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Building Information Modelling - Level of Information Need - Part 1: Concepts and principles

iTeh STANDARD PREVIEW

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Building Information Modelling - Level of Information Need - Part 1: Concepts and principles

Modélisation des informations de la construction -
Niveau du besoin d'information - Partie 1 : Concepts et
principes

Building Information Modelling -
Informationsbedarfstiefe - Konzepte und Definitionen

This European Standard was approved by CEN on 18 October 2020.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 17412-1:2020) has been prepared 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of an identical text or by endorsement, at the latest by May 2021, and conflicting national standards shall be withdrawn at the latest by May 2021.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

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Introduction

This document sets out the concepts and principles for defining the level of information need and information deliveries being part of the information exchange processes during the life cycle of built assets when using building information modelling (BIM). Those concepts and principles can deliver clear benefits to all participants in the various life cycle phases of built assets as they provide a common understanding on the right level of information needed at a certain time. One purpose of defining the level of information need is to prevent delivery of too much information. Information exchange should ensure the right information to be delivered for the agreed purpose to facilitate verification and validation processes.

This document provides methods for describing information to be exchanged according to exchange information requirements. The exchange information requirements specify the wanted information exchange. The result of this process is an information delivery.

There is a need that these concepts and principles are described in a common and comparable way to allow services related to building information modelling to be procured and offered on a European scale. The need has arisen by the fact that there are several conflicting terms, concepts and usages in place, both internationally and across Europe, that hinder the objective of having a common understanding and practise in describing the level of information need for a common European market. It is therefore helpful not to use an acronym to refer to level of information need as this can oversimplify these concepts.

The concepts and principles contained in this document are aimed at all those involved in the asset life cycle. This includes, but is not limited to, the asset owner/operator, the client, the asset manager, the design team, the construction team, an equipment manufacturer, a technical specialist, a regulatory authority, an investor, an insurer and an end-user.

The information exchange, as well as related topics such as the exchange information requirements and the information delivery are defined and explained in context of two related standards:

EN ISO 19650-1, *Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) — Information management using building information modelling — Part 1: Concepts and principles*; and

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

1 Scope

This document specifies concepts and principles to establish a methodology for specifying level of information need and information deliveries in a consistent way when using building information modelling (BIM).

This document specifies the characteristics of different levels used for defining the detail and extent of information required to be exchanged and delivered throughout the life cycle of built assets. It gives guidelines for principles required to specify information needs.

The concepts and principles in this document can be applied for a general information exchange and whilst in progress, for a generally agreed way of information exchange between parties in a collaborative work process, as well as for an appointment with specified information delivery.

The level of information need provides methods for describing information to be exchanged according to exchange information requirements. The exchange information requirements specify the wanted information exchange. The result of this process is an information delivery.

This document is applicable to the whole life cycle of any built asset, including strategic planning, initial design, engineering, development, documentation and construction, day-to-day operation, maintenance, refurbishment, repair and end-of-life.

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.

EN ISO 29481-1:2017, *Building information models — Information delivery manual — Part 1: Methodology and format (ISO 29481-1:2016)*

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ISO 6707-1, *Buildings and civil engineering works — Vocabulary — Part 1: General terms*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 29481-1:2017, ISO 6707-1 and the following apply.

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

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

EN 17412-1:2020 (E)**3.1
information container**

named persistent set of *information* (3.11) retrievable from within a file, system or application storage hierarchy

EXAMPLE Including sub-directory, information file (including model, document, table, schedule), or distinct sub-set of an information file such as a chapter or section, layer or symbol.

Note 1 to entry: Persistent information exists over a timescale long enough for it to have to be managed, i.e. this excludes transient information such as internet search results.

Note 2 to entry: Naming of an information container should be according to an agreed naming convention.

[SOURCE: EN ISO 19650-1:2018, 3.3.12 modified — cross reference has been adapted to be consistent with internal numbering system. Note 1 has been removed and Notes 2 and 3 have been renumbered]

**3.2
information delivery milestone**

scheduled event for a predefined information exchange

[SOURCE: EN ISO 19650-2:2018, 3.1.3.2]

**3.3
information exchange, verb**

act of satisfying an information requirement or part thereof

[SOURCE: EN ISO 19650-1:2018, 3.3.7 modified — cross reference related to “information requirement” has been removed]

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**3.4
information model**

set of structured and unstructured *information containers* (3.1)

[SOURCE: EN ISO 19650-1:2018, 3.3.8 modified — cross reference has been adapted to be consistent with internal numbering system]

**3.5
level of information need**

framework which defines the extent and granularity of *information* (3.11)

Note 1 to entry: One purpose of defining the level of information need is to prevent delivery of too much information.

[SOURCE: EN ISO 19650-1:2018, 3.3.16 modified — cross reference has been adapted to be consistent with internal numbering system]

**3.6
verification**

confirmation, through the provision of objective evidence, that specified requirements have been fulfilled

[SOURCE: EN ISO 9000:2015, 3.8.12 modified — Notes 1 to 3 and cross references have been removed]

3.7**validation**

confirmation, through the provision of objective evidence, that the requirements for a specific intended use or application have been fulfilled

[SOURCE: EN ISO 9000:2015, 3.8.13 modified — Notes 1 to 3 and cross references have been removed]

3.8**breakdown structure**

decomposition of a defined scope into progressive levels

[SOURCE: ISO 21511:2018, 3.13 modified — “work” has been deleted in the term, “scope of the project or programme” replaced with “scope”, “progressively lower levels consisting of elements of work” replaced with “progressive levels”]

3.9**object**

any part of the perceivable or conceivable world

[SOURCE: ISO 12006-2:2015, 3.1.1 modified — Note 1 has been removed]

3.10**geometry**

information regarding shape and location of an object

[SOURCE: ISO/IEC 13249-3:2016, 3.1.2.2.7 modified — “information regarding” has been added, “geographic location” replaced with “location”, “feature” replaced with “object”]

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3.11**information**

meaningful data

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[SOURCE: EN ISO 9000:2015, 3.8.2 modified — cross reference has been removed]

3.12**geometrical information**

description of detail and extent of information that can be expressed using shape, size, dimension, and location

3.13**alphanumeric information**

description of detail and extent of information that can be expressed using characters, digits and symbols or tokens such as mathematical symbols and punctuation marks

3.14**documentation**

collection of documents related to a given subject

[SOURCE: EN 62023:2012, 3.2.3 modified — Notes to entry 1 to 4 deleted]

EN 17412-1:2020 (E)**4 General**

To support information exchange, level of information need should be used.

The level of information need describes the granularity of information exchanged in terms of geometrical information, alphanumerical information and documentation. Different purposes have their own needs of geometrical information, alphanumerical information and documentation.

The level of information need should be used to discuss and agree on the information delivery between two or more actors.

The level of information need describes information requirements that can be human and machine interpretable.

5 Framework to specify the level of information need**5.1 General**

To specify the level of information need and how information is going to be delivered the following useful prerequisites shall be considered:

- purposes for the use of the information to be delivered;
- information delivery milestones for the delivery of the information;
- actors who are going to request and actors who are going to deliver the information;
- objects organized in one or more breakdown structures.

The specification of level of information need is informed by but does not include the listed prerequisites.

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See Annex A for more information related to the relationships between EN ISO 29481-1 and level of information need.

5.2 Consider the purposes

When the level of information need is specified, the purposes for information delivery shall be considered.

The purposes should be specified to clarify why the information is needed. The level of information need should be used for the purposes it has been required for.

The level of information need does not specify the purposes.

To achieve the same purpose, the geometrical information, alphanumerical information and documentation can vary for different objects.

EXAMPLE 1 To perform an accessibility analysis, requirements such as the clear opening width of a door, its location, the position and shape of the handle are needed. Other properties, such as the name of the manufacturer and the acquisition cost, are not relevant to fulfil the purpose. On the other hand, for cost analysis purpose, the acquisition cost of a door is needed, but the appearance of the handle is not relevant. For rendering purpose, the geometrical appearance of a door is relevant, while the name of the manufacturer and the acquisition cost are not.

During an information delivery milestone, the same level of information need required for an object can be used for different purposes.

EXAMPLE 2 In concept design, the same geometry and information of a block can be used for clash detection and quantity take off.

In some cases, the purpose should not be explicit to all actors (e.g. for security reasons). In those cases, the purpose should be considered as “not disclosed” and only authorized actors should be informed.

EXAMPLE 3 The purposes can be extracted from organizational information requirements, project information requirements and asset information requirements as described in EN ISO 19650-1:2018 5.2, 5.3, 5.4 and EN ISO 19650-2:2018, 5.1.2.

5.3 Consider the information delivery milestones

When the level of information need is specified, information delivery milestones shall be considered.

The information delivery milestones should be specified to clarify when the information is needed.

The level of information need does not specify the information delivery milestones.

At the same information delivery milestone, the geometrical information, alphanumeric information and documentation can vary for different objects.

EXAMPLE 1 To do accessibility analysis, usually the same level of information need is required at different milestones.

EXAMPLE 2 To do energy analysis, different level of information need is required at different milestones.

5.4 Consider the actors

When the level of information need is specified, actors who require and deliver the information shall be considered.

The level of information need does not specify the actor.

EXAMPLE 1 The same level of information need can be required by different actors at the same milestone to fulfil different purposes.

EXAMPLE 2 Different level of information need can be required by different actors at the same milestone to fulfil the same purpose.

NOTE 1 At different milestones, e.g. especially in the early phase, the actor responsible of delivering specified level of information need might not be specified.

EXAMPLE 3 A client might ask for a specific level of information need for an object at an agreed information delivery milestone without specifying who needs to deliver it. In this case the supply chain is free to assign responsibilities as preferred.

NOTE 2 Different actors can be responsible for different level of information need at the same information delivery milestone to fulfil the same purpose.

NOTE 3 For design purposes, at an agreed information delivery milestone, a wall in a project can be made up of a structural element, architectural cladding and an air duct penetration with an air duct passing through the penetration. Mechanical, electrical and plumbing engineers are responsible for providing reliable information concerning the sizing of the duct and associated desired penetration sizing so that the structural and architectural teams can continue their work to respectively validate the wall structure and cladding design.

5.5 Consider the objects within a breakdown structure

When the level of information need is specified, the objects within a breakdown structure for the information delivery shall be considered.

The level of information need does not specify the objects within a breakdown structure.