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Information technology — Metadata registries (MDR) —

Part 30: Basic attributes of metadata

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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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents) or the IEC list of patent declarations received (see https://patents.iec.ch).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 first edition of ISO/IEC 11179-30 cancels and replaces ISO/IEC TS 11179-30:2019, which has been technically revised.

The main changes are as follows:

— removed the prior dependence on ISO/IEC 11179-3[4], since this document is intended for use when a metadata registry is not appropriate;

— reflect the relocation of the metamodel for data specification registration from ISO/IEC 11179-3 to ISO/IEC 11179-31[5].

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 describe data". The ISO/IEC 11179 series provides a family of conceptual metamodels for the attributes of data elements and associated metadata to be specified and registered as metadata items in a metadata registry (MDR).

This document provides a simplified presentation of the basic attributes which are required to describe data elements and associated metadata, and which might be used in situations where a complete ISO/IEC 11179-3 metadata registry is not appropriate (e.g. in the specification of other International Standards).

This document applies to the definition, specification and contents of collections of metadata, including interchanging or referencing among such collections.

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Information technology — Metadata registries (MDR) —

Part 30:
Basic attributes of metadata

1 Scope

This document specifies “basic attributes” which are required to describe metadata in situations where a complete ISO/IEC 11179-3[4] metadata registry is not appropriate (e.g. in the specification of other International Standards).

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

ISO and IEC maintain 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
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
property
feature of an *object* (3.1)

EXAMPLE 1 'Being made of wood' as a property of a given 'table'.

EXAMPLE 2 'Belonging to person A' as a property of a given 'pet'.

EXAMPLE 3 'Having been formulated by Einstein' as a property of the equation '$E = mc^2$'.

EXAMPLE 4 'Being compassionate' as a property of a given 'person'.

EXAMPLE 5 'Having a given cable' as a property of a given 'computer mouse'.

Note 1 to entry: One or more objects can have the same property.

[SOURCE: ISO 1087:2019, 3.1.3]

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3.3
characteristic
abstraction of a *property* (3.2)

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* (3.4).

[SOURCE: ISO 1087:2019, 3.2.1]

3.4
concept
unit of knowledge created by a unique combination of *characteristics* (3.3)

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 has been changed]

3.5
attribute
characteristic (3.3) of an *object* (3.1) or set of objects

[SOURCE: ISO/IEC 11179-3:2023, 3.1.11]

3.6
basic attribute
attribute (3.5) of a *metadata item* (3.10) commonly needed in its specification

[SOURCE: ISO/IEC 11179-3:2023, 3.2.72, modified — "registry item" has been replaced by "metadata item" since this document applies to metadata outside the context of a registry.]

3.7
data
reinterpretable 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.

Note 2 to entry: Data may also be described using the terminological notions defined in ISO 1087 and the computational notions defined in ISO/IEC 11404:2007. A datum is a designation of a concept with a notion of equality defined for that concept.

[SOURCE: ISO/IEC 2382:2015, 2121272 — Notes to entry have been modified]

3.8
data model
graphical and/or lexical representation of *data* (3.7), specifying their *properties* (3.2), structure, and interrelationships

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

3.9
metadata
data (3.7) that define and describe other data

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

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3.10
metadata item
instance of a *metadata object* (3.11)

[SOURCE: ISO/IEC 11179-3:2023, 3.2.58, modified — "in a *metadata registry*" deleted, since this document applies to metadata outside the context of a registry.]

3.11
metadata object
object type defined by a *metamodel* (3.12)

[SOURCE: ISO/IEC 11179-3:2023, 3.2.31, modified — Notes to entry deleted.]

3.12
metamodel
data model (3.8) that specifies one or more other models, such as data models, process models, ontologies, etc.

[SOURCE: ISO/IEC 11179-1:2023, 3.2.27]

3.13
data element
⟨organization of data⟩ unit of *data* (3.7) that is considered in context to be indivisible

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) might be divisible in another context, (e.g. country code, area code, local number).

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

[SOURCE: ISO/IEC 2382:2015, 2121599, modified — Example has been moved to the end without the Note to entry prefix, other Notes to entry have been replaced.]

3.14
data element concept
concept (3.4) that can be represented in the form of a *data element* (3.13), 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.

Note 2 to entry: A data element concept may also be associated with zero, one or more *conceptual domains* (3.15) each of which expresses its *value meanings* (3.18).

Note 3 to entry: A data element concept may also be associated with zero, one or more *data elements* (3.13) each of which provide representation for the data element concept via its associated *value domain* (3.16).

[SOURCE: ISO/IEC 11179-31:2023, 3.25]

3.15
conceptual domain
CD
concept (3.4) whose meaning is expressed as an enumerated set, a description of subordinate concepts or both, which are *value meanings* (3.18)

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

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3.16
value domain
VD
set of *permissible values* (3.17)

Note 1 to entry: The *value domain* provides representation but has no implication as to what *data element concept* (3.14) 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]

3.17
permissible value
designation of a *value meaning* (3.18)

Note 1 to entry: Permissible values may be specified either as part of a *value domain* (3.16) or only associated with a *value meaning* (3.18).

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]

3.18
value meaning
semantic content of a value

Note 1 to entry: The representation of *value meanings* shall be independent of (and shall not constrain) their representation in any corresponding *value domain* (3.16).

[SOURCE: ISO/IEC 11179-31:2023, 3.10, modified — reference to “registry” has been removed.]

4 Conformance

4.1 Overview of conformance

Conformance may be claimed to some or all of the basic attributes. Conformance claims shall specify a degree of conformance, as described in 4.2.

Conformance statements with respect to this document shall also be explicit as to which portions of this document conformity is being claimed. This may be done by reference to the relevant clauses.

4.2 Degree of conformance

4.2.1 General

The distinction between “strictly conforming” and “conforming” implementations is necessary to address the simultaneous needs for interoperability and extensions. This document describes specifications that promote interoperability. Extensions are motivated by needs of users, vendors, institutions, and industries, and:

a) are not specified by this document;

b) are specified and agreed to outside this document; and

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