SLOVENSKI STANDARD
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Informacijsko modeliranje gradenj in drugi digitalni procesi v gradbeništvu - Metodologija za opisovanje, vzpostavitev in vzdrževanje atributov v medsebojno povezanih podatkovnih slovarjih

Building information modelling and other digital processes used in Construction – Methodology to describe, author and maintain properties in interconnected dictionaries

Bauwerksinformationsmodellierung und andere digitale Prozesse im Bauwesen - Methodik zur Beschreibung, Erstellung und Pflege von Merkmalen in miteinander verbundenen Datenkatalogen

Propriétés des produits et systèmes utilisés en construction Définition des propriétés, méthodologie de création et de gestion des propriétés

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

Propriétés des produits et systèmes utilisés en construction — Définition des propriétés, méthodologie de création et des gestion des propriétés

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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).

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For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 59.

Introduction

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

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

- The elements of the dictionaries, for instance, the properties, need to be described by the same attributes. If this is agreed and done by all dictionary providers, then it is quite simple to map properties in one dictionary to properties in other dictionaries which can lead to reuse of properties and to harmonization of properties across dictionaries. In addition, this is an important step to allow BIM applications to use a set of dictionaries in a common way.
- The governance of the dictionaries has to follow the same rules with respect to the building and development of the dictionaries' content.

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

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

This document contributes to ensure the quality and the unicity of properties descriptions by managing the duplicates issue.

For a property to be human understandable, any application following this standard should be able to display the value of many attributes defining this property, for example name, name of the reference document, test method, unit...

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

1 Scope

This European standard establishes the rules for defining properties used in construction and a methodology for authoring and maintaining them, for a confident and seamless digital share between stakeholders.

Regarding definition of properties and groups of properties, the standard provides:

— definitions of properties and groups of properties as a list of attributes

— definition of each attributes

Regarding authoring and maintaining process, the standard provides:

— definition and role of applicants,

— definition and role of experts and college of experts,

— definition of request's attributes,

— definition of expert's attributes,

— a governance model through the establishment of a steering committee;

— management rules to interconnect dictionaries through properties and groups of properties mapping process.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 3166-1, *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes (classification index: Z 44-000-1)*

IETF https://www.ietf.org/

EN ISO 3166-2, *Codes for the representation of names of countries and their subdivisions — Part 2: Country subdivision code (classification index: Z 44-000-2)*

EN ISO 80000-1, *Quantities and units — Part 1: General (classification index: X 02-300-1)*

EN ISO 80000-2, *Quantities and units — Part 2: Mathematical signs and symbols to be used in the natural sciences and technology (classification index: X 02-300-2)*

EN ISO 80000-3, *Quantities and units — Part 3: Space and time (classification index: X 02-300-3)*

EN ISO 80000-4, *Quantities and units — Part 4: Mechanics (classification index: X 02-300-4)*

EN ISO 80000-5, *Quantities and units — Part 5: Thermodynamics (classification index: X 02-300-5)*

EN ISO 80000-6, *Quantities and units — Part 6: Electromagnetism*

EN ISO 80000-7, *Quantities and units — Part 7: Light*

EN ISO 80000-8, *Quantities and units — Part 8: Acoustics*

EN ISO 80000-9, *Quantities and units — Part 9: Physical chemistry and molecular physics*

EN ISO 80000-10, *Quantities and units — Part 10: Atomic and nuclear physics*

EN ISO 80000-11, *Quantities and units — Part 11: Characteristic numbers*

EN ISO 80000-12, *Quantities and units — Part 12: Solid state physics*

EN ISO 80000-13, *Quantities and units — Part 13: Information science and technology (classification index: X 02-300-13)*

EN ISO 80000-14, *Quantities and units — Part 14: Telebiometrics related to human physiology (classification index: X 02-300-14)*

ISO 4217, *Codes for the representation of currencies*

ISO 8601, *Data elements and interchange formats — Information interchange — Representation of dates and times*

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/IEC 19510, *Information technology — Object Management Group Business Process Model and Notation*

3 Terms and definitions

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

3.1
building information modelling (BIM)
use of a shared digital representation of an asset to facilitate design, construction and operation processes to form a reliable basis for decisions[SOURCE: ISO/DIS 19650-1]

3.2
data dictionary
centralized repository of information about data such as meaning, relationships to other data, origin, usage and format

[SOURCE: Dictionary of IBM & computing Terminology]

3.3
interconnected dictionaries
set of dictionaries following this standard and connected using specific attributes

3.4
attribute
any data relative to the description of a property, group of properties, etc.

EXAMPLE Name, definition.

3.5
property
inherent or acquired feature of an item[SOURCE: ISO/DIS 6707-1]

EXAMPLE Thermal efficiency, heat flow, sound reduction index, acoustic power level.

3.6
shared property
property for which all the attribute values are identical in all the interconnected dictionaries

3.7
group of properties
container enabling the properties to be prearranged or organized. A Property Set as defined is ISO 16739 is a group of properties, but a group of properties is not necessarily a Property Set

Note 1 to entry: There are multiple types of possible groups eg class, domain, reference document, interdependent properties.

Note 2 to entry: A property can be member of several groups of properties.

3.8
measure
used to determine the extent or quantity of a concept

[SOURCE: bSDD content guidelines]

EXAMPLE Measure of linear distance (mm, inches), measure of volume (m^3, ft^3), measure of fire rating to CAN/ULC S101 (hours), CYMK (no unit).

3.9
unit
concept type representing a scale that enables a value to be measured

3.10
value
concept type representing holds the description of a value of a property

3.11
class
set obtained by uniting common points for a specified objective. Each class is a hierarchical element of a classification. A class can be a group of objects in a classification in which the property applies

3.12
domain
area of activity covering a science, a technique, a material, etc. A domain can be associated with a group to which the property applies

3.13
reference document
publication that is consulted to find specific information, particularly in a technical or scientific domain. A reference document can be associated with any data present in a data dictionary

3.14
interdependent properties
category of group of properties corresponding to a property allowing a link between several properties. Using this property requires to fill all the linked properties

EXAMPLE To describe the property "concrete facing quality" it is mandatory to describe 3 linked properties: concrete planarity, concrete hue, concrete texture.

3.15
specific use
where a part of industry as agreed on a group of properties which is not defined in a specific source

3.16
globally unique identifier
unique identifier generated using an algorithm

[SOURCE: ISO/IEC 11578:1996]

Note 1 to entry: In EN ISO 16739 and EN ISO 12006-3 the compressed version of GUID is used.

3.17
user
person or legal entity that interacts with the interconnected reference system via an interface providing access to the network of dictionaries

3.18
applicant
user formulating a request for the creation, modification or deactivation of a property or a group of properties

3.19
expert
legal or physical person capable of providing argued responses, based on acknowledged experience, to the requests concerning properties and groups of properties

3.20
area of competence
area of an expert's proficiency and knowledge associated to one or several groups of properties

EXAMPLE An area of competence could be:

— Domain

— Class

— Reference document

— European standard

— Construction Products Regulation

— Eurocodes

4 Rules to define properties and groups of properties

4.1 Generality

To be non-ambiguous, machine readable as well as human understandable, properties and groups of properties shall be defined by a set of attributes. Some attributes are mandatory and others are optional.

4.2 Property

A property shall be defined using the set of attributes as listed in Table 1.

4.3 Group of properties

A group of properties shall be defined using the set of attributes as listed in Table 2.

Applicants can propose group of properties as appropriate for their needs.

The different categories of group of properties are:

— class

— domain

— reference document

— interdependent properties

— specific use

Group of properties can be organised in tree structures. Any property attached to a group of properties is inherited by the sub-group(s) of properties.

Any property may be included in several groups of properties.

EXAMPLE

— class: Plasterboard (class corresponding to a family of products in a classification);

— domain: Thermal (domain corresponding to a scientific discipline);

— EN 13162 (designation that corresponds to a harmonised standard and in fact makes reference to the properties listed in Annex ZA of the standard, CE marking medium);

— interdependent properties: “concrete facing quality” is a group of properties linking 3 properties (concrete planarity, concrete hue, concrete texture);

— specific use: where a part of industry as agreed on a group of properties which is not defined in a specific source.

4.4 Attributes list

4.4.1 Attributes of property

The attributes of a property are defined in Table 1.

4.4.2 Attributes of group of properties

The attributes of a group of properties are defined in Table 2.