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Health informatics — System of concepts to support continuity of care

Informatique de santé — Système de concepts visant à favoriser la continuité des soins

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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).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

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 13940:2015), which has been technically revised.

The main changes are as follows:

— all concepts have been moved into Clause 3;

— content has been added to make it more explicit that continuity of care includes social care and related concepts.

— concepts have been aligned to ISO/IEC 21838-3:2023.

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

0.1 General

Continuity of care is an important prerequisite for ensuring that a subject of care receives effective and efficient care and the best possible outcomes over the course of any health condition, be it an injury, illness or social issue. Within any care setting or organizational context, achieving continuity of care requires an ability to understand and define care processes, their interactions and sequencing within and across organizational boundaries and to communicate information about them unambiguously using an agreed system of concepts within a shared semantic framework. The purpose of this document is to define the requirements for a system of concepts and the semantics needed to support the definition of care processes and the continuity of care.

This document does not seek to define or standardize specific processes used in the delivery of care. Instances of such standardization can be found in other standards documents, such as ISO 12967-1.

In addition to supporting the continuity of care, the system of concepts in this document provides a rigorous semantic foundation for other purposes including the use of care data for secondary use and knowledge management in the health sector, and standardized definitions for use in health informatics standards, enterprise modelling and the formulation of health policies.

Figure 1 illustrates the way in which care processes are supported by and interact with a hierarchy of other processes within and across organizations (including business, policy and technical processes) in order for care processes to operate effectively. The system of concepts specified in this document therefore includes concepts related to the physical and financial resources needed to support care processes.

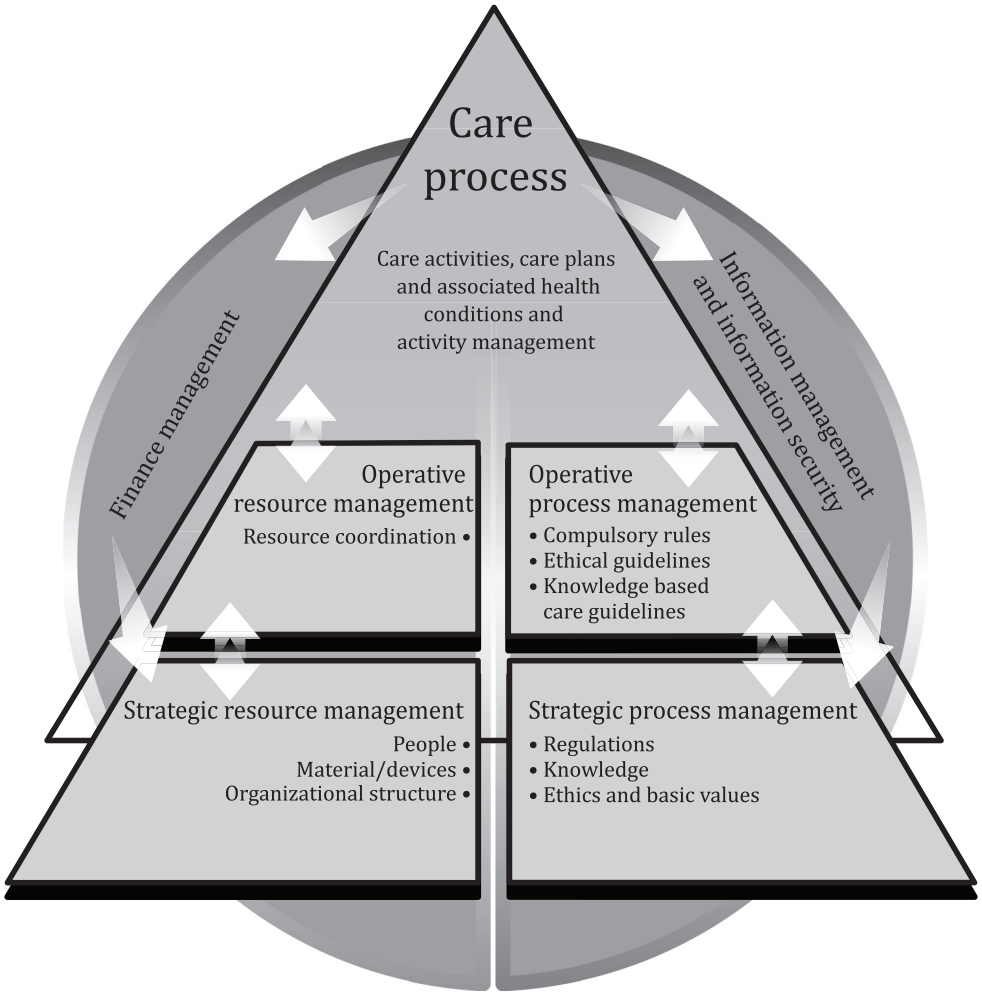


Figure 1 — Architecture of the concept areas

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0.2 Aims of this document

The primary aim of this document is to provide a comprehensive, conceptual basis for content and context in care services, including social services, clinical services or integrated services that seamlessly engage across both social and clinical contexts. This document provides a foundation for interoperability at all organizational and operational levels in care organizations, between care organizations, and for the development of information systems in care.

0.3 'Health' as a concept

In this document, health is defined with reference to the World Health Organization's (WHO) declaration of health from 1948: "... a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity".[33] In 1986 WHO made two amendments to the above definition: "resource for everyday life, not the objective of living" and "health is a positive concept emphasizing social and personal resources, as well as physical capacities". The second amendment emphasizes the importance of social aspects in the context of health.

0.4 Care, clinical care and social care

Both clinical care and social care have the objective of influencing, restoring and maintaining health as defined by WHO. In this document the term "care" is used to stress the common characteristics and objectives of both clinical care and social care. It is a common misunderstanding that healthcare is restricted to clinical action against physical and mental health problems. This does not align with the WHO description of health, which includes social aspects of care.

A key objective of this document is to support smooth transition between social care and clinical care including referral between any or all primary care, home care, community-based care, secondary and tertiary hospital care, specialist care services, and long-term institutional care.

In 2016 and 2017, two scientific papers[40,41] on the integration of social and clinical care were published. Based on these papers, a working group was launched at the UNINFO, the branch of the Italian National Unification (UNI) standardization body that tackles information and communications technology (ICT) activities. The task of the working group was to use the previous edition of this document (ISO 13940:2015) to establish a concept system not only for continuity of care in social care but also to ensure collaboration and continuity of care within, between and across the provision of both social care and clinical care. This resulted in technical report UNI/TR 11802:2020. This document (i.e. the second edition of ISO 13940) extends the system of concepts for the continuity of care to more explicitly support the continuity of care across social care and clinical care building on the contributions made in UNI/TR 11802:2020.

A generic model of the continuity of care process indicating the cyclic nature of care activities typically involved in delivering care to a subject of care is provided in Annex A.

0.5 Intended users of this document

All parties interested in the interoperability issues in clinical care and social care are intended users of this document. This includes, but is not limited to, care professionals and teams, social care personnel, subjects of care, care managers, care funding organizations and all types of care providers and local care teams.

This system of concepts is relevant across all care information and the development and use of care information systems. It can also be used for business analysis as a basis for organizational decisions and more widely in development that is not inherently tied to the use of information systems.

0.6 Alignment with ontological principles

In this document, all upper-level concepts and their definitions have been aligned with the DOLCE high level descriptive ontology for linguistic and cognitive engineering as defined in ISO/IEC 21838-3:2023, which has been built on ISO/IEC 21838-1:2021.

0.7 Description and display of concepts

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In this document the concepts are defined in Clause 3, where they are listed in logical order and grouped in subclauses according to the kinds of concepts. Concepts are accompanied by UML diagrams that illustrate their relationship to immediately related concepts.

Clauses 5 to 12 provide additional description of the concepts and extensive UML diagrams showing relations between the concepts listed in Clause 3. The large models include associations that are illustrated as undirected, describing conceptual relationships rather than data access paths.

Examples are provided wherever they are considered relevant and necessary.

The purpose of using concept model diagrams in this document is to highlight the relationships between concepts. Consequently, in conformance with ISO 24156-1, no attributes are shown in the concept classes. Characteristics are shown as related concepts. Attributes of classes in an information model represent related concepts. They can be added during implementation and still be conformant to this document.

In the diagrams used in this document, a generalization denotes an “is-a” relationship in which a specific concept is a kind of a more general concept. This relationship implies that the specific concept conforms to all characteristics defined for the more general concept. This is illustrated by a line from the specific concept to the more general concept with an open arrow at the more general concept.

The relation of this system of concepts to an upper ontology is described in Annex B. Some ontological elements are needed for understanding of the conceptual structure of this document but are not part of the concept system supporting continuity of care. Consequently, elements from the upper ontology may appear in model diagrams even if they are not explicitly defined in the terms and definitions.

0.8 Relationship of this standard to other relevant standards

— Appropriate terminology has been aligned with ISO 13606-1:2019 and HL7/FHIR.

— ISO/IEC 21838-3:2023 has been used as guidance in the modelling work.

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Health informatics — System of concepts to support continuity of care

1 Scope

This document defines the requirements for a system of concepts for different aspects of the provision of care encompassing social care as well as clinical care. The focus of this document is continuity of care.

This document defines requirements for a system of concept definitions needed to describe health and care businesses. Concept systems conforming to this document can be used to support the development of:

— logical reference models within the information viewpoint as a common basis for semantic interoperability on international, national or local levels;

— information systems;

— information for specified types of care processes.

This document does not specify how to perform specific care processes. This document does not cover research processes in the context of social and clinical care, welfare and educational processes.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

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

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

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

3.1 General terms

3.1.1
knowledge
maintained, processed, and interpreted *information* (3.1.3)

[SOURCE: ISO 5127:2017, 3.1.1.17]

3.1.2
health
state of complete physical, mental and social well-being

Note 1 to entry: The definition is drawn from the WHO description of health: a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

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