

# HEALTH ON-LINE

*e*Europe



## The eEurope Action Plan

The world economy is moving from a predominantly industrial society to a new Information Society, offering tremendous potential for growth, employment and inclusion.

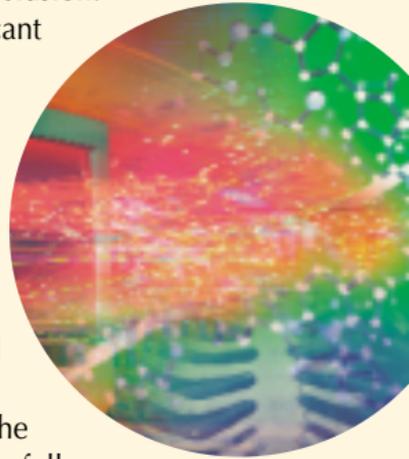
These changes, perhaps the most significant since the Industrial Revolution, are far-reaching and global and they are not just about technology. They will affect everyone, everywhere, and offer huge potential to enrich everyone's lives.

The success of the new economy will depend on consumers' ability to take full advantage of the opportunities on offer. For this, they need to be able to access the information they seek and interact successfully on the Internet and with other digital technologies.

In 1999, the European Commission (EC) launched a new initiative - eEurope 2002 - An Information Society For All. Intended to accelerate positive change in the European Union (EU), eEurope aims to secure equal access to digital systems and services for all of Europe's citizens, to promote computer literacy and, crucially, to create a partnership environment between the users and providers of systems, based on trust and enterprise. Its ultimate objective is to bring everyone in Europe - every citizen, every school and every company - on-line as quickly as possible.

Building on the success of eEurope 2002, in June 2002, an Action Plan for eEurope 2005 was launched. Its objective is to provide a favourable environment for private investment and for the creation of new services and new jobs, to boost productivity, to modernize public services, and to give everyone the opportunity to participate in the global information society. The result is intended to make the EU the most competitive and dynamic knowledge-based economy with improved employment and social cohesion by 2010.

The eEurope 2005 Action Plan proposes policy measures to bring about modern on-line public services. Concerning e-Health it proposes actions on Electronic Health Cards, Health Information Networks and On-line Health Services. The European Committee for Standardization (CEN) will be considering the standardization requirements to support these actions.





## Health On-line Objectives and Standardization

The original eEurope Action Plan stated the challenge as:

"The prime objective of this action is to develop an infrastructure of user friendly, validated and *interoperable systems for health education, disease prevention and medical care*. Many of the tools for the building of such an infrastructure exist, however efforts are needed at member state level to move towards the implementation of the infrastructure in a coherent way which enables them to use technology to achieve their health objectives."

The member states have a major role in realizing this goal. However, to achieve interoperability and meet the challenges of the borderless Internet, Community action is also required. In particular, standards are needed for the building of health systems by member states and by the private sector.

The use of information technology and the building of a Health Information Infrastructure are rapidly changing the health sector, but we are still only in the early stages of moving toward full utilization of today's technology in this field. The use of information technology can increase the efficiency of the sector and help to contain costs. 'Health on-line' can also improve the quality of care, maximize the effectiveness of health spending and empower citizens, and it has the potential to reduce some of the safety hazards associated with modern, powerful medical technology.

The lack of products complying with standards is one of the main reasons for the sub-optimal use of Information and Communication Technologies (ICTs) for health. In key areas, 11 years of standardization efforts have resulted in a number of important technical specifications developed by CEN under mandates from the European Commission and the European Free Trade Association (EFTA). These European standards are, however, used unevenly among the member states. Most ICTs in the sector still use proprietary or national solutions, preventing a European market for products as well as creating barriers to the cross-border communication of health-related information.

## Why Standards for Health Informatics?

The overall purpose of health services is to provide an increasingly high quality of care for patients and citizens, not only in their home environment but also throughout Europe. Standards are a prerequisite for:

- **Preventing health hazards, eg drug hypersensitivity**

The present lack of standardized ICT communication that prevents appropriate access to health records may result in significant clinical risks for patients. This is an important safety issue that has not been recognized sufficiently. For example, a number of adverse drug reactions could have been prevented if information in existence elsewhere in another health institution had been made available on-line. It is also well recognized that appropriate decision support systems with standard interfaces to the clinical routine situation, such as for drug therapy, can decrease sub-optimal drug use and reduce costs.

- **Patients are starting to demand that 'their' data should be available on-line**

Citizens are increasingly demanding that it should be possible to obtain professional health information related to their case from a source at the point of care, wherever this may be.



- **Improve efficiency by enabling professional co-operation in new ways**

Health Information and Communication Systems are essential to improve efficiency by enabling the effective integration and co-operation of health professional resources.

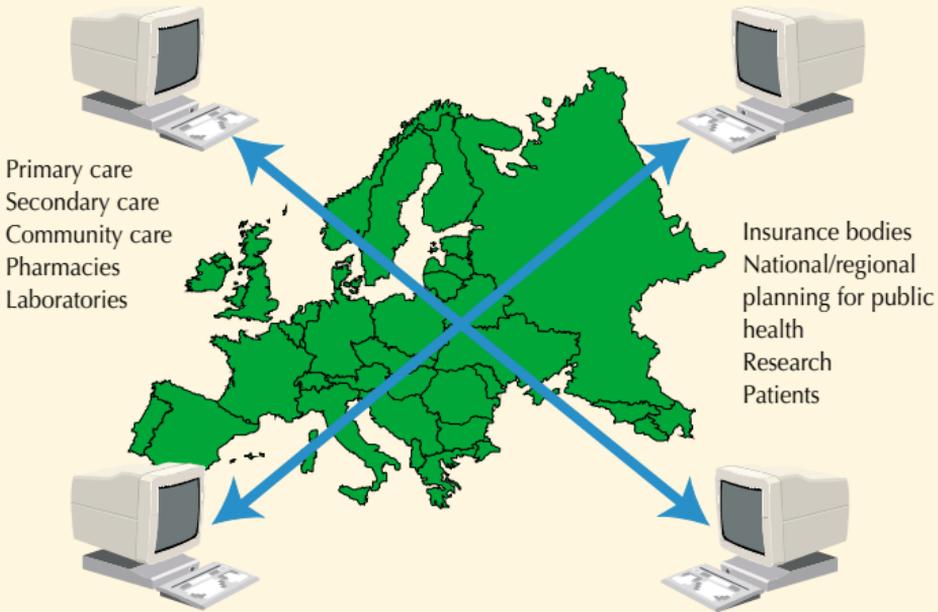
- **Quality management requires aggregated data**

ICT systems are required to manage the important process of quality management and control, involving the activities of public authorities as well as actions within provider organizations and research institutions. The aggregated information on health monitoring should also be made available to the citizens/patients, as described in the proposed Community strategy for health.

- Integration of modular systems from different suppliers**  
 Implemented standards are often crucial for communication, and they are important in open, very complex health care systems made up of many different organizations and units, with information systems from different suppliers providing different parts of the total ICT support. The suppliers are generally welcoming toward standards that enable modular systems solutions and a well defined market.
- Many standards issues require the involvement of professionals and authorities, not just industry**  
 In many areas of health information standardization, the suppliers alone cannot be the driving force; this is a task for the health professionals, healthcare service providers and authorities.
- Standards can lower costs and facilitate procurement**  
 The buyers of ICT solutions will often want to refer to existing relevant standards when requesting proposals from suppliers according to the public procurement directive. Technical standards enable a better working market with competing offers from suppliers active in several countries; although health care information systems in many cases need national adaptation. Standards will decrease the cost of ICT support, particularly when the integration of different systems is considered. Integration through communication is a key factor in improving health systems.
- National, European and Global action**  
 Healthcare is still largely a national concern, and most communication requirements remain at the regional and national level. However, there is in Europe a growing need for cross-border communication. Furthermore, the market for health information solutions is starting to become pan-European, and in some areas it is already global. While European standards activities are essential, we must also co-operate globally with the International Organization for Standardization (ISO) and other bodies. In addition, it is important for each country to develop national implementation guidelines for European and international standards.

## Use of ICT in the European Health Sector

The healthcare sector is large and complex with many different application requirements. There are a number of different types of actors that need to communicate for various healthcare purposes. The requirements are diverse and very complex. The goal is to allow all of these to communicate as required without technical obstacles.



The following health ICT application areas may be identified and need special attention:

- Patient administration and financial systems
- Electronic healthcare record systems
- Pharmacy and electronic prescription systems
- Knowledge-based systems
- Intensive care unit systems
- Laboratory Information Systems
- Homecare and Telecare applications
- Radiology Information Systems
- Bioinformatics

While these systems suppliers and users are diverse, there are also important overlaps and needs for co-ordination, largely because the patient/citizen is the centre of it all.

It is important to distinguish both the links and the borderline between healthcare informatics and general problems of ICT. A suitable infrastructure of generic inter-sector standards and products is important to ensure efficient use of ICT in healthcare.

## Standardization for Health – CEN/TC 251



CEN is the recognized European standardization organization covering all areas other than the electrotechnical and telecommunications, which are the responsibility respectively of the European Committee for Electrotechnical Standardization (CENELEC) and the European Telecommunications Standards Institute (ETSI). There are twenty national standards bodies of the EU, EFTA and candidate countries that are members of CEN. They send representatives, vote on standards and implement European standards as national standards.



Technical Committee 251 was established in 1990 and is dedicated to Health Informatics. Recognizing the importance of health for all citizens, the EC has supported the work in this area under special mandates, which has allowed intensive activity in many fields, partly in collaboration with the European R&D activities for health telematics.

### TC 251's Mission is to:

- Develop standards and related reports of high quality serving the needs of its stakeholders to enable efficient use of information and communications technology to improve European health services
- Support a European market for health information systems products and actively promote the development of a global market through collaboration with ISO/TC 215 and other standards organizations in the field

### The Scope

Standardization in the field of Health ICT to achieve compatibility and interoperability between independent systems. This includes requirements on health information structure to support clinical and administrative procedures, technical methods to support interoperable systems, as well as requirements regarding safety, security and quality.

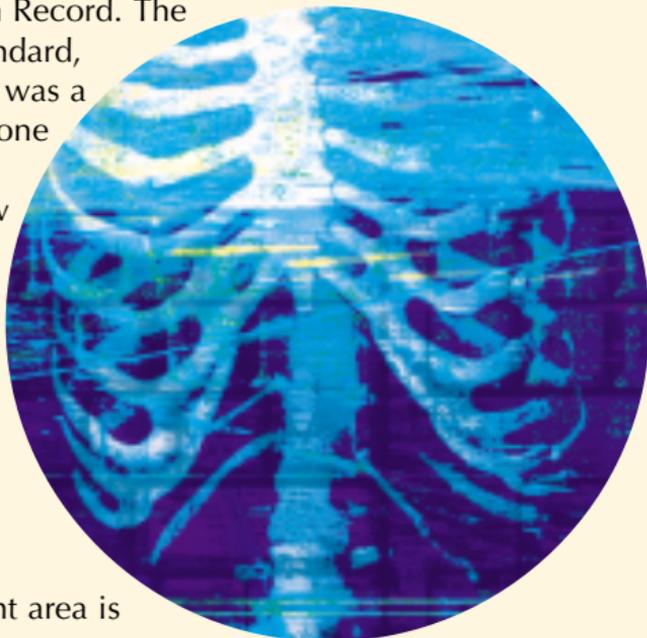


## CEN/TC 251 Working Groups

### WG I: Information Models

WG I develops domain model-based reference architectures in UML (Unified Modelling Language) for evolvable information systems meeting a variety of different purposes for health systems.

An important area of WG I work is standards for the Electronic Health Record. The published prestandard, ENV 13606, that was a significant milestone when it was first published, is now being further developed, in co-operation with the OpenEHR Foundation and the Eurorec Institute.



Another important area is standards for messages to meet specific healthcare business needs for the communication of healthcare information. A major revision of previous separate messages has been made, based on a common reference information model. General purpose information components (GPICs) have been defined to meet Service Request and Report messages in a coherent way for implementation in XML.

WG I is also working on the definition of a general service architecture for health information interchange that can connect legacy systems as well as new developments.

In addition, WG I addresses standards applicable to the storage and transfer of healthcare information using patient data cards.

## **WG II: Terminology and Knowledge bases**

Working Group II is working on the semantic organization of information and knowledge. The focus of the work is:

- Terms, concepts and interrelationships of concepts
- Structures for concept systems including those for multi-axial coding schemes
- Guidelines for the production of coding systems and knowledge bases
- Systematization of the semantic structure behind the names of compositions and headed sections of the health care record

Production of coding schemes is usually outside the scope.

## **WG III: Security, Safety and Quality**

Current European and national legislation emphasises the importance of quality, safety and security. Security of information systems is usually defined as the prevention of breaches of confidentiality, integrity and availability. In addition, WG III is concerned with accountability.

The Group has developed guidelines for the management of security for health, with protection profiles for various application areas and detailed protocols for various core security services based on inter-sector standards.

WG III is working on guidelines for handling data protection in the context of the EU data protection directive, particularly for communication outside Europe. It is also working with access control policy bridging and systems for anonymization.

Another area is guidelines for safety procedures and quality of health information systems.

## **WG IV: Technology for interoperability**

This WG develop standards that enable interoperability of devices and information systems in health informatics.

- Intercommunication of data between devices and information systems
- Integration of data for multimedia representation

Devices include, for example: clinical analyzers, medical imaging and Intensive Care Unit equipment, clinical workstations and cards.

WG IV collaborates with the Institute of Electrical and Electronics Engineers (IEEE) and ISO/TC 215 for standards for Point-of-Care Medical Devices with a large series of new standards coming as joint publications. The Group also collaborates with DICOM (Digital Imaging and Communications in Medicine) for imaging standards, without attempting to replace the work of this globally recognized body.

## Examples of standards from CEN/TC 251

WG I	Information models
ENV 1613	Medical informatics – Messages for exchange of laboratory information
ENV 12018	Medical informatics – Identification, administrative, and common clinical data structure for Intermittently Connected Devices used in healthcare (including machine readable cards)
ENV 12538	Medical informatics – Messages for patient referral and discharge
ENV 12539	Medical Informatics – Request and report messages for diagnostic service departments
ENV 12612	Medical Informatics – Messages for the exchange of healthcare administrative information
ENV 13606	Health Informatics – Electronic healthcare record communication – Part 1: Extended architecture Part 2: Domain termlist Part 3: Distribution Rules Part 4: Messages for the exchange of information
ENV 13607	Health Informatics – Messages for the exchange of information on medicine prescriptions
ENV 13730	Health informatics – Blood transfusion related messages – Part 1: Subject of care related messages Part 2: Production related messages
WG II	Terminology and Knowledge bases
ENV 1614	Healthcare informatics – Structure for nomenclature, classification and coding of properties in clinical laboratory sciences
EN 1828	Health informatics – Structure for classification and coding of surgical procedures
ENV 12381	Medical informatics – Time standards for health care specific problems
ENV 12435	Medical informatics – Expression of the results of measurements in health sciences

ENV 12610	Medical informatics – Medicinal product identification
ENV 13940	Health informatics – System of concepts to support continuity of care
ENV 14032	Health informatics – System of Concepts to support nursing
CEN/TS 14463	Health informatics – A syntax to represent the content of medical classification systems
<b>WG III</b>	<b>Security, Safety and Quality</b>
ENV 12388	Medical Informatics – Algorithm for digital signature services in health care
ENV 12924	Medical Informatics – Security categorization and protection for healthcare information systems
ENV 13608	Health Informatics – Security for Healthcare communication – Part 1: Concepts and terminology Part 2: Secure data objects Part 3: Secure data channels
ENV 12251	Health Informatics – Secure user identification – Management and security of authentication by passwords
ENV 13729	Health Informatics – Secure user identification – Strong authentication using microprocessor cards
<b>WG IV</b>	<b>Technology for Interoperability</b>
ENV 1064	Medical informatics – Standard communication protocol – Computer-assisted electrocardiography
ENV 12052	Medical Informatics – Medical imaging communication
ENV 13728	Health informatics – Instrument interfaces to laboratory information systems
ENV 13734	Health informatics – Vital signs information representation
ENV 13735	Health informatics – Interoperability of patient connected medical devices
ENV 14271	Health informatics – File exchange format for vital signs



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**CEN/TC 251 Health Informatics**

Co-ordination of the work in Health Informatics is carried out by the Swedish Standards Institute – SIS, which operates the secretariat of the Technical Committee and the web-site: [www.centc251.org](http://www.centc251.org)

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For information about eEurope, visit <http://www.eeurope-standards.org>

CEN Workshop Agreements are available from the national standards bodies in countries in the European Union, in the European Free Trade Association and the Czech Republic. CWAs developed under the eEurope Action Plan are available on-line free of charge from the CEN/ISSS web-pages ([www.cenorm.be/issS](http://www.cenorm.be/issS)).