



SLOVENSKI STANDARD SIST EN ISO 19156:2013

01-oktober-2013

Geografske informacije - Opazovanja in meritve (ISO 19156:2011)

Geographic information - Observations and measurements (ISO 19156:2011)

Geoinformation - Erdbeobachtung und Erdmessung (ISO 19156:2011)

Information géographique - Observations et mesures (ISO 19156:2011)

Ta slovenski standard je istoveten z: **EN ISO 19156:2013**

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EUROPEAN STANDARD

EN ISO 19156

NORME EUROPÉENNE

EUROPÄISCHE NORM

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English Version

Geographic information - Observations and measurements (ISO 19156:2011)

Information géographique - Observations et mesures (ISO 19156:2011)

Geoinformation - Erdbeobachtung und Erdmessung (ISO 19156:2011)

This European Standard was approved by CEN on 27 July 2012.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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Foreword

The text of ISO 19156:2011 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 19156:2013 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of an identical text or by endorsement, at the latest by January 2014, and conflicting national standards shall be withdrawn at the latest by January 2014.

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INTERNATIONAL STANDARD

ISO
19156

First edition
2011-12-15

Geographic information — Observations and measurements

Information géographique — Observations et mesures

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Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
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ISO 19156:2011(E)**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 2.

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

ISO 19156 was prepared by Technical Committee ISO/TC 211, *Geographic information/Geomatics*, in collaboration with the Open Geospatial Consortium, Inc. (OGC).

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Introduction

This International Standard arises from work originally undertaken through the Open Geospatial Consortium's Sensor Web Enablement (SWE) activity. SWE is concerned with establishing interfaces and protocols that will enable a "Sensor Web" through which applications and services will be able to access sensors of all types, and observations generated by them, over the Web. SWE has defined, prototyped and tested several components needed for a Sensor Web, namely:

- Sensor Model Language (SensorML).
- Observations & Measurements (O&M).
- Sensor Observation Service (SOS).
- Sensor Planning Service (SPS).
- Sensor Alert Service (SAS).

This International Standard specifies the Observations and Measurements schema, including a schema for sampling features.

The content presented here derives from an earlier version published by Open Geospatial Consortium as OGC 07-022r1, *Observations and Measurements — Part 1 — Observation schema* and OGC 07-002r3, *Observations and Measurements — Part 2 — Sampling Features*. A technical note describing the changes from the earlier version is available from the Open Geospatial Consortium (see <http://www.opengeospatial.org/standards/om>).

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Geographic information — Observations and measurements

1 Scope

This International Standard defines a conceptual schema for observations, and for features involved in sampling when making observations. These provide models for the exchange of information describing observation acts and their results, both within and between different scientific and technical communities.

Observations commonly involve sampling of an ultimate feature-of-interest. This International Standard defines a common set of sampling feature types classified primarily by topological dimension, as well as samples for ex-situ observations. The schema includes relationships between sampling features (sub-sampling, derived samples).

This International Standard concerns only externally visible interfaces and places no restriction on the underlying implementations other than what is needed to satisfy the interface specifications in the actual situation.

2 Conformance

2.1 Overview

Clauses 7 to 11 of this International Standard use the Unified Modeling Language (UML) to present conceptual schemas for describing Observations. These schemas define conceptual classes that

- a) may be considered to comprise a cross-domain application schema, or
- b) may be used in application schemas, profiles and implementation specifications.

This flexibility is controlled by a set of UML types that can be implemented in a variety of manners. Use of alternative names that are more familiar in a particular application is acceptable, provided that there is a one-to-one mapping to classes and properties in this International Standard.

The UML model in this International Standard defines conceptual classes; various software systems define implementation classes or data structures. All of these reference the same information content. The same name may be used in implementations as in the model, so that types defined in the UML model may be used directly in application schemas.

Annex A defines a set of conformance tests that will support applications whose requirements range from the minimum necessary to define data structures to full object implementation.

2.2 Conformance classes related to Application Schemas including Observations and Measurements

The conformance rules for Application Schemas in general are described in ISO 19109:2005. Application Schemas also claiming conformance to this International Standard shall also conform to the rules specified in Clauses 7 to 11 and pass all relevant test cases of the Abstract Test Suite in Annex A.

Depending on the characteristics of an Application Schema, 18 conformance classes are distinguished. Table 1 lists these classes and the corresponding subclause of the Abstract Test Suite.

Table 1 — Conformance classes related to Application Schemas including Observations and Measurements

Conformance class	Subclause
Generic observation interchange	A.1.1
Measurement interchange	A.1.1, A.1.2
Category observation interchange	A.1.1, A.1.3
Count observation interchange	A.1.1, A.1.4
Truth observation interchange	A.1.1, A.1.5
Temporal observation interchange	A.1.1, A.1.6
Geometry observation interchange	A.1.1, A.1.7
Complex observation interchange	A.1.1, A.1.8
Discrete coverage observation interchange	A.1.1, A.1.9
Point coverage observation interchange	A.1.1, A.1.10
Time series observation interchange	A.1.1, A.1.11
Sampling feature interchange	A.2.1, A.2.2
Spatial sampling feature interchange	A.2.1 to A.2.3
Sampling point interchange	A.2.1 to A.2.4
Sampling curve interchange	A.2.1 to A.2.3, A.2.5
Sampling surface interchange	A.2.1 to A.2.3, A.2.6
Sampling solid interchange	A.2.1 to A.2.3, A.2.7
Specimen interchange	A.2.1 to A.2.3, A.2.8

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3 Normative references

The following referenced documents are indispensable for the application 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 19101:2002, *Geographic information — Reference model*

ISO/TS 19103:2005, *Geographic information — Conceptual schema language*

ISO 19107:2003, *Geographic information — Spatial schema*

ISO 19108:2002, *Geographic information — Temporal schema*

ISO 19109:2005, *Geographic information — Rules for application schema*

ISO 19111:2007, *Geographic information — Spatial referencing by coordinates*

ISO 19115:2003, *Geographic information — Metadata*

ISO 19115:2003/Cor.1:2006, *Geographic information — Metadata — Technical Corrigendum 1*

ISO 19123:2005, *Geographic information — Schema for coverage geometry and functions*

ISO 19136:2007, *Geographic information — Geography Markup Language (GML)*

ISO/IEC 19501:2005, *Information technology — Open Distributed Processing — Unified Modeling Language (UML) Version 1.4.2*

ISO 19157:—¹⁾, *Geographic information — Data quality*

1) To be published.

4 Terms and definitions

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

4.1

application schema

conceptual schema for data required by one or more applications

[ISO 19101:2002, definition 4.2]

4.2

coverage

feature that acts as a function to return **values** from its range for any direct position within its spatial, temporal or spatiotemporal domain

[ISO 19123:2005, definition 4.17]

4.3

data type

specification of a **value** domain with operations allowed on values in this domain

[ISO/TS 19103:2005, definition 4.1.5]

EXAMPLE Integer, Real, Boolean, String, Date (conversion of a date into a series of codes).

NOTE Data types include primitive predefined types and user-definable types. All instances of a data type lack identity.

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4.4

domain feature

feature of a type defined within a particular application domain

NOTE This may be contrasted with **observations and sampling features**, which are features of types defined for cross-domain purposes.

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4.5

ex-situ

referring to the study, maintenance or conservation of a specimen or population away from its natural surroundings

NOTE Opposite of *in-situ*.

4.6

feature

abstraction of real-world phenomena

[ISO 19101:2002, definition 4.11]

NOTE A feature may occur as a type or an instance. In this International Standard, feature instance is meant unless otherwise specified.

4.7

feature type

class of **features** having common characteristics

4.8

measurand

particular quantity subject to **measurement**

[ISO/TS 19138:2006, definition 4.5]

NOTE Specialization of observable **property type**.