

**Geographic information
— Observations and
measurements (ISO
19156:2011)**

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This British Standard is the UK implementation of EN ISO 19156:2013. It is identical to ISO 19156:2011.

The UK participation in its preparation was entrusted to Technical Committee IST/36, Geographic information.

A list of organizations represented on this committee can be obtained on request to its secretary.

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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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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of an identical text or by endorsement, at the latest by January 2014, and conflicting national standards shall be withdrawn at the latest by January 2014.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.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

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

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Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Conformance	1
2.1 Overview	1
2.2 Conformance classes related to Application Schemas including Observations and Measurements	1
3 Normative references	2
4 Terms and definitions	3
5 Abbreviated terms and notation	5
5.1 Abbreviated terms	5
5.2 Schema language	5
5.3 Model element names	6
6 Dependencies	6
7 Fundamental characteristics of observations	6
7.1 The context for observations	6
7.2 Observation schema	8
7.3 Use of the observation model	15
8 Specialized observations	15
8.1 Classification of observation by result type	15
8.2 Observations whose result is constant	16
8.3 Observations whose result varies	17
9 Fundamental characteristics of sampling features	19
9.1 The context for sampling	19
9.2 Sampling Schema	20
10 Spatial sampling features	24
10.1 The context for spatial sampling features	24
10.2 Spatial sampling feature schema	24
10.3 Decomposition of extensive sampling features for observations	26
10.4 Common names for sampling features (informative)	26
11 Specimens	27
11.1 The context for specimens	27
11.2 Specimen schema	27
Annex A (normative) Abstract Test Suite	30
Annex B (informative) Mapping O&M terminology to common usage	35
Annex C (normative) Utility classes	38
Annex D (informative) Best practices in use of the observation and sampling models	40
Bibliography	46

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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.

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.