

NESSI eHealth manifesto

Background

Nowadays, the European Union is experiencing profound changes that have dramatic effects on the health service provision to the general public. These changes range from the new population distribution in the European countries to the increase of ageing people, encompassing the new habits of modern lifestyle, the appearance of new diseases, the climatic change, etc. In turn, health service provision faces a reduction in the available resources, including both economic and human aspects, whose trend is to continue in the coming years.

Almost 10%¹ of European jobs belong to the health sector, which in turn contributes to the 9% to the European Gross Domestic Product (GDP). It is expected that health costs reach up to 15% of GDP by 2020 in Europe, strictly due to cost increase and larger demand, but it does not necessarily imply larger proportional availability of resources for health service provision.

Both health stakeholders and observers forecast that eHealth in Europe is set for exponential growth, driven by the necessity to face new challenges and to deal rapidly and appropriately with the ever-increasing medical information, as well as the new massive high-throughput data and communication technologies.

In this sense, the objective for the future must be to contribute to Europe's exploitation of the unprecedented opportunities for generating new knowledge and to translate it into new systems, tools, and applications that enhance human health. Thus **NESSI eHealth WG** has identified a set of main areas in which IT technologies could be applied, which, among others, include the following: personalized medicine, e-prescription, electronic health records, tele-monitoring for homecare, operations management, development of virtual human models as well as services and health information tools managed by either health professionals or even patients.

Last but not least, eHealth can not succeed without involving health professionals in all steps of the service lifecycle, since the very beginning of new IT concepts specifications for health care services.

Target

The NESSI eHealth WG proposes actions aiming at accelerating the development of the European eHealth industry, increasing citizens' well-being and producing societal and economic benefits by developing high-quality IT products and services. eHealth includes **patient centred services** and citizen (prevention) services that will help

¹ Source: Accelerating the Development of the eHealth Market in Europe. eHealth Taskforce report 2007. EC

reaching an **effective provision for the highest quality of healthcare at the point of care**. This includes electronic services that promote health and help to prevent illness, advance in rehabilitation services, improve access to information, increase quality and/or cost-efficiency of healthcare delivery. These services should be adapted to support changes of patient conditions, patient mobility and demographic changes, harnessing medical and ICT advances for fully exploiting the limited resources present in Europe.

Health promotion and prevention is the most effective policy to have influence on the citizens' well-being and quality of life. Its major objective is to increase both the present and the future quality of life citizens in a twofold way: taking care of healthy people health status even before damage comes, and facilitating already ill people proper tools for a better daily care. IT technologies may play a major role in health promotion and disease prevention becoming a reality in daily clinical practice. IT technologies may join citizens' daily lives with medical knowledge to improve the effectiveness of self-care. IT technologies also allow this self-care to be supervised by a healthcare professional and to be continuous in time with three main benefits in mind: optimised medical diagnosis and treatments, predictive healthcare tools and personalised healthcare solutions.

Chronic, ambulatory as well as **home-care services** may benefit from continuous improvements of care and supervised self-care processes using new IT technologies. Such technologies would help actors involved in the care processes (i.e. citizens, care practitioners, etc) to better perform patient monitoring. They will also support the provision of useful and reliable patient information that will enable better diagnoses and treatments, service planning as well as serve as input for research purposes, while patients are in their normal life.

IT technologies must support operations management in health care with advanced tools for achieving new organizational models, cost-effective resource coordination and utilization, and high quality delivery of services.

IT developments must provide **clear benefits to final users** overcoming the current mistrust of new IT technologies; thus it is vital to accomplish critical levels of safety, real time and economic constraints in a complex and diverse scenario which includes many users with geographic, language and background diversity.

IT technologies will play a vital role when health services are used in a **context of emergency** and crisis management where a rapid, planned and coordinated response is crucial for mitigating the hazards and performing the required healthcare service provision in due time and on site.

Finally, it must be pointed out that the direct beneficiaries of the NESSI eHealth WG developments will be general public individuals at risk, chronically ill patients, elderly persons, healthcare professionals, public and private healthcare actors.

Impact of Services

The Health sector has been applying ICTs for quite a long time but although large achievements have been attained, many challenges remain either partially explored or simply unexplored. Completing or attaining these challenges is the matter the NESSI eHealth WG is working on. EHealth will have an impact on citizens and patients, doctors, healthcare organizations and scientific community. In particular, deployment of ICTs technologies will contribute to:

- Provide **citizens** with easier access, visualization and interaction with reliable and trustworthy medical information and services.
 - Encouraging citizens to use information technologies on their daily life by enhancing interaction and interfaces.
 - Easier, more effective and more personalized patient information.
 - **Empower** people to take responsibility for managing their health

- Decrease the administrative and financial burden on **patients**, linking clinical and medical insurance work flows

- Provide **doctors** with clinical decision support systems for disease management based on useful information automatically built upon the fusion of different sources of heterogeneous data which is crucial for decision making by:
 - Overcoming the semantic and linguistic barriers not only across countries but also different disciplines
 - Integrating behavioural, environmental, and habits information
 - Adding reliability and trustworthiness
 - Improving prevention and fast response against possible pandemic diseases.

- Link **patients** and **doctors** during specialised medical treatment, to ease the monitoring and decrease the need for hospitalisation.

- Provide more effective and more personalized patient care.

- Provide **healthcare systems** with
 - medical informatics solutions that aim to achieve the best possible support of patient care and administration by electronic data processing
 - operations management decision support systems, based on a comprehensive integrated health information system (HIS), to manage the logistic, clinical, administrative and financial aspects of a healthcare centre. The provided solutions will be customized to the personalized care delivered to patients and will be able to solve and improve the daily hospital work in different aspects such as materials replenishment, human resources and therapeutic projects management and within specialty-specific sub-systems in medical specialties (e.g. laboratory, pharmacy, operating room, out-patient clinic and territory management).
 - tools for supporting disaster/crisis management by expanding clinical and administrative workflows to medical device and external applications.

- tools for enhancing first level access to emergency information
 - Aiming to reduce the human work load of emergency services
 - Overcoming the semantic and linguistic barriers across borders and different actors
- Provide the **scientific community** with:
 - easier access to reliable and trustworthy information and with tools for new medical knowledge generation that take into account the latest biomedical innovations, such as nanotechnologies, image acquisition and processing, genomics, proteomics, metabolomics and other -omics. Data integration and knowledge extraction from high-throughput technologies constitute a main challenge that will be achieved not only by applying innovative bioinformatics tools but also by taking advantage of new IT developments such as grid technologies and parallel computing.
 - virtual human models for “in silico” experimentation. Heterogeneous information from genes to organs will be integrated using bioinformatics and mathematical approaches to produce reliable models in which it will be possible to easily research and simulate intricate physiological mechanism and biological interactions at different levels of complexity. These virtual models will provide the scientists with a new way to investigate drug development improving its safety and efficiency, and reducing tests in animals.

Requirements

One of the main barriers affecting the development of the ICT in the Health domain which has been identified is the lack of legal certainty. Thus it is necessary to provide a European regulatory framework, especially for information exchange at all levels

- Among institutions within one country/region and between countries.
- Among private and public institutions
- Among different levels of care (primary care, secondary care, etc)

Market fragmentation and lack of interoperability is another major issue, thus it is important to solve cross-domain interoperability and standardisation. The WG will emphasise the creation of processes through which interoperability can be implemented using standards like HL7, DICOM, MIAME, MIAPE and others.

Ensuring secure access and privacy protection is mandatory and essential to enhance citizens' confidence in eHealth, thus it is necessary to provide safe and secure infrastructures for linking multi-level and multi-source information from public and private sectors across geographical boundaries. Some foreseen mechanisms are hierarchical patient identification across borders, tools for patient consent, access control and audit mechanisms.

European/National/Regional Programmes

The EU's Framework Programme, the Competitiveness and Innovation Program (CIP), the Eureka programme and other continental, private initiatives are the scope in which the NESSI eHealth WG will work at European level. The WG will contribute to the NESSI Strategic Research Agenda by identifying missing research lines and thus support as part of the large NESSI team to contribute to the roadmap of future research actions within the EU's Framework Programme.

The eHealth WG will also address the enlargement of NESSI to a National and Regional scope. This will be done by including national and regional strategies in the area into the common vision of NESSI eHealth WG and spreading the results of the WG to those National actors as well as contributing to the national programmes and initiatives related to the eHealth area. The final objective of these tasks is the strengthening of the eHealth research and adoption in terms of actors and saved resources at a National and European scope.

Links of the eHealth WG

The eHealth WG foresees the establishment of links with relevant platforms and initiatives in the Health area. The objectives of this collaboration are to find common topics and promote the exchange of results between the WG and those relevant actors of the eHealth field.

Moreover, the collaboration with other similar initiatives is looking for the increase of the synergy among different research groups. Apart from this, the collaborations with other platforms will reinforce the European research arena in front of competitors such as United States or Japan; collaboration among relevant actors is also fostering the early adoption of the services by the final users.

The mechanisms to establish these collaborations are based mainly in bilateral meetings with relevant stakeholders of the different groups. The specific actions that are planned include periodic meetings with different representatives, participation on events organised by the different groups and joint publication of news to the created communities.

NESSI eHealth WG is exploring relations with the following initiatives:

- e- Mobility e-Health working group
- Nanomed (European platform on Nanomedicine)
- IMI (Platform on innovative medicaments)
- Photonics21 (European Platform on Photonics), mostly through its WG on health.
- CONTINUA Health Alliance (alliance of health relevant commercial actors)

The collaboration with those initiatives and platforms will be discussed in terms of common research topics, mechanisms and actions for the benefit of the European Health area.

Moreover, NESSI e-Health Working Group supports toughly the Future of Internet initiative that followed by NESSI Platform.

Timeframe

The WG will produce the following documents:

- eHealth WG manifesto by January 2008
- Position paper by April 2008
- New approach to strategic project set by June 2008

Required Output

The NESSI eHealth WG aims to promote NESSI platform as a foundation for eHealth services by:

- Monitoring the adequacy of NESSI's SRA to the eHealth application area
- Contributing to the NESSI SRA with requirements, scenarios and the eHealth business view.
- Contributing to NEXOF with testbed scenarios and with the requirements of such services
- Engaging in collaboration with other NWGs in areas of mutual interest
- Defining new / updated business processes addressing the issues described in section "impact of services"
- Monitoring the activities of the health initiatives at European level
- Enhancing the visibility of NESSI within the European activities and at national level as identified

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