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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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 of the voluntary nature of standards, 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 37, Language and terminology, Subcommittee SC 1, Principles and methods.

This fourth edition cancels and replaces the third edition (ISO 704:2009), which has been technically revised.

The main changes are as follows:

— the structure and content have been adapted based on ISO 1087;
— concept models in accordance with ISO 24156-1 have been introduced;
— clauses on associative concept relations have been extended;
— appellations and proper names are treated more comprehensively and more systematically;
— where necessary, existing examples have been adapted or replaced, and new examples have been introduced.

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

0.1 Overview

This document specifies state-of-the-art principles and methods of terminology work. According to ISO 1087:2019, 3.5.1, terminology work is "work concerned with the systematic collection, description, processing and presentation of concepts and their designations" in various domains and subjects. It is multidisciplinary and draws support from several disciplines (e.g. logic, epistemology, philosophy of science, linguistics, translation studies, information science, cognitive science). It combines elements from many theoretical approaches that deal with the description, ordering and transfer of knowledge.

Terminology work according to this document is concerned with terminology used for unambiguous communication in natural language, in particular special languages. The goal of terminology work as described in this document is, thus, a clarification and standardization of terminology for communication between humans. Terminology work can also support knowledge modelling, information modelling, data modelling and classification, but this document does not cover these fields.

This document is intended to standardize the essential elements for terminology work. The general purposes of this document are to provide a common theoretical framework and to explain how this framework should be implemented by organizations or individuals involved in terminology work. This document also provides the fundamentals for terminology science teaching and training, in particular for the training of terminologists or terminology workers.

Thus, this document is intended to provide assistance to those carrying out various terminology work activities. The principles and methods should be observed not only for the manipulation of terminological information but also in the planning and decision-making involved in managing terminology. The main activities include, but are not limited to, the following:

— identifying concepts and concept relations;
— analysing and structuring concept fields on the basis of identified concepts and concept relations;
— analysing and developing concept systems on the basis of concept fields;
— visualizing concept systems, for example by means of traditional concept diagrams or Unified Modeling Language-based concept models;
— defining concepts;
— assigning linguistic or non-linguistic designations to concepts;
— creating and maintaining terminology resources, principally in print and electronic media (terminography).

Objects, concepts, definitions and designations are fundamental to terminology work and therefore form the basis of this document. Objects are perceived or conceived and abstracted into concepts. Concepts are represented by designations and/or definitions. The set of designations and concepts belonging to one special language constitutes the terminology of a specific domain or subject.

For referencing objects, concepts, definitions and designations in accordance with the current state of the art, the following wording conventions are used in this document:

— Objects:
  — are perceived or conceived;
  — are abstracted into or conceptualized as concepts.
— Concepts:
  — depict or correspond to objects or groups of objects;
— are **represented** or **expressed by** linguistic or non-linguistic designations or by definitions;
— are **connected by** concept relations and **organized into** concept systems that are **structured** according to concept relations.

— **Definitions:**
— define, represent or describe concepts.

— **Designations:**
— designate or represent concepts;
— are assigned to concepts;
— refer to objects.

*Figure 1* illustrates these wording conventions in graphical form.

**Figure 1** — Graphical illustration of wording conventions

### 0.2 Notations

In running text of this document, the following notations are used starting with **Clause 4:**

— terms designating concepts defined in ISO 1087 and in this document are in italics;
— other terms and proper names are indicated by double quotation marks;
— objects, concepts, properties, characteristics, types of characteristics and criteria of subdivision are indicated by single quotation marks;
— examples are boxed;
— symbols do not have any specific markup.

These notations are intended to facilitate the distinction between different types of references and other text throughout this document.

The examples in this document have been chosen for illustrative purposes and are specific to the language(s) in question. Translation into other languages can necessitate the selection of other examples to illustrate the points.
Terminology work — Principles and methods

1 Scope

This document establishes the basic principles and methods for preparing and compiling terminologies both inside and outside the framework of standardization. It describes the links between objects, concepts, definitions and designations. It also establishes general principles for the formation of terms and proper names and the writing of definitions.

This document is applicable to terminology work in scientific, technological, industrial, legal, administrative and other fields of knowledge.

This document does not stipulate rules for the presentation of terminological entries in International Standards, which are treated in ISO 10241-1 and ISO 10241-2.

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.

ISO 1087, Terminology work and terminology science — Vocabulary

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1087 and the following 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 domain
subject field
field of special knowledge

Note 1 to entry: The borderlines and the granularity of a domain are determined from a purpose-related point of view. If a domain is subdivided, the result is again a domain.

EXAMPLE 1 The domain of chemistry can be subdivided into pure chemistry and applied chemistry.
EXAMPLE 2 Amongst others, the domains of agriculture and food production relate to the subject of cereals.


3.2 subject
area of interest or expertise

Note 1 to entry: A subject may touch upon two or more domains (3.1).

EXAMPLE The subject of cereals relates to various domains such as agriculture and food production.

[SOURCE: ISO 1087:2019, 3.1.5, modified — Note 1 to entry added (from ISO 10241-1:2011, 3.3.2) and example added.]
3.3 **intensional definition**
definition that conveys the intension of a concept by stating the immediate superordinate concept and the delimiting characteristic(s)

EXAMPLE 1 optical mouse: computer mouse in which movement is detected by light sensors.

EXAMPLE 2 mechanical mouse: computer mouse in which movement is detected by rollers and a ball.

Note 1 to entry: Intensional definitions are preferable to other types of definitions because they clearly reveal the delimiting characteristics of a concept within a concept system: they should be used whenever possible.

[SOURCE: ISO 1087:2019, 3.3.2, modified — “generic concept” replaced by “superordinate concept” in the definition, “movements are” replaced by “movement is” in the Examples, and “delimiting” added before “characteristics” in Note 1 to entry.]

3.4 **terminological entry**
concept 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 this document follows the same structural principles whether it is monolingual or multilingual.

[SOURCE: ISO 1087:2019, 3.6.2, modified — “concept entry” added as an admitted term, and “ISO 704” replaced by “this document” in Note 1 to entry.]

3.5 **full form**
designation that is complete

EXAMPLE “solid-state drive” is the full form of “SSD”.

[SOURCE: ISO 10241-1:2011, 3.4.1.2.3, modified — “complete representation of a” removed before “designation” and “that is complete” added after “designation” in the definition, example replaced.]

3.6 **terminologist**
expert who performs terminology work as a main function of a professional activity

[SOURCE: ISO 12616-1:2021, 3.30]

3.7 **terminology worker**
person whose role is to perform terminology work as an ancillary function of other professional activities

[SOURCE: ISO 12616-1:2021, 3.29]

4 **Reality and language**

In terminology work, an object is anything perceivable or conceivable. Some objects, such as a given ‘engine’, ‘sheet of paper’ or ‘diamond’, are material. Other objects, such as a given ‘conversion ratio’ or ‘project planning’, are immaterial. Still other objects, for example a given ‘unicorn’ or ‘scientific hypothesis’, are imagined. Discussions on whether an object actually exists in reality are unproductive and should thus be avoided. Attention should be focused on how one deals with objects for the purposes of communication.

Objects are made up of and identified by their properties (see 5.4.1, Example), but neither information on properties of specific objects nor information on the objects themselves is commonly recorded in terminology resources. However, in some cases, such as terminology work in support of technical documentation, objects or their properties can be represented.
5 Concepts

5.1 Overview

In communication, not every individual object in the world is differentiated and named. Instead, through observation and a process called conceptualization, objects are grouped into categories. These categories correspond to units of knowledge called concepts. Concepts are made up of characteristics (see 5.4.2, Example 2). They are represented in various forms of communication (object → concept → communication). This document does not deal with all concepts represented in natural language, but only with those belonging to domains or subjects.

In terminology work, concepts shall be considered units of knowledge that correspond to objects or groups of objects. Concepts are not to be confused with immaterial or imagined objects: objects in a given situation are observed and conceptualized mentally and then a designation is assigned to the concept rather than to the objects themselves. The link between an object and its corresponding designation or definition is made through the concept, a higher level of abstraction.

Terminology work requires an understanding of the conceptualization that underpins human knowledge in a domain or subject. Because terminology work always deals with special language, the concept is viewed in the first place as a unit of knowledge. The concepts contextualized in the special language of a given domain or subject can be represented in various forms of human communication. In natural language, concepts can be represented by linguistic designations, i.e. terms and proper names, or by non-linguistic designations, i.e. symbols. They can also be represented by definitions. In formal language, concepts can be represented by codes or formulae, while they can also be represented by icons, pictures, diagrams, graphic illustrations, sound clips, video or other multimedia representations. Concepts can also be represented with the human body as they are in signed language.

Different domains or subjects view the same objects differently. When necessary, the same objects can be abstracted in different ways, and the resulting concept(s) can be represented by different definitions for different target audiences.

EXAMPLE

<table>
<thead>
<tr>
<th>Concept</th>
<th>Domain</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>'water'</td>
<td>chemistry</td>
<td>molecule-composed compound of two atoms of hydrogen and one atom of oxygen</td>
</tr>
<tr>
<td></td>
<td>physics</td>
<td>chemical compound that is colourless, odourless and tasteless, and that is</td>
</tr>
<tr>
<td></td>
<td></td>
<td>naturally found in solid state at temperatures at and below 0 °C, in liquid state</td>
</tr>
<tr>
<td></td>
<td></td>
<td>at temperatures between 0 °C and 100 °C, and as vapour at temperatures above 100 °C under standard atmospheric pressure</td>
</tr>
<tr>
<td></td>
<td>biology</td>
<td>liquid chemical substance that is essential to all known forms of life</td>
</tr>
</tbody>
</table>

5.2 General concepts

When a concept depicts a potentially unlimited number of objects that form a group by reason of shared properties, the concept is called a general concept. Designations of general concepts take the form of terms (including appellations) or symbols.

EXAMPLE

<table>
<thead>
<tr>
<th>Terms</th>
<th>“hard disk”, “liquidity”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symbols</td>
<td>©, W</td>
</tr>
</tbody>
</table>

1) Adobe® Acrobat® X Pro is a trademark of Adobe Systems and Nokia 7 Plus® is a trademark of Nokia Corporation. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of the product named.
5.3 Individual concepts

When a concept corresponds to a unique object or to a composition of entities considered to form a unique object, the concept is called an individual concept. The designation of an individual concept takes the form of a proper name or a symbol.

**EXAMPLE 1**

| Proper names       | “United Nations”, “IBM®”
|--------------------|------------------------
| Symbols            | (used to designate ‘Africa’), (used to designate ‘Statue of Liberty’)

2) IBM® is a trademark of International Business Machines Corporation. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of the product named.

Proper names represent individual concepts and shall thus be distinguished from terms that represent general concepts. When an individual concept is expressed by a proper name that includes a linking element such as “and”, it is still considered one individual concept.

**EXAMPLE 2**

The proper name “North, Central and South America” refers to a single object that is a whole with three parts (a single region made up of the three parts). Thus, it represents one individual concept. Conversely, the three proper names “North America”, “Central America” and “South America” represent three separate individual concepts.

**EXAMPLE 3**

The proper name “Canadian Radio-television and Telecommunications Commission” refers to a single object, not two, i.e. not to the ‘Canadian Radio-television Commission’ and the ‘Canadian Telecommunications Commission’.

5.4 Characteristics

5.4.1 General

Conceptualization plays a pivotal role in organizing human knowledge because it provides the means for recognizing objects and for grouping them into meaningful categories in a particular domain or subject. To categorize an object for the purposes of conceptualization, it is necessary to identify its properties. Objects considered as sharing the same properties are grouped into categories. Once similar objects, or occasionally a single object, are viewed as meaningful categories, the relevant properties are abstracted into characteristics. The characteristics are then combined as a set in the formation of a concept.

Thus, objects in the real world are identified by their properties (see the Example below). The properties are then abstracted into characteristics and the objects are abstracted into concepts made up of the characteristics. Characteristics are qualifiers and narrow the intension of a superordinate concept (see 5.5.4.2.1).

**NOTE** The concept ‘property’ in the domain of information technology is different from the concept ‘characteristic’ as used in this document.
The relations between object, property, characteristic and concept can be further elucidated by the following statements:

— each object has at least one property;
— each relevant property is abstracted into a characteristic;
— each concept is comprised of at least one characteristic;
— each object is abstracted into at least one concept.

### 5.4.2 Terminological analysis

Based on the process of conceptualization according to 5.4.1, terminological analysis requires:

— identifying the domain or subject;
— identifying the properties possessed by objects in the domain or subject;
— determining those properties that are abstracted into characteristics;
— determining how the characteristics combine to form a concept;
— identifying relations with other concepts in the domain or subject;
— writing or identifying and analysing definitions;
— assigning a designation to the concept.

The properties that belong to objects can themselves be objects. Similarly, the characteristics that make up a concept can themselves be concepts, sometimes within the same domain or subject, sometimes not. Depending on the domain or subject concerned, terminological analysis should start with those concepts corresponding to material objects. The relevant characteristics are more easily abstracted given that the properties of those objects can be physically observed or examined.

A terminologist or terminology worker can begin by analysing content that describes objects by means of designations. By analysing relevant content, the terminologist or terminology worker can get an understanding of the properties of the various objects, so as to determine which properties need to be abstracted into characteristics.

If the objects in Example 1 below are contextualized in the field of information technology, these particular objects are recognized as belonging to the set of objects that has been conceptualized as

---

**Example**

<table>
<thead>
<tr>
<th>Reality</th>
<th>Conceptualization</th>
</tr>
</thead>
<tbody>
<tr>
<td>object ‘alarm clock’</td>
<td>concept ‘alarm clock’</td>
</tr>
<tr>
<td>has property ‘sounding an alarm at a definite time’</td>
<td>makes up characteristic ‘sounding an alarm at a definite time’</td>
</tr>
</tbody>
</table>

---
‘optical mouse’. In the process of conceptualization, the relevant *properties* of all the *objects* in the category are abstracted into *characteristics*.

**EXAMPLE 1**

The *objects* represented by the visual representations below have the following *properties*:

<table>
<thead>
<tr>
<th>Object 1</th>
<th>Object 2</th>
<th>Object 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘being a device’;</td>
<td>‘being a device’;</td>
<td>‘being a device’;</td>
</tr>
<tr>
<td>‘being ivory-coloured’;</td>
<td>‘being blue and grey’;</td>
<td>‘being black and grey’;</td>
</tr>
<tr>
<td>‘being hand-manoeuvred along a firm, flat surface’;</td>
<td>‘being hand-manoeuvred along a firm, flat surface’;</td>
<td>‘being hand-manoeuvred along a firm, flat surface’;</td>
</tr>
<tr>
<td>‘having three buttons’;</td>
<td>‘having one button’;</td>
<td>‘having two buttons’;</td>
</tr>
<tr>
<td>‘having an ivory-coloured wire for connecting to a computer’;</td>
<td>‘having a grey wire for connecting to a computer’;</td>
<td>‘having a black wire for connecting to a computer’;</td>
</tr>
<tr>
<td>‘having a visible laser emitter’;</td>
<td>‘having a visible laser emitter’;</td>
<td>‘having an infrared emitter’;</td>
</tr>
<tr>
<td>‘having light sensors that detect movement’;</td>
<td>‘having light sensors that detect movement’;</td>
<td>‘having light sensors that detect movement’;</td>
</tr>
</tbody>
</table>

To facilitate terminological analysis, the *properties of objects* can be grouped into categories such as part, function, composition, colour, shape, operation or location. Categories appropriate to the *domain* or *subject* can be found from reference works and encyclopaedias, but any list should be used flexibly. Also, it should be assumed that additional categories are likely to be needed to adequately represent all the *properties*. For practical purposes, beginning with one of the more typical *objects* is recommended. *Characteristics* shall be identified based on content about the *domain* or *subject* and this often requires research. Experienced *terminologists* or *terminology workers* for whom the *concept* in question is clear and straightforward may move directly to identifying the *characteristics*.

As illustrated in Example 2 below, those *characteristics* are applied to the entire set of *objects* as opposed to the individual *objects*. Example 2 is the preliminary result of a terminological analysis with regard to the *concept* ‘optical mouse’. *Concepts* corresponding to immaterial *objects* (e.g. ‘bankruptcy’) shall be analysed along the same lines.

**EXAMPLE 2**

*Concept*: unit of knowledge based on the set of all optical mice

*Designation (term)*: “optical mouse”

<table>
<thead>
<tr>
<th>Properties of object 1</th>
<th>Properties of object 2</th>
<th>Properties of object 3</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘being ivory-coloured’</td>
<td>‘being blue and grey’</td>
<td>‘being black and grey’</td>
<td>‘having colour’</td>
</tr>
<tr>
<td>‘being hand-manoeuvred along a firm, flat surface’</td>
<td>‘being hand-manoeuvred along a firm, flat surface’</td>
<td>‘being hand-manoeuvred along a firm, flat surface’</td>
<td>‘being hand-manoeuvred along a firm, flat surface’</td>
</tr>
<tr>
<td>‘having three buttons’</td>
<td>‘having one button’</td>
<td>‘having two buttons’</td>
<td>‘having at least one button’</td>
</tr>
<tr>
<td>‘having an ivory-coloured wire for connecting to a computer’</td>
<td>‘having a grey wire for connecting to a computer’</td>
<td>‘having a black wire for connecting to a computer’</td>
<td>‘having a wire for connecting to a computer’</td>
</tr>
<tr>
<td>‘having a visible laser emitter’</td>
<td>‘having a visible laser emitter’</td>
<td>‘having an infrared emitter’</td>
<td>‘having a light emitter’</td>
</tr>
<tr>
<td>‘having light sensors that detect movement’</td>
<td>‘having light sensors that detect movement’</td>
<td>‘having light sensors that detect movement’</td>
<td>‘having light sensors that detect movement’</td>
</tr>
</tbody>
</table>
Characteristics shall be used in the analysis of concepts, the development of concept systems and the writing of definitions. Where appropriate, they should have a bearing on the selection and formation of designations. In selecting properties and characteristics, these purposes need to be borne in mind, since the number of properties that distinguish one object from another is effectively infinite. For example, in the case of ‘computer mice’, the property ‘place of manufacture’ need not be considered. An experienced terminologist or terminology worker can anticipate what is likely to be required.

5.4.3 Intension and extension

The set of characteristics that make up the concept is the intension of the concept. The set of objects conceptualized as a concept is the extension of the concept. The intension determines the extension.

EXAMPLE 1

As shown in 5.4.2, Example 2, the characteristics making up the intension of ‘optical mouse’ determine the extension, i.e. the objects that qualify as ‘optical mice’.

EXAMPLE 2

The following characteristics make up the intension of ‘planet in the solar system’: ‘being in orbit around the Sun’, ‘having sufficient mass to assume a hydrostatic equilibrium (nearly round) shape’ and ‘having cleared the neighbourhood around its orbit’. These characteristics determine the extension, so the objects that qualify as ‘planets in the solar system’ are the following celestial bodies: ‘Mercury’, ‘Venus’, ‘Earth’, ‘Mars’, ‘Jupiter’, ‘Saturn’, ‘Uranus’ and ‘Neptune’ (in ascending order by their distance from the sun).

SOURCE: Reference [65].

5.4.4 Essential characteristics and non-essential characteristics

Not all characteristics are equally important. For practical purposes, the essential characteristics of the intension shall be the focus of terminological analysis and can differ between various domains or subjects.

The essential characteristics of a concept, such as ‘wireless mouse’, shall be identified. The absence of an essential characteristic in the course of terminological analysis leads to poor or even erroneous understanding of the concept. In the example of the concept ‘wireless mouse’, if the characteristic ‘using a wireless light or sound connection’ is removed, the concept represents a different concept corresponding to a different set of objects. Therefore, this is an essential characteristic.

On the other hand, if the characteristic ‘having colour’ is removed, the concept is not altered. Although any material object ‘wireless mouse’ necessarily has a colour, it still qualifies as a ‘wireless mouse’ independent of the specific colour in question. Therefore, this characteristic is not indispensable to understand the concept ‘wireless mouse’ and thus it is a non-essential characteristic. When the concept in question is highly complex, it can be necessary to categorize characteristics explicitly as essential characteristics and non-essential characteristics.

5.4.5 Shared characteristics and delimiting characteristics

After identifying the characteristics that make up the intension of a concept and the essential characteristics, the terminological analysis shall be taken a step further. Each characteristic of the concept under study shall be analysed with regard to other relevant concepts. Similarities between concepts are indicated by shared characteristics; differences that set a concept apart are signalled by delimiting characteristics (see 5.5.4.2.1, Example 2).

The same characteristic of a concept can be delimiting with regard to one other concept but shared with another concept. Analysing the similarities and differences between concepts results in identifying the unique set of characteristics that make up a given concept.

Specification of this unique combination of characteristics situates the concept within a network of concepts with similar or different characteristics. A concept system shall be structured according to
the relations between the concepts (see 5.6). The task of defining a concept requires knowledge of the characteristics used to develop the concept system.

5.5 Concept relations

5.5.1 General

Concepts do not exist as isolated units of knowledge but always in relation to each other. Human mental processes constantly create and refine relations between concepts, whether these relations are formally acknowledged or not. When organizing concepts into a concept system, it is necessary to bear in mind the domain or subject that gave rise to the concept and to consider the expectations and objectives of the target audience. The domain or subject shall be used as the framework within which the concept system is established.

EXAMPLE

The task is to compile the terminology of pointing devices in the domain of information technology. Thus, the example of ‘optical mouse’ forms part of the concept field dealing with ‘mice’ as conceptualized in that domain. This concept field can be the basis for developing a concept system.

NOTE ‘Mice’ outside the domain of information technology, such as ‘field mice’ or ‘laboratory mice’, are excluded.

5.5.2 Types

To develop a concept system, the concepts of the concept field and their relations shall be examined and compared. One and the same concept can be connected to other concepts by different types of concept relations. At least the following relations shall be used to develop a concept system:

— hierarchical relations (see 5.5.4);
— generic relations;
— partitive relations;
— associative relations (see 5.5.5).

5.5.3 Notations

Concept relations can be represented formally in a list or graphically. In this document, formal representations in lists are indented and numbered with a full stop (.) for generic relations, and numbered with an en dash (–) for partitive relations (see Figure 2).

a) Generic relations

b) Partitive relations

Figure 2 — Concept relations — Formal representations in lists
In this document, two graphic representations of concept systems are used. Traditional concept diagrams follow the requirements laid down in this document. UML-based concept models have been drawn in accordance with ISO 24156-1 (see Figures 3, 4, and 5).

![Diagram of generic relations](image)

**Figure 3 — Graphic representations of generic relations**

![Diagram of partitive relations](image)

**Figure 4 — Graphic representations of partitive relations**

![Diagram of associative relations](image)

**Figure 5 — Graphic representations of associative relations**

### 5.5.4 Hierarchical relations

#### 5.5.4.1 Types

Concepts connected by hierarchical relations are organized into levels of superordinate concepts, subordinate concepts and coordinate concepts. A hierarchy requires at least one subordinate concept below a superordinate concept. Concepts are superordinate, subordinate or coordinate, not on their own, but always in relation to each other in a hierarchy. Criteria of subdivision that are not obvious should be described. The same criterion of subdivision may be used for subdividing different concepts of a
given concept system. It shall not be used simultaneously for a superordinate concept and its subordinate concept.

In this document, hierarchical relations are categorized as:
-  generic relations (see 5.5.4.2);
-  partitive relations (see 5.5.4.3).

5.5.4.2  Generic relations

5.5.4.2.1  Generic relations and general concepts

In a generic relation, the intension of the subordinate concept includes the intension of the superordinate concept plus at least one additional delimiting characteristic. For example, the intension of 'optical mouse' comprises that of 'computer mouse' plus the delimiting characteristic 'detecting movement by means of light sensors'. Conversely, the extension of the superordinate concept includes that of the subordinate concept. For example, the extension of 'computer mouse' includes that of 'optical mouse' since some of the objects categorized as 'computer mice' can also be categorized as 'optical mice' (see Example 1 below).

EXAMPLE 1

Verbal description

In the concept diagram and concept model below, 'computer mouse' is a specific concept of the generic concept 'pointing device'. Similarly, the concepts 'mechanical mouse', 'optomechanical mouse' and 'optical mouse' are each a specific concept of the generic concept 'computer mouse'. Each of the coordinate concepts 'mechanical mouse', 'optomechanical mouse' and 'optical mouse' has a generic relation with the generic concept 'computer mouse'.

An ellipsis (...) indicates further specific concepts that are not shown.

Traditional concept diagram (tree diagram)
Comparing the characteristics of a concept and of other relevant concepts (i.e. generic concepts, coordinate concepts and specific concepts) can require an adjustment and refinement of the intension. In Example 2 below, the characteristics of the concept ‘optical mouse’ are compared with the characteristics of other relevant concepts in Example 3.

**EXAMPLE 2**

<table>
<thead>
<tr>
<th>Type of characteristic</th>
<th>Characteristic</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘usage’</td>
<td>‘being hand-manoeuvred along a firm, flat surface’</td>
<td>DELIMITING with regard to the <em>generic concept</em> ‘pointing device’, but INHERITED from the <em>generic concept</em> ‘computer mouse’, and SHARED with the <em>coordinate concepts</em> ‘optomechanical mouse’ and ‘mechanical mouse’</td>
</tr>
<tr>
<td>‘composition’</td>
<td>‘having a light emitter’</td>
<td>SHARED with the <em>coordinate concept</em> ‘optomechanical mouse’, but DELIMITING in relation to all other concepts in question</td>
</tr>
<tr>
<td>‘composition’</td>
<td>‘having at least one button’</td>
<td>DELIMITING with regard to the <em>generic concept</em> ‘pointing device’, but INHERITED from the <em>generic concept</em> ‘computer mouse’, and SHARED with the <em>coordinate concepts</em> ‘optomechanical mouse’ and ‘mechanical mouse’</td>
</tr>
<tr>
<td>‘function’</td>
<td>‘detecting movement by means of light sensors’</td>
<td>SHARED (partly) with the <em>coordinate concept</em> ‘optomechanical mouse’, but DELIMITING with regard to all other concepts in question</td>
</tr>
<tr>
<td>‘function’</td>
<td>‘controlling the location of a pointer on a computer screen by means of light reflection’</td>
<td>DELIMITING with regard to all other concepts in question</td>
</tr>
</tbody>
</table>

**NOTE 1** The characteristics ‘having colour’ and ‘having a wire for connecting to a computer’ have now been dispensed with as they are considered to have no importance in the subsequent steps of terminological analysis.

When documenting characteristics, instead of listing inherited characteristics redundantly for specific concepts, they shall be listed only with the *generic concept*. Under the *specific concept*, it is possible simply to list only the additional characteristic(s) that delimit(s) the *specific concept* from its *generic concept* and/or from its *coordinate concept(s)*. This important feature of the *generic relation* is called inheritance principle: if concept B (e.g. ‘optical mouse’) is a *specific concept* of the *generic concept* A
(e.g. ‘computer mouse’), then concept B inherits all the characteristics of concept A. The inheritance principle is a way of testing and validating the generic relation (see Example 3 below). A vertical series of concepts connected by generic relations is called a concept ladder. A group of coordinate concepts forms a horizontal series of concepts.

NOTE 2 In keeping with the metaphor implied by the inheritance principle, a generic concept can be called a parent, a specific concept can be called a child, and coordinate concepts can be called siblings.

EXAMPLE 3

Verbal description

According to the inheritance principle, an ‘optical mouse’ is a type of ‘computer mouse’, which is in turn a type of ‘pointing device’. The set of all ‘optical mice’ is a subset of all ‘computer mice’. This means that all ‘optical mice’ are also ‘computer mice’, and that the concept ‘optical mouse’ inherits the intension from ‘computer mouse’. When the subset is defined, however, ‘optical mice’ are distinguished from other ‘computer mice’ by at least one additional characteristic not shared by the other ‘computer mice’. This means that ‘computer mouse’ has a smaller intension than ‘optical mouse’. The delimiting characteristic used to increase the specificity of the concept is the nature of the means that convert computer mouse movement into a means of locating the pointer on the computer screen.

An ellipsis (…) indicates further specific concepts that are not shown. In the concept diagram, characteristics are displayed in separate rectangles. In the concept model, characteristics are displayed in accordance with ISO 24156-1.

Traditional concept diagram (tree diagram)
As already mentioned, in a *generic relation* there may be several ways of subdividing a *concept* into *specific concepts* depending on the *criterion of subdivision* or the *type of characteristic* chosen (see Example 4 below).
EXAMPLE 4

Verbal description

'Mechanical mouse', 'optomechanical mouse' and 'optical mouse' are coordinate concepts because they share the same criterion of subdivision; 'wired mouse' and 'wireless mouse' constitute another set of coordinate concepts (see below).

<table>
<thead>
<tr>
<th>Concept</th>
<th>Characteristic</th>
<th>Type of characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td>'mechanical mouse'</td>
<td>'detecting movement by means of rollers'</td>
<td>'means of movement detection'</td>
</tr>
<tr>
<td>'optomechanical mouse'</td>
<td>'detecting movement by means of rollers and light sensors'</td>
<td>'means of movement detection'</td>
</tr>
<tr>
<td>'optical mouse'</td>
<td>'detecting movement by means of light sensors'</td>
<td>'means of movement detection'</td>
</tr>
<tr>
<td>'wired mouse'</td>
<td>'using a corded electrical connection'</td>
<td>'computer connection'</td>
</tr>
<tr>
<td>'wireless mouse'</td>
<td>'using a cordless light or sound connection'</td>
<td>'computer connection'</td>
</tr>
</tbody>
</table>

An ellipsis (…) indicates further specific concepts that are not shown. In the concept diagram, characteristics are displayed in separate rectangles, and thicker lines indicate different criteria of subdivision (multidimensionality, see 5.6.3). In the concept model, characteristics and criteria of subdivision are displayed in accordance with ISO 24156-1.

Traditional concept diagram (tree diagram)
Apart from traditional concept diagrams (tree diagrams) and UML-based concept models, generic relations can also be visualized by an indented list (see Example 5 below).

**EXAMPLE 5**

1. pointing device
   1.1 touch pad
   1.2 computer mouse
      * (criterion of subdivision: means of movement detection)
       1.2.1 mechanical mouse
       1.2.2 optomechanical mouse
       1.2.3 optical mouse
      * (criterion of subdivision: computer connection)
       1.2.4 wired mouse
       1.2.5 wireless mouse

   1.3 light pen

NOTE The wordings with an asterisk (*) serve to structure the indented list according to relevant criteria of subdivision. They are not part of the concept hierarchy.
5.5.4.2.2 Generic relations and individual concepts

A concept ladder can contain individual concepts. If such individual concepts are present, they occupy the bottom rung (last item) of the concept ladder. The extension with a single object cannot be subdivided into a more specific concept. Each object in an extension of a general concept can be abstracted into an individual concept forming the bottom rung of a concept ladder and therefore be designated by a proper name (see Clauses C.3 and C.4). The individual concept inherits all the characteristics of its generic concept.

EXAMPLE

**Verbal description**
This example shows a concept ladder. In the concept ladder, ‘Canada’ constitutes the bottom rung, which cannot be subdivided into a more specific concept.

**Traditional concept diagram (tree diagram)**

```
geopolitical entity
  country
    Canada
```

**UML-based concept model**

```
geopolitical entity
  country
    Canada
```

5.5.4.3 Partitive relations

5.5.4.3.1 Partitive relations and general concepts

Unlike concepts connected by a generic relation, concepts connected by a partitive relation do not inherit characteristics. The parts that make up the whole can be similar in nature (such as ‘atoms’ in an ‘oxygen molecule’) or distinctly different from each other. One or more parts can be compulsory (and can thus be abstracted into characteristics) or optional. Some parts reflect delimiting characteristics in that they allow the whole to be distinguished from other similar comprehensive concepts. Some parts can be multiple such as ‘page’ (as part of a ‘book’), or variable within a range, such as an ‘ink reservoir’, an ‘ink cartridge’ or an ‘ink refill’ (as part of a ‘pen’).

To identify partitive concepts and their characteristics, it is necessary to determine the position of the comprehensive concept in a hierarchy and to be mindful of the inheritance principle with regard to the comprehensive concept (see 5.5.4.2.1). The position of the comprehensive concept in the hierarchy determines its partitive concepts and their extensions.
EXAMPLE 1

**Verbal description**

Before analysing *partitive relations*, it is necessary to determine whether the analysis starts with the *comprehensive concept* or one of its *partitive concepts*. In the following *concept diagram* and *concept model*, the analysis is based on ‘optomechanical mouse’ as the *comprehensive concept* (the whole) and its *partitive concepts* ‘mouse button’, ‘mouse ball’, ‘circuit board’, ‘x-axis roller’, ‘y-axis roller’, ‘infrared emitter’, ‘infrared sensor’ and ‘mouse wheel’ (the parts that make up the whole). The part ‘mouse wheel’ is optional since it is not found on all ‘optomechanical mice’. This is indicated in the *concept diagram* by dotted lines and in the *concept model* by information about multiplicity. All the other parts are compulsory components of all ‘optomechanical mice’. The *partitive concepts* ‘mouse ball’, ‘x-axis roller’, ‘y-axis roller’, ‘infrared emitter’ and ‘infrared sensor’ are considered delimiting parts because they behave like *delimiting characteristics* in that they allow the *comprehensive concept* ‘optomechanical mouse’ to be distinguished from *coordinate concepts* such as ‘mechanical mouse’ and ‘optical mouse’.

With regard to other ‘computer mice’ (see 5.5.4.2.1, Example 4), one of the *delimiting characteristics* of the concept ‘optomechanical mouse’ is ‘detecting movement by means of rollers and light sensors’. As with *delimiting characteristics*, whether a part is delimiting depends on the *concept system*, the *coordinate concepts*, the inheritance principle and the *criterion of subdivision* used. In the *partitive relation* shown below, the rollers are conceptualized as ‘x-axis roller’ and ‘y-axis roller’ along with their parts.

NOTE According to ISO 24156-1:2014, 3.7, multiplicity "specifies how many objects depicted by a certain concept can be related to the objects depicted by another concept".

**Traditional concept diagram (rake diagram)**

![Diagram of optomechanical mouse with delimiting and compulsory parts]
Usually a partitive concept system does not provide a complete analysis of the concepts. If a partitive concept is not particular to the comprehensive concept, then the extension of the partitive concept cannot be accounted for completely and some characteristics of its intension can be lacking. Partitive concepts, i.e., parts, that are common to two or more coordinate concepts in a generic relation may have been inherited from the generic concept. Such inherited partitive concepts shall be analysed in relation to the generic concept and not to the comprehensive concept.

EXAMPLE 2

Verbal description

The part 'mouse button' is not conceptually unique to 'optomechanical mice' but is inherited from the generic concept 'computer mouse'. The 'mouse button' of an 'optomechanical mouse' does not form a separate concept with its own designation but rather constitutes only a portion of the set of objects that make up the extension of the concept 'mouse button'. Other types of 'computer mice' also have 'mouse buttons'. The complete extension of the concept 'mouse button' can only be determined when 'mouse button' is analysed with regard to the generic concept 'computer mouse'.

The 'mechanical mouse' and 'optomechanical mouse' have, basically, the same parts. Both use rollers and other moving parts to detect the movement of the mouse ball. However, in addition to its mechanical parts, an 'optomechanical mouse' uses 'infrared emitters' and 'infrared sensors' to detect and transmit the movement of the mouse ball.

The parts 'mouse ball', 'x-axis roller', 'y-axis roller' and their parts, as found in a 'mechanical mouse' or an 'optomechanical mouse', represent partitive concepts that are unique with regard to other 'computer mice' and hence can be defined on the basis of partitive relations.
Traditional concept diagram (rake diagram, supplemented by relevant generic relations)
Multidimensional partitive concept systems are possible, although they are less common.

**EXAMPLE 3**

**Verbal description**

*Criterion of subdivision:* the concept 'tree' viewed according to 'composition as a living plant'

**Comprehensive concept:**

'tree'

**Partitive concepts:**

'root', 'trunk', 'branch', 'leaf'

*Criterion of subdivision:* the concept 'tree' viewed according to 'regenerability of organs'

**Comprehensive concept:**

'tree'

**Partitive concepts:**

'regenerative organ', 'non-regenerative organ'
Apart from traditional concept diagrams (rake diagrams) and UML-based concept models, partitive relations can also be visualized by an indented list (see Example 4 below).

**EXAMPLE 4**

<table>
<thead>
<tr>
<th>1– tree</th>
</tr>
</thead>
<tbody>
<tr>
<td>* (criterion of subdivision: composition as a living plant)</td>
</tr>
<tr>
<td>1–1     branch</td>
</tr>
<tr>
<td>1–1–1 leaf</td>
</tr>
<tr>
<td>1–2     root</td>
</tr>
<tr>
<td>1–3     trunk</td>
</tr>
<tr>
<td>1–3–1 bark</td>
</tr>
<tr>
<td>1–3–2 cortex</td>
</tr>
<tr>
<td>* (criterion of subdivision: regenerability of organs)</td>
</tr>
<tr>
<td>1–4     regenerative organ</td>
</tr>
</tbody>
</table>
**5.5.4.3.2 Partitive relations and individual concepts**

In a *generic relation*, an *individual concept* constitutes the most specific *concept* in the hierarchy (bottom rung) and cannot be subdivided further. However, if the same *individual concept* is viewed as a *comprehensive concept* in a *partitive relation*, the *individual concept* can be subdivided into its parts.

**EXAMPLE**

### Verbal description

In a *partitive relation*, the *individual concept* 'Canada', which in the Example in 5.5.4.2.2 constitutes the bottom rung in a concept ladder, can be subdivided into the various *partitive concepts* that correspond to parts of the *object* 'Canada'. The *proper name* 'Canada' thus represents an *individual concept* whose *partitive concepts* (provinces, counties, municipal units) are also designated by *proper names*.

An ellipsis (...) indicates further *specific concepts* that are not shown.

### Traditional concept diagram (rake diagram)

```
Canada

<table>
<thead>
<tr>
<th>British Columbia</th>
<th>Alberta</th>
<th>Saskatchewan</th>
<th>Manitoba</th>
<th>Ontario</th>
<th>Quebec</th>
<th>New Brunswick</th>
</tr>
</thead>
</table>

... Durham Region | Algoma District | Brant County |

| City of Elliot Lake | City of Sault Ste. Marie | Municipality of Huron Shores | Town of Blind River |
```

---

**NOTE 1** The wordings with an asterisk (*) serve to structure the indented list according to relevant *criteria of subdivision*. They are not part of the concept hierarchy.

**NOTE 2** Multiplicity and optionality of parts, as shown in Example 3, are not reflected in this list.
5.5.5 Associative relations

Associative relations are usually derived from underlying relations between objects. Depending on the domain or subject, associative relations can be more common than generic relations and partitive relations. There are various types and subtypes of associative relations (see Table 1 below).

Table 1 — Types and subtypes of associative relations

<table>
<thead>
<tr>
<th>Type (description)</th>
<th>Subtype (relation role)</th>
<th>Example(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>contiguity relation (based on proximity between objects)</td>
<td>enhancement relation (tool – accessory)</td>
<td>'smartphone’ – ‘selfie stick’</td>
</tr>
<tr>
<td></td>
<td>attachment relation (tool – connection)</td>
<td>‘computer screen’ – ‘HDMI port’</td>
</tr>
<tr>
<td></td>
<td>locative relation (container – contained; contained – contained)</td>
<td>‘milk carton’ – ‘milk’; ‘fish’ – ‘shellfish’ (with regard to ‘sea’)</td>
</tr>
<tr>
<td></td>
<td>material relation (concrete item – material)</td>
<td>‘seawater’ – ‘salt’ (one of several materials); ‘steel tyre’ – ‘steel’ (one material only)</td>
</tr>
<tr>
<td></td>
<td>property relation (material – state)</td>
<td>‘air’ – ‘humidity’</td>
</tr>
<tr>
<td></td>
<td>ownership relation (object – owner)</td>
<td>‘public enterprise’ – ‘state’</td>
</tr>
<tr>
<td></td>
<td>rank relation (level of hierarchy – level of hierarchy)</td>
<td>‘chair’ – ‘vice-chair’</td>
</tr>
<tr>
<td>Type (description)</td>
<td>Subtype (relation role)</td>
<td>Example(s)</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------------------------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>sequential relation</strong>&lt;br&gt;(based on a criterion for ordering objects)</td>
<td><strong>temporal relation</strong>&lt;br&gt;(earlier occurrence – later occurrence)</td>
<td>‘production’ – ‘consumption’</td>
</tr>
<tr>
<td></td>
<td><strong>spatial relation</strong>&lt;br&gt;(object in space – object in space)</td>
<td>‘floor’ – ‘ceiling’</td>
</tr>
<tr>
<td></td>
<td><strong>causal relation</strong>&lt;br&gt;(cause – effect)</td>
<td>‘humidity’ – ‘corrosion’</td>
</tr>
<tr>
<td></td>
<td><strong>developmental relation</strong>&lt;br&gt;(step of a process – step of a process)</td>
<td>‘tadpole’ – ‘frog’</td>
</tr>
<tr>
<td><strong>activity relation</strong>&lt;br&gt;(based on an action object)</td>
<td><strong>agent relation</strong>&lt;br&gt;(action – actor)</td>
<td>‘teach’ – ‘teacher’</td>
</tr>
<tr>
<td></td>
<td><strong>object relation</strong>&lt;br&gt;(action – object)</td>
<td>‘energy conversion’ – ‘energy’; ‘publication’ – ‘book’</td>
</tr>
<tr>
<td></td>
<td><strong>tool relation</strong>&lt;br&gt;(action – instrument)</td>
<td>‘click’ – ‘computer mouse’</td>
</tr>
<tr>
<td></td>
<td><strong>manner relation</strong>&lt;br&gt;(action – method)</td>
<td>‘teach’ – ‘e-learning’</td>
</tr>
<tr>
<td></td>
<td><strong>locational relation</strong>&lt;br&gt;(action – place)</td>
<td>‘learn’ – ‘school’</td>
</tr>
<tr>
<td></td>
<td><strong>purpose relation</strong>&lt;br&gt;(action – objective)</td>
<td>‘medical examination’ – ‘diagnosis’</td>
</tr>
<tr>
<td></td>
<td><strong>result relation</strong>&lt;br&gt;(action – beneficiary)</td>
<td>‘hospital discharge’ – ‘patient’</td>
</tr>
<tr>
<td></td>
<td><strong>patient relation</strong>&lt;br&gt;(action – patient)</td>
<td>‘psychotherapy’ – ‘client’</td>
</tr>
<tr>
<td><strong>origination relation</strong>&lt;br&gt;(based on the origin of an object)</td>
<td><strong>originator relation</strong>&lt;br&gt;(producer – product)</td>
<td>‘baker’ – ‘bread’</td>
</tr>
<tr>
<td></td>
<td><strong>ingredient relation</strong>&lt;br&gt;(raw material – product)</td>
<td>‘wood’ – ‘desk’</td>
</tr>
<tr>
<td></td>
<td><strong>instrument-product relation</strong>&lt;br&gt;(tool – product)</td>
<td>‘oven’ – ‘bread’</td>
</tr>
<tr>
<td><strong>instrumental relation</strong>&lt;br&gt;(based on a tool used for specific purposes)</td>
<td><strong>agent-instrument relation</strong>&lt;br&gt;(professional – tool employed)</td>
<td>‘painter’ – ‘brush’</td>
</tr>
<tr>
<td></td>
<td><strong>object-instrument relation</strong>&lt;br&gt;(object – tool used for handling)</td>
<td>‘time’ – ‘clock’; ‘screw’ – ‘screwdriver’</td>
</tr>
<tr>
<td></td>
<td><strong>instrument-patient relation</strong>&lt;br&gt;(tool employed – patient)</td>
<td>‘baby sling’ – ‘baby’</td>
</tr>
<tr>
<td><strong>interactional relation</strong>&lt;br&gt;(based on a two-way connection between objects)</td>
<td><strong>dependency relation</strong>&lt;br&gt;(controlled – controller; controller – controlled; agent – patient)</td>
<td>‘pointer’ – ‘computer mouse’; ‘employer’ – ‘employee’; ‘interviewer’ – ‘interviewee’</td>
</tr>
<tr>
<td></td>
<td><strong>representational relation</strong>&lt;br&gt;(entity – representative)</td>
<td>‘length’ – ‘metre’; ‘country’ – ‘flag’</td>
</tr>
</tbody>
</table>
Table 1 (continued)

<table>
<thead>
<tr>
<th>Type (description)</th>
<th>Subtype (relation role)</th>
<th>Example(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>transmission relation</td>
<td>sender-receiver relation</td>
<td>‘satellite’ – ‘parabolic dish antenna’; ‘seller’ – ‘buyer’</td>
</tr>
<tr>
<td>(based on the sender-receiver principle)</td>
<td>sender relation</td>
<td>‘mobile phone’ – ‘text message’; ‘seller’ – ‘merchandise’</td>
</tr>
<tr>
<td></td>
<td>receiver relation</td>
<td>‘text message’ – ‘mobile phone’; ‘merchandise’ – ‘buyer’</td>
</tr>
<tr>
<td>opposite relation</td>
<td>contrary relation</td>
<td>‘positive correlation’ – ‘zero correlation’ – ‘negative correlation’</td>
</tr>
<tr>
<td>(based on objects that can be viewed as opposites of each other)</td>
<td>contradictory relation</td>
<td>‘hairy-headedness’ – ‘baldness’; ‘conformity’ – ‘nonconformity’</td>
</tr>
</tbody>
</table>

5.6 Concept systems

5.6.1 General

Terminology work serves to develop and visualize a coherent concept system. The unique position of each concept within a concept system is determined by the intension and the extension. In the case of concept systems based on generic relations, the concept system also reflects the inheritance principle, because specific concepts inherit characteristics from their generic concepts.

Concept systems are cognitive tools that serve to:

— model concepts and relations between them within a concept field in a domain or subject;
— clarify concept relations;
— form the basis for a uniform and standardized terminology;
— facilitate the comparative analysis of concepts and designations across natural languages and across domains or subjects;
— facilitate the writing of definitions;
— facilitate the inclusion of all relevant concepts while developing a terminology resource.

5.6.2 Development and visualization

Once a concept system has been developed on the basis of a relevant concept field, different techniques can be used to produce concept diagrams or concept models. Developing concept systems involves a series of iterative operations leading, for example, to the compilation of a terminology resource in a specific domain or subject. These operations generally include:

— selecting the concept field, the preliminary designations and concepts to be treated by taking into account the domain or subject as well as the target audience and its needs;
— analysing the intension and extension of each concept;
— determining the relations and positions of these concepts within the concept system;
— visualizing the resulting concept system by means of a concept diagram or a concept model;
— writing or identifying and analysing definitions for the concepts based on the concept relations;
— assigning designations to each concept.
The steps involved in developing concept systems and defining concepts are closely related. Definitions shall reflect the concept system. If appropriate definitions already exist, the concept relations within the concept system shall be established primarily by analysing the characteristics of each concept included in its definition. Consequently, developing and visualizing a concept system as well as writing definitions for the relevant concepts are iterative processes that often require review and repetition of some operations.

Concept systems can be represented in different ways, for example by traditional concept diagrams following the requirements laid down in this document, or UML-based concept models drawn in accordance with ISO 24156-1. Concept diagrams and concept models shall fulfil the following criteria:

— clarity: enable terminology users to get a quick and thorough overview of the domain or subject in question;
— intelligibility: present the concept system in a user-friendly way and avoid complexity by limiting the number of concepts and concept relations shown;
— transparency: clearly display the various types of concept relations and criteria of subdivision;
— extensibility: be easy to expand and modify.

5.6.3 Types

Concept systems can be categorized according to various criteria. Based on the types of concept relation involved, the types of concept systems include the following:

— Generic concept system: a concept system in which all the concepts relate to each other as generic concepts and specific concepts (see 5.5.4.2.1, Example 1).
— Partitive concept system: a concept system in which all the concepts relate to each other as comprehensive concepts and partitive concepts (see 5.5.4.3.1, Example 1).
— Associative concept system: a concept system in which all the concepts relate to each other by means of associative relations. The type or subtype of associative relation between any two concepts may vary within a system (see Example 1 below). In special cases, the type of associative relation can be made explicit by a label adjacent to the line representing the associative relation, and directionality can be expressed by appropriate graphical means.
— Mixed concept system: a concept system using a combination of concept relations (see Examples 2, 3 and 4 below).

Based on the number of criteria of subdivision, the types of concept systems include:

— monodimensional concept system: a concept system in which superordinate concepts are subdivided according to one criterion of subdivision (see 5.5.4.2.1, Example 1);
— multidimensional concept system: a concept system in which superordinate concepts are subdivided according to more than one criterion of subdivision (see 5.5.4.2.1, Example 4, 5.5.4.3.1, Example 3, and Example 2 below).

Based on the number of immediate superordinate concepts, the types of concept systems include:

— monohierarchical concept system: a concept system in which the concepts have only one immediate superordinate concept (see 5.5.4.2.1, Example 1);
— polyhierarchical concept system: a concept system in which one or more concepts have more than one immediate superordinate concept (see Example 5 below).
EXAMPLE 1

Verbal description

This example shows an associative concept system including associative relations only.
EXAMPLE 2

Verbal description
This example shows a multidimensional mixed concept system with generic relations, partitive relations and an associative relation. An ellipsis (...) indicates further specific concepts that are not shown.

Traditional concept diagram
UML-based concept model

pointing device

... touch pad ... computer mouse ... light pen ...

means of movement detection

computer connection

mechanical mouse
optomechanical mouse
optical mouse
wired mouse
wireless mouse

mouse button
mouse ball
mouse circuit board
x-axis roller
y-axis roller
infrared emitter
infrared sensor
mouse wheel

rubber

encoder chip

shaft
encoding disc

0.* optional part(s)
1.* at least one part
2.* multiple parts

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EXAMPLE 3

Verbal description
This example shows a mixed concept system with both generic relations and partitive relations between general concepts and individual concepts. An ellipsis (...) indicates further specific concepts and partitive concepts that are not shown.

Traditional concept diagram

UML-based concept model

Different domains or subjects view the same objects in different ways. Hypothetical-deductive approaches such as mathematics can create concept systems based on statistics or abstract formulae. The natural sciences can view the same objects, but draw up concept systems resulting from the classification of observed phenomena. Engineering and technology can structure a factory according to production processes, whereas experts in law or sociology can view the same phenomena in terms of legal liability or social interaction.
EXAMPLE 4

Verbal description
This example describes the concept 'climate change', as defined in an International Standard. It also shows two mixed concept systems. An ellipsis (...) indicates further specific concepts that are not shown.

climate change
change in climate that persists for an extended period, typically decades or longer
Note 1 to entry: Climate change can be identified by such means as statistical tests (e.g. on changes in the mean, variability).
Note 2 to entry: Climate change might be due to natural processes, internal to the climate system, or external forcings such as modulations of the solar cycles, volcanic eruptions, and persistent anthropogenic changes in the composition of the atmosphere or in land use.
[SOURCE: ISO 14090:2019, 3.5]

Based on Note 2 to entry above and from the point of view of climatology, 'climate change' can be viewed as an object caused by various natural and anthropogenic factors. One part of a corresponding mixed concept system 'climate change' can be represented in the following ways.

Traditional concept diagram

UML-based concept model

From the point of view of social sciences, 'climate change' can be viewed as an object for which there are various possibilities of adaptation for humans. One part of a corresponding mixed concept system 'climate change' can be represented in the following ways.

### Traditional concept diagram

![Image of a traditional concept diagram](https://example.com/traditional-diagram.png)

- Climate change
- Adaptation to climate change
- Disaster risk management
- Ecosystem management
- Land use planning
- ... (other possibilities)

### UML-based concept model

![Image of an UML-based concept model](https://example.com/uml-model.png)

- Climate change
- Adaptation to climate change
- Disaster risk management
- Ecosystem management
- Land use planning
- ... (other possibilities)

### Verbal description

This example shows a polyhierarchical concept system.

### Traditional concept diagram (tree diagram)

- Researcher
- Teacher
- Professor

### UML-based concept model

- Researcher
- Teacher
- Professor
6 Definitions

6.1 General

A definition shall provide the essential characteristics and thus distinguish the concept from other concepts. Unlike an encyclopaedic description (see 6.6.3), a definition's main purpose is not to provide all details about a given concept.

EXAMPLE

In most encyclopaedic sources, an explanation of 'penguin' includes the information that they live in the south temperate and Antarctic regions.

This information is not necessary to differentiate penguins from other birds and should not be included in a definition.

In the case of terminology work carried out in standardization, terms and other designations are standardized (with one specified as preferred, when there is more than one designation) as well as the definition. In scientific, mathematical, and technical documentation, the definition can be complemented with a graphic illustration (see also Clause A.2). The definition can also be expressed by or complemented by a formula (see 6.4.3.10, Example, and 6.4.5.5, Example).

Some designations are so long and complex that they can serve as definitions because the elements making up the designation represent the concept's characteristics. Some definitions are so short they can be thought of as designations. Despite this, the definition should not be confused with the designation in the way they often are in dictionaries describing general language. Although some terminology resources list abbreviations as designations and provide full forms in the place of definitions, this is not appropriate terminological practice. Both the full form and the abbreviation are designations and should be treated as designations in a terminological entry. The same consideration applies to equivalents in other natural languages.

When providing definitions, the needs of the target audience shall be taken into consideration:

— experts in the domain or subject in question, already familiar with the relevant conceptualization patterns and who can be familiar with the designations;

— experts in another domain or subject who can be familiar with the designations and the concepts; or

— non-experts who are unfamiliar with both the designations and the concepts of the domain or subject.

A definition alone can be insufficient. Developing terminology resources for non-experts often requires amplification, for example by adding other types of information (contexts, encyclopaedic information, explanations, notes or examples, see 6.6) or by the inclusion of a representation in other media (e.g. graphic illustration, sound clip). The format in which definitions are written varies from natural language to natural language. Every natural language has its own conventions and definitions should respect them.

6.2 Intensional definitions

The role of an intensional definition is to provide the minimum amount of information that forms the basis for conceptualization and that allows one to recognize a concept and differentiate it from other concepts, especially coordinate concepts. An intensional definition shall define the concept as a unit with an unambiguous intension reflecting a corresponding extension.

Intensional definitions shall begin by stating the immediate, i.e. closest, superordinate concept, followed by the delimiting characteristic(s). The superordinate concept situates the concept in its proper place in the concept system (i.e. 'computer mouse' as a type of 'pointing device', 'tree' as a type of 'plant'). In practice, intensional definitions are preferable to other types of definitions and should be used whenever possible as they most clearly reveal characteristics of a concept within a concept system. Other types of...
definitions in current usage are treated in 6.3 (extensional definitions) and in Annex A (ostensive, lexical, précising and stipulative definitions).

The requirement of stating the immediate superordinate concept does not apply to the top superordinate concept in a concept system, which is usually not defined in that particular concept system.

NOTE For more details on intensional definitions, see Reference [70].

6.3 Extensional definitions

In some situations, a definition may be a list of designations that represent the concept's immediate subordinate concepts, under just one criterion of subdivision. This is called an extensional definition. The subordinate concepts correspond to objects making up the extension of the concept. (See 5.5.4.2.1, Example 4, and 5.6.3, Example 2, for examples of criteria of subdivision.) The subordinate concepts represented may either be individual concepts or general concepts. They can be ordered in various ways.

A concept's extension is not the same as an extensional definition describing that concept. The list of designations represents concepts that correspond to the objects making up the extension. It only suggests a concept's intension but does not determine it as in an intensional definition.

Extensional definitions are useful only in very limited circumstances. They shall be used when a given concept can be described more efficiently by an extensional definition than by an intensional definition. Extensional definitions shall be used only if

— the number of subordinate concepts to be enumerated is finite,
— the list of subordinate concepts is complete under one criterion of subdivision, and
— the subordinate concepts can be clarified by intensional definitions or are well known.

NOTE For more details on extensional definitions, see Reference [71].

6.4 Writing definitions

6.4.1 General

Some of the requirements and recommendations in this subclause can depend on the natural language in question. Therefore, in translations of this document, they shall be adapted to the norms of the relevant natural language.

NOTE Such adaptation does not violate the rules on the degree of correspondence as an identical version in another language in accordance with ISO/IEC Guide 21-1:2005, 4.2.

6.4.2 Nature of intensional definitions

An intensional definition shall reflect the concept system by describing the concept and its relations to other concepts in the concept system. Intensional definitions shall enable terminology users to reconstruct the concept system. The characteristics selected and presented in an intensional definition shall indicate the difference between one concept and another concept or the relation between the concepts.

An intensional definition is a statement in the form of an incomplete sentence without a full stop. The definition begins with a noun or other part of speech stating the immediate superordinate concept associated with the concept being defined (generally in lower case). This noun is followed by delimiting characteristics that distinguish the concept from its coordinate concept(s). An article (generally indefinite) is implied but not written at the beginning of a definition. The domain, subject or a special usage can be indicated in angle brackets (<>) at the beginning of the definition (see 6.4.6 and Examples 1, 2, 3 and 4 below).

Intensional definitions of concepts that are represented by nominal designations shall begin with a noun or noun phrase, those represented by verbal designations shall begin with a verb. Intensional definitions
of concepts represented by adjectival designations may begin with an adjective or adjectival phrase. In most cases, they begin with a word or phrase that indicates the state or function of an object. Depending on the natural language in question, this can be a gerund or present participle, such as:

— being or occurring ...
— of or relating to ...
— having ...

A terminological entry can start with the designation to be read as a sentence: when the concept being defined is designated by a noun, the subject is the designation, the copula (which links the predicate and the subject) is the verb “be” and the definition completes the predicate (wording about the subject). Generally, the designation is followed by a separator, such as a punctuation mark (see 3.3, Example 1 and Example 2) or line break (see Examples 1, 2, 3 and 4 below).

EXAMPLE 1

**optical mouse**

<information technology> computer mouse in which movement is detected by light sensors

This terminological entry is to be read as: “[An] optical mouse in information technology [is a] computer mouse in which movement is detected by light sensors”.

EXAMPLE 2

**localize**

<information technology> adapt the translation of a software product to the cultural norms of the target language

This terminological entry is to be read as: “[To] localize in information technology [is to] adapt the translation of a software product to the cultural norms of the target language”.

EXAMPLE 3

**acaulescent**

<botany> having no apparent stem above ground

This terminological entry is to be read as: “[being] acaulescent in botany [is] having no apparent stem above ground”.

EXAMPLE 4

**pyroclastic**

<geology> composed chiefly of rock fragments of volcanic origin

This terminological entry is to be read as: “[being] pyroclastic in geology [is being] composed chiefly of rock fragments of volcanic origin”.

If a nominal term or proper name can also represent a similar or different concept as a verb, adjective or adverb, the part of speech shall be specified in appropriate form.

EXAMPLE 5

<table>
<thead>
<tr>
<th>output, verb</th>
<th>constant, adjective</th>
<th>Xerox®, noun</th>
</tr>
</thead>
<tbody>
<tr>
<td>output, noun</td>
<td>constant, noun</td>
<td>xerox, verb</td>
</tr>
</tbody>
</table>

Xerox® is a trademark of Xerox Corporation. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of the product named.

6.4.3 Writing intensional definitions

6.4.3.1 Intensional definitions are statements of essential characteristics that make up the relevant concepts. They shall be as concise as possible and as complex as necessary. Intensional definitions shall
be written in accordance with the formal conventions specific to the natural language in question. In the case of writing definitions for standards, see ISO 10241-1 for the necessary details.

Before drafting an intensional definition, it is necessary to determine the concept relations and to model a concept system within which the concept is situated. If an intensional definition already exists, in an International Standard for example, it should be adopted as it stands only if it is consistent with other concepts in the concept system. This allows the concept in question to be incorporated into the concept system. Otherwise, it should be adjusted and/or commented.

When modelling a concept system and drafting the corresponding intensional definitions, it is essential to determine which concepts belong to the general language and thus need not be defined. Designations of such concepts are usually recorded in dictionaries describing general language.

Generic concepts, except the top generic concept in the concept system, should be defined before defining their specific concepts. When drafting a new intensional definition, the designations used in it should represent concepts with definitions either in the same terminology resource or in other resources, including dictionaries describing general language.

6.4.3.2 An intensional definition shall describe only one concept. It shall not include hidden definitions of other concepts. Any characteristic that requires a clarification shall be defined as a separate concept in a separate terminological entry.

**EXAMPLE**

<table>
<thead>
<tr>
<th>optical mouse</th>
<th>computer mouse with light sensors, phototransistors that receive light, convert it into electrical signals and are used to detect movement, which in turn controls the location of a pointer on a computer screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>This draft definition includes the characteristics ‘phototransistors that receive light, convert it into electrical signals and are used to detect movement’. These characteristics constitute a hidden definition of the concept ‘light sensor’. Thus, they should not be included in the intensional definition of ‘optical mouse’ but be used in a separate definition of the concept ‘light sensor’.</td>
<td></td>
</tr>
</tbody>
</table>

6.4.3.3 An intensional definition shall describe a concept, not the words or elements that make up a designation.

**EXAMPLE 1**

<table>
<thead>
<tr>
<th>draft definition (lexical definition, see Clause A.3)</th>
<th>coniferous tree</th>
</tr>
</thead>
<tbody>
<tr>
<td>victim definition</td>
<td>tree bearing cones</td>
</tr>
<tr>
<td>The wording “bearing cones” is an explanation of the word “coniferous” rather than a delimiting characteristic of ‘coniferous tree’.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>corrected definition</th>
<th>coniferous tree</th>
</tr>
</thead>
<tbody>
<tr>
<td>corrected definition</td>
<td>needle-leaved or scale-leaved gymnospermous tree</td>
</tr>
</tbody>
</table>

**EXAMPLE 2**

<table>
<thead>
<tr>
<th>draft definition (lexical definition, see Clause A.3)</th>
<th>population</th>
</tr>
</thead>
<tbody>
<tr>
<td>victim definition</td>
<td>collective term used to describe items being analysed</td>
</tr>
<tr>
<td>The wording “collective term ...” introduces an explanation about the term rather than an intensional definition.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>corrected definition</th>
<th>population</th>
</tr>
</thead>
<tbody>
<tr>
<td>corrected definition</td>
<td>totality of items under consideration</td>
</tr>
<tr>
<td>[SOURCE: ISO 3534-1:2006, 1.1]</td>
<td></td>
</tr>
</tbody>
</table>

6.4.3.4 An intensional definition shall not contain characteristics that belong logically to its generic concepts or specific concepts.
In the intensional definition of 'optical mouse', it is not appropriate to indicate the characteristic 'being hand-maneuvered along a firm, flat surface' since this characteristic is part of the intension of the generic concept 'computer mouse'.

6.4.3.5 An intensional definition using characteristics based on a generic relation shall represent the concept by stating the immediate generic concept, followed by the delimiting characteristics that differentiate the concept from coordinate concepts in a generic concept system. By stating the immediate generic concept, the characteristics that make up its intension are implicitly assumed in the intensional definition based on the inheritance principle (see 5.5.4.2.1 and 5.5.4.3.1). An intensional definition shall be based on the concept relations determined during terminological analysis. It can be supplemented by further information (see 6.6) or a representation in other media (e.g. graphic illustration, sound clip).

**EXAMPLE**

<table>
<thead>
<tr>
<th>mechanical mouse</th>
<th>computer mouse in which movement is detected by rollers and a ball</th>
</tr>
</thead>
<tbody>
<tr>
<td>optomechanical mouse</td>
<td>computer mouse in which movement is detected by rollers and light sensors</td>
</tr>
<tr>
<td>optical mouse</td>
<td>computer mouse in which movement is detected by light sensors</td>
</tr>
</tbody>
</table>

**NOTE** Optical mice are available in wired and wireless options.

These intensional definitions are based on the concept system in 5.5.4.2.1, Example 4:

- **Generic concept**: 'computer mouse'.
- **Specific concepts**: 'mechanical mouse', 'optomechanical mouse', 'optical mouse', 'wired mouse', 'wireless mouse'.
- **Delimiting characteristics**: 'detecting movement by means of rollers', 'detecting movement by means of rollers and light sensors' and 'detecting movement by means of light sensors'.

6.4.3.6 An intensional definition using characteristics based on a partitive relation shall describe the concept by stating the immediate comprehensive concept and the delimiting characteristics. It is therefore necessary to analyse the comprehensive concept first to determine its position in a concept system and to indicate its relation to the partitive concepts. Such an intensional definition typically begins with a wording such as "part of", "component of", "section of", "period of" or "element in", followed by the comprehensive concept and the delimiting characteristics. A concept shall be defined as a partitive concept only if it constitutes a distinct part of the comprehensive concept. In the Example below, to have a complete extension of the concept 'mouse ball', the partitive concept system for both 'mechanical mouse' and 'optomechanical mouse' shall be analysed (see 5.5.4.3.1, Example 1 and Example 2 about 'optomechanical mouse').

**EXAMPLE**

| mouse ball | spherical part on the underside of a mechanical or an optomechanical mouse that rolls on a firm surface and whose movement is used to control the location of a pointer on a computer screen |

This intensional definition of 'mouse ball' is based on the partitive concept system:

- **Comprehensive concept**: 'mechanical mouse' or 'optomechanical mouse'.
- **Partitive concept**: 'mouse ball'.

**Characteristics:**
- 'being round like a sphere';
- 'being located on the underside';
- 'rolling on a firm surface';
- 'controlling the location of a pointer on a computer screen by its movement'.
6.4.3.7 An intensional definition can contain characteristics based on an associative relation established between two concepts. The intensional definition shall state the immediate generic concept followed by characteristics that indicate the relation between the concepts in question. In many cases, the generic concept is not specific to the relevant domain or subject. Therefore, ensure that the complete intension and extension of the concept have been analysed thoroughly before defining the concept based on an associative relation. The associative concept system in 5.6.3, Example 1, shows an enhancement relation between 'mouse pad' and 'computer mouse'.

EXAMPLE

<table>
<thead>
<tr>
<th>mouse pad</th>
</tr>
</thead>
<tbody>
<tr>
<td>small pad with a special surface designed for sensing the movement of a computer mouse</td>
</tr>
</tbody>
</table>

This intensional definition is based on the associative concept system in 5.6.2, Example 1, and on the associative relation of the type enhancement relation.

Generic concept: ‘pad’.
Characteristics:
— ‘being small’ (about 20 cm by 25 cm and about 5 mm thick);
— ‘being designed with a surface for sensing the movement of a computer mouse’.

6.4.3.8 A comprehensive concept can be defined based on a mixed concept system. The intensional definition shall begin by stating the immediate generic concept of the comprehensive concept being defined, followed by a listing of the delimiting parts corresponding to the characteristics that make up the comprehensive concept. Optional parts shall not be included. Optional parts frequently associated with a concept can be mentioned in a note. This type of definition is practical only if the number of parts to be enumerated is limited.

EXAMPLE

In the intensional definition of ‘optomechanical mouse’ in 6.4.3.5, Example, the immediate generic concept is ‘computer mouse’; ‘rollers’ and ‘light sensors’ are delimiting parts as shown in the concept system in 5.5.4.3.1, Example 2 (‘x-axis roller’, ‘y-axis roller’, ‘infrared sensor’).

6.4.3.9 Complex intensional definitions shall contain only information that makes the concept unique. Any additional descriptive information deemed necessary is to be included in a note (see 6.6.5). Intensional definitions should be drafted in a consistent manner bearing in mind the target audience's language register and knowledge level.

EXAMPLE

The three synonyms below clearly reflect differing language registers and are therefore likely to be familiar to different target audiences. Accordingly, the first of the two intensional definitions is more appropriate for general users while the second is directed at experts. A given terminology resource can contain different intensional definitions of one concept directed at different target audiences.

<table>
<thead>
<tr>
<th>heart attack</th>
</tr>
</thead>
<tbody>
<tr>
<td>acute episode of heart disease marked by the death or damage of heart muscle due to insufficient blood supply to the heart and characterized especially by chest pain</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>myocardial infarction</th>
</tr>
</thead>
<tbody>
<tr>
<td>MI</td>
</tr>
<tr>
<td>infarction of the myocardium resulting typically from coronary occlusion, which may be marked by sudden chest pain, shortness of breath, nausea and loss of consciousness, and sometimes resulting in death</td>
</tr>
</tbody>
</table>

6.4.3.10 Some formulae describing scientific or mathematical quantities can be considered intensional definitions based on the concept relations represented by mathematical expressions. These mathematical expressions connect the quantity being described with each of the other quantities involved. This connection is mostly an associative relation. It is a partitive relation only if the mathematical expression is a summation (either algebraic or vectorial).
EXAMPLE

**force**
<motion of a material point>

\[ \vec{F} = m \vec{a} \]

where

\[ \vec{F} \] is the force acting on a material point;
\[ m \] is the mass of the material point;
\[ \vec{a} \] is the acceleration of the material point.

This *intensional definition* is based on a mixed concept system (*generic relation* and *associative relations*):

Generic concept: ‘vector quantity’.

Characteristics:
- ‘being related to \( m \) by the product \( ma \);’
- ‘being related to \( \vec{a} \) by the product \( ma \).’

The resulting traditional *concept diagram* and UML-based *concept model* look as follows:

---

**6.4.4 Applying the substitution principle**

The substitution principle shall be used to test the validity of a *definition*. In the case of an *intensional definition*, it is valid if it can replace a *designation* without loss of or change in *essential characteristics* of the *concept* (see 6.5.2, Example 4).

**6.4.5 Writing extensional definitions**

**6.4.5.1** An *extensional definition* shall enumerate all the *subordinate concepts* corresponding to *objects* in the *extension* and shall not include open-ended wordings (e.g. “and similar items”, “etc.”). Incomplete lists can be recorded in an example attached to an *intensional definition*. All the *subordinate concepts* enumerated shall be defined elsewhere in the *terminology resource* (except if they are well known). They shall not be defined in an *intensional definition* using the immediate *superordinate concept*, as this creates circularity (see 6.5.2).
EXAMPLE

| incomplete definition (open-ended wording) | coniferous tree | conifer such as cedars, cypresses, firs, larches, pines, etc. |
| incomplete definition (not all concepts listed) | coniferous tree | juniper, larch, fir, cedar, cypress, redwood or pine |
| extensional definition | coniferous tree | needle-leaved gymnospermous tree or scale-leaved gymnospermous tree |

**EXAMPLE** Familiar representatives of coniferous trees are cedars, yews, firs, junipers, larches, redwoods and pines.

**6.4.5.2** Extensional definitions shall be written with reference to the position of the defined concept within its concept system. When the defined concept and the listed subordinate concepts are connected by a generic relation, the operator "or" shall be used for enumerating the subordinate concepts. The result is a generic extensional definition.

**EXAMPLE 1**

| threatened species | critically endangered species, endangered species or vulnerable species |

**EXAMPLE 2**

| noble gas | helium, neon, argon, krypton, xenon, radon or oganesson |

**6.4.5.3** When the defined concept and the enumerated subordinate concepts are connected by a partitive relation, the operator "and" shall be used for enumerating the subordinate concepts. The result is a partitive extensional definition.

**EXAMPLE**

| Family 18 in the Periodic Table | helium, neon, argon, krypton, xenon, radon and oganesson |

**6.4.5.4** Partitive concepts whose extension extends beyond the partitive relation under analysis should not be defined too narrowly with regard to the comprehensive concept. In the Example below, the definition of the concept 'optical mouse' should not include the characteristics 'having a cord' and 'having a mouse wheel' as the corresponding objects are not necessarily parts of every object in the extension.

**EXAMPLE**

| definition too narrow | optical mouse | computer mouse having a cord and mouse wheel in which movement is detected by light sensors on its underside |
| corrected definition | optical mouse | computer mouse in which movement is detected by light sensors |

**6.4.5.5** Some formulae, e.g. structural formulae used in the domain of chemistry, can be considered partitive extensional definitions. A formula shall not be used as a definition and a designation at the same time, as this results in a tautology.
EXAMPLE

The molecular formula “C₄H₁₀” is an appellation and represents the concept ‘butane’. Also, it reflects the basic chemical structure of various objects ‘butane’. However, a molecular formula giving the number of atoms in a given molecule can still identify a substance ambiguously since the modelling of complex molecules can result in different atomic structures. Compounds with the same molecular formula that have different structures are called isomers. Isomeric variations have similar, but not necessarily identical, qualities. The object ‘butane’ is a relatively simple example with two variations only (‘butane’ versus ‘isobutane’). More complex chemicals can have many isomeric variations for the same molecular formula. As shown below, structural formulae help to clarify the concept and act as partitive extensional definitions.

<table>
<thead>
<tr>
<th>Isobutane</th>
<th>Butane</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Chemical structure diagram]</td>
<td>[Chemical structure diagram]</td>
</tr>
</tbody>
</table>

6.4.6 Indicating a domain or subject

The extension and the intension reflected in a definition shall be appropriate to the concept system in a given domain or subject. If the domain or subject is not clearly indicated in the designation, in the document title or is not generally understood, it shall be placed before the definition on the same line (see Example 1 and Example 2 below). In a terminology database, there is usually a separate field for indicating the domain or subject. It can be indicated in angle brackets (<>).

EXAMPLE 1

**pointer**
<programming> variable that contains the memory location of some data rather than the data itself

**pointer**
<user interface> onscreen symbol that indicates locations or choices on a computer screen

EXAMPLE  An arrowhead.

When adapting a definition to a specific domain or subject (see Clause A.4), the extension thereby is limited to the domain or subject indicated at the beginning of the definition.

EXAMPLE 2

**mouse**
<information technology> hand-held pointing device that controls the location of an onscreen pointer and the selection of functions

The concept ‘mouse’ originally belongs to the domain of zoology, but its designation has been adopted as a metaphor in the domain of information technology. By clearly indicating the domain, a separate concept is signalled and ambiguity is avoided.

6.5 Deficient definitions

6.5.1 General

Deficient definitions shall be avoided. Common types of deficient definitions are:

— circular definitions;
— inaccurate definitions;
6.5.2 Circular definitions

If one concept is defined using a second concept, and if that second concept is defined using the designation or elements of the designation representing the first concept, the resulting definitions are said to be circular. Circular definitions, sometimes called tautological definitions, make it impossible to understand the concept and shall be avoided.

Circularity can occur:

— within a single definition (inner circle);
— within a system of definitions (outer circle).

An inner circle fails to describe an essential characteristic, e.g. when the designation is repeated to introduce the definition or when an element of the designation is used as a characteristic. When writing a definition, the designation shall not be repeated to introduce the definition (see Example 1 below).

EXAMPLE 1

<table>
<thead>
<tr>
<th>Circular definition</th>
<th>tree height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected definition</td>
<td>tree height measured from the ground surface to the top of a tree</td>
</tr>
</tbody>
</table>

Upon application of the substitution principle (see 6.4.4), an outer circle results in the terminology user being unable to complete either definition. A definition is circular within a system of definitions when two or more concepts are defined by means of each other. In Example 2 below, the substitution principle clearly reveals repetition and circularity. Once the definition of 'natural tree stand' has been modified to remove the circularity, the definition of 'virgin forest' can remain as it is.

EXAMPLE 2

<table>
<thead>
<tr>
<th>Circular definitions</th>
<th>virgin forest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural tree stand</td>
<td>forest constituted of a natural tree stand</td>
</tr>
<tr>
<td>corrected definition</td>
<td>stand of trees grown in a virgin forest</td>
</tr>
</tbody>
</table>

Replacing the term 'virgin forest' with the concept's definition in the definition of 'natural tree stand' results in:

| Circular definition | stand of trees grown in a forest constituted of a natural tree stand |
| corrected definition | stand of trees grown without interference by humans |

The use of an element of the designation as a characteristic in the definition should be avoided as far as possible. However, if deemed necessary, an element that forms part of the designation may be used in the definition, provided its concept is clearly defined elsewhere. In Example 3 below, if the concept 'evergreen' is defined, the circularity is eliminated. In Example 4 below, 'haploid' in the first definition can be replaced by its definition without loss of or change in concept (see also 6.4.4).

EXAMPLE 3

<table>
<thead>
<tr>
<th>Circular definition</th>
<th>evergreen tree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected definition</td>
<td>tree with evergreen foliage</td>
</tr>
<tr>
<td>Separate definition of 'evergreen'</td>
<td>tree that has green leaves throughout the entire year</td>
</tr>
<tr>
<td>evergreen</td>
<td>having green leaves throughout the entire year</td>
</tr>
</tbody>
</table>
EXAMPLE 4

<table>
<thead>
<tr>
<th>definition</th>
<th>haploid life cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>period in an organism's life involving one generation when only the multicellular stage is haploid</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>separate definition of 'haploid'</th>
</tr>
</thead>
<tbody>
<tr>
<td>having a single set of chromosomes in the nucleus of each cell</td>
</tr>
</tbody>
</table>

When defining concepts on the basis of partitive relations, the same partitive relation shall be restricted to one level. It shall thus cover either the subordinate level (‘a’ has part ‘b’) or the superordinate level (‘b’ is part of ‘a’), not both (‘a’ has part ‘b’ and ‘b’ is part of ‘a’). In Example 5 below, if ‘encoding disc’ is defined as a partitive concept of ‘x-axis roller’ or ‘y-axis roller’, then ‘x-axis roller’ or ‘y-axis roller’ shall not be defined as a comprehensive concept of ‘encoding disk’. This avoids circularity.

EXAMPLE 5

encoding disc
wheel-like part of an x-axis roller or a y-axis roller in a mechanical or optomechanical mouse whose slot rotation creates pulses used to control the location of a pointer on a computer screen

The definition of ‘encoding disc’ is based on the partitive concept system in 5.5.4.3.1, Example 2:

**Comprehensive concepts:** ‘x-axis roller’ or ‘y-axis roller’ and ‘optomechanical mouse’ (or ‘mechanical mouse’).

**Characteristics:**
— ‘being wheel-like with slots’;
— ‘having slots in the disc that break the beam of light into pulses’;
— ‘pulsing being translated into signals that control the location of a pointer on a computer screen’.

6.5.3 Inaccurate definitions

A definition shall describe the concept precisely. It should be neither too narrow nor too broad. Otherwise, the definition is considered inaccurate. Non-delimiting or irrelevant characteristics in the definition can result in an extension where objects are unintentionally included or excluded. A definition is considered too broad if the characteristics selected to describe the concept include objects that should not be part of the extension. A definition is considered too narrow if the characteristics selected exclude objects that should be part of the extension. The domain or subject and source indicated in the terminological entry should also be considered when assessing whether a definition is too broad or too narrow.

EXAMPLE

<table>
<thead>
<tr>
<th>definition too broad</th>
<th>optomechanical mouse</th>
</tr>
</thead>
<tbody>
<tr>
<td>computer mouse that uses a ball to control the location of a pointer on a computer screen</td>
<td></td>
</tr>
</tbody>
</table>

By not specifying precisely the light sensors, this definition expands the extension to include mechanical mice.

<table>
<thead>
<tr>
<th>definition too narrow</th>
<th>optomechanical mouse</th>
</tr>
</thead>
<tbody>
<tr>
<td>computer mouse composed of a mouse button, rubber ball, circuit board, x-axis roller, y-axis roller, LED infrared emitter and infrared sensor</td>
<td></td>
</tr>
</tbody>
</table>

By specifying a rubber ball and an LED infrared emitter, this definition limits the extension by excluding older mice that used metal balls and those that use non-LED infrared emitters.

<table>
<thead>
<tr>
<th>corrected definition</th>
<th>optomechanical mouse</th>
</tr>
</thead>
<tbody>
<tr>
<td>computer mouse composed of a mouse button, ball, circuit board, x-axis roller, y-axis roller, infrared emitter and infrared sensor</td>
<td></td>
</tr>
</tbody>
</table>

In adapting an existing definition to a specific domain, subject or situation, do not change the extension of the concept. A change to the extension leads to a new concept. Similarly, changes to any of the characteristics in a definition result in a new concept.
6.5.4 Negative definitions

A definition shall describe what a concept is, not what it is not. This requirement applies even if one of its essential characteristics can be viewed as the opposite of an essential characteristic of another concept or other concepts.

EXAMPLE 1

| negative definition | deciduous tree |
| correct definition   | tree other than an evergreen tree |
| delimiting characteristics | 'having green leaves throughout the entire year' (concept 'evergreen tree') versus 'losing its leaves seasonally' (concept 'deciduous tree') |

Concepts with opposite essential characteristics are called contrary concepts. With regard to a given concept, there can be more than one contrary concept.

EXAMPLE 2

| negative definition | translation service provider |
| correct definition   | language service provider that provides professional translation services |
| delimiting characteristics | 'providing translation services' (concept 'translation service provider') versus 'providing interpreting services' (concept 'interpreting service provider') versus 'providing terminology services (concept 'terminology service provider') |

However, when a concept is the inverse of another concept that has already been defined, then the second concept may be described using a proper negation of the designation for the first concept and/or by negating its definition.

Concepts connected by such a relation are called contradictory concepts. With regard to a given concept, there can be only one contradictory concept. Contradictory concepts are often signalled by a negation in the designation or in the determining component of the designation of one concept to form the designation of the other concept.
EXAMPLE 3

<table>
<thead>
<tr>
<th><strong>conformity</strong></th>
<th>fulfilment of a requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>nonconformity</strong></td>
<td>non-fulfilment of a requirement</td>
</tr>
<tr>
<td><strong>vertebrate</strong></td>
<td>animal having a backbone</td>
</tr>
<tr>
<td><strong>invertebrate</strong></td>
<td>animal having no backbone</td>
</tr>
<tr>
<td><strong>aerobic respiration</strong></td>
<td>process of oxygen assimilation that requires free oxygen</td>
</tr>
<tr>
<td><strong>anaerobic respiration</strong></td>
<td>process of oxygen assimilation that does not require free oxygen</td>
</tr>
</tbody>
</table>

In the pairs of concepts above, each concept is a contradictory concept with regard to the second concept. The definition of the second concept in each pair contains a necessary negation of one or more essential characteristics of the definition of the first concept. Also, the designations are negated:

- “conformity” – “nonconformity” and “fulfilment” – “non-fulfilment”
- “vertebrate” – “invertebrate” and “having” – “having no”
- “aerobic” – “anaerobic” and “requires” – “does not require”

6.6 Information supplementing or replacing definitions

6.6.1 General

If information beyond a definition is needed, if no definition is available or if no definition can be drafted, other types of information can supplement or replace the definition. Such information can serve to develop, enrich or complement a definition. Information supplementing or replacing definitions is particularly important in ad hoc terminology work for translation, education and scientific or technical writing purposes. There, the emphasis is on how terminology is used in practice. Such information can also help to carry out terminology work for information and knowledge management where the emphasis is on concept relations and concept systems. For more details on ad hoc and systematic terminology work for multilingual communication, see ISO 12616-1:2021, 4.4.2.

Information supplementing or replacing definitions can be categorized as follows:

- contexts (see 6.6.2);
- encyclopaedic descriptions (see 6.6.3);
- explanations (see 6.6.4);
- notes (see 6.6.5);
- examples (see 6.6.6);
- other descriptions (see 6.6.7).

6.6.2 Contexts

A context allows terminology users to deduce the relevant concept by implication. It contains the relevant designation and is cited or adapted from a source. Typically, it consists of one or more complete sentences. A context can serve as the basis for writing a definition. Contexts can be collected at the beginning of terminology work, when concept systems and coherent definitions have not yet been written.
Furthermore, a context shall be free from linguistic errors (e.g. grammar and spelling). The following Examples include contexts and the sources from which the citations have been taken.

EXAMPLE 1

portfolio
A portfolio is a purposeful collection of student work that exhibits the student's efforts, progress, and achievements in one or more areas.
SOURCE: Reference [76], p. 60.

EXAMPLE 2

impression
An impression, in [...] online advertising, is a single view of an ad by one individual. Online publishers offer their ad inventory as available impressions and advertisers buy from them in the same terms.
SOURCE: Reference [77].

Sometimes, a context contains both the full form and its abbreviation (e.g. "computer mouse" versus "mouse" in Example 3 below).

EXAMPLE 3

computer mouse
Every day of your computing life, you reach out for your mouse whenever you want to move your cursor or activate something. Your mouse senses your motion and your clicks and sends them to the computer so it can respond appropriately.
SOURCE: Reference [58].

6.6.3 Encyclopaedic descriptions

An encyclopaedic description extends beyond a definition both in content and length. Typically, it consists of at least one complete paragraph. It not only conveys characteristics but can also provide a wide range of information about the concept, the object and/or even the relevant designation(s). If it includes all the characteristics needed, an encyclopaedic description can serve as the basis for writing a definition.

EXAMPLE

Encyclopaedic description of ‘computer mouse’
A device that controls the movement of the cursor or pointer on a display screen. A mouse is a small object you can roll along a hard, flat surface. Its name is derived from its shape, which looks [...] like a mouse, its connecting wire that one can imagine to be the mouse’s tail, and the fact that one must make it scurry along a surface. As you move the mouse, the pointer on the display screen moves in the same direction. Mice contain at least one button and sometimes as many as three, which have different functions depending on what program is running. Some newer mice also include a scroll wheel for scrolling through long documents.
SOURCE: Reference [69].

Intensional definition based on encyclopaedic description
computer mouse
pointing device designed to be manipulated by hand, having at least one button for selecting items and moving on a firm, flat surface

6.6.4 Explanations

An explanation provides an account of some or even all essential characteristics of a concept without adhering to the formal structure of a definition. It can convey the concept’s position in a concept system and elaborate on selected characteristics, e.g. on how the concept operates or is applied. Typically, an
explanation consists of one or two complete sentences. If no definition of the concept is available or exists, an explanation can be used as a starting point for writing a definition.

EXAMPLE

<table>
<thead>
<tr>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>computer mouse</strong></td>
</tr>
<tr>
<td>The computer mouse, named from its shape and size, is a piece of hardware that is commonly used as a pointing device for onscreen data and for executing functions by manually clicking on its surface.</td>
</tr>
</tbody>
</table>

*Intensional definition* based on explanation

| **computer mouse** |
| pointing device used for executing functions on a computer screen by moving it and clicking one of its buttons |

6.6.5 Notes

A note is a short statement that describes *non-essential characteristics* or optional parts often associated with a *concept*. It can also list typical elements of the *extension* that complement the *definition*. Typically, it consists of at least one complete sentence. Notes can be part of *terminological entries* in International Standards. For the relevant rules, see ISO 10241-1.

EXAMPLE (Reproduced from 6.4.3.5, Example.)

| optical mouse |
| computer mouse in which movement is detected by light sensors |

**NOTE** Optical mice are available in wired and wireless options.

6.6.6 Examples

An example demonstrates how a *concept* can be instantiated by a specific *object*. Thus, it provides information on possible forms of realization of a *concept* at the object level. An example can take the form of running text or a graphic illustration. Examples can be part of *terminological entries* in International Standards. For the relevant rules, see ISO 10241-1.

EXAMPLE

| Concept ‘single safety sign’ instantiated by an example |
| [Symbol ISO 7010 – P004] |

6.6.7 Other descriptions

There are various other forms of description that can be useful in *terminology work*. They can provide historical or culture-specific information about *objects* (e.g. their applications, inventors and locations), *properties*, *concepts* and *characteristics*. They can also contain statements about the *special language* used in the relevant *domain* or *subject*. For example, such a description can consist of a discussion about the use of synonyms in various sources. Such descriptions do not have a conventional format and can take the form of running text. Often, they are cited from existing sources. Depending on the *domain* or *subject*, a non-linguistic representation showing *characteristics* of a *concept* can replace the *definition* (see Clause A.2, Example 5).
**Example**

Description of ‘Internet of Things’ (IoT)

IoT has a broad use in industry and society today and it will continue to develop for many years to come. Various IoT applications and services have adopted IoT techniques to provide capabilities that were not possible a few years ago. IoT is one of the most dynamic and exciting areas of ICT. It involves the connecting of [p]hysical [e]ntities (“things”) with IT systems through networks. Foundational to IoT are the electronic devices that interact with the physical world. Sensors collect the information about the physical world, while actuators can act upon [p]hysical [e]ntities. Both sensors and actuators can be in many forms such as thermometers, accelerometers, video cameras, microphones, relays, heaters or industrial equipment for manufacturing or process controlling. Mobile technology, cloud computing, big data and deep analytics (predictive, cognitive, real-time and contextual) play important roles by gathering and processing data to achieve the final result of controlling [p]hysical [e]ntities by providing contextual, real-time and predictive information which has an impact on physical and virtual entities.


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**6.7 Indicating sources**

Definitions and other types of terminological information shall be accompanied by identifiers of authoritative sources. Indicating sources helps to trace the origin of terminological information and facilitates cooperation in terminology work. Furthermore, it helps to respect copyright and to obtain proper authorization, if the source’s usage conditions are not clear.

In general, the given source should be authoritative to lend credibility to the terminological information in question. Avoid errors in citations. Examples of citations are given in the examples of 6.6.2, 6.6.3 and 6.6.7.

For more details on using and indicating sources in terminology work, see ISO 690, ISO 12615 and ISO 23185.

**7 Designations**

**7.1 General**

While words or lexical units are usually recorded in dictionaries describing general language, a terminology resource shall include designations. When providing designations, the needs of the target audience shall be taken into consideration:

— experts in the domain or subject in question, already familiar with the relevant conceptualization patterns and who can be familiar with the designations;

— experts in another domain or subject who can be familiar with the designations and the concepts; or

— non-experts who are unfamiliar with both the designations and the concepts of the domain or subject.

Designations are subject to time considerations and can be readily replaced. For terminology work, it is important to record the former designations and their sequence. If a designation refers to an object that no longer exists, the terminology resource shall contain information (e.g. time period, date or status change) that specifies when one designation became outdated and another designation was introduced. If temporal information and/or changes in status are not recorded, designations are difficult to confirm.

**7.2 Types**

According to this document, designations are categorized as:

— terms (see 7.3);

— proper names (see 7.4);
Table 2 below shows how these three types of designations are linked to types of concepts and objects.

### Table 2 — Relation between designation, concept, and object levels

<table>
<thead>
<tr>
<th>Type of designation</th>
<th>term proper name</th>
<th>symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type(s) of concept(s)</td>
<td>general concept</td>
<td>individual concept or general concept</td>
</tr>
<tr>
<td>Type(s) and number(s) of object(s)</td>
<td>several objects with shared or identical properties</td>
<td>unique object or several objects</td>
</tr>
</tbody>
</table>

#### 7.3 Terms

##### 7.3.1 General

Terms (including appellations) represent general concepts that correspond to various types of objects, e.g. things, activities, situations or relations. Thus, terms (including appellations) can take the form of different parts of speech. Frequent parts of speech are noun, verb and adjective.

**EXAMPLE**

<table>
<thead>
<tr>
<th>Term</th>
<th>Part of speech</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;hard disk&quot; (information technology)</td>
<td>noun</td>
</tr>
<tr>
<td>&quot;output&quot; (economics)</td>
<td>verb or noun</td>
</tr>
<tr>
<td>&quot;constant&quot; (mathematics)</td>
<td>adjective or noun</td>
</tr>
<tr>
<td>&quot;Adobe® Acrobat® X Pro&quot;</td>
<td>noun</td>
</tr>
</tbody>
</table>

4) Adobe® Acrobat® X Pro is a trademark of Adobe Systems. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of the product named.

Terms (including appellations) shall be formed in accordance with the principles in 7.6.2. For examples of term formation methods, see Annex B.

##### 7.3.2 Types of terms

Terms are categorized according to various criteria:

- preferred term, admitted term, deprecated term (according to acceptability rating);
- complex term, simple term (according to structure);
- borrowed term (according to term formation method).

For more details, see the concept diagrams and concept models in ISO 1087:2019, Figures A.7 to A.10.

##### 7.3.3 Types of appellations

Appellations are categorized according to the type of identical objects to which they refer:

- products and services;
- scientific and technological phenomena;
- honorary distinctions;
- living organisms and other entities covered by nomenclatures (see also 7.3.4);
- documents;
- professional positions.
For more details on the various categories of appellations in English, see Clause C.2.

7.3.4 Nomenclatures

A nomenclature forms a system of designations used by an individual or a community, especially those used in a particular science, art or discipline. Nomenclatures are widely used by standardization bodies to facilitate rigorous and efficient communication. International bodies of expert communities are responsible for laying down the rules for designations in their domain or subject.

EXAMPLE

The International Committee on Systematics of Prokaryotes is responsible for the International Code of Nomenclature of Prokaryotes.

The International Union of Pure and Applied Chemistry is responsible for rules about nomenclatures in the domain of chemistry.

The International Commission on Zoological Nomenclature is responsible for the International Code of Zoological Nomenclature.

7.4 Proper names

7.4.1 General

Proper names represent individual concepts. In natural languages with grammatical number, a proper name shall designate an individual concept even if the proper name is morphologically in the plural. When recording the proper name in a terminology resource, the form of the proper name shall respect usage, i.e. it should be recorded whether the words that make up the proper name are in the singular or the plural (see Example 1 below).

EXAMPLE 1

In English, the singularity of the object is reflected in the grammar. Even though the proper name for the country 'United States of America' is plural in form, it designates an individual concept, thereby taking a singular verb in a sentence: "The United States of America stretches over thousands of miles of territory". There was a time in the early 1800s when the plural verb was used but, as the states were viewed increasingly as a single object, the singular verb was then adopted.

NOTE Not all natural languages indicate singularity in the same way, and some natural languages do not indicate it at all.

A proper name shall be a unique identifier. Where there is a possibility of confusion, jurisdictional markers, place names, dates, years or numbers shall be added (see Example 2 below).

EXAMPLE 2

Jurisdictional marker: "General Assembly of the United Nations" versus "General Assembly of the Organization of American States".

Place name: "Paris, France" versus "Paris, Michigan (USA)".

Date, year or number: "2019 Nobel Peace Prize" versus "2018 Nobel Peace Prize".

Some proper names are subject to time considerations. For example, a proper name can refer to an object that no longer exists or that has evolved over time (see Example 3 below).

EXAMPLE 3

The proper name "Ministry of Consumer and Commercial Relations" of Ontario, Canada, changed to "Ministry of Consumer and Business Services" in March 2001.
When it is clear, for example from the grammar or the context, that a proper name is used as a modifier in a longer expression, the expression shall no longer be considered a proper name. The expression shall be considered to designate a general concept and can become a term (see Example 4 below).

**EXAMPLE 4**

"United Nations" is a proper name but "United Nations agency" is not. In English, the use of the lower case noun in the expression (as "agency" above) signals a general concept and not an individual concept. However, not all natural languages indicate the difference graphically.

Proper names are often associated with a certain level of official status by an authorizing body or organization. Each organization decides the form of proper names best suited to meet its individual requirements and confers an official status to its proper names. In this way, proper names are somewhat arbitrary in comparison to terms, which are generally accepted by the relevant expert community.

The nature of proper names can present a challenge in the writing of definitions in that it can be difficult to identify delimiting characteristics. For this reason, a definition may include references to the relevant object.

### 7.4.2 Types

Proper names can refer to different types of objects:

- persons;
- institutions;
- commercial enterprises;
- places;
- human settlements;
- streets and public spaces;
- countries;
- bodies of water;
- weather phenomena;
- buildings;
- points in time or time periods;
- events;
- means of transport;
- works of art;
- astronomical objects.

**NOTE** Personal names such as “Susan Jones” or “John Smith” are proper names as well but can be of terminological interest only in very specific work environments.

For more details on the various categories of proper names in English, see Clause C.3.

### 7.5 Symbols

Symbols are an important aid to intralingual and interlingual communication. They are often part of symbol systems. Some of these symbol systems facilitate international communication, as their visual representation of concepts functions independently of any given natural language. They can
communicate information directly under difficult circumstances (e.g. traffic signs, airport signs). Whenever the technology allows for their integration into terminology resources, they can be added as synonyms for a term or proper name. Only non-linguistic representations that represent concepts are considered symbols.

Symbols should be:
- simple and easy to recognize and, if possible, self-explanatory;
- monosemic in a specific domain or subject (see 7.7.1);
- unambiguous;
- easy and economical to reproduce;
- consistent and appropriate, i.e. designed to permit coordination with and differentiation from other symbols.

If possible, symbols should bear some visual resemblance to the concept that they represent. In some cases, however, the visual resemblance of the symbol to the concept is less pronounced or completely lost. The concept represented can be no longer directly recognizable and can be supported only by general agreement (see Example 1 below).

**EXAMPLE 1**

| Symbols used in the domain of tourism to designate ‘hiking trail’ and ‘bird sanctuary’, respectively |
| ![Symbols ISO 7001 – PI TC 009 and ISO 7001 – PI TC 011](image) |

Symbol used in the domain of environmental protection to designate ‘recyclable’

![Symbol ISO 7000 – 1135](image)

Designations using a letter of the alphabet to communicate the shape of the letter itself rather than its sound shall not be considered symbols, but terms (see Example 2 below).

**EXAMPLE 2**

"U-turn" – a turn in the shape of a U  
"T-beam" – a beam, the cross-section of which is in the shape of a T

Characters that replace words or parts of words, such as symbols that designate mathematical operations or currencies, shall be considered symbols (see Example 3 below).

**EXAMPLE 3**

§, $, €, &, @, %, #, =, <, –

The linguistic designations of SI units (International System of Units) can be considered appellations, while the non-linguistic ones can be considered symbols rather than abbreviations: they do not vary from natural language to natural language, have no plural and are never written with full stops, except for normal sentence punctuation (see Example 4 below). For further details, see ISO 80000 (all parts) and IEC 80000 (all parts).
EXAMPLE 4

<table>
<thead>
<tr>
<th>Appellation</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;metre&quot;</td>
<td>m</td>
</tr>
<tr>
<td>&quot;second&quot;</td>
<td>s</td>
</tr>
<tr>
<td>&quot;metre per second&quot;</td>
<td>m/s</td>
</tr>
<tr>
<td>&quot;metre per second squared&quot;</td>
<td>m/s²</td>
</tr>
</tbody>
</table>

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 abbreviations (see Example 5 below and B.2.4).

EXAMPLE 5

A4 (paper format in accordance with ISO 216, 210 mm × 297 mm).

7.6 Formation of terms (including appellations) and proper names

7.6.1 General

Patterns for the formation of terms (including appellations) and proper names depend on the lexical, morphosyntactic and phonological structures of individual natural languages. Therefore, specific principles of the formation of terms (including appellations) and proper names should only be described in national and regional standards dealing with a particular natural language rather than in International Standards. (For examples of term formation methods for English, see Annex B.)

For a standardized terminology, it is desirable that a designation be assigned to a single concept. Before creating a new term, a new appraisal or a new proper name, it is necessary to ascertain whether a designation already exists for the concept in question. Well-established usage shall be respected. Established and widely used designations, even if they are poorly formed or opaque, should not be changed unless there are compelling reasons. For examples based on the principle of appropriateness, see 7.6.2.3.

The following principles should be followed in the formation of terms (including appellations) and proper names, as appropriate as possible to the natural language in question. (For examples of term formation methods for English, see Annex B.)

— transparency (see 7.6.2.1);
— consistency (see 7.6.2.2);
— appropriateness (see 7.6.2.3);
— conciseness (see 7.6.2.4);
— derivability and compoundability (see 7.6.2.5);
— linguistic correctness (see 7.6.2.6);
— preference for a given natural language (see 7.6.2.7);
— transliteration and transcription (see 7.6.2.8).

These principles are not all applicable simultaneously for any one term, appellation or proper name. However, they can provide assistance when creating new terms, new appellations or new proper names or when systematizing existing terminologies. If several designations exist for a single concept, the one that satisfies the largest number of principles described in 7.6.2 shall be selected as the preferred designation.
7.6.2 Principles

7.6.2.1 Transparency

A term or proper name is transparent when the concept that it designates can be inferred, at least partially, without a definition or other type of information supplementing or replacing a definition (see 6.6). In other words, the concept expressed by a term or proper name can be deduced from their linguistic elements. For a term or proper name to be transparent, a key characteristic – usually a delimiting characteristic – is expressed in the term or proper name itself. Only characteristics unlikely to change quickly as a result of technological evolution should be used. Otherwise, one can be faced with the task of renaming the concept as soon as the technology changes.

EXAMPLE

"torque wrench" versus "monkey wrench"

The term "torque wrench" (wrench used to measure torque, usually when tightening a nut or bolt component of an assembly) is transparent. However, the term "monkey wrench" (based on the personal name of its supposed inventor, "Moncky") is opaque.

"thermal noise" versus "Johnson noise"

Similarly, the term "thermal noise" is more transparent than the term "Johnson noise".

"National Commission on Terrorist Attacks Upon the United States" versus "Kean-Hamilton Commission"

The proper name "National Commission on Terrorist Attacks Upon the United States" is transparent since it clearly indicates the subject matter to be dealt with by the commission. Conversely, "Kean-Hamilton Commission", a proper name derived from the chair and vice-chair of the commission, is opaque.

7.6.2.2 Consistency

Existing terms and proper names as well as new terms and new proper names should integrate into and be consistent with the relevant concept system.

EXAMPLE

synthetic fabrics: "nylon", "orlon", "dacron", "rayon", etc.

Any designation for a new synthetic fabric is consistent (ends in "-on") and respects the pattern arising from the concept system.

position titles in a company: "VP of Finance", "VP of Marketing", "VP of Production", etc.

Any title for a new position at the same level is consistent ("VP of") and respects the pattern arising from the concept system.

7.6.2.3 Appropriateness

Proposed terms and proper names should adhere to familiar, established linguistic patterns used in a given natural language. Formations that cause confusion should be avoided.

EXAMPLE 1

The information technology term "install wizard" is confusing because it looks like a command (to install a wizard) rather than a term for a type of wizard (for installing software). The appropriate term is "installation wizard". It is clear and accurate and, therefore, unlikely to be mistranslated in localization projects.

Terms and proper names should be as neutral as possible. They should avoid distracting connotations, especially discriminatory ones.
EXAMPLE 2

In information technology, the term “blacklist” designates a list of URLs to be blocked by a web browser. Conversely, the term “whitelist” designates a list of URLs to be allowed by a web browser. Thus, the two terms have negative and positive connotations related to the colours black and white, respectively. Therefore, they can be considered discriminatory. The newer terms “blocklist” and “allowlist” are more neutral synonyms.

7.6.2.4 Conciseness

A term or proper name should be as concise as possible. Undue length is a serious shortcoming. It violates the principle of linguistic economy and it frequently leads to ellipsis (omission).

EXAMPLE 1

“e-mail” or "email" instead of “electronic mail”

The requirement for conciseness often conflicts with those for transparency and appropriateness (see 7.6.2.1 and 7.6.2.3, respectively). The greater the number of characteristics included in a term or proper name, the greater its transparency and appropriateness. However, increasing the number of characteristics expressed in a term or proper name often makes it too long and inconvenient to use. Practicality should govern any decision to give preference to one pattern of formation over another. For example, shortened forms should be favoured whenever a long, precise term or proper name is not suitable (e.g. oral communication in a factory). In contrast, complex terms, composed of several words or lexical units, are acceptable in academic publications.

In many cases, both a full form and abbreviations coexist. Abbreviations can produce synonyms or homonyms that do not occur if the full forms are used. It is a function of terminology work to draw attention to potential difficulties of this kind, and users of abbreviations need to be aware of the risk of misunderstanding. In documents, it is common practice to give the full form (together with the abbreviation) when the term or proper name first occurs, so that the abbreviation can be used throughout the rest of the document.

EXAMPLE 2

“World Health Organization (WHO)”, “European Union (EU)”

7.6.2.5 Derivability and compoundability

Productive formation of terms or proper names that allows derivatives and compounds should be favoured, according to whatever conventions prevail in an individual natural language.

EXAMPLE 1

“herb” versus “medicinal plant”

The term “herb” with its derived terms “herbaceous”, “herbal”, “herbalist” and “herby” is preferred over “medicinal plant”, which produces no derivatives.

EXAMPLE 2

The proper name (country name) “Saint Vincent and the Grenadines” produces both the adjective “Vincentian” and the synonym “of Saint Vincent and the Grenadines”. Based on the principle of conciseness (see 7.6.2.4), “Vincentian” is preferred over “of Saint Vincent and the Grenadines”.

SOURCE: Reference [62], p. 197.

7.6.2.6 Linguistic correctness

When new terms, new appellations or new proper names are coined, they should adhere to the morphological, morphosyntactic and phonological norms of the natural language in question.
7.6.2.7 Preference for a given natural language

Borrowing from other natural languages is accepted as a method for the formation of designations. However, designations that exist in the given natural language should be given preference over direct loans when appropriate (see B.4.2).

Sometimes, proper names are not translated but remain in their original natural language. However, an individual concept can have a proper name in different natural languages. Whether an individual concept has a proper name in more than one natural language depends on the following:

— the language policy of a country;
— how internationally well known the concept is;
— the multilingual nature of the object in question;
— the need for international cooperation.

EXAMPLE 1

In bilingual countries such as Canada, proper names associated with the federal government (agencies, procedures, regulations, etc.) exist in both English and French; in Switzerland, many proper names exist in French, German and Italian.

Major geographical entities, such as countries and their capitals, are internationally well known. Therefore, they have proper names in the various natural languages, e.g. "Italia", "Italy", "Italie", "Italia"; "United States", "États-Unis", "Estados Unidos", "Estado Unido", "Ameerika Ühendriigid". For details, see ISO 3166 (all parts).

Because of their international nature, many United Nations agencies have proper names in various natural languages, e.g. "Food and Agriculture Organization of the United Nations" ("FAO"), "Ernährungs- und Landwirtschaftsorganisation der Vereinten Nationen" ("FAO"), "Organisation des Nations Unies pour l'alimentation et l'agriculture" ("FAO"), "Organizzazione delle Nazioni Unite per l'alimentazione e l'agricoltura" ("FAO"), "De Forenede Nationers Levnedsmiddel- og Landbrugsorganisation" ("FAO"), "Organização das Nações Unidas para a Alimentação e a Agricultura" ("FAO"), "منظمة الأغذية والزراعة للأمم المتحدة" ("FAO").

EXAMPLE 2

In documents directed at an international target audience, proper names can be used in the original natural language if they are likely to be understood or they can be translated for the purposes of international cooperation and understanding. However, in a document directed at an international target audience, the Irish proper name "Áras an Uachtaráin" cannot be understood. Therefore, the English equivalent "The Official Residence of the President of Ireland" is a better alternative.

A proper name without an official equivalent in another natural language (issued by an authorizing body or organization) should normally be kept in the original natural language. In the case of legal entities, the proper name shall remain in the form recorded in the original legal document. Many proper names, however, have official equivalents in other natural languages that are commonly used and listed in standard references and such official equivalents should be used.

In the event of no official equivalent being available, a proper name can be either transliterated or transcribed (see 7.6.2.8). Alternatively, it can appear with an explanation or non-official equivalent (full form or abbreviation) as an aid to comprehension. Do not use a non-official equivalent in another natural language that denotes a different concept in that natural language.

7.6.2.8 Transliteration and transcription

In the dissemination of standardized terminologies, it can be necessary to render a designation written in one alphabet or non-alphabetic writing system into a different writing system. In such instances, the most authoritative system for transliteration or transcription shall be used. For transliteration or transcription into Latin characters, the latest International Standards shall be used (e.g. ISO 9, ISO 233, ISO 259, ISO 843, ISO 3602, ISO 7098, ISO 9984, ISO 9985, ISO 11940, ISO/IEC 10646 and the Unicode Standard[55]).
In the case of phonetic transcription, the latest version of the International Phonetic Alphabet (IPA) of the International Phonetic Association shall be used; see Reference [67].

7.7  Relations between designations and concepts

7.7.1  Mononymy and monosemy

Ideally, when precise and accurate communication is required in a given special language, the objective is to achieve both mononymy and monosemy (depending on the perspective taken) at least within one and the same domain or subject. This condition reduces ambiguity, while synonymy (see 7.7.2), polysemy and homonymy (see 7.7.5) can lead to ambiguity.

Designations characterized by mononymy are called mononyms. Designations characterized by monosemy are called monosemes.

**EXAMPLE**

| mononyms (and monosemes) | “electron”  
| “neutron”  
| “proton” |

7.7.2  Synonymy

Designations characterized by synonymy are called synonyms and are always interchangeable. However, if two or more designations are assigned to concepts whose intensions are almost identical, they are called quasi-synonyms and are interchangeable only in some situations.

**EXAMPLE**

| synonyms | “half-life” = “half value period”  
| “term bank” = “terminological data bank”  
| [SOURCE: ISO 1087: 2019, 3.7.3]  
| “learning management system” = “LMS”  
| [SOURCE: ISO/IEC 2382-36:2019, 3.3.1]  
| “drinking water” |

| quasi-synonyms | “dashboard” ≈ “instrument panel”  
| [SOURCE: ISO 7001:2007, PI PF 007] |

7.7.3  Equivalence

Designations characterized by equivalence are called equivalents. They play an important role in terminology work for multilingual communication.

**EXAMPLE**

| equivalents | “wavelength” (English) = “Wellenlänge” (German)  
| “United Nations” (English) = “Организация Объединённых Наций” (Russian) |
7.7.4 Antonymy

Designations characterized by antonymy are called antonyms. They designate contrary concepts or contradictory concepts (see 6.5.4).

EXAMPLE

<table>
<thead>
<tr>
<th>antonyms</th>
<th>“text production” ≠ “text reception” (contrary concepts, see 6.5.4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“lawful” ≠ “unlawful” (contradictory concepts, see 6.5.4)</td>
</tr>
</tbody>
</table>

7.7.5 Polysemy and homonymy

Designations in a given natural language can have identical forms, either phonetic or written, but designate different concepts. Designations characterized by polysemy are called polysemes and designate concepts that have something in common.

EXAMPLE 1

<table>
<thead>
<tr>
<th>polysemes</th>
<th>“bridge” (dental plate), “bridge” (structure to carry traffic over a gap)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“curve” (line in graphs), “curve” (bend in a road)</td>
</tr>
</tbody>
</table>

Designations characterized by homonymy are called homonyms and designate unrelated concepts.

EXAMPLE 2

<table>
<thead>
<tr>
<th>homonyms</th>
<th>“rock” (popular music), “rock” (mass of stone);</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“bank” (financial enterprise), “bank” (area alongside a river)</td>
</tr>
</tbody>
</table>

Homophones are phonetically identical but orthographically different designations that represent unrelated concepts. Conversely, homographs are orthographically identical but phonetically different designations that represent unrelated concepts. Homonyms are both written and pronounced the same way. Example 3 below shows homophones, homographs and homonyms (British English pronunciation).

EXAMPLE 3

<table>
<thead>
<tr>
<th>homophones</th>
<th>“sun” (celestial body) – “son” (male child) /sʌn/ – /sʌn/</th>
</tr>
</thead>
<tbody>
<tr>
<td>homographs</td>
<td>“tear” ([to] cry) – “tear” ([to] separate) /tɪə(r)/ – /teə(r)/</td>
</tr>
<tr>
<td>homonyms</td>
<td>“bloom” (efflorescence) – “bloom” (type of ingot) /bluːm/ – /bluːm/</td>
</tr>
</tbody>
</table>

7.7.6 Harmonization

Incidences of synonymy, polysemy or homonymy usually lead to the need for concept harmonization or term harmonization, which is part of the standardization process. The standardization of terminologies frequently implies concept harmonization and term harmonization within a domain or subject, across domains or subjects and across natural languages. To reduce duplication and cost, efforts should be made to harmonize whenever minor differences exist. For methods of concept harmonization and term harmonization, see ISO 860.

7.7.7 Acceptability rating

The terminology treated in an International Standard shall reflect a coherent concept system of the domain or subject in question. It shall be precise and lead to increased clarity in communication. Thus, in the case of terminology work carried out in standardization, an acceptability rating should be carried out by indicating designations as preferred, admitted or deprecated. On this basis, terminology users can decide which designation to use or to avoid.

A designation recommended by a technical committee or other authoritative body shall be considered preferred, whereas an admitted designation shall represent an acceptable synonym for a preferred
Designations that have been rejected are labelled as deprecated. Designations are rejected or deprecated for various reasons. A designation can be a synonym for the preferred designation but is deprecated in the interests of mononymy (see 7.7.1). A designation can be flawed or inaccurate.

**EXAMPLE 1**

- The term “fireproof” is misleading and inaccurate; the terms “fire-resistant” or “fire-retardant” are more precise (see 7.6.2.3).
- The term “prebake resistance” is not necessarily flawed, but it is deprecated in favour of “precure heat tolerance”, a more transparent term (see 7.6.2.1).

A designation considered deprecated for one concept can be reserved to designate another concept.

**EXAMPLE 2**

The term “terminology” is deprecated as a synonym for “terminology science”, but is used to represent the concept ‘set of designations and concepts belonging to one domain or subject’.  
**SOURCE:** ISO 1087:2019, 3.1.11 and 3.1.12.

A designation can be deprecated due to historical developments of the object(s) in question.

**EXAMPLE 3**

The historical proper name “Commission of the European Communities” is deprecated as a synonym for the current proper name “European Commission”.

A designation can become obsolete because it is no longer in common use.

**EXAMPLE 4**

The term “spiraec acid” is obsolete as a synonym for the current term “salicylic acid”.

The inclusion of a designation in a terminology resource can imply the deprecation of other designations that are used as synonyms in the relevant domain or subject. It is wise to consider these designations, to identify them explicitly as admitted or deprecated, and to explain any reasons for deprecation.
Annex A
(informative)

Other types of definitions

A.1 General
This document presents intensional definitions (see 6.2) and extensional definitions (see 6.3) as the main types of definitions used in terminology work. It acknowledges, however, that other types of definitions are in current usage in some situations. Those types of definitions that are most relevant in terminology work are treated in this annex.

A.2 Ostensive definitions
An ostensive definition, also called demonstrative definition or definition by pointing, represents the relevant concept by exhibiting mainly non-linguistic representations (e.g. a drawing, an illustration, a video, a sound clip or a computer animation). It can even point to one or more representative objects in the extension of the concept. With the increased availability of technology, ostensive definitions can use any form of multimedia. However, rather than being used on its own, an ostensive definition is best employed as a complement to a designation and an intensional definition, since it is not always clear what is being referred to or how far to generalize from the particular object exhibited. Furthermore, it can be difficult to deduce the superordinate concept from an ostensive definition.

There are various types of graphic representations:

— abstract illustrations;
— network diagrams;
— matrix diagrams;
— schematic diagrams;
— iconic illustrations;
— drawings and etchings;
— photographs;
— statistical diagrams;
— line charts;
— bar charts;
— pie charts;
— mixed figures that combine two or more forms.

An ostensive definition may be recognized as a definition on its own only in the rare cases where the non-linguistic representation can represent the concept in an analogous way to an intensional definition. Otherwise, it shall not be used as a definition but as supplementary information for inclusion in a note (see 6.6.5).
EXAMPLE 1

This statistical diagram is an ostensive definition of the concept 'exploded pie chart'.

**exploded pie chart**

An ostensive definition shall provide the same information as an **intensional definition**, i.e. the **superordinate concept** along with the **delimiting characteristics**.

EXAMPLE 2

The following abstract illustration can be used as an ostensive definition of the concept 'equilateral triangle'.

**Intensional definition** (using **characteristics** based on a **generic relation**):

**equilateral triangle**

triangle that has all three sides the same length

**Ostensive definition:**

**equilateral triangle**

\[
\begin{array}{c}
a \\
\end{array}
\]

**Generic concept:** 'triangle'.

**Delimiting characteristic:**

— ‘all three sides being the same length, where \( a = \text{length} \).

Iconic illustrations present **objects** or their **properties**. They are especially useful in complementing **partitive extensional definitions** since they show the relation between a whole and its parts.
EXAMPLE 3

A saw bench (with and without sliding table) and its parts
<machine tools>

a) Saw bench

b) Saw bench with sliding table

Key

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>riving knife</td>
</tr>
<tr>
<td>2</td>
<td>saw blade guard</td>
</tr>
<tr>
<td>3</td>
<td>saw blade guard support</td>
</tr>
<tr>
<td>4</td>
<td>fixed guard beneath table</td>
</tr>
<tr>
<td>5</td>
<td>rip fence</td>
</tr>
<tr>
<td>6</td>
<td>cross-cut fence</td>
</tr>
<tr>
<td>7</td>
<td>table insert</td>
</tr>
<tr>
<td>8</td>
<td>machine table</td>
</tr>
<tr>
<td>9</td>
<td>extension table</td>
</tr>
<tr>
<td>10</td>
<td>controls</td>
</tr>
<tr>
<td>11</td>
<td>exhaust outlet</td>
</tr>
<tr>
<td>12</td>
<td>push stick</td>
</tr>
<tr>
<td>13</td>
<td>cutting height adjustment</td>
</tr>
<tr>
<td>14</td>
<td>sliding table</td>
</tr>
<tr>
<td>15</td>
<td>inclination adjustment</td>
</tr>
</tbody>
</table>

[SOURCE: ISO 19085-9:2019, 3.2]

Iconic illustrations are also useful for clarifying associative relations between concepts.

EXAMPLE 4

Data quality management process, part “implementation” (concepts connected by a temporal relation)

data quality management
<automation systems>

<table>
<thead>
<tr>
<th>(Plan)</th>
<th>(Do)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Quality Planning</td>
<td>Data Quality Control</td>
</tr>
<tr>
<td>Data Quality Improvement</td>
<td>Data Quality Assurance</td>
</tr>
</tbody>
</table>

(Act) (Check)

However, the object or mainly non-linguistic representation depicted in the ostensive definition should not be confused with the concept itself. A graphic representation is but a depiction of only one object among all the other objects that make up the extension of the concept. For this reason, a graphic representation of a concept is best used to complement a definition. A graphic representation complements a definition well if it further clarifies the characteristics of a given concept and/or its relations to other concepts. Graphic representations can provide a means of visualizing a concept that can be difficult to grasp from definitions alone.

**EXAMPLE 5**

This picture of a fir tree can be used to illustrate the concept ‘tree’, but not to define it. However, the illustration is merely a representation of the object, not the object itself. Furthermore, the specific fir tree illustrated is not the same as the concept ‘tree’, whose extension includes other objects such as ‘deciduous trees’.

### A.3 Lexical definitions

Dictionaries describing general language often contain lexical definitions, also called lexicographic(al) definitions or dictionary definitions. A terminology resource can include such lexical definitions in the following cases: when the superordinate concept of a concept is not specialized or when the top superordinate concept has become so generalized it no longer qualifies as a concept of the relevant domain or subject. Lexical definitions can be the basis for producing précising definitions (see Clause A.4).

**EXAMPLE**

The generic concept for ‘mouse pad’ is ‘pad’ and is a candidate for the relevant concept system.

- **pad**
  - thin, cushionlike mass of soft material, used to fill, to give shape, or to protect against jarring, scraping or other injury
  - SOURCE: Reference [64].

### A.4 Précising definitions

Précising definitions, also called precise definitions or exacting definitions, can be necessary when adapting a definition to a specific domain or subject. Terminological analysis can begin with a lexical definition (a more vague description) and can involve turning it into a précising definition. The objective is to identify the given concept designated by a designation. The specific domain or subject shall be clearly indicated at the beginning of the definition.

A précising definition narrows the objects in the extension of the concept by adding more precise characteristics to a lexical definition. Therefore, the concept ‘fish’ is made more precise by specifying characteristics that limit the concept to the domain of ichthyology. In the end, an intensional definition can be written based on the précising definition.

**EXAMPLE**

- **Lexical definition:** fish
  - A limbless cold-blooded vertebrate animal with gills and fins living wholly in water.
  - SOURCE: Reference [75].

- **Précising definition:** fish
  - [ichthyology] any of a large group of cold-blooded, finned aquatic vertebrates, divided into three classes: Agnatha, Chondrichthyes and Osteichthyes
  - SOURCE: Based on Reference [59].
Intensional definition: fish
<ichthyology> cold-blooded, finned aquatic vertebrate
NOTE There are three classes of fish: Agnatha, Chondrichthyes and Osteichthyes.
SOURCE: Based on Reference [59].

A.5 Stipulative definitions

A.5.1 Using stipulative definitions

Where a concept needs to be interpreted specifically based on a unique situation, it can be described by a stipulative definition. Stipulative definitions do not follow common terminological practice, but serve the specific purposes of individual bodies, e.g. standards bodies, legislators or businesses. They should be used only when absolutely necessary.

When the concept is limited to a given situation and the need for a stipulative definition is valid, it shall be clearly identified as such. The definition shall begin with a qualifier, such as "For the purposes of <document name>, ...". Stipulative definitions shall be located only within the parent document or set of related documents to which they apply. In some cases, they are identified with special wording, such as "Definition specific to this standard".

A stipulative definition can narrow or widen the extension of the concept. It can thus contradict the norms of understanding in its domain or subject, while a précising definition does not.

EXAMPLE

Stipulative definition: obstruction
In this Act, [...] obstruction means any slide, dam or other thing impeding wholly or partially the free passage of fish [...].
SOURCE: Reference [61], p. 3.

A.5.2 Writing stipulative definitions

A particular context rarely refers to all the objects making up the extension of a concept. Definitions in laws and regulations tend to be interpretive and are often stipulative definitions. The stipulative definition defines a (new) concept that is narrower than the one usually represented by the designation. The stipulative definition is not inaccurate with regard to this (new) concept, only with regard to the usual one. Therefore, it is important to include a specification clause at the beginning of the definition (see the Example below). Definitions in International Standards are defining rather than interpretive. If a concept is restricted to a particular interpretation, it shall be explained in the body of the International Standard rather than by creating a new concept with a smaller extension. If specification information is associated with the concept, then this shall be given in an appropriate specification clause rather than in a definition.

The following definition of 'organization' does not define the concept 'organization' but merely signals how to interpret the concept in a given situation. From all the objects that make up the extension of the concept 'organization', this stipulative definition considers only those not operating for profit.

EXAMPLE

<table>
<thead>
<tr>
<th>definition too narrow</th>
<th>organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>for the purposes of this regulation, a body not operating for profit</td>
<td></td>
</tr>
</tbody>
</table>
Examples of term formation methods

B.1 General

The examples found in this annex are based on English and are not intended to cover all the methods used for English term formation. For a more complete description of the various formation methods of English, reference works on word formation should be consulted.

Patterns of term formation depend on the lexical, morphosyntactic and phonological structures of individual natural languages. Therefore, general requirements and recommendations cannot be given in an International Standard. For example, each natural language has its own rules for abbreviating full forms of terms. Also, conventions of the natural language in question dictate whether a term consists of a single lexical element, several morphological elements combined to form a single unit, several words arranged in a string, or a terminological phrase. Therefore, this annex should not be translated but adapted to the specific rules applicable to the natural language in question.

The following methods of term formation apply to English and can also apply to other natural languages:

— coining new terms (see Clause B.2);
— using existing forms (see Clause B.3);
— translingual borrowing (see Clause B.4).

B.2 Coining new terms

B.2.1 General

A new term is specifically coined. Term formation methods such as derivation, compounding or the creation of abbreviations can be used to coin new terms.

B.2.2 Derivation

Derivation involves forming a new term by adding one or more morphological elements, or affixes, to a word or lexical unit.

EXAMPLE

<table>
<thead>
<tr>
<th>combination</th>
<th>meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>phosphor + -ous</td>
<td>“phosphorous”</td>
</tr>
<tr>
<td>co- + education + -al</td>
<td>“co-educational”</td>
</tr>
<tr>
<td>de- + tox(i)n + -fi- + -cation</td>
<td>“detoxification”</td>
</tr>
</tbody>
</table>

B.2.3 Compounding

Compounding involves combining existing words or lexical units into a new term that contains two or more roots but designates a single concept. The result of compounding can be complex terms, compound terms, phrases or blends. The elements of the complex term or phrase often include qualifiers to a term for the superordinate concept in the form of adjectives, proper names, nouns or verbal qualifiers, and can be joined by a hyphen or cannot be joined at all. Therefore, complex terms consist of more than one word or lexical unit. Compound terms result from fusing and thus are considered single-word terms.
As stated in Clause B.1, the rules for the structuring of terms are more or less strict in various natural languages. English, in particular, allows much freedom in this respect and, consequently, the difference between compound terms and complex terms is often blurred (see the Example below). Blends result from fusing two or more words, after one or more of them have been clipped (see B.2.4).

**EXAMPLE**

| Complex terms | (joined by hyphenation): “composer-conductor”, “high-definition television” |
| Compound terms | (not joined): “member country”, “information highway”, “street car” |
| Phrase | “handle with care” |
| Blends | (joined by fusing): “downsizing”, “outflow”, “streetcar” |
| Blends | (back and front clipping) “information” + “entertainment” = “infotainment” |
| Blends | (back and back clipping) “cybernetics” + “organism” = “cyborg” |
| Blends | (one back clipping only) “cybernetics” + “space” = “cyberspace” |
| Blends | (back and front/back clipping) “quasi”+ “stellar object” = “quasar” |
| Blends | (back, back and middle clipping) “surface + active + agent” = “surfactant” |

**B.2.4 Creation of abbreviations**

Excessive length makes some terms difficult to use. Abbreviations can be created in different ways. Good writing practice dictates that both the full form of a term and its abbreviation are indicated the first time a potentially unfamiliar abbreviation is used in a text. In general, an abbreviation should be easy to pronounce.

In English, types of abbreviations include:
- short forms;
- acronyms;
- initialisms;
- clipped terms.

Short forms use fewer words to designate the same concept than the corresponding full forms. In some cases, they are pronounced as their written form suggests. In some cases, they are non-pronounced, i.e. the relevant full form is pronounced instead.

**Acronyms** are created by combining initial letters or syllables from each or some of the elements of the full form. The new term is pronounced syllabically like a word.

**Initialisms** are created by using the first letter (or sound) of each or some of the elements of the full form of a term. Initialisms are pronounced letter by letter.

**Clipped terms** are formed by truncating the front, middle or back portion of a term. Both ends can also be truncated.

Other abbreviations are created by omitting words and/or parts of a word making up a term. In some cases, the first letter of a word suffices. Still other abbreviations are created by replacing parts of the term by an arbitrary string of characters. In others, the first letters of short phrases are grouped together. Such abbreviations can end with a full stop.
EXAMPLE 1

<table>
<thead>
<tr>
<th>Full form</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Intergovernmental Group of Twenty-Four on International Monetary Affairs and Development&quot;</td>
<td>&quot;Group of Twenty-Four&quot;</td>
</tr>
<tr>
<td>&quot;page&quot;</td>
<td>&quot;p.&quot;</td>
</tr>
<tr>
<td>&quot;United Nations Educational, Scientific and Cultural Organization&quot;</td>
<td>&quot;UNESCO&quot;</td>
</tr>
<tr>
<td>&quot;disc operating system&quot;</td>
<td>&quot;DOS&quot;</td>
</tr>
<tr>
<td>&quot;light amplification by stimulated emission of radiation&quot;</td>
<td>&quot;laser&quot;</td>
</tr>
<tr>
<td>&quot;United Nations&quot;</td>
<td>&quot;UN&quot;</td>
</tr>
<tr>
<td>&quot;ante meridiem&quot;</td>
<td>&quot;a.m.&quot;</td>
</tr>
<tr>
<td>&quot;personal computer&quot;</td>
<td>&quot;PC&quot;</td>
</tr>
<tr>
<td>&quot;parachute&quot;</td>
<td>&quot;chute&quot;</td>
</tr>
<tr>
<td>&quot;influenza&quot;</td>
<td>&quot;flu&quot;</td>
</tr>
<tr>
<td>&quot;prefabricated house&quot;</td>
<td>&quot;prefab&quot;</td>
</tr>
<tr>
<td>&quot;Public Law&quot; (United States of America)</td>
<td>&quot;Pub. L.&quot;</td>
</tr>
<tr>
<td>&quot;Official Journal L Series&quot; (European Union)</td>
<td>&quot;OJ L&quot;</td>
</tr>
<tr>
<td>&quot;globalization&quot;</td>
<td>&quot;G11N&quot; (11 reflects the number of letters)</td>
</tr>
</tbody>
</table>

Terms can be formed by any combination of term formation methods.

EXAMPLE 2

<table>
<thead>
<tr>
<th>Full form</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;solid-state drive technology&quot;</td>
<td>&quot;SSD technology&quot;</td>
</tr>
<tr>
<td>&quot;AIDS (Acquired Immune Deficiency Syndrome) related complex&quot;</td>
<td>&quot;ARC&quot;</td>
</tr>
</tbody>
</table>

There are also shortened forms that are no abbreviations because they are not derived from a corresponding full form or there is no full form at all. Still, such independent shortened forms can be of interest in terminology work.

EXAMPLE 3

<table>
<thead>
<tr>
<th>Full form</th>
<th>Independent shortened form</th>
</tr>
</thead>
<tbody>
<tr>
<td>[&quot;wireless fidelity&quot;: only invented for promotional purposes]</td>
<td>&quot;wi-fi&quot;</td>
</tr>
<tr>
<td>&quot;International Organization for Standardization&quot;</td>
<td>&quot;ISO&quot;</td>
</tr>
</tbody>
</table>

B.3 Using existing forms

B.3.1 General

Existing forms can be used to create new terms by term formation methods and processes such as conversion, terminologization, semantic transfer and borrowing. It should be borne in mind that using
existing forms can lead to polysemy or homonymy (see 7.7.5), and as a result lead to confusion and ambiguity. However, existing terms can be used to create new terms, e.g. by derivation or compounding (see B.2.2 and B.2.3, respectively).

B.3.2 Conversion

New terms can be created by changing the syntactic category (e.g. part of speech) of existing forms.

EXAMPLE

<table>
<thead>
<tr>
<th>domain</th>
<th>existing term</th>
<th>new term</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;economics&gt;</td>
<td>“output” (noun)</td>
<td>“output” (verb)</td>
</tr>
<tr>
<td>&lt;mathematics&gt;</td>
<td>“constant” (adj.)</td>
<td>“constant” (noun)</td>
</tr>
<tr>
<td>&lt;environmental protection&gt;</td>
<td>“empty” (adj.)</td>
<td>“empty” (verb), “empty” (noun)</td>
</tr>
</tbody>
</table>

B.3.3 Terminologization

Terminologization is the process by which an expression from general language is transformed into a term. Terms produced in the course of terminologization can be accompanied by précising definitions and stipulative definitions (see Clauses A.4 and A.5, respectively).

EXAMPLE 1

<table>
<thead>
<tr>
<th>general language:</th>
<th>“circuit”</th>
</tr>
</thead>
<tbody>
<tr>
<td>domain of electrical engineering:</td>
<td>line enclosing an area</td>
</tr>
<tr>
<td>domain of electrical engineering:</td>
<td>arrangement of devices or media through which electric current can flow</td>
</tr>
</tbody>
</table>

Sometimes the new term can be based on a literary allusion.

EXAMPLE 2

<table>
<thead>
<tr>
<th>line from Finnegans Wake (James Joyce):</th>
<th>“quark”</th>
</tr>
</thead>
<tbody>
<tr>
<td>domain of nuclear physics:</td>
<td>Three quarks for Muster Mark!</td>
</tr>
<tr>
<td>domain of nuclear physics:</td>
<td>one of a group of six elementary particles having electric charges of magnitude one-third or two-thirds that of the electron</td>
</tr>
</tbody>
</table>

Occasionally, new terms develop through the widespread usage of a particular tradename that has become a generic term (see C.2.2 and C.3.3).

EXAMPLE 3

<table>
<thead>
<tr>
<th>“Hoover®”5):</th>
<th>tradename of a company founded to manufacture vacuum cleaners</th>
</tr>
</thead>
<tbody>
<tr>
<td>“hoover”:</td>
<td>term used (mainly in Britain and Ireland) to designate any vacuum cleaner and also the act of vacuum-cleaning</td>
</tr>
</tbody>
</table>

5) Hoover® is a trademark of Techtronic Floor Care Technology Limited. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of the products named.

B.3.4 Semantic transfer within a special language

Semantic transfer is the process whereby an existing term within a special language is used to designate another concept by logical extension: terms designating a concept corresponding to material objects can be extended to immaterial objects, a part extended to the whole, a container extended to the substance contained, etc.
EXAMPLE

<table>
<thead>
<tr>
<th>material:</th>
<th>part of a computer monitor on which information is displayed</th>
</tr>
</thead>
<tbody>
<tr>
<td>immaterial:</td>
<td>information displayed on a computer screen</td>
</tr>
</tbody>
</table>

**B.3.5 Transdisciplinary borrowing**

In *transdisciplinary borrowing*, a *term* from one *domain* or *subject* is borrowed and assigned to a new *concept* in another *domain* or *subject* within the same *natural language*. The *characteristics* that make up the *intension* of the *concepts* in the two *domains* or *subjects* are often comparable by analogy.

**EXAMPLE**

<table>
<thead>
<tr>
<th>&lt;medicine&gt;</th>
<th>&quot;virus&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>infectious agent that causes diseases</td>
<td></td>
</tr>
</tbody>
</table>

| <computer science> | infectious agent that causes computer malfunctions |

**B.4 Translingual borrowing**

**B.4.1 General**

Existing *terms* or *concepts* in one *natural language* can be introduced into another *natural language* by *borrowing*, either by *direct loan* or *loan translation*.

**B.4.2 Direct loan**

Existing *terms* are frequently adopted from one *natural language* to another if there is no current *term* for the *concept* in the second *natural language*. The *borrowed term* can be pronounced, spelled or inflected differently in the borrowing *natural language*.

**EXAMPLE**

<table>
<thead>
<tr>
<th>German “Raster”</th>
<th>⇒ English “raster” (digitized grid)</th>
</tr>
</thead>
<tbody>
<tr>
<td>English “starboard”</td>
<td>⇒ Dutch “stuurboord” (right side of a ship)</td>
</tr>
</tbody>
</table>

**B.4.3 Loan translation**

*Loan translation*, also called calque translation, is a term formation method whereby the morphological elements of a *term* in another *natural language* are translated to form a *new term*.

**EXAMPLE**

<table>
<thead>
<tr>
<th>German “Weltanschauung”</th>
<th>⇒ English “worldview”</th>
</tr>
</thead>
<tbody>
<tr>
<td>English “long-term storage”</td>
<td>⇒ French “stockage à long terme”</td>
</tr>
<tr>
<td></td>
<td>⇒ Spanish “almacenamiento a largo plazo”</td>
</tr>
</tbody>
</table>
Annex C
(informative)

Appellations and proper names

C.1 General

This annex describes those categories of *appellations* and *proper names* in English that are most relevant in *terminology work*. It is not in itself a comprehensive classification system. Since not all rules for the formation of *appellations* and *proper names* apply to all *natural languages*, this annex should be adapted rather than translated for *natural languages* other than English. Furthermore, this annex covers the relation between *appellations* and *proper names*.

Depending on the circumstances of communication, an *appellation* can become a *proper name*, and vice versa. Typically, a *proper name* contains an additional distinctive element that sets it apart from the similar *appellation*. In this way, the *proper name* creates a link to a unique *object*, while the *appellation* without the distinctive element refers to *objects* within a group of identical *objects*. Frequently, an *appellation* and *proper names* of *objects* in the *extension* of the *concept* represented by the *appellation* take very similar forms. Sufficient distinctions shall be made to clearly use one or the other.

**EXAMPLE**

<table>
<thead>
<tr>
<th>Appellation</th>
<th>Proper name</th>
<th>Distinctive element</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Nobel Peace Prize&quot;</td>
<td>&quot;2019 Nobel Peace Prize&quot;</td>
<td>year</td>
</tr>
<tr>
<td>&quot;Montreal International Jazz Festival&quot;</td>
<td>&quot;Montreal International Jazz Festival, 40th edition&quot;</td>
<td>reoccurrence</td>
</tr>
<tr>
<td>&quot;Archbishop&quot;</td>
<td>Archbishop of Brisbane</td>
<td>place name</td>
</tr>
<tr>
<td>&quot;President of the United States&quot;</td>
<td>44th President of the United States</td>
<td>order of appearance</td>
</tr>
<tr>
<td>&quot;TGV&quot;</td>
<td>&quot;TGV 6702&quot;</td>
<td>number</td>
</tr>
</tbody>
</table>

C.2 Categories of appellations

C.2.1 General

There are many categories of *appellations*. The most important ones for *terminology work* are described in C.2.2 to C.2.7.

C.2.2 Product names

Product names refer to products (goods) or services. Because of their economic impact, they are of growing interest in *terminology work*. For commercial enterprises, their product names play a strategic role in the market and can be a unique selling point compared to competitors. Therefore, commercial enterprises seek legal protection for their product names in the form of trademarks or registered trademarks (see also C.3.3).

**EXAMPLE 1**

"Stella Artois®" (a beer), "Road King®" (a motorcycle).6)

6) Stella Artois® is a trademark of Anheuser-Busch InBev S.A. and Road King® is a trademark of Harley-Davidson. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of the products named.
Sometimes, a legally protected trademark becomes a generic term over time due to its widespread use.

**EXAMPLE 2**

The product name “Sellotape®” has become a generic term in the form of the verb “sellotape” (stick things together using tape). The product name “Xerox®” has become a generic term in the form of the verb “xerox” (copy a document using a photocopier).  

7) Sellotape® is a trademark of Henkel AG & Co. KGaA and Xerox® is a trademark of Xerox Corporation. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of the product named.

### C.2.3 Names of scientific and technological phenomena

Names of scientific and technological phenomena refer to scientific laws and effects indicated by the name of their inventor or the place of invention, technological methods, etc.

**EXAMPLE**

“Compton effect”, “Linz-Donawitz steelmaking”.

### C.2.4 Names of honorary distinctions

Names of honorary distinctions refer to awards, trophies, medals, decorations, honorary titles, etc. Some names of honorary distinctions can become proper names (see Clause C.1).

**EXAMPLE**


### C.2.5 Names covered by nomenclatures

Names covered by nomenclatures are used in many domains. Depending on the domain in question, such appellations are formed using elements of Latin, Ancient Greek or various living natural languages (see also 7.3.4). Molecular formulae for chemical compounds are appellations and can be treated as synonyms for terms.

**EXAMPLE**


**NOTE** Generally, nomenclatures are freely available on the internet.

### C.2.6 Document names

Document names refer to documents that exist in several editions. They include various pieces of legislation, treaties, agreements, licences and permits, policies, directives, standards and guidelines, frameworks, forms, etc. This category also includes degrees, diplomas, certificates and professional qualifications.

**EXAMPLE**

C.2.7 Position titles

Position titles refer to particular jobs within a given work environment with specific tasks. They are different from occupational titles or job titles that are not considered appellations. Some position titles can become proper names (see Clause C.1).

EXAMPLE 1

The term “minister” designates various occupations depending on the domain or subject. Conversely, the position title “Prime Minister” is an appellation.

Position titles can include civil, military, religious or academic ranks. Modifiers are often used to indicate a ranking or hierarchical relationship. Titles of courtesy (forms of address) and titles of nobility are also considered position titles, e.g. “His Majesty the Emperor of Japan”.

EXAMPLE 2

United States Air Force non-commissioned officer ranks: “Airman Basic”, “Airman”, “Airman First Class”, “Senior Airman”, “Staff Sergeant”.

Transport of London hierarchy: “Commissioner”, “Managing Director – Surface Transport”, “Director of Network Management”.

“Executive”, “Assistant Deputy” and “Deputy” are modifiers used to indicate administrative ranking in the Ontario Ministry of Health and Long-Term Care: “Director”, “Executive Director”, “Assistant Deputy Minister”, “Deputy Minister”, “Minister”.

C.3 Categories of proper names

C.3.1 General

There are many categories of proper names. The most important ones for terminology work are described in C.3.2 to C.3.16. Whenever possible, the terms used have been taken from the state-of-the-art literature in onomastics (name studies); see References [63], [66] and [79]. There is a tradition in onomastics to form terms for proper names by using elements of Ancient Greek. When such a term exists for the relevant category of proper name, it is used in the heading, either as the only term or as a synonym.

C.3.2 Institutional names

Institutional names refer to independent entities that operate on a non-profit basis, such as public organizations, associations, boards, commissions, committees, federations or panels. Institutional names of administrative units can be combined with place names (see C.3.4) to make them unique and to distinguish one from the other. Generic terms such as “branch”, “bureau”, “centre”, “department”, “division”, “office”, “secretariat”, “section” or “unit” can be officially part of the wording that makes up an institutional name.

EXAMPLE


C.3.3 Company names

Company names, also called business names or firm names, refer to commercial enterprises, i.e. private legal entities that usually operate on a for-profit basis.
EXAMPLE 1

“Virtual Advertising Corporation” (fictitious), “Metallic Engineering Industries” (fictitious).

For commercial enterprises, their business names play a strategic role in the market and can be a unique selling point compared to competitors. Therefore, commercial enterprises seek legal protection for their business names in the form of trademarks or registered trademarks (see also C.2.2).

Sometimes, a legally protected trademark becomes a generic term over time due to its widespread use.

EXAMPLE 2

The business name “Xerox®” has become a generic term in the form of a verb “xerox” (copy a document using a photocopier).

8) Xerox® is a trademark of Xerox Corporation. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of the products named.

C.3.4 Place names

Place names refer to natural or artificial geographical features. Place names are often officially approved by an authoritative body at the local, national or international level. Place names can include a generic element and a specific element. The generic element is the part that describes a general class to which a specific geographical feature belongs. The specific element is the part that identifies the specific geographical feature. In terminology work for multilingual communication, the general rule is that the generic element is expressed in the other relevant natural language(s) while the specific element is generally kept in the original natural language.

EXAMPLE

“Oak Ridges Moraine”, “Ontario”, “Iqaluit”.

In “Garden Bay Lake”, the generic element is “Lake” while the specific element is “Garden Bay”. Only the generic element is expressed in other natural languages, e.g. in French or Spanish. The specific element “Garden Bay” is left in English: “lac Garden Bay” in French or “lago Garden Bay” in Spanish.

However, there are exceptions to this rule, e.g. if the apparent generic element is deemed to be part of the specific element: “Rocky Mountains”, “Bay of Biscay”. In such cases, the entire proper name is either left in the original natural language (“Rocky Mountains”) or rendered fully in the other natural language (“golfo de Gascogne”, “golfo de Vizcaya”, “Bizkaiko Golkoa”, “Golf von Biscaya”, “Bá na Biscáine”).

C.3.5 Settlement names (oikonyms, oeconyms, econyms)

Settlement names refer to places where people live, such as cities, towns and villages.

EXAMPLE

“Paris, France”, “New York City”.

C.3.6 Street names and names of public spaces (hodonyms)

Street names refer to routes within or between human settlements such as cities, towns and villages. Similarly, names of public spaces refer to spots of particular interest, such as urban spaces. Some names of public spaces can be interpreted as building names, and vice versa (see C.3.11).

EXAMPLE


C.3.7 Country names

Country names refer to sovereign nation-states recognized according to international law. Country names come in the form of full names and short names. For codes that can be used as synonyms of
country names, see ISO 3166 (all parts). A list of those codes can be found on the ISO Online browsing platform. For country names in the six official languages of the United Nations, see Reference [78].

EXAMPLE

“United States of America” (full name) = “United States” (short name) = “US” (two-letter code in accordance with ISO 3166-1).

C.3.8 Oronyms
Oronyms refer to mountains, mountain ranges, hills, etc.

EXAMPLE

“Mount Everest”, “Rocky Mountains”.

C.3.9 Hydronyms
Hydronyms refer to bodies of water, such as seas, lakes and rivers.

EXAMPLE

“Atlantic Ocean”, “Victoria Falls”, “Murray River”.

C.3.10 Meteorological names
Meteorological names refer to weather phenomena, such as low-pressure and high-pressure areas, hurricanes and floods.

EXAMPLE


NOTE The World Meteorological Organization is responsible for managing meteorological names of tropical cyclones.

C.3.11 Building names
Building names refer to houses, castles, stadiums, buildings for religious worshipping, etc. Some building names can be interpreted as names of public spaces, and vice versa (see C.3.5).

EXAMPLE

“The Vietnam Veterans Memorial Wall”, “Heathrow Airport”, “Wembley Stadium”.

C.3.12 Temporal names
Temporal names refer to one-off points in time or entire periods of time such as historical events and eras. Some temporal names can be interpreted as event names, and vice versa (see C.3.13), or become appellations (see Clause C.1).

EXAMPLE

“Renaissance”, “Bronze Age”, “D-Day”, “Remembrance Day”.

C.3.13 Event names
Event names refer to conferences, conventions, congresses, summits, symposia, round tables, trade shows, colloquia, forums, seminars, sports competitions, commemorative events, etc. This category also includes academic, vocational and professional courses, seminars, workshops and programmes. Some
event names can be interpreted as temporal names, and vice versa (see C.3.12), or become appellations (see Clause C.1).

EXAMPLE

"Kyoto Conference on Global Climate Change", "2013 G8 Summit", "Stanley Cup 2000" (the event as opposed to the trophy), "International Volunteer Day 2021".

C.3.14 Names of means of transport

Names of means of transport refer to aircraft, ships, trains, rockets, etc. Some names of means of transport can become appellations (see Clause C.1).

EXAMPLE


C.3.15 Names of works of art

Names of works of art refer to paintings, sculptures, photographs, films, ballets, theatrical presentations, musical compositions, etc.

EXAMPLE


C.3.16 Astronomical names (astronyms)

Astronomical names refer to astronomical objects such as planets, stars, galaxies, etc.

EXAMPLE

“Saturn”, “Milky Way”, “Halley’s Comet”.

C.4 Specific forms of proper names and appellations

In many domains and subjects, clear identification of individual objects is paramount. This results in identification systems based on systematically formed designations. Since such designations are similar to proper names or appellations in several respects, they are of growing importance in terminology work. Also, such designations are stored in product data management systems, which in turn are linked with terminology management systems, especially in commercial work environments.

EXAMPLE 1

Individual motor vehicles receive vehicle identification numbers that are unique worldwide, as stipulated in ISO 3779. “WDB9066331S111111” is a vehicle identification number that can be interpreted as a proper name.

EXAMPLE 2

In the European Union, bovines must bear coded ear tags. “UK666766500046” is an ear tag identifier that can be interpreted as a proper name.

EXAMPLE 3

In today’s commerce, article numbers are used to identify groups of identical products, especially for computer-based processing. “m0000549HF” is an article number for a toothpaste and can be interpreted as an appellation. “246248” is an article number for a projector and can be interpreted as an appellation.
EXAMPLE 4

In the International Statistical Classification of Diseases and Related Health Problems, each disease or health problem is assigned a unique code. The code “9C61” is a synonym for “glaucoma” and can be interpreted as an *appellation*. The code “7A01” is a synonym for “short-term insomnia” and can be interpreted as an *appellation*. The code “NC92.6” is a synonym for “fracture of lateral malleolus” and can be interpreted as an *appellation*.

SOURCE: Reference [80].
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