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**Building information modelling  
and other digital processes used  
in construction — Methodology  
to describe, author and maintain  
properties in interconnected data  
dictionaries**

*Modélisation des informations de la construction et autres processus numériques utilisés en construction — Méthodologie de description, de création et de gestion des propriétés dans les dictionnaires de données interconnectés*



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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](http://www.iso.org/directives)).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

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](http://www.iso.org/iso/foreword.html).

This document was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 442, *Building Information Modelling (BIM)*, in collaboration with ISO 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 accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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](http://www.iso.org/members.html).

## Introduction

In the digital built environment, there will not be a single data dictionary which comprises all the definitions which are needed in all BIM domains. Different groups, possibly in different countries, will create or have created separate data dictionaries, specialized for their needs, based on the legislation and culture. We are, and will be faced with, various separated data dictionaries. They may even reside on the same platform yet logically they are detached.

For the future of BIM, it is important to ensure that these data dictionaries can be interoperable in tools and applications.

- The elements of the data dictionaries need to be described by the same attributes. If this is agreed and done by all data dictionary providers, it becomes possible to map properties in one data dictionary to properties in other data dictionaries. This can lead to reuse of properties and to the harmonization of properties across data dictionaries. In addition, this is an important step to allow BIM applications to use multiple data dictionaries consistently.
- The governance of the data dictionaries needs to follow the same rules with respect to the building and development of the data dictionaries' content.

The assumption is that the data dictionaries are independent from each other, they are connected in a coordinated network of data dictionaries (again, there may exist several of these networks). Within the network, the data dictionaries are related, which is visible, for instance, using a specific attribute which maps properties and groups of properties of different data dictionaries to each other. Any data dictionary in the network of coordinated data dictionaries is independent, i.e. it has its own processes and committees to control the development and evolution of the data dictionary; meanwhile, they all follow the same description and governance rules described in this document.

This document specifies the attributes to define properties and groups of properties of a single data dictionary as well as the processes and commissions/roles for the governance of a single data dictionary in a network of coordinated data dictionaries. In the governance processes, it is described how the single data dictionary deals with queries and change requests and the extension of queries to other connected data dictionaries; information of other connected data dictionaries regarding change is an integral part of this process.

This document contributes to ensuring the quality and the unicity of property descriptions and avoiding the creation of duplicates.



# Building information modelling and other digital processes used in construction — Methodology to describe, author and maintain properties in interconnected data dictionaries

## 1 Scope

This document establishes the rules for defining properties used in construction and a methodology for authoring and maintaining them, for a confident and seamless digital share among stakeholders following a BIM process.

Regarding the definition of properties and groups of properties, this document provides:

- definitions of properties and groups of properties as a list of attributes;
- definitions of all the provided attributes.

Regarding the authoring and maintaining process, this document provides:

- definitions and roles of applicants;
- definitions and roles of experts and the commission of experts;
- definitions of request's attributes;
- definitions of expert's attributes;
- requirements to establish the management rules to interconnect data dictionaries through the mapping process for properties and groups of properties.

To apply the methodology of this document, it is presupposed that the following are in place:

- an established governance model for a data dictionary;
- a framework for a network of data dictionaries.

It is not in the scope of this document to provide the content of the interconnected data dictionaries.

## 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 codes*

ISO 3166-2, *Codes for the representation of names of countries and their subdivisions — Part 2: Country subdivision code*

ISO 4217, *Codes for the representation of currencies*

ISO 8601 (all parts), *Date and time — Representations for information interchange*

ISO/IEC 11404, *Information technology — General-Purpose Datatypes (GPD)*

ISO 12006-3, *Building construction — Organization of information about construction works — Part 3: Framework for object-oriented information*

ISO 80000 (all parts), *Quantities and units*

IETF <https://www.ietf.org/>

### 3 Terms and definitions

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

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

#### 3.1 alternative use

category of *group of properties* (3.14) not corresponding to *class* (3.7), *domain* (3.11), *reference document* (3.18) or *composed property* (3.8)

Note 1 to entry: This category of group of properties shall be used only after having considered the possible use of all the other categories.

#### 3.2 applicant

*user* (3.21) formulating a request for the creation, modification or deactivation of a *property* (3.17) or a *group of properties* (3.14)

#### 3.3 area of competence

area of an *expert's* (3.12) proficiency and knowledge associated to one or several *groups of properties* (3.14)

EXAMPLE An area of competence could be:

- *domain* (3.11);
- *class* (3.7);
- *reference document* (3.18).

#### 3.4 attribute

data element for the computer-sensible description of a *property* (3.17), a *group of properties* (3.14), etc.

Note 1 to entry: An attribute describes only one single detail of a property or a group of properties.

EXAMPLE The name of a property, the definition of a group of properties.

[SOURCE: ISO 13584-42:2010, 3.3, modified — In the definition and Note 1 to entry, references to "a relation or a class" have been replaced with "a group of properties"; the EXAMPLE has been updated.]

#### 3.5 base quantity

quantity in a conventionally chosen subset of a given system of quantities, where no *quantity* (3.16) in the subset can be expressed in terms of the other quantities within that subset

[SOURCE: ISO 80000-1:2009, 3.4, modified — NOTES 1 to 4 have been removed.]