
Geographic information — Conceptual schema language

Information géographique — Schéma de langage conceptuel



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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.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of normative document:

- an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;
- an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

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/TS 19103 was prepared by Technical Committee ISO/TC 211, *Geographic information/Geomatics*.

Introduction

This Technical Specification of the ISO geographic information 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 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 Technical Specification. First, a CSL must be selected that meets the requirements for rigorous representation of geographic information. This Technical Specification 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 Technical Specification provides guidelines on how UML should be used to create geographic information and service models that are a basis for achieving the goal of interoperability.

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

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Geographic information — Conceptual schema language

1 Scope

This Technical Specification provides rules and guidelines for the use of a conceptual schema language within the ISO geographic information standards. The chosen conceptual schema language is the Unified Modeling Language (UML).

This Technical Specification provides a profile of the Unified Modeling Language (UML) for use with geographic information. In addition, it provides guidelines on how UML should be used to create standardized geographic information and service models.

2 Conformance

Any conceptual schema written for a specification, including a profile or functional standard, that claims conformance with this Technical Specification shall pass all of the requirements described in the abstract test suite in Annex A. Non-UML schemas shall be 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.

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 19101:2002, *Geographic Information — Reference model*

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

4 Terms, definitions and abbreviations

4.1 ISO/TS 19103 terms

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

4.1.1

application

manipulation and processing of data in support of user requirements

[ISO 19101]

4.1.2

application schema

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

[ISO 19101]