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SIST EN ISO 19110:2006
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Geografske informacije - Metodologija za objektne kataloge (ISO 19110:2016)

Geographic information - Methodology for feature cataloguing (ISO 19110:2016)

Geoinformation - Objektartenkataloge (ISO 19110:2016)

Information géographique - Méthodologie de catalogage des entités (ISO 19110:2016)

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Geographic information - Methodology for feature cataloguing (ISO 19110:2016)

Information géographique - Méthodologie de catalogage des entités (ISO 19110:2016)

Geoinformation - Objektartenkataloge (ISO 19110:2016)

This European Standard was approved by CEN on 12 December 2016.

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European foreword

This document (EN ISO 19110:2016) has been prepared by Technical Committee ISO/TC 211 "Geographic information/Geomatics" in collaboration with Technical Committee CEN/TC 287 "Geographic Information" the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2017, and conflicting national standards shall be withdrawn at the latest by June 2017.

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The text of ISO 19110:2016 has been approved by CEN as EN ISO 19110:2016 without any modification.

INTERNATIONAL STANDARD

ISO 19110

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Geographic information — Methodology for feature cataloguing

Information géographique — Méthodologie de catalogage des entités

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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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO 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).

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

For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 211, *Geographic information/Geomatics*.

This second edition cancels and replaces the first edition (ISO 19110:2005), which has been technically revised. It also replaces ISO 19110:2005/Amd1:2011. Annex G explains how to transform feature catalogues from the first edition to this revised version.

Introduction

Geographic features are real-world phenomena associated with a location relative to the Earth, about which data are collected, maintained, and disseminated. Feature catalogues defining the types of features, their operations, attributes, and associations represented in geographic data are indispensable to turning the data into usable information. Such feature catalogues promote the dissemination, sharing, and use of geographic data through providing a better understanding of the content and meaning of the data. Unless suppliers and users of geographic data have a shared understanding of the kinds of real-world phenomena represented by the data, users will be unable to judge whether the data supplied are fit for their purpose.

The availability of standard feature catalogues that can be used multiple times will reduce costs of data acquisition and simplify the process of product specification for geographic datasets.

This document provides a standard framework for organizing and reporting the classification of real-world phenomena in a set of geographic data. Any set of geographic data is a greatly simplified and reduced abstraction of a complex and diverse world. A catalogue of feature types can never capture the richness of geographic reality. However, such a feature catalogue should present the particular abstraction represented in a given dataset clearly, precisely, and in a form readily understandable and accessible to users of the data.

Geographic features occur at two levels: instances and types. At the instance level, a geographic feature is represented as a discrete phenomenon that is associated with its geographic and temporal coordinates and may be portrayed by a particular graphic symbol. These individual feature instances are grouped into classes with common characteristics: feature types. It is recognized that geographic information is subjectively perceived and that its content depends on the needs of particular applications. The needs of particular applications determine the way instances are grouped into types within a particular classification scheme. ISO 19109 specifies how data shall be organized to reflect the particular needs of applications with similar data requirements.

NOTE The full description of the contents and structure of a geographic dataset is given by the application schema developed in compliance with ISO 19109. The feature catalogue defines the meaning of the feature types and their associated feature attributes, feature operations, and feature associations contained in the application schema.

This document enables the multilingual description of application schemas compliant with ISO 19109. It goes further to provide a mechanism enabling a single global description of some properties occurring many times in an application schema and a binding of those global properties to the corresponding feature types.

The collection criteria used to identify individual real-world phenomena and to represent them as feature instances in a dataset are not specified in this document. Because they are not included in the standards, collection criteria should be included separately in the product specification for each dataset.

A standard way of organizing feature catalogue information will not automatically result in harmonization or interoperability between applications. In situations where classifications of features differ, this document may at least serve to clarify the differences and thereby help to avoid the errors that would result from ignoring them. It may also be used as a standard framework within which to harmonize existing feature catalogues that have overlapping domains.

This revision of ISO 19110 addresses issues related to the multilingual management of feature catalogues and applies the changes documented in a previous amendment. In addition to removing minor inconsistencies in the conceptual schemas, the amendment enhanced the mechanism ensuring the management of global properties. The amendment also provided an XML schema implementation of the feature catalogue conceptual schema and a management of feature catalogue registers. If the initial conceptual schema is not a subset of the amended conceptual schema, it is possible to transform legacy instances.

Geographic information — Methodology for feature cataloguing

1 Scope

This document defines the methodology for cataloguing feature types. This document specifies how feature types can be organized into a feature catalogue and presented to the users of a set of geographic data. This document is applicable to creating catalogues of feature types in previously uncatalogued domains and to revising existing feature catalogues to comply with standard practice. This document applies to the cataloguing of feature types that are represented in digital form. Its principles can be extended to the cataloguing of other forms of geographic data. Feature catalogues are independent of feature concept dictionaries defined in ISO 19126 and can be specified without having to use or create a Feature Concept Dictionary.

This document is applicable to the definition of geographic features at the type level. This document is not applicable to the representation of individual instances of each type. This document excludes portrayal schemas as specified in ISO 19117.

This document may be used as a basis for defining the universe of discourse being modelled in a particular application, or to standardize general aspects of real world features being modelled in more than one application.

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, *Geographic information — Conceptual schema language*

ISO 19109, *Geographic information — Rules for application schema*

ISO 19115-1:2014, *Geographic information — Metadata — Part 1: Fundamentals*

ISO/TS 19115-3:2016, *Geographic information — Metadata — Part 3: XML schema implementation for fundamental concepts*

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

ISO/TS 19139:2007, *Geographic information — Metadata — XML schema implementation*

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:

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

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

3.1
designation
designator
representation of a concept by a sign which denotes it

Note 1 to entry: In terminology work, three types of designations are distinguished: symbols, appellations and terms.

[SOURCE: ISO 1087-1:2000, 3.4.1]

3.2
feature
abstraction of real-world phenomena

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

Note 1 to entry: A feature may occur as a type or an instance. Feature type or feature instance should be used when only one is meant.

[SOURCE: ISO 19101-1:2014, 4.1.11]

3.3
feature association
relationship that links instances of one *feature* (3.2) type with instances of the same or a different feature type

3.4
feature attribute
characteristic of a *feature* (3.2)

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

EXAMPLE 2 A feature attribute named "length" may 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.

[SOURCE: ISO 19101-1:2014, 4.1.12]

3.5
feature catalogue
catalogue containing definitions and descriptions of the *feature* (3.2) types, *feature attributes* (3.4) and feature relationships occurring in one or more sets of geographic data, together with any *feature operations* (3.7) that can be applied

Note 1 to entry: Feature relationships include *feature inheritances* (3.6) and *feature associations* (3.3).

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

3.6
feature inheritance
mechanism by which more specific *features* (3.2) incorporate structure and behaviour of more general features related by behaviour

3.7
feature operation
operation that every instance of a *feature* (3.2) 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: Sometimes, feature operations provide a basis for feature type definition.

3.8
functional language
language in which *feature operations* (3.7) are formally specified

Note 1 to entry: In a functional language, feature types may be represented as abstract data types.

3.9
signature
text string that specifies the name and parameters required to invoke an operation

Note 1 to entry: It may contain optional returned parameters. This signature is usually derived from the formal definition. This is the equivalent of the UML signature.

4 Conformance

4.1 Conformance classes

The methodology for cataloguing feature types is defined through a set of requirements for the description of feature types. A single conformance class is defined for models meeting all the conceptual requirements. This document presents a conceptual model for a representation of feature type descriptions as a set of UML diagrams that satisfy this conformance class. Annex A presents the abstract test suits for conformance classes.

A second set of requirements for XML implementation of the conceptual model are the basis for a conformance class for XML implementation of the UML model for representation of feature types in a feature catalogue. This implementation is based on rules defined in ISO/TS 19139 and ISO/TS 19115-3.

Annex D defines a conceptual model for a registered feature catalogue, but no corresponding XML implementation is specified by this document.

Table 1 — Conformance classes defined by this specification

Conformance class URI[a]	Standardization target	Conformance class name (implemented clause)
/conf/conceptual-model	Conceptual model	Conceptual model for a feature catalogue
/conf/feature-catalogue-xml	XML implementation	XML implementation of feature catalogue conceptual model
/conf/feature-catalogue-xml-instance	XML instance document	Valid XML instance document for interchange of feature catalogue content

[a] All Conformance Class URIs are HTTP URIs, prefix 'http://standards.iso.org/iso/19110' to the paths in the table cell to get the complete URI.

5 Abbreviated terms

GFC	Geographic Feature Cataloguing
GFM	General Feature Model
HTTP	Hyper Text Transfer Protocol
IHO	International Hydrographic Organization
TS	Technical Specification