TECHNICAL REPORT

# ISO/IEC TR 11179-2

First edition
2019-04

# Information technology — Metadata registries (MDR) —

## Part 2: Classification

*Technologies de l'information — Registres de métadonnées (RM) — Partie 2: Classification*

Reference number
ISO/IEC TR 11179-2:2019(E)

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Published in Switzerland

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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.

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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*.

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

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.


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# Introduction

This document focuses on the part of the metadata registry (MDR) model called the *classification region* (see ISO/IEC 11179-3:2013, 9.2). The classification region permits the registration and administration of all or part of a *classification scheme*. A classification scheme can be used to classify a *Classifiable Item* (see ISO/IEC 11179-3:2013, 9.2.2.1), which is a type that can be applied to any metadata item in a metadata registry.

There are many efforts underway to devise classification schemes and to use the schemes to build and populate classification structures for organizing information resources. Classification schemes can be used to discover information pertaining to topics of interest. For the purpose of this document, the following are all considered types of classification schemes of varying discriminatory power: tags, keywords, lists of categories, hierarchies, thesauri, taxonomies and ontologies. These classification schemes have potentially great utility for organizing objects in an MDR.

When applied to classifiable items in an MDR, the classification schemes covered in this document have utility for:

— deriving and formulating other administered items;

— ensuring appropriate attribute and attribute-value inheritance;

— deriving names from a controlled vocabulary;

— disambiguating;

— recognizing superordinate, coordinate and subordinate concepts;

— recognizing relationships among items;

— deriving or clarifying the meaning of items associated with the classified items;

— assisting in the development of modularly designed names and definitions.

Each type of classification scheme mentioned above has particular strengths and weaknesses, and provides the foundation upon which particular capabilities can be built. Tags and keywords, for example, are a quick way to provide users some assistance in locating potentially useful classifiable items. A thesaurus provides a more structured approach, arranging descriptive terms in a structure of broader, narrower and related classification categories. A taxonomy provides a classification structure that adds the power of inheritance of meaning from generalized taxa to specialized taxa. Ontologies, with associated epistemologies, can provide rich, rigorously defined structures (e.g. directed acyclic graphs with multiple inheritance) that can convey information needed by software, such as intelligent agents and mediators that are useful in the provision of intelligent information services. When classification systems are used to classify data elements, or value domains, it makes it easier for end users to interpret the data that is associated with the data elements or value domains.

An example of a classification scheme that uses external standards or controlled vocabulary in registering to a metadata registry is provided in Annex A.

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# Information technology — Metadata registries (MDR) —

# Part 2: Classification

## 1 Scope

This document compliments ISO/IEC 11179-3 by describing registration of classification schemes and using them to classify registered items in an MDR. Any metadata item can be made a *Classifiable_Item* so it can be classified, which can include object classes, properties, representations, conceptual domains, value domains, data element concepts and data elements themselves.

This document does not establish a particular classification scheme as pre-eminent. Sanction of a particular taxonomic approach and/or a particular epistemology is also beyond the scope of this document. These are addressed by other standards committees and/or tend to be tailored to a particular domain of discourse. The MDR can establish its own classification schemes, and other standards committees are developing or have developed normative languages for use in classification and/or particular techniques and structures that can be accommodated by this document.

Each registration authority, as described and specified in ISO/IEC 11179-6, can classify classifiable items according to the classification schemes, structures and content that it deems appropriate. In documenting the classification aspects of classifiable items, the registration authority can use the principles, methods, procedures and attributes covered in this document.

## 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 http://www.electropedia.org/

**3.1**
**characteristic**
abstraction of a property of an *object* (3.5) or of a set of objects

Note 1 to entry: Characteristics are used for describing *concepts* (3.3).

[SOURCE: ISO 1087-1:2000, 3.2.4]

**3.2**
**classification scheme**
descriptive information for an arrangement or division of *objects* (3.5) into groups based on criteria such as *characteristics* (3.1), which the objects have in common

[SOURCE: ISO/IEC 11179-3:2013, 3.2.16]

Note 1 to entry: A classification scheme is a concept system used for classifying some objects.

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**3.3**
**concept**
unit of knowledge created by a unique combination of *characteristics* (3.1)

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

[SOURCE: ISO 1087-1:2000, 3.2.1]

**3.4**
**concept system**
set of *concepts* (3.3) structured according to the relations among them

[SOURCE: ISO 1087-1:2000, 3.2.11]

**3.5**
**object**
anything perceivable or conceivable

Note 1 to entry: Objects may also be material (e.g. an engine, a sheet of paper, a diamond), immaterial (e.g. a conversion ratio, a project plan), or imagined (e.g. a unicorn).

[SOURCE: ISO 1087-1:2000, 3.1.1]

**3.6**
**relation**
sense in which *concepts* (3.3) can be connected, via constituent roles

EXAMPLE Causality is a relation with two constituent roles: cause and effect.

[SOURCE: ISO/IEC 11179-3:2013, 3.2.119]

**3.7**
**hierarchical relation**
relation between two concepts which can be either a generic relation or a partitive relation

[SOURCE: ISO 1087-1:2000, 3.2.20]

**3.8**
**hierarchy**
concept system in which all concepts are related in hierarchical relations that form a partial ordering

## 4 Meaning of classification

**Classifying** may refer to categorizing, the process in which ideas and objects are recognized, differentiated and understood. In general, ideas and objects can be classified by a **classification scheme**.

For the purpose of this document, a **classification scheme** defines descriptive information for an arrangement or division of objects (ideas) into groups based on criteria such as characteristics, which the objects (ideas) have in common (ISO/IEC 11179-3:2013, 3.2.16).

A classification scheme is represented as a **concept system** (ISO/IEC 11179-3:2013).

A **concept system** is a set of **concepts** structured according to the **relations** among them (ISO/IEC 11179-3:2013, 3.2.19) and inherited by the classifiable item.

A **concept** is defined as a unit of knowledge created by a unique combination of characteristics (ISO/IEC 11179-3:2013, 3.2.18).

**Relation** is defined as a sense in which **concepts** may be connected, via constituent roles.

Figure 1 depicts the above definitions of key words related with classification.


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