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Geografisk information – Observationer och mätningar (ISO 19156:2011)

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

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Europastandarden EN ISO 19156:2013 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN ISO 19156:2013.

Denna standard ersätter SS-ISO 19156:2011, utgåva 1.

The European Standard EN ISO 19156:2013 has the status of a Swedish Standard. This document contains the official version of EN ISO 19156:2013.

This standard supersedes the Swedish Standard SS-ISO 19156:2011, edition 1.

Upplysningar om sakinnehållet i standarden lämnas av SIS, Swedish Standards Institute, telefon 08-555 520 00. Standarder kan beställas hos SIS Förlag AB som även lämnar allmänna upplysningar om svensk och utländsk standard.

Information about the content of the standard is available from the Swedish Standards Institute (SIS), telephone +46 8 555 520 00. Standards may be ordered from SIS Förlag AB, who can also provide general information about Swedish and foreign standards.

Denna standard är framtagen av kommittén för Ramverk för geodata, SIS/TK 323.

Har du synpunkter på innehållet i den här standarden, vill du delta i ett kommande revideringsarbete eller vara med och ta fram andra standarder inom området? Gå in på www.sis.se - där hittar du mer information.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 19156

July 2013

ICS 35.240.70

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.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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Endorsement notice

The text of ISO 19156:2011 has been approved by CEN as EN ISO 19156:2013 without any modification.

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).

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

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.

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.

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**.