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Medizinische Informatik – Servicearchitektur – Teil 3: Verarbeitungssicht (ISO 12967-3:2020); Englische Fassung EN ISO 12967-3:2020

Health informatics –
Service Architecture (HISA) –
Part 3: Computational viewpoint (ISO 12967-3:2020);
English version EN ISO 12967-3:2020

Informatique de santé –
Architecture de service –
Partie 3: Point de vue informatique (ISO 12967-3:2020);
Version anglaise EN ISO 12967-3:2020

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Nationales Vorwort

Dieses Dokument (EN ISO 12967-3:2020) wurde vom Technischen Komitee ISO/TC 215 „Health informatics“ in Zusammenarbeit mit dem Technischen Komitee CEN/TC 251 „Medizinische Informatik“ erarbeitet, dessen Sekretariat von NEN (Niederlande) gehalten wird.

Der Arbeitsausschuss NA 063-07-02 AA „Interoperabilität“ des Fachbereichs 7 „Medizinische Informatik“ des DIN-Normenausschusses Medizin (NAMed) hat an der Erarbeitung ebenfalls mitgewirkt.

Dieses Dokument enthält unter Berücksichtigung des Präsidialbeschlusses 1/2004 nur die englische Fassung von EN ISO 12967-3:2020.

Für die in diesem Dokument zitierten Dokumente wird im Folgenden auf die entsprechenden deutschen Dokumente hingewiesen:

ISO 8601-1:2019	siehe	DIN ISO 8601-1:2020-12
ISO 9000:2015	siehe	DIN EN ISO 9000:2015-11
ISO 13606 (all parts)	siehe	DIN EN ISO 13606 (alle Teile)

Aktuelle Informationen zu diesem Dokument können über die Internetseiten von DIN (www.din.de) durch eine Suche nach der Dokumentennummer aufgerufen werden.

Änderungen

Gegenüber DIN EN ISO 12967-3:2011-06 wurden folgende Änderungen vorgenommen:

a) Verwendung von Begriffen, Definitionen und Konzepten aus ISO 13940:2015 (Contsys);

b) Verweisungen auf weitere Standards wie z. B. HL7 und FHIR;

c) Aktualisierung der Literaturhinweise.

Frühere Ausgaben

DIN V ENV 12967-1: 1998-04
DIN EN 12967-3: 2008-02
DIN EN ISO 12967-3: 2011-06

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Nationaler Anhang NA
(informativ)

Zusammenfassung

Dieses Dokument spezifiziert die grundlegenden Merkmale des Verarbeitungsmodells, das durch eine spezifische Architekturschicht des Informationssystems (d. h. die Servicearchitektur) implementiert werden soll, um eine umfassende und integrierte Schnittstelle zur allgemein gültigen Unternehmensinformation zu schaffen und die grundlegenden Geschäftsprozesse der Gesundheitsversorgungsorganisation zu unterstützen, wie in ISO 12967-1 festgelegt. Das Verarbeitungsmodell wird ohne explizite oder implizite Voraussetzung über physische Technologien, Tools oder Lösungen spezifiziert, die für dessen physische Implementierung in den verschiedenen Zielszenarien übernommen wird. Die Spezifikation ist dennoch formell, vollständig und unzweideutig genug, um es Implementierern zu ermöglichen, ein effizientes Design des Systems für die spezifische technologische Umgebung abzuleiten, die für die physische Implementierung ausgewählt wird.

Das in diesem Dokument festgelegte Verarbeitungsmodell sorgt für eine konsistente Grundlage zwischen verschiedenen Ingenieurs- und Technologiespezifikationen (einschließlich Programmiersprachen und Kommunikationsmechanismen), da diese mit dem gleichen Verarbeitungsobjektmodell konsistent sein müssen. Diese Konsistenz ermöglicht bereichsübergreifendes Arbeiten und die Übertragbarkeit von Komponenten in der resultierenden Implementierung.

Ziel dieses Dokuments ist es nicht, eine feststehende, vollständige Spezifikation aller möglichen Schnittstellen, die für jegliche Anforderung jeglichen Gesundheitsversorgungsunternehmens nötig sein könnten, zu repräsentieren. Es spezifiziert nur einen Satz von Merkmalen hinsichtlich Gesamtorganisation und individueller Verarbeitungsmodelle, die als grundlegend und allen Gesundheitsversorgungsorganisationen gemein erkannt wurden, und die durch das von der Servicearchitektur implementierte Verarbeitungsmodell erfüllt werden.

Physische Implementierungen des in diesem Dokument festgelegten Verarbeitungsmodells können Erweiterungen erlauben, um zusätzliche und lokale Anforderungen zu unterstützen, dabei aber die Konsistenz mit den Vorgaben dieses Dokuments beibehalten. Erweiterungen können sowohl die Definition zusätzlicher Eigenschaften der Objekte des in diesem Dokument festgelegten Verarbeitungsmodells als auch der Implementierung völlig neuer Objekte beinhalten.

Das in diesem Dokument festgelegte Verarbeitungsmodell kann auch über die Zeit hinweg entsprechend der Entwicklung anwendbarer Normierungsinitiativen nach der in ISO 12967-1:2019, Abschnitt 7, festgelegten Methodik erweiterbar sein, in der ein Satz gemeinsamer Informationsdienste der Gesundheitsversorgung angeführt und die Anforderungen dahinter und die Methodik beschrieben werden, mit der diese angewendet wird.

Die in diesem Dokument festgelegten Informationsdienste sind nur der identifizierbare Minimalsatz entsprechend der identifizierten Anforderungen des Gesundheitsversorgungsunternehmens und bilden die Servicearchitektur (d. h. die Integrationsplattform), die als Grundlage für Gesundheitsversorgungsanwendungen, z. B. die elektronische Gesundheitsakte oder Patientenverwaltung, dienen.

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Nationaler Anhang NB
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Begriffe

Die Benummerung der folgenden Begriffe und Abkürzungen ist identisch mit der Benummerung in der englischen Fassung.

3 Begriffe

Für die Anwendung dieses Dokuments gelten die folgenden Begriffe.

ISO und IEC stellen terminologische Datenbanken für die Verwendung in der Normung unter den folgenden Adressen bereit:

— ISO Online Browsing Platform: verfügbar unter https://www.iso.org/obp

— IEC Electropedia: verfügbar unter http://www.electropedia.org/

3.1
Schnittstelle
(en: interface)
Abstraktion des Verhaltens eines Objekts, bestehend aus einem Teilsatz der möglichen Wechselwirkungsmechanismen dieses Objekts, zusammen mit dem Satz der Einschränkungen, die beim Auftreten dieser Wechselwirkung vorliegen

3.2
Verarbeitungsobjekt
(en: computational object)
von einer Verarbeitungssicht aus betrachtetes Objekt zur Darstellung der funktionalen Zerlegung eines Systems, das einen bestimmten Zustand und ein bestimmtes Verhalten sowie Wechselwirkungen durch Schnittstellen mit weiteren Verarbeitungsobjekten aufweist

3.3
Behandelter
Patient
Person im Gesundheitswesen
(en: subject of care, patient, subject of healthcare)
Akteur des Gesundheitswesens mit der persönlichen Rolle, für den Empfang von Gesundheitsdienstleistungen vorgesehen zu sein, diese zu erhalten oder diese bereits erhalten zu haben

[QUELLE: ISO 13940:2015, 5.2.1, modifiziert — Anmerkung und Beispiele wurden entfernt]

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Nationaler Anhang NC
(informativ)

Literaturhinweise

DIN EN ISO 9000:2015-11, *Qualitätsmanagementsysteme — Grundlagen und Begriffe (ISO 9000:2015); Deutsche und Englische Fassung EN ISO 9000:2015*

DIN EN ISO 13606 (alle Teile), *Medizinische Informatik — Kommunikation von Patientendaten in elektronischer Form*

DIN ISO 8601-1:2020-12, *Datum und Uhrzeit — Darstellung für den Informationsaustausch — Teil 1: Grundlegende Regeln (ISO 8601-1:2019)*

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

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Health informatics - Service Architecture (HISA) - Part 3: Computational viewpoint (ISO 12967-3:2020)

Informatique de santé - Architecture de service - Partie 3: Point de vue informatique (ISO 12967-3:2020)

Medizinische Informatik - Servicearchitektur - Teil 3: Verarbeitungssicht (ISO 12967-3:2020)

This European Standard was approved by CEN on 11 June 2020.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN ISO 12967-3:2020) has been prepared by Technical Committee ISO/TC 215 "Health informatics" in collaboration with 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 May 2021, and conflicting national standards shall be withdrawn at the latest by May 2021.

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

This document supersedes EN ISO 12967-3:2011.

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

Endorsement notice

The text of ISO 12967-3:2020 has been approved by CEN as EN ISO 12967-3:2020 without any modification.

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 215, *Health informatics*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 251, *Health informatics*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 12967-3:2009), which has been technically revised. The main changes compared to the previous edition are as follows:

— use of terms, definitions and concepts from ISO 13940:2015 (Contsys);

— reference to further standards, such as HL7® and FHIR®;

— updates to the Bibliography.

A list of all parts in the ISO 12967 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

The ISO 12967 series specifies fundamental requirements for 'information infrastructure' and 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 healthcare specific service architecture), distinct from individual applications and accessible throughout the whole information system through information services, as shown in Figure 1.

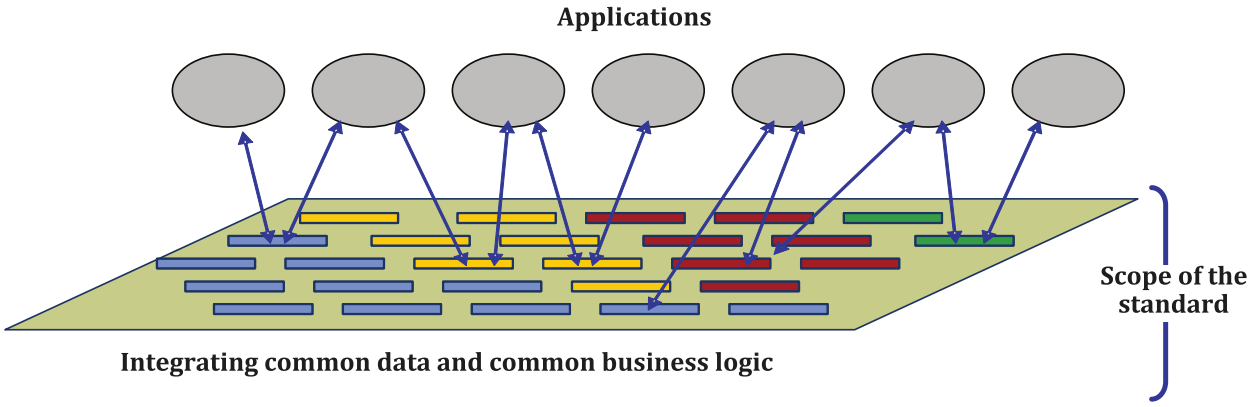

Figure 1 — Scope of the ISO 12967 series

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 should be supported by the information and functionality of the service architecture. 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 service architecture to integrate the enterprise's common data and to support the enterprise requirements formalized in ISO 12967-1. It also provides guidance on how one individual enterprise can extend the ISO 12967 series information model with additional concepts needed to support local requirements in terms of information to be put in common.

   Information viewpoint is specified in ISO 12967-2.

c) Computational viewpoint: specifies the scope and characteristics of the information services that should be provided by the service architecture for allowing access to the common data as well as for 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 information services needed to support local specific requirements in terms of common business logic to be implemented.

   Computational viewpoint is specified in this document.

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ISO 12967-1:2020, Annex C includes an explanation of ISO 23903:—[1)] and its relevance in regard to the ISO 12967 series, for integration with other International Standards such as ISO 13940.

1) Under preparation. Stage at the time of publication: ISO/DIS 23903:2020.

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Health informatics — Service architecture (HISA) —

Part 3: Computational viewpoint

1 Scope

This document specifies the fundamental characteristics of the computational model implemented by a specific architectural layer of the information system (i.e. the service architecture) to provide a comprehensive and integrated interface to the common enterprise information and to support the fundamental business processes of the healthcare organization, as defined in ISO 12967-1. The computational model is specified without any explicit or implicit assumption about the physical technologies, tools or solutions to adopt 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 which will be selected for the physical implementation.

The computational model specified in this document provides the basis for ensuring consistency between different engineering and technology specifications (including programming languages and communication mechanisms) since they are intended to be consistent with the same computational object model. This consistency allows open inter-working and portability of components in the resulting implementation.

This document does not aim at representing a fixed, complete, specification of all possible interfaces that might be necessary for any requirement of any healthcare enterprise. It specifies only a set of characteristics — in terms of overall organization and individual computational objects, identified as fundamental and common to all healthcare organizations, and that are satisfied by the computational model implemented by the service architecture.

Preserving consistency with the provisions of this document, physical implementations of the computational model specified in this document can allow extensions in order to support additional and local requirements. Extensions can include both the definition of additional properties of the objects of the computational model specified in this document and the implementation of entirely new objects.

Also, the computational model specified in this document can be extendable over time according to the evolution of the applicable standardization initiatives, in accordance to the methodology defined in ISO 12967-1:2020, Clause 7, which identifies a set of healthcare common information services, describing the requirements behind them and the methodology through which they will be used.

The information services specified in this document are only the minimal set identifiable according to the identified requirements of the healthcare enterprise, and constituting the service architecture (i.e. the integration platform) to serve as the basis for healthcare applications, e.g. EHR or patient administration.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 12967-1:2020, *Health informatics — Service architecture — Part 1: Enterprise viewpoint*

ISO 12967-2:2020, *Health informatics — Service architecture — Part 2: Information viewpoint*

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3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
interface
abstraction of the behaviour of an object which consists of a subset of the possible interaction mechanisms of that object, together with the set of constraints when that interaction occurs

3.2
computational object
object as seen in a computational viewpoint representing the functional decomposition of a system showing a state and behaviour as well as interactions through interfaces with other computational objects

3.3
subject of care
patient
subject of healthcare
healthcare actor with a person role; who seeks to receive, is receiving, or has received healthcare

[SOURCE: ISO 13940:2015, 5.2.1, modified — Note and examples omitted.]

4 Abbreviated terms

EHR	Electronic Health Record
HISA	Health Informatics — Service Architecture
ODP	Open Distributed Processing
UML	Unified Modeling Language

5 Methodological principles

5.1 General

This document encompasses the computational viewpoint, which is concerned in answering HISA design aspects through the functional decomposition of the system into a set of computational objects that interact at interfaces, also enabling distribution. HISA will thus be further specified in terms of computational objects, which manage information and provide services, and their interfaces, starting from the clusters of objects identified in ISO 12967-1 and further detailed in ISO 12967-2.

5.2 Clusters of objects

ISO 12967-1 has identified the scope, need for, and use of the ISO 12967 series by both developers and end users. It has described the scope of the business objects from the organization's viewpoint, by summarizing the related user activities and requirements through natural language. During this process the main healthcare common clusters of objects have been identified in ISO 12967-1:

a) Subject of care objects

These objects handle the information necessary for supporting the users' activities that are identified in the "Subject of care workflow".

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