Strengthening national health systems through a capacity-based eHealth architecture

How health informatics standards can help to build a better health system.

Interoperability, standards, and architecture

The exchange of health information between health organizations, facilities and patients can improve health outcomes for patients and system efficiency, but seamless interoperability is more difficult to achieve in the health sector compared with other sectors. The correct adoption of standards for eHealth can improve information exchange and provide tools to manage complex health information. Full interoperability between health information systems (HIS) requires a strategy to progressively deploy systems and technologies based on compatible standards. The building of interoperable systems in healthcare requires the use of a systematic **architectural approach**.

> **The WHO-ITU National eHealth Strategy Toolkit and ISO/TR 14639 Parts 1 and 2 form a set of tools for the design and deployment of a complete eHealth Architecture.**
>
> **The architectural components and their characteristics described in ISO/TR 14639-2 are designed to be reviewed and, where appropriate, adopted by countries and health authorities at a level relevant to their specific needs.**

The growing need to strengthen health systems in low-and middle income countries (LMIC) in the international community has driven the development of a two-part technical reference document: ISO/TR 14639 *Health informatics — Capacity-based eHealth architecture roadmap* by the ISO technical committee ISO/TC 215, *Health Informatics:*

- *Part 1: Overview of national eHealth initiatives* presents a description of contemporary national enterprise-wide HIS from Australia, Brazil, Canada, Kenya and India. The resulting landscape identifies key high-level categories for different aspects of such systems which should be considered in any national architecture design endeavor. This part of ISO/TR 14639 proposes development of an eHealth architecture maturity model (eHAMM) for expressing the extent of development of HIS and eHealth architecture. The model can be used to direct planning and assess progress of national HIS towards maturity.

- *Part 2: Architectural components and maturity model* provides a guide to best practice business requirements and principles for countries and their subordinate health authorities planning and implementing the use of information and communications technology (ICT) to support the delivery and development of healthcare. The eHealth architecture model presented in Part 1 is described in terms of its components and capabilities that health authorities may use as a framework for building their own eHealth architectures and also for measuring the maturity of their health systems' use of ICT to support the delivery and development of healthcare.

An eHealth architecture model (eHAM)

Developing an eHealth architecture model to achieve the following goals:

- Patients, health professionals and policy-makers having the right data at the right time and right place(s) to make decisions about health services, treatment and delivery of care;
- Information being used cost-effectively to improve health services:
- Health information being harmonized, consistent, accessible and able to be used effectively;
- Appropriate information that supports evidence-based practice, health services planning, quality, safety, accessibility and public health in general.

ISO/TR 14639-2

- Provides an eHealth enterprise architecture describing eHealth information services, processes, components, activities and policies
- Applies an organised approach to investments in ICT to support delivery of healthcare services
- Supports the planning, development and continuous improvement of health services
- Supports the principles, policies and specifications set out in international standards and architectural frameworks commonly used in the health sector

ISO TR 14639-2 is a valuable source of information for:

- Planning and provision of health services
- Developing health information resources and eHealth policy
- Implementing systems for information gathering, statistics and care delivery
- Developers of Health Information Systems and services
- Academics, researchers and students in health informatics.
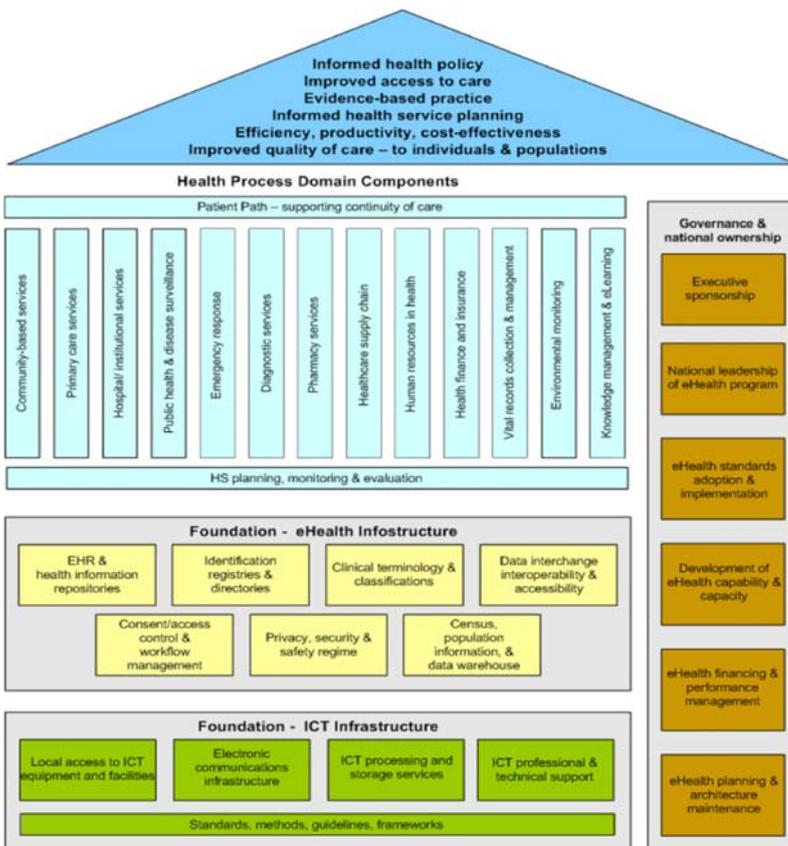
ISO/TR 14639-2

Candidate standards supporting eHealth architecture model and maturity models

Annex D (see extract below) lists about 40 standards deemed of high importance and relevance with respect to facilitating the development, design, and implementation of national-level health information system (HIS) initiatives, particularly in LMICs. The list includes standards pertaining to core areas such as data, messaging, architecture, and security.

Table D.1 — Candidate Standards — Group 1		
Recommended		
#	**Standard**	**Reference**
1	Business requirements for health summary records — Part 1: Requirements	TR 12773–1
2	Business requirements for health summary records — Part 2: Environmental scan	TR 12773–2
3	Capacity-based eHealth architecture roadmap — Part 1: Overview of national eHealth initiatives	TR 14639–1

The **ISO/TC 215** *Health informatics* **committee** promotes standardization in the field of information for health, and Health Information and Communications Technology (ICT) to improve interoperability between independent systems, enable compatibility and consistency of health information and data, and reduce duplication of data and systems

ISO TC 215 has published more than 120 standards. Visit its website at:
http://www.iso.org/iso/home/standards_development/list_of_iso_technical_committees/iso_technical_committee.htm?commid=54960