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Irish Standard
I.S. EN ISO 12381:2019

Health informatics - Explicit time-related expressions for healthcare-specific problems (ISO 12381:2019)

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This document is based on:	*Published:*
EN ISO 12381:2019	2019-09-11

This document was published under the authority of the NSAI and comes into effect on:	ICS number:
2019-09-29	35.240.80
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NSAI	T +353 1 807 3800	Sales:
1 Swift Square,	F +353 1 807 3838	T +353 1 857 6730
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EUROPEAN STANDARD

NORME EUROPÉENNE

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EN ISO 12381

September 2019

ICS 35.240.80

Supersedes EN 12381:2005

English Version

Health informatics - Explicit time-related expressions for healthcare-specific problems (ISO 12381:2019)

Informatique de santé - Expressions relatives au temps explicites utilisées dans le domaine de la santé (ISO 12381:2019)

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European foreword

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INTERNATIONAL STANDARD

ISO 12381

First edition
2019-07

Health informatics — Explicit time-related expressions for healthcare-specific problems

Informatique de santé — Expressions relatives au temps explicites utilisées dans le domaine de la santé

Reference number
ISO 12381:2019(E)

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Foreword

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

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Introduction

Time is an important variable in healthcare, and standards are needed about how to represent information with explicit references to time. This document is a first contribution to this harmonization process, focusing on “representation” and “explicit reference”.

Indeed, a system for time-standards should have as a minimum requirement the capacity to order temporal facts (situations, events, episodes) in three major ways, independent of any specific ontology of time itself:

— by relating situations to a calendar;

— by relating situations to “reference” situations;

— by relating events together in “before- and after-” chains.

The main reason for this threefold organization is that our everyday temporal discourse contains a variety of expressions that can only be regimented into a uniform style of analysis with a certain artificiality.

The purpose of this document is to enhance, in a perspective of machine-machine and person-machine communication, the generation of statements that are guaranteed to be understood unambiguously with respect to the time-related expressions that are embedded within them.

The purpose of this document is not to develop a full-blown temporal logic, but a standardized way of representing time-related expressions, such that all kinds of questions about the temporal organization of situations can be answered on the basis of the information available. Nor is it the intention of the framework presented here to provide a means to interpret the information in its original format. Interpretation of the source information is the task of the provider of information itself. The framework presented in this document allows information providers to express their time-related information in such a way that the intended meaning can be unambiguously understood by a receiver.

This of course requires the use of a “restricted”, regimented model or language, allowing the disambiguation of many time-related expressions uttered in natural language. The model (language) presented in this document is restricted enough to allow such disambiguation for time-related expressions in “traditional” medical language but is not expressive enough to account for all time related linguistic phenomena that can be encountered in natural language.

This document provides representational tools for “explicit” time-related information. It does not allow (nor encourage) the ad hoc interpretation of implicit temporal information. In an expression such as “diabetes since childhood”, “since childhood” is an explicit temporal reference for the diabetes, but the implicit information what “childhood” might mean (e.g. starting at the age of 2?), is not addressed. However, the framework presented in this document has enough expressive power to allow a specific provider of information to state explicitly what his or her understanding is of “childhood” is.

This document describes some conformance characteristics by means of which developers of health care information systems can label specific modules of their systems as to the degree they are compliant with the document. Although the framework itself does not deal with temporal reasoning, the conformance characteristics can be used to evaluate to what level temporal reasoning is possible with the information collected in a given system.

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Health informatics — Explicit time-related expressions for healthcare-specific problems

1 Scope

This document specifies a set of representational primitives and semantic relations needed for an unambiguous representation of explicit time-related expressions in health informatics. This document does not introduce or force a specific ontology of time, nor does it force the use of a fixed representation scheme for such an ontology. Rather this document provides a set of principles for syntactic and semantic representation that allow the comparability of specific ontologies on time, and the exchange of time-related information that is expressed explicitly.

This document applies to both the representation of actual phenomena occurring in the real world (e.g. registrations in medical records) and to the description of concepts (e.g. medical knowledge bases).

This document is applicable to

a) developers of medical information systems where there might be a need for explicit time-related concepts for internal organization (e.g. temporal data bases, temporal reasoning systems),

b) information modellers or knowledge engineers building models for the systems mentioned in a),

c) experts involved in the development of semantic standards on precise subdomains in health care where time-related information needs to be covered, (e.g. in the study of pathochronology, i.e. the discipline dealing with the time course of specific diseases), and

d) developers of interchange formats for messages in which time-related information is embedded.

This document is not intended to be used directly for

— representing what is true in time,

— reasoning about time, or

— representation of metrological time.

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 8601-1, *Data elements and interchange formats — Information interchange — Representation of dates and times — Part 1: Basic rules*

ISO 8601-2, *Data elements and interchange formats — Information interchange — Representation of dates and times — Part 2: Extensions*

ISO 80000-3, *Quantities and units — Part 3: Space and time*

3 Terms and definitions

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

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