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Building construction – Organization of information about construction works – Part 3: Framework for object-oriented information (ISO 12006-3:2007)

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EUROPEAN STANDARD

EN ISO 12006-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2016

ICS 91.010.01

English Version

**Building construction - Organization of information about
construction works - Part 3: Framework for object-
oriented information (ISO 12006-3:2007)**

Construction immobilière - Organisation de
l'information des travaux de construction - Partie 3:
Schéma pour l'information basée sur l'objet (ISO
12006-3:2007)

Bauwesen - Organisation von Daten zu Bauwerken -
Teil 3: Struktur für den objektorientierten
Informationsaustausch (ISO 12006-3:2007)

This European Standard was approved by CEN on 30 September 2016.

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European foreword

The text of ISO 12006-3:2007 has been prepared by Technical Committee ISO/TC 59 “Buildings and civil engineering works” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 12006-3:2016 by Technical Committee CEN/TC 442 “Building Information Modelling (BIM)” the secretariat of which is held by SN.

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of an identical text or by endorsement, at the latest by April 2017, and conflicting national standards shall be withdrawn at the latest by April 2017.

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The text of ISO 12006-3:2007 has been approved by CEN as EN ISO 12006-3:2016 without any modification.

Introduction

The main part of ISO 12006-3 consists of the specification of a taxonomy model, which provides the ability to define concepts by means of properties, to group concepts, and to define relationships between concepts. Objects, collections and relationships are the basic entities of the model. The set of properties associated with an object provide the formal definition of the object as well as its typical behaviour. Properties have values, optionally expressed in units.

The role that an object is intended to play can be designated through the model and this provides the capability to define the context within which the object is used. Each object may have multiple names and this allows for its expression in terms of synonyms or in multiple languages. The language name of each object must always be given in English (the default language). An object may also be named in terms of the language of the location in which it is determined or used. Objects may be related to formal classification systems through the provision of references.

The model has one root entity from which the following three subtype entities inherit: objects, collections and the relationships between them. The root entity provides the ability to assign any set of names, labels, descriptions and references, in any language, to its derived types, as well as identifiers and dates.

Objects are divided into subjects, activities, actors, units, values and measures with units and properties. Subjects and activities are the things and processes that are described. The others are description entities related to other objects and themselves through relationships.

Relationships provide an association mechanism between objects. Relationships are divided into association, collection, specialization, composition, involvement (acting upon), property assignment, sequencing and measure assignment.

Collections provide for all kinds of groupings of objects, including nested collections, by means of the collect relationship.

Properties are entities that provide the context for data stored as values. Properties are differentiated according to types of data containment: enumeration values, list values, bounded list values, bounded values, single values and table values.

The value content, associated with a property through a measure with a unit, will be stored in the value component, which is language-dependent. The latter entity models the way any name, description, value or reference is represented on a per language base.

The model described in this part of ISO 12006 is proposed as a bridge between classification systems as described in ISO 12006-2 [5], and product modelling as described in several publications [2], [3], [6], [7].

Building construction — Organization of information about construction works —

Part 3: Framework for object-oriented information

1 Scope

This part of ISO 12006 specifies a language-independent information model which can be used for the development of dictionaries used to store or provide information about construction works.

It enables classification systems, information models, object models and process models to be referenced from within a common framework.

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 10303-11, *Industrial automation systems and integration — Product data representation and exchange — Part 11: Description methods: The EXPRESS language reference manual*

ISO/IEC 10646, *Information technology — Universal Multiple-Octet Coded Character Set (UCS)*

3 Language encoding

All information that is specified as type “String”, or that resolves to type “String”, shall be able to be expressed using the UNICODE character set ^[8] as set out in ISO/IEC 10646, preferably using the UTF-8 encoding form, the UTF-8 encoding scheme and the “UCS Transformation Format 8” ^[4].

4 Specification

4.1 General

The model in this part of ISO 12006 is specified using the EXPRESS data definition language according to ISO 10303-11.

The model is described informally in 4.2, conforming to the EXPRESS-G notation.

The model is described formally in the EXPRESS language specification presented in 4.3 and as an EXPRESS long form specification in 4.4.