TECHNICAL SPECIFICATION

ISO/TS 19135-2

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2012-05-01

Geographic information — Procedures for item registration —

Part 2: XML schema implementation

Information géographique — Procédures pour l'enregistrement d'éléments —

Partie 2: Implémentation des schémas XML

Reference number
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Foreword

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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 document:

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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.

ISOTS 19135-2 was prepared by Technical Committee ISO/TC 211, *Geographic information/Geomatics*.

ISO 19135 consists of the following parts, under the general title *Geographic information — Procedures for item registration*:

— *Part 2: XML schema implementation* [Technical Specification]

A part 1 dealing with procedures for item registration is under preparation.

Introduction

The ISO 19135 series standardizes the procedures for the registration of geographic items. Since it does not provide any encoding for the storage and exchange of registers and register items, implementations may vary based on the interpretation of the base standard.

This Technical Specification defines an XML encoding for the storage and exchange of ISO 19135-compliant registers and register items. This encoding conforms to the rules described in ISO/TS 19139.

The encoding defined in this Technical Specification is intended to be extended to specific registers, e.g. ISO 19145[1)] for registers of representations of geographic point location.

1) To be published.

Geographic information — Procedures for item registration —

Part 2:
XML schema implementation

1 Scope

This Technical Specification defines Geographic ReGister XML (grg) encoding, an XML schema implementation derived from ISO 19135.

2 Conformance

Conformance with this Technical Specification shall be checked using all the relevant tests specified in Annex A and all the relevant tests specified in Annex A of ISO/TS 19139:2007. The framework, concepts, and methodology for testing, and the criteria to be achieved to claim conformance, are specified in ISO 19105.

3 Normative references

The following referenced documents are indispensable for the application of this Technical Specification. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 19135:2005, *Geographic information — Procedures for item registration*

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

4 Terms and definitions

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

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

NOTE See Reference [5] in the Bibliography.

4.2
package
general purpose mechanism for organizing elements into groups

[ISO/TS 19103:2005, 4.2.22]

5 Abbreviations

UML Unified Modelling Language

URI Unique Resource Identifier

XCT XML Class Type

XML eXtensible Markup Language

XSD XML Schema Definition

6 Introduction to the encoding descriptions

This Technical Specification defines Geographic ReGister (grg) XML encoding, an XML schema implementation of the register schema defined in Clause 8 of ISO 19135:2005. This XML schema implementation of ISO 19135 follows the encoding rules stated in ISO/TS 19139:2007, Clause 8. The exceptions and the implementations based on external types are detailed in this clause. This clause uses the UML notation commonly used in ISO geographic information standards and the specific notations defined in ISO/TS 19139:2007, 5.4.

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

grg	Geographic ReGister	(http://www.isotc211.org/2005/grg)
gco	Geographic COmmon extensible markup language	(http://www.isotc211.org/2005/gco)
gmd	Geographic MetaData extensible markup language	(http://www.isotc211.org/2005/gmd)

7 XML namespaces

Figure 1 below shows the namespace used to implement ISO 19135 along with its dependencies on the namespaces defined in ISO/TS 19139 used to implement ISO 19115 and the related standards.

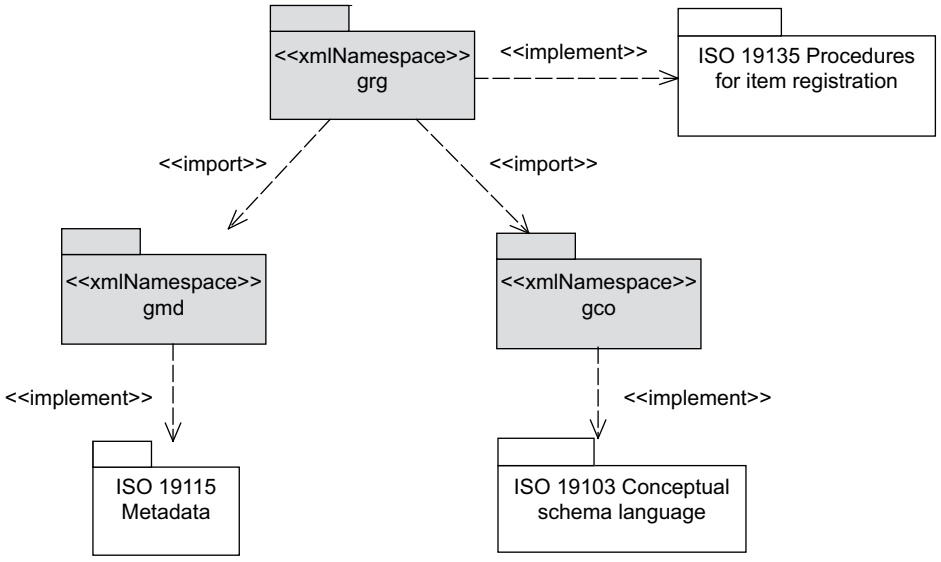

Figure 1 — XML namespaces

8 grg namespace

8.1 Organization of the grg namespace

This namespace contains the implementation of the register schema of ISO 19135. The root of this namespace is grg.xsd. Figure 2 shows the organization of the grg namespace.

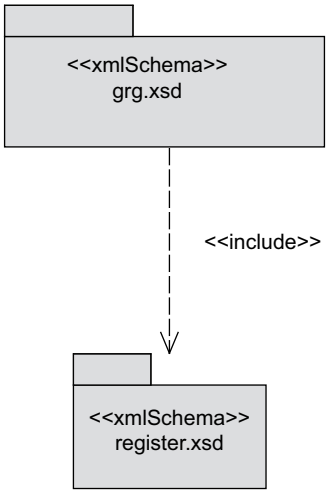

Figure 2 — Organization of grg namespace

8.2 grg.xsd

This XML schema includes directly all the implemented concepts of the grg namespace, but it does not contain the declaration of any type.

8.3 register.xsd

8.3.1 Introduction

This XML schema implements all the UML classes of the register schema defined in Clause 8 of ISO 19135:2005.

The UML classes defined in ISO 19135:2005, 8,2 and 8.7 to 8.24, are implemented in XML schema following the encoding rules defined in Clause 8 of ISO/TS 19139:2007. These classes are: RE_Register, RE_ReferenceSource, RE_RegisterItem, RE_ProposalManagementInformation, RE_AdditionInformation, RE_ClarificationInformation, RE_AmendmentInformation, RE_Reference, RE_SubregisterDescription, RE_AlternativeExpression, RE_AlternativeName, RE_Locale, RE_Version, RE_FieldOfApplication, RE_ItemStatus, RE_DecisionStatus, RE_Disposition, RE_AmendmentType and RE_SimilarityToSource.

Additionally, this XML schema contains two customized encodings, described in 8.3.2 and 8.3.3.

8.3.2 RE_RegisterOwner, RE_RegisterManager, and RE_SubmittingOrganization

An abstract element grg:AbstractRegisterStakeholder of type grg:AbstractRegisterStakeholder_Type is created to share the two common attributes of classes RE_RegisterOwner, RE_RegisterManager, RE_SubmittingOrganization defined in ISO 19135:2005, 8.3, 8.4 and 8.5. Their XML Class Type (XCT) derives from this abstract element, as depicted in Figure 3.

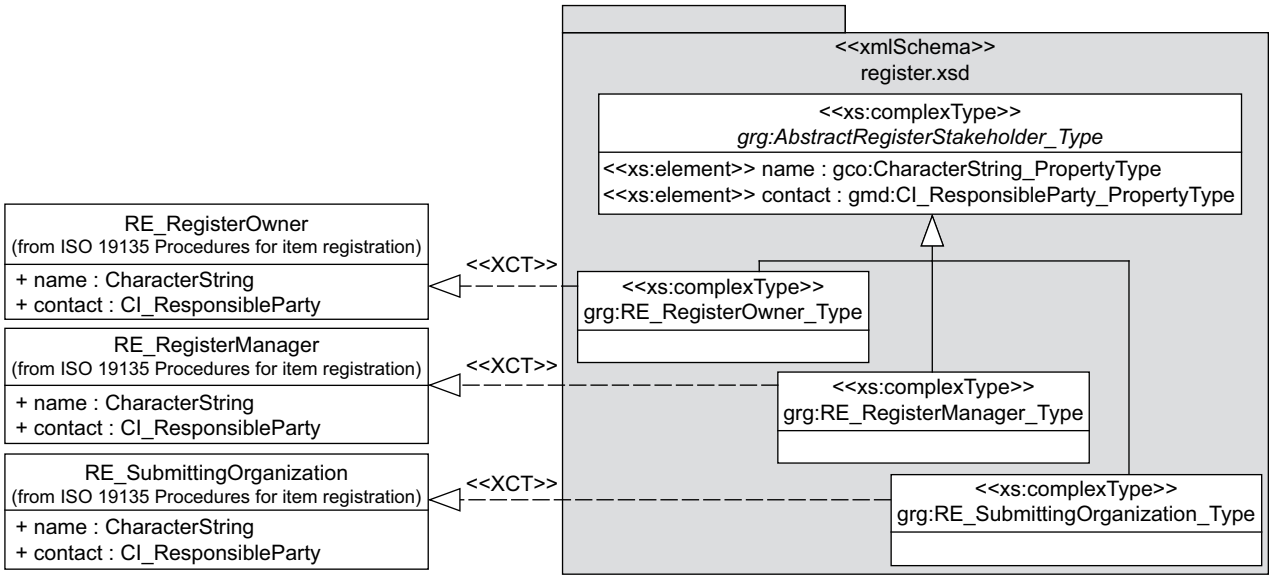

Figure 3 — Implementation of RE_RegisterOwner, RE_RegisterManager and RE_SubmittingOrganization

8.3.3 RE_ItemClass

ISO 19135:2005, 8.6.6, states that the *Categorization* association between RE_RegisterItem and RE_ItemClass shall be navigable from *describedItem* to *itemClass* but need not be navigable in the other direction. However, communities implementing ISO 19135 have identified a requirement to navigate from *itemClass* to *describedItem*. Since it is not prohibited by ISO 19135, this Technical Specification defines an encoding for *describedItem* as a role of RE_ItemClass. The XCT of RE_ItemClass contains an XML schema element implementing *describedItem*, as depicted in Figure 4.

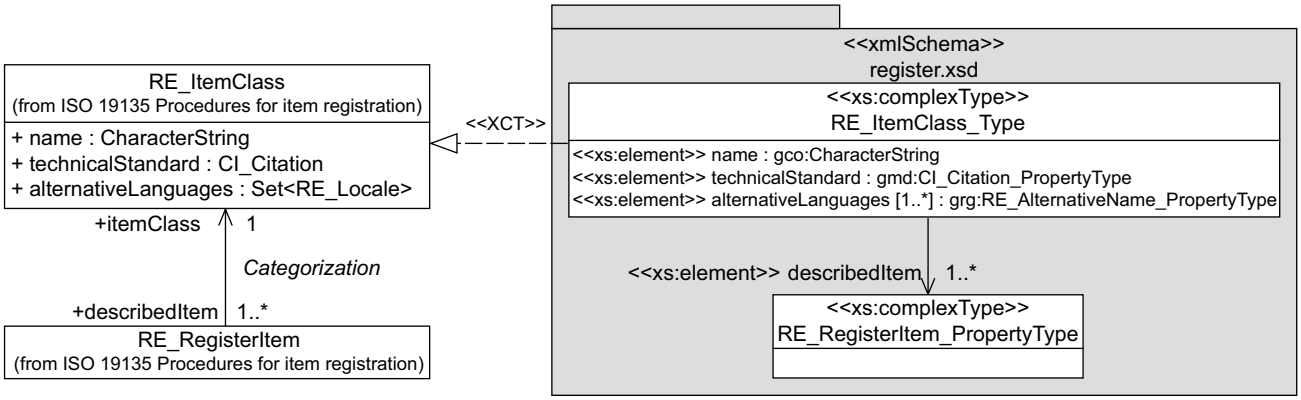

Figure 4 — Implementation of RE_ItemClass

Annex A
(normative)

Abstract test suite

A.1 Introduction

This Technical Specification defines an XML schema encoding compliant with ISO/TS 19139. As such, this abstract test suite includes, by reference, the abstract test suite specified in ISO/TS 19139.

A.2 Overview of conformance test tools

Minimum conformance with this Technical Specification requires that geographic register and register item instance (XML) documents can be validated without error against the XML schemas defined by the encoding rules in Clause 8 of ISO/TS 19139:2007 and described in detail in Clause 8 of this Technical Specification. While many tools are available to test validation of XML instance documents against provided XML schemas, it is important to understand that not all validation tools implement the full W3C XML schema recommendation and not all validation tools interpret the W3C XML schema recommendation in the same manner. It is recommended that a tool with strict interpretation of XML schema and full support for the W3C XML schema recommendation be used to ensure conformance.

A.3 Conformance requirements — Constraints

XML schema 1.0 does not support the enforcement of certain types of constraints. For example, co-constraints such as the requirement that a register item with a “notValid” value on the “status” attribute implies a “notEmpy” value for the “dateAccepted” attribute cannot be enforced with XML schema. Document schema definition languages other than XML schema, e.g. Schematron or XSLT 2.0, should be used to implement these constraints. As a result, it is imperative that implementers heed the anchor notes shown in the figures of ISO 19135. Table A.1 shows the affected elements and the anchor notes and annotations.

Table A.1 — Conformance rules not enforceable with XML schema

Affected class	Conformance rule
RE_Register	countOf(version + dateOfLastChange) > = 1

RE_RegisterItem	status < > #notValid implies dateAccepted - > notEmpty
	status = #superseded or status = #retired implies dateAmended - > notEmpty

RE_RegisterItem	if
	exists - > (self.amendmentInformation.amendmentType = #retirement
	and self.amendmentInformation.disposition = #accepted
	and self.amendmentInformation.status = #final)
	then self.status = #retired
	else if
	exists - > (self.amendmentInformation.amendmentType = #supersession
	and self.amendmentInformation.disposition = #accepted
	and self.amendmentInformation.status = #final)
	then self.status = #superseded
	else if
	exists - > (self.additionInformation.disposition = #accepted
	and self.additionInformation.status = #final)
	then self.status = #valid
	else
	self.status = #notValid
	endif

RE_RegisterItem	specificationSource.similarity < = 3
RE_ProposalManagementInformation	status < > #pending implies disposition - > notEmpty status < > #pending implies dateDisposed - > notEmpty
RE_SubregisterDescription	self.itemClass.name = “Subregister” self.itemClass.technicalStandard.CI_Citation.title = “ISO 19135 Geographic information - Procedures for registration of items of geographic information” self.itemClass.technicalStandard.CI_Citation.alternateTitle = “ISO 19135:2005” self.itemClass.technicalStandard.CI_Citation.date.CI_Date.date = “2005” self.itemClass.technicalStandard.CI_Citation. otherCitationDetails = “Clause 8.14”
RE_Version	The attribute number shall be represented as a constrained CharacterString that denotes the version. The CharacterString shall be of the form < first positive integer > < dot > < second positive integer > < letter characters > (“#.#a”), where: a) < first positive integer > (one or more digits) shall specify the major version designation; b) < dot > (“.”) shall delimit the < first positive integer > from the < second positive integer > when there is a < second positive integer >; c) < second positive integer > (one or more digits) shall optionally specify the minor version designation; and d) < letters > (one or more characters) shall optionally specify the minor subversion designation.

Annex B
(informative)

Geographic ReGister XML Resources

B.1 XML schemas defined in this Technical Specification

This Technical Specification defines the content of one XML namespace commonly identified using the suggested prefix grg. This namespace prefix is appended to http://www.isotc211.org/2005/ to make a complete namespace identifier.

The files that make up the Geographic ReGister extensible markup language or http://www.isotc211.org/2005/grg are available at http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19135-2_Schemas in the "grg" directory and are: "grg.xsd" and "register.xsd".

B.2 XML schemas defined in ISO/TS 19139

This Technical Specification is based on the XML schema implementation and encoding rules provided in ISO/TS 19139:2007, Annex C.

Bibliography

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

[2] ISO 19105, *Geographic information — Conformance and testing*

[3] ISO 19115, *Geographic information — Metadata*

[4] ISO 19145, *Geographic information — Registry of representations of geographic point location*[2)]

[5] [W3C XML] *Namespaces in XML 1.0* (Third Edition), Available at <http://www.w3.org/TR/xml-names/>, W3C Recommendation 8 December 2009

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