
**Geographic information — Cross-
domain vocabularies**

Information géographique — Vocabulaires interdomaines

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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).

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 (see 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 voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

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

This second edition cancels and replaces the first edition of ISO 19146:2010 which has been technically revised.

The main changes compared to the previous edition are as follows:

- the principles for the cross-mapping of vocabularies have been revised;
- the vocabulary cross-mapping methodology has been reformatted into requirements and conformance classes;
- the conceptual schema has been revised to harmonize with other ISO/TC 211 standards;
- the conceptual schema has been expanded to include the package Term Cross Map which specifies the classes for registering and managing terminological entries and their cross-mapping.

Introduction

The development of information products frequently requires the acquisition and combination of multiple datasets from different data suppliers. The manner in which the data is combined depends on the nature of the business need under consideration and may vary from the simple assembly of thematic representations through to sophisticated integration, analysis and rendering. In every case, the data suppliers and processors need to share a common understanding of the data's characteristics to ensure their appropriate interpretation and use. The more complex or automated the processing becomes, the more necessary it is for this understanding to be unambiguous.

A challenge that arises when combining disparate datasets stems from differing terminology conventions adopted by the contributing suppliers. Frequently, a dataset will originate from a community of professionals that provide support to a particular industry (for example, road transport). The terminology used to describe the content, relationships and behaviour of the data reflects the industry's alignment of concepts with its specialist culture, conventions and practices. A particular concept, therefore, may be identified by different terms depending on the industry context in which it is used.

The capacity to combine data that have been sourced from different professional communities is dependent upon a common comprehension of the terms and concepts used to describe the business meaning of the data. The availability of cross-mapping that reconciles the semantic differences between the communities' vocabularies is therefore required.

This document establishes a methodology for cross-mapping between vocabularies. It is principally intended for use by geospatial communities but may have wider application.

It is not the objective of this document to define an ontology or taxonomy; its purpose is to provide rules for ensuring consistency when implementing cross-mapping processes. The rules, however, have been developed with regard to taxonomic and ontological concepts and with a view to enabling semantic interoperability. Their application to vocabulary cross-mapping, therefore, can be expected to provide input to any future ontology or taxonomy initiatives.

This document applies the provisions of ISO 19135-1:2015 to the registration of geospatial concepts. It also adopts terms and concepts that are taken from UML and terminology theory and practice.

Geographic information — Cross-domain vocabularies

1 Scope

This document establishes a methodology for cross-mapping vocabularies. It also specifies an implementation of ISO 19135-1:2015 for the purpose of registering cross-mapped vocabulary entries.

Methodologies for the development of ontologies and taxonomies that relate to geographic information and geomatics are not within the scope of this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 19103:2015, *Geographic information — Conceptual schema language*

ISO 19104:2016, *Geographic information — Terminology*

ISO 19115-1:2014, *Geographic information — Metadata — Part 1: Fundamentals*

ISO 19135-1:2015, *Geographic information — Procedures for item registration — Part 1: Fundamentals*

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 terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at <http://www.electropedia.org/>

— ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1.1

associative concept system

concept system (3.1.5) based on *associative relations* (3.1.2)

3.1.2

associative relation

pragmatic relation

relation between two *concepts* (3.1.4) having a non-hierarchical thematic connection by virtue of experience

Note 1 to entry: An associative relation exists between the concepts 'education' and 'teaching', 'baking' and 'oven'.

[SOURCE: ISO 1087-1:2000, 3.2.23]

3.1.3

characteristic

abstraction of a property of an object or of a set of objects

Note 1 to entry: Characteristics are used for describing *concepts* (3.1.4).