SLOVENSKI STANDARD
SIST EN 14822-1:2006

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Zdravstvena informatika – Informacijske komponente za splošno uporabo – 1. del: Pregled

Health informatics - General purpose information components - Part 1: Overview

Medizinische Informatik - Allgemein verwendbare Informationskomponenten - Teil 1: Überblick

Informatique de la santé - Composants d'information d'usage général - Partie 1: Vue d'ensemble

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35.240.80	Uporabniške rešitve IT v zdravstveni tehniki	IT applications in health care technology

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Health informatics - General purpose information components - Part 1: Overview

Informatique de santé - Unité d'information dans les messages - Partie 1: Vue d'ensemble

Medizinische Informatik - Allgemein verwendbare Informationskompomenten - Teil 1: Überblick

This European Standard was approved by CEN on 16 August 2005.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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Foreword

This European Standard (EN 14822-1:2005) has been prepared by Technical Committee CEN/TC 251 “Health informatics”, the secretariat of which is held by SIS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2006, and conflicting national standards shall be withdrawn at the latest by April 2006.

This is part one of a multipart standard under the heading:

Health informatics - General purpose information components

with the following parts:

— Part 1: Overview

— Part 2: Non-clinical

— Part 3: Clinical

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

Many previous messaging and information structure standards for health have overlapping parts with a number of objects being defined in separate documents, sometimes with small variations making implementation of conformant applications more difficult. It therefore makes sense to define a set of general purpose components that can be used for definition of communication structures for different purposes. This approach was suggested and approved as a strategy for CEN/TC 251 in the Short Strategic Study on message standards alignment in 1999 examining a set of five European prestandards for messages. This standard is aiming to provide such a set of components and has been developed jointly with a new European Standard for Service Request and Report messages that is using the components defined herein.

Another important background to the development of this European Standard has been the wish for a harmonisation of information models for health developed in Europe and the USA expressed in the collaboration agreement entered March 2000 between CEN/TC 251 and HL7 (Health Level Seven, Ann Arbor. Michigan). The goal was set for a maximum degree of alignment while maintaining their independence and need to serve the business requirements of the respective markets but also to make the results available to ISO for possible international standardization.

HL7 have adapted a general strategy similar to CEN/TC 251 using information modelling expressed in UML (Unified Modelling Language) for their new standards and a lot of interaction and information sharing has occurred between CEN experts and HL7 in an open spirit of collaboration.

This European Standard includes a large number of objects which are technically similar to descriptions in draft documents of HL7, although partly described differently due to the fact that CEN is following the ISO rules for drafting and presentation of standards which HL7 is not. CEN wishes to express its gratitude towards HL7 experts for generously sharing their models with the European expert team.

1 Scope

This European Standard specifies General Purpose Information Components to be used in standards for information exchange and information models supporting various health specific business requirements. The components defined in this standard are the most commonly needed basic building blocks for such standardization but these components may require further specialisation and be complemented by other objects required for specific purposes not met by these generally useful components. Such standardization using these general purpose information components could be performed both on a European (CEN) level or be done nationally or for specific user communities regionally as well as internationally.

This European Standard provides an informative overview of this series of standards and includes rules for using the components defined in the other parts and on conformance claims.

2 Normative references

Not applicable.

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply.

3.1
General Purpose Information Component
GPIC
commonly useful information component that is a specialisation of classes in an international reference information model which is intended to be used in the specification of an information service for health or of a communication between health information systems

3.2
Health Related Service
service provided to one or more persons or other living subjects aiming at improving the health status or diminishing the probability of disease service provided to one or more persons or other living subjects aiming at improving the health status or diminishing the probability of disease

4 Symbols and abbreviations

HL7	Health Level Seven Inc.
GPIC	General Purpose Information Component
RIM	Reference Information Model
UML	Unified Modelling Language

5 General Purpose Information Components – their design

5.1 Basic design objectives

The healthcare information components which are presented in EN 14822-1 and EN 14822-2 and have been selected to meet major requirements from existing European message standards and some projected requirements for other types of information exchange.

It is noteworthy that this document may be useful in the design of interacting components in a local application as well as for remote communication across organisational boundaries. The information components defined in this series can support database design, interacting objects using SOAP (Simple Object Access Protocol), COM (Common Object Model) or CORBA (Common Object Request Broker Architecture) as well as traditional store and forward messaging systems.

5.2 General Purpose Information Components and the Health Level Seven RIM

A General Purpose Information Component (GPIC) is a specification of a component of an information system or of a communication between such systems and we may use a number of these components in order to build a larger systems or communications.

In particular, the GPICs which are the subject of this multipart standard are generated so as to provide a set of generic templates for commonly encountered concepts that are found in healthcare information systems and in the communication between such systems.

Given that GPICs are a set of components that may be used in combination to describe a larger whole, there is a need to have consistency in the internal design principles of the GPICs and also in the external interfaces which allow components to be combined in a consistent manner. If such principles are rigorously adhered to it becomes easier to provide tools to support the development of messaging and other communication systems.

Achieving the necessary degree of consistency in the internal design and external interfacing of the GPICs has been facilitated by the use of the Health Level Seven (HL7) Reference Information Model (RIM). It shall be understood that this RIM is NOT a model of healthcare nor of healthcare records; rather it is a high level model of healthcare information elements and the relationships between these elements. The RIM therefore provides us with an abstract model from which those elements that we need in order to design the relevant GPICs can be selected. In effect the RIM provides the basic building blocks from which we construct larger building blocks: the GPICs (see Figure 1).

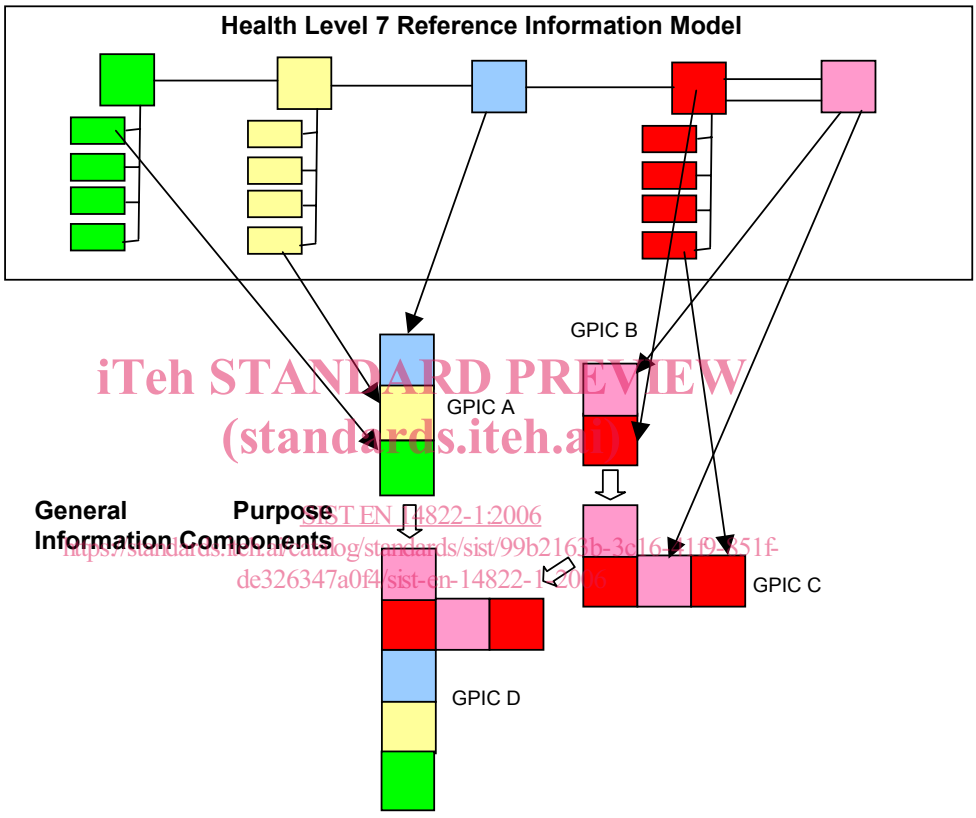

Figure 1 — HL7 reference information model and GPIC design

Figure 1 illustrates that RIM classes are being used to construct a number of different GPICs which may be further combined, either with additional RIM classes or other GPICs to make larger, more complex GPICs.

An example may be used to illustrate the basics of the process. The RIM contains a concept of person which could be used in GPICs which describe patients, doctors, nurses, next of kin, animal owners etc. A GPIC design will use those attributes of the Person class which are appropriate to the function of the particular GPIC and then combine this with another RIM concept of Role to produce a tailored description of the person/role that describes the person playing the role of patient, nurse etc.

The RIM provides the generic classes such as Act, Entity and Person (see next subclause) together with a set of generic attributes with their data types and rules concerning the number and type of relationships with other RIM classes. The GPIC takes from the RIM those classes, attributes and class associations that are required and imposes constraints by defining:

— the precise purpose of the combination of RIM classes, i.e. what is the scope of the GPIC;

— the sub-set of attributes which are being used in each class. For example, the use of the Person attribute 'deceased_time' may be appropriate to the concept of Patient but not to the concept of Healthcare Professional;

— the exact purpose of each attribute. For example in different GPICs, the use of the attribute 'code' derived from the Entity class may be used to provide a coded description of a very wide range of 'things' such as the type of medicinal product pack or the kind of care setting or the type of device etc.;

— limitations upon data types associated with each attribute. For example, although most of the RIM attributes are associated with precise data types there are many attributes where a wide range of data types are allowed. This is especially prevalent in describing time where there may be requirements for a date/time, a date/time range, a period of time, and so on. In designing a GPIC the use of each attribute is more focussed. This permits the imposition of constraints upon the data types and also of the underlying vocabulary sets associated with coded attributes.

5.3 Health Level 7 (HL7) Reference Information Model

5.3.1 Introduction

The General Purpose Information Components described within this multi-part standard conform to HL7's Reference Information Model Version 3 Version 2.01 (successfully balloted July 2003). This subclause describes those aspects of the Reference Information Model that is relevant to the design of the General Purpose Information Components.

The HL7 RIM consists of a large number of classes and relationships. Four of these classes are, however, of prime importance and form the 'backbone' of the RIM. These classes are Entity, Role, Participation and Act. These four classes (plus the 'relationship classes) are shown in Figure 2 below.

The backbone may be read left to right as: an Entity (e.g. person) plays a Role (e.g. patient) and participates in some Act (e.g. consultation). The backbone can be read from right to left as: an Act (e.g. appendectomy) has the participation, of Entity (person) who is in the Role of nurse.

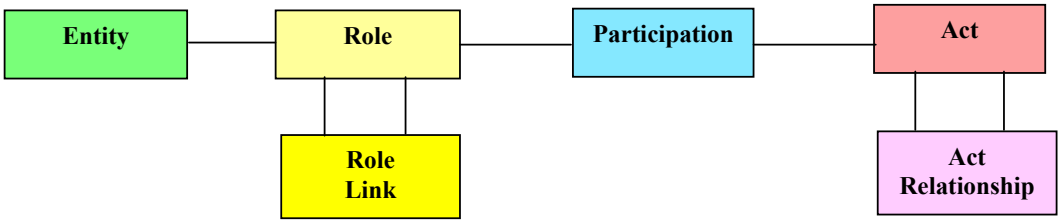

Figure 2 — HL7 Reference information backbone

5.3.2 Entities

General description

Entities represent physical things such as persons, animals, organisations, medicinal products, devices, places, samples etc. A simplified model of Entity and its more important specialisations are shown in Figure 3 below.

Within these standards Entities are indicated by the colour green.

Entities may only be associated with classes of type Role, i.e. Entities cannot be directly associated with each other[1], only through Role classes.

An entity may be associated with any number of instances of Role classes.

NOTE A fuller representation of the HL7 Entity Classes is provided in Annex B. Further note that this material is owned by HL7 Inc. and subject to their terms and conditions.

[1] Although Entity may me associated with Language Communication which is also coloured green in these standards.

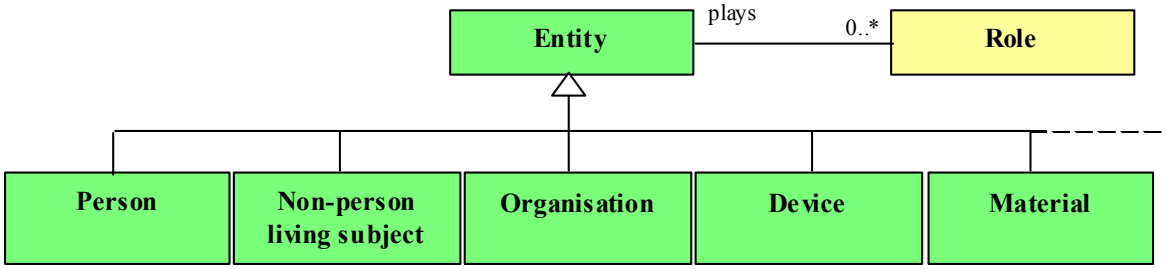

Figure 3 — Entity specialisations

Description of specialisations

Here some information about some of the more important attributes is included, especially those where their function is less obvious.

Entity: this core class includes:

— *classCode*: a means of defining which specialisation of Entity is being used. In this, Entity itself may be the specialisation (i.e. no specialisation). The classCode shall always be present. The values which classCode may adopt are presented in 10.1.1 of EN 14822-2:2005.

— *determinerCode*: provides a means of specifying whether the instance of Entity (or its specialisation) is describing an actual instance of something, e.g. an actual pack of medicine that has been issued to a patient, a 'kind' of thing, e.g. the type of pack of medicine that is being ordered for a patient, or a quantified_kind, for example a three packs of medicine. Allowed values are:

  — INST = Instance of;

  — KIND = Kind of;

  — QUANTIFIED_KIND.

— *code*: is the main classifying attribute of the Entity class and all of its specialisations. This code indicates what kind of Entity is being referred to by using a code from one of several coding systems depending on the class of entities, such as living subjects (typed by animal and plant taxonomies), chemical substance (e.g. IUPAC(International Union of Pure and Applied Chemistry) code), organizations, place, device etc.

— *desc*: provides a description of an entity or is specialisations using free text or multimedia data.

— *id*: provides a unique identifier for an entity. Ideally each entity will have only one identifier assigned to it, however, since different systems will maintain different data bases, there may be different instance identifiers assigned by different systems.

— *name*: provides a name of the entity, for example, person name, animal name, organisation name, device name etc.

— *quantity*: specifies the quantity of the given entity. In this context the quantity is an extensive "amount" type of quantity (e.g., number, length, volume, mass, surface area, energy etc.).