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Information technology — Metadata registries (MDR) —

Part 5: Naming principles

Technologies de l'information — Registres de métadonnées (RM) —

Partie 5: Principes de dénomination

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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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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 11179-5:2015), which has been technically revised.

The main changes are as follows:

— the restructuring of the different parts of ISO/IEC 11179 has been taken into account;

— references to other standards have been updated to the latest editions;

— naming principles have been added to enhance clarity;

— additional examples have been provided.

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

This document contains both principles and rules. Principles establish the premises on which the rules are based. Registry users can enforce rules as an application of this document.

A naming convention is a convention (a set of rules) about names. Many naming conventions have much in common, whether it is defining a method of specifying names for common usage across application systems, or developing an organization's internal policy on the choice of XML tags for data interchange. A naming convention can be based on principles. In addition, it can contain formal and informal inputs, such as guidelines, recommendations, company policies, programming conventions, specifications, procedures, and so on. The purpose of this document is to describe and specify these common features of naming conventions. This document is intended to have broad applicability, including areas outside of Metadata Registries.

The goal of any naming convention is to allow development of names for items that have maximum clarity and transparency of meaning, combined with concision, demanding minimal effort of interpretation by the end user, subject to the constraints of the system under which the items are processed. A naming convention can be used to form names by which information about the data is expressed, in a simplified but still understandable grammar compared to natural language rules. Ideally, the names resemble summaries of the formal definition of the information being named.

In a metadata registry, one name can be designated as the "registry name," derived by describing the content of a metadata item in a structured way, using a set of rules, i.e. by application of a formalized naming convention. Other names for the same metadata entity can occur in any context. For example, these can be

— software system names;

— programming language names;

— report header names;

— data interchange (e.g. XML) names;

— names in other natural languages.

Names can have varying levels of rigor applied to their formation and usage. The collection and display of all names used by any single metadata item can be a major benefit of a metadata registry. The process of deriving names from concept systems and arranging semantic components with a naming convention forms a set of consistent, meaningful registry names. Names from other contexts, which can possibly have been formed with naming conventions, and therefore can have little or no semantic content, are collected and related to the registry name, thus, contributing in a valuable way to enterprise data management.

ISO/IEC 11179-3:2023 uses the term "designation" in reference to most metamodel items except for the classes Namespace and Naming Convention. The designations for these classes were adopted in deference to commonly accepted usage. This document will continue to use the term "name" for constructs that, for purposes of this document, are interchangeable with "designation".

NOTE This document uses **bold** font to highlight items from the metamodel described in ISO/IEC 11179-3:2023. Most multi-word designations also contain underscores between words in ISO/IEC 11179-3; the underscores have been omitted in this document for readability.

The naming principles and rules described in this document apply primarily to names of concepts, data element concepts, conceptual domains, data elements, and value domains, but can be extended to any registry content. Differing naming conventions can be applied to different sets of registry items. This document should be used in conjunction with those which establish rules and procedures for attributing, classifying, defining, and registering items. (Refer to ISO/IEC 11179-6[4] for a discussion of identification.)

This document can be used for applications that are unrelated to ISO/IEC 11179, i.e. this document has broad applicability for use in describing naming conventions for almost any need or purpose. The same principles apply.

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In Annex A, all of the examples are given with English terminologies. However, there is an intention that those rules be effective in other natural languages, even in those languages that use ideographs such as Japanese, Chinese, or Korean, when the terminologies used in the name are controlled properly. Annex B contains a version of the rules for Asian languages.

It is out of scope of the naming rules to establish semantic equivalence of names among different languages. Naming must be supplemented by other methods such as ontologies or controlled vocabularies in establishing semantic equivalence.

Annex C contains an example implementation of naming conventions in an MDR registry.

This document can be applied to ISO/IEC 11179-3, i.e. describing naming conventions associated with designations of registry items and other features of these metamodels. The following are examples of designations in these metamodels: the designation of a data element (class name: Designation; attribute: sign); the designation of classification scheme name; etc. Annex D contains a Concordance Table relating items in this document to items in ISO/IEC 11179-1, 11179-3, 11179-31, and 11179-32.

This document does not make requirements on any specific set of conventions, e.g. specific semantic, syntactic, or lexical requirements for names.

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Information technology — Metadata registries (MDR) —

Part 5:
Naming principles

1 Scope

This document provides instruction for naming of the following items, as defined in ISO/IEC 11179-3 and ISO/IEC 11179-31: concept, data element concept, conceptual domain, data element, and value domain. This document describes naming in a metadata registry (MDR); includes principles and rules by which naming conventions can be developed; and provides examples of naming conventions.

2 Normative references

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

ISO/IEC 11179-3:2023, *Information technology — Metadata registries (MDR) — Part 3: Metamodel for registry common facilities*

3 Terms and definitions

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

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

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

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

3.1
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
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]

3.3
property
quality common to all members of an *object class* (3.2)

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

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3.4
characteristic
abstraction of a *property* (3.3)

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* (3.6).

[SOURCE: ISO 1087:2019, 3.2.1]

3.5
representation class
classification of types of representations

[SOURCE: ISO/IEC 11179-1:2023, 3.3.14]

3.6
concept
unit of knowledge created by a unique combination of *characteristics* (3.4)

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/IEC 11179-3:2023, 3.2.7]

3.7
general concept
concept (3.6) which corresponds to two or more *objects* (3.1) which form a group by reason of common *properties* (3.3)

EXAMPLE 'planet', 'tower', 'Nobel Prize in Physics', 'moon'.

Note 1 to entry: For a general concept it is essential that a number of corresponding objects greater than 1 can be perceived or conceived of. For example, 'spaceship' has been a general concept before such a material object existed, at the time when there existed only 1 such object, and later, when there existed several such objects.

[SOURCE: ISO 1087-1:2019, 3.2.9]

3.8
sign (noun)
textual string or symbol that can be used to denote a *concept* (3.6)

[SOURCE: ISO/IEC 11179-3:2023, 3.2.10]

3.9
designation
<registry> representation of a *registry item* (3.31) by a *sign* (3.8) which denotes it

[SOURCE: ISO/IEC 11179-3:2023, 3.2.11]

3.10
name
designation of an *object* (3.1) by a linguistic expression

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

3.11
term
designation (3.9) that represents a *general concept* (3.7) by linguistic means

EXAMPLE "laser printer", "planet", "pacemaker", "chemical compound", "3/4 time", "Influenza A virus", "oil painting".

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Note 1 to entry: Terms may be partly or wholly verbal.

[SOURCE: ISO 1087:2019, 3.4.2]

3.12
name part
part of name
discrete *term* (3.11) that is used as part of a *name* (3.10) of a *registry item* (3.31)

3.13
object class term
part of the *name* (3.10) of a *registry item* (3.31) which represents the *object class* (3.2) to which it belongs, for those registry items containing object classes

3.14
property term
part of the *name* (3.10) of a *registry item* (3.31) that expresses a *property* (3.3) of an *object class* (3.2), for those registry items containing property classes

3.15
representation term
designation (3.9) of an instance of a *representation class* (3.5)

3.16
qualifier term
word or words that help define and differentiate a *concept* (3.6)

3.17
separator
delimiter
symbol or space enclosing or separating a part within a *name* (3.10)

3.18
namespace
set of *designations* (3.9), *scoped identifiers* (3.34) 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.

[SOURCE: ISO/IEC 11179-3:2023, 3.2.13]

3.19
context
circumstance, purpose, and perspective under which an *object* (3.1) is defined or used

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

3.20
naming convention
specification of how *signs* (3.8) of *designations* (3.9), *scoped identifiers* (3.34) or both are formulated

Note 1 to entry: A naming convention can apply to scoped identifiers when they are included in the associated *namespace* (3.11)

[SOURCE: ISO/IEC 11179-3:2023, 3.2.22]

3.21
principle
fundamental, primary assertion which constitutes a source of action determining particular objectives or results

Note 1 to entry: A principle is usually supported through one or more rules.

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3.22
rule
statement governing conduct, procedure, conditions, and/or relations

3.23
lexical
pertaining to words or the vocabulary of a language as distinguished from its grammar and construction

3.24
semantics
branch of linguistic science that deals with the meanings of words

3.25
syntax
relationships among characters or groups of characters, independent of their meanings or the manner of their interpretation and use

Note 1 to entry: More specifically, the structure of expressions in a language, and the rules governing the structure of a language

3.26
structure set
concepts (3.6) in an area of discourse, with their relationships to other concepts

Note 1 to entry: Examples include data models, information models, taxonomies, and ontologies.

3.27
metadata object
object type defined by a metamodel

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 in ISO/IEC 11179-31,[5] concept systems in ISO/IEC 11179-32,[6] data sets in ISO/IEC 11179-33,[7] computable data in ISO/IEC 11179-34,[8] and models in ISO/IEC 11179-35[9].

Note 2 to entry: The term also applies to metadata objects described by the metamodels in the various parts of ISO/IEC 19763,[10] which build upon the metamodel in ISO/IEC 11179-3.

[SOURCE: ISO/IEC 11179-3:2023, 3.2.31]

3.28
metadata item
instance of a *metadata object* (3.27) in a *metadata registry* (3.29)

[SOURCE: ISO/IEC 11179-3:2023, 3.2.58]

3.29
metadata registry
MDR
information system for registering metadata

[SOURCE: ISO/IEC 11179-1:2023, 3.2.31]

3.30
registry
information system for registration

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

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3.31
registry item
item recorded in a *registry* (3.30)

[SOURCE: ISO/IEC 11179-3:2023, 3.2.54, modified — Note to entry removed.]

3.32
registered item
identified item that is recorded and managed in a *registry* (3.30)

[SOURCE: ISO/IEC 11179-3:2023, 3.2.65, modified — Note to entry removed.]

3.33
identified item
registry item (3.31) identified in a *registry* (3.30)

[SOURCE: ISO/IEC 11179-3:2023, 3.2.61]

3.34
scoped identifier
identifier of an *identified item* (3.33) within a specified *namespace* (3.18)

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

[SOURCE: ISO/IEC 11179-3:2023, 3.2.62]

4 Conformance

4.1 Conformity for registries

4.1.1 Rules for a conforming registry

A registry containing a namespace associated with a set of registry items which conform to naming conventions so that:

— each item shall be named in accordance with a naming convention;

— each naming convention shall have its scope documented;

— each naming convention shall have its authority documented;

— each naming convention should have its semantic rules documented;

— each naming convention should have its syntactic rules documented;

— each naming convention should have its lexical rules documented; and

— each naming convention should have its uniqueness rules documented;

then that namespace is in conformance with this document.

A registry in which every namespace conforms to this document is a conforming registry.

4.1.2 Rules for a strictly conforming registry

A registry containing a namespace associated with a set of registry items which conform to naming conventions so that:

— each item shall be named in accordance with a naming convention;

— each naming convention shall have its scope documented;

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