

SVENSK STANDARD

SS-EN ISO 19136-2:2018



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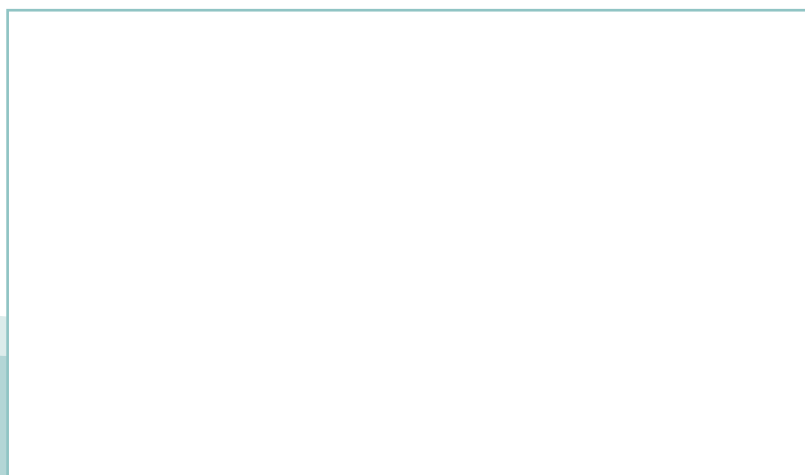
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Geografisk Information – Geography Markup Language (GML) – Del 2: Utökade scheman och kodningsregler (ISO 19136-2:2015)

Geographic information – Geography Markup Language (GML) – Part 2: Extended schemas and encoding rules (ISO 19136-2:2015)



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Denna standard ersätter SS-EN ISO 19136:2009, utgåva 1 och SS-ISO 19136-2:2015, utgåva 1

The European Standard EN ISO 19136-2:2018 has the status of a Swedish Standard. This document contains the official version of EN ISO 19136-2:2018.

This standard supersedes the SS-EN ISO 19136:2009, edition 1 and SS-ISO 19136-2:2015, edition 1

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EUROPEAN STANDARD

EN ISO 19136-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2018

ICS 35.240.70

Supersedes EN ISO 19136:2009

English Version

**Geographic information - Geography Markup Language
(GML) - Part 2: Extended schemas and encoding rules
(ISO 19136-2:2015)**

Information géographique - Langage de balisage
en géographie (GML) - Partie 2: Schémas étendus
et règles d'encodage (ISO 19136-2:2015)

Geoinformation - Geography Markup Language
(GML) - Teil 2: Erweitertes Schema und Kodierregeln

This European Standard was approved by CEN on 10 March 2017.

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COMITÉ EUROPÉEN DE NORMALISATION
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CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

The text of ISO 19136-2:2015 has been prepared by Technical Committee ISO/TC 211 "Geographic information/Geomatics" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 19136-2:2018 by Technical Committee CEN/TC 287 "Geographic Information" the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2019, and conflicting national standards shall be withdrawn at the latest by March 2019.

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This document supersedes EN ISO 19136:2009.

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Endorsement notice

The text of ISO 19136-2:2015 has been approved by CEN as EN ISO 19136-2:2018 without any modification.

Introduction

Geography Markup Language is an XML grammar written in XML Schema for the description of application schemas as well as the transport and storage of geographic information.

The key concepts used by Geography Markup Language (GML) to model the world are drawn from the ISO 19100- series of International Standards and the OpenGIS Abstract Specification.

A feature is an "abstraction of real world phenomena" (ISO 19101); it is a geographic feature if it is associated with a location relative to the Earth. So a digital representation of the real world may be thought of as a set of features. The state of a feature is defined by a set of properties, where each property may be thought of as a {name, type, value} triple.

The number of properties a feature may have, together with their names and types, is determined by its type definition. Geographic features with geometry are those with properties that may be geometry-valued. A feature collection is a collection of features that may itself be regarded as a feature; as a consequence a feature collection has a feature type and thus may have distinct properties of its own, in addition to the features it contains.

Following ISO 19109, the feature types of an application or application domain is usually captured in an application schema. A GML application schema is specified in XML Schema and can be constructed in two different and alternative ways:

- by adhering to the rules specified in ISO 19109 for application schemas in UML, and conforming to both the constraints on such schemas and the rules for mapping them to GML application schemas specified in this part of ISO 19136;
- by adhering to the rules for GML application schemas specified in this part of ISO 19136 for creating a GML application schema directly in XML Schema.

Both ways are supported by this part of ISO 19136. To ensure proper use of the conceptual modelling framework of the ISO 19100- series of International Standards, all application schemas are expected to be modelled in accordance with the General Feature Model as specified in ISO 19109. Within the ISO 19100- series, UML is the preferred language by which to model conceptual schemas.

GML specifies XML encodings, conformant with ISO 19118, of several of the conceptual classes defined in the ISO 19100- series of International Standards and the OpenGIS Abstract Specification. These conceptual models include those defined in:

- ISO/TS 19103, *Geographic information — Conceptual schema language* (units of measure, basic types);
- ISO 19107, *Geographic information — Spatial schema* (geometry and topology objects);
- ISO 19108, *Geographic information — Temporal schema* (temporal geometry and topology objects, temporal reference systems);
- ISO 19109, *Geographic information — Rules for application schemas* (features);
- ISO 19111, *Geographic information — Spatial referencing by coordinates* (coordinate reference systems);
- ISO 19123, *Geographic information — Schema for coverage geometry and functions*;
- ISO 19148, *Geographic information — Linear referencing*.

The aim is to provide a standardized encoding (i.e. a standardized implementation in XML) of types specified in the conceptual models specified by the International Standards listed above. If every application schema were encoded independently and the encoding process included the types from, for example, ISO 19108, then, without unambiguous and completely fixed encoding rules, the XML encodings would be different. Also, since every implementation platform has specific strengths and weaknesses, it is helpful to standardize XML encodings for core geographic information concepts modelled in the ISO 19100- series of International Standards and commonly used in application schemas.

In many cases, the mapping from the conceptual classes is straightforward, while in some cases the mapping is more complex (a detailed description of the mapping is part of this part of ISO 19136).

In addition, GML provides XML encodings for additional concepts not yet modelled in the ISO 19100-series of International Standards or the OpenGIS Abstract Specification, for example, dynamic features, simple observations or value objects.

Predefined types of geographic feature in GML include coverages and simple observations.

A coverage is a subtype of feature that has a coverage function with a spatiotemporal domain and a value set range of homogeneous 1- to n -dimensional tuples. A coverage may represent one feature or a collection of features "to model and make visible spatial relationships between, and the spatial distribution of, Earth phenomena" (OGC Abstract Specification Topic 6) and a coverage "acts as a function to return values from its range for any direct position within its spatiotemporal domain" (ISO 19123).

An observation models the act of observing, often with a camera or some other procedure, a person or some form of instrument (Merriam-Webster Dictionary: "an act of recognizing and noting a fact or occurrence often involving measurement with instruments"). An observation is considered to be a GML feature with a time at which the observation took place, and with a value for the observation.

A reference system provides a scale of measurement for assigning values to a position, time or other descriptive quantity or quality.

A coordinate reference system consists of a set of coordinate system axes that is related to the Earth through a datum that defines the size and shape of the Earth.

A temporal reference system provides standard units for measuring time and describing temporal length or duration.

A reference system dictionary provides definitions of reference systems used in spatial or temporal geometries.

Spatial geometries are the values of spatial feature properties. They indicate the coordinate reference system in which their measurements have been made. The "parent" geometry element of a geometric complex or geometric aggregate makes this indication for its constituent geometries.

Temporal geometries are the values of temporal feature properties. Like their spatial counterparts, temporal geometries indicate the temporal reference system in which their measurements have been made.

Spatial or temporal topologies are used to express the different topological relationships between features.

A units-of-measure dictionary provides definitions of numerical measures of physical quantities, such as length, temperature and pressure, and of conversions between units.