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Geographic information — Feature concept dictionaries and registers

Information géographique — Dictionnaires de concepts d'entités et registres

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 ISO documents 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).

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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.

This document was prepared by Technical Committee ISO/TC 211, *Geographic information/Geomatics,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 287, *Geographic Information,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 19126:2009), which has been technically revised.

The main changes compared to the previous edition are as follows:

— the UML diagrams has been improved to conform to the current style and the UML to the ISO/TC 211 Harmonized Model for both the 2009 version and this document has been added;

— minor updates have been made to take into account changes to other standards, particularly ISO 19135-1.

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 specifies a schema for geographic feature concept dictionaries managed as registers. As described in ISO 19101-1, geographic features are abstractions of real world phenomena associated with a location relative to the surface of the earth, about which data are collected, maintained and disseminated.

A feature concept dictionary provides basic definitions and related information about a set of concepts that may be used to describe geographic features and shared across multiple application areas. Elements from a feature concept dictionary can be reused in one or more feature catalogues. A feature catalogue is often associated with a particular application schema, product specification and data set. It provides a complete textual specification of a set of feature types and their properties and relationships. See Annex A for further discussion of the relationships between feature concept dictionaries, feature catalogues, application schemas and product specifications.

ISO 19135-1 specifies procedures for the registration of items of geographic information. Items of geographic information that can be registered are members of object classes specified in other standards. This document defines object classes and specifies rules used to establish and maintain feature concept dictionaries as ISO 19135-1 conformant register schemas.

ISO 19135-1 specifies the structure of a hierarchical register in which the principal register holds a set of items that describe the subregisters. This document specifies a schema for a hierarchical register where the subregisters are feature concept dictionaries and/or feature catalogues. This document specifies an accompanying schema. The resulting hierarchical register can be used as a basis for harmonization and the establishment of interoperability between different geographic information communities.

Feature concept dictionaries and feature catalogues maintained as registers can serve as sources of reference for similar registers established by other geographic information communities as part of a system of cross-referencing. Cross-referencing between respective items in registers of items of geographic information can be difficult in cases where the structure of registers differs between information communities. This document can serve as a guide for different information communities to develop compatible registers that can support a system of geographic information cross-referencing.

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Geographic information — Feature concept dictionaries and registers

1 Scope

This document specifies a schema for feature concept dictionaries to be established and managed as registers. It does not specify schemas for feature catalogues or for the management of feature catalogues as registers. However, as feature catalogues are often derived from feature concept dictionaries, this document does specify a schema for a hierarchical register of feature concept dictionaries and feature catalogues. These registers are in accordance with ISO 19135-1.

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 19103:2015, *Geographic information — Conceptual schema language*

ISO 19115-1, *Geographic information — Metadata — Part 1: Fundamentals*

ISO 19135-1:2015, *Geographic information — Procedures for item registration — Part 1: Fundamentals*

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
compound registry
registry (3.20) containing multiple *registers* (3.19) that share the same *item classes* (3.17) and coordinated management of a common characteristic

Note 1 to entry: The common characteristic can be a shared namespace for the assignment of names and/or codes.

3.2
data product
dataset or dataset series that conforms to a *data product specification* (3.3)

[SOURCE: ISO 19131:2007, 4.6]

3.3
data product specification
detailed description of a dataset or dataset series together with additional information that will enable it to be created, supplied to and used by another party

[SOURCE: ISO 19131:2007, 4.7, modified — The Note has been removed.]

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3.4
data type
specification of a *value domain* (3.22) with operations allowed on values in this domain

[SOURCE: ISO 19103:2015, 4.14, modified — Note 1 to entry and the Example have been removed.]

3.5
feature
abstraction of real world phenomena

EXAMPLE The phenomenon named "Eiffel Tower" may be classified with other similar phenomena into a feature type named "tower".

Note 1 to entry: A feature can occur as a type or an instance. In this document, feature type is meant unless otherwise specified.

Note 2 to entry: This document does not address real world phenomena directly. It addresses only their abstractions (feature concepts and feature types) and feature instances (data collected to represent a feature in conformance with a specified feature type).

[SOURCE: ISO 19101-1:2014, 4.1.11, modified — Note 2 to entry and the Example have been added.]

3.6
feature association
relationship that links instances of one *feature* (3.5) type with instances of the same or a different feature type

Note 1 to entry: A feature association can occur as a type or an instance. In this document, feature association type is meant unless otherwise specified.

[SOURCE: ISO 19110:2016, 3.3 modified — Note 1 to entry has been added.]

3.7
feature association concept
concept that can be specified in detail as one or more *feature association* (3.6) types

EXAMPLE A "supports" feature association concept describes a relationship between real world phenomena such as "highways" and "bridges" where the role of one feature is that it is *supported-by* the other feature (whose role is *supporter-of*).

3.8
feature attribute
characteristic of a feature

EXAMPLE 1 A feature attribute named "colour" can have an attribute value "green" which belongs to the data type "text".

EXAMPLE 2 A feature attribute named "length" an have an attribute value "82,4" which belongs to the data type "real".

Note 1 to entry: A feature attribute has a name, a data type and a value domain associated to it. A feature attribute for a feature instance also has an attribute value taken from the value domain.

Note 2 to entry: A feature attribute can occur as a type or an instance. In this document, feature attribute type is meant unless otherwise specified.

[SOURCE: ISO 19101-1:2014, 4.1.12, modified — Note 2 to entry has been changed and Note 3 to entry has been removed.]

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3.9
feature attribute concept
concept that can be specified in detail as one or more *feature attribute* (3.8) types

EXAMPLE A "height" feature attribute concept describes length in the vertical direction as a characteristic that can be shared by real world phenomena such as "human", "tree" and "building."

3.10
feature catalogue
catalogue containing definitions and descriptions of the *feature* (3.5) types, *feature attributes* (3.8), and feature relationships occurring in one or more sets of geographic data, together with any *feature operations* (3.13) that can be applied

[SOURCE: ISO 19101-1:2014, 4.1.13]

3.11
feature concept
concept that can be specified in detail as one or more *feature* (3.5) types

EXAMPLE The feature concept "road" can be used to specify several different feature types, each with a different set of properties appropriate for a particular application. For a travel planning application, it can have a limited set of attributes such as name, route number, location and number of lanes, while for a maintenance application it can have an extensive set of attributes detailing the structure and composition of each of the layers of material for which it is composed.

3.12
feature concept dictionary
dictionary that contains definitions of, and related descriptive information about, concepts that can be specified in detail in a *feature catalogue* (3.10)

3.13
feature operation
operation that every instance of a *feature* (3.7) type may perform

EXAMPLE A feature operation upon a "dam" is to raise the dam. The results of this operation are to raise the height of the "dam" and the level of water in a "reservoir".

Note 1 to entry: The values of feature attributes of feature instances are affected by feature operations.

[SOURCE: ISO 19110:2016, 3.7 modified — Note 1 to entry has been changed.]

3.14
feature operation concept
concept that can be specified in detail as one or more *feature operation* (3.13) types

EXAMPLE A "traffic flow" operation can return the number of persons or vehicles expected to move on or through some kind of transportation feature during a period of time specified as input to the operation.

3.15
hierarchical register
structured set of *registers* (3.19) for a domain of register items, composed of a principal register and a set of *subregisters* (3.21)

EXAMPLE The ISO 6523 series is associated with a hierarchical register. The principal register contains organization identifier schemes and each subregister contains a set of organization identifiers that comply with a single organization identifier scheme.

[SOURCE: ISO 19135-1:2015, 4.1.4 modified — Example updated]

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3.16
identifier
linguistically independent sequence of characters capable of uniquely and permanently identifying that with which it is associated

[SOURCE: ISO 19135-1:2015, 4.1.5]

3.17
item class
set of items with common properties

Note 1 to entry: Class is used in this context to refer to a set of instances, not the concept abstracted from that set of instances.

Note 2 to entry: To avoid potential ambiguity in this document, the expression "register item class" is used.

[SOURCE: ISO 19135-1:2015, 4.1.7 modified — Note 2 to entry has been added.]

3.18
nominal value
name of an object, type, or category

EXAMPLE "Deciduous needle leaf" is a nominal value that identifies a vegetation type.

Note 1 to entry: Many feature attributes take nominal rather than numerical values. The value domain of such an attribute is usually specified as an enumeration or a code list.

3.19
register
set of files containing *identifiers* (3.16) assigned to items with descriptions of the associated items

[SOURCE: ISO 19135-1:2015, 4.1.9]

3.20
registry
information system on which a *register* (3.19) is maintained

[SOURCE: ISO 19135-1:2015, 4.1.13]

3.21
subregister
part of a *hierarchical register* (3.15) that contains items from a partition of a domain of information

[SOURCE: ISO 19135-1:2015, 4.1.16]

3.22
value domain
set of accepted values

[SOURCE: ISO 19103:2015, 4.37 modified — The Example has been removed.]

4 Conformance

4.1 General

To conform to this document, all of the conditions specified for at least one of the two conformance classes described in the following subclauses shall be satisfied.

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