

SVENSK STANDARD

SS-EN ISO 19119:2016



Fastställt/Approved: 2016-02-29

Publicerad/Published: 2016-03-04

Utgåva/Edition: 2

Språk/Language: engelska/English

ICS: 35.020; 35.240.01; 35.240.30; 35.240.50; 35.240.60; 35.240.70

Geografisk information – Tjänster (ISO 19119:2016)

Geographic information – Services (ISO 19119:2016)

This preview is downloaded from www.sis.se. Buy the entire standard via <https://www.sis.se/std-8019240>

Standarder får världen att fungera

SIS (Swedish Standards Institute) är en fristående ideell förening med medlemmar från både privat och offentlig sektor. Vi är en del av det europeiska och globala nätverk som utarbetar internationella standarder. Standarder är dokumenterad kunskap utvecklad av framstående aktörer inom industri, näringsliv och samhälle och befrämjar handel över gränser, bidrar till att processer och produkter blir säkrare samt effektiviserar din verksamhet.

Delta och påverka

Som medlem i SIS har du möjlighet att påverka framtida standarder inom ditt område på nationell, europeisk och global nivå. Du får samtidigt tillgång till tidig information om utvecklingen inom din bransch.

Ta del av det färdiga arbetet

Vi erbjuder våra kunder allt som rör standarder och deras tillämpning. Hos oss kan du köpa alla publikationer du behöver – allt från enskilda standarder, tekniska rapporter och standardpaket till handböcker och onlinetjänster. Genom vår webbtjänst e-nav får du tillgång till ett lättnavigerat bibliotek där alla standarder som är aktuella för ditt företag finns tillgängliga. Standarder och handböcker är källor till kunskap. Vi säljer dem.

Utveckla din kompetens och lyckas bättre i ditt arbete

Hos SIS kan du gå öppna eller företagsinterna utbildningar kring innehåll och tillämpning av standarder. Genom vår närhet till den internationella utvecklingen och ISO får du rätt kunskap i rätt tid, direkt från källan. Med vår kunskap om standarders möjligheter hjälper vi våra kunder att skapa verklig nytta och lönsamhet i sina verksamheter.

Vill du veta mer om SIS eller hur standarder kan effektivisera din verksamhet är du välkommen in på www.sis.se eller ta kontakt med oss på tel 08-555 523 00.



Standards make the world go round

SIS (Swedish Standards Institute) is an independent non-profit organisation with members from both the private and public sectors. We are part of the European and global network that draws up international standards. Standards consist of documented knowledge developed by prominent actors within the industry, business world and society. They promote cross-border trade, they help to make processes and products safer and they streamline your organisation.

Take part and have influence

As a member of SIS you will have the possibility to participate in standardization activities on national, European and global level. The membership in SIS will give you the opportunity to influence future standards and gain access to early stage information about developments within your field.

Get to know the finished work

We offer our customers everything in connection with standards and their application. You can purchase all the publications you need from us - everything from individual standards, technical reports and standard packages through to manuals and online services. Our web service e-nav gives you access to an easy-to-navigate library where all standards that are relevant to your company are available. Standards and manuals are sources of knowledge. We sell them.

Increase understanding and improve perception

With SIS you can undergo either shared or in-house training in the content and application of standards. Thanks to our proximity to international development and ISO you receive the right knowledge at the right time, direct from the source. With our knowledge about the potential of standards, we assist our customers in creating tangible benefit and profitability in their organisations.

If you want to know more about SIS, or how standards can streamline your organisation, please visit www.sis.se or contact us on phone +46 (0)8-555 523 00



Europastandarden EN ISO 19119:2016 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN ISO 19119:2016.

Denna standard ersätter SS-EN ISO 19119:2006, utgåva 1 och SS-EN ISO 19119:2006/A1:2011, utgåva 1.

The European Standard EN ISO 19119:2016 has the status of a Swedish Standard. This document contains the official English version of EN ISO 19119:2016.

This standard supersedes the Swedish Standard SS-EN ISO 19119:2006, edition 1 and SS-EN ISO 19119:2006/A1:2011, edition 1.

© Copyright/Upphovsrätten till denna produkt tillhör SIS, Swedish Standards Institute, Stockholm, Sverige. Användningen av denna produkt regleras av slutanvändarlicensen som återfinns i denna produkt, se standardens sista sidor.

© Copyright SIS, Swedish Standards Institute, Stockholm, Sweden. All rights reserved. The use of this product is governed by the end-user licence for this product. You will find the licence in the end of this document.

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 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

EN ISO 19119

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2016

ICS 35.240.70

Supersedes EN ISO 19119:2006

English Version

Geographic information - Services (ISO 19119:2016)

Information géographique - Services (ISO 19119:2016)

Geoinformation - Dienste (ISO 19119:2016)

This European Standard was approved by CEN on 20 February 2016.

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.

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.

CEN members are the national standards bodies of 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 United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

European foreword	2
Introduction	vii
1 Scope	1
2 Conformance	1
2.1 Claiming conformance.....	1
2.2 General.....	1
2.3 Enterprise viewpoint.....	1
2.4 Computational viewpoint.....	1
2.5 Information viewpoint.....	2
2.6 Service taxonomies.....	2
2.7 Engineering viewpoint.....	2
2.8 Technology viewpoint.....	2
3 Normative references	3
4 Terms and definitions and abbreviations	3
4.1 Terms and definitions.....	3
4.2 Abbreviations.....	5
5 Notation	7
5.1 General.....	7
5.2 Conformance class.....	7
5.3 Requirements class.....	7
5.4 Rules.....	8
5.5 Identifiers.....	8
5.6 Conceptual schemas.....	8
5.7 Descriptions of concepts.....	8
5.8 Architecture patterns.....	8
6 Overview of geographic services architecture	9
6.1 Purpose and justification.....	9
6.2 Relationship to ISO 19101-1.....	9
6.3 Interoperability reference model based on ISO RM-ODP.....	10
6.4 Service abstraction.....	11
6.5 Interoperability.....	13
6.6 Use of other geographic information standards in service specifications.....	14
7 Enterprise viewpoint: A context for services	14
7.1 Enterprise viewpoint.....	14
7.2 Enterprise viewpoint service specifications.....	15
7.3 Examples of relevant standards.....	16
7.4 Example and tools.....	17
8 Computational viewpoint: A basis for service interfaces and chaining	17
8.1 Component and service interoperability and the computational viewpoint.....	17
8.2 Services, interfaces and operations.....	18
8.3 Computational viewpoint service specifications.....	19
8.3.1 Requirements class for computational viewpoint service specifications.....	19
8.3.2 Service interfaces with operations.....	19
8.3.3 Service behaviour and constraints.....	21
8.4 Service chaining.....	23
8.4.1 General.....	23
8.4.2 Anatomy of a service chain.....	24
8.4.3 Service chain modelling.....	25
8.4.4 Services organizer folder.....	27
8.4.5 Services to enable service chaining.....	27
8.4.6 Architecture patterns for service chaining.....	28

8.4.7	Variations on chaining patterns.....	33
8.5	Service metadata.....	34
8.6	Simple service architecture.....	34
8.7	Examples of relevant standards.....	35
8.8	Examples and tools: Service modelling with SoaML.....	35
9	Information viewpoint: A basis for semantic interoperability.....	35
9.1	Information model interoperability and the information viewpoint.....	35
9.2	Information viewpoint Service specifications.....	36
10	Service taxonomies.....	39
10.1	Need for multiple service taxonomies.....	39
10.2	Service taxonomies and requirements.....	40
10.3	Architectural reference model.....	40
10.4	Definition of the Architectural reference model.....	40
10.5	Uses of the Architectural reference model.....	40
10.6	Overview of the Architectural reference model.....	41
10.6.1	Services and service interfaces.....	41
10.6.2	Identifying services and service interfaces for geographic information.....	42
10.7	Types of geographic information services.....	42
10.7.1	Requirement for service taxonomy.....	42
10.7.2	Types of information technology services relevant to geographic information.....	42
10.7.3	Extension of service types for geographic information.....	44
10.8	Geographic architecture services taxonomy.....	44
10.8.1	Geographic architecture services taxonomy requirements.....	44
10.8.2	Geographic boundary/human interaction services.....	45
10.8.3	Geographic model/information management services.....	46
10.8.4	Geographic workflow/task management services.....	47
10.8.5	Geographic processing services.....	47
10.8.6	Geographic communication services.....	50
10.8.7	Geographic system management and security services.....	50
10.9	ISO suite of International Standards in geographic architecture services taxonomy.....	51
10.10	Geographic service chaining validity.....	51
10.11	User-perspective Lifecycle model for Services.....	52
10.12	User-defined service taxonomies.....	53
10.13	Services organizer folder (SOF).....	53
10.13.1	Grouping of services.....	53
10.13.2	Image exploitation SOF.....	53
10.13.3	Geographic data fusion SOF.....	54
10.14	Semantic information models.....	55
10.15	Examples of relevant standards.....	56
10.16	Examples and tools.....	57
11	Engineering viewpoint: A basis for distribution and communication patterns.....	57
11.1	Distribution transparencies and the engineering viewpoint.....	57
11.2	Distributing components using a multi-tier architecture model.....	58
11.3	Distribution transparencies.....	61
11.4	Engineering viewpoint Service specifications.....	62
11.5	Multi-style SOA.....	63
11.6	Relevant architectural styles.....	63
11.6.1	Service-oriented architectures.....	63
11.6.2	Representational State Transfer (REST).....	64
11.6.3	Web 2.0.....	65
12	Technology viewpoint: A basis for cross platform interoperability.....	66
12.1	Infrastructure interoperability and the technology viewpoint.....	66
12.2	Need for multiple platform-specific specifications.....	67
12.3	Conformance between platform-neutral and platform-specific service specifications.....	67
12.4	From platform-neutral to platform-specific specifications.....	68
12.5	Technology objects.....	68

12.6	Technology viewpoint service specifications.....	68
12.6.1	Requirements class for technology viewpoint.....	68
12.6.2	Technology mappings.....	69
12.7	Architectural classification according to cloud computing service categories.....	71
Annex A (normative) Conformance.....		72
Annex B (informative) Example user scenarios.....		78
Annex C (informative) Principles for mapping to distributed computing platforms.....		81
Annex D (informative) Use case-based methodology.....		92
Annex E (informative) Example — Use case template.....		95
Annex F (informative) Service modelling – SoaML.....		98
Bibliography.....		101

European foreword

This document (EN ISO 19119:2016) has been prepared by Technical Committee ISO/TC 211 “Geographic information/Geomatics” in collaboration with 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 August 2016, and conflicting national standards shall be withdrawn at the latest by August 2016.

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.

This document supersedes EN ISO 19119:2006.

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 19119:2016 has been approved by CEN as EN ISO 19119:2016 without any modification.

Introduction

The widespread application of computers and use of geographic information systems (GIS) have led to the increased analysis of geographic data within multiple disciplines. Based on advances in information technology, society's reliance on such data are growing. Geographic datasets are increasingly being shared, exchanged, and used for purposes other than their producers' intended ones. GIS, remote sensing, automated mapping and facilities management (AM/FM), Spatial Data Infrastructure (SDI), traffic analysis, geopositioning systems, and other technologies for Geographic Information (GI) are entering a period of radical integration.

This International Standard provides a framework for platform neutral and platform specific specification of services that can enable users to access, process and manage geographic data from a variety of sources, potentially for various distributed computing platforms (DCPs).

- “a framework for platform neutral and platform specific specification of services” means that this International Standard provides requirements for how services shall be specified in such a way that one service can be specified independently of one or more underlying distributed computing platforms. The framework provides requirements for a further mapping to specific platforms in order to enable conformant platform specific specifications to ensure conforming and interoperable service implementations.
- “access, process and manage” means that geodata users can query remote databases and control remote processing resources and also take advantage of other distributed computing technologies, such as software delivered to the user's local environment from a remote environment for temporary use;
- “from a variety of sources” means that users will have access to data acquired in a variety of ways and stored in a wide variety of relational and non-relational databases;
- “across a generic computing interface” means that ISO 19119 interfaces provide reliable communication between otherwise disparate software resources that are equipped to use these interfaces;
- “within an open information technology environment” means that this International Standard enables geoprocessing to take place outside of the closed environment of monolithic GIS, remote sensing, and AM/FM systems that control and restrict database, user interface, network and data manipulation functions;
- services shall be categorised according to a service taxonomy based on architectural areas and may also be categorised according to a usage life cycle perspective, as well as according to domain specific and user defined service taxonomies, providing support for publication and discovery of services.

The difference between this version of this International Standard and the previous ISO 19119:2005 version is the following:

This International Standard has defined a set of requirements and related abstract tests for the specification of services according to enterprise, computational, information, engineering and technology viewpoints. This International Standard has defined a set of requirements for categorizing services according to service taxonomies. The service metadata has been moved to ISO 19115-1.

Service policies, service contracts including service level agreements (SLAs) are currently not specified as part of this International Standard, as these are considered most relevant for service deployment and service ownership, which is not currently a focus for this International Standard.

Geographic information — Services

1 Scope

This International Standard defines requirements for how platform neutral and platform specific specification of services shall be created, in order to allow for one service to be specified independently of one or more underlying distributed computing platforms.

This International Standard defines requirements for a further mapping from platform neutral to platform specific service specifications, in order to enable conformant and interoperable service implementations.

This International Standard addresses the Meta:Service foundation of the ISO geographic information reference model described in ISO 19101-1:2014, Clause 6 and Clause 8, respectively.

This International Standard defines how geographic services shall be categorised according to a service taxonomy based on architectural areas and allows also for services to be categorised according to a usage life cycle perspective, as well as according to domain specific and user defined service taxonomies, providing support for easier publication and discovery of services.

2 Conformance

2.1 Claiming conformance

Any product claiming conformance with the conformance classes in this International Standard shall pass all the associated requirements described in the abstract test suite given in [Annex A](#).

2.2 General

This International Standard defines six conformance classes shown in [Table 1](#) to [Table 6](#), matching the six requirements classes described in [Clause 7](#) to [Clause 12](#). Any service claiming conformance to any requirements class in this International Standard shall pass all of the tests listed in the corresponding conformance class, which are described in detail in the abstract test suites in [Annex A](#). Each test relates to one or more specific requirements, which are explicitly indicated in the description of the test.

2.3 Enterprise viewpoint

The enterprise viewpoint conformance class is shown in [Table 1](#).

Table 1 — Enterprise viewpoint conformance class

Conformance class	/conf/enterpriseviewpoint
Requirements	/req/enterpriseviewpoint (Table 11)
Tests	All tests in A.2

2.4 Computational viewpoint

The computational viewpoint conformance class is shown in [Table 2](#).

Table 2 — Computational viewpoint conformance class

Conformance class	/conf/computationalviewpoint
Dependency	/conf/enterpriseviewpoint
Requirements	/req/computationalviewpoint (Table 12)
Tests	All tests in A.3

2.5 Information viewpoint

The information viewpoint conformance class is shown in [Table 3](#).

Table 3 — Information viewpoint conformance class

Conformance class	/conf/informationviewpoint
Dependency	/conf/uml (2.4)
Requirements	/req/informationviewpoint (Table 18)
Tests	All tests in A.4

2.6 Service taxonomies

The service taxonomy conformance class is shown in [Table 4](#).

Table 4 — Service taxonomies conformance class

Conformance class	/conf/servicetaxonomies
Dependency	/conf/uml (2.4)
Requirements	/req/servicetaxonomies (Table 19)
Tests	All tests in A.5

2.7 Engineering viewpoint

The engineering viewpoint conformance class is shown in [Table 5](#).

Table 5 — Engineering viewpoint conformance class

Conformance class	/conf/engineeringviewpoint
Dependency	/conf/uml (2.4)
Requirements	/req/engineeringviewpoint (Table 26)
Tests	All tests in A.6

2.8 Technology viewpoint

The technology viewpoint conformance class is shown in [Table 6](#).

Table 6 — Technology viewpoint conformance class

Conformance class	/conf/technologyviewpoint
Dependency	/conf/uml (2.4)
Requirements	/req/technologyviewpoint (Table 27)
Tests	All tests in A.7

NOTE The definition of an abstract test suite appears in ISO 19105.

3 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 10746-1, *Information technology — Open Distributed Processing — Reference model: Overview — Part 1*

ISO 19101-1:2014, *Geographic information — Reference model — Part 1: Fundamentals*

ISO 19103, *Geographic information — Conceptual schema language*

ISO 19115-1:2014, *Geographic information — Metadata — Part 1: Fundamentals*

[SoaML] *Service oriented architecture Modeling Language v 1.0.1*, May 2012, OMG standard¹⁾

4 Terms and definitions and abbreviations

4.1 Terms and definitions

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

4.1.1

capability

real-world effect that a *service* (4.1.12) provider is able to provide to a service consumer

[SOURCE: SOA-RAF]

4.1.2

computational viewpoint

viewpoint (4.1.15) on an ODP system and its environment that enables distribution through functional decomposition of the system into objects which interact at *interfaces* (4.1.8)

[SOURCE: ISO/IEC 10746-3:2015, 4.1.1.3]

4.1.3

distribution transparency

property of hiding from a particular user the potential behaviour of some parts of a distributed system

Note 1 to entry: Distribution transparencies enable complexities associated with system distribution to be hidden from applications where they are irrelevant to their purpose.

[SOURCE: ISO/IEC 10746-2:2009, 11.1.1]

4.1.4

engineering viewpoint

viewpoint (4.1.15) on an ODP system and its environment that focuses on the mechanisms and functions required to support distributed interaction between objects in the system

[SOURCE: ISO/IEC 10746-3:2009, 4.1.1.4]

4.1.5

enterprise viewpoint

viewpoint (4.1.15) on an ODP system and its environment that focuses on the purpose, scope and policies for that system

[SOURCE: ISO/IEC 10746-3:2009, 4.1.1.1]

1) <http://www.omg.org/spec/SoaML/1.0.1/>

4.1.6**entity**

something that has separate and distinct existence and objective or conceptual reality

4.1.7**information viewpoint**

viewpoint (4.1.15) on an ODP system and its environment that focuses on the semantics of information and information processing

[SOURCE: ISO/IEC 10746-3:2009, 4.1.1.2]

4.1.8**interface**

named set of *operations* (4.1.10) that characterize the behaviour of an *entity* (4.1.6)

Note 1 to entry: See 8.2 for a discussion of interface.

4.1.9**interoperability**

capability to communicate, execute programs, or transfer data among various functional units in a manner that requires the user to have little or no knowledge of the unique characteristics of those units

[SOURCE: ISO/IEC 2382:2009, 2121317]

4.1.10**operation**

specification of a transformation or query that an object may be called to execute

Note 1 to entry: An operation has a name and a list of parameters.

Note 2 to entry: See 8.2 for a discussion of operation.

4.1.11**real world effect**

actual result of using a *service* (4.1.12), rather than merely the *capability* (4.1.1) offered by a service provider

Note 1 to entry: See 8.3 for a discussion of service.

[SOURCE: OASIS RAF, 3.2.3]

4.1.12**service**

distinct part of the functionality that is provided by an *entity* (4.1.6) through *interfaces* (4.1.8)

4.1.13**service chain**

sequence of *services* (4.1.12) where, for each adjacent pair of services, occurrence of the first action is necessary for the occurrence of the second action

4.1.14**technology viewpoint**

viewpoint (4.1.15) on an ODP system and its environment that focuses on the choice of technology in that system

[SOURCE: ISO/IEC 10746-3:2009, 4.1.1.5]

4.1.15

viewpoint (on a system)

form of abstraction achieved using a selected set of architectural concepts and structuring rules, in order to focus on particular concerns within a system

[SOURCE: ISO/IEC 10746-2, 3.2.7]

4.1.16

workflow

automation of a business process, in whole or part, during which documents, information or tasks are passed from one participant to another for action, according to a set of procedural rules

4.2 Abbreviations

API	Application Programming Interface
BPEL	Business Process Execution Language
BPMN	Business Process Modelling Notation
CORBA	Common Object Request Broker Architecture
CSL	Conceptual schema language
DAG	Directed Acyclic Graph
DCP	Distributed Computing Platform
DEM	Digital Elevation Model
DTD	Document type definitions
EJB	Enterprise Java Beans
ERP	Enterprise Resource Planning
GIOP	General Inter-ORB Protocol
GFM	General feature model
HTI	Human Technology Interface
HTML	Hypertext Markup language
HTTP	Hypertext Transfer Protocol
IaaS	Infrastructure as a Service
IDL	Interface Definition Language
IIOp	Internet Inter-ORB Protocol
INSPIRE	Infrastructure for Spatial Information in Europe
IT	Information Technology
J2EE	Java 2 Enterprise Edition with EJB
JDBC	Java Data Base Connectivity
OASIS	Organization for the Advancement of Structured Information Standards

OCL	Object Constraint Language
ODBC	Open Database Connectivity
ODMG	Object Database Management Group
ODP	Open Distributed Processing (see RM-ODP)
OGC	Open Geospatial Consortium
OMG	Object Management Group
ORB	Object Request Broker
OWL	Web Ontology Language
PaaS	Platform as a Service
QoS	Quality of Service
QVT	Query/View/Transformation
REST	Representational state transfer
RDF	Resource Description Framework
RMI	Remote Method Invocation
RM-ODP	Reference Model of Open Distributed Processing (ISO/IEC 10746)
RPC	Remote Procedure Call
SaaS	Software as a Service
SDI	Spatial Data Infrastructure
SDAI	Standard Data Access Interface (ISO 10303-22)
SOA	Service Oriented Architecture
SoaML	Service oriented architecture Modelling Language (OMG)
SOAP	Simple Object Access Protocol
SOF	Service Organizer Folder
SPS	Spatial Planning Service
SQL	Structured Query Language
UML	Unified Modeling Language
URI	Uniform Resource Identifier
W3C	World Wide Web Consortium
WFS	Web Feature Service
WMS	Web Map Service
XML	Extensible Markup Language

XML RDF XML Resource Description Framework

XSLT XML Stylesheet Language Transformations

Concepts from schemas defined in some other International Standards are designated with names that start with bi-alpha codes as follows:

TM ISO 19108:2002 Temporal Schema, Temporal Objects

5 Notation

5.1 General

This International Standard describes how to describe a service. In addition to stating the rules for creating service descriptions, this International Standard provides guidance through examples.

5.2 Conformance class

Conformance to this International Standard is possible at a number of levels, specified by conformance classes ([Clause 2](#)). Each conformance class is summarized using the template shown as [Table 7](#).

Table 7 — Conformance class template

Conformance class	<code>/conf/{classM}</code>
Dependency	[identifier for another conformance class]
Requirements	<code>/req/{classA}</code>
Tests	[reference to clause(s) containing tests]

All tests in a class shall be passed, so dependencies are on other conformance classes (see Resolution 570 of ISO/TC 211, N3262). Each conformance class tests conformance to a set of requirements packaged in a requirements class ([Clause 7](#) and [Clause 8](#)).

5.3 Requirements class

Each normative statement (requirement or recommendation) in this International Standard forms part of a specific requirements class. In this International Standard, each requirements class is described in a discrete clause or subclause and summarized using the template shown as [Table 8](#).

Table 8 — Requirements class template

Requirements class	<code>/req/{classM}</code>
Target type	[artefact or technology type]
Dependency	[identifier for another requirements class]
Requirement	<code>/req/{classM}/{reqN}</code>
Recommendation	<code>/req/{classM}/{recO}</code>
Requirement	<code>/req/{classM}/{reqP}</code>
Requirement /Recommendation	[repeat as necessary]

All requirements in a class shall be satisfied, so the requirements class is the unit of re-use and dependency. Hence, the value of a Dependency requirement is another requirements class.