BS EN ISO 29481-3:2022

BSI Standards Publication

Building information models — Information delivery manual

Part 3: Data schema

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The UK participation in its preparation was entrusted to Technical Committee B/555, Construction design, modelling and data exchange.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Bauwerksinformationsmodelle - Handbuch der Informationslieferungen - Teil 3: Datenschema und Klassifikation

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European foreword

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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of an identical text or by endorsement, at the latest by April 2023, and conflicting national standards shall be withdrawn at the latest by April 2023.

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Foreword

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This document was prepared by Technical Committee ISO/TC 59, *Buildings and civil engineering works*, Subcommittee SC 13, *Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM)*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 442, *Building Information Modelling (BIM)*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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Introduction

This document specifies a machine applicable, readable and transferable (SMART) data schema for the efficient development, management and reuse of information delivery manual (IDM) specifications based on ISO 29481-1. ISO 29481-1 sets out a methodology for describing the processes and information requirements for a defined purpose within the development or management of an asset. In the absence of a standard data schema for exchanging and sharing the contents of IDMs in an electronic format, IDM specifications have historically been developed as either a static document file or as a data file specified in a proprietary data format. Consequently, their contents cannot be efficiently exchanged, shared and reused. The goal of this document is to define a standard data schema in order to expedite the development and sharing of the IDM specifications to meet the rapidly increasing demand for various building information modelling (BIM) use cases (UCs).

Using extensible markup language (XML), this document specifies a data schema for authoring, exchanging and sharing an IDM specification defined by ISO 29481-1. The data schema is referred to as the idmXML schema definition (idmXSD). idmXSD aims to allow users to electronically store, search, share, exchange and reuse IDM specifications and their contents, including metadata such as authors, dates, languages, revision history and supported project phases, as well as detailed descriptions of each information requirement. In addition, this document specifies the IDM code generation rules based on their key properties.

Use of this document will improve the interoperability of IDM specifications and their contents, providing tight digital links between the components of an IDM specification and to external data definitions such as ISO 16739-1 (industry foundation classes, IFC), ISO 12006-3, ISO 19650-1, ISO 23386, ISO 23387, EN 17412-1 (level of information need) and ISO 21597-1 (information container for linked document delivery), as well as model view definitions (MVDs) of standard data schemas.

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Building information models — Information delivery manual —

Part 3:
Data schema

1 Scope

This document is the technical addition to the methodology set out in ISO 29481-1. It defines a specification to store, exchange and read information delivery manual (IDM) specifications in a standardized and machine-readable way.

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 639-1, *Codes for the representation of names of languages — Part 1: Alpha-2 code*

ISO 3166-1, *Codes for the representation of names of countries and their subdivisions — Part 1: Country code*

ISO 8601-1, *Date and time — Representations for information interchange — Part 1: Basic rules*

ISO 22263, *Organization of information about construction works — Framework for management of project information*

ISO 29481-1:2016, *Building information models — Information delivery manual — Part 1: Methodology and format*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 29481-1 and the following 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
attribute
XML construct that modifies or provides descriptive metadata about an element's content

[SOURCE: ISO 20616-1:2021, 3.7, modified — The term "XML attribute" has been deleted. The phrase "included within the start tag of an XML element" has been removed and "that element's content" has been replaced with "an element's content".]

3.2
information delivery manual code
IDM code
code for an *IDM specification* (3.3) created based on the key identifying features of an IDM specification

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3.3
information delivery manual specification
IDM specification
instance of an IDM and its components

3.4
use case
UC
description of an information use for a specific purpose by one or more actors and/or systems

3.5
business context map
description of the information flow in a business context represented in the form of a process map or interaction map

4 Overview of the IDM schema

4.1 Naming convention

The naming convention shown below is used for the IDM schema elements.

a) The camel case convention shall be used for the naming of IDM schema elements.

b) Except for the terms below, all the terms shall be spelled out:

   1) idm: information delivery manual;

   2) uc: use case;

   3) er: exchange requirement;

   4) pm: process map;

   5) im: interaction map;

   6) tm: transaction map;

   7) id: identifier.

c) Elements that represent descriptions, a group or a set shall be specified using a plural form.

EXAMPLE benefits, limitations, requiredResources, requiredCompetencies.

4.2 Restriction notation

The following XSD restriction notation is used for the IDM data schema.

— PK: primary key.

— Required: mandatory.

— Optional: not mandatory.

— The 1:1 restriction depicts that both the minimum and maximum occurrence of an element is 1. This means there shall be one element.

— The 0:1 restriction depicts that the minimum occurrence of an element is 0 and the maximum occurrence is 1.

— The 0:* restriction depicts the zero to many relationship, which is represented as minOccurs = "0" to maxOccurs = "unbounded" in the XML schema.

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4.3 Overall structure of the IDM schema

The idmXSD consists of the idm element, its three core components (i.e. UC, business context map and ER), and the relations and properties related to them.

— An IDM specification consists of a UC, business context maps and an ER.

— A UC shall include the header information specified in ISO 29481-1 and other metadata sufficient to provide the context and the scope of an IDM.

— A business context map visually and formally represents the information delivery processes for a UC. ISO 29481-1 requires the exchange method and process to be specified in one or more PM and/or IM.

— An ER defines the information required by a specific UC at an individual information-unit level; possibly with references to the elements of standard data schemas, such as CityGML[19], ISO 16739-1 (IFC), gbXML[17] or ISO 12006-3.

Clauses 5 to 11 define the entities, relationships, attributes and restrictions of the IDM schema. Figure 1 illustrates a conceptual view of the IDM schema. A downloadable link to the full idmXSD is provided in Annex A.

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