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## **Geographic information — Reference model**

*Information géographique — Modèle de référence*



Reference number  
ISO 19101:2002(E)

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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 3.

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 International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 19101 was prepared by Technical Committee ISO/TC 211, *Geographic information/Geomatics*.

Annexes A and B of this International Standard are for information only.

## Introduction

Every comprehensive standardization effort needs a reference model to ensure an integrated and consistent approach. This International Standard is a guide to structuring geographic information standards in a way that will enable the universal usage of digital geographic information. This reference model describes the overall requirements for standardization and the fundamental principles that apply in developing and using standards for geographic information. In describing these requirements and principles, this reference model provides a vision of standardization in which geographic information can be integrated with existing and emerging digital information technologies and applications. This International Standard is intended to be used by information system analysts, program planners and developers of geographic information standards that are related to geographic information standards, as well as others in order to understand the basic principles of this series of standards and the overall requirements for standardization of geographic information.

Beyond the needs within traditional applications of digital geographic information, there is a growing recognition among users of information technology that indexing by location is a fundamental way to organize and to use digital data. Increasingly, digital data from a wide variety of sources is being referenced to locations for use in a diversity of applications. Consequently, there is an increasing need for standardization of geographic information and services for processing this information. To meet this need, the ISO 19100 series standardizes relevant aspects of the description and management of geographic information and geographic information services. This standardization will:

- increase the understanding and usage of geographic information;
- increase the availability, access, integration and sharing of geographic information;
- promote the efficient, effective and economic use of digital geographic information and associated hardware and software systems;
- contribute to a unified approach to addressing global ecological and humanitarian problems.

To achieve these goals, standardization of geographic information in the ISO 19100 series is based on the integration of the concepts of geographic information with those of information technology. The development of standards for geographic information must consider the adoption or adaptation of generic information technology standards whenever possible. It is only when this cannot be done that geographic information standards need to be developed.

This International Standard identifies a generic approach to structuring the ISO 19100 series of standards. This reference model uses concepts obtained from the ISO/IEC Open Systems Environment (OSE) approach for determining standardization requirements described in ISO/IEC TR 14252, the IEC Open Distributed Processing (ODP) Reference Model described in ISO/IEC 10746-1 and other relevant ISO standards and technical reports. This International Standard does not prescribe any specific products or techniques for implementing geographic information systems.

# Geographic information — Reference model

## 1 Scope

This International Standard defines the framework for standardization in the field of geographic information and sets forth the basic principles by which this standardization takes place.

This framework identifies the scope of the standardization activity being undertaken and the context in which it takes place. The framework provides the method by which what is to be standardized can be determined and describes how the contents of the standards are related.

Although structured in the context of information technology and information technology standards, this International Standard is independent of any application development method or technology implementation approach.

## 2 Conformance

General conformance and testing requirements for the ISO 19100 series of geographic information standards are described in ISO 19105. Specific conformance requirements are described in individual standards in the ISO 19100 series.

## 3 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO/IEC 19501-1:—<sup>1)</sup>, *Information technology — Unified Modeling Language (UML) — Part 1: Specification*

## 4 Terms and definitions

For the purposes of this International Standard, the following terms and definitions apply. Sources of term definitions not defined in this International Standard are provided.

NOTE Throughout this document, certain terms are italicized. These terms are defined either in this clause or in the terms and definitions clause of another part of ISO 19100, as indicated.

### 4.1

#### **application**

manipulation and processing of data in support of user requirements

### 4.2

#### **application schema**

conceptual schema for data required by one or more applications

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1) To be published.