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Geographic information — General feature model and rules for application schema

Information géographique — Modèle général des entités et règles relatives au schéma d'application

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Contents

Page

Foreword ..... **vi**
Introduction ..... **vii**
1 Scope **1**
2 Normative references **1**
3 Terms, definitions, and abbreviated terms **1**
3.1 Terms and definitions 1
3.2 Abbreviated terms 4
4 Conformance **4**
4.1 General 4
4.2 Meta-Model 4
4.3 Spatial 4
4.4 Temporal 4
4.5 Quality 5
4.6 Spatial referencing by identifiers 5
4.7 Coverages 5
4.8 UML application schema 5
4.9 Profile existing conceptual schema 5
5 Presentation and abbreviations **6**
5.1 Presentation 6
5.1.1 General 6
5.1.2 Conformance class 6
5.1.3 Requirements class 6
5.1.4 Provisions 6
5.1.5 Identifiers 7
5.1.6 Conceptual schemas 7
5.1.7 Descriptions of concepts 7
5.2 Package abbreviations 7
6 Context **8**
6.1 Purpose of an application schema 8
6.2 Rationale for defining the rules for application schemas 8
6.3 Application schemas supporting data interchange 9
7 General feature model **10**
7.1 Principle for defining features 10
7.1.1 Features, coverages and properties 10
7.1.2 Essential properties of features 11
7.2 The Concept of the General Feature Model 12
7.2.1 Introduction 12
7.2.2 The purpose of the GFM 12
7.3 Conceptual Schema of the General Feature Model 13
7.3.1 The structure of the GFM 13
7.3.2 The main part of the GFM 14
7.3.3 Metaclass IdentifiedType 15
7.3.4 Metaclass FeatureType 16
7.3.5 Metaclass PropertyType 16
7.3.6 Metaclass AttributeType 16
7.3.7 Metaclass FeatureAssociationRole 17
7.3.8 Metaclass ValueAssignment 17
7.3.9 Metaclass FeatureAssociationType 18
7.3.10 Metaclass InheritanceRelation 18
7.4 Attributes of feature types 18
7.4.1 Introduction 18
7.4.2 Metaclass SpatialAttributeType 19

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7.4.3 Metaclass TemporalAttributeType 19
7.4.4 Metaclass QualityAttributeType 19
7.4.5 Metaclass LocationAttributeType 19
7.4.6 Metaclass MetadataAttributeType 20
7.4.7 Metaclass ThematicAttributeType 20
7.4.8 Metaclass CoverageFunctionAttributeType 20
7.5 Relationships between feature types 20
7.5.1 Introduction 20
7.5.2 Metaclass InheritanceRelation 20
7.5.3 Metaclass FeatureAssociationType 21
7.6 Constraints 21

8 Rules for application schemas 22
8.1 The application modelling process 22
8.1.1 Introduction 22
8.1.2 Features and the application schema 22
8.2 General rules for application schemas 23
8.2.1 Rule for using CSLs 24
8.2.2 Rule for integration 24
8.2.3 Rules for modelling features 24
8.2.4 Rule for property names 25
8.2.5 Rule for attributes 25
8.2.6 Rule for association roles 25
8.2.7 Rule for value assignments 26
8.2.8 Rule for feature associations 26
8.2.9 Rule for inheritance relations 26
8.3 Rules for use of spatial schemas 26
8.3.1 Rules for modelling applications with spatial properties 26
8.3.2 Use of standard spatial schemas 26
8.3.3 Rule for spatial attributes 27
8.3.4 Use of geometric collections and spatial complexes to represent the values of spatial attributes of features 28
8.3.5 Spatial associations between features 28
8.3.6 Features sharing geometry 29
8.3.7 Point features, line features and area features 30
8.3.8 Defining interpolation methods 30
8.3.9 Independent spatial complexes 31
8.4 Rules for use of temporal schemas 33
8.4.1 Rules for modelling applications with temporal properties 33
8.4.2 Use of temporal conceptual schema 34
8.4.3 Rule for temporal attributes 34
8.4.4 Temporal associations between features 34
8.5 Rules for use of quality schemas 35
8.5.1 Introduction 35
8.5.2 Data quality rules 35
8.6 Rule for use of geographic identifiers 37
8.7 Use of metadata 39
8.8 Rule for use of coverage functions 39
8.9 Use of observations 41
8.10 Rules for application schemas in UML 44
8.10.1 General 44
8.10.2 Rules for conceptual schema language for application schemas 44
8.10.3 Rule for packaging and identification of an application schema 47
8.10.4 Documentation of an application schema 48
8.10.5 Rules for integration of application schemas and abstract schemas 48
8.10.6 Rules for modelling structures in UML 50
8.10.7 Linguistic adaptation 52
8.11 Rules for domain profiles of existing conceptual schemas in UML 53
8.11.1 Introduction 53

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8.11.2 Rule for adding information to an existing conceptual schema 54
8.11.3 Rule for tailored use of an existing conceptual schema 55
Annex A (normative) **Abstract test suite** **57**
Annex B (informative) **The modelling approach and the General Feature Model** **63**
Annex C (informative) **Application schema examples** **66**
Annex D (informative) **Backward compatibility** **71**
Bibliography **76**

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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 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 211, *Geographic information/Geomatics*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 287, *Geographic Information*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 19109:2015), which has been technically revised.

The main changes are as follows:

— changes in the title and scope;

— new sub-clauses discussing the concept of the General Feature Model;

— re-organization of Clause 7 to include only concepts of the General Feature Model and moving the general rules for application schema to Clause 8;

— updating the references to other ISO/TC 211 standards in applicable cases to reflect classes in respective latest versions;

— removing the dependencies to other ISO/TC 211 standards related to attributes of features.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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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, it is necessary to fully document the data structures for data access and exchange. The interfaces between systems, therefore, need to be defined with respect to data and operations, using the methods standardized in this document. For the construction of internal software and data storage within proprietary systems, any method is acceptable provided it supports the standardized interfaces.

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.

This document aims to express the importance of continuing the modelling of geospatial information according to the concepts contained in this document. The name and contact information of the maintenance agency for this document can be found at www.iso.org/maintenance_agencies.

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Geographic information — General feature model and rules for application schema

1 Scope

This document defines the General Feature Model (GFM) as the metamodel for creating application schemas in the context of geo-information modelling. The GFM is explained and implemented as rules for creating and documenting application schemas, including principles for the definition of features.

This document is applicable to:

— conceptual modelling of features and their properties from a universe of discourse;

— definition of application schemas;

— general rules for using a conceptual schema language for application schemas;

— rules for application schemas using UML as the conceptual schema language;

— 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.

This document does not apply to:

— choice of one particular conceptual schema language for application schemas;

— definition of any particular application schemas;

— 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 Normative references

There are no normative references in this document.

3 Terms, definitions, and abbreviated terms

3.1 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

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