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OGC NAME TYPE SPECIFICATION - DEFINITIONS - PART 1 - BASIC NAME

POLICY

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CONTENTS

| | | |
|------|--|------|
| I. | ABSTRACT | v |
| II. | KEYWORDS | v |
| III. | PREFACE | vi |
| IV. | SECURITY CONSIDERATIONS | vii |
| V. | SUBMITTING ORGANIZATIONS | viii |
| VI. | SUBMITTERS | viii |
| 2. | CONFORMANCE | 10 |
| 1. | SCOPE | 2 |
| 3. | TERMS DEFINITIONS AND ABBREVIATED TERMS | 4 |
| 3.1. | Terms and definitions | 4 |
| 4. | CONVENTIONS | 6 |
| 5. | NAMING RULE | 8 |
| 5.1. | OGC name schemes | 8 |
| 5.2. | Production rule for definition URIs | 8 |
| 5.3. | Compact URIs | 9 |
| 6. | NAME ASSIGNMENT AND RESOLUTION | 12 |
| 6.1. | Definition types | 12 |
| 6.2. | Authorities | 12 |
| 6.3. | Names | 12 |
| 6.4. | Names for EPSG definitions | 12 |
| 6.5. | Description | 13 |
| 6.6. | Resolution of the Same Definition to Different Encodings | 14 |
| 6.7. | Assigning and Handling Name Aliases | 15 |
| 6.8. | Supporting Services | 15 |
| | ANNEX A (INFORMATIVE) BACKGROUND | 18 |
| A.1. | Introduction | 18 |
| A.2. | URNs for Coordinate Reference Systems | 18 |
| A.3. | URNs and URLs | 19 |

| | |
|---|----|
| A.4. URN and schema component designators | 19 |
| ANNEX B (INFORMATIVE) REVISION HISTORY | 22 |
| BIBLIOGRAPHY | 25 |

LIST OF TABLES

| | |
|-----------------|----|
| Table B.1 | 22 |
|-----------------|----|

LIST OF FIGURES

| | |
|----------------|---|
| Figure 1 | 9 |
|----------------|---|



ABSTRACT

The mission of the OGC Naming Authority (OGC-NA) is to provide the means through which OGC resources such as OGC documents, namespaces and ontologies can be controlled and managed such that they can provide clear and well-defined names and definitions. In the terminology defined in ISO 19135, OGC-NA is the Control Body for the register of OGC Names. This document specifies a rule for constructing OGC names that may be used for identifying definitions, as well as rules for formally representing the meanings of the definitions.



KEYWORDS

The following are keywords to be used by search engines and document catalogues.

ogcdoc, OGC document, policy, naming authority, definitions



PREFACE

This document specifies a rule for constructing OGC names that may be used for identifying definitions.



SECURITY CONSIDERATIONS

No security considerations have been made for this document.



SUBMITTING ORGANIZATIONS

The following organizations submitted this Document to the Open Geospatial Consortium (OGC):

- OGC
- CSIRO



SUBMITTERS

All questions regarding this submission should be directed to the editor or the submitters:

| Name | Affiliation |
|-------------|-------------|
| Gobe Hobona | OGC |
| Simon Cox | CSIRO |



2

CONFORMANCE

2

CONFORMANCE

This policy defines part 1 of the OGC name-type specification for definitions.

Conformance with this policy shall be checked using the naming rule and naming assignment policy defined in this document.

1

SCOPE

1

SCOPE

An OGC name may be provided for a definition of a type of object broadly classified as a “concept” or system parameter, including:

- Coordinate Reference Systems (CRSs) and related objects.
- Data types
- Feature and property types
- Functions
- Nil values
- Units of measure

The precise scope of definitions that may be identified with OGC Names is provided by the set of items in the register at <http://www.opengis.net/register/ogc-na/def-type>

Note that “Definitions” may be contrasted with “instances”, which shall use names constructed following rules provided in other OGC Name Type Specifications.

3

TERMS DEFINITIONS AND ABBREVIATED TERMS

TERMS DEFINITIONS AND ABBREVIATED TERMS

3.1. Terms and definitions

3.1.1. Concept

unit of knowledge created by a unique combination of characteristics (source: ISO 1087-1:2000)

3.1.2. control body

group of technical experts that makes decisions regarding the content of a register (source: ISO 19135)

3.1.3. register

set of files containing identifiers assigned to items with descriptions of the associated items (source: ISO 19135)

4

CONVENTIONS

This document uses the normative terms (SHALL, SHOULD, etc) defined in Subclause 5.3 of [OGC 06-121r3], which is based on the ISO/IEC Directives, Part 2: Rules for the structure and drafting of International Standards. In particular, the word 'shall' (not 'must') is the verb form used to indicate a requirement to be strictly followed to comply with this specification.

Name production rules in this document are expressed using ABNF (IETF RFC 5324).



5

NAMING RULE

This section describes the naming rule.

5.1. OGC name schemes

Two URI schemes [IETF RFC 3986](#) are defined by OGC to provide persistent names for resources of interest in geographic information infrastructures. The generic syntax for OGC names is described in [OGC Naming Authority – Procedures](#).

The generic syntax for OGC http URIs is

```
URI = "http://www.opengis.net/" OGCResource "/" ResourceSpecificPath
```

The generic syntax for OGC URNs is [IETF RFC 5165](#)

```
URN = "urn:ogc:" OGCResource ":" ResourceSpecificString
```

The following ABNF adapted from [IETF RFC 3986](#) provides some basic definitions required in the rest of this document.

```
segment      = *pchar
segment-nc   = *pchar-nc
segment-nz   = 1*pchar
segment-nz-nc = 1*pchar-nc
pchar       = unreserved / pct-encoded / sub-delims / ":" / "@"
pchar-nc    = unreserved / pct-encoded / sub-delims / "@"
pct-encoded  = "%" HEXDIG HEXDIG
unreserved  = ALPHA / DIGIT / "-" / "." / "_" / "~"
reserved    = gen-delims / sub-delims
gen-delims  = ":" / "/" / "?" / "#" / "[" / "]" / "@"
sub-delims  = "!" / "$" / "&" / "'" / "(" / ")"
             / "*" / "+" / "," / ";" / "="
```

5.2. Production rule for definition URIs

The basic form for an OGC name that identifies a definition shall be produced using the following rule:

```
OGCResource    = "def"
ResourceSpecificPath = definition-type "/" authority "/" version "/" code
ResourceSpecificString = definition-type ":" authority ":" versionURN ":"
codeURN
definition-type = segment-nz-nc ; a token from the register of OGC
definition types1
authority       = segment-nz-nc ; a token from the register of OGC authorities2
version        = segment-nz-nc / "0" ; use 0 for un-versioned names
code           = segment-nz-nc *( "/" segment-nz-nc )
```

versionURN = segment-nc ; this may be a zero-length string
codeURN = segment-nz-nc *(":" segment-nz-nc)

“version” or “versionURN” is an optional field. For un-versioned definitions:

- within the http URI form the version field shall be “0”
- within the URN form versionURN shall be a zero-length string—so an un-versioned definition can be detected by a pair of colons “:”.

The actual code may be composed of a sequence of fields delimited by “/” in the http URI form, or “:” in the URN form.

Note that the register of definition types (<http://www.opengis.net/register/ogc-na/def-type>) was previously presented as Table 2 in the OGC Best Practice Definition identifier URNs in OGC namespace OGC 07-092r1.

Note that the register of authorities (<http://www.opengis.net/register/ogc-na/authority>) was previously presented as Table 1 in the OGC Best Practice Definition identifier URNs in OGC namespace OGC 07-092r1

5.3. Compact URIs

Compact URIs (CURIEs) are an abbreviation for strings that are intended to represent URIs. Their purpose is to support the definition of scoped names that map to URIs.

The URI of **any** definition registered in OGC-NA controlled registers may be represented in shortened form through use of CURIEs.

The `skos:notation` property shall be used for specifying the form of the registered CURIE.

The `prov:wasDerivedFrom` property shall be used for specifying the URI to which the registered CURIE applies.

An extract from an example registration is shown below in Turtle.

```
<http://www.opengis.net/def/curie/ogc/1.0/crs/EPSG> <http://www.w3.org/2004/02/skos/core#notation> "EPSG"^^<http://www.w3.org/2001/XMLSchema#string>.
```

```
<http://www.opengis.net/def/curie/ogc/1.0/crs/EPSG> <http://www.w3.org/ns/prov#wasDerivedFrom> <http://www.opengis.net/def/crs/EPSG/0/>.
```

Figure 1

The extract above makes it possible to use [EPSG:4326] in place of <http://www.opengis.net/def/crs/EPSG/0/4326>

5.3.1. Register of CURIEs

The OGC-NA maintains a register of CURIEs at <http://www.opengis.net/def/curie>. The register shall be used as a look-up for CURIEs commonly used in OGC Standards.

CURIEs recorded in the register shall be treated as case sensitive.

5.3.2. Use of Safe CURIEs

OGC Standards should only allow safe CURIEs, unless support for other forms of CURIEs is inherited from another standard (e.g. GeoSPARQL inherits its support of CURIEs from SPARQL). Safe CURIEs are specified in square brackets. For example, the safe CURIE [EPSG:3857] may be used in an API request such as : `https://example.org/foo/collections/bar/items?crs=[EPSG:3857]`

5.3.3. Applying CURIEs to Coordinate Reference Systems

CURIEs representing a shortened form of the URI of a registered Coordinate Reference System (CRS) may be used as an alternative to the full URI by following the syntax below:

```
{authority}:{identifier} == http://www.opengis.net/def/crs/{authority}/0/{identifier}
```

For example, EPSG:4326 may be used to represent <http://www.opengis.net/def/crs/EPSG/0/4326>

When a CURIE is used to represent a CRS, the following shall apply:

- a) The version segment of the URI is assumed to be equal to 0
- b) The definition-type segment shall be assumed to be equal to crs.
- c) The definition segment shall be assumed to be equal to def.

Therefore “EPSG” as a prefix shall expand to <http://www.opengis.net/def/crs/EPSG/0/>.



6

NAME ASSIGNMENT AND RESOLUTION

NAME ASSIGNMENT AND RESOLUTION

This section describes the name assignment policy.

6.1. Definition types

The register of definition types <http://www.opengis.net/register/ogc-na/def-type> is controlled by OGC-NA. Changes to this register (additions, deletions, and supersession) shall be initiated by a submission to the OGC Naming Authority names@ogc.org.

6.2. Authorities

The register of authorities <http://www.opengis.net/register/ogc-na/authority> is controlled by OGC-NA. Changes to this register (additions, deletions, and supersession) shall be initiated by a submission to the OGC Naming Authority names@ogc.org.

6.3. Names

The register of names <http://www.opengis.net/def/> is controlled by OGC-NA. Changes to this register (addition, deletion, and supersession) shall be initiated by a submission to the OGC Naming Authority names@ogc.org.

6.4. Names for EPSG definitions

http URI form:

<http://www.opengis.net/def/definitionType/EPSSG/0/code>

URN form:

`urn:ogc:def:definitionType:EPSSG::code`

In this case, the 'authority' part of the URI is 'EPSSG'. The 'code' part of the URI is the EPSG 'code' unique identifier of the referenced definition. Alternately, the 'code' part of the URI can be the EPSG 'name' unique identifier. In this case, omission of the version number is recommended,

as this is not required to identify a referenced record in the EPSG dataset and may even lead to confusion if a version number is provided.

The policy of the Survey and Positioning Committee of the International Association of Oil and Gas Producers (IOGP) is to not delete any entities. However, if a record is found to be incorrect, that record is deprecated and replaced. When this is done, the deprecation field of the deprecated record is changed from “false” to “true”. (In some implementations, “false” may be “0” or “no”, and “true” may be “1” or “yes”). Deprecated records are also termed ‘invalid records’. When retrieving any geodetic parameters from the EPSG dataset a user therefore needs to verify whether the record(s) is / are valid or invalid. The user then has two options: (1) follow the links provided and use the valid replacing record(s), a course typically followed when spatially referencing a new dataset, or (2) retrieve the invalid, deprecated record(s) in order to undo the effects of this error in an existing spatial dataset that had been spatially referenced using the incorrect records. Note that spatial referencing using (an) invalid EPSG entities will only generate errors if the data is subsequently subjected to coordinate conversions and/or transformations.

Example 1 The http URI value for EPSG CRS 3163 is:

<http://www.opengis.net/def/crs/EPSSG/0/3163>

Example 2 The http URI value for the “WGS 84 longitude-latitude” CRS specified in Subclause B.3 of WMS 1.3 (previously referenced as CRS:84) is:

<http://www.opengis.net/def/crs/OGC/1.3/CRS84>

Example 3 The URN value for EPSG CRS 3163 is:

urn:ogc:def:crs:EPSSG::3163

Example 4 The URN value for the “WGS 84 longitude-latitude” CRS specified in Subclause B.3 of WMS 1.3 (previously referenced as “CRS:84”) is:

urn:ogc:def:crs:OGC:1.3:CRS84

6.5. Description

Each definition shall be described using the Simple Knowledge Organization System (SKOS) vocabulary of the World Wide Web (W3C) consortium. Other vocabularies may also be used **in addition** to SKOS.

The following predicates are mandatory for resources:

- **skos:prefLabel** for providing a human-readable version of a resource’s name
- **dcterms:created** for stating the date the resource was created in the register
- **dcterms:modified** for stating the date the resource was modified in the register (mandatory if the resource has been modified)

- **policy:status** for indicating whether the resource is valid, retired, superseded, or under consideration
- **skos:definition** for providing a human-readable description of the resource
- **rdfs:label** for providing a human-readable version of a resource's name (used for compatibility with non-SKOS systems)

An example of a definition described in SKOS is shown below.

```

@prefix dcterms: <http://purl.org/dc/terms/> .
@prefix owl: <http://www.w3.org/2002/07/owl#> .
@prefix policy: <http://www.opengis.net/def/metamodel/ogc-na/> .
@prefix status: <http://www.opengis.net/def/status/> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix skos: <http://www.w3.org/2004/02/skos/core#> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

<http://www.opengis.net/def/serviceType/ogc/wcs/2.0>
  rdf:type skos:Concept ;
  dcterms:created "2018-03-13"^^xsd:date ;
  dcterms:modified "2018-04-16"^^xsd:date ;
  policy:status status:valid ;
  skos:broader <http://www.opengis.net/def/serviceType/ogc/wcs>;
  rdfs:label "OGC Web Coverage Service 2.0"^^xsd:string ;
  rdfs:seeAlso <http://www.opengis.net/spec/wcs/2.0> ;
  skos:prefLabel "OGC Web Coverage Service 2.0"@en ;
  skos:definition "A Web Coverage Service (WCS) offers multi-dimensional
coverage data for access over the Internet" .

```

6.6. Resolution of the Same Definition to Different Encodings

The definition of a resource may be accessed in any number of encodings that are supported by a resolution service or resolver. A non-exhaustive list of example encodings relevant to different resources is below:

- Geography Markup Language (GML): Supports the encoding on features, coordinate reference systems, and codelists.
- Well Known Text (WKT): Supports the encoding on features, and coordinate reference systems.
- Simple Knowledge Organization System (SKOS) in Resource Description Framework (RDF): Supports the encoding concepts, glossaries, and thesauri

A resolution service and a client application shall negotiate the encoding format to use through the content negotiation process defined in [IETF RFC 7231](#).

6.7. Assigning and Handling Name Aliases

Where the URI of a named resource has an alias, the OGC-NA shall entail copies of all the properties for both forms of URI, and create inverse `sameAs` relationships. For example, upon registering the resource `example-B` as an alias of `example-A`,

- all of the properties of `example-A` shall be copied to `example-B`
- the statement that `example-B` is `sameAs` `example-A` shall be declared
- the statement that `example-A` is `sameAs` `example-B` shall be declared

In code, this is illustrated below.

```
<example-A> rdf:type skos:Concept.  
<example-B> rdf:type skos:Concept.  
<example-A> owl:sameAs <example-B> .
```

6.8. Supporting Services

In some cases, additional services may be provided by OGC Staff to facilitate the use of names or URIs that are registered with the OGC-NA. Such supporting services may be provided through a path underneath <http://www.opengis.net/def> or its sub-paths. The interface definition and syntax for communicating with the supporting services is **out-of-scope** of the responsibilities of the OGC-NA.

Examples of such supporting services include:

- **AUTO2 namespace for CRS:** The “AUTO2” namespace is used for “automatic” coordinate reference systems; that is, for a class of CRSs that include a user-selected centre of projection. See section 6.7.3.4 of the Web Map Service (WMS) version 1.3.0 standard (OGC 06-042). Note that although the namespace is with the OGC-NA [here](#), the syntax is instead specified in the WMS 1.3.0 standard.
- **AUTO namespace for CRS:** The AUTO namespace is used for “automatic” projections; that is, for a class of projections that include an arbitrary center of projection. See section 6.5.5.2 of the WMS 1.1.1 standard (OGC 01-068r3). Note that although the namespace is with the OGC-NA [here](#), the syntax is instead specified in the WMS 1.1.1 standard. The supporting service is provided at <http://www.opengis.net/def/crs/AUTO>
- **Compound CRS:** See clause 6.4 of the OGC Coverage Implementation Schema with Corrigendum Standard version 1.1.1 (OGC 09-146r8). Note that although the service is provided through the OGC Definitions Server, the syntax and interface are specified in the

CIS 1.1.1 standard. The supporting service is provided at <http://www.opengis.net/def/crs-compound>

A

ANNEX A (INFORMATIVE) BACKGROUND



ANNEX A (INFORMATIVE) BACKGROUND

A.1. Introduction

This annex includes useful information from the previous document OGC 07-092r3

A.2. URNs for Coordinate Reference Systems

One frequent use of URNs is referencing the CRS for an OGC Web Service input or output; another use is referencing the CRS for a feature geometry or a bounding box. These URNs are used to identify the referenced CRS, not to transfer a definition of that CRS. Most of this material is also applicable to referencing CRS components and Coordinate Operations and their components, often referred to as objects.

NOTE 1: Subclause D.14 of [OGC 06-121r3] summarizes many of the requirements considered when specifying how to reference CRSs.

Document [OGC 06-121r3] specifies that each specific OWS shall always reference a CRS by using an XML attribute or element with the type anyURI. Such an anyURI value can be used to reference a CRS whether the definition of that CRS is included in the same data transfer, is NOT included in the same data transfer, cannot be electronically accessed, or can be electronically accessed.

NOTE 2: In XML Schemas, the anyURI data type is the standard way to briefly reference (or cite) a value specified elsewhere. XML attributes with the type anyURI include the GML defined attributes named gml:srsName, gml:uom, xlink:href, and gml:codeSpace.

When using an XML attribute or element with the type anyURI to reference a CRS, CRS-related, or other object, that URI shall have a value which uses one of two alternative URI formats:

a) Universal Resource Locator (URL), with standard form. The URL format should be used whenever the referenced definition is known to be electronically available using this standard URL.

b) Universal Resource Name (URN), with a specified form. The URN format shall be used whenever the referenced definition is not, or might not be, available using a URL. This URN shall reference data that is specified by some ‘authority’ and is ‘well-known’ to both client and server software, including multiple clients and multiple servers.

NOTE 3: Two widely-used forms of URI are URL and URN. We are specifying using URNs as the way of citing CRS-related definitions that are “well-known” but are not adequately electronically available using a URL.

Subclause 10.3.2 of the OWS Common specification [OGC 06-121r3] specifies when and how to use URLs to reference a CRS or CRS-related object. Use of URNs is expected to be more common than use of URLs, and specific OWS Implementation Specifications are expected to use many standard URN values.

A.3. URNs and URLs

URNs [IETF RFC 2141] are a kind of URI [IETF RFC 2396], and may be used as the value of references where a URI is required. This is often the case in GML-based encodings (e.g., the standard XML attributes `xlink:href`, `xlink:role`, `xlink:arcrole`, `srsName`, `uom`, `codeSpace`) and in OGC Web Services (OWS) operation requests and responses.

A URN serves as a persistent identifier of a resource or concept. A detailed description of the resource may also be available online, with a resource locator (URL) providing an access point. In general, there is no direct mapping or algorithm to obtain a URL for the resource designated by a URN. URNs are intended to be more persistent than URLs, so that they remain valid even if a resource description is relocated. However, a resolution service or resolver is expected to provide a URL corresponding to a URN.

A.4. URN and schema component designators

In a few places in OWS interfaces, an identifier for an XML component is required. In these cases, it is important that the identifier reference the actual schema definition, which may then be used as the template for an OWS request or response.

A number of options are available for identification of schema components. The W3C XML Schema recommendation provides QName (qualified name – see XML Schema Part 2, clause 3.2.18). A QName has the lexical form `ns:name` where ‘ns’ is an XML namespace prefix for which a namespace declaration is in scope. The QName thus corresponds with an identifier tuple {namespace, local name} where ‘namespace’ is the fully scoped identifier for the XML namespace. In contrast, a URN identifier is complete, and does not depend on context for resolution of the namespace prefix.

NOTE: The W3C XML activity is currently considering a more complete scheme for identification of schema components, documented in the working draft XML Schema: Component Designators <http://www.w3.org/TR/xmlschema-ref/>.

In OWS interfaces, XML components are generally identified using a QName.

While there is some overlap of the meaning of schema component designators with the OGC URN scheme used for dataTypes and featureTypes, it should be understood that a URN identifies the concept, and not just its XML and XML Schema implementation. Of course, the concepts denoted by identifiers from the featureType branch generally have XML Schema implementations, so direct mappings are implied. Note that the mapping may be one-to-many, for example to manage versioning of the XML schema implementation independent of versioning of the concept.



B

ANNEX B (INFORMATIVE) REVISION HISTORY

B

ANNEX B (INFORMATIVE) REVISION HISTORY

Table B.1

| DATE RELEASED | EDITOR | PRIMARY CLAUSE MODIFIED | DESCRIPTION |
|------------------|------------------|-------------------------------|---|
| 2008-12-04 0.1 | Simon Cox | N/A | Initial draft document |
| 2008-12-11 0.1 | Arliss Whiteside | Cover, i, ii, iii, 2, 3, 5, A | Corrected format, inserted comments, and extended |
| 2009-04-01 0.1 | Simon Cox | all | Minor tweaks and corrections for consistency with the other OGC-NA documents. |
| 2009-05-15 0.2 | David Burggraf | all | Moved all references to parameterized and compound name form of URN definitions with the intention of specifying these forms in the separate documents OGC 09-054 and OGC 09-055, respectively. |
| 2009-05-21 0.2 | Simon Cox | 2, 3 | Additional normative references; Replace EBNF with ABNF |
| 2010-01-31 1.1.0 | Simon Cox | all | ABNF revised to match RFC 3986; http URI syntax made explicit |
| 2010-02-28 1.1.1 | Simon Cox | 3.2 | Specific token "0" to be used for un-versioned http URIs. |
| 2010-03-31 1.1.2 | Simon Cox | 3.2 | Amend ABNF to allow an unlimited set of fields separated by either : or / . |
| 2018-05-16 1.2 | Gobe Hobona | all | Conversion to asciidoctor asciidoc. Updated URL of def-type list. Added the Description section and SKOS example. |

| DATI RELEASE | | EDITOR | PRIMAR CLAUSE MODIFI | DESCRIPTION |
|--------------------|-----|----------------|----------------------------|---|
| 2021 06- 25 | 1.3 | Gobe Hobona | 5.3 | Added clause on Shortened Names of CRS's. Fixes Issue 92 . |
| 2022- 02- 16 | 1.3 | Gobe Hobona | 5.2 | Changed statement about version number to "version" or "versionURN" is an optional field. Fixes Issue 143 . |
| 2022 02- 17 | 1.3 | Gobe Hobona | 6.7 | Added clause on Assigning and Handling Name Aliases. Fixes Issue 116 . |
| 2022- 02- 18 | 1.3 | Gobe Hobona | 6.8 | Added clause on supporting services. Fixes Issue 93 . |
| 2022 02- 16 | 1.3 | Gobe Hobona | all | Conversion to metanorma asciidoc. |



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