Patient Record (EPR) and integrates individual departmental requirements
- First European hospital that achieved Stage 7 EMRAM* award by HIMSS** Analytics Europe in 2011
- Digital patient data can easily be exchanged with other healthcare providers such as ambulatory practices or medical insurances

"With Soarian we have a solid basis for future challenges".

Dr. Peter Cocke, former Head of information technology at the University Hospital Hamburg-Eppendorf

*Electronic Medical Record Adoption Model **Healthcare Information and Management Systems Society

In Denmark, Siemens' e-Health solution enables digital data access across various platforms

SIEMENS

Hospitals of the Midtjyllandt region, Denmark

A region connects and exchanges data:

- Enables authorized parties to access health data and images digitally across various care providers and platforms
- Region-wide data exchange and connection with national image index
- Reports and images made available securely and reliably via a central multimedia archive
- Huge benefits for both, patients and doctors

"With the new solution Denmark has exceeded the international standards and principles in health IT. For the region it means that we have created a platform for further new projects and continue the path for standardization"

Lars Simesen, IT architect of the Region Midtjylland, Denmark

*Healthcare Information and Management Systems Society

In Austria, Siemens' e-Health solution enables digital data access across various providers

SIEMENS

Wiener Krankenanstaltenverbund (Vienna, Austria), one of Europe's biggest health care provider hospital groups chooses Siemens to implement " ELGA ".

Easy and save access to all relevant data of a patient for all health providers involved:

- Innovative technological infrastructure enables ELGA and IHE* compliant exchange of data
- Fast exchange of patient data means better care for patients
- No duplicate treatments mean less cost for the healthcare system

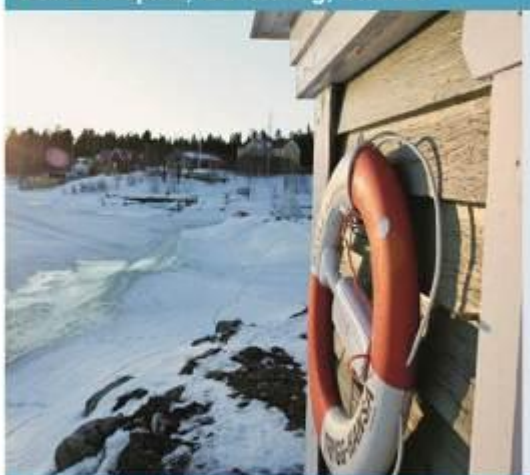
ELGA is an information system based on a government initiative driven by the federal states that bundles existing patient reports no matter where in Austria they were created.

*IHE: Integrating the Healthcare Enterprise (IHE) is a non-profit organization. It sponsors an initiative by the healthcare industry to improve the way computer systems share information

In Sweden, Siemens' e-Health solution helps make the patient safer and the doctor's work more efficient

SIEMENS

Gävle hospital, Gävleborg, Sweden



Remote monitoring can save lives:

- Provides a consistent workflow-supporting Electronic Patient Record (EPR) together with remotely controllable pacemaker*.
- Delivers efficient patient care despite long distances and few hospitals independent of the patients location
- Delivers quick information about the status of the patient such as vital signs for authorized personnel.
- Saves time for patients and physicians
- Patients feel safe and supported

"Combining Soarian with remotely controllable pacemakers means a safer and easier life for the patient, and a more efficient healthcare system."

Dr. Per-Erik Gustafsson, Cardiologist, Gävle hospital, Gävleborg, Sweden

*the pacemaker is not delivered by Siemens

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The Way Forward

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The Way Forward

The digital hospital remains an essential building block towards seamless care delivery and shared knowledge, and is a response to the patient's empowerment.

Smart e-Health solutions will further empower the development of approaches in personalized medicine. The EU should continue to highlight the broader meaning of e-Health in this regard.

Siemens is prepared to engage in the implementation process of clinical information systems and to further develop and improve the e-Health solutions of the future.

Many e-Health concepts are developed and available: It is finally time to implement them together – involving care providers, industry and policy makers.

It is time to further strengthen European e-Health policy as driver for "innovation made in Europe".

Need for joint implementation of available e-Health concepts

Predictions are difficult, especially about the future…
(Nils Bohr)

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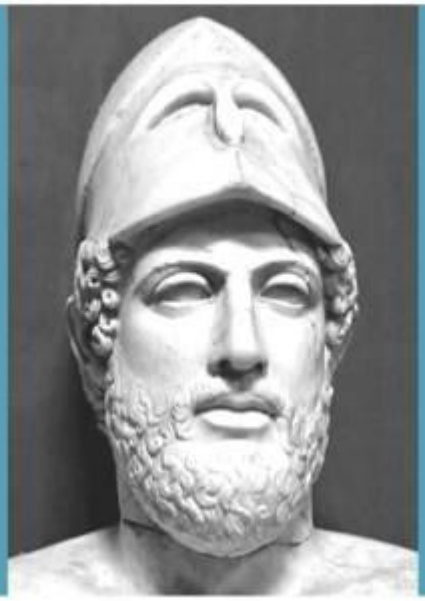

" It is less important to predict the future than to be prepared for the future. "

Perikles (~495-429 BC)

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Thank you for your attention

Hartmut Schaper

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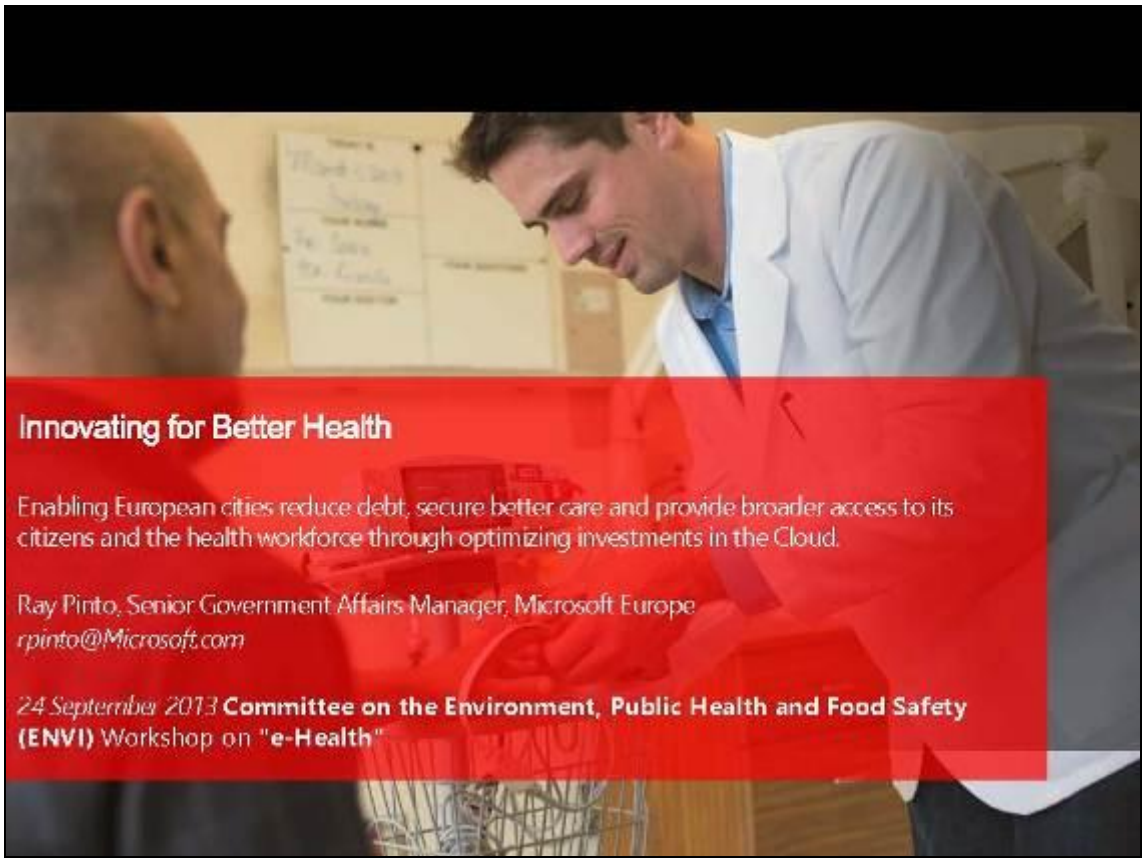
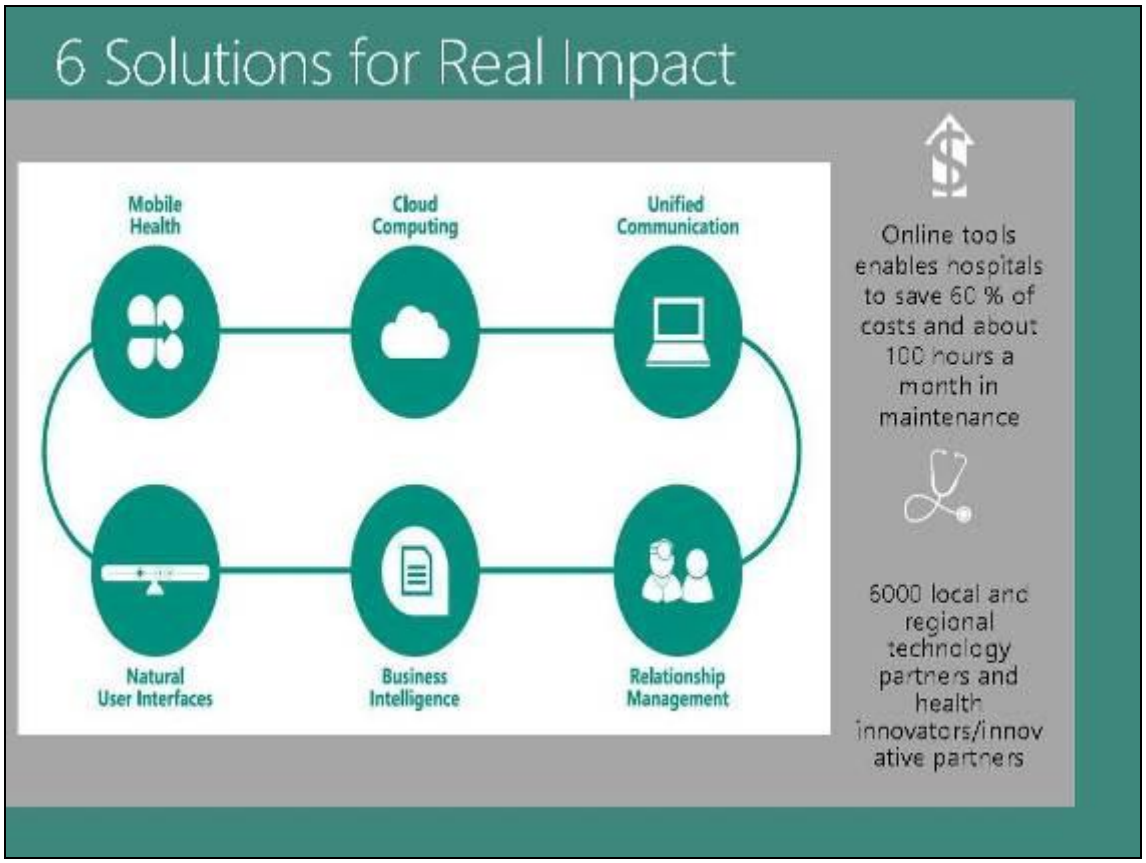
E-mail:
hartmut.schaper@siemens.com

www.siemens.com/hospital-it

Presentation by Mr Ray Pinto




Solutions for Healthier Cities
In-market, proven solutions for real impact and healthier cities
Coalition of Partners for Healthier Cities supported by:
Microsoft
Atos
avanade
Capgemini
CLINICALL
icomedias
KMD
OCSL
Polycom
Rapid Circle
REALDOLMEN
wortell
Home Care
Primary Care
Healthier Cities
Solutions
Social Benefits & Admin
Health & Wellness
Pandemics Management


6 Solutions for Real Impact
Mobile Health
Cloud Computing
Unified Communication
Natural User Interfaces
Business Intelligence
Relationship Management
Online tools enables hospitals to save 60 % of costs and about 100 hours a month in maintenance
6000 local and regional technology partners and health innovators/innovative partners

Pandemics Management:
ATOS – Prototype for Pandemics management

xRM Framework for Incident and Case Management

Using Bing Maps, Sharepoint, and Lync

Manage, track, classify and group suspicious incidents

Teki
Tele-assistance For Basque Country Chronic Patients

Developed by the Basque Sanitary Service and Accenture, Teki's objective is to reduce the number of patients (currently 23%) who end up going back to hospital in the following months after hospitalization.

Mobile Health: SkinScan

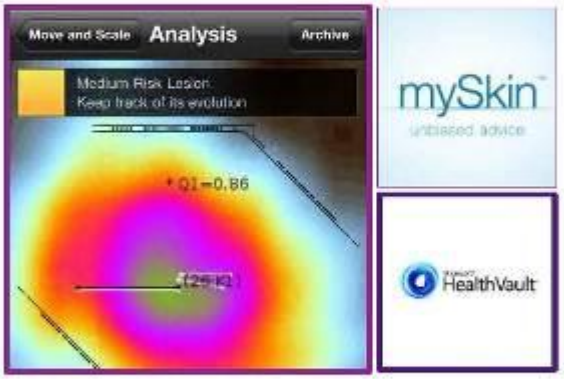
mySkin's SkinScan

Microsoft Windows Phone application developed by mySkin

Allows individuals to scan, track and analyze skin lesions

Microsoft HealthVault

Store and share the images over the lifetime of their record



Kinect In Operating Theatre

Helping Spanish Doctors Navigate MRIs

Tedesys is using Kinect technology in an operating theatre in Spain to help doctors navigate MRIs and CAT scans with a wave of their hand.

If approved by national government agencies, who knows what benefits this could bring?

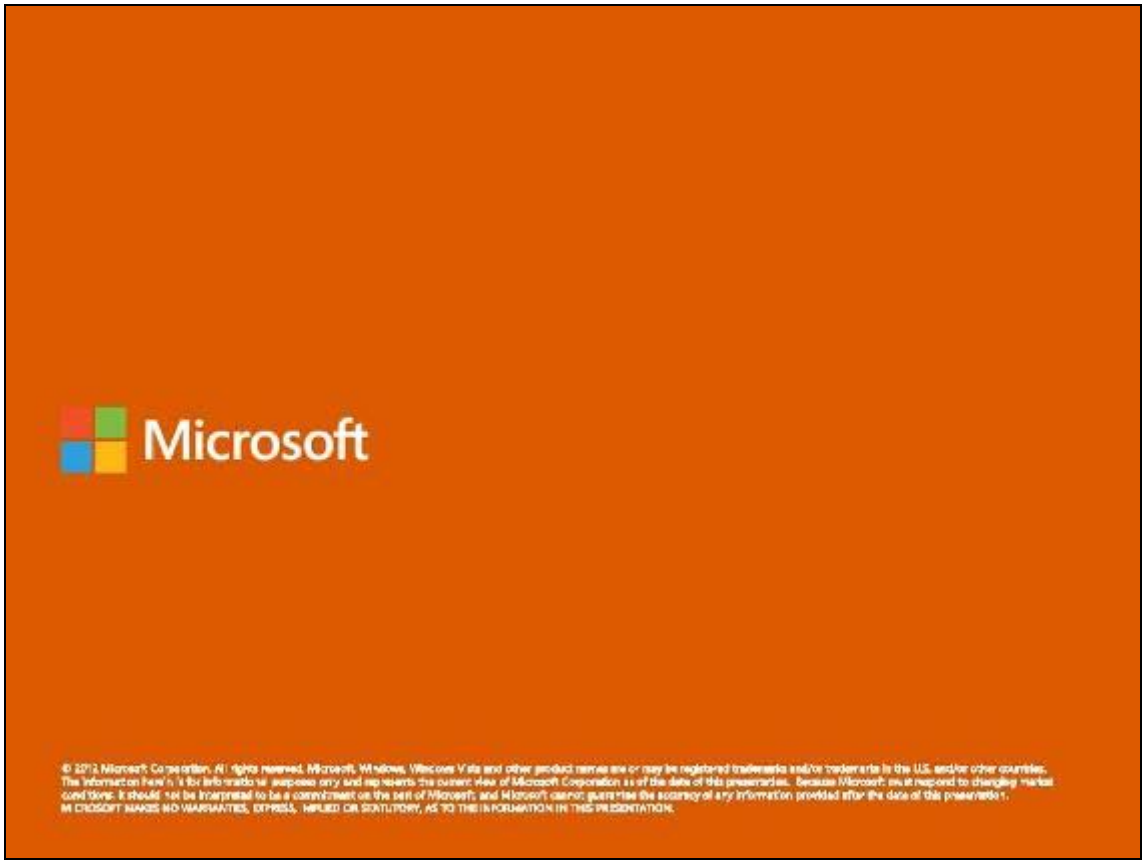
Stroke Patients Benefit From Kinect

Royal Berkshire Hospital

Rehabilitation therapists are making Kinect an important part of the rehabilitation process for stroke and other brain injury patients at Royal Berkshire Hospital.

Child Cerebral Palsy

Imagine Cup Team KiDnect From Croatia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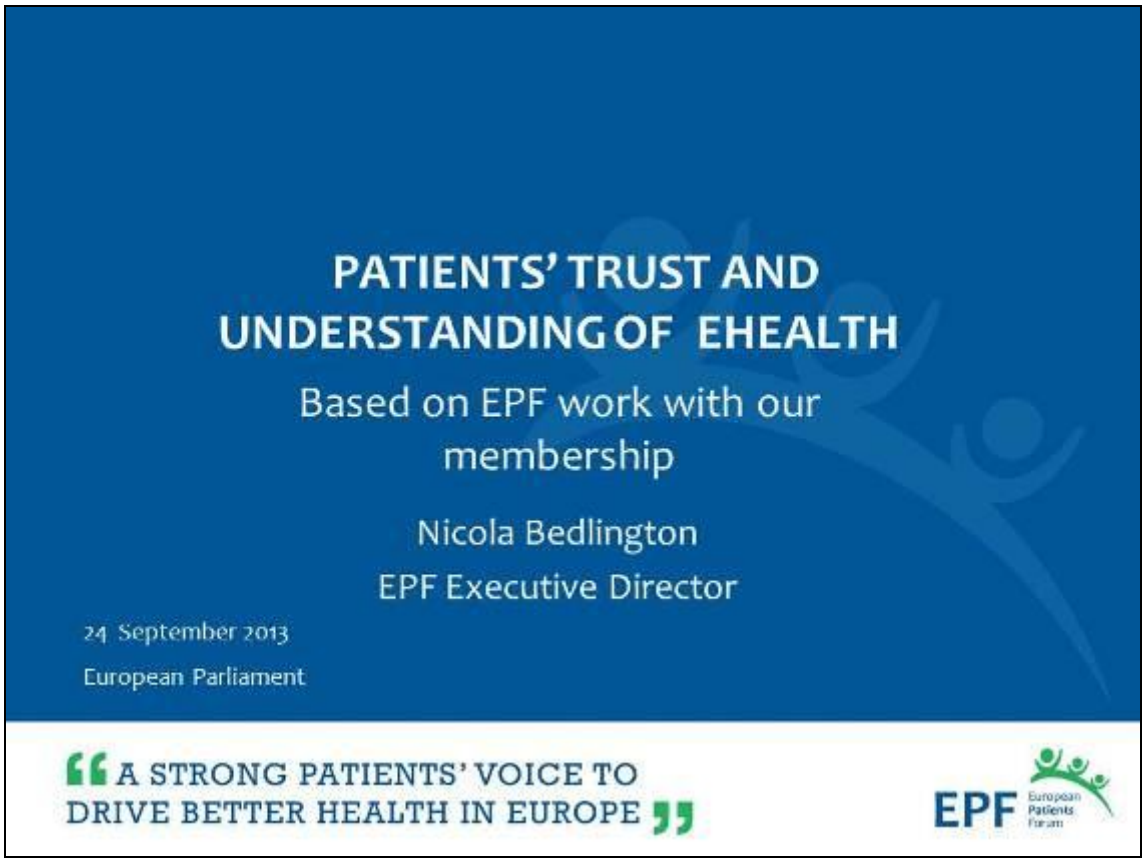
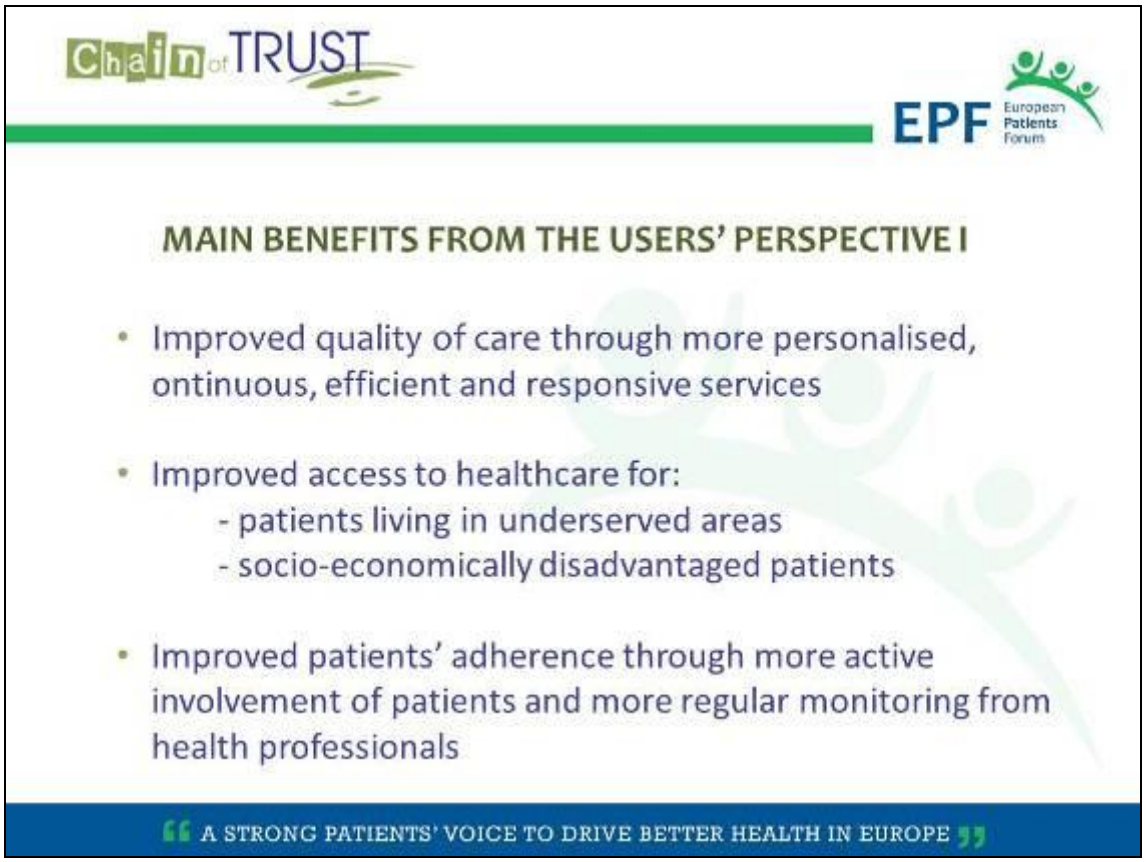
Presentation by Ms Nicola Bedlington




Chain of TRUST
EPF European Patients Forum
Objectives
1. Knowledge gathering
To improve available knowledge of the specific views - needs, perceptions on the added value and concerns - among patients and health professionals with regard to telehealth services
2. Raising awareness and understanding
To increase awareness and understanding of users' perspective on telehealth amongst patients' and health professionals' organisations and health authorities at European and Member State level
A STRONG PATIENTS' VOICE TO DRIVE BETTER HEALTH IN EUROPE


Chain of TRUST
EPF European Patients Forum
MAIN ISSUES REGARDING USERS' TRUST AND ACCEPTANCE
The human dimension
'Telehealth has been mainly driven by technology rather than by the needs of people'
Trust plays more than ever a key role in patient-health professional relations
Patients perceive a risk of 'impersonality' and of neglect of 'psychological factors'
Capacity of Users
Patients fear the burden of responsibility and lack of skills - telehealth services need to integrate eHealth literacy skills
Self-confidence has to be supported with training and user-friendly applications
A STRONG PATIENTS' VOICE TO DRIVE BETTER HEALTH IN EUROPE


Chain of TRUST
EPF European Patients Forum
MAIN ISSUES REGARDING USERS' TRUST AND ACCEPTANCE II
• Telehealth as a complement/added value to and not as a replacement of conventional services
• Access and health inequalities: telehealth should fill the gap and not exacerbate inequalities
• Decisions on whether to adopt telehealth will depend to a great extent to its perceived effects on patient safety
• Organisational aspects: change in routine, workload and lack of support from management are barriers for health professionals' buy in.
• Privacy and confidentiality issues
A STRONG PATIENTS' VOICE TO DRIVE BETTER HEALTH IN EUROPE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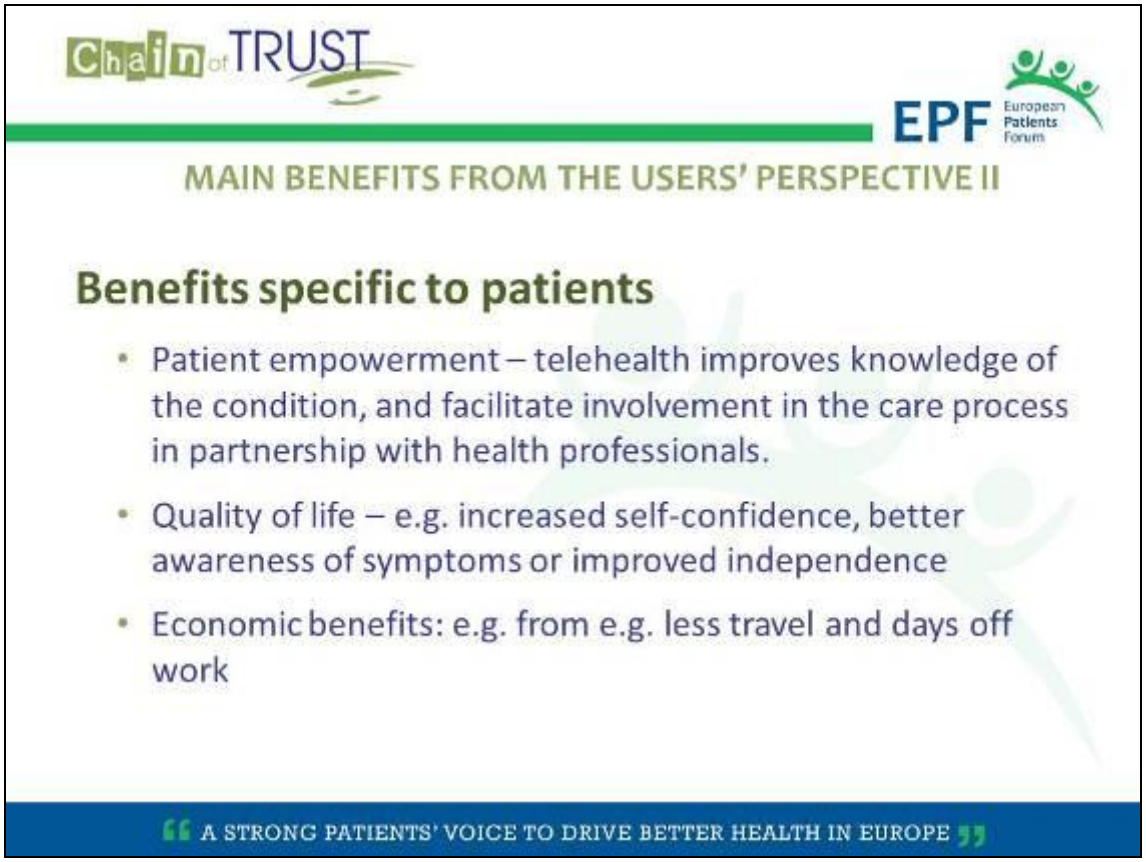
MAIN BENEFITS FROM THE USERS' PERSPECTIVE I
• Improved quality of care through more personalised, ontinuous, efficient and responsive services
• Improved access to healthcare for:
- patients living in underserved areas
- socio-economically disadvantaged patients
• Improved patients' adherence through more active involvement of patients and more regular monitoring from health professionals
A STRONG PATIENTS' VOICE TO DRIVE BETTER HEALTH IN EUROPE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EPF European Patients Forum
MAIN BENEFITS FROM THE USERS' PERSPECTIVE II
Benefits specific to patients
• Patient empowerment – telehealth improves knowledge of the condition, and facilitate involvement in the care process in partnership with health professionals.
• Quality of life – e.g. increased self-confidence, better awareness of symptoms or improved independence
• Economic benefits: e.g. from e.g. less travel and days off work
A STRONG PATIENTS' VOICE TO DRIVE BETTER HEALTH IN EUROPE


Chain of TRUST
EPF European Patients Forum
MAIN KEY DRIVERS FOR USERS' ACCEPTANCE
• Telehealth -user-centric as opposed to technology-driven.
• Telehealth should not affect negatively the patient–health professional relationship, increase mutual trust;
• Telehealth needs to deliver real benefits and add value to users in relation to solely conventional healthcare;
• at least the same safety and reliability standard as conventional health services;
• Self-confidence and competence in using telehealth services and mutual confidence between users, are crucial and should not be underestimated
A STRONG PATIENTS' VOICE TO DRIVE BETTER HEALTH IN EUROPE


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A STRONG PATIENTS' VOICE TO DRIVE BETTER HEALTH IN EUROPE
EPF

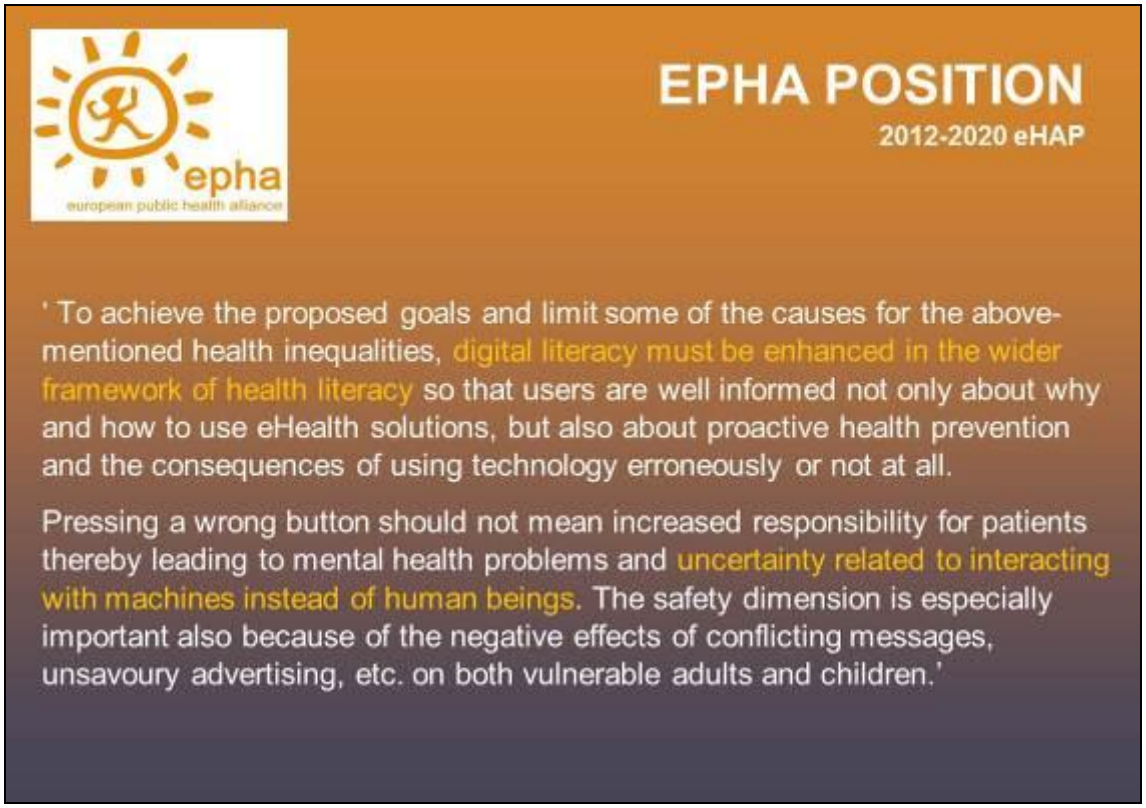
Presentation by Mr Sascha Marschang

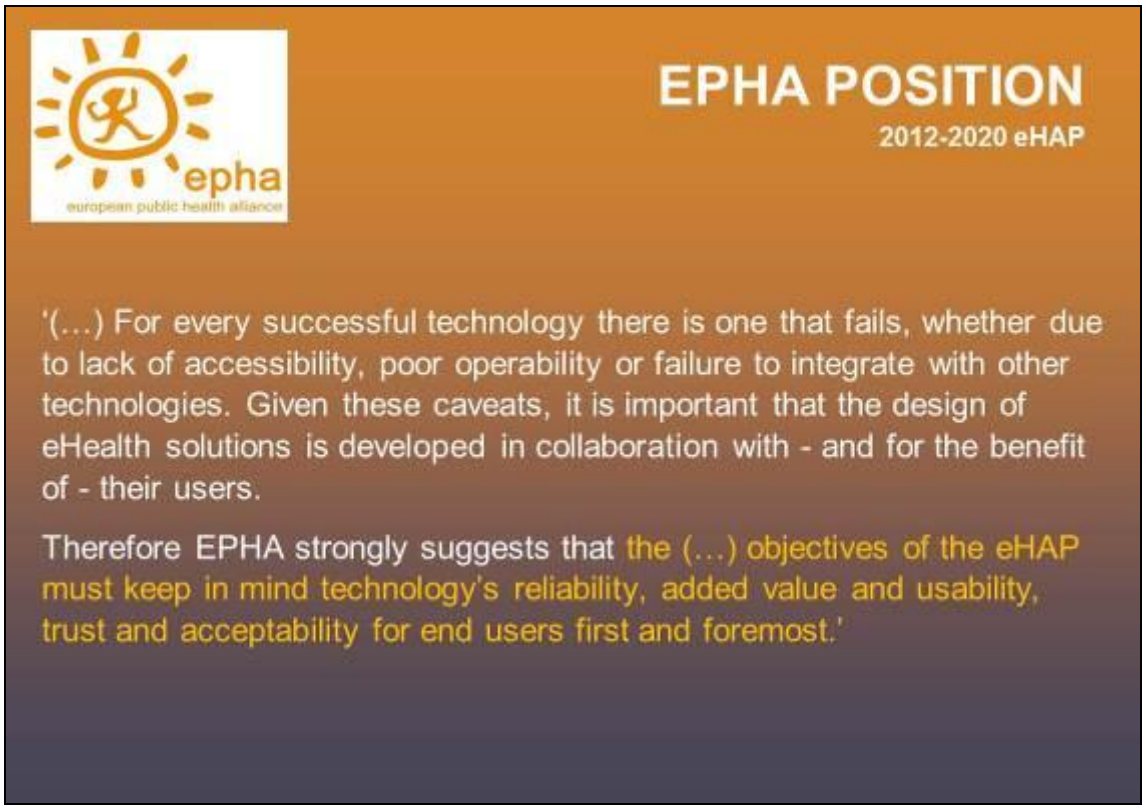

epha
european public health alliance
WHO ARE WE?
The European Public Health Alliance (EPHA)....
is a Brussels-based network representing the public health community throughout Europe
comprises +/- 90 member organisations based in EU-28 and EFTA, EU applicant and candidate countries & beyond
Members include disease-specific organisations (e.g. cancer, diabetes, cardiovascular, respiratory, HIV/AIDS, mental health), health professionals (e.g. nurses, doctors, pharmacists), regional interests, academic groupings, vulnerable groups (e.g. Roma, migrants, older people) & many more
Advocates for more citizen involvement and transparency in political decision-making processes on health policy at EU level


epha
european public health alliance
WHO ARE OUR MEMBERS?
ehn
fighting heart disease and stroke
european heart network
HAI
European Level
Associations
AGE Platform Europe
Royal College of Physicians
Organisations
National level
CANCER RESEARCH UK
Voluntary groups
EIWH
errc
european roma rights centre
Regional Level


epha
european public health alliance
WHO ARE WE?
EPHA....
Is a "change agent": EPHA's mission is to bring together the public health community to provide thought leadership and facilitate change; to build public health capacity to deliver equitable solutions to European public health challenges, to improve health and reduce health inequalities.
"Our vision is of a Europe with universal good health and well-being, where all have access to a sustainable and high quality health system: A Europe whose policies and practices contribute to health, both within and beyond its borders
Overarching values: equity, sustainability, diversity, solidarity, universality, good governance


epha
european public health alliance
EPHA
eHealth activities
Members of eHealth Stakeholder Group led by DG CONNECT (issue leader on Health Inequalities)
EPHA Briefing on eHealth (2011)
EPHA Position on 2012-2020 eHAP
EPHA Briefing on mHealth (Sep 2013)
Articles on eHealth / Digital Agenda for Europe / ICT diffusion
Focus: impacts on patients, health professionals, vulnerable groups in EU
Efficiency gains vs. high investments in technology: public health implications?
Need for stratified health services: EU older, more diverse & complex!


epha
european public health alliance
EPHA POSITION
2012-2020 eHAP
' To achieve the proposed goals and limit some of the causes for the above-mentioned health inequalities, digital literacy must be enhanced in the wider framework of health literacy so that users are well informed not only about why and how to use eHealth solutions, but also about proactive health prevention and the consequences of using technology erroneously or not at all.
Pressing a wrong button should not mean increased responsibility for patients thereby leading to mental health problems and uncertainty related to interacting with machines instead of human beings. The safety dimension is especially important also because of the negative effects of conflicting messages, unsavoury advertising, etc. on both vulnerable adults and children.'


epha
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EPHA POSITION
2012-2020 eHAP
'(...) For every successful technology there is one that fails, whether due to lack of accessibility, poor operability or failure to integrate with other technologies. Given these caveats, it is important that the design of eHealth solutions is developed in collaboration with - and for the benefit of - their users.
Therefore EPHA strongly suggests that the (...) objectives of the eHAP must keep in mind technology's reliability, added value and usability, trust and acceptability for end users first and foremost.'


epha
european public health alliance
eHealth
Prerequisites
Common scope & ambition across EU: what is included, what are the goals?
Equal access & infrastructure
Unambiguous legal framework (e.g. 'loopholes' between eHealth, medical devices and other health tools)
Removal of legal & technical implementation obstacles (e.g. cost, interoperability, data protection, eIdentification / authentication, confidentiality, consent...)
Transferable best practices between MS
Innovation takes many forms – low-tech solutions can be more inclusive for some end users
Need impact assessments / data on health outcomes to avoid competition with traditional HS investments
Emphasise eHealth's complementarity
Partnership approach to ensure that needs of vulnerable groups are taken into account (e.g. EIP on AHA)
Solidarity: health is a human right not (only) a consumer good!


epha
european public health alliance
Health Inequalities
Activities
Inclusion off- and online
Consultation response re: EU action to reduce health inequalities (2009)
EPHA Briefing on Health Inequalities (2010)
EPHA European Charter for Health Equity launched 2010 (signed by over 250 individuals and organisations)
Institute of Health Equity consultation re: role of health professionals (2012)
Collaboration with European Patients' Forum
Roma health fellowship pilot programme & capacity building events
Healthcare access (e.g. austerity impacts, economic governance, access to medicines, European Platform against Poverty & Social Exclusion...)
EHSG subgroup on Health Inequalities
Identifying best practices at EU, national, regional & local level (e.g. eHealth strategies, eInclusion initiatives by civil society and industry)
Ensuring that health inequalities are not exacerbated online!


epha
european public health alliance
mHealth
WELLDOC
2 of 2 files
Depth: 15 cm
FPS: 4.35


epha
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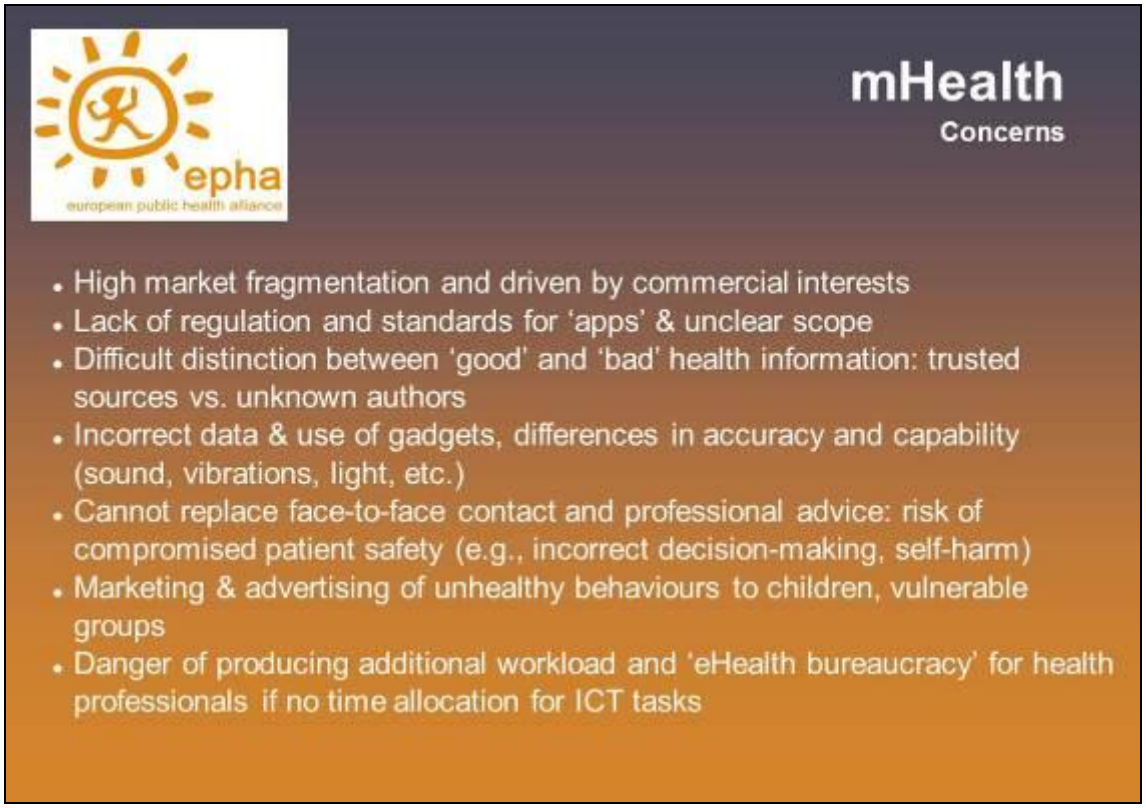
mHealth
Advantages
• Accessing health content 'on the go': better integration into routines?
• Tailored (public) health messages for vulnerable groups, e.g. by SMS
• Bringing the Internet & social media to non-traditional ICT users
• Direct contact health professionals & patients, incl. most vulnerable
• Real-time monitoring of chronic conditions & location, allowing better follow-up for patients unable to travel
• Encouraging self-control and 'competitive health behaviour'
• Smartphones: user-friendly interface, easy to navigate, pictorials, video-content, voice-generated commands, camera, GPS, gaming, etc.: making health interactive, engaging & fun (?)
• European Directory of Health Apps (2012), eInclusion awards (2008 & 2012)
• Work-related tools and apps: supporting health professionals at bedside (e.g. taking notes more easily, recording, photographs, etc.)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european public health alliance
mHealth
Concerns
• High market fragmentation and driven by commercial interests
• Lack of regulation and standards for 'apps' & unclear scope
• Difficult distinction between 'good' and 'bad' health information: trusted sources vs. unknown authors
• Incorrect data & use of gadgets, differences in accuracy and capability (sound, vibrations, light, etc.)
• Cannot replace face-to-face contact and professional advice: risk of compromised patient safety (e.g., incorrect decision-making, self-harm)
• Marketing & advertising of unhealthy behaviours to children, vulnerable groups
• Danger of producing additional workload and 'eHealth bureaucracy' for health professionals if no time allocation for ICT tasks


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eHealth literacy
eHealth literacy is complex and involves a number of different literacies that require cognitive and behavioural competences applied at the same time:
• basic literacy (e.g., reading, writing, speaking, numeracy)
• digital literacy (using and navigating ICT tools and Internet)
• media literacy
• health literacy (being able to find, understand, contextualise, appraise and act upon health information)
• (…)
How meaningful is online health information to non-traditional ICT users?
How can it become more relevant and inclusive?


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eHealth
Recommendations
EPHA supports eHealth solutions that...
play a clear role as part of overall health system policies
improve health system efficiency and patient safety via new forms of collaboration between & amongst health professionals and patients
facilitate health professionals' tasks by freeing up time for patient contact
offer meaningful, 'tailored' content to meet the needs of disease-specific patients and their families, as well as non-traditional ICT users
involve end users in the design and policy-making process for 'real life' input
increase quality and continuity of care, e.g. interdisciplinary healthcare teams in primary and hospital settings allowing active participation of all health profs.


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eHealth
Recommendations (cont.)
offer patient-centred care, incl. possibilities for 'co-managing' health by patient-consumers
increase health awareness (and self-responsibility?) thanks to improved health literacy
empower individuals by stimulating prevention and health promotion
'include everyone', especially individuals unable to access quality healthcare services *offline* due to geographic isolation, health professional shortages, irregular residence status, poverty / homelessness, physical / mental disability...
acknowledge that everybody is different: provision of stratified health services off- and online, respecting individual ICT competences, needs and preferences


epha
european public health alliance
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Presentation by Dr Konstanty Radziwill


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COMITÉ PERMANENT DES MÉDECINS EUROPÉENS
STANDING COMMITTEE OF EUROPEAN DOCTORS
CPME activities in the field of eHealth
• eHealth WG meets twice a year + webmeetings
• Participation in the eHealth Governance initiative (eHGI) + eHealth Stakeholders Group (eHSG)
• Analysis and opinion on the General Data Protection Regulation
• Participation in the "Chain of Trust" project on assessment of the perspective of the main end users of telehealth services across the EU
• Participation in the "Momentum" project on advancing telemedicine adoption in Europe
• Analysis and opinion on eHealth Action Plan (2012-2020)
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Benefits
• Better **access** to care and information for the patients
• Better **quality** of care (readability, accuracy, comparability, transportability of the data)
• Support for epidemiology and public health
• Better **working conditions** for health workers
• Better **efficiency** of the health care systems
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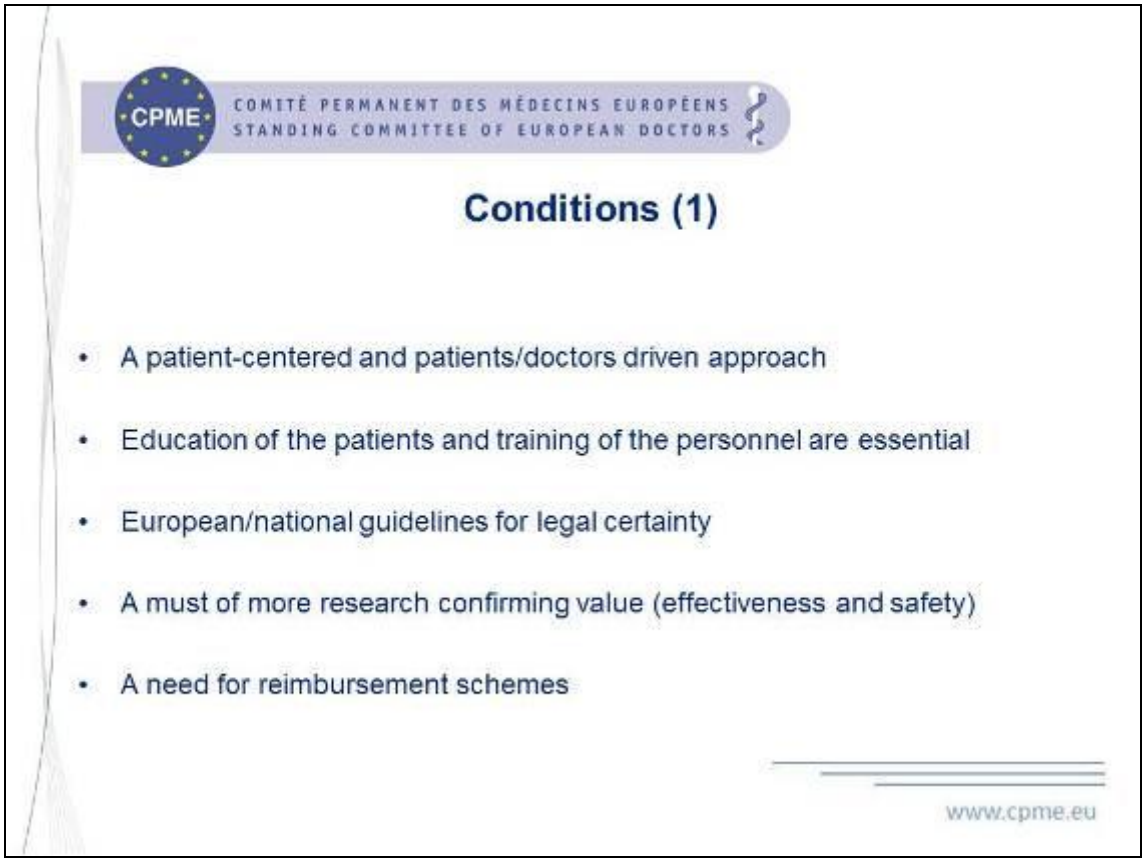
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Conditions (1)
• A patient-centered and patients/doctors driven approach
• Education of the patients and training of the personnel are essential
• European/national guidelines for legal certainty
• A must of more research confirming value (effectiveness and safety)
• A need for reimbursement schemes
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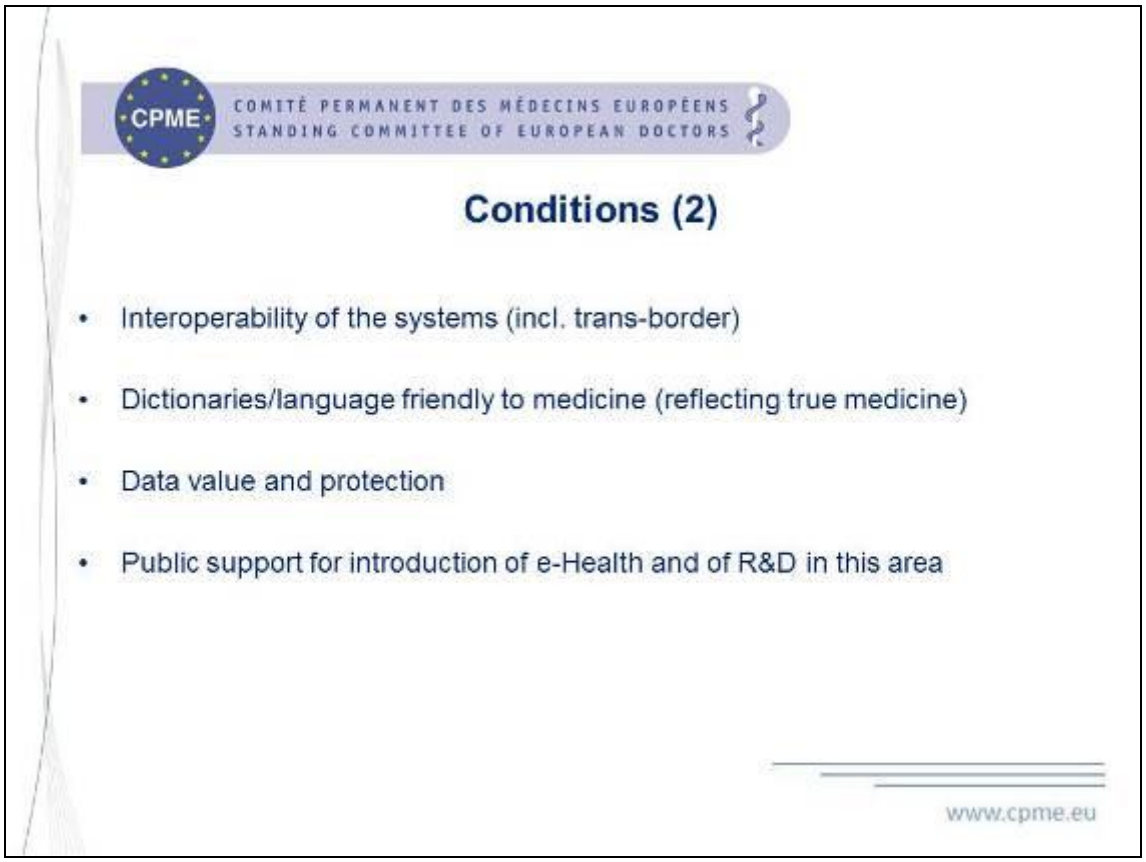
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Conditions (2)
• Interoperability of the systems (incl. trans-border)
• Dictionaries/language friendly to medicine (reflecting true medicine)
• Data value and protection
• Public support for introduction of e-Health and of R&D in this area
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STANDING COMMITTEE OF EUROPEAN DOCTORS
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