

PD ISO/TS 19139-2:2012



BSI Standards Publication

Geographic information — Metadata — XML schema implementation

Part 2: Extensions for imagery and gridded
data

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National foreword

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**Geographic information —
Metadata — XML schema
implementation —**

**Part 2:
Extensions for imagery and gridded
data**

*Information géographique — Métadonnées — Mise en oeuvre par des
schémas XML —*

Partie 2: Extension pour l'imagerie et les données maillées





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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.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of normative document:

- an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;
- an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

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/TS 19139-2 was prepared by Technical Committee ISO/TC 211, *Geographic information/Geomatics*.

ISO/TS 19139 consists of the following parts, under the general title *Geographic information — Metadata — XML schema implementation*:

- *Part 1: Geographic information — Metadata — XML schema implementation*
- *Part 2: Extensions for imagery and gridded data*

Introduction

The importance of metadata describing digital geographic data is explained in detail in the text of ISO 19115 and in the text of ISO 19115-2 (for imagery and gridded data). ISO 19115 and ISO 19115-2 are abstract in that they provide a worldwide view of metadata relative to geographic information, but no encoding.

Since ISO 19115 does not provide any encoding, implementation of geographic information metadata could vary based on the interpretation of metadata producers. In an attempt to facilitate the standardization of implementations, ISO/TS 19139 provides a definitive, rule-based encoding for carrying out ISO 19115. ISO/TS 19139 provides Extensible Markup Language (XML) schemas that are meant to enhance interoperability by providing a common specification for describing, validating and exchanging metadata about geographic datasets, dataset series, individual geographic features, feature attributes, feature types, feature properties, etc.

This Technical Specification utilizes ISO/TS 19139 specification and extends it to define XML Schema implementation for ISO 19115-2. It provides a definitive, rule-based encoding for carrying out ISO 19115-2.

Geographic information — Metadata — XML schema implementation —

Part 2: Extensions for imagery and gridded data

1 Scope

This Technical Specification defines Geographic Metadata for imagery and gridded data (gmi) encoding. This is an XML Schema implementation derived from ISO 19115-2.

2 Conformance

The framework, concepts, and methodology for testing, and the criteria to be achieved to claim conformance, are specified in ISO 19105. Conformance to this specification may apply to:

- a) a candidate XML Schema implementation of ISO 19115-2 which shall pass the test module defined in A.2;
- b) an XML document containing XML fragments referring to an XML Schema implementation of ISO 19115-2 conformant to this Technical Specification. Such an XML document shall pass the module defined in A.3.

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 19105:2000, *Geographic information — Conformance and testing*

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

ISO 19115:2003, *Geographic information — Metadata*

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

ISO 19115-2:2009, *Geographic information — Metadata — Part 2: Extensions for imagery and gridded data*

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

ISO/TS 19139:2007, *Geographic information — Metadata — XML schema implementation*

W3C XML, *Extensible Markup Language (XML) 1.0* (Second Edition), W3C Recommendation (6 October 2000)

W3C XML Schema Part 1, *XML Schema Part 1: Structures*. W3C Recommendation (2 May 2001)

W3C XML Schema Part 2, *XML Schema Part 2: Datatypes*. W3C Recommendation (2 May 2001)

4 Terms and definitions

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

4.1
document <XML>
well-formed data object

[SOURCE: W3C XML]

4.2
schema document <XML Schema>
XML *document* (4.1) containing schema component definitions and declarations

Note 1 to entry: The W3C XML Schema provides an XML interchange format for schema information. A single schema document provides descriptions of components associated with a single XML namespace, but several documents may describe components in the same schema, i.e. the same target namespace.

[SOURCE: ISO 19136:2007, 4.1.55]

4.3
namespace
collection of names, identified by a URI reference, which are used in XML *documents* (4.1) as element names and attribute names

[SOURCE: W3C XML]

4.4
package
general purpose mechanism for organizing elements into groups

[SOURCE: ISO/TS 19103:2005, 4.2.22]

EXAMPLE Identification information, Metadata entity set information, Constraint information.

5 Symbols and abbreviated terms

5.1 Abbreviations

UML	Unified Modelling Language
URI	Unique Resource Identifier
XML	eXtensible Markup Language
XCGE	XML Class Global Element
XSD	XML Schema Definition

5.2 UML model stereotypes

A UML stereotype is an extension mechanism for existing UML concepts (see ISO 19115-2. In addition to the stereotypes already defined in ISO 19115-2 for describing metadata, this Technical Specification uses stereotypes defined in ISO/TS 19139 which are necessary for a rules-based encoding into XML Schema.

The elements of the UML diagrams depicted in this Technical Specification can carry stereotypes specifying an XML implementation. Those stereotypes are carried by classes representing XML elements or XML types, UML attributes, UML links (realizations or dependencies) and UML packages.

In this Technical Specification the following Stereotypes of classes are used:

- a) <<xs:element>>: The class represents an XML global element.

In this Technical Specification the following Stereotypes of links are used:

- b) `<<XCGE>>`: (carried by realization relationships). The XCGE of the abstract concept to implement is substituted by the specified external implementation.
- c) `<<implement>>`: (carried by dependency relationships). The source represents an XML schema implementing the abstract concepts defined in the target.
- d) `<<include>>`: (carried by dependency relationships). The source and the target represent XML schemas. The source includes (`<xs:include ... />`) the target.
- e) `<<import>>`: (carried by dependency relationships). The source and the target represent sets of XML objects grouped within the same namespace. The source imports (`<xs:import ... />`) the target.

In this Technical Specification the following Stereotypes of packages are used:

- f) `<<xmlSchema>>`: The package represents an XML schema.
- g) `<<xmlNamespace>>`: The package represents a set of XML objects grouped within the same namespace.

6 XML Schema requirements

6.1 Introduction

This XML Schema implementation of ISO 19115-2 follows the encoding rules stated in ISO/TS 19139:2007, Clause 8. Its specificity (particularly, the exceptions and the implementations based on external types) is detailed in this clause, using the UML notation commonly used in the ISO 191*nn* family of International Standards and the specific notations defined in ISO/TS 19139:2007, 5.4.

6.2 XML namespaces

In the list below, the item on the left describes the namespace prefix commonly used to describe the elements in the namespace. The second item is an English description of the namespace prefix, and the item in parentheses is the URI of the actual namespace.

gmi	Geographic Metadata for imagery and gridded data	(http://www.isotc211.org/2005/gmi)
gco	Geographic Common extensible markup language	(http://www.isotc211.org/2005/gco)
gmd	Geographic MetaData extensible markup language	(http://www.isotc211.org/2005/gmd)
gml	Geography Markup Language	(http://www.opengis.net/gml/3.2)
gmx	Geographic Metadata XML Schema	(http://www.isotc211.org/2005/gmx)
gss	Geographic Spatial Schema extensible markup language	(http://www.isotc211.org/2005/gss)
gsr	Geographic Spatial Referencing extensible markup language	(http://www.isotc211.org/2005/gsr)
gts	Geographic Temporal Schema extensible markup language	(http://www.isotc211.org/2005/gts)

While the namespace URI is the normative identifier of a namespace from the perspective of the W3C XML Schema specification, the designations of the namespaces in this document are based on prefixes within this document (i.e. gmi namespace means the namespace identified by the <http://www.isotc211.org/2005/gmi> URI).