

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Standard data element types with associated classification scheme –
Part 1: Definitions – Principles and methods**

**Types normalisés d'éléments de données avec plan de classification –
Partie 1: Définitions – Principes et méthodes**



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2017 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - www.iec.ch/searchpub

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing 20 000 terms and definitions in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary

65 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Catalogue IEC - webstore.iec.ch/catalogue

Application autonome pour consulter tous les renseignements bibliographiques sur les Normes internationales, Spécifications techniques, Rapports techniques et autres documents de l'IEC. Disponible pour PC, Mac OS, tablettes Android et iPad.

Recherche de publications IEC - www.iec.ch/searchpub

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études,...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne de termes électroniques et électriques. Il contient 20 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans 16 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

Glossaire IEC - std.iec.ch/glossary

65 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: csc@iec.ch.

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Standard data element types with associated classification scheme –
Part 1: Definitions – Principles and methods**

**Types normalisés d'éléments de données avec plan de classification –
Partie 1: Définitions – Principes et méthodes**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 31.020

ISBN 978-2-8322-4581-1

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD.....	10
INTRODUCTION.....	12
1 Scope.....	13
2 Normative references	13
3 Terms, definitions and abbreviated terms	14
3.1 Terms and definitions.....	14
3.2 Abbreviated terms.....	20
4 Foundation for the concepts of IEC 61360 standard dictionaries.....	20
5 Dictionary identification	22
5.1 General.....	22
5.2 Dictionary_supplier	22
5.3 Code.....	22
5.4 Version_number.....	23
5.5 Date_of_current_version	23
5.6 Revision_number	23
6 Property	24
6.1 Overview.....	24
6.2 Specification of information object	27
6.3 Data_element_type_class	28
6.4 Depends_on	29
6.5 Formula	29
6.6 Preferred_letter_symbol.....	30
6.7 Synonymous_letter_symbol	30
6.8 Attributes internal to Property	30
6.9 Code_of_alternative_unit	31
6.10 Code_of_list_of_units	31
6.11 Code_of_unit	32
6.12 Definition_class	32
6.13 Drawing_reference.....	32
7 Identifying_attributes	32
7.1 Overview.....	32
7.2 Specification of information object	33
7.3 Code.....	34
7.4 Preferred_name	35
7.5 Revision_number	35
7.6 Short_name	36
7.7 Synonymous_name.....	36
7.8 Version_number.....	36
8 Semantic_attributes.....	37
8.1 Overview.....	37
8.2 Specification of information object	37
8.3 Definition	37
8.4 Note.....	39
8.5 Remark.....	39
8.6 Source_document_of_definition	39
9 Administrative_attributes	40

9.1	Overview.....	40
9.2	Specification of information object	40
9.3	Obsolete_date	40
9.4	Proposal_date.....	40
9.5	Published_in	41
9.6	Published_by	41
9.7	Responsible_committee	41
9.8	Revision_released_on.....	42
9.9	Status_level	42
9.10	Version_initiated_on	43
9.11	Version_released_on	43
10	Value_attributes	43
10.1	Overview.....	43
10.2	Specification of information object	44
10.3	Alternative_units_of_measure	44
10.4	Data_type	45
10.4.1	General	45
10.4.2	Simple type	46
10.4.3	Enumeration type	51
10.4.4	Class instance type	52
10.4.5	Class reference type.....	53
10.4.6	Aggregate type	53
10.4.7	Level type.....	55
10.4.8	Large object type.....	56
10.4.9	Placement type.....	56
10.4.10	Data type dependencies	57
10.5	Number_of_significant_digits	59
10.6	Referenced_class_identifier	60
10.7	Unit_of_measure.....	60
10.8	Value_format	61
11	Condition_property	63
11.1	Specification of information object	63
11.2	Property_data_element_type	64
12	Dependent_condition_property	64
12.1	Specification of information object	64
12.2	Depends on	65
12.3	Property_data_element_type	65
13	Dependent_property	66
13.1	Specification of information object	66
13.2	Depends on	66
13.3	Property_data_element_type	67
14	Non_dependent_property	67
14.1	Specification of information object	67
14.2	Property_data_element_type	67
15	Translation_information	68
15.1	Specification of information object	68
15.2	Date_of_current_translation_revision	68
15.3	Language_code	68

15.4	Responsible_translator	69
15.5	Responsible_translator_coded	69
15.6	Translation_revision.....	69
16	Value_list	70
16.1	Specification of information object	70
16.2	Attributes internal to Value_list	71
16.3	Definition_class	71
16.4	Enumerated_list_of_terms	72
17	Term.....	72
17.1	Specification of information object	72
17.2	Preferred_letter_symbol_in_text	73
17.3	Attributes internal to Term.....	73
17.4	Definition_class	73
18	Drawing.....	73
18.1	Information model	73
18.2	Specification of information object	74
18.3	Code.....	75
18.4	Descriptive_designator	75
18.5	Drawing_title.....	76
18.6	File_format	76
18.7	File_name.....	77
18.8	Revision_number	77
18.9	Version_number.....	78
18.10	Attributes internal to Drawing.....	78
19	Unit of measure	78
19.1	Overview.....	78
19.2	Specification of information object	79
19.3	Primary_unit	80
19.4	Unit_in_text	80
19.5	Unit_XML.....	80
19.6	Attributes internal to Unit_of_measure	81
19.7	Drawing_reference.....	81
20	Creation of language variants	81
20.1	Overview.....	81
20.2	Language-dependent attributes of a Property.....	81
20.3	Language-dependent attributes of an Item_class	82
20.4	Language-dependent attributes of a Drawing	82
20.5	Language-dependent attributes of a Unit_of_measure	82
20.6	Language-dependent attributes of a Relation	82
21	Item_class	82
21.1	Classification tree	82
21.2	Composition tree.....	85
21.3	Use of auxiliary schemes for classification and coding of values	86
21.4	Information model	87
21.5	Specification of information object	87
21.6	Class_type.....	88
21.7	Coded_name	89
21.8	Attributes internal to Item_class	89

21.9	Applicable_data_element_type	89
21.10	Applicable_relation	90
21.11	Classifying_data_element_type.....	90
21.12	Drawing_reference.....	91
21.13	Is_case_of	91
21.14	Superclass.....	91
22	Relation.....	92
22.1	Overview.....	92
22.2	Specification of information object	93
22.3	External_solver_for_the_formula.....	93
22.4	Formula	94
22.5	Language_for_formula_interpretation.....	95
22.6	Relation type.....	95
22.7	Role_of_the_relation.....	95
22.8	Attributes internal to Relation	97
22.9	Definition_class	98
22.10	Codomain_of_function	98
22.11	Domain_of_function	98
22.12	Domain_of_relation.....	99
22.13	Drawing_reference.....	99
22.14	Super_relation	99
23	Dictionary_element.....	99
24	Advanced concepts	100
24.1	Overview.....	100
24.2	Condition	100
24.3	Reuse of properties	104
24.4	Classes and properties for common use	106
24.5	Block	107
24.6	Cardinality	109
24.7	Polymorphism	111
24.7.1	Overview	111
24.7.2	Polymorphic choices directly assigned to the specified Item_class	112
24.7.3	Polymorphic choices assigned to the specified Item_class through a Value_list	114
24.8	Relation	116
24.8.1	Overview	116
24.8.2	Restricted enumeration.....	116
24.8.3	Grouping	118
25	Qualifiers.....	119
26	Characters and character sets	120
26.1	Overview.....	120
26.2	Recommended character sets.....	120
26.3	Line feed.....	120
26.4	Subscript	120
26.5	Superscript	121
26.6	Greek characters	121
Annex A (informative)	Data model.....	123
Annex B (normative)	Type classification codes of properties	128

B.1	Property classification	128
B.1.1	Overview	128
B.1.2	Principles	128
B.1.3	Quantitative Property information objects	128
B.1.4	Non-quantitative Property information objects	130
B.2	Survey of type classification codes for non-quantitative properties	130
B.3	Survey of type classification codes for quantitative properties	131
Annex C (informative)	Preparation of new classes and properties	141
C.1	Responsibilities	141
C.2	Recommended elements of data set	141
Annex D (informative)	Rules for defining new versions and revisions of dictionary elements	142
D.1	Changes in the attributes of Property information objects	142
D.2	Changes in the attributes of class information objects	144
Annex E (informative)	Classifying_data_element_type attribute	145
Annex F (informative)	Conventions for names and definitions	146
F.1	Conventions for writing definitions	146
F.1.1	General	146
F.1.2	ISO/IEC 11179-4	146
F.1.3	ISO 704	146
F.1.4	Additional conventions	147
F.2	Conventions for writing names	147
F.2.1	Requirements	147
F.2.2	Recommendations	147
F.2.3	Mechanical quantitative property names	147
F.2.4	Electrical quantitative property names	147
F.2.5	Non-quantitative property names	148
Annex G (normative)	Value format specification	149
G.1	General	149
G.2	Notation	149
G.3	Data value format types	151
G.4	Meta-identifier used to define the formats	151
G.5	Quantitative value formats	151
G.5.1	General	151
G.5.2	NR1-value format	151
G.5.3	NR2-value format	152
G.5.4	NR3-value format	152
G.5.5	NR4-value format	153
G.6	Non-quantitative value formats	154
G.6.1	General	154
G.6.2	Alphabetic value format	154
G.6.3	Mixed characters value format	155
G.6.4	Number value format	155
G.6.5	Mixed alphabetic or numeric characters value format	156
G.6.6	Binary value format	156
G.7	HTML5 format	156
G.8	Value examples	157
Annex H (informative)	Modelling notation	158

H.1	General.....	158
H.2	UML Class	158
H.3	Generalization	158
H.4	Simple association.....	158
H.5	Modularization with UML package.....	159
	Bibliography.....	161
Figure 1	– Simplified model of IEC 61360-1 (UML class diagram)	21
Figure 2	– Overview model for Characteristic (UML class diagram).....	27
Figure 3	– Property (UML class diagram).....	28
Figure 4	– Identifying attributes (UML class diagram).....	34
Figure 5	– Semantic attributes (UML class diagram)	37
Figure 6	– Administrative_attributes (UML class diagram).....	40
Figure 7	– Value_attributes (UML class diagram).....	44
Figure 8	– Examples for technical data associated with connecting lines	46
Figure 9	– Condition_property (UML class diagram).....	64
Figure 10	– Dependent_condition_property (UML class diagram).....	65
Figure 11	– Dependent_property (UML class diagram).....	66
Figure 12	– Non_dependent_property (UML class diagram)	67
Figure 13	– Translation_information (UML class diagram).....	68
Figure 14	– Value_list (UML class diagram).....	71
Figure 15	– Term (UML class diagram)	72
Figure 16	– Overview model for Drawing concept (UML class diagram)	74
Figure 17	– Drawing (UML class diagram)	75
Figure 18	– Overview model for Measure concept (UML class diagram).....	79
Figure 19	– Unit_of_measure (UML class diagram).....	80
Figure 20	– Classification tree	83
Figure 21	– Composition tree	86
Figure 22	– Overview model for Concept_data (UML class diagram).....	87
Figure 23	– Item_class (UML class diagram).....	88
Figure 24	– Overview model for Relation concept (UML class diagram)	92
Figure 25	– Relation (UML class diagram)	93
Figure 26	– Dictionary_element (UML class diagram)	100
Figure 27	– Working point of a fuse	101
Figure 28	– Implementation in IEC 62656-1 spreadsheet format of the example in	
Figure 27	102
Figure 29	– (a) Dynamic gain and noise figure measurement setup, and (b)	
	measurement with a saturation wavelength of 1550 nm	103
Figure 30	– Implementation in IEC 62656-1 spreadsheet format of the example in	
Figure 29	104
Figure 31	– Reuse of properties (IEC 62656-1 spreadsheet format)	105
Figure 32	– Use of class information objects to associate tolerated capacitance	
	information to a fixed capacitor (IEC 62656-1 spreadsheet format)	107
Figure 33	– Interpretation of Class and Property information objects forming a block.....	108
Figure 34	– Example of a block (IEC 62656-1 spreadsheet format)	109

Figure 35 – Interpretation of Class and Property information objects forming cardinality	110
Figure 36 – Example for a block whose number of occurrences is limited through PAA506 (IEC 62656-1 spreadsheet format).....	111
Figure 37 – Interpretation of Class and Property information objects forming a polymorphism	112
Figure 38 – Polymorphic choices directly assigned to the specified Item_class (IEC 62656-1 spreadsheet format)	113
Figure 39 – Polymorphic choices assigned to the specified class through a value list (IEC 62656-1 spreadsheet format)	115
Figure 40 – Example – Restricted enumeration (IEC 62656-1 spreadsheet format)	117
Figure 41 – Example – List of units for measuring the gap width of a labyrinth seal	118
Figure 42 – Example – Information objects of Figure 41 (IEC 62656-1 spreadsheet format).....	119
Figure A.1 – Characteristic (UML class diagram)	124
Figure A.2 – Drawing concept (UML class diagram)	125
Figure A.3 – Category (UML class diagram).....	125
Figure A.4 – Measure concept (UML class diagram)	126
Figure A.5 – Relation concept (UML class diagram).....	126
Figure A.6 – Value list concept (UML class diagram)	127
Figure H.1 – Example for generalization	158
Figure H.2 – Example of an association	159
Figure H.3 – Example of an association to a UML class owned by another UML package.....	159
Figure H.4 – Division of the IEC 61360-1 model into modules	160
Table 1 – Examples of generic concepts for individual quantities	19
Table 2 – List of attributes of Property information objects as defined in IEC 61360-1 and their equivalent in IEC 61360-2	25
Table 3 – Globally unique identification.....	33
Table 4 – Data type dependencies	59
Table 5 – List of attributes of Drawing.....	74
Table 6 – List of attributes of Item_class as defined in IEC 61360-1 and their equivalent in IEC 61360-2.....	85
Table 7 – Transliteration of Greek characters to Latin characters.....	122
Table B.1 – Survey of main classes of Property information objects.....	129
Table B.2 – Classification codes of non-quantitative data element types.....	130
Table B.3 – Classification codes for quantities of physical chemistry and molecular physics	131
Table B.4 – Classification codes for quantities of electricity and magnetism.....	133
Table B.5 – Classification codes for quantities of periodic and related phenomena	134
Table B.6 – Classification codes for quantities of acoustics	134
Table B.7 – Classification codes for quantities of heat	135
Table B.8 – Classification codes for quantities of information.....	135
Table B.9 – Classification codes for quantities of mechanics.....	136

Table B.10 – Classification codes for quantities of light and related electromagnetic radiations.....	137
Table B.11 – Classification codes for amounts.....	137
Table B.12 – Classification codes for prices and tariffs.....	138
Table B.13 – Classification codes for dimensionless business quantities and counts.....	138
Table B.14 – Classification codes for business ratios and percentages.....	138
Table B.15 – Classification codes for quantities of space and time.....	139
Table B.16 – Classification codes for quantities of nuclear reactions and ionizing radiations.....	140
Table D.1 – Overview of configuration management in Property updating operations.....	143
Table D.2 – Overview of configuration management in class updating operations.....	144
Table F.1 – Example of the name structure for electrical quantitative properties.....	148
Table G.1 – ISO/IEC 14977 EBNF syntactic meta-language.....	150
Table G.2 – Transposing European style digits into Arabic digits.....	155
Table G.3 – Number value examples.....	157

INTERNATIONAL ELECTROTECHNICAL COMMISSION

STANDARD DATA ELEMENT TYPES WITH ASSOCIATED CLASSIFICATION SCHEME –

Part 1: Definitions – Principles and methods

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 itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 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 61360-1 has been prepared by subcommittee 3D: Product properties and classes and their identification, of IEC technical committee 3: Information structures and elements, identification and marking principles, documentation and graphical symbols.

This fourth edition cancels and replaces the third edition published in 2009. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- support of advanced constructs such as
 - conditions and constraints,
 - blocks,

- cardinality,
 - polymorphism,
 - generic and restricted enumerations, and
 - mapping;
- extended list of data types;
 - harmonization with IEC 62656-1;
 - support of IEC TS 62720 and of coded units;
 - harmonization of semantic and administrative data among the various information objects;
 - use of UML for data modelling;
 - enhanced definitions and descriptions;
 - introduction of examples of higher level constructs such as block, cardinality, or polymorphism as guidance for the user of the IEC 61360 series.

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

FDIS	Report on voting
3D/295/FDIS	3D/298/RVD

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

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

A list of all parts in the IEC 61360 series, published under the general title *Standard data element types with associated classification scheme*, can be found on the IEC website.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://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 publication 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

The IEC 61360 series as a whole specifies a general purpose dictionary of technical terms covering the field of electrotechnology, electronics and related domains. The dictionary is specified in a computer-sensible form as a reference dictionary. By using the dictionary, applications can interact and share data in an unambiguous way free from semantic uncertainties.

This document addresses domain engineers and provides a detailed introduction to the structure of the dictionary and its uses from the viewpoint of the dictionary provider as well as from the viewpoint of the user of the dictionary. IEC 61360-2 specifies the detailed dictionary data model and IEC 61360-6 stipulates quality criteria for the content of the dictionary.

Referencing to a common dictionary is advantageous in all cases where product information has to be transferred in an unambiguous way. Use cases include catalogues, ordering processes, product information contained in specifications or contracts.

The International Electrotechnical Commission has set up a technical dictionary for the use in the electrotechnical and electronic domain which is maintained by SC 3D. This dictionary is called IEC Common Data Dictionary (IEC CDD) and can be accessed on the following IEC web page: <http://std.iec.ch/iec61360>.

Dictionaries should not be confused with catalogues or master data collections; these make use of dictionary objects. In catalogues or master data collections, values are assigned to instances of dictionary objects. Thus they build upon dictionaries. Consequently, dictionaries are normally exchanged in advance of any catalogue or master data.

Closely associated with this document is IEC 61360-2, which contains the information model using the EXPRESS modelling language. In this model, the definition and structure of IEC 61360-1 is formalized and presented in a computer-sensible form.

This document is largely compliant with IEC 61360-2:2012 and ISO 13584-42:2010. However, practical use has shown the necessity to selectively extend the data model. Thus, this fourth edition of IEC 61360-1 extends IEC 61360-2 in both semantics and syntax and introduces additional constructs available from IEC 62656-1 for practical benefits. For example, constructs such as enumerations of real numbers or relation objects do not exist in IEC 61360-2, but are needed in many fields of engineering.

IEC 62656-1 provides interfaces to IEC CDD. Thus, change requests to IEC CDD need to be formed according to the interface specification available from the latter standard.

In some cases it can be difficult to see whether words represent names of information objects or if just everyday items are addressed, e.g. by the term "property".

For this reason, the following typographic rules are used in this document:

- bold, upper case first letter: name of a UML class, e.g. "**Property**";
- bold, lower case first letter: name of a UML attribute or UML association, e.g. "**revision_number**";
- normal font (i.e. not bold), lower case first letter: floating text, e.g. "property".

UML information object names should be treated as constants and should not be translated in other languages.

STANDARD DATA ELEMENT TYPES WITH ASSOCIATED CLASSIFICATION SCHEME –

Part 1: Definitions – Principles and methods

1 Scope

This part of IEC 61360 specifies principles for the definition of the properties and associated attributes and explains the methods for representing verbally defined concepts with appropriate data constructs available from IEC 61360-2. It also specifies principles for establishing a hierarchy of classification from a collection of classes, each of which represents a technical concept in the electrotechnical domain or a domain related to electrotechnology.

The use of this document facilitates the exchange of technical data through a defined structure for the information to be exchanged in a computer-sensible form. Each property to be exchanged has an unambiguously defined meaning and consistent naming, where relevant a defined value list, a prescribed format and defined units of measure for all quantitative values. There is also provision for:

- a) control of changes to definitions of the properties through version and revision numbers;
- b) inclusion of notes and remarks to clarify and help in the application of the definitions;
- c) indication of the sources of definitions and value lists;
- d) associated figures and formulae.

NOTE IEC TCs and SCs, or other organizations can take this document as a basis for the development of their own dictionaries.

Out of scope of this document are subjects concerning the information technology infrastructure such as:

- security;
- database locking mechanisms;
- access rights management.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 62656-1:2014, *Standardized product ontology register and transfer by spreadsheets – Part 1: Logical structure for data parcels*

IEC TS 62720, *Identification of units of measurement for computer-based processing*

IEC 80000 (all parts), *Quantities and units*

ISO/IEC 646, *Information technology – ISO 7-bit coded character set for information interchange*

ISO/IEC 10646, *Information technology – Universal Multiple-Octet Coded Character set (UCS)*