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Part 3: Metamodel for registry common facilities

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

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

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html. In the IEC, see www.iec.ch/understanding-standards.

This document was prepared by Joint Technical Committee ISO/IEC/JTC 1, *Information technology*, Subcommittee SC 32, *Data management and interchange*.

This fourth edition cancels and replaces the third edition (ISO/IEC 11179-3:2013), which has been technically revised. It also incorporates the Amendment ISO/IEC 11179-3:2013/Amd.1:2020.

The main changes are as follows:

— this fourth edition presents a metamodel for the Common Facilities of a Basic Registry which has potential use for more than just metadata;

— the previous edition has been split into multiple parts to make it more manageable;

  — the Basic Attributes (formerly Clause 12) have been moved to ISO/IEC 11179-30: Basic attributes of metadata;

  — the Data Description region (formerly Clause 11) has been moved to ISO/IEC 11179-31: Metamodel for data specification registration;

  — the Concepts region (formerly Clause 9) and the Binary Relations region (formerly Clause 10) have been moved to ISO/IEC 11179-32: Metamodel for concept system registration;

— simplification of the UML used to describe the metamodels, such as:

  — elimination of use of stereotypes;

  — addition of an explicit 'Item' class as the superclass of all types of registry items;

  — removal of role names on associations;

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  - removal of redundant specification of attributes and associations in the text;

- refactoring of some of the packages to reduce dependencies, including:

  - moving the Concept class to the Basic and Core package where it is referenced from multiple metamodel regions, including: the Data Specification package in ISO/IEC 11179-31, the Concept System package in ISO/IEC 11179-32, the Data Set package in ISO/IEC 11179-33 and the Model package in ISO/IEC 11179-35;

  - moving the Context class to the Basic and Core package where it is referenced from the Designation and Definition package in this document, the Data Specification package in ISO/IEC 11179-31 and the Data Set package in ISO/IEC 11179-33;

  - moving the Slot class to the Basic and Core package, a more appropriate location than the Identification package;

  - a Classification region has been restored, based on the style of ISO/IEC 11179-3:2003[12], to remove dependency on the Concept System region for classification;

- adding a generic mapping facility among registry items;

- a change to the formatting of the text in Clauses 5 through 11 and Annexes B and C, to better align with ISO Directives and ISO House Style, see 5.3.2.

A list of all parts in the ISO/IEC 11179 series can be found on the ISO and IEC websites.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

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Introduction

Data processing and electronic data interchange rely heavily on accurate, reliable, controllable and verifiable data recorded in databases. A prerequisite for correct and proper use and interpretation of data is that both users and owners of data have a common understanding of the meaning and representation of the data. To facilitate this common understanding, a number of characteristics, or attributes, of the data have to be defined. These characteristics of data are known as "metadata", that is, "data that describes data".

The attributes of data elements and associated metadata can be specified and recorded as registry items in a metadata registry (MDR). The metadata registry is used to keep information about data elements and associated concepts, such as "data element concepts", "conceptual domains" and "value domains" (see ISO/IEC 11179-31). Generically, these are all referred to as "metadata items". Such metadata are necessary to clearly describe, record, analyse, classify and administer data.

ISO/IEC 11179 addresses the semantics of data, the representation of data and the registration of the descriptions of that data. It is through these descriptions that an accurate understanding of the semantics and a useful depiction of the data are found.

The purposes of the ISO/IEC 11179 series are to promote the following:

— standard description of data;

— common understanding of data across organizational elements and between organizations;

— re-use and standardization of data over time, space and applications;

— harmonization and standardization of data within an organization and across organizations;

— management of the components of descriptions of data;

— re-use of the components of descriptions of data.

Each part of ISO/IEC 11179 is devoted to addressing a different aspect of these needs, as described in ISO/IEC 11179-1:2023, Clause 7. This document specifies the information to be recorded in a metadata registry in the form of a conceptual data model. It also specifies common facilities for dealing with identification, designation, definition and registration of any type of registry item. Thus, this document applies to registries other than metadata registries. Other parts of ISO/IEC 11179 extend this model to support specific types of metadata items, such as: data elements, data element concepts, data set specifications, concept systems, etc. (See 1.2.)

NOTE ISO/IEC 11179-30[16] describes the basic attributes of registry items for purposes where a complete metadata registry is not appropriate.

This document is of interest to information developers, information managers, data administrators, standards developers, application developers, business modellers and others who are responsible for making data understandable and shareable. ISO/IEC 11179 has broad applicability across subject areas and information technologies.

ISO/IEC 11179 applies to activities including:

a) the definition, specification and registration of contents of metadata registries, including interchanging or referencing among various collections of data elements[17], including data sets[19] and models[21][29];

b) interchange or reference among various collections of metadata, including models[21][29];

c) the registration and management of semantic artifacts that are useful for data management, data administration and data analysis;

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d) the interrelation of concept systems with data held in relational databases, XML databases, knowledgebases, text, and possibly graph databases deriving from natural language text understanding systems;

e) the provision of services for semantic computing: Semantics Service Oriented Architecture, Semantic Grids, semantics-based workflows, Semantic Web, etc;

f) support for addressing semantic web considerations such as AAA (anyone can say anything about anything), non-unique names and open world assumption.

In Clauses 5 through 11 and Annexes B and C, this document uses:

— **bold** font to highlight terms which represent metadata objects specified by the metamodel;

— normal font for terms which represent concepts defined in Clause 3.

EXAMPLE **Concept** (6.4.2.2) is a class each instance of which models a concept.

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Information technology — Metadata registries (MDR) —

Part 3:
Metamodel for registry common facilities

1 Scope

1.1 Structure of a metadata registry

This document specifies the information to be recorded in a metadata registry in the form of a conceptual data model:

— Clause 5 specifies the approach used to model a metadata registry;

— Clause 6 specifies the Core Model of the registry, including basic types and classes to be reused in extending the model. The core model defines a generic “registry item”, from which any type of item that needs to registered can be sub-classed;

— Clause 7 specifies the metamodel for Identification of registry items;

— Clause 8 specifies the metamodel for Designation and Definition of registry items;

— Clause 9 specifies the metamodel for Registration of registry items;

— Clause 10 specifies the metamodel for Classification of registry items;

— Clause 11 specifies the metamodel for Mapping among registry items.

1.2 Model extensions

Other parts of ISO/IEC 11179 extend the core model to support additional functionality, including the following:

— ISO/IEC 11179-31[17] provides a metamodel for data specification registration, including support for data elements, data element concepts, conceptual domains and value domains;

— ISO/IEC 11179-32[18] provides a metamodel for concept system registration , including support for concept systems and ontologies;

— ISO/IEC 11179-33[19] provides a metamodel for data set registration;

— ISO/IEC 11179-34[20] (under development) provides a metamodel for computable data registration;

— ISO/IEC 11179-35[21] provides a metamodel for model registration.

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.

ISO/IEC 11179-6:2023, *Information technology — Metadata registries (MDR) — Part 6: Registration*

ISO/IEC 11404:2007, *Information technology — General-Purpose Datatypes (GPD)*

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3 Terms, definitions and abbreviated terms

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

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1 Terms related to metamodel constructs

3.1.1
class
<metamodel> description of a set of *objects* (3.2.1) that share the same *attributes* (3.1.11), operations, methods, *relationships* (3.1.4) and semantics

Note 1 to entry: Adapted from ISO/IEC 19505-2:2012, 7.3.7[27].

3.1.2
abstract class
<metamodel> *class* (3.1.1) that does not provide a complete declaration and typically cannot be instantiated

Note 1 to entry: An abstract class is intended to be used by other classes as a general class for *specialization* (3.1.8).

Note 2 to entry: Cf. *concrete class* (3.1.3).

Note 3 to entry: Adapted from ISO/IEC 19505-1:2012, 9.19.1[26] Classifier.isAbstract.

3.1.3
concrete class
<metamodel> *class* (3.1.1) that can be instantiated

Note 1 to entry: Cf. *abstract class* (3.1.2).

3.1.4
relationship
<metamodel> connection among model elements

Note 1 to entry: In this document, a relationship is one of: an *association* (3.1.5), a *generalization* (3.1.7) or a *specialization* (3.1.8).

3.1.5
association
<metamodel> semantic *relationship* (3.1.4) between two *classes* (3.1.1) or between two or more instances of the same class

Note 1 to entry: An association is a type of relationship.

Note 2 to entry: Adapted from ISO/IEC 19505-2:2012, 7.3.3[27] Association.

3.1.6
association class
<metamodel> *association* (3.1.5) that is also a *class* (3.1.1)

Note 1 to entry: An association class not only connects a set of classes, but also defines a set of features that belong to the association itself.

Note 2 to entry: Adapted from ISO/IEC 19505-2:2012, 7.3.4[27] AssociationClass.

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3.1.7
generalization
<metamodel> *relationship* (3.1.4) between a more general class (the parent) and a more specific class (the child) that is fully consistent with the general class and that adds additional information

Note 1 to entry: A generalization is a type of *relationship* (3.1.4).

Note 2 to entry: The more general class is referred to as the *superclass* (3.1.9).

Note 3 to entry: The more specific class is referred to as a *subclass* (3.1.10).

Note 4 to entry: A generalization is directed from the *subclass* to the *superclass*.

Note 5 to entry: 'Fully consistent' means that the *subclass* has all of the *attributes* (3.1.11) and *relationships* (3.1.4) of the *superclass*.

Note 6 to entry: cf. *specialization* (3.1.8); generalization is the inverse of specialization.

Note 7 to entry: Adapted from ISO/IEC 19505-2:2012, 7.3.20[27].

3.1.8
specialization
<metamodel> *relationship* (3.1.4) between a more general class (the parent) and a more specific class (the child) that is fully consistent with the general class and that adds additional information

Note 1 to entry: A specialization is a type of *relationship* (3.1.4).

Note 2 to entry: The more general class is referred to as the *superclass* (3.1.9).

Note 3 to entry: The more specific class is referred to as a *subclass* (3.1.10).

Note 4 to entry: A specialization is directed from the *superclass* to the *subclass*.

Note 5 to entry: 'Fully consistent' means that the *subclass* has all of the *attributes* (3.1.11) and *relationships* (3.1.4) of the *superclass*.

Note 6 to entry: cf. *generalization* (3.1.7); *specialization* is the inverse of *generalization*.

Note 7 to entry: Adapted from ISO/IEC 19505-2:2012, 7.3.20[27].

3.1.9
superclass
<metamodel> *class* (3.1.1) that is a *generalization* (3.1.7) of one or more other classes

Note 1 to entry: The classes being generalized are known as *subclasses* (3.1.10).

Note 2 to entry: In UML, **s**ubclasses of a superclass are by default not *disjoint* (3.2.39). This document specifies when subclasses are required to be disjoint. Further, when the superclass is not intended to be instantiated alone, this document shows the superclass as abstract, thus preventing the superclass being instantiated other than through one or more of its subclasses. An *abstract class* (3.1.2) is indicated by showing the class name in *italics* in any class diagram that uses it.

Note 3 to entry: A particular class can be a superclass with respect to one relationship, but a subclass with respect to another relationship.

3.1.10
subclass
<metamodel> *class* (3.1.1) that is a *specialization* (3.1.8) of another *class*

Note 1 to entry: The class being specialized is known as the *superclass* (3.1.9).

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Note 2 to entry: In UML, subclasses of a superclass are by default not *disjoint* (3.2.39). This document specifies when subclasses are required to be disjoint. Further, when the superclass is not intended to be instantiated alone, this document shows the superclass as abstract, thus preventing the superclass being instantiated other than through one or more of its subclasses. An *abstract class* (3.1.2) is indicated by showing the class name in *italics* in any class diagram that uses it.

Note 3 to entry: A particular class can be a subclass with respect to one relationship, but a superclass with respect to another relationship.

3.1.11
attribute
<metamodel> *characteristic* (3.2.4) of an *object* (3.2.1) or set of objects

3.1.12
composite attribute
<metamodel> *attribute* (3.1.11) whose *datatype* (3.1.13) is non-atomic

EXAMPLE See Administered_Item.registration_state (9.4.2.4), where **registration_state** is a composite attribute with Registration_State (9.4.4) as its *composite datatype* (3.1.15).

3.1.13
datatype
set of distinct values, characterized by properties of those values and by operations on those values

[SOURCE: ISO/IEC 11404:2007, 3.12]

3.1.14
primitive datatype
datatype (3.1.13) that cannot be decomposed into other datatypes without loss of associated semantics

[SOURCE: ISO/IEC 11404:2007, 3.44, modified — Deleted “identifiable” as a qualifier for datatype and deleted “all” as a qualifier for associated semantics.]

3.1.15
composite datatype
<metamodel> *datatype* (3.1.13) that is also a *class* (3.1.1)

Note 1 to entry: A composite datatype is used as a datatype for a *composite attribute* (3.1.12).

EXAMPLE See Administered_Item.registration_state (9.4.2.4) where Registration_State (9.4.4) serves as the composite datatype for the composite attribute **registration_state**.

3.1.16
identifier
sequence of characters, capable of uniquely identifying that with which it is associated, within a specified *context* (3.2.15)

Note 1 to entry: Unlike a *name* (3.2.12), an identifier is linguistically neutral.

3.1.17
package
<metamodel> grouping of *metadata objects* (3.2.31) that provides a *namespace* (3.2.13) for the grouped objects and allows them to be referenced as a group

Note 1 to entry: Adapted from ISO/IEC 19505-2:2012, 7.3.38[27].

3.1.18
metamodel region
<metamodel> sub-division of a *package* (3.1.17) used to organize *metadata objects* (3.2.31) for ease of explanation

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3.2 Terms related to concepts

3.2.1
object
anything perceivable or conceivable

Note 1 to entry: Objects can be material (e.g. 'engine', 'sheet of paper', 'diamond'), immaterial (e.g. 'conversion ratio', 'project plan') or imagined (e.g. 'unicorn', 'scientific hypothesis').

[SOURCE: ISO 1087:2019, 3.1.1]

3.2.2
object class
set of ideas, abstractions or things in the real world that are identified with explicit boundaries and meaning and whose properties and behaviour follow the same rules

[SOURCE: ISO/IEC 11179-31:2023, 3.1]

3.2.3
property
quality common to all members of an *object class* (3.2.2)

[SOURCE: ISO/IEC 11179-31:2023, 3.2]

3.2.4
characteristic
abstraction of a *property* (3.2.3)

EXAMPLE 'Having a cable for connecting with a computer' as a characteristic of the concept 'cord mouse'.

Note 1 to entry: Characteristics are used for describing *concepts* (3.2.7).

[SOURCE: ISO 1087:2019, 3.2.1]

3.2.5
classification scheme
descriptive information for an arrangement or division of *objects* (3.2.1) into groups based on criteria such as *characteristics* (3.2.4), which the objects have in common

EXAMPLE Origin, composition, structure, application, function, etc.

3.2.6
classification scheme item
item of content in a *classification scheme* (3.2.5)

Note 1 to entry: This can be a node in a taxonomy or ontology, a term in a thesaurus, etc.

3.2.7
concept
unit of knowledge created by a unique combination of *characteristics* (3.2.4)

Note 1 to entry: Concepts are not necessarily bound to particular natural languages. They are, however, influenced by the social or cultural background which often leads to different categorizations.

Note 2 to entry: A concept is independent of its representation.

[SOURCE: ISO 1087:2019, 3.2.7, modified — Note 2 to entry changed.]

3.2.8
concept relation
relation between *concepts* (3.2.7)

[SOURCE: ISO 1087:2019, 3.2.11]

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3.2.9
concept system
set of *concepts* (3.2.7) structured in one or more related domains according to the *concept relations* (3.2.8) among its concepts

Note 1 to entry: In this definition, 'domain' is used in the sense of 'field of special knowledge' as defined in ISO 1087:2019, 3.1.4.

[SOURCE: ISO 1087:2019, 3.2.28, modified — Note 1 to entry added.]

3.2.10
sign (noun)
textual string or symbol that can be used to denote a *concept* (3.2.7)

3.2.11
designation
<registry> representation of a *registry item* (3.2.54) by a *sign* (3.2.10) which denotes it

3.2.12
name
designation of an *object* (3.2.1) by a linguistic expression

[SOURCE: ISO/IEC 15944-1:2011, 3.35]

3.2.13
namespace
set of *designations* (3.2.11), *scoped identifiers* (3.2.62) or both for a particular business need

Note 1 to entry: The term *namespace* is used in this document because it is in common use, even though the concept is being applied to identifiers as well as names.

3.2.14
acceptability rating
scale of acceptability

Note 1 to entry: Subclause 8.7.1 specifies the values to be used.

3.2.15
context
circumstance, purpose, and perspective under which an *object* (3.2.1) is defined or used

[SOURCE: ISO/IEC 11179-1:2023, 3.3.3]

3.2.16
language
systematic use of sounds, characters, symbols or *signs* (3.2.10) to express meaning or communicate meaning or a message

[SOURCE: ISO 5127:2017, 3.1.5.01]

3.2.17
designation acceptability
acceptability rating (3.2.14) of the *designation* (3.2.11) in the specified *designation context* (3.2.18)

3.2.18
designation context
context (3.2.15) in which a *designation* (3.2.11) is applicable

3.2.19
designation language
language (3.2.16) or dialect in which a *sign* (3.2.10), usually a *name* (3.2.12), is expressed

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3.2.20
designation namespace
namespace (3.2.13) to which a *designation* (3.2.11) is bound

3.2.21
binding
mapping from one framework or specification to another, enabling *data* (3.2.29), commands or both to be passed between them

3.2.22
naming convention
specification of how *signs* (3.2.10) of *designations* (3.2.11), *scoped identifiers* (3.2.62) or both are formulated

Note 1 to entry: A naming convention can apply to scoped identifiers when they are included in the associated *namespace* (3.2.13)

3.2.23
definition
<registry> representation of a *registry item* (3.2.54) by a descriptive statement which, in a given *language* (3.2.16) and *context(s)* (3.2.15), serves to differentiate it from other registry items

3.2.24
definition text
text of the *definition* (3.2.23)

[SOURCE: ISO 1087:2019, 3.4.1]

3.2.25
definition acceptability
acceptability rating (3.2.14) of the *definition* (3.2.23) in the specified *definition context* (3.2.26)

3.2.26
definition context
context (3.2.15) in which the *definition* (3.2.23) is applicable

3.2.27
definition language
language (3.2.16) used to write the *definition text* (3.2.24)

3.2.28
definition source reference
reference to the source from which the *definition* (3.2.23) is taken

3.2.29
data
re-interpretable representation of information in a formalized manner suitable for communication, interpretation, or processing

Note 1 to entry: Data can be processed by humans or by automatic means.

[SOURCE: ISO/IEC 2382:2015, 2121272, modified — Notes to entry 2 and 3 deleted.]

3.2.30
metadata
data (3.2.29) that defines and describe other data

[SOURCE: ISO/IEC 11179-1:2023, 3.2.26]

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3.2.31
metadata object
object type defined by a *metamodel* (3.2.34)

Note 1 to entry: In all parts of ISO/IEC 11179, this term is applied only to metadata objects described by the metamodels in those parts of ISO/IEC 11179 which specify potential registry content, including *data elements* (3.2.43) in ISO/IEC 11179-31[17], *concept systems* (3.2.9) in ISO/IEC 11179-32[18], data sets in ISO/IEC 11179-33[19], computable data in ISO/IEC 11179-34[20], and models in ISO/IEC 11179-35[21].

Note 2 to entry: The term also applies to metadata objects described by the metamodels in the various parts of ISO/IEC 19763[29], which build upon the metamodel in this document.

3.2.32
data model
graphical, lexical or combined representation of *data* (3.2.29), specifying their *properties* (3.2.3), structure and inter-relationships

[SOURCE: ISO/IEC 11179-1:2023, 3.2.24]

3.2.33
conceptual data model
conceptual model
data model (3.2.32) that represents an abstract view of the real world

Note 1 to entry: A conceptual model represents the human understanding of a system, which can be anywhere from a paper-based system to a complex database in an IT system.

[SOURCE: ISO/IEC 11179-1:2023, 3.2.25]

3.2.34
metamodel
data model (3.2.32) that specifies one or more other models, such as data models, process models, ontologies, etc

Note 1 to entry: The *metamodel* in this document is expressed as a *conceptual data model* (3.2.33) using UML class diagram *notation* (3.2.36).

[SOURCE: ISO/IEC 11179-1:2023, 3.2.27, modified — Note 1 to entry added.]

3.2.35
metamodel construct
unit of *notation* (3.2.36) for modelling

Note 1 to entry: The metamodel constructs used in this document are defined in 3.1.

3.2.36
notation
formal syntax and associated semantics for the representation of information

EXAMPLE UML, MOF, OCL, OWL/RDF, SKOS, CGIF, XCL, XTM or ISO/IEC 11404.

Note 1 to entry: A formal syntax consists of a set of symbols and the rules for their use.

Note 2 to entry: A formal syntax is often intended for machine processing.

3.2.37
cardinality
number of elements in a set

Note 1 to entry: cf. *multiplicity* (3.2.38).

Note 2 to entry: Adapted from ISO/IEC 19501:2005[25], Glossary.

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3.2.38
multiplicity
specification of the range of allowable *cardinalities* (3.2.37) that a set can assume

Note 1 to entry: Multiplicity specifications can be given for roles within *associations* (3.1.5) or *attributes* (3.1.11) within a *class* (3.1.1).

Note 2 to entry: A multiplicity is a (possibly infinite) subset of the non-negative integers.

Note 3 to entry: Adapted from ISO/IEC 19501:2005, Glossary.

3.2.39
disjoint
having no elements in common

Note 1 to entry: Disjoint subclasses are mutually exclusive.

3.2.40
extension
feature not defined by this document

3.2.41
model extension
class (3.1.1), *attribute* (3.1.11) or *relationship* (3.1.4) that an implementation of a *registry* (3.2.49) provides that is not defined by this document or related standards

Note 1 to entry: This document specifies *slots* (3.2.42) as a mechanism for extending *registry items* (3.2.54).

3.2.42
slot
container for an *extension* (3.2.40) to a *registry item* (3.2.54)

3.2.43
data element
<organization of data> unit of *data* (3.2.29) that is considered in context to be indivisible

EXAMPLE The data element "age of a person" with values consisting of all combinations of 3 decimal digits.

Note 1 to entry: The definition states that a data element is "indivisible" in some context. This means that it is possible that a data element considered indivisible in one context (e.g. telephone number) can be divisible in another context, (e.g. country code, area code, local number).

[SOURCE: ISO/IEC 2382:2015, 2121599, modified — Note 1 to entry label removed from the example. Note 2 to entry replaced and renumbered as Note 1, Note 3 to entry deleted.]

3.2.44
data element concept
DEC
concept (3.2.7) that can be represented in the form of a *data element* (3.2.43), described independently of any particular representation

Note 1 to entry: A data element concept is implicitly associated with both the property and the object class whose combination it expresses.

[SOURCE: ISO/IEC 11179-31:2023, 3.25, modified — Notes 2 and 3 to entry deleted.]

3.2.45
conceptual domain
CD
concept (3.2.7) whose meaning is expressed as an enumerated set, a description or both of subordinate concepts, which are *value meanings* (3.2.46)

[SOURCE: ISO/IEC 11179-31:2023, 3.5]

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3.2.46
value meaning
semantic content of a value

Note 1 to entry: The representation of value meanings in a *registry* (3.2.49) are independent of (and do not constrain) their representation in any corresponding *value domain* (3.2.47).

[SOURCE: ISO/IEC 11179-31:2023, 3.10]

3.2.47
value domain
VD
set of *permissible values* (3.2.48)

Note 1 to entry: The *value domain* provides representation but has no implication as to what *data element concept* (3.2.44) the values are associated with nor what the values mean.

Note 2 to entry: The *permissible values* can either be enumerated, expressed via a description, or a combination of the two.

[SOURCE: ISO/IEC 11179-31:2023, 3.13]

3.2.48
permissible value
designation (3.2.11) of a *value meaning* (3.2.46)

Note 1 to entry: *Permissible values* may be specified either as part of a *value domain* (3.2.47) or only associated with a *value meaning* (3.2.46).

Note 2 to entry: Within a *value domain*, *permissible values* can either be enumerated, expressed via a description, or a combination of the two.

Note 3 to entry: Explicit mapping of a single permissible value to a single value meaning is possible only when both the value meaning and permissible value are enumerated, e.g. for code sets. For described permissible values, it is possible for the described meaning to be associated with a range of values, e.g. weight in kilograms.

[SOURCE: ISO/IEC 11179-31:2023, 3.19]

3.2.49
registry
information system for *registration* (3.2.64)

[SOURCE: ISO/IEC 11179-1:2023, 3.2.34]

3.2.50
register
information store or database maintained by a *registry* (3.2.49)

3.2.51
registry product
particular information system for implementing a *registry* (3.2.49)

3.2.52
registry instance
implementation of a *registry product* (3.2.51) and instance of a *registry* (3.2.49)

3.2.53
registry metamodel
metamodel (3.2.34) specifying the model for a *registry* (3.2.49)

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3.2.54
registry item
item recorded in a *registry* (3.2.49)

Note 1 to entry: A *registry item* is recorded in the *registry*, but is not necessarily identified, named, defined, classified, registered or administered. Specific information needs to be provided for each of these categories which can be provided when the item is initially recorded, or later. See also *classified item* (3.2.59), *identified item* (3.2.61), *registered item* (3.2.65), *administered item* (3.2.66) and *attached item* (3.2.68).

3.2.55
metadata registry
MDR
information system for registering *metadata* (3.2.30)

Note 1 to entry: The associated information store or database is known as a *metadata register* (3.2.56).

[SOURCE: ISO/IEC 11179-1:2023, 3.2.31, modified — Note 1 to entry added.]

3.2.56
metadata register
information store or database maintained by a *metadata registry* (3.2.55)

3.2.57
metadata registry product
particular information system for implementing a *metadata registry* (3.2.55)

3.2.58
metadata item
instance of a *metadata object* (3.2.31) in a *metadata registry* (3.2.55)

Note 1 to entry: In all parts of ISO/IEC 11179, this term is applied only to instances of metadata objects described by the metamodels in parts of ISO/IEC 11179 which specify potential registry content, including *data elements* (3.2.43) in ISO/IEC 11179-31[17], *concept systems* (3.2.9) in ISO/IEC 11179-32[18], data sets in ISO/IEC 11179-33[19], computable objects in ISO/IEC 11179-34[20], and models in ISO/IEC 11179-35[21].

Note 2 to entry: The term also applies to instances of metadata objects described by the metamodels in the various parts of ISO/IEC 19763[29], which build upon the metamodel in this document.

Note 3 to entry: A metadata item has associated *attributes* (3.1.11), as appropriate for the *metadata object* it instantiates.

3.2.59
classified item
registry item (3.2.54) classified in a *classification scheme* (3.2.5)

3.2.60
identification scheme
system for allocating *identifiers* (3.1.16) to registered *objects* (3.2.1)

[SOURCE: ISO/IEC 6523-1:1998, 3.6]

3.2.61
identified item
registry item (3.2.54) identified in a *registry* (3.2.49)

3.2.62
scoped identifier
identifier (3.1.16) of an *identified item* (3.2.61) within a specified *namespace* (3.2.13)

Note 1 to entry: A *namespace* provides the scope within which the *scoped identifier* uniquely identifies the *identified item*.

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3.2.63
version
unique form differing in certain aspects from an earlier or later form

[SOURCE: ISO/IEC 11179-1:2023, 3.3.25]

3.2.64
registration
set of rules, operations and procedures for the management of an item in a *registry* (3.2.49)

Note 1 to entry: A detailed description of registration as it applies in ISO/IEC 11179 is found in ISO/IEC 11179-6.

Note 2 to entry: In this document, registration requires that a minimum set of *administrative information* (3.2.67) about the *registry item* (3.2.54) be specified, such that it becomes a *registered item* (3.2.65).

Note 3 to entry: A *registry item* is recorded in the *registry*, but is not necessarily identified, named, defined, classified, registered or administered. Specific information needs to be provided for each of these categories which can be provided when the item is initially recorded, or later. See also *classified item* (3.2.55), *identified item* (3.2.61), *registered item* (3.2.62), *administered item* (3.2.66) and *attached item* (3.2.68).

[SOURCE: ISO/IEC 11179-1:2023, 3.3.33, modified — Notes 2 and 3 to entry added.]

3.2.65
registered item
identified item (3.2.61) that is recorded and managed in a *registry* (3.2.49)

Note 1 to entry: In this document, registration requires that a minimum set of *administrative information* (3.2.67) about the *registry item* (3.2.54) be specified, such that it becomes a *registered item*.

Note 2 to entry: A *registry item* is recorded in the *registry*, but is not necessarily identified, named, defined, classified, registered or administered. Specific information needs to be provided for each of these categories which can be provided when the item is initially recorded, or later. See also *classified item* (3.2.59), *identified item* (3.2.61), *registered item* (3.2.65), *administered item* (3.2.66) and *attached item* (3.2.68).

3.2.66
administered item
registered item (3.2.65) for which *administrative information* (3.2.67) is recorded

3.2.67
administrative information
<registry> information about the administration of an item in a *registry* (3.2.49)

EXAMPLE Creation date, last change date, origin, change description, explanatory comment.

3.2.68
attached item
registered item (3.2.65) for which *administrative information* (3.2.67) is recorded in another registered item

Note 1 to entry: This is often a member of a group of registered items that is managed as a whole.

3.2.69
registration state
information about the *registration* (3.2.64) of an *administered item* (3.2.66)

3.2.70
registration status
designation (3.2.11) of the status in the *registration* (3.2.64) life-cycle of an *administered item* (3.2.66)

Note 1 to entry: Designation values are specified in 9.6.1 and described more fully in ISO/IEC 11179-6:2023, 4.3.2.

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3.2.71
administrative status
designation (3.2.11) of the status in the administrative process of a *registration authority* (3.2.92)

Note 1 to entry: The values and associated meanings of the *administrative status* are determined by each *registration authority*. Cf. *registration status* (3.2.70).

3.2.72
basic attribute
<registry> *attribute* (3.1.11) of a *registry item* (3.2.54) commonly needed in its specification

3.2.73
attribute instance
specific instance of an *attribute* (3.1.11)

Note 1 to entry: Adapted from ISO/IEC 2382:2015, 2121441[5] attribute value, to distinguish an instance of an attribute from its value.

3.2.74
attribute value
value associated with an *attribute instance* (3.2.73)

Note 1 to entry: Adapted from ISO/IEC 2382:2015, 2121441[5] attribute value, to distinguish an instance of an attribute from its value.

3.2.75
mandatory
always required

Note 1 to entry: One of three obligation statuses applied to the *attributes* (3.1.11) of *registry items* (3.2.54), indicating the conditions under which the attribute is required; see also *conditional* (3.2.77) and *optional* (3.2.76).

Note 2 to entry: Obligation statuses apply to *registry items* with a *registration status* (3.2.70) of "recorded" or higher.

3.2.76
optional
permitted but not required

Note 1 to entry: One of three obligation statuses applied to the *attributes* (3.1.11) of *registry items* (3.2.54), indicating the conditions under which the attribute is required. See also *conditional* (3.2.77) and *mandatory* (3.2.75).

Note 2 to entry: Obligation statuses apply to *registry items* with a *registration status* (3.2.70) of "recorded" or higher.

3.2.77
conditional
required under certain specified conditions

Note 1 to entry: One of three obligation statuses applied to the *attributes* (3.1.11) of *registry items* (3.2.54), indicating the conditions under which the attribute is required. See also *mandatory* (3.2.75) and *optional* (3.2.76).

Note 2 to entry: Obligation statuses apply to *registry items* with a *registration status* (3.2.70) of "Recorded" or higher.

3.2.78
contact
instance of a *role* (3.2.83), an *individual* (3.2.82) or both within an *organization* (3.2.84) to or from whom an information item(s), a material object(s), person(s) or some combination can be sent in a specified context

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3.2.79
contact information
information to enable a *contact* (3.2.78) to be located or communicated with

3.2.80
phone number
telephone number

Note 1 to entry: Specified by ITU-T Recommendation E.164 (2005-02)[35], the international public telecommunications numbering plan.

3.2.81
postal address
set of information which, for a postal item, allows the unambiguous determination of an actual or potential delivery point, usually combined with the specification of an addressee or a mailee

[SOURCE: UPU S42,[38] modified — Replaced “and/or” by “or”]

3.2.82
individual
single human being

3.2.83
role
specified responsibilities

3.2.84
organization
unique framework of authority within which *individuals* (3.2.82) act, or are designated to act, towards some purpose

Note 1 to entry: The kinds of organizations covered by ISO/IEC 6523-1[8] include the following examples:

a) an organization incorporated under law;

b) an unincorporated organization or activity providing goods, services or both including:

   1) partnerships;

   2) social or other non-profit organizations or similar bodies in which ownership or control is vested in a group of individuals;

   3) sole proprietorships;

   4) governmental bodies.

c) groupings of the above types of organizations where there is a need to identify these in information interchange.

[SOURCE: ISO/IEC 6523-1:1998, 3.1, modified — ‘goods and/or services’ changed to ‘goods, services or both’, 'person or persons' changed to 'individuals', leading article deleted, trailing fullstop deleted, NOTE converted to Note 1 to entry.]

3.2.85
organization identification scheme
identification scheme (3.2.60) dedicated to the unique identification of *organizations* (3.2.84)

[SOURCE: ISO/IEC 6523-1:1998, 3.7]

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3.2.86
international code designator
identifier (3.1.16) of an *organization identification scheme* (3.2.85)

Note 1 to entry: See also ISO/IEC 11179-6:2023, Annex A, A.4.

[SOURCE: ISO/IEC 6523-1:1998, 3.8, modified — Used 'identifier of' instead of 'the data element used to uniquely identify', Note 1 to entry added.]

3.2.87
organization identifier
identifier (3.1.16) assigned to an *organization* (3.2.84) within an *organization identification scheme* (3.2.85) and unique within that scheme

[SOURCE: ISO/IEC 6523-1:1998, 3.10]

3.2.88
organization part
any department, service or other entity within an *organization* (3.2.84) which needs to be identified for information exchange

[SOURCE: ISO/IEC 6523-1:1998, 3.2]

3.2.89
organization part identifier
opi
identifier (3.1.16) allocated to a particular *organization part* (3.2.88)

Note 1 to entry: See also ISO/IEC 11179-6.

[SOURCE: ISO/IEC 6523-1:1998, 3.11, modified — Note 1 to entry added.]

3.2.90
registrar
representative of a *registration authority* (3.2.92)

3.2.91
registrar identifier
identifier (3.1.16) for the *registrar* (3.2.90)

3.2.92
registration authority
RA
organization (3.2.84) responsible for maintaining a *register* (3.2.50)

3.2.93
registration authority identifier
identifier (3.1.16) assigned to a *registration authority* (3.2.92)

3.2.94
boolean
mathematical *datatype* (3.1.13) associated with two-valued logic

Note 1 to entry: See also 6.2.2 Boolean datatype.

Note 2 to entry: Adapted from ISO/IEC 11404:2007, 8.1.1 Boolean.

3.2.95
date
datatype (3.1.13) whose values are points in time to the resolution: year, month, day

Note 1 to entry: See also 6.2.4 Date datatype.

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Note 2 to entry: Adapted from ISO/IEC 11404:2007, 8.1.6 date and time.

3.2.96
datetime
datatype (3.1.13) whose values are points in time to the resolution: year, month, day, hour, minute, second and optionally fractions thereof and optionally a time-zone specification

Note 1 to entry: See also 6.2.3 Datetime datatype.

Note 2 to entry: Adapted from ISO/IEC 11404:2007, 8.1.6 date and time.

3.2.97
datetime period
combination of an optional start *datetime* (3.2.96) and an optional end *datetime*

Note 1 to entry: At least one of the start or end datetimes shall be specified.

Note 2 to entry: A period can be open ended, meaning that the end datetime is not yet known, and is therefore not specified.

Note 3 to entry: A period can be missing a start datetime if that is unknown.

3.2.98
integer
mathematical *datatype* (3.1.13) comprising the exact integral values

Note 1 to entry: See also 6.2.5 Integer datatype.

Note 2 to entry: Adapted from ISO/IEC 11404:2007, 8.1.7.

3.2.99
string
family of *datatypes* (3.1.13) which represent strings of symbols from standard character-sets

Note 1 to entry: See also 6.2.11 String datatype.

Note 2 to entry: Adapted from ISO/IEC 11404:2007, 10.1.5 Character String.

3.2.100
text
data (3.2.29) in the form of characters, symbols, words, phrases, paragraphs, sentences, tables, or other character arrangements, intended to convey a meaning, and whose interpretation is essentially based upon the reader's knowledge of some natural language or artificial language

Note 1 to entry: See also the **Text** datatype (6.2.12).

[SOURCE: ISO/IEC 2382:2015(en), 2121273, modified — Note 1 to entry added.]

3.2.101
reference document
document that provides pertinent details for consultation about a subject

3.2.102
stewardship
responsibility for the maintenance of *administrative information* (3.2.67) applicable to one or more *administered items* (3.2.66)

Note 1 to entry: The responsibility for the *registration* (3.2.64) of an *administered item* (3.2.66) can be different from the responsibility for *stewardship* of the *administered item*.

3.2.103
stewardship contact
contact information (3.2.79) associated with a *stewardship* (3.2.102)

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3.2.104
stewardship organization
organization (3.2.84) that maintains *stewardship* (3.2.102) of an *administered item* (3.2.66)

3.2.105
stewardship record
record of a *stewardship organization* (3.2.104) and a *stewardship contact* (3.2.103) involved in the *stewardship* (3.2.102) of an *administered item* (3.2.66)

3.2.106
submission
act of submitting a *registry item* (3.2.54) for *registration* (3.2.55) in a *registry* (3.2.49)

3.2.107
submission contact
submitter
contact information (3.2.79) associated with a *submission* (3.2.106)

3.2.108
submission organization
submitting organization
organization (3.2.84) that submits a *registry item* (3.2.54) for *registration* (3.2.55)

3.2.109
submission record
record of a *submission organization* (3.2.108) and a *submission contact* (3.2.107) involved in the *submission* (3.2.106) of a *registry item* (3.2.54) for *registration* (3.2.55)

3.3 Abbreviated terms

CD	conceptual domain
DOI	digital object identifier (see Reference [32])
EBNF	extended Backus-Naur form (see Reference [22])
MDR	metadata registry
OPI	organization part identifier
RA	registration authority
RDF	resource description framework (see Reference [37])
UML	unified modeling language (see References [26] and [27])
UPU	Universal Postal Union (see Reference [38])
URI	uniform resource identifier
URL	uniform resource locator
VD	value domain
W3C	World Wide Web Consortium
XCL	extended Common Logic markup language (see Reference [31])
XML	extensible markup language

4 Conformance

4.1 Overview of conformance

This document prescribes a conceptual model, not a physical implementation. Therefore, the metamodel need not be physically implemented exactly as specified. However, it shall be possible to unambiguously map between the implementation and the metamodel in both directions.

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