

eHealth in Theorie und Praxis

(183.635, VU, 4.0h, 5 ECTS)

Thomas Grechenig,
Wolfgang Schramm,
Barbara Tappeiner,
Geraldine Fitzpatrick

Inhalt

- 1 **eHealth Strategie**
- 2 **European eHealth Action Plan**
- 3 **WHO eHealth Foundation**
- 4 **Beispiele**

E-Health Project

Any sufficiently large IT infrastructure project on a regional, national or international level can be cognitively described along four major abstraction levels:

1. Political/Public Level – Political/Public Criteria (PC)
2. Institutional Level – Institutional Criteria (IC)
3. Operative/Process Level – Operational Criteria (OC)
4. Technical Level – Technical Criteria (TC)

A project can only be successful by dealing with all four levels!

Challenges for European Health Systems



Pressure on healthcare systems:

Citizens' expectations for high-quality care

Demographic changes

Increased prevalence of chronic diseases

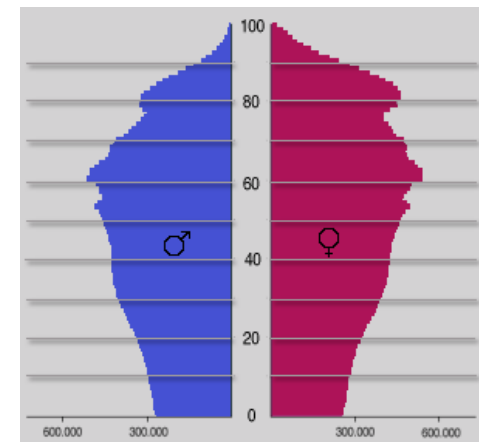
Increased mobility of citizens and patients

Staff shortages, unequal territorial distribution

Reactive model of healthcare delivery

Rising healthcare costs

How to offer high-quality & affordable care?



EC vision for Health: ICT to support paradigm shift



From 'curative care' to 'preventive care'

From 'hospital-based' to 'patient-centred'

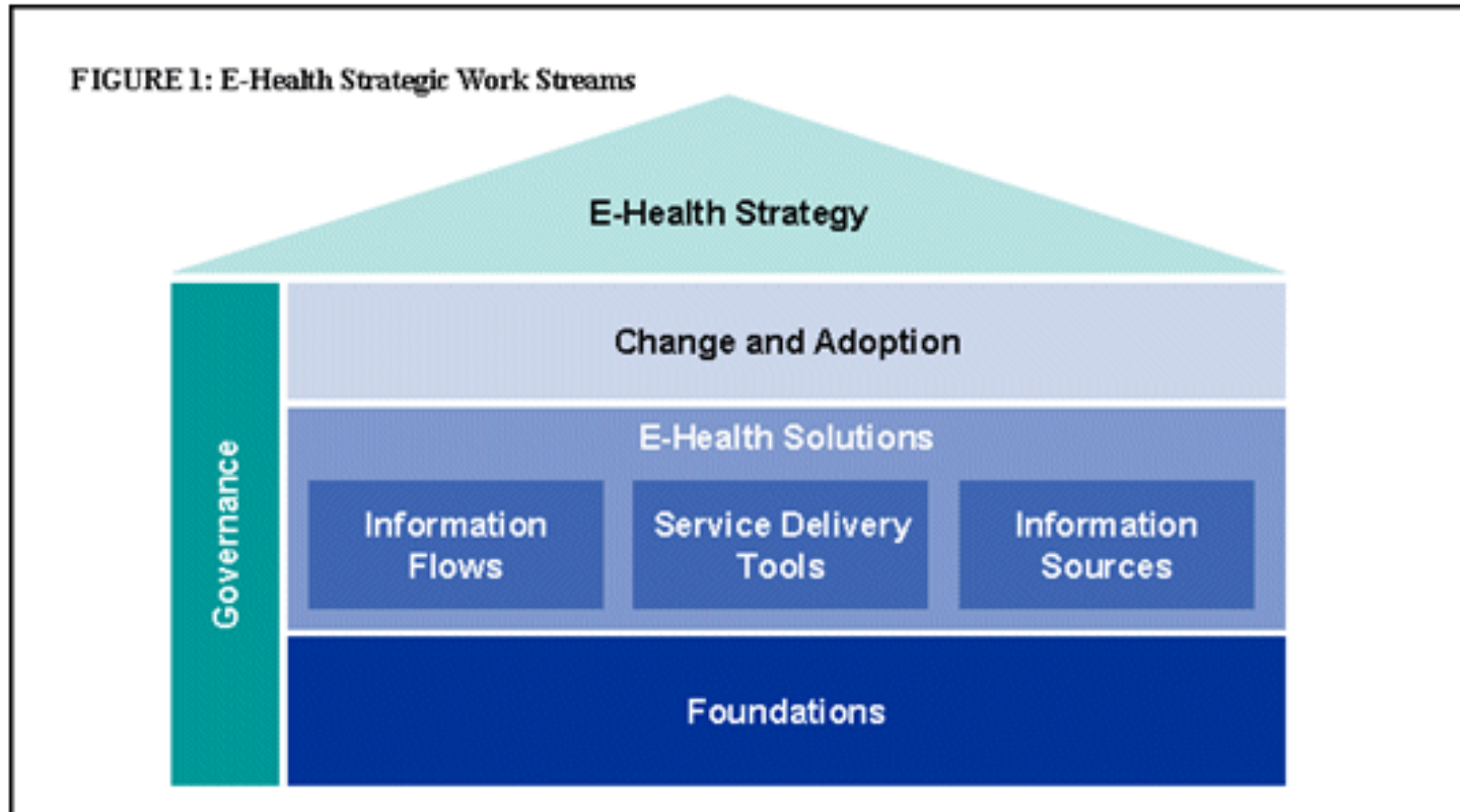
HOW?

By using ICT to enable collaborative, personalised care → empowering

By aiming at sustainability of healthcare systems → reengineering

eHealth can help !

eHealth Strategy



EC instruments: to make eHealth reality!



- Research:
 - Seventh Framework Programme for Research (FP7)
 - Personal Health Systems, Patient Safety, Virtual Physiological Human (~100M€/year)
- Policy:
 - Action Plan for a European eHealth Area (April 2004)
 - White Paper “Together for health” COM (2007) 630 (October 2007)
 - Communication on lead markets (December 2007)
 - Recommendation on cross border interoperability of EHR systems (July 2008)
 - Communication on “telemedicine and the benefit for patients, healthcare systems and society” (November 2008)
 - Digital Agenda for Europe (May 2010)
 - Directive on patient's rights for cross border care, Art 14 (March 2011)
 - eHealth Governance Initiative (2011)
 - eHealth Task Force (report due 2012)
 - NEW eHealth Action Plan (Due 4Q 2012)
- Implementation:
 - Competitiveness Innovation Programme (CIP ICT PSP): Large Scale Pilots on Interoperability and Telemedicine + Thematic Networks
 - EIP on Active and Healthy Ageing (2011)



- **The European Commission has been investing in eHealth research for over 20 years. Since 2004, it has been developing targeted policy initiatives aimed at fostering widespread adoption of eHealth technologies across the EU**
- **2003:**
 - eHealth Ministerial Conference: Initiative to promote co-ordination at European Level
 - Targets and objectives laid down in the eEurope Action Plan as well as the Programme of Community Action in the field of public health (2003-2008)
- **2004: eHealth Action Plan 2004-2010**
 - Results of Conference issued in Communication COM (2004) 356 titled „eHealth – making healthcare better for European Citizens: An action plan for a European eHealth Area
 - <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52004DC0356:EN:NOT>

MITTEILUNG DER KOMMISSION AN DEN RAT, DAS EUROPÄISCHE PARLAMENT, DEN EUROPÄISCHEN WIRTSCHAFTS- UND SOZIALAUSSCHUSS UND DEN AUSSCHUSS DER REGIONEN -- Elektronische Gesundheitsdienste - eine bessere Gesundheitsfürsorge für Europas Bürger: Aktionsplan für einen europäischen Raum der elektronischen Gesundheitsdienste



- **Addressing common challenges** such as interoperability of health information systems electronic health records, patient identifiers and mobility of patients and health professionals
- **Building pilots** for accelerating implementation of eHealth information on, for example, health education and disease prevention as well as promoting the use of electronic health cards
- **Working together** and monitoring, benchmarking and disseminating best practices.



- **2006:**

- ICT for Health Unit of DG INFSO (Directorate General for Information Society and Media, 1100 Employees, DG = branch of administration dedicated to a specific field of expertise) adopted a new strategy in line with the Commission's new i2010 policy framework



- I2010
 - was the EU policy framework for the information society and media (2005-2009).
 - promoted the positive contribution that information and communication technologies (ICT) can make to the economy, society and personal quality of life
 - followed by a new initiative – the Digital Agenda – in 2010.
 - http://ec.europa.eu/information_society/eeurope/i2010/index_en.htm
- "new healthcare delivery model, based on preventive and person-centred health systems, which can only be achieved through proper use of ICT"
- Forward looking research under the Seventh Framework Programme (FP7)
- Continuity of care by deployment of interoperable eHealth services across Europe



- **April 2007:**
 - **eHealth-ERA Project** (see following slide for details)
 - Report on the eHealth priorities and strategies of the Member States
 - good progress had been made in implementing the European Commission's eHealth strategy
 - Not accompanied by progress in educational and socio-economic issues related to eHealth
- **End 2007/2008**
 - EC unveiled plans to make eHealth one of the EU's first six **Lead Market Initiatives** = strategic priority
 - EC published an Action Plan for eHealth at the end of 2007
 - Assess the possibility of adopting a legal initiative for eHealth and telemedicine.
 - Need for common standards in eHealth and the importance of interoperability.
 - Greater cooperation on eHealth between the Member States was encouraged.
 - Actions which were similar to those of the 2004 eHealth Action



- **2008:**
 - Action Plan for Telemedicine
 - Ten-point roadmap for promoting Telemedicine in Europe
 - Follow Up Plan in October 2009
 - = **Communication on “telemedicine** and the benefit for patients, healthcare systems and society” (November 2008)
- **May 2010**
 - **Digital Agenda for Europe** (see following slide)
- **2011:**
 - **Cross-border Health Care Directive**
 - EU-wide framework for cross-border access to health care services
 - Art.14 on interoperability calls for the creation of a network on eHealth
 - May 2011: European Voluntary eHealth Network
 - Launched during European eHealth Ministerial Conference (part of eHealth Week)

eHealth-ERA Project (2005-2007)

- Towards the Establishment of a European eHealth Research Area
- Database of European eHealth priorities and strategies is a service to European States and their citizens
- enhance knowledge about eHealth activities and to facilitate co-operation between states and regions in the field of eHealth
- includes documents about national eHealth priorities, strategies, roadmaps and RTD programmes in all EU Member States, the Candidate Country of Turkey as well as Iceland, Liechtenstein, Norway and Switzerland (27 Member States + 5 other European Countries)
- In April 2007, the European Commission published them in a brochure.
- <http://www.ehealth-era.org/indexold.htm>
- Followed by <http://ehealth-strategies.eu/>

-

European Digital Agenda – eHealth

- **Renew commitment to eHealth by fostering:**
- **EMPOWERMENT**
 - support patients access to eHealth services, including patients records + telemedicine services
- **SHARING KNOWLEDGE/INTEROPERABILITY FOR BETTER CARE**
 - minimum data set for patients' summaries
 - standardization, certification and testing

Digital Agenda - EMPOWERING

- KA 13 (I)
pilot actions to secure online access to their medical health data by 2015
 - CIP ICT PSP Call 5 –Objective 3.4 a- Support pilots enabling patients access to data and associated services (including telehealth, CDM services)
 - 2 pilots B (Palante + Sustains):
 - involving in total 19 regions and expected to reach ...X patients.
- Implementation of Commission Communication on “Telemedicine for the benefit of patients', healthcare systems and society” COM (2008) 689 – Nov 2008
- Evidences on large scale → CIP ICT PSP RENEWING HEALTH started Feb 2010
 - Develop guidelines for consistent assessment of the impact of telemedicine → MUST study + ongoing work
 - 1 CIP ICT PSP under negotiation- to support wider deployment of Telemedicine (guidelines, good practice exchange) 500k (3years)

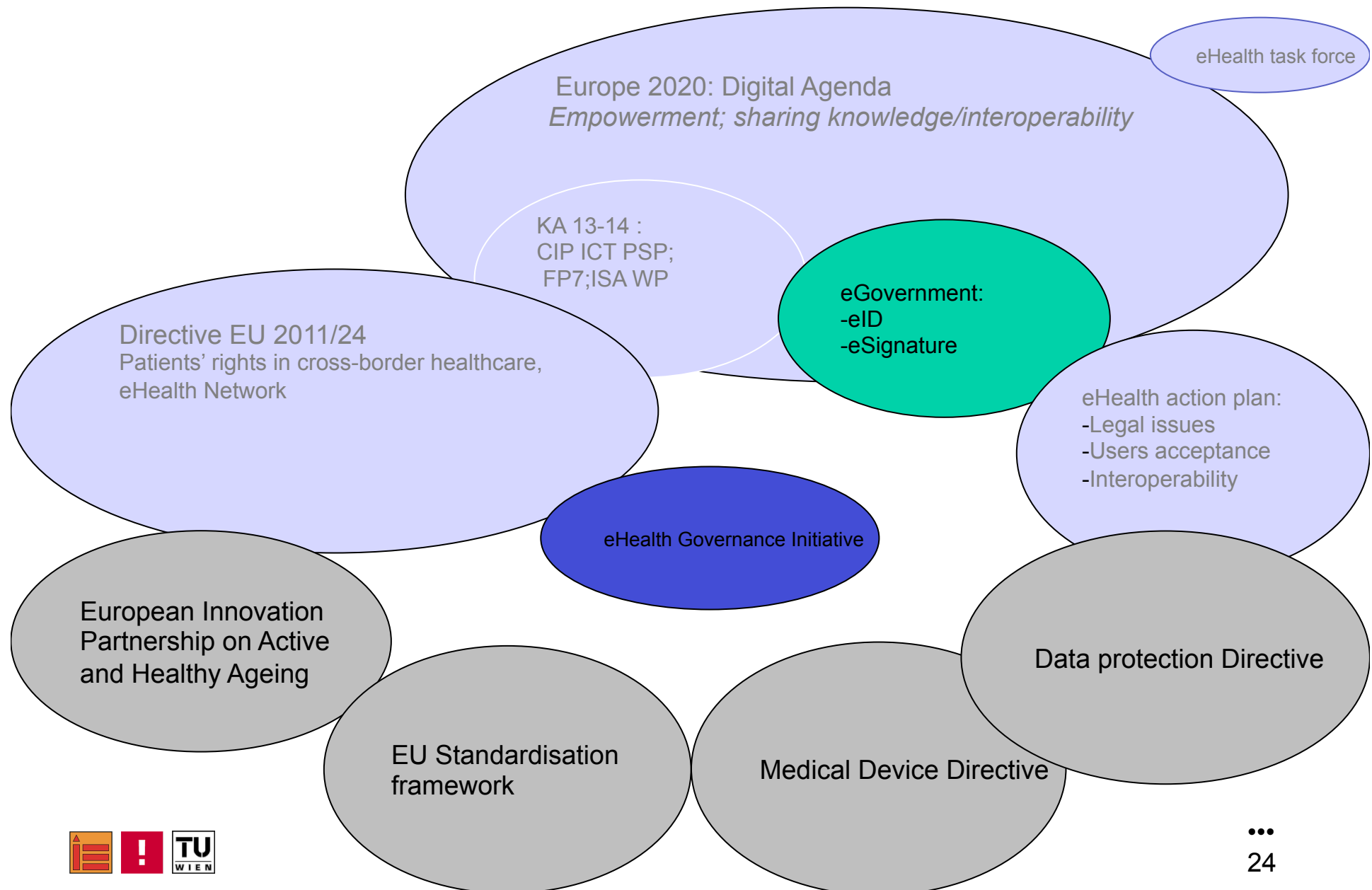
Digital Agenda – Sharing Knowledge

- KA14 Recommendation on minimum common set of patient data for interoperability of patient records by 2012.
 - epSOS
 - European eHealth Governance Initiative
 - Consultation with MS and stakeholders
- eHealth Network - Article 14 XBorder care Directive
- Action 78
Foster EU-wide standards, interoperability testing and certification of eHealth systems by 2015 through stakeholder dialogue
 - Support R&D → FP7 Call 7 Objective 5.3 d (semantic interoperability and infostructure)
 - new EU standardisation framework
 - ISA WP 2011- Study on Interoperability framework for eHealth and Telemedicine – to be launched in 2011

What's next

- New “eHealth Action Plan” – EC Communication (due 2012)
 - Evidences and awareness
 - Interoperability/standardisation/market
 - Regulatory/Organisational issues
 - Innovation in eHealth

Strategic references eHealth cooperation



Conclusions

eHealth high on EU Agenda

Many ongoing initiatives (supported by CIP ICT PSP, Health and growth; FP7, Horizon 2020 etc)

eHealth Action plan 2012 will consolidate

eHealth Network will be a key instrument to strengthen MS cooperation



eHealth Action Plan 2004-2010 – Overview of Actions (1)

Overview of actions

Action	Time	Responsibility
NB. Within each of the issues facing the e-Health sector (addressing common challenges, pilot actions, and working together and monitoring practices), we list the actions to be taken <i>sequentially</i> .		

Issue 1: Addressing common challenges		
The Communication on patient mobility is presented as part of an overall strategy on health care together with the present communication and that on the open method of coordination. Work is already underway to improve information on patient mobility and mobility of health professionals at European level, and is being taken forward in particular through the health systems working party under the information strand of the public health programme.	2004	Commission
By mid 2005, the Commission should produce a summary of European best practices as guidance for Member States.	Mid-2005	Commission
By end 2005, each Member State is to develop a national or regional roadmap for e-Health. This should focus on deploying e-Health systems, setting targets for interoperability and the use of electronic health records, and address issues such as the reimbursement of e-Health services.	End 2005	Member States
By end 2006, Member States, in collaboration with the European Commission, should identify a common approach to patient identifiers. This should take account of best practices and developments in areas such as the European Health Insurance Card and identity management for European citizens.	End 2006	Member States, Commission
By end 2006, Member States, in collaboration with the European Commission, should identify and outline interoperability standards for health data messages and electronic health records, taking into account best practices and relevant standardisation efforts.	End 2006	Member States, Commission
By end 2006, a collaborative approach should be undertaken among Member States to supporting and boosting	End	Member States

investment in e-Health.	2006	
By end 2007, Member States should adopt conformity testing and accreditation schemes following successful best practices.	End 2007	Member States
During the period 2004-2008, Member States should support deployment of health information networks for e-Health based on fixed and wireless broadband and mobile infrastructures and Grid technologies.	2004-2008	Member States
By end 2009, the European Commission, in collaboration with Member States, should undertake activities to: Set a baseline for a standardised European qualification for e-Health services in clinical and administrative settings. Provide framework for greater legal certainty of e-Health products and services liability within the context of existing product liability legislation. Improve information for patients, health insurance schemes and providers regarding the rules applying to the assumption of the costs of e-Health services. Promote e-Health with a view to reducing occupational accidents and illnesses as well as supporting preventive actions in the face of the emergence of new workplace risks.	End 2009	Commission, Member States
Issue 2: Pilot actions: accelerating beneficial implementation		
By end 2005, a European Union public health portal will give access to European level public health information. Health portals shall offer dedicated information on safety at work and health risks in the workplace. By end 2005, there will be a strengthening of early warning, detection, and surveillance of health threats through enhanced information and communication technologies tools.	End 2005	Commission
Promoting the use of cards in the health care sector. Adoption of implementation of an electronic health insurance card by 2008.	2008	Commission, Member States
By end 2008, the majority of European health organisations and health regions (communities, counties, districts) should be able to provide online services such as teleconsultation (second medical opinion), e-prescription, e-referral, telemonitoring and telecare.	End 2008	Member States



eHealth Action Plan 2004-2010 – Overview of Actions (2)

Issue 3: Working together and monitoring practices		
In 2004, a high level e-Health forum should be established, the role of which will be to support the Commission services. It should involve all necessary stakeholders, including at national, regional, or local hospital authority levels, thereby enhancing the understanding of the Commission services with regard to the current and planned status of development of e-Health in Member States. Its task should be to follow up the various roadmaps, and to identify further actions including a strong focus on users and access for all to e-Health, as well as to develop a strong evidence basis for the case for e-Health. The work of the e-Health forum will also be closely associated with the implementation of the Community Public Health Programme.	2004	Commission
By the start of 2005, Member States, in collaboration with the European Commission, should agree on an overall approach to benchmarking in order to assess the quantitative, including economic, and qualitative impacts of e-Health.	Start 2005	Member States, Commission
By the end of 2005, the European Commission, with contributions from Member States, should establish an effective way of disseminating best practices and supporting actions within the European e-Health area.	End 2005	Commission, Member States
An assessment of e-Health developments should be completed ahead of the second part of the World Summit to be held in Tunis in 2005.	2005	Commission, Member States
During the period 2004-2008, Member States with the support of the European Commission will organise special events such as high level conferences in order to disseminate best practices.	2004-2008	Member States, Commission
During the period 2004-2010, every two years, the European Commission will publish a study on the state of the art in deployment, examples of best practices, and the associated benefits of e-Health.	2004-2010	Commission



- **Issue 1: Addressing common challenges (1)**
 - Health Authorities leadership
 - *Target: By end 2005, each Member State is to develop a national or regional roadmap for e-Health. This should focus on deploying e-Health systems, setting targets for interoperability and the use of electronic health records, and address issues such as the reimbursement of eHealth services.*
 - *Implementation:*
 - *Own mandate of MS*
 - *eHealth ERA ReviewStudy*
 - *Only high level policy documents*

Reported eHealth activities	Total 2006 eHealth ERA	Total 2010 eHealth Strategies	Delta
Legal activities	14	22	8
Evaluation	5	21	16
EHR Patient Summary	27	27	0
ePrescription	16	22	6
Telehealth	23	27	4
Patient ID	24	26	2
Professional ID	13	22	9
Citizen card	22	25	3
Professional card	7	18	9
Standards (technical/semantic)	19	27	8

Source: eHealth Strategies study, 2010



■ Issue 1: Addressing common challenges (2)

■ Interoperability of health information systems - Patient Identifiers

- *Target: By end 2006, Member States, in collaboration with the European Commission, should identify a common approach to patient identifiers. This should take account of best practices and developments in areas such as the European Health Insurance Card and identity management for European citizens. .*
- *Implementation:*
 - *Different approaches in each MS*
 - *Purely healthcare Ids*
 - *General purpose electronic cards (eCards)*
 - *Projects: Netc@rds (eHHIC- electr. european Health Insurance Card), epSOS (x-border exchange of medical data), STORK (eID Interoperability Platform)*

■ Interoperability of health information systems - Interoperability of electronic health records

- *Target: By end of 2006, Member States, in collaboration with the European Commission, should identify and outline interoperability standards for health data messages and electronic health records, taking into account best practices and relevant standardisation efforts.*

■ *Implementation:*

- *2006 no general approach for life long EHR*
- *2008 recommendation of interoperability*
- *Standards*

Standard	Use in Europe
HL7 V2 and V3 (Health Level 7, version 2 and 3)	15 countries
CDA R2 (clinical document architecture, release 2; an HL7 V3-based standard)	8 countries
DICOM (Digital Imaging and Communications in Medicine standards)	8 countries
LOINC (Logical Observation Identifiers Names and Codes)	4 countries

- *Projects: EHR-Q Thematic Network (quality assurance and certification of EHR), epSOS (x-border interoperability, semantic interoperability), CALLIOPE (interoperability roadmap)*



- **Issue 1: Addressing common challenges (3 & 4)**
 - Mobility of patients and health professionals
 - *Target: No specific target, but proposals, such as improving the exchange of information, reference centres for health information*
 - *Implementation:*
 - *2011 Cross boarder HealthCare Directive, Art. 14*
 - *eHealthGovernance Group → European Voluntary eHealth Network*
 - Enhancing infrastructure and technologies
 - *Target: During the period 2004-2008, Member States should support deployment of health information networks for e-Health based on fixed and wireless broadband and mobile infrastructures and Grid technologies. .*
 - *Implementation:*
 - *Dedicated Health Networks*
 - *Sweden: IP-based broadband network separated from internet; Belgium, Denmark: VPN over public infrastructure , UK: variety of different networks*



- **Issue 1: Addressing common challenges (5)**
 - **Conformity testing and accreditation for an eHealth market - Guidance**
 - *Target: By mid 2005, the Commission should produce a summary of European best practices as guidance for Member States.*
 - *Implementation:*
 - *Funding of several studies by EC*
 - *„Good eHealth“ Study – dissemination and learning*
 - **Conformity testing and accreditation for an eHealth market – Conformity and accreditation**
 - *Target: By end 2007, Member States should adopt conformity testing and accreditation schemes following successful best practices.*
 - *Implementation:*
 - *IHE – Integrating the Healthcare Enterprise in Europe*
 - *COCIR – public/private certification*
 - *EUROREC – quality labelling, certification of EHR*



▪ Issue 1: Addressing common challenges (6 & 7)

▪ Leveraging investments

- *Target: By end 2006, a collaborative approach should be undertaken among Member States to supporting and boosting investment in e-Health.*
- *Implementation:*
 - *No evidence for special collaboration for leveraging investments*
 - *Funding provided by FP6 and FP7*
 - *„Good eHealth“ Study – dissemination and learning*

▪ Legal and regulatory issues

- *Target: By end 2009, the European Commission, in collaboration with Member States, should undertake activities to:*
 - *Set a baseline for a standardised European qualification for e-Health services in clinical and administrative settings.*
 - *Provide framework for greater legal certainty of e-Health products and devices liability within the context of existing product liability legislation.*
 - *Improve information for patients, health insurance schemes and providers regarding the rules applying to the assumption of the costs of e-Health services.*
 - *Promote e-Health with a view to reducing occupational accidents and illnesses as well as supporting preventive actions in the face of the emergence of new workplace risks.*
- *Implementation:*
 - *MS: no overall legal framework*
 - *epSOS – general legal issues*
 - *Communication on Telemedicine – legal clarity of the existing EU law on telemedicine*
 - *Cross border Health Care directive – 2011 (reimbursement of treatments for patients from other member states)*
 - *Further study needed*



▪ Issue 2: Pilot Actions: accelerating beneficial implementation (1&2)

▪ Information for citizens and authorities on health education and disease prevention

- *Target: By end 2005, a European Union public health portal will give access to European level public health information. Health portals shall offer dedicated information on safety at work and workplace health risks. By end 2005, there will be a strengthening of early warning, detection, and surveillance of health threats through enhanced information and communication technologies tools.*

- *Implementation:*

- *DG Health and Consumer – Health-EU Portal (early warning, surveillance of diseases..)*
- *Statistics – Healthy Life Years (HLY) – target: doubling the HLY by 2020*
- *Website of D. For public health and risk assessment: links to databases, info on policies*

▪ Towards integrated health information networks

- *Target: By end 2008, the majority of all European health organisations and health regions (communities, counties, districts) should be able to provide online services such as teleconsultation (second medical opinion), e-prescription, e-referral, telemonitoring and telecare.*

- *Implementation:*

- *ePrescription, others under telemedicine*
- *WSD in England (whole system demonstrator)*
- *RENEWING HEALTH project (ICT Policy Support Programme – ICT PSP)*



- **Issue 2: Pilot Actions: accelerating beneficial implementation (3)**
 - Promoting the use of cards in health care
 - *Target: Promoting the use of cards in the health care sector. Adoption of implementation of an electronic health insurance card by 2008.*
 - *Implementation:*
 - *Many local implementations*
 - *NETC@RDS – eEHIC*



▪ Issue 3: Working together and monitoring practice (1)

▪ Disseminating best practices

- *Target: In 2004, a high level e-Health forum should be established, the role of which will be to support the Commission services. It should involve all necessary stakeholders, including at national, regional, or local hospital authority levels, thereby enhancing the understanding of the Commission services with regard to the current and planned status of development of e-Health in Member States. Its task should be to follow up the various roadmaps, and to identify further actions including a strong focus on users and access for all to e-Health, as well as to develop a strong evidence basis for the case for e-Health. The work of the e-Health forum will also be closely associated with the implementation of the Community Public Health Programme. During the period 2004-2008, Member States with the support of the European Commission will organise special events such as high level conferences in order to disseminate best practices. In parallel, **by the end of 2005, the European Commission, with contributions from Member States, should establish an effective way of disseminating best practices and supporting actions within the European e-Health area.***
- *Implementation:*
 - *eHealth Stakeholder Group 2005 as advisory group for the i2010 Subgroup on eHealth*
 - *European Task force on eHealth (HCPs, Patient repr., Industry) advises EC, May 2011*
 - *Annual eHealth Conference and Week*
 - *Action Plan for Telemedicine 2008*
 - *Action Plan for eHealth in the framework of LMI for Europe*
 - *ePractice.eu – eHealth Procurers Forum, Telemedicine Forum*



▪ Issue 3: Working together and monitoring practice (2&3)

▪ Benchmarking

- *Target: During the period 2004-2010, every two years, the European Commission will publish a study on the state of the art in deployment, examples of best practices, and the associated benefits of e-Health.*
- *By the start of 2005, Member States, in collaboration with the European Commission, should agree on an overall approach to benchmarking in order to assess the quantitative, including economic and qualitative impacts of e-Health.*
- *Implementation:*
 - *Numbers of studies since 2005*
 - *eHealth ERA – end of 2006*
 - *eHealth Strategies in Europe 2006 – 2011*
 - *Good eHealth Study 2006-2008*
 - *Methodology to assess Telemedicine Applications 2009-2010*
 - *Projects: RENEWINGHEALTH, epSOS*
 - *eHealth Benchmarking as activity in 3 Phases*

▪ Internal Collaboration

- *Target: An assessment of e-Health developments should be completed ahead of the second part of the World Summit to be held in Tunis in 2005.*
- *Implementation:*
 - *Progress Report on eHAP in 2005, presented in Tunis*
 - *WHA58.28 on eHealth of World Health Assembly – WHO integration*
 - *Research in FP6 and FP7*
 - *MoU in Dec. 2010 with US Dept. Of Health and EC – Interoperability on EHR*

Progress in a new Action Plan- Objectives



- A user-centric approach to attract and empower both ends of the spectrum, i.e. citizens, patients and healthcare professionals (objective 1)
- A thematic approach to lower the main barriers to eHealth deployment, such as interoperability and legal certainty (objective 2 and 3)
- The creation of a favourable environment to boost eHealth, which comprises support for research and development (R&D), innovation, and market development (objective 4).



- At a first glimpse, the implementation of the eHAP 2004-2010 could appear to be incomplete. Nearly all actions of importance were delayed and some have not been fulfilled at all. The **following targets have not been reached**. These include those actions which are the most massive in their implications and in their scale (and are indeed those which could be considered closest to the shift towards a European eHealth area):
 - identification of a common approach among the Member States for patient identifiers;
 - identification of interoperability standards for EHRs among the Member States;
 - adoption of common schemes for conformity testing and accreditation;
 - creation of a framework for greater legal certainty of eHealth products and services;
 - provision of online services in telemedicine and ePrescription by the majority of European health organisations and health regions.

Conclusion – state of eHealth in Member States



- All have elaborate strategies on eHealth
- Standards for EHRs have been developed: some Member States follow these, while the use of subsets of records such as Patient Summaries are underway in four countries
- National-level ePrescription services are a reality in three states and are in preparation in others
- Telemedicine is regionally applied at a pilot level with an emphasis in the Nordic countries, and is politically supported by a dedicated action plan (2008)
- Legal frameworks are under preparation in some countries and under consideration in most of them
- Large-scale pan-European pilot implementations on partial EHRs are progressing (through epSOS)
- Electronic European Health Insurance Cards services have been implemented on a pilot basis (in the context of NETC@RDS)
- Numerous studies on vital areas of eHealth have provided information, highlighted best practice and enriched the experience of all stakeholders
- Dissemination of best practice has become an online resource (ePractice.eu portal)
- An EU Public Health portal is a reality
- The creation of a market on eHealth products and services has become a long-term political aim (via the LMI and its action plan).

- **Basic Operational Framework on eHealth for Health Care Delivery**

List of Elements for Requirements definition for a basic level of health service:

- a level to be reached;
- guidance on how to identify requirements that are not yet in place;
- a list of WHO products and services that countries can use in meeting these requirements.

WHO – BOF-eHCD - basic policy



- Elements of basic policy requirements for eHCD

1.1 National coordination of e-health services		
1.1.1		National policy
1.1.2		National e-health plan
1.1.3		Legal framework for protection and transfer of patient data
1.1.4		National E-health committee
1.1.5		Education Programmes
1.1.6		Inventory of applications
1.2 e-health for emergencies		
1.2.1		Emergency response plan
1.3 Adequate resources		
1.3.1		Financial
1.3.1a		Fiscal allocation
1.3.1b		Cost recovery
1.3.2		Technical resources
1.3.2a		Adequate functioning equipment
1.3.3		Adequate number of trained staff

- Elements of basic requirements for quality and safety measures for eHCD

2.1 Standards for Patient Care Information Systems' (PCIS)	
2.1.1	Hospital Information Systems (HIS)
2.1.2	Electronic Patient Record (EPR)
2.1.3	Patient Information Systems (PIS)
2.1.4	Physician Order Entry (POE)
2.1.5	Decision-Support Technique (DST)
2.1.6	Medication System
2.1.7	General Practitioner Information Systems (GPIS)
2.1.8	Data Warehouse
2.1.9	Training of all staff
2.1.10	Quality assessment system
2.1.11	Documentation system for all processes
2.1.12	Security
2.2 Standards for Telematics services	
2.2.1	National strategy for Telematics services
2.2.2	Feasibility study on telemedicine
2.2.3	Telemedicine, tele-education, telematics for health research and health services management
2.2.4	Working description of the techniques
2.2.5	Health technology assessment
2.2.6	Support for safe and appropriate use of blood
2.2.7	Good telemedicine practice

- Elements of basic requirements for access to eHCD applications

3.1 Connectivity	
3.1.1	E-mail
3.1.2	Internet
3.1.3	Connections
3.1.4	Video Equipment
3.1.5	Computers
3.1.6	Smart cards
3.1.7	specific hardware for PCIS
3.1.8	Distance learning for trained professional and health workers
3.2 Software and Hardware Standards	
3.2.1	Assessment of e-readiness
3.2.2	Basic standards for technology readiness
3.2.3	Guidelines on adherence to technology standards
3.2.4	Protocols for evaluation, procurement, validation of hardware
3.2.5	Protocols for evaluation, procurement, validation of software
3.2.6	Standards and guidelines on open sources software
3.2.7	Benchmarking and comparative studies
3.2.8	Technology transfer and investment protocols
3.2.9	Computing manufacturing
3.2.10	Development and production of component chips
3.2.11	Encryption
3.2.12	Public software style standards
3.2.13	Guidelines on policies

- Elements of basic requirements for the effective use of eHCD applications

4.1 Appropriate Technical Use of e-health services	
4.1.1	National policy and guidelines on e-health
4.1.2	Training of health care workers involved in e-health
4.1.3	E-based patient tracking and recording
4.1.4	Patient demographics
4.1.5	ADT events
4.1.6	Diagnosis
4.1.7	Rad. Images and Lab results
4.1.8	e-referral
4.2 Store and forward image exchange	
4.2.1	Tele radiology
4.2.2	Tele ultrasound
4.2.3	Tele clinical physiology
4.2.4	Tele pathology
4.2.5	Tele laboratories
4.3 Tele consultation	
4.3.1	Dermatology
4.3.2	Pediatrics
4.3.3	Densitometry
4.3.4	Psychiatry
4.3.5	Surgery including laparoscopy
4.3.6	Cardiology
4.3.7	Decision trees for patient self management of chronic diseases
4.3.8	Tele conferencing
4.4 e-learning	
4.4.1	Laboratory
4.4.2	Diagnostic Imaging
4.4.3	Blood Safety and Clinical Technology
4.4.4	Injection Safety
4.4.5	Surgical Care and Transplantation
4.4.6	Medical devices

WHO BOF eHCD – Form Part 1 – Example



(BOF) COUNTRY REVIEW VERSION

THEME	REQUIREMENTS IN COUNTRY	IN PLACE			COMMENTS
		Yes	No	Part	
1. POLICY.					
Elements of basic policy requirements for eHCD.					
1.1 eHealth national policy and plan					
1.1.1	Does your country have a National eHealth policy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.1.2	Does your country have a National eHealth plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.1.3	Is your National eHealth strategy (or plan) meeting both national and provincial demands?, as well as issues relating to primary, secondary and tertiary levels of health systems?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.2 Adequate, sustainable finances and technical resources					
1.2.1	Legislative framework as you may know guide health professionals to deal with appropriate establishment of health services information systems. Does your country have a Legislative framework? If that is the case please describe it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.2.2	Does your National eHealth plan have a committee, to coordinate and assist the national activities on eHealth?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.2.3	Education programmes are important factors for the best implementation and maintenance of a national eHealth plan, please describe what are the programmes that your National plan on eHealth have.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.2.4	Clinical engineering, is a main component of Health systems, does your National health system has a capacity building curriculum?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.2.5	Do you have an Inventory of applications of eHealth? Please describe them.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.2.6	Ethical and Legal issues are always important components that health security professionals dealing with, these issues that are related to systems, data protection and privacy are critical to healthcare. Please describe does that your country deal with.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.3 eHealth for emergencies					
1.3.1	Emergency and disaster preparedness and recovery are primary duties of healthcare providers and other first responders and must be carefully taken into consideration when planning an information system operational capabilities. Do you have an integration of EHCD applications into emergency response plan? Please describe it.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



WHO eHealth Country Report - Example Austria

Austria

Country indicators	Population (000s)	8 337	Total health expenditure (%GDP) ^a	10.1	ICT Development Index	6.72
	GNI per capita (PPP Int \$)	38 550	Per capita total health expenditure (PPP Int \$)	3 836	ICT Development Index rank	17
	World Bank income group	High	Hospital bed density (per 10 000 population)	78	Mobile cellular subscriptions (per 100 population)	136.71
	OECD country	Yes	Physician density (per 10 000 population)	37.9	Internet users (per 100 population)	73.45
	Life expectancy at birth (years)	80	Nurse density (per 10 000 population)	66.4	Disability Adjusted Life Years (DALY)	10 223

Sources: See page ix

1. eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

I. Policy framework

	Country response	Global response (%) ^a	Policy implemented	Year of implementation
National eGovernment policy	Yes	85 ^b	Partly	2006
National eHealth policy	Yes	55 ^b	Partly	2006
National ICT procurement policy for health sector	No	37 ^c	—	—
National multiculturalism policy for eHealth	No	30 ^c	—	—
National telemedicine policy	Yes	25 ^c	Partly	—

II. Legal and ethical frameworks for eHealth

	Country response	Global response (%) ^a
Legislation on personal and health-related data		
To ensure privacy of personally identifiable data	Yes	70
To protect personally identifiable data specifically in EMR or EHR ¹	Yes	31
Legislation for sharing health-related data between health care staff through EMR/EHR ¹		
Within the same health care facility and its network of care providers	No	26
With different health care entities within the country	No	23
With health care entities in other countries	No	11
Internet pharmacies		
Legislation that allows/prohibits internet pharmacy operations	Prohibits	Allows: 7, Prohibits: 19
National regulation/accreditation/certification of internet pharmacy sites	No	7
Legislation that allows/prohibits internet pharmacy purchases from other countries	No	Allows: 6, Prohibits: 12
Internet safety		
Government sponsored initiatives about Internet safety and literacy	Yes	47
Security tools required by law for facilities used by children	Do not know	22
Quality assurance approaches to health-related Internet content		
Voluntary compliance by content providers or web site owners	Yes	56
Technology through filters and controls	No	28
Government intervention through laws or regulations	No	26
Education programmes for consumers and professionals	No	23
Official approval through certification, accreditation, or quality seals	No	17

III. eHealth expenditures and their funding source

Expenditure	Public funding		Private funding		Donor/non-public funding		Public-private partnerships funding	
	Country response	Global response (%) ^a	Country response	Global response (%) ^a	Country response	Global response (%) ^a	Country response	Global response (%) ^a
ICT equipment	Yes	78	Yes	37	No	59	Yes	28
Software	Yes	76	Yes	35	No	56	Yes	29
Pilot projects	Yes	69	Yes	33	Yes	51	Yes	28
Skills training	Yes	61	Yes	26	No	43	No	20
Ongoing support	Yes	61	Yes	19	No	35	No	18
Scholarships	Yes	28	Yes	8	No	19	No	4

IV. Capacity building

	Country response	Global response (%) ^a
ICT education		
ICT training for students in health sciences at tertiary institutions	Yes	77
Institutions offer continuing education in ICT for health professionals	Yes	75
Professional groups offered ICT continuing education		
Medical	Yes	73
Nursing	No	62
Public health	No	60
Dentistry	Yes	54
Pharmacy	No	54

^a Indicates the percentage of participating Member States responding "Yes"

¹ Electronic medical records / Electronic health records

2. eHealth applications

eHealth applications surveyed in 2009 include telemedicine (the delivery of health care services using ICT where distance is a barrier to care); mHealth (the use of mobile devices in delivering health care services); and eLearning (use of ICT for learning).

I. Telemedicine

	Country response	Global response (%) ^a
Telemedicine enabling actions		
National telemedicine policy	Yes	25
Implemented national telemedicine policy	Partly	—
Formal evaluation and/or publication of telemedicine initiatives since 2006	Yes	22
Barriers to implementing telemedicine solutions		
Perceived costs too high	No	60
Lack of legal policies/regulation	No	40
Organizational culture not supportive	Yes	39
Underdeveloped infrastructure	No	38
Lack of policy frameworks	No	37
Competing priorities	Yes	37
Lack of demand by health professionals	Yes	31
Lack of nationally adopted standards	No	26
Lack of knowledge of applications	Yes	25
Lack of technical expertise	No	17
Information most needed in country to support telemedicine development		
Cost and cost effectiveness	Yes	69
Clinical possibilities	Yes	58
Infrastructure	No	52
Evaluation	Yes	46
Legal and ethical	Yes	45
Effect on human resources	Yes	40
Patients' perception	Yes	30

II. mHealth

	Country response	Global response (%) ^a
mHealth initiatives		
mHealth initiatives are conducted in country	Yes	83
Formal evaluation and/or publication of mHealth initiatives	Yes	12
Barriers to implementing mHealth initiatives		
Competing priorities	Yes	53
Lack of knowledge of applications	Yes	47
Lack of policy framework	No	44
Cost effectiveness unknown	Yes	40
Lack of legal policies/regulation	Yes	38
Perceived costs too high	No	37
Lack of demand	No	29
Underdeveloped infrastructure	No	26
Lack of technical expertise	No	26

III. eLearning

	Country response	Global response (%) ^a
eLearning in health sciences at the tertiary level		
Used in teaching health sciences	Yes	72
Used in training health professionals	Yes	69
Barriers to eLearning		
Underdeveloped infrastructure	No	64
Lack of policy framework	No	63
Lack of skilled course developers	Yes	55
Lack of knowledge of applications	No	46
Perceived costs too high	Yes	45
Availability of suitable courses	Yes	42
Lack of demand	No	21

IIIb. eLearning target groups

Profession	Students		Professionals	
	Country response	Global response (%) ^a	Country response	Global response (%) ^a
Medical	Yes	68	No	71
Public health	Yes	52	Yes	56
Nursing	No	50	Yes	55
Pharmacy	No	45	No	37
Dentistry	Yes	39	No	37

^a n=113

^b n=112

^c n=114

National Ehealth Strategies – Examples – Denmark

BORGER

SUNDHEDSFAGLIG

LOG PÅ

MIN SIDE

Søg

> Nyheder

> Om sundhed.dk

> Hjælp

> English

> Presserum

> Sitemap

> Kontakt sundhed.dk

Her er du: Forside > Service > English > An e-health nation

English

About the portal

An e-health nation

> Healthcare in Denmark

> MedCom

Contact us

Can my country copy the success?

AN E-HEALTH NATION

The Danish eHealth Portal has been a political objective of high quality information using the most current information technology.

> Healthcare in Denmark

The Danish healthcare sector

> MedCom

MedCom is a new, web-based system

Key facts about the Danish healthcare system:¹¹

Life expectancy at birth: 78.1 years

Healthcare Expenditure as % of GDP: 9.8% (OECD 2007)

WHO Ranking of Healthcare systems: rank 25

Public sector healthcare expenditure as % of total healthcare expenditure: 85% (OECD 2007)

■ DK ■ EU27

Indicators: Compound indicators of eHealth use (cf. annex for more information), % values. **Source:** empirica, Pilot on eHealth Indicators, 2007.

National Ehealth Strategies – Examples – Denmark

Features for Patients

Directory of names and addresses

- Contact information
- E-services in the contact with the GP (booking, prescription renewal, consultation)
- Health appointment calendar
- Comparison of prices, quality and accessibility
- Information about prevention, treatment and coping
- Contact information

Medical information (eg. information about treatments)

- Waiting list information from hospitals
- Preventive medicine
- Health laws and regulations
- Medical patient handbook with 3000 articles and 2000 illustrations
- Patient to patient dialogue in online patient networks
- Test yourself

Access to personal health data

- Online Electronic Health Record from hospitals
- Cross-sectorial personal electronic medicine profile
- Overview of personal medical history since 1977 (list of contacts with hospitals)
- Overview of contact with primary sector clinics since 2003
- Online Organ Donor Registration
- Online Living Will
- 'My log' (lets the patient see which health professionals have accessed their personal data)
- Some local it-services for patients with chronic conditions

Features for Practitioners

Information for GPs:

- Online Medical Handbook
- ICPC search of diagnoses from GP's electronic healthcare program
- Complete cross-sectoral list of health and prevention programs offered by municipalities or hospitals.
- Waiting list information from hospitals
- Encyclopedias (Cochrane etc.)
- Access to edit information on the clinic's presentation on the portal.

Patient data:

- Online Electronic Health Record from hospitals
- Cross-sectorial personal electronic medicine profile
- Web access to laboratory data
- Treatment feedback and benchmarking data regarding current patients with diabetes etc.

Regional information:

- Contact information (authorities, departments, health personnel)
- Visitation information from hospitals/regions
- Preventive medicine
- Health laws and regulations
- Laboratories and consultants
- Regional health reports

National Ehealth Strategies – Examples – Denmark

The purpose of the portal is to:

- Bring together relevant information from all parts of the health service
- Offer a shared platform of communication
- Empower patients by offering maximum insight and transparency in the health care sector
- Offer health care providers easy access to clinical information about their patients' medical history.
- All Danish citizens have access to sundhed.dk, enabling patients to communicate and patients and their families to get an overview of correct and updated health care information.

Denmark has been first mover on many IT initiatives within health services.

National Ehealth Strategies – Examples – England



[Home](#) [Services & Applications](#) [Engagement](#) [Newsroom](#) [Resources](#) [Industry](#) [About Us](#) [Patients](#)

NHS Connecting for Health

NHS Connecting for Health (NHS CFH) is part of the Department of Health Informatics Directorate.

Our role is to maintain and develop the NHS national IT infrastructure.

NHS staff, the media and patients can use this site to learn about our work and its benefits.



Latest news

[Hamer champions involving student nurses in IT innovation](#)
19 March 2012

[Choose and Book features in BBC TV show 'Doctors'](#)
01 March 2012

[Clarification on free NHS treatment for those with an NHS Number](#)
09 February 2012

[More news](#)



Featured services



[Summary Care Records \(SCR\)](#)

SCRs provide healthcare staff treating patients, in an emergency or out-of-hours.

New & upgraded sections



[Electronic Prescription Service \(EPS\)](#)

New content, FAQs & cases

[Key figures about healthcare in the United Kingdom¹¹:](#)

Total population: 61,411.69 (OECD 2008);
Life expectancy at birth: 79.9 years (OECD 2007);
Healthcare expenditure as a % of GDP: 8.4% (OECD 2007);



National Ehealth Strategies – Examples – England

Applications

Alphabetical: A to N

- ▶ [Addressing](#)
- ▶ [Automatic identification and data capture \(AIDC\)](#)
- ▶ [Choose and Book](#)
- ▶ [Clinical Dashboards](#)
- ▶ [Clinical Record Standards](#)
- ▶ [Clinical Safety](#)
- ▶ [Data Standards](#)
- ▶ [Demographics](#)
- ▶ [Deployment support](#)
- ▶ [Electronic Prescription Service \(EPS\)](#)
- ▶ [ePrescribing](#)
- ▶ [GP Support](#)
- ▶ [Health and Social Care Integration](#)
- ▶ [HealthSpace](#)
- ▶ [Implementation](#)
- ▶ [Informatics Capability Development \(ICD\)](#)
- ▶ [Information Governance \(IG\)](#)
- ▶ [Map of Medicine](#)
- ▶ [N3 - The National Network](#)

Alphabetical: N to Z

- ▶ [NHS Business Partners](#)
- ▶ [NHS Care Records patient website](#)
- ▶ [NHS Infrastructure Maturity Model \(NIMM\)](#)
- ▶ [NHS Interoperability Toolkit](#)
- ▶ [NHSmail](#)
- ▶ [NHS Number](#)
- ▶ [NHS Pathways Capacity Management System \(CMS\)](#)
- ▶ [NHS Strategic Tracing Service \(NSTS\)](#)
- ▶ [Offender Health IT](#)
- ▶ [Pathology Messaging](#)
- ▶ [Picture Archiving and Communications System \(PACS\)](#)
- ▶ [Professionalising Health Informatics \(PHI\)](#)
- ▶ [Pseudonymisation](#)
- ▶ [Registration Authorities and Smartcards](#)
- ▶ [Secondary Uses Service \(SUS\)](#)
- ▶ [Spine](#)
- ▶ [Summary Care Records \(SCR\)](#)
- ▶ [Systems & Service Delivery](#)

National Ehealth Strategies – Examples – Österreich

Mission Statement

- e-Health ist ein Gesundheitsservice für Bürger und dient der kontinuierlichen
- Verbesserung des österreichischen Gesundheitswesens

Vision

- e-Health ist ein integriertes Management der Gesundheit der Bürgerinnen und Bürger mittels Informations- und Kommunikationstechnologie zur Unterstützung der Prozesse aller Akteure im Gesundheitswesen unter besonderer Berücksichtigung der Datenschutzes und der Datensicherheit.
- Bis 2015 werden den berechtigten Personen die wichtigsten Gesundheitsdaten ebenso wie aktuelles medizinisches Wissen orts- und zeitunabhängig in einer optimal aufbereiteten Form zur Verfügung stehen.

Key facts about the Austrian healthcare system:¹⁶

Life expectancy at birth: 80.5 years

Healthcare Expenditure as % of GDP: 10.1% (OECD 2007)

WHO Ranking of Healthcare systems: rank 9

Public sector healthcare expenditure as % of total healthcare expenditure: 76% (OECD 2007)

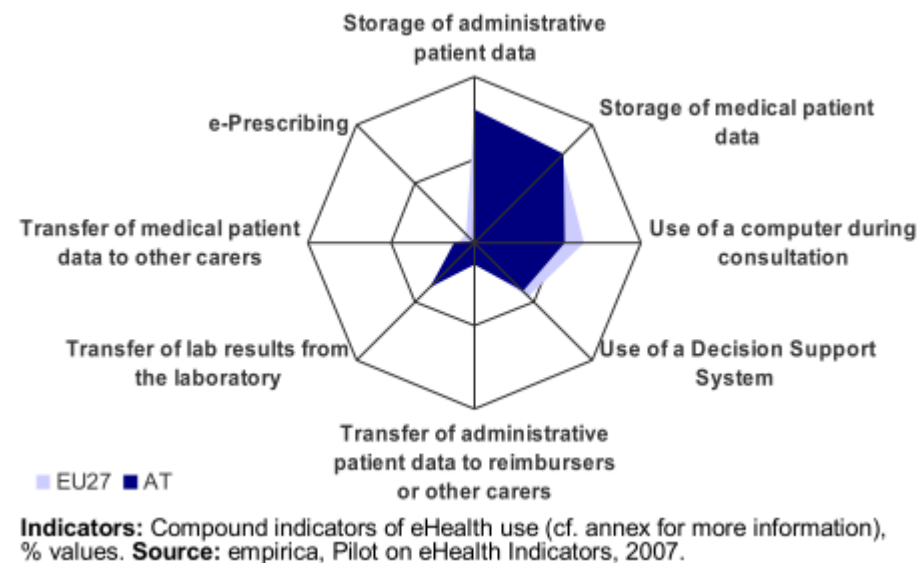
National Ehealth Strategies – Examples – Österreich

Schlüsselfunktionen und Werte von e-Health

- Der Bürger steht im Mittelpunkt von e-Health
- Datenschutz und Datensicherheit sind integraler Bestandteil von e-Health
- e-Health bringt mehr Information, Transparenz und Flexibilität für Bürger
- e-Health dient der kontinuierlichen Qualitätsverbesserung im Gesundheitswesen
- e-Health konzentriert sich auf die Prozesse des Gesundheitswesens
- e-Health unterstützt eine effiziente und effektive Gesundheitsversorgung
- e-Health stärkt die professionelle Kompetenz
- e-Health unterstützt den Zugriff auf aktuelles, qualitätsgesichertes Expertenwissen
- e-Health erzeugt Mehrwert im Gesundheitswesen
- e-Health ist überregional
- e-Health führt zu Innovation im Gesundheitswesen
- e-Health führt zur Veränderungen der Organisation des Gesundheitswesen

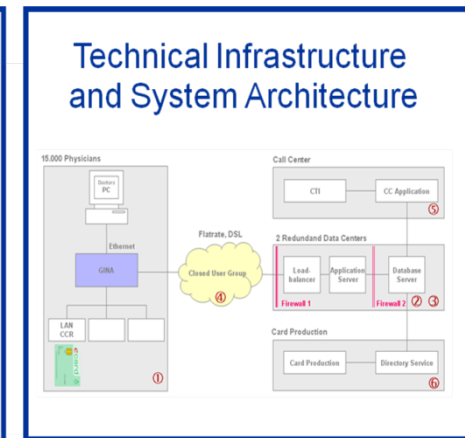
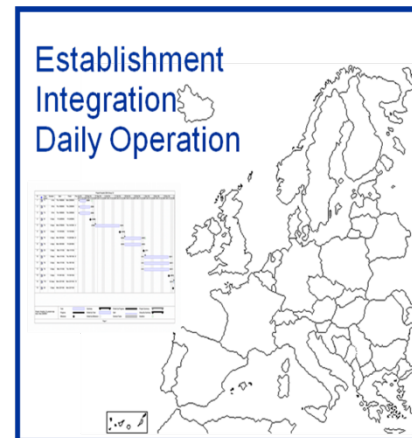
Nationale eHealth Strategie – Österreich - Module

- **eMedikation / eRezept**
- **eLabor**
- **eArztbriefe**
 - eBefundbericht
 - eZusweisung
 - eÜberweisung
- **eLeistungsbericht**
 - eAbrechnung
 - eKostenübernahme
- **eTerminmanagement**
- **eOrdering**
- **eNotfallsdaten**
- **eImpfpass**
- **eMutter-Kind-Pass**
- • e...



→ ELGA

Natural Order of Criteria Levels



PC>IC>OC>TC

References

European Commission: e-Health - making healthcare better for European citizens: An action plan for a European e-Health Area (eHealth Action Plan 2004-2010)- COM (2004) 356

European Commission: Assessing the progress of the eHealth Action Plan for the period 2004 – 2010, Report Date: August 2011

WHO Atlas eHealth country profiles: based on the findings of the second global survey on eHealth. (Global Observatory for eHealth Series, 1)

<http://ehealth-strategies.eu/>

Programme, Satellite meetings, Exhibition, Networking, Social events, etc: www.ehealthweek.org

History of the eHealth Ministerial conferences since 2003:
<http://ec.europa.eu/ehealthweek>

Fragen

- Danke für die Aufmerksamkeit!