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Building Information Modelling - Level of Information Need - Concepts and principles

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Modélisation des Informations pour la Construction (BIM) - Niveau d'Information Requis -
Concepts et Principes

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Building Information Modelling - Level of Information Need - Concepts and principles

Modélisation des Informations pour la Construction
(BIM) - Niveau d'Information Requis - Concepts et
Principes

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(BIM) - Niveau d'Information Requis - Concepts et
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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (prEN 17412:2019) has been prepared by Technical Committee CEN/TC 442 “Building Information Modelling (BIM)”, the secretariat of which is held by SN.

This document is currently submitted to the CEN Enquiry.

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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 preventing both a costly overproduction of information as well as a risky underproduction. Information exchange ensures the right information to be delivered for the agreed purpose to facilitate verification and validation processes.

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.

This document applies to the information management during the whole life cycle of a built asset, including strategic planning, initial design, engineering, development, documentation and construction, day-to-day operation, maintenance, refurbishment, repair and end-of-life.

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

- EN ISO 19650-1, *Organization of information about construction works — 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*.

[SIST EN 17412-1:2021](https://standards.iteh.ai/catalog/standards/sist/be912fd1-6205-44b9-96cf-5a05cef0ec03/sist-en-17412-1-2021)

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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 a contractually 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.

The concepts and principles contained in this document are applicable to all those involved in the asset life cycle. This includes, but is not limited to, the asset owner/operator, the project client, the asset manager, the design team, the construction supply chain, the equipment manufacturer, the system specialist, the regulator, and the end-user.

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

<https://standards.iteh.ai/catalog/standards/sist/be912fd1-6205-44b9-96cf-5a05cef0ec03/sist-prEN-ISO-23386-2019>, *Building information modelling and other digital processes used in construction — Methodology to describe, author and maintain properties in interconnected dictionaries*

prEN ISO 23387, *Building Information Modelling (BIM) - Data templates for construction objects used in the life cycle of any built asset - Concepts and principles (ISO 23387)*

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, ISO 6707-1 and 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 <http://www.iso.org/obp>

prEN 17412:2019 (E)**3.1
information container**

named persistent set of information 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: Structured information containers include geometrical models, schedules and databases. Unstructured information containers include documentation, video clips and sound recordings.

Note 2 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 3 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 – reference (3.3.1) to (3.11) to be consistent with internal numbering system]

**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 (3.3.2) related to “information requirement” has been removed]

<https://standards.iteh.ai/catalog/standards/sist/be912fd1-6205-44b9-96cf-5a05cef0ec03/sist-en-17412-1-2021>

**3.4
information model**

set of structured and unstructured information containers

[SOURCE: EN ISO 19650-1:2018, 3.3.8 modified – cross reference (3.3.2) related to “information requirement” has been removed]

**3.5
level of information need**

description of the information deliverable to fulfil a specific purpose for which the information is required

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 – definition has been changed, same NOTE 1 to entry]

**3.6
verification**

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

[SOURCE: EN ISO 9000:2015, 3.8.12]

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]

3.8**breakdown structure**

decomposition of a defined scope into progressive levels

[SOURCE: ISO 21511:2018, 3.13 modified – deletion of “work” from the title and “of the project or programme”, “lower” and “consisting of elements of work” from the definition]

3.9**object**

any part of the perceivable or conceivable world

[SOURCE: ISO 12006-2:2015, 3.1.1]

3.10**geometry**

information that can be perceived from shape, position, scale, orientation and reflection of representation of an object

Note 1 to entry: An object can be geometrically described through form, size, dimensions, and location – in space or to other objects.

EXAMPLE 1 Information can be derived from geometry, e.g. the dimensions of an object, the distance between interrelated objects etc.

EXAMPLE 2 Documentation can be derived from geometry, e.g. views extracted from an information model and recorded as an external document.

EXAMPLE 3 Geometry can be represented by square, cube, cylinder, ball, cone, triangle, curve, straight line, object placed within an object, etc.

EXAMPLE 4 Geometry can be used for 3-dimensional (3D) consistency to visualize, generate views, quantity take off, clash detection, etc.

3.11**information**

meaningful data

Note 1 to entry: Information can be expressed using characters, digits and symbols or tokens such as mathematical symbols and punctuation marks.

EXAMPLE 1 Information can be contained within a brief, a budget, a specification, an energy calculation, a product data sheet, a technical report, an operation and maintenance manual, etc.

EXAMPLE 2 Information can be used to create geometrical form, shape and size.

EXAMPLE 3 Information can be used to create documents and documentation.

EXAMPLE 4 Information can be used to filter, sort, check, compare and analyse objects.

[SOURCE: ISO 22263:2008, 2.6 modified – NOTE 1 to entry and EXAMPLES added]

prEN 17412:2019 (E)**3.12****level of geometry****LOG**

description of detail and extent of geometry

Note 1 to entry: Deprecated term: level of detail

3.13**level of information****LOI**

description of detail and extent of information

3.14**document**

fixed and structured amount of information that can be managed and interchanged as a unit between users and systems

[SOURCE: EN 82045-1:2001, 3.2.3]

3.15**documentation****DOC**

collection of documents related to a given subject

[SOURCE: EN 62023:2012, 3.2.3 modified – NOTES to entry 1 to 4 deleted, “DOC” added]

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 geometry, information and documentation. Different purposes, have their own needs of geometry, information and documentation.

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

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 should be identified:

- 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 deliver the information;
- objects in one or more breakdown structures.

The definition of level of information need is independent from the listed prerequisites.

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

5.2 Identify the purposes

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

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

The level of information need does not specify the purposes.

To achieve the same purpose, the geometry, 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 purposes, the acquisition cost of a door is needed, but the appearance of the handle is not relevant. For rendering purposes, 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.

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

5.3 Identify the information delivery milestones

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

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 geometry, 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 Identify the actors

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

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 is not always specified.

EXAMPLE 3 A client could 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.