SLOVENSKI STANDARD
oSIST ISO/DIS 19117:2011

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Geografske informacije - Prikazi in opisi geografskih podatkov

Geographic information - Portrayal

Information géographique - Présentation

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Geographic information — Portrayal

Information géographique — Présentation

[Revision of first edition (ISO 19117:2005)]

ICS 35.240.70

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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.

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ISO 19117 was prepared by Technical Committee ISO/TC 211, *Geographic information/Geomatics*.

This second edition cancels and replaces the first edition (ISO 19117:2005), which has been technically revised.

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Introduction

This International Standard specifies a conceptual schema for portrayal data, in particular symbols and portrayal functions. Portrayal functions associate features with symbols for the portrayal of the features on maps and other display media. This schema includes classes, attributes, associations and operations that provide a common conceptual framework that specifies the structure of and interrelationships between features, portrayal functions, and symbols. It separates the content of the data from the portrayal of that data, to allow the data to be portrayed in a manner independent of the data set. This framework is derived from concepts found in existing portrayal implementations, and specifies a conceptual standard for use in future implementations (for example OGC Symbology Encoding and Styled Layer Descriptor Profile of WMS).

This International Standard provides an abstract model for developers of portrayal systems so they can implement a system with the flexibility to portray geographic data to a user community in a manner that makes sense to that community.

The principal changes in this revision are to expand the concept of portrayal rules to more generic portrayal functions, include definitions for symbols (including parameterized symbols), include both portrayal functions and symbols in portrayal catalogues, and define a core portrayal schema, and extensions for specialized cases.

This revision for the most part expands on the concepts in ISO 19117:2005, but concepts for portrayal specifications (as a symbol instead of an operation), portrayal catalogue (also includes symbols), and rules-based portrayal (multiple rules allowed) have been changed.

Geographic information — Portrayal

1 Scope

This International Standard specifies a conceptual schema for describing symbols, portrayal functions that map geospatial features to symbols, and the collection of symbols and portrayal functions into portrayal catalogues. This conceptual schema can be used in the design of portrayal systems. It allows feature data to be separate from portrayal data, permitting data to be portrayed in a dataset independent manner.

This International Standard does not address the following:

— standard symbol collection (e.g. International Chart 1 – IHO);

— a standard for symbol graphics (e.g. scalable vector graphics [SVG]);

— portrayal services (e.g. web map service);

— capability for non-visual portrayal (e.g. aural symbology);

— dynamic rendering (e.g. on the fly contouring of tides);

— portrayal finishing rules (e.g. generalization, resolve overprinting, displacement rules);

— 3D symbolization (e.g. simulation modelling).

2 Conformance

Any portrayal catalogue, portrayal function and symbol describing the portrayal of geographic information claiming conformance with this International Standard shall pass the relevant tests of the abstract test suite presented in Annex A, and those portrayal extension requirements that are applicable to the extension or extensions being used.

Conformance classes are defined for the portrayal core, and the core plus extensions. These extensions provide additional functionality, and are not mutually exclusive of each other.

Core portrayal conformance classes
Conformance class – portrayal core (general)
Conformance class – portrayal core – symbol
Conformance class – portrayal core – portrayal function
Conformance class – portrayal core – portrayal catalogue

Portrayal function extension conformance classes
Conformance class – portrayal core plus conditional function extension
Conformance class – portrayal core plus context extension
Conformance class – portrayal core plus function symbol parameter extension

Symbol extension conformance classes
Conformance class – portrayal core plus compound symbol extension
Conformance class – portrayal core plus complex symbol extension
Conformance class – portrayal core plus reusable symbol component extension
Conformance class – portrayal core plus symbol parameter extension

3 Normative references

The following referenced documents are indispensable for the application 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/TS 19103:2005, *Geographic information — Conceptual schema language*

ISO 19107:2003, *Geographic information — Spatial schema*

ISO 19109:2005, *Geographic information — Rules for application schema*

ISO 19110:2005, *Geographic information — Methodology for feature cataloguing*

ISO 19111:2007, *Geographic information — Spatial referencing by coordinates*

ISO 19115:2003, *Geographic information — Metadata*

ISO 19133:2005, *Geographic information — Location-based services — Tracking and navigation*

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

ISO/IEC 19501:2005, *Information technology* — Open Distributed Processing — *Unified Modeling Language (UML) Version 1.4.2*

4 Terms and definitions

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

4.1
annotation
any marking on illustrative material for the purpose of clarification

NOTE Numbers, letters, **symbols**, and signs are examples of annotation.

4.2
class
description of a set of objects that share the same attributes, operations, methods, relationships, and semantics

[ISO/TS 19103:2005, definition 4.27]

NOTE A class may use a set of interfaces to specify collections of operations it provides to its environment. See: interface.

4.3
complex symbol
symbol that is composed of multiple symbols, repeated in a pattern

EXAMPLE A **point** symbol that is composed of two point graphics.

4.4
compound symbol
symbol composed of multiple other symbols, arranged in a meaningful relationship

EXAMPLE A dashed line symbol with a **point** symbol repeated at an interval.

4.5
conditional feature portrayal function
function that maps a geographic **feature** to a **symbol** based on some condition evaluated against a property or attribute of a feature

4.6
curve
1-dimensional **geometric primitive**, representing the continuous image of a line

[ISO 19107:2003, definition 4.23]

4.7
dataset
identifiable collection of data

[ISO 19115:2003, definition 4.2]

NOTE A dataset may be a smaller grouping of data which, though limited by some constraint such as spatial extent or **feature** type, is located physically within a larger dataset. Theoretically, a dataset may be as small as a single feature or **feature attribute** contained within a larger dataset. A hardcopy map or chart may be considered a dataset.

4.8
feature
abstraction of real world phenomena

[ISO 19101:2002, definition 4.11]

NOTE A feature may occur as a type or an **instance**. Feature type or feature instance should be used when only one is meant.

4.9
feature attribute
characteristic of a **feature**

[ISO 19101:2002, definition 4.12]

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 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 In a feature catalogue, a feature attribute may include a value domain but does not specify attribute values for feature instances.

4.10
feature portrayal function
function that maps a geographic **feature** to a **symbol**

4.11
function
rule that associates each element from a domain (source, or domain of the function) to a unique element in another domain (target, co-domain, or range)

[ISO 19107:2003, definition 4.41]

4.12
geographic information
information concerning phenomena implicitly or explicitly associated with a location relative to the Earth

[ISO 19101:2002, definition 4.16]

4.13
geometric primitive
geometric object representing a single, connected, homogeneous element of space

[ISO 19107:2003, definition 4.48]

4.14
instance
object that realizes a **class**

[ISO 19107:2003, definition 4.53]

4.15
layer
basic unit of **geographic information** that may be requested as a map from a server

[ISO 19128:2005, definition 4.6]

4.16
metadata
data about data

[ISO 19115:2003, definition 4.5]

4.17
parameterized feature portrayal function
function that maps a geographic **feature** to a **parameterized symbol**

NOTE A parameterized **feature portrayal function** passes the relevant attribute values from the feature **instance** for use as input to the parameterized **symbol**

4.18
parameterized symbol
symbol that has dynamic parameters

NOTE The dynamic parameters map to the attribute values of each **feature instance** being portrayed

4.19
point
0-dimensional **geometric primitive**, representing a position

[ISO 19107:2003, definition 4.61]

4.20
portrayal
presentation of information to humans

4.21
portrayal catalogue
collection of defined **portrayals** for a **feature** catalogue

NOTE Content of a portrayal catalogue includes **portrayal functions**, **symbols**, and **portrayal context** (optional)

4.22
portrayal context
circumstances, imposed by factors extrinsic to a geographic **dataset**, that affect the **portrayal** of that dataset

NOTE Portrayal context may influence the selection of **portrayal functions** and construction of **symbols**.

EXAMPLE Factors contributing to portrayal context may Include the proposed display or map scale, the viewing conditions (day/night/dusk), and the display orientation requirements (north not necessarily at the top of the screen or page) among others.

4.23
portrayal function
function that maps geographic **feature**s to **symbols**

NOTE **Portrayal** functions can also include parameters and other computations that are not dependent on geographic feature properties.

4.24
portrayal function set
function that maps a **feature** catalogue to a **symbol set**

4.25
portrayal rule
specific type of **portrayal function** expressed in a declarative language

NOTE A declarative language is rule-based and includes decision and branching statements

4.26
portrayal service
generic interface used to portray **features**

4.27
render
conversion of digital graphics data into visual form

EXAMPLE Generation of an image on a video display.

4.28
simple symbol
symbol that is neither compound nor parameterized

4.29
spatial attribute
feature attribute describing the spatial representation of the **feature** by coordinates, mathematical **functions** and/or boundary topology relationships

4.30
surface
2-dimensional **geometric primitive**, locally representing a continuous image of a region of a plane

[ISO 19107:2003, definition 4.75]