ICS 35.240.70 SLOVENSKÁ TECHNICKÁ NORMA Máj 2016

STN	Geografická informácia Pravidlá aplikačnej schémy (ISO 19109: 2015)	STN EN ISO 19109 01 9335

Geographic information. Rules for application schema (ISO 19109: 2015)

Information géographique. Règles de schéma d'application (ISO 19109: 2015)

Geoinformation. Regeln zur Erstellung von Anwendungsschemata (ISO 19109: 2015)

Táto norma obsahuje anglickú verziu EN ISO 19109: 2015.
Európska norma EN ISO 19109: 2015 má postavenie slovenskej technickej normy.

This standard includes the English version of EN ISO 19109: 2015.
The European Standard EN ISO 19109: 2015 has the status of a Slovak Standard.

122617

Anotácia

V tejto medzinárodnej norme sa definujú pravidlá na tvorbu a dokumentáciu aplikačných schém vrátane princípov definovania objektov.

Predmetom záujmu tejto normy je:

- konceptuálne modelovanie objektov a ich vlastností v oblasti záujmu,
- definovanie aplikačných schém,
- využitie jazyka konceptuálnej schémy na aplikačné schémy,
- prechod od pojmov v konceptuálnom modeli k typom dát v aplikačnej schéme,
- integrácia normalizovaných schém z rôznych noriem ISO z oblasti geografickej informácie s aplikačnou schémou.

V tejto norme sa neupravuje:

- výber konkrétneho jazyka konceptuálnej schémy na aplikačné schémy,
- definovanie akejkoľvek konkrétnej aplikačnej schémy,
- reprezentácia typov objektov a ich vlastností v katalógu objektov,
- reprezentácia metadát,
- pravidlá zobrazenia jednej aplikačnej schémy do druhej,
- implementácia aplikačnej schémy do počítačového prostredia,
- počítačový systém a návrh aplikačného softvéru,
- programovanie.

Národný predhovor

Táto norma obsahuje národnú prílohu NA (informatívnu), v ktorej je zoznam slovenských a anglických termínov.

Táto norma obsahuje štyri národné poznámky v národnej prílohe.

Vypracovanie normy

Spracovateľ: Úrad pre normalizáciu, metrológiu a skúšobníctvo SR

Technická komisia: TK 89 Geodézia a kartografia

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 19109

December 2015

ICS 35.240.70

Supersedes EN ISO 19109:2006

English Version

Geographic information - Rules for application schema (ISO 19109:2015)

Information géographique - Règles de schéma d'application (ISO 19109:2015)

Geoinformation - Regeln zur Erstellung von Anwendungsschemata (ISO 19109:2015)

This European Standard was approved by CEN on 20 November 2015.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN ISO 19109:2015 E

European foreword

This document (EN ISO 19109:2015) 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 2016, and conflicting national standards shall be withdrawn at the latest by June 2016.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 19109:2006.

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

Endorsement notice

The text of ISO 19109:2015 has been approved by CEN as EN ISO 19109:2015 without any modification.

Contents

Page

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. 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. 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 WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

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

This first edition of ISO 19103:2015 cancels and replaces the first edition (ISO/TS 19103:2005).

Introduction

This International Standard of the ISO geographic information suite of standards is concerned with the adoption and use of a conceptual schema language (CSL) for developing computer interpretable models, or schemas, of geographic information. Standardization of geographic information requires the use of a formal CSL to specify unambiguous schemas that can serve as a basis for data interchange and the definition of interoperable services. An important goal of the ISO geographic information suite of standards is to create a framework in which data interchange and service interoperability can be realized across multiple implementation environments. The adoption and consistent use of a CSL to specify geographic information is of fundamental importance in achieving this goal.

There are two aspects to this International Standard. First, a CSL is selected that meets the requirements for rigorous representation of geographic information. This International Standard identifies the combination of the Unified Modeling Language (UML) static structure diagram with its associated Object Constraint Language (OCL) and a set of basic type definitions as the conceptual schema language for specification of geographic information. Secondly, this International Standard provides guidelines on how UML should be used to create geographic information models that are a basis for achieving the goal of interoperability.

One goal of the ISO geographic information suite of standards using UML models is that they will provide a basis for model based mapping to encoding schemas like the ones defined in ISO 19118, as well as a basis for creating implementation specifications for implementation profiles for various other environments.

This International Standard describes the general metamodel for use of UML in the context of the ISO geographic information series of standards. Aspects specifically dealing with the modelling of application schemas are described in ISO 19109.

This International Standard is a revision of a previous version from 2005. Changes are documented in Clause 5.

Geographic information — Conceptual schema language

1 Scope

This International Standard provides rules and guidelines for the use of a conceptual schema language within the context of geographic information. The chosen conceptual schema language is the Unified Modeling Language (UML).

This International Standard provides a profile of the Unified Modelling Language (UML).

The standardization target type of this standard is UML schemas describing geographic information.

2 Conformance

2.1 Introduction

This International Standard defines three levels of conformance classes:

— UML version

— Data types

— Model documentation

To conform to this International Standard, the usage of a conceptual schema language shall satisfy all of the requirements specified in one of the three levels of conformance described below, with the corresponding abstract test suite in Annex A.

2.2 UML version conformance

2.2.1 UML 2 conformance class

Table 1 describes the conformance class for UML 2.

Table 1 — UML 2 conformance class

Conformance class identifier	UML2
Standardization target type	UML2 schemas for geographic information
Dependency	ISO/IEC 19505-2:2012, Clause 2 OCL 2.3.1
Requirements	All requirements in 6.2 to 6.12 except Requirement 2, and including Requirement 26.
Tests	All tests in A.1.2

2.2.2 UML 1 to UML2 mapping conformance class

Table 2 describes the conformance class for mapping from UML 1.

Table 2 — UML 1 to UML 2 mapping conformance class

Conformance class identifier	UML1
Standardization target type	UML1 schemas for geographic information
Dependency	UML2 ConformantSchema ISO/IEC 19501:2005, Clause 2
Requirements	All requirements in Annex B
Tests	All tests in A.1.3

2.2.3 Conformant schema conformance class

Table 3 describes the conformance class for non-UML schemas.

NOTE Non-UML schemas are considered conformant if there is a well-defined mapping from a model in the source language into an equivalent model in UML and that this model in UML is conformant.

Table 3 — Conformant schema conformance class

Conformance class identifier	ConformantSchema
Standardization target type	Schemas for geographic information
Dependency	UML2
Requirements	Requirement 2 in 6.2.
Tests	All tests in A.1.4

2.3 Data types conformance

2.3.1 Introduction

Conceptual schemas that claim conformance with this International Standard may also state that they conform to a named subset of the concepts in the standard. These subsets may be used to document different levels of capabilities or complexities. This International Standard describes two levels of capabilities for the use of data types which are defined in Table 4 and 5.

2.3.2 Core types conformance class

Table 4 describes the conformance class for core data types.

Table 4 — Core types conformance class

Conformance class identifier	CoreTypes
Standardization target type	Core types for geographic information
Dependency	UML2 ISO/IEC 11404:2007 ISO 8601:2004
Requirements	All requirements in Clause 7
Tests	All tests in A.2.1

2.3.3 Core and extension types conformance class

Table 5 describes the conformance class for core and extension data types.

Table 5 — Core and extension types conformance class

Conformance class identifier	CoreExtendedTypes
Standardization target type	Core and extension types for geographic information
Dependency	CoreTypes ISO 639 ISO 3166 RFC 3986
Requirements	All requirements in Annex C
Tests	All tests in A.2.2

2.4 Model documentation conformance

2.4.1 Introduction

The UML diagrams and textual description of model elements in a model are most often presented in a document. The specific requirements in this International Standard for presentation of geographic information is an extension of the requirements imposed by UML 2. A separate conformance class is defined for this in Table 6.

2.4.2 Model documentation conformance class

Table 6 describes the conformance class for model documentation.

Table 6 — Model documentation conformance class

Conformance class identifier	ModelDocumentation
Standardization target type	Documentation of UML schemas for geographic information
Dependency	UML2
Requirements	All requirements in 6.16
Tests	All tests in A.3

3 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 639 (all parts), *Codes for the representation of names and languages*

ISO 3166 (all parts), *Codes for the representation of names of countries and their subdivisions*

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

ISO/IEC 11404:2007, *Information technology — General-Purpose Datatypes (GPD)*

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

ISO/IEC 19505-2:2012, *Information technology — Object Management Group Unified Modeling Language (OMG UML) — Part 2: Superstructure*

NOTE Unified Modeling Language (UML), *version 2.4.1*, available at http://www.omg.org/spec/UML/

OCL 2.3.1, OMG *Object Constraint Language (OCL), version 2.3.1*, available at <http://www.omg.org/spec/OCL/>

RFC 3986 dated January 2005 on URI Syntax, available at <http://www.ietf.org/rfc/rfc3986.txt>