SLOVENSKI STANDARD
SIST EN ISO 19118:2011

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Nadomešča:
SIST EN ISO 19118:2006

Geografske informacije - Kodiranje (ISO 19118:2011)

Geographic information - Encoding (ISO 19118:2011)

Geoinformation - Kodierung (ISO 19118:2011)

Information géographique - Codage (ISO 19118:2011)

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35.240.70	Uporabniške rešitve IT v znanosti	IT applications in science

SIST EN ISO 19118:2011 **en**

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English Version

Geographic information - Encoding (ISO 19118:2011)

Information géographique - Codage (ISO 19118:2011)

Geoinformation - Kodierung (ISO 19118:2011)

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Foreword

This document (EN ISO 19118:2011) 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of an identical text or by endorsement, at the latest by April 2012, and conflicting national standards shall be withdrawn at the latest by April 2012.

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This document supersedes EN ISO 19118:2006.

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The text of ISO 19118:2011 has been approved by CEN as a EN ISO 19118:2011 without any modification.

INTERNATIONAL STANDARD

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Geographic information — Encoding

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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ISO 19118 was prepared by Technical Committee ISO/TC 211, *Geographic information/Geomatics*.

This second edition cancels and replaces the first edition (ISO 19118:2005), which has been technically revised.

Introduction

This International Standard specifies the requirements for defining encoding rules used for interchange of geographic data within the set of International Standards known as the “ISO 19100 series”. An encoding rule allows geographic information defined by application schemas and standardized schemas to be coded into a system-independent data structure suitable for transport and storage. The encoding rule specifies the types of data being coded and the syntax, structure and coding schemes used in the resulting data structure. The resulting data structure can be stored on digital media or transferred using transfer protocols. It is intended that the data be read and interpreted by computers, but data can be in a form that is human readable.

The choice of one encoding rule for application-independent data interchange does not exclude application domains and individual nations from defining and using their own encoding rules that can be platform dependent or more effective with regard to data size or processing complexity. XML is a subset of ISO/IEC 8879 and has been chosen because it is independent of computing platform and interoperable with the World Wide Web.

This International Standard is divided into three logical sections. The requirements for creating encoding rules based on UML schemas are specified in Clauses 6 to 9. The requirements for creating encoding service are specified in Clause 10, and the requirements for XML-based encoding rules are specified in Annex A.

The XML-based encoding rule is intended for use as a neutral data interchange. It relies on the Extensible Markup Language (XML) and the ISO/IEC 10646 character set standards.

The geographic information standards are organized within the set of International Standards known as the “ISO 19100 series”. The background and the overall structure of this series of International Standards and the fundamental description techniques are defined in ISO 19101, ISO/TS 19103 and ISO/TS 19104.

Users of this International Standard can develop application schemas to formally describe geographic information. An application schema is compiled by integrating elements from other standardized conceptual schemas (e.g. ISO 19107). How this integration takes place is described in ISO 19109. The set of International Standards known as the “ISO 19100 series” also defines a set of common services that are available when developing geographic information applications. The common services are generally defined in ISO 19119 and cover access to, and processing of, geographic information according to the common information model. This International Standard covers implementation issues.

Geographic information — Encoding

1 Scope

This International Standard specifies the requirements for defining encoding rules for use for the interchange of data that conform to the geographic information in the set of International Standards known as the "ISO 19100 series".

This International Standard specifies

— requirements for creating encoding rules based on UML schemas,

— requirements for creating encoding services, and

— requirements for XML-based encoding rules for neutral interchange of data.

This International Standard does not specify any digital media, does not define any transfer services or transfer protocols, nor does it specify how to encode inline large images.

2 Conformance

2.1 Introduction

Two sets of conformance classes are defined for this International Standard.

2.2 Conformance classes related to encoding rules

All encoding rules shall pass all test cases of the abstract test suite in B.1. All encoding rules shall pass all test cases of the abstract test suite in B.2 and/or B.3.

Table 1 — Conformance classes related to encoding rules

Conformance class	Subclause of the abstract test suite
All encoding rules	B.1
Encoding rule with instance conversion	B.2
Encoding rule with schema conversion	B.3

2.3 Conformance classes related to encoding services

All encoding services shall pass all test cases of the abstract test suite in B.4. Depending on the capabilities of the encoding service, it shall pass all test cases of additional conformance classes in accordance with Table 2.

Table 2 — Conformance classes related to encoding services

Conformance class	Subclause of the abstract test suite
All encoding services	B.4
Generic encoding service	B.5
Service that encodes data	B.6
Service that decodes data	B.7
Service that generates an output data structure schema	B.8

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 8601:2004, *Data elements and interchange formats — Information interchange — Representation of dates and times*

ISO/IEC 10646:2011, *Information technology — Universal Coded Character Set (UCS)*

ISO/TS 19103:2005, *Geographic information — Conceptual schema language*

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

Extensible Markup Language (XML) 1.0, W3C Recommendation. Available at <http://www.w3.org/TR/REC-xml>

4 Terms and definitions

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

4.1
application schema
conceptual schema (4.5) for **data** (4.8) required by one or more applications

[ISO 19101:2002, 4.2]

NOTE An application schema describes the content, the structure and the constraints applicable to **information** (4.22) in a specific application domain.

4.2
character
member of a set of elements that is used for the representation, organization, or control of **data** (4.8)

[ISO/IEC 2382-1:1993, 01.02.11]

4.3
code
representation of a label according to a specified scheme

4.4
conceptual model
model (4.27) that defines concepts of a **universe of discourse** (4.33)

[ISO 19101:2002, 4.4]

4.5
conceptual schema
formal description of a **conceptual model** (4.4)

[ISO 19101:2002, 4.5]

4.6
conceptual schema language
formal language based on a conceptual formalism for the purpose of representing **conceptual schemas** (4.5)

[ISO 19101:2002, 4.6]

EXAMPLES UML, EXPRESS, IDEF1X.

NOTE A conceptual schema language may be lexical or graphical.

4.7
conversion rule
rule for converting instances in the input **data** (4.8) structure to instances in the output data structure

4.8
data
reinterpretable representation of **information** (4.22) in a formalized manner suitable for communication, interpretation, or processing

[ISO/IEC 2382-1:1993, 01.01.02]

4.9
data interchange
delivery, receipt and interpretation of **data** (4.8)

4.10
data transfer
movement of **data** (4.8) from one point to another over a **medium** (4.26)

NOTE Transfer of **information** (4.22) implies transfer of data.

4.11
data type
specification of a **value domain** (4.34) with operations allowed on values in this domain

[ISO/TS 19103:2005, 4.1.5]

EXAMPLES Integer, Real, Boolean, String and Date.

NOTE A data type is identified by a term, e.g. Integer. Values of the data types are of the specified value domain, e.g. all integer numbers between –65537 and 65536. The set of operations can be +, -, * and / and is semantically well defined. A data type can be simple or complex. A simple data type defines a value domain where values are considered atomic in a certain context, e.g. Integer. A complex data type is a collection of data types that are grouped together. A complex data type may represent an object and can, thus, have identity.