

BS ISO 19104:2016



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Geographic information — Terminology



National foreword

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Information géographique — Terminologie



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Contents

Page

Foreword	v
Introduction	vi
1 Scope	1
2 Conformance	1
2.1 Conformance class overview	1
2.2 Terminological entry conformance class	1
2.2.1 Terminological entry aggregated conformance classes	1
2.2.2 Selection and harmonization of concepts conformance class	2
2.2.3 Terminological entry content conformance class	2
2.2.4 Terminological entry drafting conformance class	3
2.2.5 Cultural and linguistic adaptation conformance class	3
2.2.6 Layout and formatting of terminological entries conformance class	3
2.3 Terminology register conformance class	3
2.3.1 Terminology register aggregated conformance classes	3
2.3.2 Terminology register structure conformance class	4
2.3.3 Terminology register stakeholder conformance class	4
2.3.4 Terminology register information package conformance class	5
2.3.5 Terminology register schema conformance class	5
3 Normative references	5
4 Terms and definitions	6
5 Abbreviated terms	11
6 General principles	11
7 Selection and harmonization of concepts	12
7.1 General	12
7.2 Requirements Class — Selection and harmonization of concepts	12
7.3 Requirement — Selection of concepts	13
7.4 Requirement — Development of concept system	13
7.5 Requirement — Harmonization of concepts	13
8 Terminological entries	14
8.1 General	14
8.2 Terminological entry content	14
8.2.1 Requirements Class — Terminological entry content	14
8.2.2 Requirement — Terminological entry content	15
8.3 Terminological entry drafting	16
8.3.1 Requirements Class — Terminological entry drafting	16
8.3.2 Requirement — Entry number	16
8.3.3 Requirement — Preferred terms, admitted terms, deprecated terms	17
8.3.4 Requirement — Equivalent term	18
8.3.5 Requirement — Abbreviation	19
8.3.6 Requirement — Symbol	19
8.3.7 Requirement — Definition	20
8.3.8 Requirement — Non-verbal representation	21
8.3.9 Requirement — Examples	22
8.3.10 Requirement — Notes to entry	22
8.3.11 Requirement — Source	22
8.4 Cultural and linguistic adaptation	23
8.4.1 Requirements class — Cultural and linguistic adaptation	23
8.4.2 Requirement — Reference environment	23
8.4.3 Requirement — Degree of correspondence	23
9 Representation of terminological entries in rendered documents	24
9.1 General	24

9.2	Requirements Class — Layout and formatting of terminological entries.....	24
9.3	Requirement — Terminological entry presentation.....	24
10	Terminology registers.....	25
10.1	General.....	25
10.2	Terminology register structure.....	25
10.2.1	Requirements class — Terminology register structure.....	25
10.2.2	Requirement — Simple terminology register.....	26
10.2.3	Requirement — Hierarchical multi-lingual terminology register.....	26
10.2.4	Requirement — Reference language subregister.....	26
10.2.5	Requirement — Submitted language subregister.....	27
10.3	Terminology register stakeholders.....	27
10.3.1	Requirements class — Terminology register stakeholders.....	27
10.3.2	Requirement — Register stakeholders general requirement.....	28
10.3.3	Requirement — Terminology register owner.....	28
10.3.4	Requirement — Terminology register manager.....	28
10.4	Terminology register information package.....	29
10.4.1	Requirements class — Terminology register information package.....	29
10.4.2	Requirement — Information package general requirements.....	29
10.4.3	Requirement — Core information package.....	30
10.4.4	Requirement — Supplementary information package.....	30
10.5	Terminology register schema.....	31
10.5.1	General.....	31
10.5.2	Notation.....	32
10.5.3	Requirements class — Terminology register schema.....	32
10.5.4	Requirement — Simple terminology register schema.....	34
10.5.5	Requirement — Hierarchical multi-lingual terminology register schema.....	34
10.5.6	Requirement — TermStakeholder class.....	34
10.5.7	Requirement — TermRegister class.....	36
10.5.8	Requirement — TermRegisterEntry class.....	40
10.5.9	Requirement — Example class.....	47
10.5.10	Requirement — NoteToEntry class.....	48
10.5.11	Requirement — TermAddition class.....	48
10.5.12	Requirement — TermAmendment class.....	51
10.5.13	Requirement — TermClarification class.....	52
10.5.14	Requirement — TermSubregisterDescription class.....	53
	Annex A (normative) Abstract test suite.....	56
	Annex B (normative) Multi-lingual environments.....	64
	Annex C (normative) Format of terminological entries.....	68
	Annex D (informative) Example of a core information package — ISO/TC 211 Multi-Lingual Glossary of Terms.....	71
	Annex E (informative) Example of supplementary information package — ISO/TC 211 Multi-Lingual Glossary of Terms.....	78
	Bibliography.....	83

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).

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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 211, *Geographic information/Geomatics*.

This first edition of ISO 19104 cancels and replaces ISO/TS 19104:2008, which has been technically revised.

Introduction

A common language is an essential prerequisite to human communication. A simple knowledge of vocabulary however, is insufficient to guarantee effective communication. A word can have several meanings depending on the context in which it is used. Similarly, a concept can be referenced by several terms, each communicating a different connotation or level of emphasis.

The issues associated with language extend far beyond day-to-day communication. Every field of endeavour, from engineering to cookery, has its own vocabulary. To participate in discussions on a subject, it is necessary to understand both the terms and the context in which they are used. Imprecise usage (for example, by using two terms interchangeably when, in fact, they have distinctly different connotations) may have unfortunate consequences.

The risks compound considerably when translating terminology from one language (for example, English) to another (for example, Mandarin Chinese). The different cultures, language structures and character sets can present difficulties in ensuring that terminological entries in both languages have precisely the same meaning.

This document specifies requirements for the development of terminological entries in the field of geographic information. Its scope includes the development of concepts, the content and drafting of terminological entries, and the presentation of terminological records. It also includes guidelines for the cultural and linguistic adaptation of terminological entries based on the provisions of ISO 10241-2.

This document applies the provisions of ISO 19135-1 to the registration of geospatial concepts. A schema for the establishment of multi-lingual terminology registers is provided. The provisions of ISO 19135-1 regarding the management and maintenance of registers are also applied.

Geographic information — Terminology

1 Scope

This document specifies requirements for the collection, management and publication of terminology in the field of geographic information.

The scope of this document includes

- selection of concepts, harmonization of concepts and development of concept systems,
- structure and content of terminological entries,
- term selection,
- definition preparation,
- cultural and linguistic adaptation,
- layout and formatting requirements in rendered documents, and
- establishment and management of terminology registers.

This document is applicable to International Standards and Technical Specifications in the field of geographic information.

2 Conformance

2.1 Conformance class overview

This document defines two aggregate conformance classes, namely

- terminological entry – for preparing and publishing terminological entries, and
- terminology register – for establishing and managing terminology registers.

Any terminological entry or terminology register claiming conformance with this document shall comply with its respective aggregate conformance class and shall satisfy the associated abstract test suite requirements described in [Annex A](#).

2.2 Terminological entry conformance class

2.2.1 Terminological entry aggregated conformance classes

The terminological entry conformance class is an aggregate of five distinct conformance classes, namely

- selection and harmonization of concepts,
- terminological entry content,
- terminological entry drafting,
- cultural and linguistic adaptation, and
- layout and formatting of terminological entries.

The characteristics of the terminological entry conformance class are defined in [Table 1](#).

Table 1 — Terminological entry conformance class

Conformance class identifier	terminological entry < http://standards.iso.org/iso/19104/conf/tent >
Standardization target	terminological entry
Dependency	2.2.2 – Selection and harmonization of concepts conformance class < http://standards.iso.org/iso/19104/conf/con >
Dependency	2.2.3 – Terminological entry content conformance class < http://standards.iso.org/iso/19104/conf/tmm >
Dependency	2.2.4 – Terminological entry drafting conformance class < http://standards.iso.org/iso/19104/conf/ted >
Dependency	2.2.5 – Cultural and linguistic adaptation conformance class < http://standards.iso.org/iso/19104/conf/cla >
Dependency	2.2.6 – Layout and formatting of terminological entries conformance class < http://standards.iso.org/iso/19104/conf/pub >
Requirements	All requirements in Tables 2, 3, 4, 5 and 6 .
Tests	All tests in Tables 2, 3, 4, 5 and 6 .

2.2.2 Selection and harmonization of concepts conformance class

[Table 2](#) defines the characteristics of the conformance class for the selection and harmonization of concepts.

Table 2 — Selection and harmonization of concepts conformance class

Conformance class identifier	concept selection < http://standards.iso.org/iso/19104/conf/con >
Standardization target	terminological entry
Dependency	ISO 704:2009
Dependency	ISO 860:2007
Dependency	ISO 10241-1:2011
Requirements	All requirements in Clause 7 < http://standards.iso.org/iso/19104/req/con >
Tests	All tests in A.1

2.2.3 Terminological entry content conformance class

[Table 3](#) defines the characteristics of the conformance class for terminological entry content.

Table 3 — Terminological entry content conformance class

Conformance class identifier	terminological entry content < http://standards.iso.org/iso/19104/conf/tmm >
Standardization target	terminological entry
Dependency	ISO 704:2009
Dependency	ISO 10241-1:2011
Requirements	All requirements in 8.2 < http://standards.iso.org/iso/19104/req/tmm >
Tests	All tests in A.2

2.2.4 Terminological entry drafting conformance class

[Table 4](#) defines the characteristics of the conformance class for terminological entry drafting.

Table 4 — Terminological entry drafting conformance class

Conformance class identifier	terminological entry drafting < http://standards.iso.org/iso/19104/conf/ted >
Standardization target	terminological entry
Dependency	ISO 704:2009
Dependency	ISO 10241-1:2011
Requirements	All requirements in 8.3 < http://standards.iso.org/iso/19104/req/ted >
Tests	All tests in A.3

2.2.5 Cultural and linguistic adaptation conformance class

[Table 5](#) defines the characteristics of the conformance class for cultural and linguistic adaptation.

Table 5 — Cultural and linguistic adaptation conformance class

Conformance class identifier	cultural and linguistic adaptation < http://standards.iso.org/iso/19104/conf/cla >
Standardization target	terminological entry
Dependency	ISO/IEC Guide 21-1
Dependency	ISO 10241-2:2012
Requirements	All requirements in 8.4 < http://standards.iso.org/iso/19104/req/cla >
Tests	All tests in A.4

2.2.6 Layout and formatting of terminological entries conformance class

[Table 6](#) defines the characteristics of the conformance class for the layout and formatting of terminological entries.

Table 6 — Layout and formatting of terminological entries conformance class

Conformance class identifier	layout and formatting < http://standards.iso.org/iso/19104/conf/pub >
Standardization target	terminological entry
Dependency	ISO 10241-1:2011
Requirements	All requirements in 9 < http://standards.iso.org/iso/19104/req/pub >
Tests	All tests in A.5

2.3 Terminology register conformance class

2.3.1 Terminology register aggregated conformance classes

The terminology register conformance class is an aggregate of four distinct conformance classes, being:

- terminology register structure,

- terminology register stakeholder,
- terminology register information package,
- terminology register schema.

The characteristics of the terminology register conformance class are defined in [Table 7](#).

Table 7 — Terminology register conformance class

Conformance class identifier	terminology register < http://standards.iso.org/iso/19104/conf/treg >
Standardization target	terminology register
Dependency	2.3.2 – Terminology register structure conformance class < http://standards.iso.org/iso/19104/conf/trs >
Dependency	2.3.3 – Terminology register stakeholder conformance class < http://standards.iso.org/iso/19104/conf/tst >
Dependency	2.3.4 – Terminology register information package conformance class < http://standards.iso.org/iso/19104/conf/tri >
Dependency	2.3.5 – Terminology register schema conformance class < http://standards.iso.org/iso/19104/conf/sch >
Requirements	All requirements in Tables 8, 9, 10 and 11
Tests	All tests in Tables 8, 9, 10 and 11

2.3.2 Terminology register structure conformance class

[Table 8](#) defines the characteristics of the conformance class for terminology register structure.

Table 8 — Terminology register structure conformance class

Conformance class identifier	terminology register structure < http://standards.iso.org/iso/19104/conf/trs >
Standardization target	terminology register
Dependency	ISO 19135-1:2015
Requirements	All requirements in 10.2 < http://standards.iso.org/iso/19104/req/trs >
Tests	All tests in A.6

2.3.3 Terminology register stakeholder conformance class

[Table 9](#) defines the characteristics of the conformance class for terminology register stakeholders.

Table 9 — Terminology register stakeholder conformance class

Conformance class identifier	terminology register stakeholder < http://standards.iso.org/iso/19104/conf/tst >
Standardization target	terminology register
Dependency	ISO 19135-1:2015
Requirements	All requirements in 10.3 < http://standards.iso.org/iso/19104/req/tst >
Tests	All tests in A.7

2.3.4 Terminology register information package conformance class

[Table 10](#) defines the characteristics of the conformance class for terminology register information packages.

Table 10 — Terminology register information package conformance class

Conformance class identifier	terminology register information package < http://standards.iso.org/iso/19104/conf/tri >
Standardization target	terminology register
Dependency	ISO 19135-1:2015
Requirements	All requirements in 10.4 < http://standards.iso.org/iso/19104/req/tri >
Tests	All tests in A.8

2.3.5 Terminology register schema conformance class

[Table 11](#) defines the characteristics of the conformance class for terminology register schema.

Table 11 — Terminology register schema conformance class

Conformance class identifier	terminology register schema < http://standards.iso.org/iso/19104/conf/sch >
Standardization target	terminology register
Dependency	ISO 19103:2015
Dependency	ISO 19115-1:2014
Dependency	ISO 19135-1:2015
Requirements	All requirements in 10.5 < http://standards.iso.org/iso/19104/req/sch >
Tests	All tests in A.9

3 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 639-2, *Codes for the representation of names of languages — Part 2: Alpha-3 code*

ISO 690, *Information and documentation — Guidelines for bibliographic references and citations to information resources*

ISO 704:2009, *Terminology work — Principles and methods*

ISO 860:2007, *Terminology work — Harmonization of concepts and terms*

ISO 3166-1, *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes*

ISO 10241-1:2011, *Terminological entries in standards — Part 1: General requirements and examples of presentation*

ISO 10241-2:2012, *Terminological entries in standards — Part 2: Adoption of standardized terminological entries*

ISO 12615, *Bibliographic references and source identifiers for terminology work*

ISO 19103:2015, *Geographic information — Conceptual schema language*

ISO 19115-1:2014, *Geographic information — Metadata — Part 1: Fundamentals*

ISO 19135-1:2015, *Geographic information — Procedures for item registration — Part 1: Fundamentals*

4 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:

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

NOTE The core list of terms and definitions from the ISO/TC 211 geographic information International Standards and Technical Specifications is available at <<http://www.isotc211.org/>>.

4.1 abbreviation

designation ([4.10](#)) formed by omitting words or letters from a longer form and designating the same *concept* ([4.3](#))

[SOURCE: ISO 1087-1:2000, 3.4.9]

4.2 admitted term

term ([4.34](#)) rated according to the scale of the term acceptability rating as a synonym for a *preferred term* ([4.21](#))

Note 1 to entry: An admitted term is an acceptable alternative to a preferred term.

[SOURCE: ISO 1087-1:2000, 3.4.16, modified — the Note 1 to entry has been added.]

4.3 concept

unit of knowledge created by a unique combination of characteristics

Note 1 to entry: Concepts are not necessarily bound to particular languages. They are, however, influenced by the social or cultural background which often leads to different categorizations.

[SOURCE: ISO 1087-1:2000, 3.2.1]

4.4 concept field

unstructured set of thematically related *concepts* ([4.3](#))

[SOURCE: ISO 1087-1:2000, 3.2.10]

4.5 concept harmonization

activity leading to the establishment of a correspondence between two or more closely related or overlapping *concepts* ([4.3](#)) having professional, technical, scientific, social, economic, linguistic, cultural or other differences, in order to eliminate or reduce minor differences between them

Note 1 to entry: The purpose of concept harmonization is to improve communication.

[SOURCE: ISO 860:2007, 3.1]

4.6

concept system

set of *concepts* (4.3) structured according to the relations among them

[SOURCE: ISO 1087-1:2000, 3.2.11]

4.7

data category

result of the specification of a specific type of *terminological data* (4.36)

[SOURCE: ISO 10241-1:2011, 3.1.4]

4.8

definition

representation of a *concept* (4.3) by a descriptive statement which serves to differentiate it from related concepts

[SOURCE: ISO 1087-1:2000, 3.3.1]

4.9

deprecated term

term (4.34) rated according to the scale of the term acceptability rating as undesired

[SOURCE: ISO 1087-1:2000, 3.4.17]

4.10

designation

designator

representation of a *concept* (4.3) by a sign which denotes it

Note 1 to entry: In terminology work, three types of designations are distinguished: symbols, appellations and *terms* (4.34).

[SOURCE: ISO 1087-1:2000, 3.4.1]

4.11

domain

<general vocabulary> distinct area of human knowledge to which a *terminological entry* (4.37) is assigned

Note 1 to entry: Within a database or other terminology collection, a set of domains will generally be defined. More than one domain can be associated with a given *concept* (4.3).

[SOURCE: ISO 19146:2010, 4.9, modified — In the definition, the words terminological record have been changed to *terminological entry*.]

4.12

hierarchical register

structured set of *registers* (4.26) for a domain of register items, composed of a *principal register* (4.22) and a set of *subregisters* (4.32)

EXAMPLE ISO/IEC 6523 (all parts) is associated with a hierarchical register. The principal register contains organization identifier schemes and each subregister contains a set of organization identifiers that comply with a single organization identifier scheme.

Note 1 to entry: Each subregister is a register in its own right.

[SOURCE: ISO 19135-1:2015, 4.1.4, modified — Note has been added.]

4.13

homograph

designation (4.10) having the same written form as another designation representing a different *concept* (4.3)

EXAMPLE 1 The homographic term “die” as a noun represents different concepts in the domains of manufacturing, integrated circuits and table-top games.

EXAMPLE 2 The homographic graphical symbol  (e.g. in an airport or train station) may mean “up” (e.g. an escalator) or “straight ahead” depending on the location’s surroundings.

[SOURCE: ISO 10241-1:2011, 3.4.1.4]

4.14

homonymy

relation between *designations* (4.10) and *concepts* (4.3) in a given language in which one designation represents two or more unrelated concepts

Note 1 to entry: An example of homonymy is:

bark

1 “sound made by a dog”,

2 “outside covering of the stem of woody plants”,

3 “sailing vessel”.

Note 2 to entry: The designations in the relation of homonymy are called homonyms.

[SOURCE: ISO 1087-1:2000, 3.4.25]

4.15

homophone

one of two or more words that are pronounced the same but differ in meaning, origin, and sometimes spelling

EXAMPLE *night* and *knight*.

4.16

item class

set of items with common properties

Note 1 to entry: Class is used in this context to refer to a set of instances, not the concept abstracted from that set of instances.

[SOURCE: ISO 19135-1:2015, 4.1.7]

4.17

language

system of signs for communications usually consisting of vocabulary and rules

Note 1 to entry: In this document, language refers to natural language or special languages but not to programming languages or artificial languages unless specifically identified.

[SOURCE: ISO 5127:2001, 1.1.2.01, modified — Note has been added.]

4.18

language identifier

information in a *terminological entry* (4.37) which indicates the name of a *language* (4.17)

[SOURCE: ISO 1087-1:2000, 3.8.8]

4.19

non-verbal representation

representation of a *concept* (4.3) by means other than a descriptive statement, while revealing characteristics of this concept

Note 1 to entry: A non-verbal representation can be a chemical or mathematical formula, a pictographic representation or a figure, table or other kind of visual or non-visual representation revealing characteristics of the concept concerned.

[SOURCE: ISO 10241-1:2011, 3.4.2.3, modified — The reference to the examples has been removed.]

4.20

obsolete term

term (4.34) which is no longer in common use

[SOURCE: ISO 1087-1:2000, 3.4.18]

4.21

preferred term

term (4.34) rated according to the scale of the term acceptability rating as the primary term for a given *concept* (4.3)

[SOURCE: ISO 1087-1:2000, 3.4.15]

4.22

principal register

register (4.26) that contains a description of each of the *subregisters* (4.32) in a *hierarchical register* (4.12)

[SOURCE: ISO 19135-1:2015, 4.1.8]

4.23

reference environment

geographical and cultural environment in which a *concept* (4.3) is conceived and perceived

4.24

reference language

language (4.17) specified for the development and description of *concepts* (4.3)

EXAMPLE The reference language for the ISO/TC 211 Multi-Lingual Glossary of terms is English.

Note 1 to entry: See *submitted language* (4.29).

4.25

reference language subregister

subregister (4.32) in a hierarchical multi-lingual *terminology register* (4.39) that contains only *terminological entries* (4.37) in the *reference language* (4.24)

4.26

register

set of files containing identifiers assigned to items with descriptions of the associated items

[SOURCE: ISO 19135-1:2015, 4.1.9]

4.27

simple register

register (4.26) containing items of a single *item class* (4.16)

EXAMPLE A register containing *terminological entries* (4.37) in a single specified language.

4.28

subject field

field of special knowledge

[SOURCE: ISO 1087-1:2000, 3.1.2]

4.29

submitted language

language ([4.17](#)) that is not the *reference language* ([4.24](#))

Note 1 to entry: Terminological entries presented in a submitted language are translated from equivalent *terminological entries* ([4.37](#)) in the reference language.

4.30

submitted language subregister

subregister ([4.32](#)) in a hierarchical multi-lingual *terminology register* ([4.39](#)) that contains only *terminological entries* ([4.37](#)) in a single *submitted language* ([4.29](#))

4.31

subordinate concept

narrower concept

concept ([4.3](#)) which is either a specific concept or a partitive concept

[SOURCE: ISO 1087-1:2000, 3.2.14]

4.32

subregister

part of a *hierarchical register* ([4.12](#)) that contains items from a partition of a domain of information

[SOURCE: ISO 19135-1:2015, 4.1.16]

4.33

technical standard

<register> standard containing the definitions of *item classes* ([4.16](#)) requiring registration

[SOURCE: ISO 19135-1:2015, 4.1.18]

4.34

term

verbal *designation* ([4.10](#)) of a general *concept* ([4.3](#)) in a specific *subject field* ([4.28](#))

Note 1 to entry: A term may contain symbols and can have variants, e.g. different forms of spelling.

[SOURCE: ISO 1087-1:2000, 3.4.3]

4.35

term equivalent

term ([4.34](#)) in another *language* ([4.17](#)) which designates the same *concept* ([4.3](#))

Note 1 to entry: A term equivalent should be accompanied by a *definition* ([4.7](#)) of the designated concept expressed in the same language as the term equivalent.

4.36

terminological data

data related to *concepts* ([4.3](#)) or their *designations* ([4.10](#))

[SOURCE: ISO 1087-1:2000, 3.8.1, modified — The accompanying note to the entry for terminological data has been omitted.]

4.37

terminological entry

part of a *terminological data collection* (ISO 10241-1:2011, 3.1.2) which contains the *terminological data* (4.36) related to one *concept* (4.3)

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 multi-lingual.

[SOURCE: ISO 1087-1:2000, 3.8.2, modified — Note 1 to entry has been added.]

4.38

terminological entry identifier

unique, unambiguous, and linguistically neutral identifier assigned to a *terminological entry* (4.37)

4.39

terminology register

register (4.26) of *terminological entries* (4.37)

Note 1 to entry: A terminology register may be structured according to *language* (4.17) and/or *domain* (4.11).

4.40

terminology repository

data store or document in which *terms* (4.34) and their associated *definitions* (4.8) are stored or recorded

5 Abbreviated terms

CD	committee draft
DIS	draft International Standard
FDIS	final draft International Standard
GIS	geographic information system
IT	information technology
IUT	implementation under test
ODP	open distributed processing
PT	project team
TC	technical committee
TMG	Terminology Maintenance Group
UML	Unified Modeling Language
WD	working draft

6 General principles

The development of a terminological entry requires the simultaneous satisfaction of three requirements, namely

- the identification of the concept,
- the nomination of a designation (usually a term) for that concept, and

- the construction of a definition, associated with the designation, that unambiguously describes the concept.

The consistent resolution of the three will be guided by the basic principle that

- for each concept there is a single term (and vice-versa), and
- for each concept there is a single definition (and vice-versa).

Therefore, when developing a standard terminology within the field of geographic information

- every effort shall be made to avoid use of a single term for multiple concepts and multiple terms for a single concept,
- every effort shall be made to avoid contradictions occurring in terminological entries in closely related standards,
- only the concepts relevant to the subject or scope of the standard shall be defined, and
- the form of a definition shall be such that it can replace the term in context (i.e. principle of substitution).

7 Selection and harmonization of concepts

7.1 General

The development of terminology requires a detailed understanding of the concepts that characterize the domain or subject area.

Concepts do not exist as isolated units of knowledge but always in relation to each other. Concepts that are structured according to the relations among them are said to form a concept system. A concept system provides a structural representation of the concepts of a subject field. Its modelling requires that the concepts of the subject field be examined and compared. The comparison process helps avoid gaps and overlaps being introduced into the conceptual model.

When organizing concepts into a concept system, it is necessary to be cognisant of the subject field that gave rise to the concept, and to consider the expectations and objectives of the target users. The subject field shall act as the framework within which the concept field is established (see ISO 704:2009, 5.5.1).

Concepts and terms develop differently in individual languages and language communities, depending on professional, technical, scientific, social, economic, linguistic, cultural or other factors (see ISO 860:2007, 0.1). Any asymmetry between languages may result in some unexpected anomalies. For example, the concept “library” in English corresponds to two concepts in Japanese: “toshokan” and “toshoshitsu”. Similarly, the English terms “period” and “periodic time” best translate to “période” in French.

Concept harmonization, within and between domains (and also across multiple languages), may therefore be necessary. Harmonization starts at the concept level and continues at the term level. It is an integral part of standardization.

The principles and methods for identifying concepts and developing concept systems are specified in ISO 704.

7.2 Requirements Class — Selection and harmonization of concepts

The requirements for selecting and harmonizing concepts for a geographic information standard or technical specification comprise a single requirements class (see [Table 12](#)), identified as <<http://standards.iso.org/iso/19104/req/con>> and abbreviated as 19104con.

Table 12 — Requirements class for selection and harmonization of concepts

Requirements class	
19104con = < http://standards.iso.org/iso/19104/req/con >	
Target type	Terminological entry
Dependency	ISO 704:2009
Dependency	ISO 860:2007
Dependency	ISO 10241-1:2011
Requirement	Selection of concepts
Requirement	Development of concept system
Requirement	Harmonization of concepts

7.3 Requirement — Selection of concepts

The requirements regarding the selection of concepts are identified in [Table 13](#).

Table 13 — Selection of concepts requirement

Requirement
<19104con:conceptSelection>
Any concept that requires formal definition to clarify the understanding of a geographic information standard or technical specification shall have a terminological entry included in the terminology of that document.
Each concept shall be central to understanding the standard and shall not be self-explanatory.
— The concepts discussed in the normative clauses of the document (including those represented by UML or similar models) shall be reviewed to determine whether their inclusion in the document's terminology is appropriate.
Existing concepts (including their terms and definitions) shall be reused to the maximum possible extent.
— Current terminology repositories maintained by ISO and its technical committees [for example, the terms and definitions component of the ISO Online Browsing Platform (http://www.iso.org/obp/ui/) and the ISO/TC 211 Multi-Lingual Glossary of Terms (http://www.isotc211.org/)] shall be utilized to determine if existing concepts (in geographic information or related domains) exist.
A single definition shall be associated with each concept.
The concept's definition in the field of geographic information shall not correspond to that in general language dictionaries.

7.4 Requirement — Development of concept system

The requirements regarding the development of a concept system are specified in [Table 14](#).

Table 14 — Development of concept system requirement

Requirement
<19104con:conceptSystemDevelopment>
A concept system for the concepts in a geographic information standard or technical specification shall be developed before finalizing terms and definitions.
The development of the concept system shall be performed according to the provisions of ISO 704.

7.5 Requirement — Harmonization of concepts

The requirements regarding the harmonization of concepts are identified in [Table 15](#).

Table 15 — Harmonization of concepts requirement

Requirement
<19104con:conceptHarmonization>
Current terminology repositories maintained by ISO and its technical committees [for example, the terms and definitions component of the ISO Online Browsing Platform (http://www.iso.org/obp/ui/) and the ISO/TC 211 Multi-Lingual Glossary of Terms (http://www.isotc211.org/)] shall be utilized to identify any overlaps or inconsistencies between existing concepts (and their terminologies) and those proposed in the geographic information standard or technical specification.
If harmonization of concepts (and terminologies) is required or recommended, it shall be performed according to the provisions of ISO 860.

8 Terminological entries

8.1 General

The requirements governing the structure and content of terminological entries in geographic information standards and technical specifications are presented in [8.2](#), [8.3](#), and [8.4](#). Based on the provisions of ISO 10241-1 and ISO 704, they specify

- the mandatory, conditional and optional data categories to be included in a terminological entry,
- the drafting requirements for each data category, and
- requirements relating to the adaptation of terminological entries into alternative cultural and linguistic environments.

It is important to recognize that different cultures may perceive and conceptualize the same object in different ways. Standardized concepts, concept systems and terminological entries may, therefore, require both structural adaptation and language translation when being imported into an alternative cultural and linguistic environment. The existence of preferred terms, admitted terms and deprecated terms for a concept in one language does not necessarily mean that there will be parallel preferred terms, admitted terms and deprecated terms for the same concept in other languages. The same is true for abbreviated forms of terms.

It is recommended that working groups and project teams be cognisant of cultural and linguistic adaptation issues when selecting terms and definitions, and consult with national bodies and/or professional organizations at an early stage to identify concept comprehension or language translation difficulties.

ISO 10241-2 establishes principles and guidelines for the cultural and linguistic adaptation of standardized terminological entries. The standard clarifies the challenges faced by non-English standardizing bodies during the process of adopting internationally standardized terminological entries. A summary of the guidelines shall be carried out as specified in [Annex B](#).

8.2 Terminological entry content

8.2.1 Requirements Class — Terminological entry content

The requirements for the content of a terminological entry in a geographic information standard or technical specification comprise a single requirements class, identified as <<http://standards.iso.org/iso/19104/req/tmm>> and abbreviated as 19104tmm (see [Table 16](#)).

Table 16 — Requirements class for terminological entry content

Requirements class	
19104tmm = < http://standards.iso.org/iso/19104/req/tmm >	
Target type	Terminological entry
Dependency	ISO 704:2009
Dependency	ISO 10241-1:2011
Requirement	Terminological entry content

8.2.2 Requirement — Terminological entry content

A terminological entry shall include the mandatory data categories specified in [Table 17](#).

A terminological entry shall include one or more of the conditional data categories specified in [Table 17](#) if the respective condition for inclusion is satisfied.

A terminological entry may include one or more of the optional data categories specified in [Table 18](#).

Drafting requirements for the individual data categories are specified in [8.3](#). In instances where a conditional or optional data category is included in a terminological entry, the content shall conform to the drafting requirements for that data category.

Table 17 — Terminological entry content — Mandatory and conditional data categories

Requirement
<19104tmm:terminologicalEntryContentRequirement>
<u>Mandatory data categories</u>
A terminological entry shall include the following data categories:
— Entry number (one only),
— Preferred term (one only),
— Definition (one only).
<u>Conditional data categories</u>
A terminological entry shall include one or more of the following data categories if the condition requiring inclusion is satisfied:
— Admitted term (one or more) – If a term is associated with the concept, is commonly used in a certain context but only partly meets the requirements for a preferred term.
— Deprecated term (one or more) – If a term is associated with the concept, is used in a certain context but does not meet the requirements for a preferred term or an admitted term.
— Abbreviation for a preferred term and/or admitted term and/or deprecated term (one or more) – If an abbreviation has been defined and is routinely used.
— Symbol (one or more) – If a symbol is a conventionally used designation of the concept or is internationally standardized.
— Non-verbal representation (one or more) – If a representation is widely recognized and in common use.
— Note to entry (one or more) – If inclusion is prescribed by a requirement of this document.
— Source – If the entire terminological entry, a language section of the terminological entry, a term, letter symbol, graphical symbol, definition, context, non-verbal representation or example has been taken from another standard, a harmonized nomenclature or an external authoritative source.

Table 18 — Terminological entry content — Optional data categories

Option
<19104tmm:terminologicalEntryContentOption>
Optional data categories
A terminological entry may include one or more of the following optional data categories:
— Equivalent term (one or more) – If needed to present a term that represents the concept in a different language.
— Non-verbal representation – If needed to exemplify a concept or to assist translation into other languages.
NOTE 1 The option to include a non-verbal representation is in addition to the conditional requirement to include a non-verbal representation (see Table 17).
— Example (one or more) – If needed to further illustrate a concept.
— Note to entry (one or more) – If needed to elaborate a concept or provide contextual information.
NOTE 2 The option to include a note to entry is in addition to the conditional requirement to include a note to entry (see Table 17).

8.3 Terminological entry drafting

8.3.1 Requirements Class — Terminological entry drafting

The drafting requirements for terminological entry data categories in a geographic information standard or technical specification comprise a single requirements class, identified as <<http://standards.iso.org/iso/19104/req/ted>> and abbreviated as 19104ted (see [Table 19](#)).

Table 19 — Requirements class for terminological entry drafting

Requirements class	
19104ted = < http://standards.iso.org/iso/19104/req/ted >	
Target type	Terminological entry
Dependency	ISO 704:2009
Dependency	ISO 10241-1:2011
Requirement	Entry number
Requirement	Preferred term
Requirement	Admitted term
Requirement	Deprecated term
Requirement	Equivalent term
Requirement	Abbreviation
Requirement	Symbol
Requirement	Definition
Requirement	Non-verbal representation
Requirement	Example
Requirement	Note to entry
Requirement	Source

8.3.2 Requirement — Entry number

The requirements regarding the entry number are specified in [Table 20](#).

Table 20 — Entry number requirement

Requirement
<19104ted:entryNumberRequirement>
The entry number shall be part of the clause numbering of the standard or technical specification, in accordance with the rules for numbering divisions and subdivisions used by ISO.
The entry number of a terminological entry shall be unique.
EXAMPLES 4.1, 4.1.9

8.3.3 Requirement — Preferred terms, admitted terms, deprecated terms

The normative status (preferred, admitted or deprecated) of any designation, including the full forms and abbreviated forms of terms, shall be determined on the basis of the purpose and target group of the standard. It shall also take into consideration:

- whether a particular designation has already been harmonized,
- the designation's frequency of use,
- whether the designation is up-to-date.

The following general criteria, which relate to term-formation principles, should also be taken into account (see ISO 704:2009, 7.4.2):

- transparency, so that the term reveals the delimiting characteristics of the concept,
- consistency in using term elements, so that the term reveals the position of the concept in the corresponding concept system,
- appropriateness, so that the term adheres to familiar, established patterns of meaning within a language community,
- linguistic economy, so that the term is as concise as possible,
- derivability, so that derivatives can be formed according to the conventions of the language,
- linguistic correctness, so that the term conforms to the morphological, morphosyntactic and phonological conventions of the language(s),
- preference for native languages.

Adoption of homonyms should be avoided; if this is not possible, the domain or subject field associated with the concept shall be included with the definition [See [8.3.7](#) and [Annex C](#)].

A generic term shall not be allocated to a context-dependent concept.

The requirements regarding preferred terms, admitted terms and deprecated terms are specified in [Tables 21, 22 and 23](#) respectively.

Table 21 — Preferred term requirement

Requirement
<19104ted:preferredTermRequirement>
A preferred term is a term that is commonly accepted and recognized by subject specialists as the principal term for the concept. A term recommended by a recognized standards body (for example, an ISO technical committee) shall be considered a preferred term. The term shall not be: — a trade name or trademark (constituting rights related to intellectual or industrial property), — the name of a research project, — obsolete and archaic, — Colloquial (local informal term to describe a formal term e.g. “guy” instead of “man”). An abbreviated form that is the recognized designation for a concept may be accepted as a preferred term. In such cases, the full form shall be accepted as an admitted term. EXAMPLE Preferred term — SONAR, Admitted term — Sound Navigation and Ranging. If it is considered necessary or useful to provide an explanation of the reasons for selecting the abbreviated form as preferred term, the explanation shall be given in a note to entry. If no term is available as the preferred term, a term from another domain or subject (or from another language or culture) may be used, or, a new term may be created on the basis of terminological principles.

Table 22 — Admitted term requirement

Requirement
<19104ted:admittedTermRequirement>
A term that only partly meets the requirements for a preferred term but is in common use in a certain context shall be chosen as an admitted term. An acceptable synonym for a preferred term shall be considered an admitted term. If there are several admitted terms, they shall be given in the order of preference. If an admitted term is a national variant, it shall be followed by a code as defined in ISO 3166-1; the numeric 3-digit code is used for the IT interface (i.e. stored in a database), while the meaning of this code is presented in human language for the user (i.e. the human interface). Subject to the requirement in Table 17, an abbreviation, if it exists, shall be included as an admitted term.

Table 23 — Deprecated term requirement

Requirement
<19104ted:deprecatedTermRequirement>
A term that does not meet the requirements for a preferred term or an admitted term but is in some use in a certain context shall be specified as a deprecated term. A term that has been rejected shall be considered a deprecated term. Obsolete terms, superseded terms, archaic terms, scientific-technical slang and other terms which are detrimental to domain communication shall be rated as deprecated terms. Both full forms and abbreviated forms may be selected as deprecated terms if their use is rated as undesired.

8.3.4 Requirement — Equivalent term

Terms in different languages (or in different dialects of the same language) that represent the same concept are equivalent terms (equivalents).

The requirements regarding equivalent terms are identified in [Table 24](#).

Table 24 — Equivalent term requirement

Requirement
<19104ted:equivalentTermsRequirement>
Equivalent terms, when provided, shall be included in terminological entries as admitted terms. Equivalent terms shall be preceded by: — the numeric, 3 character country code as defined in ISO 3166-1, if needed, — the language code as defined in ISO 639-2 (e.g. “fra” for French, “deu” for German). Specificities in the usage of an equivalent term, including the degree of equivalence, may be explained in a note to entry.

8.3.5 Requirement — Abbreviation

The requirements regarding abbreviations are specified in [Table 25](#).

Table 25 — Abbreviation requirement

Requirement
<19104ted:abbreviationRequirement>
Every abbreviation included in a terminological entry shall be accompanied by the full form of the term. The full form of the term shall itself be a preferred term, admitted term or deprecated term and shall not be included as a definition. EXAMPLE SONAR is an abbreviation. The full form of the term is “SOund Navigation And Ranging”. The definition of the concept that SONAR represents is “sensor that uses sound navigation and ranging technology for sensing”. The following terminological entry for SONAR is correct. It includes the abbreviation, the full form of the term, and the definition. SONAR Sound Navigation and Ranging sensor that uses sound navigation and ranging technology for sensing The following terminological entry for SONAR is incorrect. It includes the full form of the term as the definition instead of a description of the concept. SONAR <i>Sound Navigation And Ranging</i>

8.3.6 Requirement — Symbol

The requirements regarding symbols are identified in [Table 26](#).

Complex letter symbols can include numerals, mathematical symbols, typographical signs and syntactic signs (e.g. punctuation marks, hyphens, parentheses, square brackets and other connectors or delimiters) whose character styles (i.e. font and bold, italic, bold italic or other style conventions) are governed by domain-, subject- or language-specific conventions. They are often also abbreviated forms, but may have additional communicative functions.

Table 26 — Symbol requirement

Requirement
<19104ted:symbolRequirement>
Symbols in standardized terminological entries shall not comprise trademarks (i.e. registered marks, brands or logos) which constitute rights related to intellectual or industrial property. Characters that replace words or parts of words, such as mathematical symbols or currency symbols, shall be considered symbols. Alphanumeric codes made up of combinations of letters, numbers or both shall be considered symbols if they do not represent words in a natural language or abbreviated form. Terms using the letters of the alphabet as iconic symbols to communicate the shape of the letter itself rather than its sound shall not be considered a symbol. When there is more than one symbol representing a given concept, the symbols shall be presented in the order of preference of the standardizing body and their normative status shall be indicated. Where a letter symbol is specific to a particular language section, it may be complemented by a code for the name of the language in accordance with ISO 639-2, if necessary in combination with codes for names of countries in accordance with ISO 3166-1 or codes for names of scripts in accordance with ISO 15924. Where a graphical symbol is specific to a particular language section, it may be complemented by a code for names of countries in accordance with ISO 3166-1.

8.3.7 Requirement — Definition

The drafting of definitions shall be based on the general rules and principles laid down in ISO 704.

The requirements regarding definitions are identified in [Table 27](#).

Table 27 — Definition requirement

Requirement
<19104ted:definitionRequirement>
Description of concept The definition shall consist of a single phrase precisely specifying the concept. It should be neither too narrow nor too broad, otherwise the definition is considered inaccurate. The definition shall be as concise as possible and as complex as necessary. It shall contain only information that makes the concept unique. Any additional descriptive information deemed necessary is to be included in a note to entry. The definition shall describe only one concept. It shall not include hidden definitions of other concepts, e.g. concepts denoting characteristics. Any characteristic that requires an explanation shall be defined as a separate concept in a separate entry or given in a note to entry. The definition shall reflect the concept system describing the concept and its relations to other concepts in the concept system. Definitions shall be systemic in order to enable the concept system to be reconstructed. The characteristics selected in a definition shall indicate the delimitation that distinguishes one concept from another or the connection between the concepts.

Table 27 (continued)

The definition shall not contain characteristics that belong logically to superordinate or subordinate concepts.
The definition shall describe a concept, not the words, abbreviations or elements that make up a designation.
The definition shall not take the form of, or contain, a requirement.
The definition shall describe what a concept is, not what it is not. However, when a concept is the opposite of another concept already defined, then the first concept may be defined by a negative definition using the second one's designation or the second one's definition.
Specification of domain or subject
If the specific domain or subject field is not clearly indicated in the designation or in the document title, it shall be placed before the definition on the same line.
Grammatical form and presentation
The definition shall have the same grammatical form as the term. Thus, to define a verb, a verbal phrase shall be used; to define a singular noun, the singular shall be used.
The definition shall not begin with an expression such as "term used to describe" or "term denoting"; neither shall it take the form "/term/ is..." or "/term/ means ...".
The definition shall not begin with an article.
Preferred terms and symbols used within the definition shall be cited verbatim.
A preferred term defined elsewhere in the same standard may be highlighted and followed by its entry number.
Adaptations
If a cited definition needs to be adapted, such modification shall be kept to a minimum.
If an adaptation involves restructuring a definition, for example because the concept systems are not compatible, the definition shall be considered to have been modified. In this case, an indication of the modification shall follow the indication of the source.
Validation
The substitution principle shall be used to test the validity of a definition. A definition is valid if it can replace a designation (term) in discourse without loss of, or change in, meaning.
Circular definitions shall be avoided.

8.3.8 Requirement — Non-verbal representation

Non-verbal representations can be used to exemplify a concept. In general, they should not replace a definition but complement it.

Non-verbal representations in terminological entries in standards usually comprise visual representations such as figures (e.g. photographs and pictographic representations, technical drawings, charts, graphs, diagrams, etc.), tables and mathematical expressions. In some non-verbal representations, colour is semantically significant.

Inclusion of a non-verbal representation is mandatory if in common use. Non-verbal representations are not usually included in ISO geographic information standards and technical specifications, the characteristics of concepts being elaborated within the text of the document. Inclusion may be necessary in instances where the definition of a concept is difficult to translate between languages.

The requirements regarding non-verbal representations are identified in [Table 28](#).