



BSI Standards Publication

Review of geospatial and building information modelling (BIM) terminological entries

National foreword

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Review of geospatial and building information modelling (BIM) terminological entries

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informations de la construction (BIM) et les information
géospatiales*

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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)*.

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.

Introduction

Several developments aim to leverage structured information to support decision-making within the built environment. The two most prevalent are:

- building information modelling (BIM): focused on the organization and structuring of information relating to assets such as buildings and infrastructure; and
- geographic information systems (GIS): focused on the organization and structuring of information relating to geospatial information and geomatics.

ISO/TR 23262 investigates the conceptual and technological barriers between BIM and GIS. This document further develops this work by summarizing the key conceptual and terminological equivalents and homonyms.

Review of geospatial and building information modelling (BIM) terminological entries

1 Scope

This document provides an overview of terminological entries relating to building information modelling (BIM) as well as those relating to geographic information or geomatics. This document identifies terminological entries which are identical, equivalent (i.e. synonyms), homonymous, and entries which are unique to their respective domains.

This document does not provide recommendations to resolve terminology homonyms.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions 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 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 29481-1:2016, 3.2, modified — The words “built object” have been replaced with “asset”; the words “including buildings, bridges, roads, process plants, etc.” have been removed; note 1 to entry has been removed.]

3.2 geographic information system

information system dealing with information concerning phenomena associated with location relative to the Earth

[SOURCE: ISO 19101-1:2014, 4.1.20]

3.3 terminological entry

collection of terminological data related to only one concept

Note 1 to entry: A terminological entry prepared in accordance with the principles and methods given in ISO 704 follows the same structural principles whether it is monolingual or multilingual.

[SOURCE: ISO 1087:2019, 3.6.2]

4 Abbreviated terms

BIM building information modelling

GIS geographic information system

MLGT multi-lingual glossary of terms

UML unified modelling language

5 Management of terminology

5.1 Report methodology

A systematic review of terminological entries used within the standards on GIS developed by ISO/TC 211 (see [5.3.2](#)) and those on BIM developed by ISO/TC 59/SC 13 (see [5.3.1](#)) was undertaken.

This review evaluated the definitions of these terminological entries to establish:

- identical entries: terminological entries which use the same definition;
- equivalent entries: terminological entries whose definitions capture the same concepts;
- homonymous entries: terminological entries whose definitions capture different concepts;
- unique entries: terminological entries not found within either the BIM or GIS which may resolve a gap in its lexis.

NOTE 1 Unique entries which are not relevant to both BIM and GIS have been excluded from this document for clarity.

NOTE 2 Other terminological entry components, such as examples and notes to entry, have been excluded from this document for clarity.

5.2 Document structure

For ease of comparison and organization, terminological entries have been grouped in this document under the following sub-domains of analysis:

- data structures and architectures;
- digital representation (graphical and non-graphical);
- digital documentation;
- uses, functions and services;
- data acquisition and processing techniques and technologies.

5.3 Sources of terminological entries

5.3.1 BIM terminological entries

Terminological entries used throughout the standardization of BIM are stored and maintained in the Working Terminology Document,^[73] which includes over 180 terminological entries.

For the purposes of this document, a terminological entry is considered part of BIM if it is included within the Working Terminology Document^[73].

5.3.2 GIS terminological entries

Terminological entries used throughout the standardization of GIS are stored and maintained within the ISO/TC 211 Multi-Lingual Glossary of Terms (MLGT).^[74] ISO TC/211 MLGT includes over 2000 terminological entries, many of which have multiple translations.

For the purposes of this document, a terminological entry is considered part of GIS if it is included within ISO/TC 211 MLGT or its proposed update as of March 2024.

6 Terminology review

6.1 Data structures and architectures

[Table 1](#) shows terminological entries related to data structure and architectures.

Table 1 — Terminological entries related to data structures and architectures

BIM	GIS					Comments
	Term	Definition	Source	Term	Definition	Source
	application schema	conceptual schema for data required by one or more applications	ISO 19101-1:2014, 4.1.2	application schema	conceptual schema for data required by one or more applications	ISO 19101-1:2014, 4.1.2
	concept	unit of knowledge created by a unique combination of characteristics	ISO 1087:2019, 3.2.7	concept	unit of knowledge created by a unique combination of characteristics	ISO 1087:2019, 3.2.7
	conceptual schema	formal description of a conceptual model	ISO 19101-1:2014, 4.1.6	conceptual schema	formal description of a conceptual model	ISO 19101-1:2014, 4.1.6
	conceptual schema language	formal language based on a conceptual formalism for the purpose of representing conceptual schemas	ISO 19101-1:2014, 4.1.7	conceptual schema language	formal language based on a conceptual formalism for the purpose of representing conceptual schemas	ISO 19101-1:2014, 4.1.7
	namespace	collection of names, identified by a URI reference, which are used in XML documents as element names and attribute names	ISO/TS 19139-1:2019, 3.1	namespace	collection of names, identified by a URI reference, which are used in XML documents as element names and attribute names	ISO/TS 19139-1:2019, 3.1
	schema	formal description of a model	ISO 19101-1:2014, 4.1.34	schema	formal description of a model	ISO 19101-1:2014, 4.1.34
	individual	instance of a class	ISO 19150-2:2015, 4.1.20	individual	instance of a class	ISO 19150-2:2015, 4.1.20
	constraint	adaptation of a data type that restricts its range or operations	ISO/IEC 2382:2015, 2122397	constraint <UML>	condition or restriction expressed in natural language text or in a machine readable language for the purpose of declaring some of the semantics of an element or set of elements	ISO 19103:2024, 3.25

Table 1 (continued)

BIM			GIS			Comments
Term	Definition	Source	Term	Definition	Source	
class	description of a set of objects that share the same characteristics	ISO 22274:2013, 3.4	legend class	class resultant from the application of a classification process	ISO 19144-1:2009, 4.1.16	Equivalent: Both entries relate to an object classifier of a classification process.
			class	<classification> result of a classification process as part of a classification system which subdivides concepts within a given topic area	ISO 19144-2:2023, 3.1.6	
			class	<UML> classifier of a set of objects	ISO 19103:2024, 3.14	
classification system	systematic collection of classes organized according to a known set of rules, and into which objects may be grouped	ISO 5127:2017, 3.6	classification system	system for assigning objects to classes	ISO 19144-1:2009, 4.1.5	Equivalent: Both entries relate to a system for organizing or assigning objects to classes.
conceptual data model	data model that represents an abstract view of the real world	ISO/IEC 11179-1:2023, 3.2.25	conceptual model	model that defines concepts of a universe of discourse	ISO 19101-1:2014, 4.1.5	Equivalent: Both entries relate to representations of reality.
information	meaningful data	ISO 9000:2015, 3.8.2	information	knowledge concerning objects, such as facts, events, things, processes, or ideas, including concepts, that within a certain context has a particular meaning	ISO/IEC 2382:2015, 2121271	Equivalent: Both entries relate to a meaningful collection of data.

Table 1 (continued)

BIM	GIS				Comments
	Term	Definition	Source	Definition	Source
data format		predetermined arrangement of data on a data medium	ISO 5127:2017, 3.1.13.12	language construct that specifies the representation, in character form, of data objects in a record, file, message, storage device, or transmission channel	ISO/IEC 2382:2015, 2122408
dataset		named collection of data	N/A	identifiable collection of data	ISO 19115-1:2014, 4.3
information unit		single piece of information	ISO 6707-2:2017, 3.2.1	collection of data	ISO 19168-1:2020, 3.1.1
ontology		formal, explicit specification of a shared conceptualization	ISO 5127:2017, 3.1.2.03	unit of data that, in a certain context, is considered indivisible	ISO 19118:2005, 4.9
semantic relation		relation between concepts and between class symbols and their meanings	ISO 5127:2017, 3.1.7.01	formal representation of phenomena of a universe of discourse with an underlying vocabulary including definitions and axioms	ISO 19101-1:2014, 4.1.26
classification				set of entity occurrences that have the same attributes, together with these attributes	ISO/IEC 2382:2015, 2121466
				relationship <uml>	ISO 19103:2024, 3.63
		process of assigning objects to classes according to criteria	ISO 22274:2013, 3.5	abstract representation of real world phenomena using classifiers	ISO 19144-1:2009, 4.1.4
					Homonymous: The BIM entry relates to classifying an object, whilst the GIS entry relates to the result of being classified.

Table 1 (continued)

BIM	GIS				Comments
	Definition	Source	Term	Definition	
link	directed relationship between two digital entities	ISO 5127:2017, 3.1.12.30	link	directed topological connection between two nodes	Homonymous: The GIS entry relates to a more specific subject.
			feature association	relationship that links instances of one feature type with instances of the same or a different feature type	
metadata	data about data or data elements	ISO/IEC 2382:2015, 212150	metadata	information about a resource	Homonymous: The BIM entry focuses on data, whilst the GIS entry includes broader concepts. It is noted that information about a person, within the BIM domain would be captured within a "property", not within "metadata".
class code	notation representing a concept or class in a structured vocabulary	ISO 5127:2017, 3.8.3.24	N/A	N/A	Unique to BIM: Related GIS entries include "classifier" and "classification process".
constituent properties	properties which define a parent property	N/A	N/A	N/A	Unique to BIM: Related GIS entries include "properties", as well as some "parent/child" concepts, in specific domains, that use an equivalent relationship between their respective concepts.
data model	description of the organization of data in a manner that reflects an information structure	ISO 5127:2017, 3.1.13.33	N/A	N/A	Unique to BIM: Related GIS entries include "metamodel" and "schema".
link dataset	dataset containing links	N/A	N/A	N/A	Unique to BIM: Related GIS entries include "Place Identifier (PI) link", "linked geodata", and "dataset".