



3/810/NP

NEW WORK ITEM PROPOSAL

Proposer TC3 Secretariat	Date of proposal 2006-07-21
TC/SC 3	Secretariat Sweden
Date of circulation 2006-07-21	Closing date for voting 2006-11-15

A proposal for a new work item within the scope of an existing technical committee or subcommittee shall be submitted to the Central Office. The proposal will be distributed to the P-members of the technical committee or subcommittee for voting, and to the O-members for information. The proposer may be a National Committee of the IEC, the secretariat itself, another technical committee or subcommittee, an organization in liaison, the Standardization Management Board or one of the advisory committees, or the General Secretary. Guidelines for proposing and justifying a new work item are given in ISO/IEC Directives, Part 1, Annex C (see extract overleaf). **This form is not to be used for amendments or revisions to existing publications.**

The proposal (to be completed by the proposer)

Title of proposal

Basic rules for identification systems

☒ Standard ☐ Technical Specification ☐ Publicly Available Specification

Scope (as defined in ISO/IEC Directives, Part 2, 6.2.1)

This standard specifies basic requirements for identification systems for the identification of objects (such as products, "items", documents, database entries, etc.) including requirements for the application of identifiers in computer sensible form, and requirements for their interchange.

The specification of a physical file formats required for such an interchange is not included in this standard, nor is possible physical marking for the identification of objects dealt with.

Purpose and justification, including the market relevance and relationship to Safety (Guide 104), EMC (Guide 107), Environmental aspects (Guide 109) and Quality assurance (Guide 102) . (attach a separate page as annex, if necessary)

See "Remarks from the TC officers" next page.

Target date for first CD 2007-02-01 for IS 2009-06-30

Estimated number of meetings 3 Frequency of meetings: per year Date and place of first meeting: 2006-11 (place to be decided)

Proposed working methods ☒ E-mail ☐ ftp

Relevant documents to be considered

See next page.

Relationship of project to activities of other international bodies

Liaison organizations
IEC TC44, TC65
ISO TC10, TC184/SC4

Need for coordination within ISO or IEC
Yes, the NP might be of interest to many TCs and will therefore be made known also via IEC SB3 and MoUMG for e-business.

Preparatory work

Ensure that all copyright issues are identified. Check one of the two following boxes

☒ A draft is attached for comment ☐ An outline is attached

We nominate a project leader as follows in accordance with ISO/IEC Directives, Part 1, 2.3.4 (name, address, fax and e-mail): Per-Åke Svensson (Secretary of IEC/TC3)

Concerns known patented items (see ISO/IEC Directives, Part 2) <input type="checkbox"/> yes If yes, provide full information as an annex <input checked="" type="checkbox"/> no	Name and/or signature of the proposer Per-Åke Svensson, Secretary IEC TC3
Comments and recommendations from the TC/SC officers	
1) Work allocation <input type="checkbox"/> Project team <input checked="" type="checkbox"/> New working group <input type="checkbox"/> Existing working group no:	
2) Draft suitable for direct submission as <input checked="" type="checkbox"/> CD <input type="checkbox"/> CDV <input type="checkbox"/> Publication as a PAS	
3) General quality of the draft (conformity to ISO/IEC Directives, Part 2) <input checked="" type="checkbox"/> Little redrafting needed <input type="checkbox"/> Substantial redrafting needed <input type="checkbox"/> no draft (outline only)	
4) Relationship with other activities In IEC The NP is of general interest to product and system TCs. Therefore it is suggested to be made known via SB3 and other SBs. In other organizations The NP is of special interest to organisations dealing with e-business. Therefore it is suggested to be made known via MoUMG for e-business.	
Remarks from the TC/SC officers "Principles for identification" has since a number of years been listed as a project on "stage 0" level by IEC TC3 (PWI 3-2). There are a number of reasons for this: <ul style="list-style-type: none"> - IEC 81714-2 Ed.1 contained an annex about global product identification. It was felt that it was too hidden there and was consequently removed at the preparation of IEC 81714-2 Ed.2 with the intent to put it elsewhere in order to elaborate it further. - IEC 61346 Ed.1 <i>Structuring principles and reference designations</i> deals in the introduction to the first part with some general aspects of identification. The reason for providing this information there was originally to make clear what reference designations is not, in order to avoid introduction of irrelevant requirements and comments and later misuse. In the presently ongoing revision of this publication (in IEC TC3 MT18) it has been recognized that a separate publication on identification principles should support that work. - Identification is generally a prerequisite for making information systems work, especially when systems are integrated. For this reason there are a number of standards already available, intended to support specific business needs and applications. A publication on general principles for identification is, however, as far as we know, not available. - The existing trend in business to split and to merge companies in new combinations has as one result that many more or less well developed identification systems meet and will need to be managed together. The setting up of e-business sites in which products from many suppliers meet has similar consequences. The requirements on identification systems can therefore no longer be isolated to the single companies. <p>The present document has been prepared with this background. The intent is to describe some simple principles and concepts for the creation of identification systems and requirements for their documentation. This should simplify the inclusion of required functionality in commercial business systems and also simplify the practical handling when companies are split and merged.</p> <p>The present document has been drafted by the Secretary of TC3 with the assistance of a number of people in the TC3 area who have reviewed and commented it. This is actually the 4th draft. An earlier draft was also presented to the ISO TC10 officers at a co-ordination meeting in Oslo in May 2006. ISO TC10 declared its interest in the work and intent to circulate it for approval as a new work item, and the acceptance could consequently result in a joint IEC-ISO work.</p>	

Copyright © 2006 International Electrotechnical Commission, IEC. All rights reserved. It is permitted to download this electronic file, to make a copy and to print out the content for the sole purpose of preparing National Committee positions. You may not copy or "mirror" the file or printed version of the document, or any part of it, for any other purpose without permission in writing from IEC.

Considered documents

Documents considered in the preparation of this NP are i.a:

- document 3/728/INF which contains an Annex D of IEC 81714-1 Ed. 1
- the introduction to IEC 61346-1 Ed. 1
- ISO/CD 21849 ISO/TC20 N3246 Aircraft and space – Industrial data – Product identification and traceability (2005-02-04)
- ISO 15459 (2006) Information technology – Unique identifiers for item management:
 - Part 1: Unique identifiers for transport units
 - Part 2: Registration procedures
 - Part 3: Common rules for unique identifiers
 - Part 4: Unique identifiers for supply chain management
- RFC 4122 Universally Unique Identifiers
- information from www.gs1.org (GTIN, etc, former EAN, UPC)

CONTENTS

CONTENTS	1
FOREWORD	3
1 Scope	5
2 Normative references	5
3 Terms and definitions	5
4 Introduction	8
4.1 Purpose of identifiers	8
4.2 Referencing and traceability	9
4.3 Permanence	10
4.4 Changes to an identified object	10
4.5 Principles for creation of identification numbers	10
4.5.1 General	10
4.5.2 Method 1	10
4.5.3 Method 2	11
5 Identification within an organizational context	11
5.1 Identification system	11
5.2 Domain	13
5.3 Kinds of object subject to identification	13
5.4 Construction of identification numbers	14
5.5 Check digit	14
5.6 Registration	15
5.7 Identification number generators	15
6 Identification within a global context	15
6.1 General	15
6.2 Identification of a local domain	16
6.3 Application of the domain identifier	16
6.4 Global domains	17
7 Identification within a system or product context	17
7.1 General	17
7.2 Identification systems	17
8 Identification within a library or catalogue context	18
8.1 General	18
9 Unambiguous identification over time	18
9.1 General	18
10 Further rules for the identification of some specific kinds of object	19
10.1 Identification of products	19
10.1.1 Basic identification	19
10.1.2 Supplementary identification	19
10.1.3 Information model	19
10.2 Identification of documents	20
10.2.1 Basic identification	20
10.2.2 Supplementary identification	20
10.3 Identification of packages	20
11 Conformance	20
11.1 General	20
Annex A Identification versus classification (Informative)	21

Annex B Commonly occurring kinds of objects (Informative)	23
Annex C Configurable product concepts (Informative).....	24
Annex D Examples of global domains (Informative)	25
Annex E EXPRESS–Model (Informative)	26
Annex F Bibliography	34

INTERNATIONAL ELECTROTECHNICAL COMMISSION

Basic rules for identification systems**FOREWORD**

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC XXX has been prepared by of IEC technical committee 3: Information structures, documentation and graphical symbols.

The text of this standard is based on the following documents:

FDIS	Report on voting
XX/XX/FDIS	XX/XX/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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

Basic rules for identification systems

1 Scope

This standard specifies basic requirements for identification systems for the identification of objects (such as products, “items”, documents, database entries, etc.) including requirements for the application of identifiers in computer sensible form, and requirements for their interchange.

The specification of a physical file formats required for such an interchange is not included in this standard, nor is possible physical marking for the identification of objects dealt with.

2 Normative references

The following referenced documents are indispensable for the application 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.

IEC 61175	<i>Industrial systems, installations and equipment and industrial products – Designation of signals</i>
IEC 61346-1	<i>Industrial systems, installations and equipment and industrial products - Structuring principles and reference designations - Part 1: Basic rules</i>
IEC 61666	<i>Industrial systems, installations and equipment and industrial products - Identification of terminals within a system</i>
IEC 62023	<i>Structuring of technical information and documentation</i>
IEC 82045-1	<i>Document management – Part 1: Principles and methods</i>
IEC 82045-2	<i>Document management – Part 2: Metadata elements and information reference model</i>
ISO 3166-1	<i>Codes for the representation of names of countries and their subdivisions – Part 1: Country codes</i>
ISO 6523-1	<i>Information technology – Structure for the identification of organizations and organization parts –Part 1: Identification of organization identification schemes</i>
ISO/IEC 646	<i>Information technology – ISO 7-bit coded character set for information interchange</i>
ISO/IEC 15459	<i>Information technology - Unique identifiers for item management</i>
ISO/IEC 9834-8	<i>Information technology -- Open Systems Interconnection -- Procedures for the operation of OSI Registration Authorities: Generation and registration of Universally Unique Identifiers (UUIDs) and their use as ASN.1 Object Identifier components</i>

3 Terms and definitions

3.1

identifier

attribute of an object used to unambiguously depicts it in a specified environment

NOTE – Identifiers are used for unambiguous referencing. Examples: product identifier, document identifier.

3.2

identification number

string of characters that represents the value of the *identifier*

NOTE – It is industrial practice that although the term says “number” the string can contain alphabetical and numeric characters and hyphens.

3.3

identification number domain

environment within which the *identification numbers* are unambiguous

NOTE – Different identifiers can share the same identification number domain. Example: product identification numbers and document identification numbers can be taken from the same series of identification numbers.

3.4

identification system

set of formal rules specifying an *identification number domain*, the kind of objects to be identified and the construction of *identification numbers* in this domain

3.5

(product) identification number; part number; article number; product identifying number

identification number for a type of product assigned within an *identification system*

NOTE 1 - Product identification numbers are often required to be **unique** (an object shall have one number only). This is an unnecessary strong requirement, it is sufficient if they are **unambiguous**. An object may have more than one identification number, even if this is an undesirable situation.

Furthermore it is assumed in the definition that an organization may be responsible for more than one identification number domain. This is a commonly occurring situation when organizations are merged, etc.

NOTE 2 – The product identification number is normally assigned at the engineering of a product. Products with the same product identification number have the same “form, fit and function” and are interchangeable.

3.6

GTIN

identification number for a type of article in accordance with the Global Trade Identification Number system

NOTE 1 – GTIN is used for products distributed and sold through retail dealer networks and non-retail channels of distribution. The GTIN was formerly referred to as EAN and UPC.

NOTE 2 – GTIN are allocated by the GS1 organization (<http://www.gs1.org>) with branches in more than 80 countries. Different coding types of numbers are available, with different lengths. A number includes: numbering organization prefix, number allocated to the company, the number of the product and a check digit.

3.7

(product) serial number

identification number for an individual specimen of a type of product

NOTE – The serial number is normally assigned at the manufacturing of the product

3.8

traceability

ability to trace the history, application or location of that which is under consideration [ISO 9000, 3.5.4]

NOTE 1 When considering **product** (3.4.2 of ISO 9000), traceability can relate to

- the origin of materials and parts,
- the processing history, and
- the distribution and location of the product after delivery.

NOTE 2 In the field of metrology the definition in VIM: 1993, 6.10, is the accepted definition.

3.9**(product) lot number; batch number**

identification number for a set of specimens of the same type of product manufactured together under assumed identical conditions and in a limited time interval and therefore considered equal

NOTE – The lot number is normally assigned at the manufacturing of the product. A lot number is a “less precise serial number” used in addition to a (product) identification number.

3.10**reference designation**

identifier of a specific object with respect to the system of which the object is a constituent, based on one or more aspects of that system

[IEC 61346-1 3.7]

4 Introduction

4.1 Purpose of identifiers

The purpose of identification is to ensure unambiguous and precise **referencing**.

Referencing is a basic requirement for **traceability**.

An identifier is a depicted attribute to an object serving for its identification.

An **identification number** is a data item (character or group of characters) supplying absolute and unambiguous reference to a particular object (article, product, document, information object, etc.) **within a specified domain (or context)**.

The specification of an identification number domain, the kind of objects to be identified in it and the construction of identification numbers in this domain is usually called an **identification system**.

Unambiguity is the most important requirement on an identifier and **permanence** is the most important requirement of an identification system.

As for example product identification numbers are presented on the products themselves, as well as in the associated product documentation used for the maintenance of those products for their whole life-time, product identification numbers shall be usable as references for a long time: minimum 10 years, but often 40 years or more.

These requirements for unambiguity and permanence have become even more emphasized, because of the existing and increasing use of electronic information exchange in internal as well as external trade.

In connection with the design, engineering, realization, operation, maintenance and disposal, i.e. the life-cycle of a product or system, it is necessary to employ a number of identification systems for different purposes and for various kinds of objects, for example:

- product/part identification system used for the numbering of types of products;
- (product/part) serial identification system used for the numbering of product specimens;
- (product/part) lot/batch identification system used for the numbering of sets of products of the same type manufactured under identical conditions and in which therefore all products are assumed to be equal;
- document identification systems for the numbering of documents;
- quotation identification system for the numbering of quotations/offers;
- order identification system used for numbering of orders/contracts;
- inventory identification systems used for plant management or leasing business;
- etc.

Such identification systems have the purpose to associate the identified objects to the **organization being responsible** for them.

Another group of identification systems, often focusing on the facilitation of trade and logistics, and for which usually international organizations are responsible, has the purpose to identify objects from different sources, in order to allow global following, search and retrieval, for example:

- trade item (article) identification systems GTIN (Global Trade Item Number), earlier known as EAN (European Article Number) and UPC (Universal Product Code);

- asset identification system GIAI (Global Individual Asset Identifier);
- book identification system ISBN (International Standard Book Number);
- serial publications identification system ISSN (International Standard Serial Number);
- package identification systems containing one or more trade items;
- package identification systems of e.g air carriers;
- identification systems for certificates and PKIs (Public Key Infrastructures)
- etc.

A third group of identification systems have the purpose to associate the identified object occurrences to the **product / system / plant of which they are a part**:

- reference designation system used for the identification of objects; and
- document designation system used for the identification of documents.

For a more comprehensive discussion of identification versus classification, please refer to Identification versus classification (Informative).

4.2 Referencing and traceability

The identification number is a shorthand notation that makes it possible to refer to one specific object (or a group of equal objects).

In order to fulfil the requirements for traceability an identification number shall refer to a document or documentation, or with a general term: to **meta information** to the object. The meta information provides the relevant description. See Figure 1.

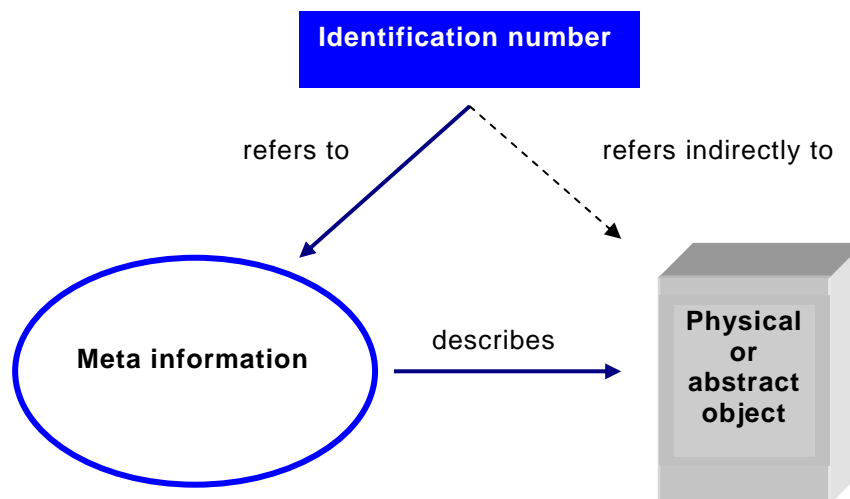


Figure 1 -The referencing mechanism

An identification number may also refer to information *per se*, without any associated object.

NOTE -Traditionally one has not been so careful in separating the information and the “actual object”. If you asked the document archive for a specific identification number you got the document; if you asked the workshop for the same number you got the real, described thing. What they did was to apply the same identification number series in two different domains. This may not cause any practical problems as long as the two domains are so obviously separated.

However, if the real world object consist of information as well (e.g. a software program) one has to be quite clear about which domain that is addressed or apply different identification number series in the same domain.

4.3 Permanence

The requirement for permanence of an identification system is primarily fulfilled by the selection of a domain with permanence, secondly by stable rules for the generation of identification numbers within this domain, and finally a register permitting retrieval of the metadata of the identification number itself (when and by whom was the number generated).

Internal and external structures of organisations being in charge of identification systems are likely to change over time in order to meet external and internal business requirements. Computer system environments in which the identifiers are used are also constantly changing over time.

Nevertheless, an applied identification system shall ensure that one identification number can never depict two different objects (in the same domain), and preferably one object should not have more than one identification number.

Principally, information on an established and used identification system must not be deleted, and an identification number never reused until nobody can be expected to refer to it. An identification system shall therefore be independent from - seen in this time perspective – the volatile internal organization of a company or other organization or from the used computer system environment.

4.4 Changes to an identified object

An object that is subject to change may be identified with the same identification number as long as its relevance is the same from a usage perspective. This is necessary in order to avoid unnecessary changes in the context where it is referenced, thus avoiding the potential "avalanches" of changes of identification numbers that would otherwise be a consequence.

In order to manage such changes from other perspectives than usage a complete identifier for the object shall include revision and/or version index. See also clause 10.

4.5 Principles for creation of identification numbers

4.5.1 General

To create the identification numbers two principally different methods can be applied:

1. The identifying numbers are entirely ***free from semantic meaning with regard to the identified object***, issued from a managed number bank in order to avoid duplication and ambiguity. This number is referring to the information that provides the required description of the identified object.
2. The required description is ***coded into the identifying number*** in accordance with a defined coding scheme. This number is either the complete description or referring to the meta information that provides additional information.

4.5.2 Method 1

Method 1 requires centralized management of the identification number system. It does not require long identification numbers and is flexible in the sense that the meta information referred to can be arbitrarily voluminous and structured, and have any desired information granularity. The identification number can easily be kept stable over time; at the same time as the content of the meta information can be adapted to current needs (e.g. restructured, increase of granularity). See also Annex A.

This method is therefore recommended for identifiers of objects which need to be associated to an organization as a whole for reasons of traceability, product liability, etc and therefore have to be under strict control.

4.5.3 Method 2

Method 2 requires centralized management of the coding schemes, but then the generation of identification numbers can be decentralized. The application of the method results normally in long identification numbers, as the length depends on the number of properties necessary to code. It is sensitive to changes in information requirement; focus on other coded properties will impose changes in the coding system also when the described objects *per se* are unchanged. See also Annex A.

This method is primarily recommended only for identification of occurrences of (information or other) objects within a limited context, for example delivery or a library.

NOTE – An extreme example of the possibility for decentralization is the UUID (GUID) system in accordance with RFC4122 (ISO/IEC 9834-8:2004). An UUID is a 128 bit long identifier based on time stamps and node IDs and guaranteed to be unique across space and time without need for registration. Example of such a UUID: b5ef6610-b746-11da-a94d-0800200c9a66. The UUID system is commonly applied for global identification in computer systems for but can because of the length of the identification numbers be used for machine-reading only.

5 Identification within an organizational context

5.1 Identification system

An identification system shall be **defined and documented** by a description of:

- the *domain* to which it applies possibly including its relation to other identification systems applied in the same environment, see 5.2;
- the *kind of objects* subject to identification, see 5.3 ;
- the *rules* for how the identification numbers shall be constructed in order to be unambiguous within this domain, see 5.4;
- the rules for how the domain should be *managed over time*; and
- a description of relevant *tools* for the management of the system: at least a register, see 5.5, possibly supplemented with identification number generator(s), see 5.7.

To maintain the integrity of an identification system is it important that it is not used for other purposes than the originally intended.

Table 1 and Table 2 give generic examples of identification systems by means of indicating the names of the identifiers, and relating the domain to the contexts within which they originate and are being used.

The domain is in these tables expressed by means of the name of an activity for which the custodian for the domain is responsible.

A **type** is a class of objects having a set of characteristics in common. Depending on the number of common characteristics a type can be from generic to quite specific, for example:

- Generic object types, for example as described in IEC 61346-2 where the identifier of the type is expressed by a letter code;
- Many kinds of products, for example motors, transformers or contactors, are designed as a range of sizes with common characteristics. In such cases the identifier for the range as a whole might be a type designation (type designator); for each size possibly a more specific one.
- Each product variant in such a product series has normally a product identification number.
- The commercial packaging of these products can introduce further types; packages containing for example 1, 5 or 10 products need to be differentiated with different GTIN-numbers.

Table 1 Identifiers used for serial products

Origin/main use	Types	Occurrences of types	Individuals
Development	Type designation	Not applicable	Not applicable
Engineering	Product identification number	Reference designation (of abstract object)	Not applicable
Manufacturing	Article number, Product identification number	Reference designation	Serial number
Marketing and sales	Article number, Product identification number, GTIN	(Reference designation)	Serial number, GIAI
Use and maintenance	Article number, Product identification number, GTIN	(Reference designation)	Serial number, GIAI

Table 2 Identifiers used for “one-of-a-kind” products: systems and installations

Origin/main use	Types	Occurrences of types	Individuals
Development	Type designation of “typical solutions”	Reference designation	Not applicable
Engineering	Type designation of “typical solutions”	Reference designation	Not applicable
Manufacturing	Product identification number	Reference designation	Serial number, GIAI
Marketing and sales	Article number, Product identification number, GTIN	Reference designation	Serial number, (Ordering number), GIAI
Use and maintenance	Article number, Product identification number, GTIN, Internal parts number	Reference designation	Serial number, Inventory number, GIAI

An **individual** is one specimen of a product type irrespective of where it is being used. Each of the produced specimens of the product type mentioned might need to be individually identified. If it is not required, nor practically possible, to differentiate between the individuals, identification of a lot or batch may be used instead.

An **occurrence of a type** refers to the application of a type in a plant or system irrespective of which individual it is.

The relation between the concepts is further illustrated in Figure 2.

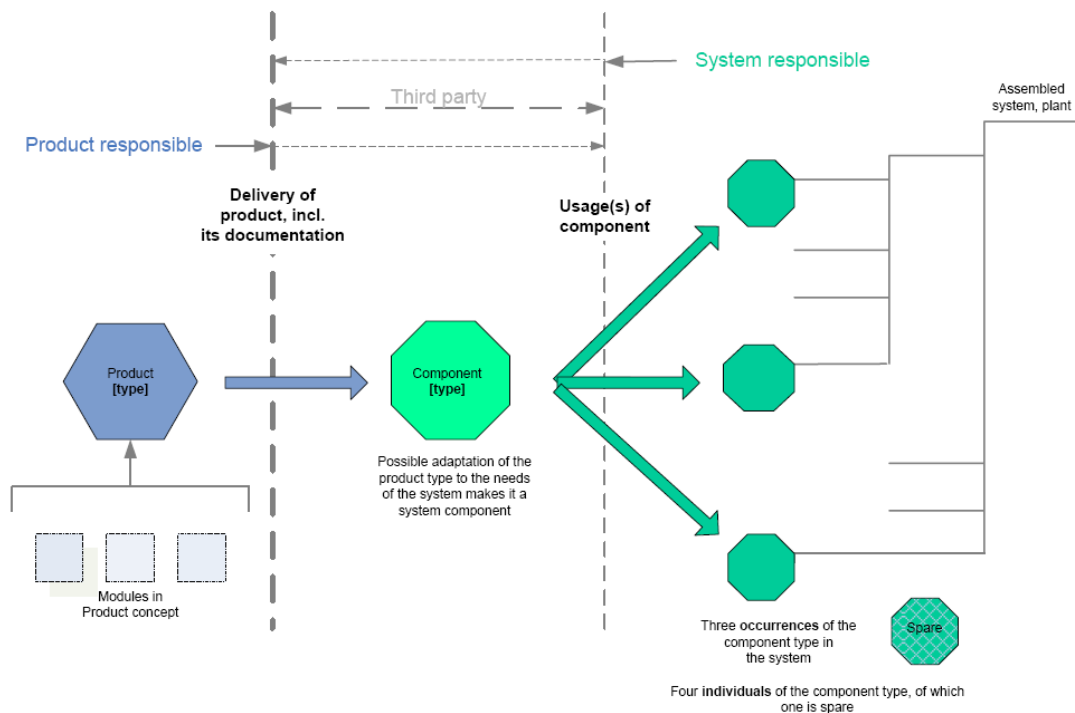


Figure 2 - Illustration of the concepts type, individual and occurrence

NOTE - This figure illustrates also the common case that a general product type might need to be adapted before being usable as a component in a system, e.g. by setting of parameters.

5.2 Domain

The specification of the domain shall clearly include:

- the domain of validity – where it is being used;
- the kind of objects subject to identification;
- the name of the organization responsible for the domain - the custodian.

One (or more) register(s) listing the issued identification numbers shall be maintained.

In order to make possible global identification, the domain itself might need to be identified in a wider context, see 6.2.

The need for identification of the domain is also relevant when legacy identification numbering systems from mergers and take-overs of organizations, splitting of organizations into independent ones, as well as parallel established numbering systems for different markets, for specific customers etc., have to be efficiently handled as well.

5.3 Kinds of object subject to identification

The kind of objects being identified shall be clearly specified.

When describing the kind of objects, care should be taken not mixing “objects” with documents describing these objects, for example: “order” with “the order document”.

For the identification of documents in an organizational context the same rules apply as for other objects.

Annex B provides a more comprehensive list of commonly occurring kinds of object within industrial companies and subject to information exchange between trading partners.

5.4 Construction of identification numbers

The identification numbers shall consist of a string of characters and be in accordance with 4.4.1 or 4.4.2.

Even if the word “number” is used in the term, both numeric and alphabetic characters can be used. To ensure that computer processing of the identification numbers is possible internationally and independent of language, the character set to be used shall be limited to that of ISO/IEC 646 International Reference Version (IRV), excluding National replacement characters. Upper-case letters are preferred. Lower-case case letters shall have the same significance as corresponding upper-case letters.

The specified character set thus include 0, ..., 9 and A, ..., Z, i.e. 35 characters.

For identification numbers intended to be human readable it is further good practice to avoid using upper-case letter O to avoid confusion with number 0, and not to use upper-case letter I due to confusion with lower-case letter l and number 1, since not all fonts that might be used for the presentation of the number distinguish clearly between those characters.

NOTE – If no semantic meaning is put into specific character positions, the identification numbers do not need to be very long, as illustrated in the following table, based on 33 characters.

No of characters (<i>n</i>)	No of possible identification numbers (33 ⁿ)
3	35 937
4	1 185 921
5	39 135 393
8	$1,41 \times 10^{12}$
10	$1,53 \times 10^{15}$
20	$2,35 \times 10^{30}$

For identification method 1, the characters HYPHEN SIGN (-), UNDERLINE SIGN (_) and SPACE SIGN () may be used as separator signs between groups of characters in order to enhance readability for human readers. If such a character is used, it shall neither be assigned any specific meaning nor be interpreted by information systems.

For identification method 2 the additional special characters of ISO/IEC 646 IRV may also be used. If used they shall have a specific meaning.

The number of characters in the string is not specified in this standard, since it depends on the application area. The following should, however, be considered:

- Identification numbers intended to be human readable and manageable should be kept as short as practicable;
- For identification numbers intended to be primarily machine readable (by bar coding, RFID, etc) ISO/IEC 15479-1 and -4 recommends a limitation to 20 characters, but application systems should be capable of managing up to 35 characters (35 characters for transport units which is the limit for EDIFACT).

NOTE – It is advised that for data exchange a receiving system needs to be capable of receiving the full character length of the sending system, irrespective of the previously given recommendations. It is recommended to apply a variable length of up to 256 characters.

5.5 Check digit

For identification numbers likely to be transferred several times from one medium to another, for example by human key-in or scanning, it is useful to check the integrity of the number before further processing. This can in simpler cases be done by a format check or, more secure, by a check digit.

For identification numbers drawn from a linear series (i.e. identification numbers in accordance with method 1) all possible combinations of characters are formally valid. In this case the (allowed) number of characters (possibly together with max and min value) may be checked. Even if numbers of this kind are reasonably short and misinterpretation therefore less likely, an additional check digit increases the integrity.

For identification numbers based on a combination of elements (i.e. identification numbers in accordance with method 2) and when using other algorithms for decentralized management the numbers are long, the risk for misinterpretation higher, and therefore the value of an additional check digit will be higher.

NOTE – There are several algorithms in use for the calculation of check digits. As examples can be mentioned the calculation used for GTIN-13: The final digit (the check digit) of a GTIN-13 identification number is computed so that summing the even-numbered digits, plus 3 times the odd-numbered digits (from the right), modulo 10, is 0.

Check digits can also easily be calculated for identification numbers containing alphabetical characters.

5.6 Registration

The identification numbers shall be registered by the domain responsible in order to ensure that no duplicates are issued.

It might for practical reasons be required to delegate this responsibility within an organization to different organizational units. This can most easily be done by using the first character positions for the assignment.

NOTE 1 - This use of character positions is not to be interpreted as an assignment of a “semantic meaning” with regard to the identified object, since the responsibility for a given series might be transferred over time. For example GTIN uses this technique to distribute the responsibility for GTIN numbers to agencies in the different countries.

NOTE 2 - The management of the information on the actually identified objects is out of scope of this publication. For further information please refer, e.g. to the series IEC-ISO 82045 on document management.

5.7 Identification number generators

An identification number generator is a software program that creates identification numbers in accordance with defined rules, ensures that no duplicates are issued, and logs the result. When called upon, the program responds with the next free number.

Identification number generators are commonly integrated into computer systems for the purpose of creating unambiguous identifiers for use within the system itself.

If such identification numbers are to be communicated outside of the system, for example for product identification, the rules for the creation of the identification numbers shall be in agreement with the long-term rules for identification number within the domain to which the identification number belongs, since the life-time of the computer system is likely to be short in comparison with the life-time of e.g. investment products.

If several such identification number generators are used within an organization, it is possible to distribute the responsibility for the number generation as described in 5.5, but in this case not to organizational units but to identification number generators.

NOTE – When setting up an identity number generator it is good practice to reserve (part of) a series for training, education, software testing, fault finding and similar purposes. People are otherwise very creative and use old numbers or redefine old things because there is no way for them to be allowed to create new numbers for those purposes without triggering other mechanisms in an integrated environment. This could be harmful.

6 Identification within a global context

6.1 General

Globally unambiguous identification can be achieved in two different ways:

- a local domain with validity within an organization is supplemented with an identification of the domain, possibly further supplemented with an identifier for the country, etc., see 6.2; or
- the domain for the identification system is defined as global right from the start, see 6.4.

The principles are illustrated in Figure 3.

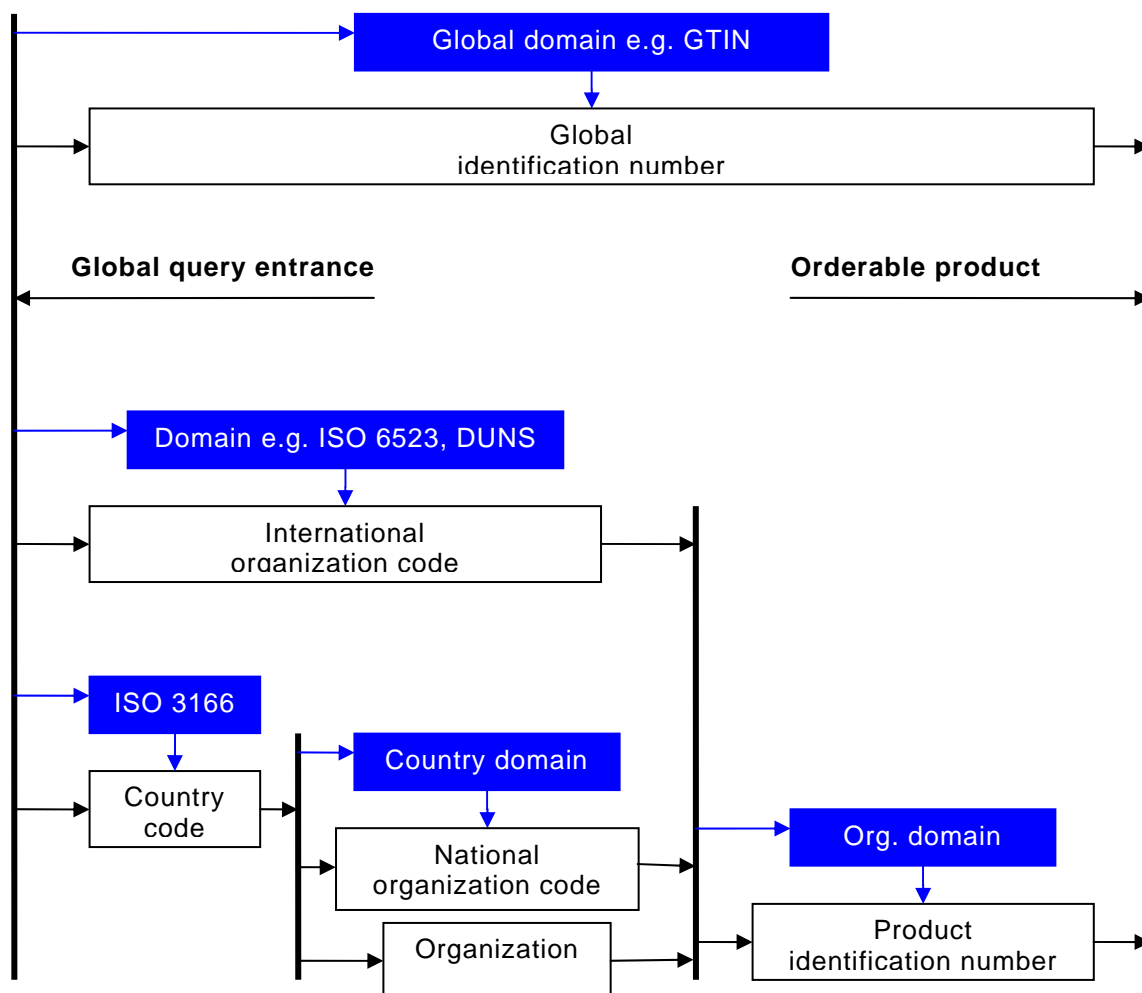


Figure 3 - Structured global query for products

6.2 Identification of a local domain

To achieve a global unambiguous identification, the local domain has to be identified within a larger domain, which might be enterprise wide, national or international (regional or global).

The local domain is identified by a domain identifier, which shall be unambiguous within the larger domain. The principles described in 4.4 apply.

NOTE – Method 1 can be applied if a registration authority for the larger domain exists. If no registration authority is available method 2 is applicable.

6.3 Application of the domain identifier

In most cases the identification numbers are sufficient as identifiers on a product or document, as the identification number domain is known and presupposed in that specific context. For example:

- An identification number shown on a rating plate is interpreted as belonging to a domain corresponding to the organization with its name or logotype presented on the plate;
- An identification number used as a document number is interpreted as belonging to a domain corresponding to the organization with its name or logotype presented in the title block of the document, or in e.g. a letter head;
- An identification number presented in the content of a document (listing of parts or documents, references to related documents, etc) are also interpreted as belonging to a domain corresponding to the organization with its name or logotype presented in the header or footer of the document;

Wherever an identification numbers is presented or used and the domain is not clear from the context, information on the domain identifier shall be explicitly stated.

The appearance of the identification number domain can be different in different contexts:

- In presentation as field names on screens, headlines in tables, in clear text, etc., the domain might be shown integrated in a field name, column headline, etc. (labelled as for example “GTIN”);
- In applications where identification numbers from several different domains are handled regularly, the domain ID (or name) and the identification number are specified as separate fields that always are communicated as a pair;
- As a concatenated part of an identifier comprising the domain ID and the identification number separated with an UNDERLINE character (e.g. GTIN_1234567891234).

In communication between different parties the domain identifier and the identification number should be transferred as two separate entities whenever the domain isn't always one and the same (in which case it might be presupposed).

6.4 Global domains

A number of global domains are defined today to allow unambiguous identification, see Annex D.

For trade and logistics i.a. ISO/IEC 15459-1, -2, -3 and -4 applies.

7 Identification within a system or product context

7.1 General

The identification systems used in a delivered system or product serves primarily the purpose to identify or address occurrences of object types within this context.

7.2 Identification systems

The basic identification system is the reference designation system:

- the *domain*, is in this case limited to the actual system or product;
- the *kind of objects* subject to identification are in accordance with IEC 61346-2¹;
- the *rules* for how the identification numbers are constructed in order to be unambiguous within this domain are constructed in accordance with IEC 61346-1¹.

The domain as whole (the system or product) is as a freestanding type identified in accordance with an identifier as described in clause 5.

¹ As a result of the ongoing revision of IEC 61346 carried out jointly between IEC TC3 and ISO TC10 the number is planned to be changed to 81346 in order to make it possible to include parts from the different organisations in the one series.

If such a system or product is included as a constituent (occurrence) in another (larger) system or product it will adopt the reference designation for the occurrence in this larger system.

NOTE - Multilevel reference designations in accordance with IEC 61346-1 can be considered as a concatenation of domains.

IEC 61346 is further supplemented by:

- IEC 61666 for the identification of terminals within a system, and
- IEC 61175 for the identification of signals within a system.

For the identification of documents in a system or product context IEC 61355 applies. This identifier is also based on the reference designation in accordance with IEC 61346.

8 Identification within a library or catalogue context

8.1 General

“Library” is a commonly used term used not only for books but also for collections of other kinds of information objects intended for repetitive access and reuse, for example catalogues of products, document forms, “typical solutions”, instance diagrams, graphical symbols, data element types, etc.

The structure of a library is generally based on one or more classification structures.

Objects contained in a library structure should generally be **identified** in accordance with clause 5 in order to ensure permanence of the identification. The used identifiers could belong to one or more domains.

NOTE - For maintenance and retrieval purposes the objects **are** additionally **classified**, in accordance with the classification schemes on which the library is built. A classification scheme may vary over time to meet varying requirements for retrieval.

Identification and classification should be kept apart in order to ensure both permanence and flexibility. Please refer to Annex A.

9 Unambiguous identification over time

9.1 General

The requirement for permanence is reasonably easy to meet, provided that the organization in charge of a domain is also stable over time. Organizations are, however, sometimes split or merged with other organizations. At a merger the new organization will face a situation with two or more identification number domains. In unfortunate cases these might be impossible to merge since some identification numbers would then no longer be unambiguous. Identification numbers from the earlier organizations are most likely necessary to handle in the same information system environment where collisions would then appear.

Re-identification of objects is under such circumstances neither a practically nor a principally possible solution. It would in most cases be extremely costly (because of all changes in existing documentation) and for example product identification numbers are in any case printed on the marking plates of since long sold and distributed products.

The method to create a globally unambiguous identification by means of domain identifiers can be applied also for this purpose. The domain identifier (Domain ID) depicts the former custodian of the number, i.e. the owner and manager of the numbering scheme from which the identification number once were generated.

Note that this organization will in many cases no longer exist, and therefore no international or national organization codes etc will be available. Therefore, the domain ID has to be handled as a separate entity entirely within the new organization.

There are cases where the numbering scheme for some of the identification numbers in actual use is not possible to trace back to its origin. In such cases a Domain ID can be created based on the organizational unit in which these numbers was first created and controlled.

10 Further rules for the identification of some specific kinds of object

10.1 Identification of products

10.1.1 Basic identification

A product of an organization shall be unambiguously identified by at least one product identification number and preferably one only, i.e. have a unique number.

NOTE – Multiple identification numbers for an object do not make any harm from a pure information technological aspect, but will cause additional cost for maintenance and might, if physical objects are identified and marked, result in multiple storage of the same object under different identification numbers.

If a product is used as a component in a “higher level assembly” the reference shall be made, to this product identification number.

If the delivered specimens of a product are individually tested or if there for other reasons is a need for individual identification, each delivered specimen shall in addition be identified by a serial number, to which the documentation (such as test records) of the delivered specimen can be assigned.

A product that is subject to change may be identified with the same product identification number as long as the “form, fit and function” is the same, i.e. the product is the same as the previous one seen *from a user perspective*. This means that all user documentation can remain unchanged.

If the “form, fit and function” is not the same, the changed product shall have a new product identification number.

A product may be subject to substantial “internal” changes that do not affect the usage, but only the manufacturing, test procedures, etc. In such cases the product identification number may be kept provided that the revision level of the changed product is properly documented and marked.

10.1.2 Supplementary identification

For the purpose of facilitation of the logistics of a product it may be further identified by a GTIN (earlier EAN or UPC).

A GTIN identifies a traded object. The traded object is in some cases equal to the product identified in accordance with 10.1.1, but may in other cases contain more than one specimen of the product. If a product is used as a component in a “higher level assembly”, a reference to the GTIN should therefore in such cases be provided as supplementary information only; the primary reference shall still be to the product identification number.

10.1.3 Information model

Annex E contains an information model of entities and relations involved in the identification of products.

10.2 Identification of documents

10.2.1 Basic identification

A document of an organization shall be unambiguously identified by at least one document identifying number and preferably one only, i.e. have a unique number.

For further rules relating to the identification of documents, please refer to IEC 82045-1 and IEC 82045-2.

Note that a document identification number shall refer to the **information** contained in the document, irrespective of the medium that carries it. This makes references stable.

The same identification number may also be used to refer to different language variants of the information. The different language variants are in such cases differentiated by means of an additional language identifier.

10.2.2 Supplementary identification

A **physical document copy** (e.g. instruction manual, provided on a specific medium (e.g. paper, CD-ROM), on one or more specific languages) that is part of a delivered product (e.g. packed in the same package), should be treated and **identified** as a product and as such specified as a component in the parts list of the delivered product.

10.3 Identification of packages

A traded object being identified by an identification number may only be commercially available within a package unit. Such a package unit may contain more than one specimen of the traded object and may also contain specimens of different traded objects. The package unit should therefore be identified by itself including references to the traded objects it contains.

A traded object may, due to its dimensions and assembly configuration, be deliverable within one or many packages.

Annex E contains an information model of entities and relations involved in the packaging of products.

11 Conformance

11.1 General

Conformance to this standard can be claimed for identification systems defined and documented in accordance with clause 5 to 8 (which includes part of clause 4 by references).

For computer systems claimed to be in compliance with this standard should special attention be given the requirement to manage identification number domains.

Annex A

Identification versus classification

(Informative)

A.1 Identification

When the word **identify** is used in everyday language it has a number of slightly different meanings: to establish the identity of; to recognize or select by analysis; to regard oneself as sharing the same characteristics or thinking as (someone else); to associate (someone or something) closely with (something else).

Identification is the action or process of identifying or the fact of being identified.

Identity (from Latin *idem* same; Late Latin *identitas*) is absolute sameness; individuality; etc.

The term **identification** as used in this standard has a very specific meaning: the action or process of assigning an *identifier* to an object or the fact of being assigned an *identifier*.

An **identifier** is a data item (character or group of characters) supplying absolute and **unambiguous reference** to a particular object (document, product, etc.) within a specified domain or context and within a specified time range, usually very long.

This is the only purpose an identifier has. The task is big enough considering that the internal structure of the organization managing an identification system is constantly changing in order to meet external and internal requirements and the requirement for stability and permanence therefore can be difficult to meet. Nevertheless, the identification system has to ensure that one identification number can never depict two different objects, and preferably one object should not have more than one identification number.

The requirement for uniqueness and stability of the identification number is higher today than before, because of the existing and increasing use of electronic information exchange in internal as well as external trade. This has also increased the size of the domain within which an identifier needs to be unambiguous.

A.2 Classification

Classification of an object is an activity that often is carried out in the context of identification and sometimes also mixed up with it. A **classifying attribute** is a data item that characterises a particular object as being a member of a class. The class is defined by a classification scheme.

Different classification schemes can be applied for an object. Consequently, an object may be a member of many classes and be characterized by many classifying attributes. Examples of classifying attributes: document kind, product class, etc. but also sheet size, responsible department, etc.

The purpose of classification is **retrieval**. By following a classification schemes it should be possible to find all the members of a class.

During the life time of an product, document, etc. the requirements for classification may differ considerably and, in order to be up to date, the classification schemes may need to be revised regularly. There is no such thing as one stable classifying scheme that can cover all relevant aspects and the entire life cycle of a product or document. To select one incomplete out of a number of possibilities is unsatisfactory.

Classification attributes do not depict objects uniquely and ***they may need to be changed*** in order to serve their intended purpose. Therefore, they are not well suited as a basis for identification, not even if several are combined in one string.

A.3 Conclusion

Identification numbers ***shall never be changed, but classification attributes should preferably be managed in such a way that they can be changed easily***. Example: If a classifying attribute for a document needs to be changed, this should not require a formal revision of the document itself.

It is recognized that classifying attributes traditionally have been part of identification numbers, usually so that a specific character position is assigned a certain “meaning”, i.e. assigned a classification attribute in a coded form. The reason for doing so is that it is then possible, in a rudimentary way, to use the identification numbers for retrieval purposes. However, such methods do not meet today’s information processing requirements.

Modern computer based document management systems or product management systems can be used to attach several different independent classifications attributes to a single document or product. These can satisfy all reasonable search and retrieval needs. The classifying attributes may be changed: old ones deleted and new ones added to be in line with the technical development.

To include classifying attributes in the identification number, even if it once made sense, is therefore no longer neither needed nor desirable:

- the identification numbers become unnecessary long;
- it is necessary to use the maximum length always, if each position is assigned a meaning;
- fewer identification numbers can be used within each number series;
- it complicates the design and use of the identification number banks;
- blocking of a whole series, if a classification character in the beginning of the identification number needs to be changed later on;
- it may be impossible to continue an allocated series;
- impossible to correct a mistake at the classification of the product or document;
- impossible to change a classification system over time;
- etc..

Identification and classification should be kept apart. Identification numbers and classifying attributes are different, independent, data items.

Annex B

Commonly occurring kinds of objects

(Informative)

(This is to be prepared! List: Object kind name; Context (organizational, system/plant; library; ...;)

- Product type
- Product individual
- Component type
- Component occurrence
- Document kind
- Document (individual)
- Project
- Order
- Quotation
- Traded item
- Etc

Annex C

Configurable product concepts (Informative)

C.1 General

“Configurable product” is a commonly used (although strictly speaking inappropriate) term for a configurable product concept, i.e. the set of formal engineering rules for a product type, processed by a software application system, a “product configurator”, that automatically creates the information required for the manufacturing of variants of the product type in response to the input of requirement data.

NOTE – The term is inappropriate since there is no product existing until a variant of the product type is created.

From identification perspective this raises a couple of questions:

- How should the product concept, i.e. the set of formal engineering rules, be identified?
- How should the created variants be identified?

C.2 Identification of the product concept

The product concept can be seen as a document or a set of documents with a main document. It is therefore natural to identify it with a document identification number.

Note especially that since the product concept is likely to be changed several times during its life time, the ***rules for version control*** are especially important to apply. Please refer to IEC 82045 -1 and IEC 82045-2.

C.3 Identification of the product variants

The created product variants should be identified with product identification numbers like other products.

A product configurator is usually equipped with an identification number generator. This should be set up in accordance with the general rules for the identification system in force within the organization. Do not use any special rules specific to the configurator, since the created product variants are likely to need to be managed for a long time after the product configurator has ceased to exist.

It might be tempting to identify the generated product variants with serial numbers only, but since many copies of one variant may be ordered, serial numbers should also in this case be reserved for the identification of each individual specimen.

Annex D

Examples of global domains

(Informative)

(This is to be prepared! List: Domain; domain custodian; kind of identified object; reference to rules; example of identification number; remarks.)

- GTIN - Global Trade Item Number
- GLN - Global Location Number
- SSCC – Serial Shipping Container Code
- GRAI – Global Returnable Asset Identifier
- GIAI – Global Individual Asset Identifier
- GSRN – Global Service Relation Number
- GDTI – Global Document Type Identifier
- ISBN – International Standard Book Number.
- ISMN – International Standard Music Number
- URN:NBN – Identifier for electronic resources
- ISSN – International Standard Serial Number
- Etc.

Annex E

EXPRESS–Model

(Informative)

This annex provides the application reference model for product identification on a world-wide level and is given in figure A.1. The application reference model is a graphical representation of the structure and constraints of the application objects specified. The graphical form of the application reference model is presented in EXPRESS-G. The application reference model is independent from any implementation method.

EXPRESS-G is a graphical data modelling language specified in ISO 10303-11 [1] . The application reference model depicts the requirements set up in this international standard.

NOTE 1 - For an introduction to EXPRESS–G, see Annex F.

NOTE 2 - Annex E is available in the English language only.

E.1 Description of entities – Identification scheme

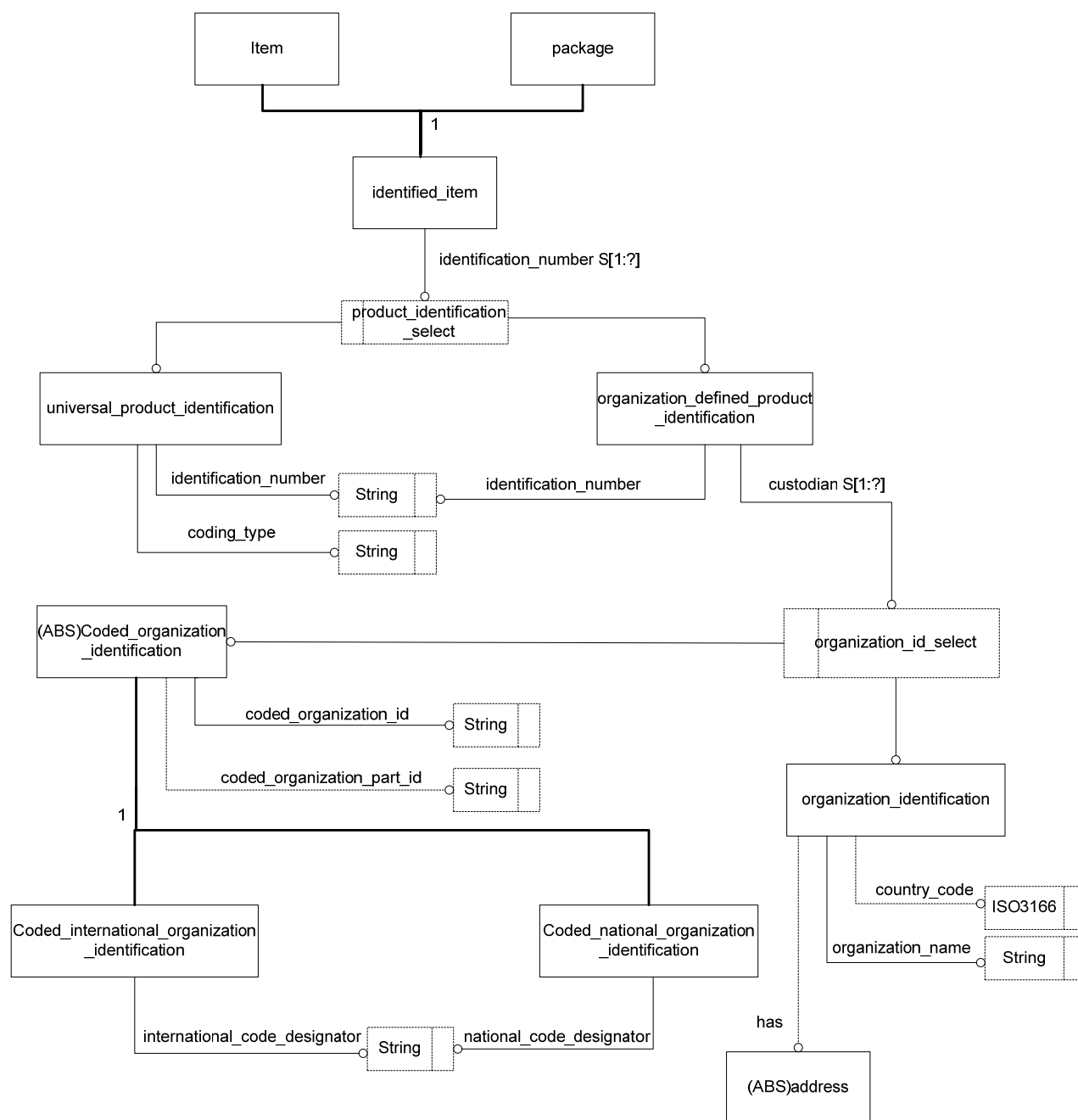


Figure A. 1 – Product identification part

E.1.1 Item

The entity **Item** is any kind of traded object.

NOTE – The different entities **Item** and **Package** are required in order to be able to differentiate between an item and a package of an item

E.1.2 Package

See clause E.2.3 .

E.1.3 Identified_item

The entity Identified_item is either an item or a package. The data associated with the entity Identified_item are the following:

- identification_number S[1:?].

E.1.3.1 identification_number S[1:?]

Relation specifying the identification numbers of the identified items.

E.1.4 Product_identification_select

The entity Product_identification_select gives the possibility to select between two different kinds of identification of a product. The data associated with a product_identification are the following:

- universal_product identification, and
- organization_defined_product_identification.

E.1.5 Universal_product_identification

The entity Universal_product_identification supplies the data needed for an identification of a product on a worldwide level. The data associated with an Universal_product_identification are the following:

- identification_number;
- coding_type.

E.1.5.1 identification_number (universal_product_code)

Coded identification based on a defined world-wide product identification system including the country code, the organization code within that country and the item code within that organization. The code normally contains an additional check digit.

E.1.5.2 coding_type

Information on the domain and structure used within the global identification system.

NOTE 1 At present the following values of coding types are known: EAN-8: EAN-13, UPC-A (12 digits); UPC-B (12 digits), UPC-C (14 digits), UPC-D (14 +n digits), ISSN, ISBN, GTIN etc. For further domains see Annex D.

E.1.6 Organization_defined_product_identification

The entity Organization_defined_product_identification supplies the data for the identification of a product within an organization on international, regional or national level for such identification systems not applying a global identification system. The data associated with an Organization_defined_product_identification are the following:

- identification_number;
- custodian S[1:?].

E.1.6.1 identification_number

Private code uniquely identifying a product within an organization.

NOTE 1- Different terms are used throughout industrial branches, e.g. item code, product identification code, item identification, item id, product identifying number. They all correspond to the term "identification number".

E.1.6.2 custodian S[1:?]

The relation custodian specifies the organization which is the legal owner of the product identifying number.

NOTE – The cardinality takes into account that the same item may be multiply identified within different domains, e.g. organization-bound, via EAN-13 etc.

E.1.7 Organization_id_select

The entity Organization_id_select gives the possibility to select between two different kinds of identification of an organization. The data associated with an Organization_id_select are the following:

- (ABS)Coded_organization_identification;
- Organization_identification.

E.1.8 (ABS)Coded_organization_identification

The entity (ABS)Coded_organization_identification allows the possibility to refer alternately to a coded international or national based identification system. The data associated with (ABS)Coded organization identification are the following:

-coded_organization_id;

- coded_organization_part_id.

E.1.8.1 coded_organization_id

Coded name of a particular organization within an organization identification scheme.

NOTE - ISO 6523 provides a code with a variable length of up to 35 digits.

E.1.8.2 coded_organization_part_id

Coded name of a part of a particular organization within an organization identification scheme. The coded_organization_part_id need not be given.

NOTE - ISO 6523 provides a code with a variable length of up to 35 digits.

E.1.9 Coded_international_organization_identification

The entity Coded_international_organization_identification supplies the data for a worldwide identification of an organization in a coded form. The data associated with a Coded_international_organization_identification are the following:

- international_code_designator.

E.1.9.1 international_code_designator (ICD)

Coded name of the authority issuing the organization codes, assigned by a registration authority conforming to ISO 6523.

NOTE 1 - ISO 6523 provides a four digit code. The ICD may be transmitted as a variable-length data element; conversely, if transmitted in a 4 digit fixed length field, leading zeros shall be added to complete the format to 4 digits if the ICD value is less than 1000.

NOTE 2 - A list of assigned ICD can be obtained at the ISO General Secretariat.

E.1.10 Coded_national_organization_identification

The entity Coded_national_organization_identification supplies the data for a national identification of an organization in a coded form. The data associated with a Coded_national_organization_identification are the following:

- national_code_designator.

E.1.10.1 national_code_designator

Coded name of the authority issuing the organization codes, assigned by a national registration authority.

E.1.11 Organization_identification

The entity Organization_identification is a number of persons or groups that has the responsibility to design, produce and supply products and services. The data associated with an organization_identification are the following:

- country_code;
- organization_name;
- has.

E.1.11.1 country_code

Coded name of a country according to the two-letter code of ISO 3166-1. The country code need not be specified for a particular organization.

NOTE 1 - The country code needs to be provided, if the organization internal product identification system is country-bound; i.e. the internal product identification system is not unique within that organization on a world-wide level. Then the additive use of the country code makes the existing product identification system applicable on a world-wide level.

NOTE 2 - ISO 3166-1 specifies country codes.

E.1.11.2 organization_name

Specification of the identification of a particular organization.

NOTE - ISO 6523 provides a string of 250 characters.

E.1.12 (ABS)Address

The Address is an abstract supertype of Postal_address, Electronic_address and Physical_address. It specifies where people and organizations are located and how to contact them. The address need not be specified for a particular organization.

For detailed information see IEC 820465-2: 2004, Annex A.4.27.

NOTE - The address needs to be added, if the organization internal product identification system is location-bound; i.e. the internal product identification system is not unique within that organization neither on a world-wide nor country level. Then the additive use of the country code and the address (of a location) make the existing product identification system applicable on a world-wide level.

E.2 Description of entities – Package scheme

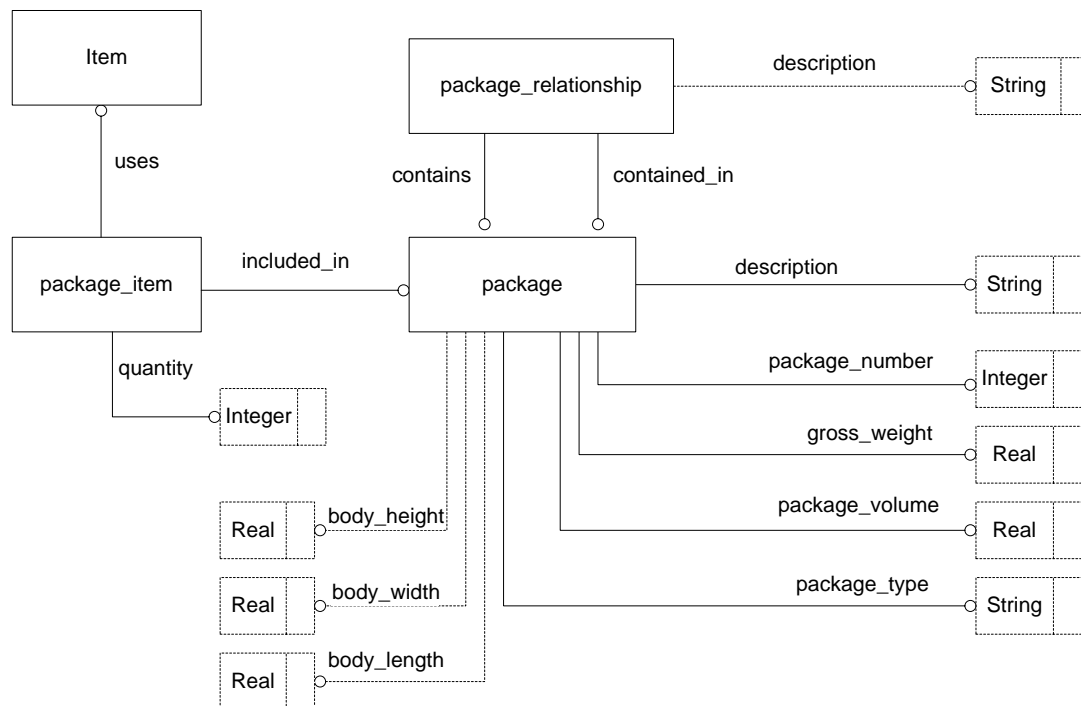


Figure A. 2 – Package identification part

E.2.1 item

See clause E.1.1.

E.2.2 package_item

The entity Package_item provides information about the items being included in a package. The data associated with a package_item are the following:

- quantity;
- included_in;
- uses.

E.2.2.1 quantity

Provides the information about the number of packaged items included within a single package.

E.2.2.2 included_in

Relation assigning a package_item to a specified package.

E.2.2.3 uses

E.2.3 package

The entity Package provides the information associated with each package. The data associated with a package are the following:

- description;
- package_number;
- gross_weight;
- package_volume;
- package_type;
- body_height;
- body_length;
- body_width.

E.2.3.1 description

Clear text description of the content of a package.

E.2.3.2 package_number

Identification of a package within a set of zero, or many packages.

E.2.3.3 gross_weight

Information concerning the gross weight of a single package.

E.2.3.4 package_volume

Information concerning the volume of a single package.

E.2.3.5 package_type

Information concerning the type of packaging used in freight logistics system.

NOTE – In the context of Incoterms 2000 a list of predefined package types is available.

E.2.3.6 body_length

Length of a packaged body. The body_length need not be specified for a particular package.

NOTE – Independently of its real shape, e.g. circular, rectangular, etc. all packages are considered as bodies with rectangular shapes.

E.2.3.7 body_width

Width of a packaged body. The body_width need not be specified for a particular package.

E.2.3.8 body_height

Height of a packaged body. The body_height need not be specified for a particular package.

E.2.4 Package_relationship

The Package-relationship specifies relations between specified different packages used to deliver a package item.

The data associated with a Package_relationship are the following:

- contains;
- contained_in;
- description.

E.2.4.1 contains

The contains specifies the second of the two package objects related by the Package_relationship.

E.2.4.2 contained_in

The relating_party specifies the first of the two package objects related by the Package_relationship.

E.2.4.3 description

Provides human-readable information about a particular Package_relationship. The description need not be specified for a particular Package_relationship.

Annex F Bibliography

(To be updated and extended!)

- [1] ISO 10303-11:1994, Industrial automation systems and integration – Product data representation and exchange – Part 11: Description methods: The EXPRESS language reference manual
- [2] Information modelling – Getting started with EXPRESS-G. This document is available as pdf file under (<http://tc3.iec.ch> > TC3 > Standing documents)
- [3] EAN Vade–mecum; International Article Numbering Association (EAN International), Rue Royale 29, B–1000 Brussels, Belgium

WWW Homepages related to Universal Product Code and European Article Numbering (<http://www.ean.be/>);

WWW Homepage related to GS1 (<http://www.gs1.org/>) .

NOTE – Readers have to be aware of the fact that references given, may disappear within the Web without prior notice.