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Health informatics — Vocabulary for terminological systems

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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 17115 was prepared by Technical Committee ISO/TC 215, *Health informatics*.

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Introduction

Health terminology is complex and multifaceted, more so than most language domains. It has been estimated that between 500 000 and 45 million different concepts are needed to adequately describe concepts (e.g. conditions of patients and populations), actions in healthcare and related concepts (e.g. biomedical molecules, genes, organisms, technical methods and social concepts).

It is obvious that to adequately represent and especially to process this complexity, simple coding schemes are inadequate and formal multidimensional concept representation systems are required. Several such formal systems exist but systems and their underlying philosophy are described in different ways. The system itself can, for example, be called an ontology, medical entity dictionary, coding and reference model or reference terminology. The differences in terminology are understandable; this kind of work is highly interdisciplinary and integrates knowledge from linguistics, philosophy, informatics and health sciences, and there is room for misunderstanding between disciplines.

This International Standard is based on other standards, with clarifications and examples appropriate to health care in order to inform those working with terminology in health care, and aims to establish a set of basic concepts required to describe formal concept representation systems, especially for health sciences, and to describe representation of concepts and characteristics, for use especially in formal computer-based concept representation systems. These issues have previously been addressed by EN 12264, which is partly replaced by this International Standard. This document is not intended to be exhaustive, but to serve as a basis for related International Standards by reference and associated implementation guides.

Informally, the term "concepts" is often used when what is meant is "concept representations". However, this leads to confusion when precise meanings are required. Concepts arise out of human individual and social conceptualization of the world around them. Concept representations are artefacts constructed of symbols and are often manifest in computer programs. Because they are artefacts, it is possible to be precise about the functioning and capabilities of concept representations. It is more difficult to be clear about the yet poorly understood function of human conceptualization.

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Health informatics — Vocabulary for terminological systems

1 Scope

1.1 Main purposes

This International Standard defines a set of basic concepts required to describe formal concept representation systems, especially for health sciences, and describes representation of concepts and characteristics, for use especially in formal computer-based concept representation systems. A main motivation is to make it possible to precisely describe content models described in other International Standards.

The principles established by ISO/TC 37 are extended here into a formal system suited to health informatics.

Potential uses for this International Standard are

— to describe formal definitions, parts of definitions and how they are related, and

— to describe patterns for concept representation in a particular domain.

1.2 Target groups

The target groups for this International Standard are

— developers of concept representation systems for different health care domains,

— developers of standards for concept representation, especially those describing domain concept models,

— information modellers, knowledge engineers, and standards developers building information models for health information systems, such as electronic health records and decision support systems,

— developers of information systems that require an explicit system of concepts for internal organization, data warehouse management and middleware services.

1.3 Topics not considered

This International Standard does not include enumeration of axiomatic concepts and semantic links, or detailed content of health terminology systems (classifications, nomenclatures or reference terminology of health concepts).

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply. Selected background terms and definitions from ISO 1087-1 are provided in Annex A.

NOTE The use of angular brackets <> refers to a category which can be specialized to various concepts as required.

2.1 Specialization

2.1.1
specialize
form a more **specific concept** (A.3.2.16) [by constraining the **extension** (A.3.2.8) of a more **generic concept** (A.3.2.15)]

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