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**Zdravstvena informatika - Arhitektura storitve - 2. del: Informacijski vidik (ISO 12967-2:2009)**

Health informatics - Service architecture - Part 2: Information viewpoint (ISO 12967-2:2009)

Medizinische Informatik - Servicearchitektur - Teil 2: Informationssicht (ISO 12967-2:2009)

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Informatique de santé - Architecture de service - Partie 2: Point de vue d'information (ISO 12967-2:2009) <https://standards.iteh.ai/catalog/standards/sist/38359e9-8a71-49e7-8409-c25982a6eace/sist-en-iso-12967-2-2011>

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**ICS:**

35.240.80	Uporabniške rešitve IT v zdravstveni tehniki	IT applications in health care technology
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## Health informatics - Service architecture - Part 2: Information viewpoint (ISO 12967-2:2009)

Informatique de santé - Architecture de service - Partie 2:  
Point de vue d'information (ISO 12967-2:2009)

Medizinische Informatik - Servicearchitektur - Teil 2:  
Informationssicht (ISO 12967-2:2009)

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## Foreword

The text of ISO 12967-2:2009 has been prepared by Technical Committee ISO/TC 215 “Health informatics” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 12967-2:2011 by Technical Committee CEN/TC 251 “Health informatics” the secretariat of which is held by NEN.

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of an identical text or by endorsement, at the latest by September 2011, and conflicting national standards shall be withdrawn at the latest by September 2011.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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**Health informatics — Service  
architecture —**

**Part 2:  
Information viewpoint**

*Informatique de santé — Architecture de service —*

*Partie 2: Point de vue d'information*

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 12967-2 was prepared by Technical Committee ISO/TC 215, *Health informatics*, based on the European Standard EN 12967-2:2007 with minor editorial amendments.

ISO 12967 consists of the following parts, under the general title *Health informatics — Service architecture*:

— *Part 1: Enterprise viewpoint*

— *Part 2: Information viewpoint*

— *Part 3: Computational viewpoint*

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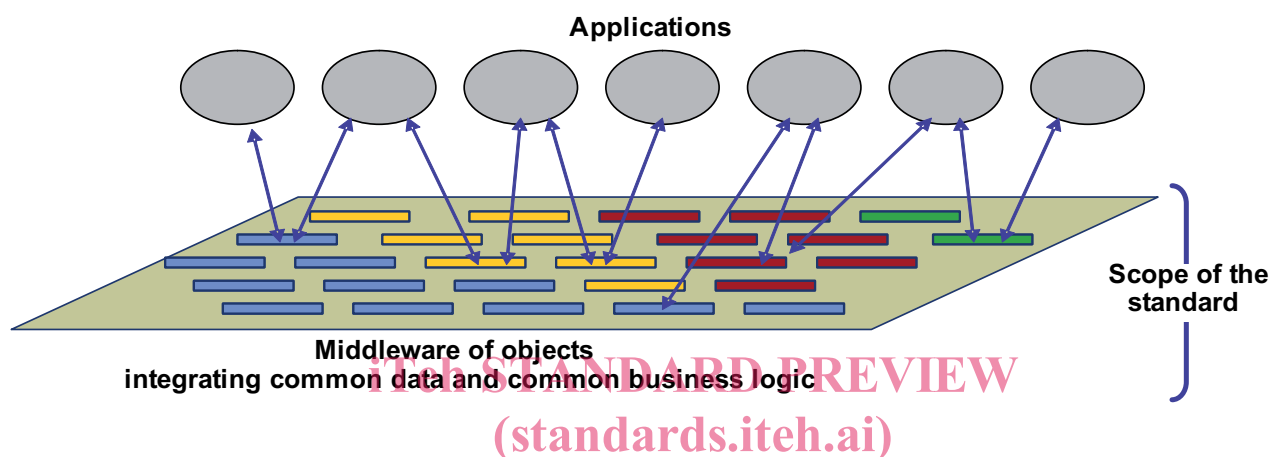
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## Introduction

This is the second part of ISO 12967, a multi-part standard that provides guidance for the description, planning and development of new systems as well as for the integration of existing information systems, both within one enterprise and across different healthcare organizations through an architecture integrating the common data and business logic into a specific architectural layer (i.e. the middleware), distinct from individual applications and accessible throughout the whole information system through services, as shown in Figure 1.



**Figure 1 — Scope**

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The overall architecture is formalized according to ISO/IEC 10746 (all parts) and is therefore structured through the following three viewpoints.

- a) **Enterprise viewpoint:** specifies a set of fundamental common requirements at enterprise level with respect to the organizational purposes, scopes and policies that must be supported by the information and functionality of the middleware. It also provides guidance on how one individual enterprise (e.g. a regional healthcare authority, a large hospital or any other organization where this model is applicable) can specify and document additional specific business requirements, with a view to achieving a complete specification, adequate for the characteristics of that enterprise.

Enterprise viewpoint is specified in ISO 12967-1.

- b) **Information viewpoint:** specifies the fundamental semantics of the information model to be implemented by the middleware to integrate the common enterprise data and to support the enterprise requirements formalized in ISO 12967-1. It also provides guidance on how one individual enterprise can extend the standard model with additional concepts needed to support local requirements in terms of information to be put in common.

Information viewpoint is specified in this part of ISO 12967.

- c) **Computational viewpoint:** specifies the scope and characteristics of the services that must be provided by the middleware for allowing access to the common data as well as the execution of the business logic supporting the enterprise processes identified in the information viewpoint and in ISO 12967-1. It also provides guidance on how one individual enterprise can specify additional services needed to support local specific requirements in terms of common business logic to be implemented.

Computational viewpoint is specified in ISO 12967-3.

# Health informatics — Service architecture —

## Part 2: Information viewpoint

### 1 Scope

This part of ISO 12967 specifies the fundamental characteristics of the information model to be implemented by a specific architectural layer (i.e. the middleware) of the information system to provide a comprehensive and integrated storage of the common enterprise data and to support the fundamental business processes of the healthcare organization, as defined in ISO 12967-1.

The information model is specified without any explicit or implicit assumption on the physical technologies, tools or solutions to be adopted for its physical implementation in the various target scenarios. The specification is nevertheless formal, complete and non-ambiguous enough to allow implementers to derive an efficient design of the system in the specific technological environment that will be selected for the physical implementation.

This specification does not aim at representing a fixed, complete, specification of all possible data that can be necessary for any requirement of any healthcare enterprise. It specifies only a set of characteristics, in terms of overall organization and individual information objects, identified as fundamental and common to all healthcare organizations, and that is satisfied by the information model implemented by the middleware.

Preserving consistency with the provisions of this part of ISO 12967, physical implementations allow extensions to the standard information model in order to support additional and local requirements. Extensions include both the definition of additional attributes in the objects of the standard model, and the implementation of entirely new objects.

Also this standard specification is extensible over time according to the evolution of the applicable standardization initiatives.

The specification of extensions is carried out according to the methodology defined in ISO 12967-1:2009, Clause 7, "Methodology for extensions".

### 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 11404:2007, *Information technology — General-Purpose Datatypes (GPD)*

ISO 12967-1:2009, *Health informatics — Service architecture — Part 1: Enterprise viewpoint*

ISO 12967-3:2009, *Health informatics — Service architecture — Part 3: Computational viewpoint*

**ISO 12967-2:2009(E)****3 Terms and definitions**

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

- 3.1 information object**  
information held by the system about entities of the real world, including the ODP system itself, is represented in an information specification in terms of information objects, their relationships and behaviour
- 3.2 package**  
cluster of information objects
- 3.3 middleware**  
enabling technology of enterprise application integration (EAI) describing a piece of software that connects two or more software applications so that they can exchange data
- 3.4 enterprise application integration EAI**  
use of software and computer systems architectural principles to integrate a set of enterprise computer applications

**4 Symbols and abbreviations**

ODP	Open Distributed Processing
HISA	Health Informatics Service Architecture
UML	Unified Modelling Language
GPIC	General Purpose Information Component

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**5 Methodological principles****5.1 Language and notation adopted for the specification of the model (informative)**

The objective of the information viewpoint specification is to describe the information relevant for the enterprise to be handled by the middleware. It consists of a formal information model detailing the semantic and syntactic aspects of all data to be managed.

The specification is based on an object model, derived from the enterprise viewpoint by properly structuring and aggregating the information that has been identified as relevant in the specification of the business processes, tasks and activities.

While the general approach of the ODP standard is also used for ISO 12967-1, the modelling language to be used is UML, which was not available at the time of the first edition of the ODP standard.

The information viewpoint is concerned with information modelling (i.e. the kinds of information handled by the system). It focuses on the semantics of information and information processing in the system. The individual components of a distributed system must share a common understanding of the information they communicate when they interact, or the system will not behave as expected. Some of these items of information are handled, in one way or another, by many of the objects in the system. To ensure that the interpretation of these items is consistent, the information language defines concepts for the specification of the meaning of information stored within, and manipulated by, an ODP system, independently of the way the information processing functions themselves are to be implemented.

Thus, information held by the ODP system about entities in the real world, including the ODP system itself, is represented in an information specification in terms of information objects, and their associations and behaviour. Atomic information objects represent basic information elements. More complex information is represented as composite information objects, each expressing associations over a set of constituent information objects.

Some elements visible from the enterprise viewpoint will be visible from the information viewpoint and vice versa. For example, an activity seen from the enterprise viewpoint may appear in the information viewpoint as the specification of some processing which causes a state transition of an information entity.

Different notations for information specifications model the properties of information in different ways. Emphasis may be placed on classification and reclassification of information types, or on the states and behaviour of information objects. In some specification languages, atomic information objects are represented as values. The approach to be taken will depend on the modelling technique and notation being used.

Assessment of conformance to the information specification of a system involves relating the requirements expressed in the specification to sets of observations of the behaviour of the system at conformance points identified in the engineering and technology specification, and assessing the degree of consistency between the requirements and the observations.

## 5.2 UML Class Diagram notation guidelines and profile (informative)

For each cluster of objects identified in the enterprise viewpoint, the information objects will be illustrated according to the following rationale.

- Information objects (i.e. classes) grouped in the packages will be not be coloured.
- Classes not expressly grouped in the package will also be represented if there are associations from classes belonging to the package to these classes. These classes, however, will be coloured in yellow.
- The names of classes will be meaningful and start with a capital letter (e.g. Person). If the name is composed of more than one word the blank spaces between the words present in the diagrams will be instead omitted in the tables describing the classes (e.g. "Period of care" in the diagram will become "PeriodOfCare" in the tables, "Subject of care" in the diagram will become "SubjectOfCare"). Blank spaces are left in the diagrams for readability reasons.
- Associations will be labelled when the label adds value to the diagram.
- Associations may be labelled through a property, or through a verb phrase; in the latter case, an arrow will be added to the association label to avoid ambiguity.
- Labels are always in lower case and, if a label is a verb phrase (with arrow), it will have one blank space in between words.
- Navigability is not relevant when using UML for an information specification and will not be represented.
- In general, for readability reasons, the classes should only contain the name of the class. Properties should be described in the tables; however, if properties are displayed in the diagrams, the following holds.
  - Notation for visibility of properties is not used, as it is not pertinent for the conceptual models used in the information viewpoint. Although visibility symbols could be used to indicate access control, this is not done as all healthcare-related information should be accessed through careful authorization.
  - Data types of the properties should be displayed in the class in the diagram.
- For some classes, associations to other classes could be modelled (in the UML diagrams) as attributes to the class. This reflects that the association has value rather than reference semantics, in addition to the resulting simplification of the model. In other cases, the same method might be used in the UML diagrams even though the association has reference semantics. This is done just to simplify the models. In the related class descriptions, these instances of simplified modelling are described as associations rather than attributes.