SLOVENSKI STANDARD
SIST EN ISO 19118:2006

01-september-2006

Geografske informacije – Kodiranje (ISO 19118:2005)

Geographic information - Encoding (ISO 19118:2005)

Geoinformation - Kodierung (ISO 19118:2005)

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Information géographique - Codage (ISO 19118:2005)

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<u>**ICS:**</u>

07.040	Astronomija. Geodezija. Geografija	Astronomy. Geodesy. Geography
35.240.70	Uporabniške rešitve IT v znanosti	IT applications in science

SIST EN ISO 19118:2006 **en**

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 19118

July 2006

ICS 35.240.70

English Version

Geographic information - Encoding (ISO 19118:2005)

Information géographique - Codage (ISO 19118:2005)   Geoinformation - Kodierung (ISO 19118:2005)

This European Standard was approved by CEN on 16 June 2006.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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EN ISO 19118:2006 (E)

Foreword

The text of ISO 19118:2005 has been prepared by Technical Committee ISO/TC 211 "Geographic information/Geomatics" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 19118:2006 by Technical Committee CEN/TC 287 "Geographic Information", the secretariat of which is held by NEN.

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of an identical text or by endorsement, at the latest by January 2007, and conflicting national standards shall be withdrawn at the latest by January 2007.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Endorsement notice

The text of ISO 19118:2005 has been approved by CEN as EN ISO 19118:2006 without any modifications.

INTERNATIONAL STANDARD

ISO
19118

First edition
2005-07-15

Geographic information — Encoding

Information géographique — Codage

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Reference number
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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.

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.

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

Introduction

This International Standard specifies the requirements for defining encoding rules to be used for interchange of geographic data within the ISO 19100 series of International Standards. 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 to be coded and the syntax, structure and coding schemes used in the resulting data structure. The resulting data structure may be stored on digital media or transferred using transfer protocols. It is intended to be read and interpreted by computers, but may be in a form that is human readable.

The choice of one encoding rule for neutral 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 regards 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 8. The requirements for creating encoding service are specified in Clause 9, and the XML based encoding rule is specified in Annex A.

The XML based encoding rule is intended to be used for neutral data interchange. It relies on the Extensible Markup Language (XML) and the ISO/IEC 10646 character set standards. Introductions to XML and ISO/IEC 10646 are given in Annexes C and D, respectively. Annex E contains examples of the application of this International Standard.

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

Users of this International Standard will develop application schemas to capture the semantics of geographic information. An application schema is compiled by integrating elements from a set of standardized conceptual schemas developed in ISO 19107, ISO 19108, ISO 19110, ISO 19111, ISO 19112, ISO 19113, ISO 19115 and ISO 19117, including eventually new standardized conceptual schemas. How this integration will take place is described in ISO 19109. The ISO 19100 series of International Standards also defines a set of common services that shall be available when developing geographic information applications. The common services are generally defined in ISO 19119 and will cover access to and processing of geographic information according to the common information model. Two service areas are defined more closely in ISO 19116 and ISO 19117. ISO 19105, ISO 19106, ISO 19114 and this International Standard cover implementation issues.

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INTERNATIONAL STANDARD   **ISO 19118:2005(E)**

Geographic information — Encoding

1   Scope

This International Standard specifies the requirements for defining encoding rules to be used for interchange of geographic data within the ISO 19100 series of International Standards.

This International Standard specifies

— requirements for creating encoding rules based on UML schemas,

— requirements for creating encoding services,

— an informative XML based encoding rule for neutral interchange of geographic data.

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

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2   Conformance

Two conformance levels are defined for this International Standard. The conformance levels are defined in the abstract test suite in Annex B.

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/IEC 10646, *Information technology — Universal Multiple-Octet Coded Character Set (UCS)*

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

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

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

Extensible Markup Language (XML) 1.0 (Second Edition), W3C Recommendation 6 October 2000. Available at <http://www.w3.org/TR/REC-xml>

XML Schema Part 1: Structures, W3C Recommendation 2, May 2001. Available at <http://www.w3.org/TR/xmlschema-1/>

XML Schema Part 2: Datatypes, W3C Recommendation 2, May 2001. Available at <http://www.w3.org/TR/xmlschema-2/>

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4   Terms and definitions

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

4.1
application schema
conceptual schema for **data** required by one or more applications

[ISO 19101]

NOTE   An application schema describes the content, the structure and the constraints applicable to information 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**

[ISO/IEC 2382-1]

4.3
code
representation of a label according to a specified scheme

4.4
conceptual model
model that defines concepts of a **universe of discourse**

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[ISO 19101]

4.5
conceptual schema
formal description of a **conceptual model**

[ISO 19101]

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

[ISO 19101]

EXAMPLE   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** structure to instances in the output **data** structure

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

[ISO/IEC 2382-1]

4.9
data element
unit of **data** that, in a certain context, is considered indivisible

4.10
data interchange
delivery, receipt and interpretation of **data**

4.11
data transfer
movement of **data** from one point to another over a **medium**

NOTE   Transfer of information implies transfer of data.

4.12
data type
specification of a **value domain** with operations allowed on values in this domain

[ISO/TS 19103]

EXAMPLE   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 which are grouped together. A complex data type may represent an object and can thus have identity.

4.13
dataset
identifiable collection of **data**

[ISO 19115]

4.14
encoding
conversion of **data** into a series of **codes**

4.15
encoding rule
identifiable collection of **conversion rules** that define the **encoding** for a particular **data** structure

EXAMPLE   XML, ISO 10303-21, ISO/IEC 8211.

NOTE   An encoding rule specifies the types of data to be converted as well as the syntax, structure and codes used in the resulting data structure.

4.16
encoding service
software component that has an **encoding rule** implemented

4.17
feature
abstraction of real world phenomena

[ISO 19101]

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

4.18
file
named set of records stored or processed as a unit

[ISO/IEC 2382-1]