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## Terminology work — Principles and methods

*Travail terminologique — Principes et méthodes*

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ISO 704:2022

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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](http://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](http://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](http://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](http://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.

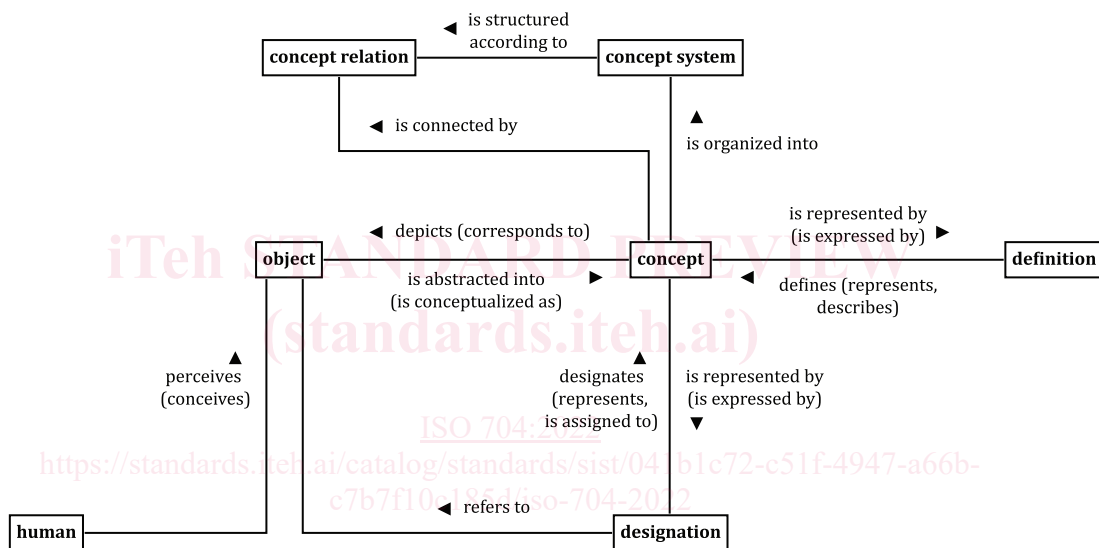


Figure 1 — Graphical illustration of wording conventions

## 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.

[SOURCE: ISO 1087:2019, 3.1.4, modified — Examples added.]

### 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 <https://standards.iteh.ai/catalog/standards/sist/041b1c72-c51f-4947-a66b-c7b7f10c185d/iso-704-2022>

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

### 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



<i>Terms</i>	"hard disk", "liquidity"
<i>Appellations</i>	"Adobe® Acrobat® X Pro" <sup>1)</sup> , "Nokia 7 Plus®" <sup>1)</sup> , "HNO <sub>3</sub> "
<i>Symbols</i>	©, W

<sup>1)</sup> 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®” <sup>2)</sup>
Symbols	 (used to designate ‘Africa’),  (used to designate ‘Statue of Liberty’)
<sup>2)</sup> 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’.

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## 5.4 Characteristics

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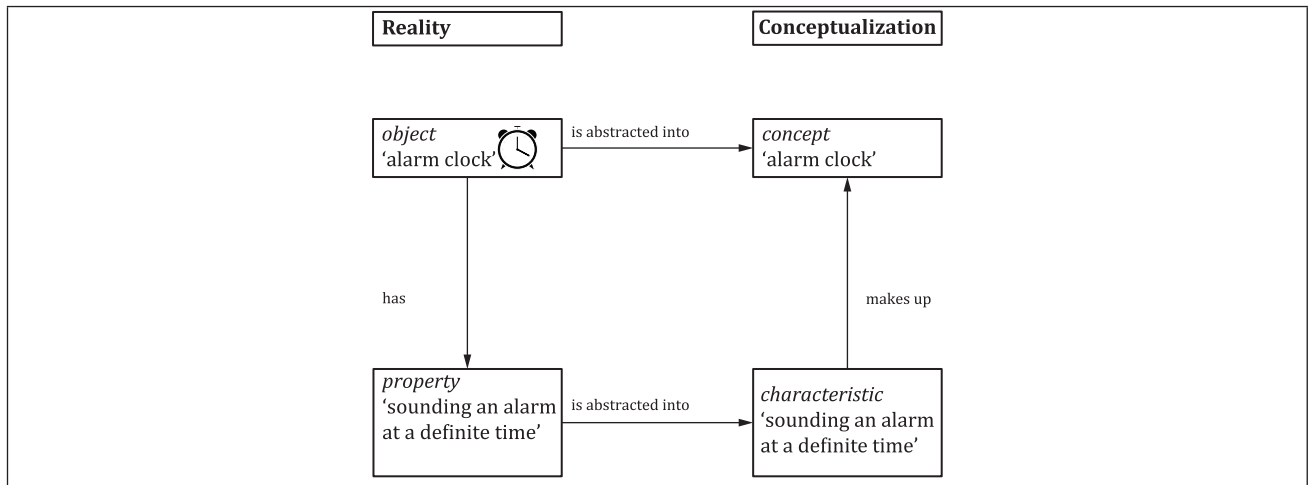
### 5.4.1 General

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.

## EXAMPLE



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.

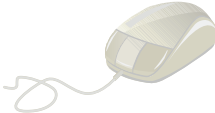
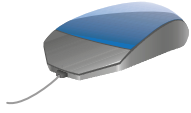

A *terminologist* or *terminology worker* can begin by analysing content that describes *objects* by means of *designations*. By analysing relevant content, the *terminologist* or *terminology worker* can get an understanding of the *properties* of the various *objects*, so as to determine which *properties*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

‘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*:

		
<ul style="list-style-type: none"> <li>— ‘being a device’;</li> <li>— ‘being ivory-coloured’;</li> <li>— ‘being hand-manoeuvred along a firm, flat surface’;</li> <li>— ‘having three buttons’;</li> <li>— ‘having an ivory-coloured wire for connecting to a computer’;</li> <li>— ‘having a visible laser emitter’;</li> <li>— ‘having light sensors that detect movement’.</li> </ul>	<ul style="list-style-type: none"> <li>— ‘being a device’;</li> <li>— ‘being blue and grey’;</li> <li>— ‘being hand-manoeuvred along a firm, flat surface’;</li> <li>— ‘having one button’;</li> <li>— ‘having a grey wire for connecting to a computer’;</li> <li>— ‘having a visible laser emitter’;</li> <li>— ‘having light sensors that detect movement’.</li> </ul>	<ul style="list-style-type: none"> <li>— ‘being a device’;</li> <li>— ‘being black and grey’;</li> <li>— ‘being hand-manoeuvred along a firm, flat surface’;</li> <li>— ‘having two buttons’;</li> <li>— ‘having a black wire for connecting to a computer’;</li> <li>— ‘having an infrared emitter’;</li> <li>— ‘having light sensors that detect movement’.</li> </ul>

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

<b>Concept:</b> unit of knowledge based on the set of all optical mice			
<b>Designation (term):</b> “optical mouse”			
<i>Properties of object 1</i>	<i>Properties of object 2</i>	<i>Properties of object 3</i>	<i>Characteristics</i>
‘being ivory-coloured’	‘being blue and grey’	‘being black and grey’	‘having colour’
‘being hand-manoeuvred along a firm, flat surface’	‘being hand-manoeuvred along a firm, flat surface’	‘being hand-manoeuvred along a firm, flat surface’	‘being hand-manoeuvred along a firm, flat surface’
‘having three buttons’	‘having one button’	‘having two buttons’	‘having at least one button’
‘having an ivory-coloured wire for connecting to a computer’	‘having a grey wire for connecting to a computer’	‘having a black wire for connecting to a computer’	‘having a wire for connecting to a computer’
‘having a visible laser emitter’	‘having a visible laser emitter’	‘having an infrared emitter’	‘having a light emitter’
‘having light sensors that detect movement’	‘having light sensors that detect movement’	‘having light sensors that detect movement’	‘having light sensors that detect movement’

*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