



**Geographic information—Rules for
application schema**

STANDARDS
Australia



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AS ISO 19109:2018

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The following are represented on Committee IT-004:

- ANZLIC - the Spatial Information Council
- Australian Antarctic Division
- Australian Bureau of Statistics
- Australian Hydrographic Office
- Bureau of Meteorology (Australian Government)
- CSIRO
- Curtin University of Technology
- Department of Defence (Australian Government)
- Department of Human Services (Australian Government)
- Geoscience Australia
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Geographic information—Rules for application schema

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Preface

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee IT-004, Geographical Information/Geomatics, to supersede AS/NZS ISO 19109:2006, *Geographic information — Rules for application schema*.

After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this Standard is to define rules for creating and documenting application schemas, including principles for the definition of features.

This Standard includes the following:

- (a) conceptual modelling of features and their properties from a universe of discourse;
- (b) definition of application schemas;
- (c) use of the conceptual schema language for application schemas;
- (d) transition from the concepts in the conceptual model to the data types in the application schema; and
- (e) integration of standardized schemas from other ISO geographic information standards with the application schema.

This Standard is identical with, and has been reproduced from ISO 19109:2015, *Geographic information — Rules for application schema*.

As this document has been reproduced from an International Standard, the following applies—

- (i) In the source text ‘this International Standard’ should read ‘this Australian Standard’.
- (ii) A full point substitutes for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms ‘normative’ and ‘informative’ are used in Standards to define the application of the appendices or annexes to which they apply. A ‘normative’ appendix or annex is an integral part of a Standard, whereas an ‘informative’ appendix or annex is only for information and guidance.

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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.

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

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

This second edition cancels and replaces the first edition (ISO 19109:2005).

Introduction

Any description of reality is always an abstraction, always partial, and always just one of many possible “views”, depending on the application field.

The widespread application of computers and geographic information systems (GIS) has led to an increased use of geographic data within multiple disciplines. With current technology as an enabler, society’s reliance on such data is growing. Geographic datasets are increasingly being shared and exchanged. They are also used for purposes other than those for which they were produced.

To ensure that data will be understood by both computer systems and users, the data structures for data access and exchange must be fully documented. The interfaces between systems, therefore, need to be defined with respect to data and operations, using the methods standardized in this International Standard. For the construction of internal software and data storage within proprietary systems, any method may be used that enables the standardized interfaces to be supported.

An application schema provides the formal description of the data structure and content required by one or more applications. An application schema contains the descriptions of both geographic data and other related data. A fundamental concept of geographic data is the feature

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Geographic information—Rules for application schema

1 Scope

This International Standard defines rules for creating and documenting application schemas, including principles for the definition of features.

The scope of this International Standard includes the following:

- conceptual modelling of features and their properties from a universe of discourse;
- definition of application schemas;
- use of the conceptual schema language for application schemas;
- transition from the concepts in the conceptual model to the data types in the application schema;
- integration of standardized schemas from other ISO geographic information standards with the application schema.

The following are outside the scope:

- choice of one particular conceptual schema language for application schemas;
- definition of any particular application schema;
- representation of feature types and their properties in a feature catalogue;
- representation of metadata;
- rules for mapping one application schema to another;
- implementation of the application schema in a computer environment;
- computer system and application software design;
- programming.

2 Conformance

2.1 General

This International Standard defines 12 conformance classes shown in [Tables 1 to 12](#), matching the 12 requirements classes described in [Clauses 7 and 8](#). Any application schema claiming conformance to any requirements class in this International Standard shall pass all of the tests listed in the corresponding conformance class, which are described in detail in the abstract test suites in [Annex A](#). Each test relates to one or more specific requirements, which are explicitly indicated in the description of the test.

2.2 Meta-model

Table 1 — Meta-model conformance class

Conformance class	/conf/general
Requirements	/req/general (Clause 7, Table 15)
Tests	All tests in A.2