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Industrial systems, installations and equipment and industrial products — Classification and designation of information —

Part 1: Basic rules and classification of information

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INDUSTRIAL SYSTEMS, INSTALLATIONS AND EQUIPMENT AND INDUSTRIAL PRODUCTS – CLASSIFICATION AND DESIGNATION OF INFORMATION –

Part 1: Basic rules and classification of information

FOREWORD

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IEC 81355-1 has been prepared by IEC/TC 3: Documentation, graphical symbols and representations of technical information, in close cooperation with ISO/TC 10: Technical product documentation. It is an international standard.

It is published as a double logo standard and has the status of a horizontal publication in accordance with IEC Guide 108.

This edition cancels and replaces the second edition of IEC 61355-1 published in 2008. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to IEC 61355-1:2008:

a) Focusing on classification of information rather that classification of document kinds;
b) Introduced a classification scheme based on inherent content of information;

c) Introduced a distinction between an informatio1n container and a document, the latter being for human perception;

d) Introduction of information kind classification code (ICC), replacing document kind classification code (DCC);

e) Introduced structuring of information containers;

f) Introduced an information model of the concepts dealt with;

g) Introduced a conversion table for merging from the use of DCC to the use of ICC.

The text of this International Standard is based on the following documents:

Draft	Report on voting
3/XX/FDIS	3/XX/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table. In ISO, the standard has been approved by xx members out of xx having cast a vote.

The language used for the development of this International Standard is English.

This document was drafted in accordance with IEC/ISO Directives, Part 2, and developed in accordance with IEC/ISO Directives, Part 1 and IEC/ISO Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

In this document, *italic type* is used as follows:

- terms defined in Clause 3 (applies to the text in Clause 3 only);
- in the description of the EXPRESS model, entity names and attribute identifiers.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The "colour inside" logo on the cover page of this document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

Information is necessary for all activities during the life cycle of industrial systems, installations, equipment and industrial products. It may be produced in any phase or activity. Information may be received from and delivered to other parties, and different parties may need different information for the same object, depending on what is most suitable for their need.

This document is based on the former IEC 61355-1:2008 and IEC 61355 DB standards but is now a new joint ISO & IEC document. As a new joint document, this document clarifies key concepts related to information and the designation of sets of information exchanged between parties, as represented by the focus on classification of information and the shift in focus from “documents” to “information containers”.

Notably the paper-based presentation of information that was used as a basis for classification in IEC 61355-1:2008 is no longer present in this document. Instead, this document provides “information kind classification codes (ICC)” to be used in the designation of information containers, thereby replacing the previous “document kind class codes (DCC)” of IEC 61355-1:2008.

One aim of this document is to support the unambiguous exchange of information for the purpose of communication and understanding between parties. For this purpose, it is necessary to disregard what the set of information is called in daily life. Instead, the basis of understanding is based on a classification of the kind of information managed and exchanged between parties.

Another aim of this document is to set up rules for a specific method of correlating information and objects, i.e., to indicate to which object a specific set of information relates. For this purpose, a concept for designation of information containers is provided. Also, a concept for relating information containers to one or more objects is provided. By this, support is also provided for the structuring, storage and retrieval of information based on the information content of an information container and the object to which the information relates.

INDUSTRIAL SYSTEMS, INSTALLATIONS AND EQUIPMENT AND INDUSTRIAL PRODUCTS – CLASSIFICATION AND DESIGNATION OF INFORMATION –

Part 1: Basic rules and classification of information

1 Scope

This part of the 81355 International Standard, published jointly by IEC and ISO, provides rules and guidelines for the classification and designation of information containers based on their inherent content. This document is applicable for information used in the life cycle of a system, e.g., industrial plants, construction entities and equipment.

This document defines classes of information and their information kind classification code (ICC). The defined classes and codes provided are used as values associated with metadata, e.g., in information management systems (see IEC 82045-1 and IEC 82045-2).

The rules, guidelines and classes are general and are applicable to all technical areas, for example mechanical engineering, electrical engineering, construction engineering and process engineering. They can be used for systems based on different technologies or for systems combining several technologies.

This document also has the status of a horizontal publication in accordance with IEC Guide 108. It is intended for use by technical committees in preparation of publications related to classification and designation of information.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

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

3.1
information
intelligence or knowledge capable of being represented in forms suitable for communication, storage or processing

Note 1 to entry: Information may be represented for example by signs, symbols, pictures or sounds.

[SOURCE: IEC 60050-701:1988, 701-01-01]

3.2
object
entity involved in a process of development, implementation, usage, and disposal

Note 1 to entry: An object is something abstract or physical toward which thought, feeling, or action is directed.

Note 2 to entry: The object has *information* (3.1) associated to it.

[SOURCE: IEC 81346-1:2022, 3.1]

3.3
system
set of interrelated *objects* (3.2) considered in a defined context as a whole and separated from their environment

Note 1 to entry: A system is generally defined with the view of achieving a given objective, e.g. by performing a definite function.

Note 2 to entry: Elements of a system can be natural or man-made material *objects*, as well as modes of thinking and the results thereof (e.g., forms of organisation, mathematical methods, programming languages).

Note 3 to entry: The system is considered to be separated from the environment and from the other external systems by an imaginary boundary, through which the system is related to the external systems.

Note 4 to entry: The term "system" should be qualified when it is not clear from the context to what it refers, e.g. control system, colorimetric system, system of units, transmission system.

Note 5 to entry: When a system is part of another system, it may be considered as an object as defined in this document.

[SOURCE: IEC 81346-1:2022, 3.2]

3.4
data
representation of *information* (3.1) in a formalized manner suitable for human or automatic processing

Note 1 to entry: Processing includes communication and interpretation.

Note 2 to entry: In English, the word "data" is generally used in plural form. For use in singular form, it can be called "data item".

[SOURCE: IEC 60050-171:2019, 171-01-02]

3.5
data element
data item (3.4) that is considered to be indivisible in a certain context

[SOURCE: IEC 60050-171:2019, 171-02-01, modified – The example and note have been deleted.]

3.6
record
set of *data elements* (3.5), treated as a whole

[SOURCE: IEC 60050-171:2019, 171-02-28, modified – The domain and note have been deleted, and "context" deleted from the definition.]

3.7
file
set of related *records* (3.6) treated as a whole

[SOURCE: IEC 60050-171:2019, 171-02-30]

3.8
inherent content
subject of information (3.1), independent of any use of the information (3.1)

Note 1 to entry: The word "inherent" is regarded as existing in something as a permanent, essential, or characteristic attribute.

3.9
information class
kind of *information* (3.1) characterized by its *inherent content* (3.8)

3.10
information container
named persistent set of *information* (3.1) retrievable from within a *file* (3.7), *system* (3.3) or application storage hierarchy

EXAMPLE: Including sub-directory, information *file* (including model, *document*, table, schedule), or distinct sub-set of an information file such as a chapter or section, layer, or symbol.

Note 1 to entry: Structured information containers include geometrical models, schedules and databases. Unstructured information containers include *documentation*, video clips and sound recordings.

Note 2 to entry: Persistent information exists over a timescale long enough for it to have to be managed, i.e. this excludes transient information such as internet search results.

Note 3 to entry: Naming of an information container should be according to an agreed naming convention.

Note 4 to entry: An information container can include other information containers (sub-containers).

[SOURCE: ISO 19650-1:2018, 3.3.12, modified - Note 4 to entry added.]

3.11
object designation
unambiguous identifier of an *object* (3.2) in a given context

Note 1 to entry: Examples of such designations are: reference designation, type number, serial number, name.

3.12
document
information container (3.10) presented in a format suitable for human perception

3.13
documentation
collection of *documents* (3.12) related to a given object

4 General concepts

4.1 General

Information is necessary for different activities and purposes during the life cycle of a system. Information is often transmitted and stored using specific terms, serving different purposes. These terms are often defined and understood only in a certain context, which can lead to misunderstandings for the recipient of the information.

This document provides a classification scheme to structure and sort large amounts of information in groups, based on the type of information. Each of these groups is characterised by an unambiguous definition in a clear hierarchy. The user of this document can link additional information terms by relating any new term to the class defining the kind of information and thereby expand the use and application of this document.

Annex A shows the information model of the concept of this document.

In the context of this document, it is necessary to distinguish between the following concepts and their interrelationship:

- object;
- information;
- information class;
- information container;
- information container designation;
- information storage;
- document.

Figure 1 shows the relationship among the concepts, where information related to an object is stored as an information container in a data storage and presented as a document.

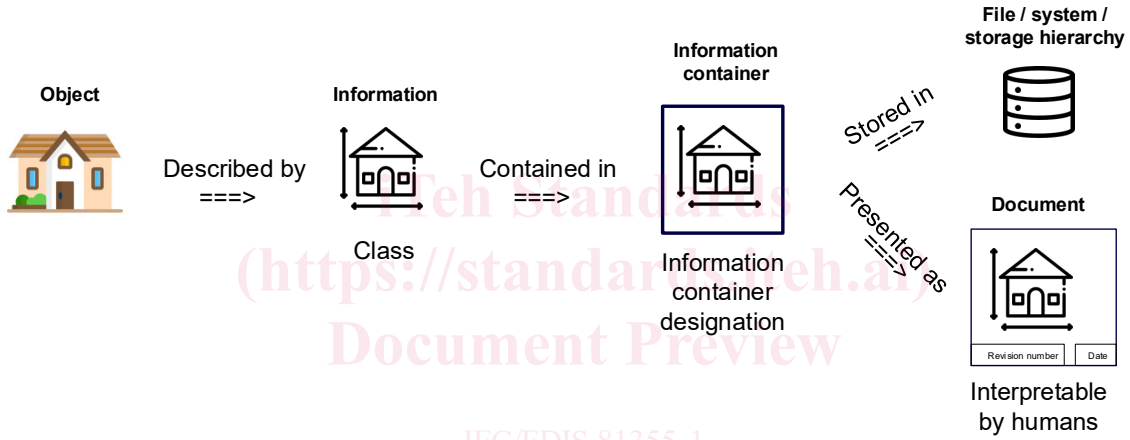

Figure 1 – Interrelation of concepts

4.2 Classification principles

This document defines hierarchical classes of information based on its inherent content - "what the information is about in itself" - as distinct from what it is intended or used for.

Each class within the hierarchy has a letter code which designates an entry class and its subclass. This letter code is called an information kind classification code, which in this document is abbreviated "ICC". As the ICC is recognized by non-verbatim letter codes (A, B, C, etc.), the ICC itself becomes a natural designation for recognition of information across national borders, languages, and technical disciplines, thus creating a common language for exchange of information.

NOTE The former document kind classification code (DCC) provided in IEC 61355-1 is in this document replaced by "ICC", as the aim of this document is to classify information in a broad sense, as distinct from documentation presenting the information in a certain form only. However, the meaning behind former DCC codes is to the extent possible transferred to ICC codes in this document. See also Annex D.

The classification scheme defined in Annex B has a hierarchical structure that constitutes two levels L1 and L2, where:

- entry classes (L1) are purely defined based on the inherent content of information;
- subclasses (L2) of the entry classes are based on different facets, depending on the entry class.

Annex B specifies ICC entry classes (Table B.1) and subclasses (Table B.2).

Classes of information presented in this document are considered to be complete and fully representative of information related to technical systems. Therefore, no "miscellaneous" or "other" open classes, "free for the user" etc., are provided. See also Clause D.2.

Information shall be associated with an entry class and a related subclass when its inherent content matches the definitions of an entry class and a subclass. See Annex B, Table B.1 for entry class and Table B.2 for subclass definitions.

5 Designation of information containers

5.1 General

An information container shall be associated with an information kind classification code (ICC) to which it belongs, as defined in Table B.1 and Table B.2 (see Annex B). To classify information correctly, the information to be classified shall comply with the definition of the ICC selected.

The information container designation shall:

- designate the information container unambiguously within a defined context;
- provide the possibility to specify sorting criteria for object related information;
- provide the possibility to identify different kinds of information related to an object;
- provide a method to refer to an information container from other information containers.

The ICC forms part of an information container designation.

If the context is changed, the information container designations shall be verified in the new context.

If there is a need for designating multiple kinds of information in one information container, the information container shall be designated as defined in 5.4.

5.2 Designation of an information container

An information container designation shall consist of (see Figure 2):

- the prefix sign "&" (ampersand), followed by;
- the letter code for the entry class of information (position L1), followed by;
- the letter code for the subclass of information (position L2), followed by;
- a number to distinguish among information containers of the same class within the same context.

The number, including any leading zero (if any), shall have no specific meaning.

NOTE 1 Only characters A through Z, except I and O, are used

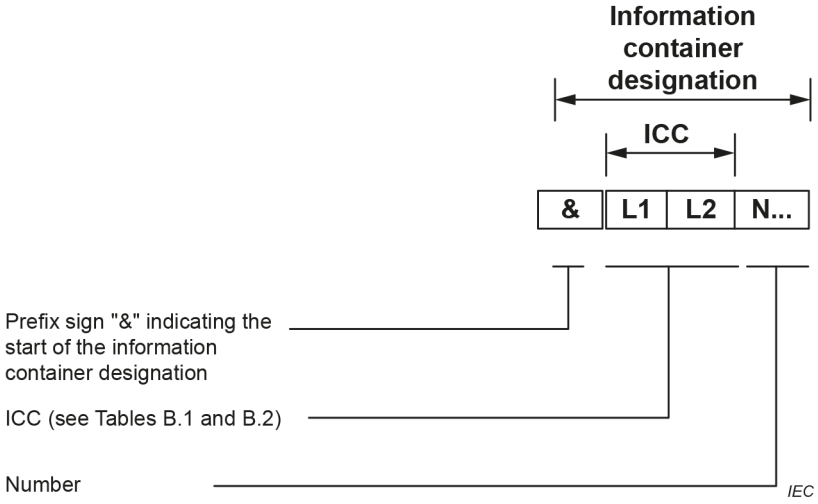

Figure 2 – Structure of an information container designation using ICC

5.3 Relating information containers to objects

Information is related to one or more objects. Objects can be administrative or technical. If information shall be related to a specific object, the relation between the object and the related information container is defined by (see Figure 3):

1) the designation of the object to which the container is related, followed by;
2) the designation of the information container related to the object.

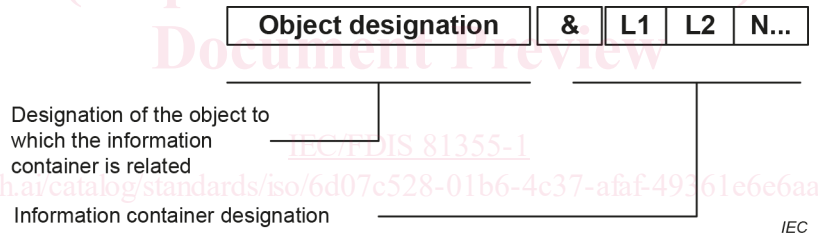

Figure 3 – Relating information container designation to an object

Several information containers can be related to the same object, each unambiguously identified in relation to a certain context, see Table 1.

Table 1 – Example of multiple information containers related to one object

Object designation: Wind turbine generator	Information container designations	Information
=A1	&DA1	Data sheet (wind turbine generator)
=A1	&FS1	Single-line circuit diagram
=A1	&FS2	Multi-line circuit diagram
=A1	&LH1	Mechanical layout

One information container can be related to multiple objects, each unambiguously identified in relation to the same context, see Table 2.