Structure of URIs in ISO/TC 211 resources for implementation

# Background

The implementation of ISO/TC211 standards as XSD Schemas and ontologies requires access to official URIs for both the schemas and individual resources within the schemas. For conformance testing and documentation, also conformance classes, conformance tests, requirements and recommendations from standards need to be uniquely identified. For ISO/TC211 standards produced prior to the adoption of the formatting rules defined in this standing document, various templates have been used for such identification.

With this background, ISO/TC211 adopted resolution 858 at [the 45th ISO/TC211 Plenary Meeting in Wellington in 2017](https://isotc.iso.org/livelink/livelink?func=ll&objId=19389743&objAction=Open).

**Resolution 858 ISO/TC 211 URI structure**

ISO/TC 211 resolves that all identifiable conformance classes, conformance tests, requirements and recommendations in ISO geographic information standards shall be identified by URIs with a given structure. ISO/TC 211 instructs the convenors of TMG, XMG, GOM, PMG and HMMG to develop the structure of the URIs and web resources in a draft report lead by Mr. Knut Jetlund. The report will be sent to the ISO/TC 211 secretariat for distribution to its members one month before the next plenary meeting. Once accepted, this report will be an input to the revision of 19105.

According to the ISO TMB resolution 38/2017 from its 68th meeting, such resources may be stored separately, outside of the master document of the standards, provided that a clearly defined framework exists for their use and maintenance. Considering this, the management groups in ISO/TC 211 have defined a set of rules for structing URIs to be used in forthcoming documents published by ISO/TC 211.

# Approved URI structure

## Identified resources

The following ISO/TC 211 resources for implementation require unique and persistent identification:

1. XML Schemas and example files
2. Ontologies
3. Profiles
4. Registries

Besides, as approved in Resolution 858, the following elements from standards documents require unique and persistent identification:

1. Normative statements: requirements, recommendations and permissions
2. Conformance classes and conformance tests

## Main repository

<https://www.isotc211.org/> is the main repository for ISO/TC 211 resources for implementation, as stated in resolution 857:

**Resolution 857 Official web access for ISO/TC 211 resources to support implementation of standards**

ISO/TC 211 resolves to use isotc211.org for web access to its official resources that support implementation, including but not limited to, XML Implementation Schemas, XML Codelists, XML Example files, Ontologies, UML XMI files, Terminologies and Profiles of standards.

## Framework – sub-domain structure

Sub-domain structures are presented in Table 1 – sub-domain structure.

**Table 1 – Sub-domain structure**

|  |  |
| --- | --- |
| **Resource** | **Sub-domain structure** |
| XML Schemas and example files | [https://schemas.isotc211.org](http://schemas.isotc211.org) |
| Ontologies (as specified in Annex B of ISO 19150-2) | [https://def.isotc211.org](http://def.isotc211.org) |
| Registries | [https://registry.isotc211.org](http://registry.isotc211.org) |
| Profiles, conformance classes and tests, and normative statements | [https://standards.isotc211.org](http://standards.isotc211.org) |

Beneath these sub-domain structures, the following detailed path structures are recommended to be almost identical across all resource types.

Elements used in URI Templates in subsequent clauses:

* Standard number: The main number of the standard. E.g. “19115”
* Part number: For standards with several parts. E.g. “-1”. If the standard has no parts: “-”
* Namespace: XML namespace for the schema. E.g. “mda”
* Edition number: Official ISO edition number. E.g. “1”
* Fix number: For subdividing an edition in fixes. Initial value “0”

## XML Schemas and example files

Template:

**https://schemas.isotc211.org/***standardNumber***/-***[partNumber]***/***namespace***/***editionNumber***.***fixnumber*

Notes:

* The edition number is appended to the end of the template to ease the effort related to upgrading in implementations.

**Examples:**

* URI for the mda namespace of ISO 19115-3:2016 (edition 1):
  + <https://schemas.isotc211.org/19115/-3/mda/1.0>
* URI for the dps namespace of ISO 19131 (edition 2):
  + <https://schemas.isotc211.org/19131/-/dps/2.0>

## Ontologies

Template:

**https://def.isotc211.org/iso***standardNumber***/-***[partNumber]***/***year***/**namespace**.rdf**

Notes:

* The URI template for ontologies is defined in ISO 19150-2.
* There are differences between Ontologies and XML schemas on the approach for namespaces. Ontologies are conforming to ISO 19150-2 and use the *package name* as namespace, while XML Schemas are conforming to ISO 19139 and ISO 19136, and use the tagged value *xmlns*.

Example:

* For the MetadataApplicationInformation namespace of ISO 19115-1:2014 (edition 1):
  + <https://def.isotc211.org/iso19115/-1/2014/MetadataApplicationInformation.rdf>

## Registries

Template:

**https://** *registryName***.isotc211.org**

Example:

* URI for the ISO Geodetic Registry:
  + <https://geodetic.isotc211.org>

## Profiles of standards

**Template:**

**https://standards.isotc211.org/***standardNumber***/-***[partNumber]***/***editionNumber***/profiles/***profileName*

**Example:**

* URI for the NZ Profile of ISO 19160-1:2015:
  + [https://standards.isotc211.org/19160/-1/1/profiles/NZ Profile Specification 20151203.pdf](https://standards.isotc211.org/19160/-1/1/profiles/NZ%20Profile%20Specification%2020151203.pdf)

Notes:

* As these URIs may refer to an actual file, the profile name is placed at the end of the template, while the edition number is placed earlier in the template, before the profiles keyword.

## Normative statements

**Template:**

**https://standards.isotc211.org/***standardNumber***/-***[partNumber]***/***editionNumber***/***statementType***/***nsClassId***/***nsId*

where:

* statementType: is req (requirement), rec (recommendation) or per (permission)
* nsClassId: The class id for the normative statement
* nsID: Internal id for the normative statement

**Example:**

* URI for requirement “extent” in the requirement class “content” in ISO 19131 edition 2:
  + <https://standards.isotc211.org/19131/-/2/req/content/extent>

Notes:

* The *edition number* of the document is placed before the *statement type* to enable one main URI for all statements in one edition. The statements are expected to require inspection for each edition.
* The content of the resource should show the normative statement.

## Conformance classes and tests

**Template:**

**https://standards.isotc211.org/***standardNumber***/-***[partNumber]***/***editionNumber***/conf/***classId***/***TestId*

**Example:**

* URI for the conformance test “allContent” in the requirement class “content” in ISO 19131 edition 2:
  + <https://standards.isotc211.org/19131/-/2/conf/content/allContent>

Notes:

* The *edition number* of the document is placed before *conf* to enable one main URI for all conformance classes in one edition. The tests are expected to require inspection for each edition.
* The content of the resource should describe the conformance class and test.

# Relation to ISO 19105

As noted in resolution 858, the rules recommended in this standing document will be used as input in the revision of ISO 19105 – Conformance and testing. In addition, if accepted, these rules will also be used as input to future standardization projects and revisions.

# 

# (Issues to be discussed)

## Content of normative resources

What shall be the content of the resource for normative statements and conformance classes/tests?

## Alternative order of elements in URIs for normative statements and conformance classes/tests

An alternative is to place the classId before statementType, to reduce the number of classes. With today’s structure, we get one class per statementType.

Example: ISO 19131 Edition 2 has both requirements (req) and recommendations (rec) in the requirements class “content” and use the same name for a conformance class as well. See table bellow.

With an alternative structure, there would be one “content” class, with subfolders for requirments, recommendations and possibly conformance tests.

* + <https://standards.isotc211.org/19131/-/2/normative/content>
  + <https://standards.isotc211.org/19131/-/2/normative/content/req/extent>
  + <https://standards.isotc211.org/19131/-/2/normative/content/req/scope-model>
  + <https://standards.isotc211.org/19131/-/2/normative/content/req/...>
  + <https://standards.isotc211.org/19131/-/2/normative/content/rec/useCase>
  + <https://standards.isotc211.org/19131/-/2/normative/content/rec/content-features>
  + <https://standards.isotc211.org/19131/-/2/normative/content/rec/...>
  + <https://standards.isotc211.org/19131/-/2/conformance/content/allContent>
  + <https://standards.isotc211.org/19131/-/2/conformance/content/...>

Existing content requirements and recommendations in ISO 19131:

|  |  |
| --- | --- |
| **Requirements class** | [**https://standards.isotc211.org/19131/-/2/req/content**](https://standards.isotc211.org/19131/-/2/req/content) |
| **Standardization target type** | Instance of a data product specification, regardless of data encoding |
| **Dependency** | <https://standards.isotc211.org/19103/-/1/> (Conceptual schema language) |
| **Dependency** | <https://standards.isotc211.org/19108/-/1/> (Temporal schema) |
| **Dependency** | <https://standards.isotc211.org/19115/-1/1/> (Metadata – Part 1: Fundamentals) |
| **Dependency** | <https://standards.isotc211.org/19157/-/1/> (Data quality) |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/specification-model> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/identification-model> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/extent> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/scope-model> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/scope-cover> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/specification-scope> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/scope-identification> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/content-model> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/content-scope> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/reference-model> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/reference-scope> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/quality-level> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/quality-model> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/quality-scope> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/capture-model> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/capture-scope> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/maintenance-model> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/maintenance-scope> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/portrayal-model> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/portrayal-scope> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/delivery-model> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/delivery-scope> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/metadata-model> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/metadata-scope> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/additional-model> |
| **Requirement** | <https://standards.isotc211.org/19131/-/2/req/content/additional-content> |
| **Recommendation** | <https://standards.isotc211.org/19131/-/2/rec/content/useCase> |
| **Recommendation** | <https://standards.isotc211.org/19131/-/2/rec/content/content-features> |
| **Recommendation** | <https://standards.isotc211.org/19131/-/2/rec/content/content-coverage> |
| **Recommendation** | <https://standards.isotc211.org/19131/-/2/rec/content/content-application> |
| **Recommendation** | <https://standards.isotc211.org/19131/-/2/rec/content/content-complete> |
| **Recommendation** | <https://standards.isotc211.org/19131/-/2/rec/content/metadata-minimum> |
| **Recommendation** | <https://standards.isotc211.org/19131/-/2/rec/content/dps-layout> |