

# **EHR Interoperability through ISO 13606 and Clinical Archetypes**

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The communication, interoperability and analysis of electronic health records is of growing global importance as the functionality and use of EHR systems increases. Longitudinal EHRs can improve the quality and safety of care to individuals, provide the knowledge needed to improve the efficiency of health care services and population health programmes, and accelerate clinical research.

Clinical information about individual patients is inevitably collected across multiple care settings and within diverse heterogeneous EHR repositories. Integrating this information is a recognised health informatics challenge, and has been the subject of over 20 years of international research. In recent years, the requirements for electronic health record information architectures have been consolidated within ISO 18308 [1].

These requirements have been adopted within the ISO 13606 EHR interoperability standard. This five part standard defines a generic information model for representing part all of an individual's EHR [2], vocabularies for some of its information properties [3], a security policy model for representing the consent and permissions for access to the EHR information being communicated [4], and an interface specification for requesting and providing EHR information [5]. Taken together, these parts standards ensure that the information governance, provenance and clinical context of each health record entry is communicated consistently.

However, a generic EHR architecture is not sufficient to ensure that the clinical meaning of information obtained from heterogeneous sources can be reliably and robust interpreted by receiving systems and services. The way in which clinical information is organised (hierarchically) within the EHR therefore also needs to be formalised and agreed amongst clinical communities. This includes, for example, definitions for individual data elements and how they should be combined, which data elements should be mandatory, what kinds of data value are appropriate (a term, a quantity etc.) units of measurement, value ranges, valid terms. These clinical model specifications are commonly known as archetypes. Part 2 of ISO 13606 defines how archetypes should be formally represented for interoperability [6], drawing on pioneering work of the openEHR Foundation [7].

The current challenge is to grow clinical communities to define these archetypes. We need to identify how evidence of best practice and multi-professional clinical consensus should best be combined to define archetypes at the optimal level of granularity and specificity for wide adoption. Patients and social care communities will increasingly be involved in sharing records and so need to be included when archetypes are being defined. Definitive archetypes will need to be quality labelled and disseminated. SemanticHealthNet, an EU Network of Excellence, is exploring many of these design and adoption challenges [8].

## **Reference**

1. Kalra,D. (2010), ISO 18308 Requirements for an Electronic Health Record Reference Architecture.
2. Kalra,D., Lloyd,D. (2008), ISO 13606 Electronic Health Record Communication Part 1: Reference Model.
3. Kalra,D. (2009), ISO 13606 Electronic Health Record Communication Part 3: Reference Archetypes and Term Lists.

4. Kalra,D. (2009), ISO TS 13606 Electronic Health Record Communication Part 4: Security.
5. Kalra,D. (2010), ISO/EN 13606 Electronic Health Record Communication Part 5: Interface Specification.
6. Kalra,D., Beale,T., Lloyd,D., Heard,S. (2008), ISO 13606 Electronic Health Record Communication Part 2: Archetype Interchange Specification.
7. Please see <http://www.openehr.org>
8. Please see <http://www.semantichealthnet.eu>