

# OGC® DOCUMENT: 18-053R2

External identifier of this OGC® document: <http://www.opengis.net/docs/CS/3DTiles/1.0>



Open  
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# OGC DOCUMENT TITLE

COMMUNITY STANDARD

APPROVED

**Version:** 1.0

**Submission Date:** 2018-06-04

**Approval Date:** 2018-12-14

**Publication Date:** 2019-01-31

**Editor:** Patrick Cozzi, Sean Lilley

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## ABSTRACT

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<Insert Abstract Text here>



## KEYWORDS

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

keyword\_1, keyword\_2, keyword\_3, etc.



# PREFACE

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This document establishes the OGC CRS ontology and its submodules. The definition of elements of coordinate reference systems is an essential part of geospatial data provision. However, until now, coordinate reference systems and their components could not be represented in an OGC-standardized semantic web vocabulary. This document introduces the ontology model, its classes and properties, application examples and can serve as the foundation of a semantic web based coordinate system registry at OGC. Special attention is given to the compatibility of the CRS Ontology vocabulary to other OGC-endorsed Semantic Web standards such as GeoSPARQL and alignments to other data standards are provided as part of this specification.

**NOTE:** Insert Preface Text here. Give OGC specific commentary: describe the technical content, reason for document, history of the document and precursors, and plans for future work.

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## IV

## SECURITY CONSIDERATIONS

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No security considerations have been made for this Standard.

## V

## SUBMITTERS

---

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

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## VI

## SOURCE OF THE CONTENT FOR THIS OGC DOCUMENT

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## VII

## VALIDITY OF CONTENT

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## VIII

## FUTURE WORK

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**NOTE:** If you need to place any further sections in the preface area use the [ .preface ] attribute.



## CONTRIBUTORS

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Additional contributors to this Standard include the following:

Individual name(s), Organization



1

# SCOPE

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# SCOPE

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<Insert Scope text here>

**NOTE:** Give the subject of the document and the aspects of that scope covered by the document.



2

# CONFORMANCE

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## CONFORMANCE

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<Insert conformance content here>

**NOTE:** Provide a short description of the content approached in subsequent sections and the main subject of the document



3

# NORMATIVE REFERENCES

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The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

*Identification of Common Molecular Subsequences.* Smith, T.F., Waterman, M.S., J. Mol. Biol. 147, 195–197 (1981)

*ZIB Structure Prediction Pipeline: Composing a Complex Biological Workflow through Web Services.* May, P., Ehrlich, H.C., Steinke, T. In: Nagel, W.E., Walter, W.V., Lehner, W. (eds.) Euro-Par 2006. LNCS, vol. 4128, pp. 1148–1158. Springer, Heidelberg (2006)

*The Grid: Blueprint for a New Computing Infrastructure.*, Foster, I., Kesselman, C.. Morgan Kaufmann, San Francisco (1999).

*Grid Information Services for Distributed Resource Sharing.* Czajkowski, K., Fitzgerald, S., Foster, I., Kesselman, C. In: 10th IEEE International Symposium on High Performance Distributed Computing, pp. 181–184. IEEE Press, New York (2001)



4

# TERMS AND DEFINITIONS

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This document uses the terms defined in OGC Policy Directive 49, 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 conform to this document and OGC documents do not use the equivalent phrases in the ISO/IEC Directives, Part 2.

This document also uses terms defined in the OGC Standard for Modular specifications (OGC 08-131r3), also known as the ‘ModSpec’. The definitions of terms such as standard, specification, requirement, and conformance test are provided in the ModSpec.

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

## 4.1. example term

---

term used for exemplary purposes

**Note 1 to entry:** An example note.

Example      Here’s an example of an example term.

[SOURCE: ]



5

# CONVENTIONS

---

**NOTE:** This section provides details and examples for any conventions used in the document. Examples of conventions are symbols, abbreviations, use of XML schema, or special notes regarding how to read the document.

## 5.1. Identifiers

---

The normative provisions in this standard are denoted by the URI

<http://www.opengis.net/spec/{standard}/{m.n}>

All requirements and conformance tests that appear in this document are denoted by partial URIs which are relative to this base.

## 5.2. Other conventions

---

<Place any other convention needed with its corresponding title>



6

# CORE

---

This clause establishes the **Core** Requirements class, with IRI /req/core, which has a corresponding Conformance Class, **Core**, with IRI /conf/core.

The Core module establishes a set of classes and properties which define the building blocks of a spatial reference system definition. Some of the definitions are extended in specialized modules related to the Core module.

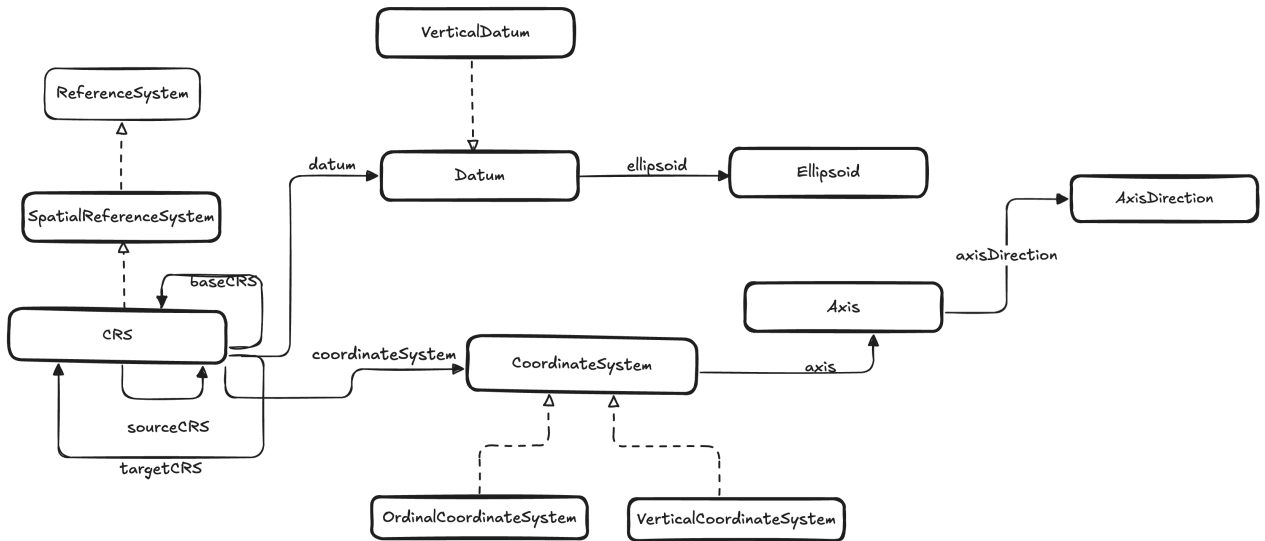


Figure 1

From a base class SpatialReferenceSystem, we define a class for a coordinate system, as the superclass of all spatial reference systems describing locations using coordinates. These SpatialReferenceSystems are described using a Datum and a coordinate system definitions with at least one coordinate axis. Together with several subtypes of coordinate reference system, these definitions complete the Core module.

## REQUIREMENTS CLASS 1: 06-CORE.ADOC EXTENSION

IDENTIFIER	/req/06-core.adoc
TARGET TYPE	Implementation Specification
REQUIREMENT	/req/Coordinate_Reference_System_Parameters
	/req/Coordinate_Reference_System_Types
	/req/Coordinate_Reference_System_Properties



# 6.1. Coordinate Reference System Parameters

Requirement 1: Coordinate Reference System Parameters	
IDENTIFIER	/req/Coordinate_Reference_System_Parameters
STATEMENT	Implementations shall allow the RDFS classes geosrs:AreaOfUse, geosrs:Extent, geosrs:GeographicBoundingBox, geosrs:AxesList, geosrs:SingleCRSList to be used in SPARQL graph patterns.

## 6.1.1. Class: geosrs:AreaOfUse

Table 1 — geosrs:AreaOfUse

URI	<a href="https://w3id.org/geosrs/srs/AreaOfUse">https://w3id.org/geosrs/srs/AreaOfUse</a>
Definition	Area within which a coordinate operation may be used.
Example	geosrs:AreaOfUse( <a href="https://opengeospatial.github.io/ontology-crs/data/def/crs/EPSG/0//29903_area_of_use">https://opengeospatial.github.io/ontology-crs/data/def/crs/EPSG/0//29903_area_of_use</a> )

|URI |<https://w3id.org/geosrs/srs/Extent>|

|Definition |Geographic area or time interval in which the referring object is valid. Cf. ISO 19115-1:2014:2014-04, part 6.6.1 and table B.15 line 335.

Table 2

===== Class: geosrs:GeographicBoundingBox .geosrs:GeographicBoundingBox [cols="1,1"]
---

|URI |<https://w3id.org/geosrs/srs/GeographicBoundingBox>|

|Definition |Frame delimiting an area of interest. See ISO 19115-1:2014:2014-04, part 6.6.1 and table B.15.1 line 344.

Table 3

===== Class: geosrs:AxesList .geosrs:AxesList [cols="1,1"]
---

|URI |<https://w3id.org/geosrs/srs/AxesList>|

|Definition |Ordered list of coordinate system axes.

Table 4

==== Class: geosrs:SingleCRSList .geosrs:SingleCRSList [cols="1,1"]

|URI |[https://w3id.org/geosrs/srs/SingleCRSList\[\]](https://w3id.org/geosrs/srs/SingleCRSList[])

|Definition |Ordered list of simple reference coordinate systems.

Table 5

==== Coordinate Reference System Properties [requirement,identifier="/req/Coordinate\_Reference\_System\_Properties"] .Coordinate Reference System Properties ==== Implementations shall allow the RDFS classes geosrs:baseCRS, geosrs:conversion, geosrs:coordinateSystem, geosrs:datum, geosrs:datumEnsemble, geosrs:domainOfValidity, geosrs:method, geocrs:asProj4, geocrs:asProjJSON, geocrs:asWKT, geosrs:EPSGcode to be used in SPARQL graph patterns. ==== Property: geocrs:asProj4 .geocrs:asProj4 [cols="1,1"]

|URI |geocrs:asProj4

|Type |<http://www.w3.org/2002/07/owl#DatatypeProperty>[owl:DatatypeProperty]

|Definition |PROJ4 string defining a CRS. Note: this paradigm is ambiguous and presently considered outdated.

|Range |<https://w3id.org/geosrs/proj4Literal>[proj4Literal]

|Domain |<https://w3id.org/geosrs/srs/CRS>[CRS]

Table 6

==== Property: geocrs:asProjJSON .geocrs:asProjJSON [cols="1,1"]

|URI |geocrs:asProjJSON

|Type |<http://www.w3.org/2002/07/owl#DatatypeProperty>[owl:DatatypeProperty]

|Definition |CRS definition encoded as a JSON object interpretable by PROJ4.

|Range |<https://w3id.org/geosrs/projJSONLiteral>[projJSONLiteral]

|Domain |<https://w3id.org/geosrs/srs/CRS>[CRS]

Table 7

==== Property: geocrs:asWKT .geocrs:asWKT [cols="1,1"]

|URI |geocrs:asWKT

|Type |<http://www.w3.org/2002/07/owl#DatatypeProperty>[owl:DatatypeProperty]

|Definition |CRS definition encoded according to the Well Known Text structure. Cf. ISO 19162:2019.

|Range |<https://w3id.org/geosrs/wktLiteral>[wktLiteral]

|Domain |<https://w3id.org/geosrs/srs/CRS>[CRS]

Table 8

==== Coordinate Reference System Types [requirement,identifier="/req/Coordinate\_Reference\_System\_Types"] .  
Coordinate Reference System Types ===== Implementations shall allow the RDFS classes geosrs:BoundCRS, geosrs:CompoundCRS, geosrs:CRS, geosrs:EngineeringCRS, geosrs:GeocentricCRS, geosrs:GeodeticCRS, geosrs:GeographicCRS, geosrs:ParametricCRS, geosrs:ProjectedCRS, geosrs:SelenographicCRS, geosrs:ReferenceSystem, geosrs:SingleCRS, geosrs:SpatialReferenceSystem, geosrs:SpatioParametricCompoundCRS, geosrs:SpatioParametricTemporalCompoundCRS, geosrs:SpatioTemporalCompoundCRS, geosrs:StaticCRS, geosrs:TemporalCRS, geosrs:VerticalCRS to be used in SPARQL graph patterns. ===== Class: geosrs:BoundCRS .geosrs:BoundCRS [cols="1,1"]

|URI |<https://w3id.org/geosrs/srs/BoundCRS>[]

|Super-classes |<https://w3id.org/geosrs/srs/BoundCRS>[BoundCRS]

Table 9

===== Class: geosrs:CompoundCRS .geosrs:CompoundCRS [cols="1,1"]

|URI |<https://w3id.org/geosrs/srs/CompoundCRS>[]

|Definition |Coordinate reference system using at least two independent single coordinate reference systems. Cf. ISO 19111:2007:2007-07, parts 8.2.3.c, 8.2.4, table 6 and annex B.1.2.4.

|Super-classes |<https://w3id.org/geosrs/srs/CompoundCRS>[CompoundCRS]

|Example |geosrs:CompoundCRS[<https://opengeospatial.github.io/ontology-crs/data/def/crs/EPSG/0//20043>] |===

## 6.1.2. Class: geosrs:CRS

Table 10 — geosrs:CRS

URI	<a href="https://w3id.org/geosrs/srs/CRS">https://w3id.org/geosrs/srs/CRS</a>
Definition	Depending on the spatial dimension of coordinates (1D, 2D, 3D), this piece of metadata is used for specifying the elements of definition associated to a given set of

	coordinates: its datum, its ellipsoid, its prime meridian, the type of coordinates (geocentric, geographic, projected,...), the coordinates units of measure, when appropriate the cartographic projection used, the vertical coordinate reference system.
Super-classes	<a href="#">CRS</a>

### 6.1.3. Class: geosrs:EngineeringCRS

**Table 11** — geosrs:EngineeringCRS

URI	<a href="https://w3id.org/geosrs/srs/EngineeringCRS">https://w3id.org/geosrs/srs/EngineeringCRS</a>
Definition	A contextually local coordinate reference system which can be divided into two broad categories: — earth-fixed systems applied to engineering activities on or near the surface of the earth; — CRSs on moving platforms such as road vehicles, vessels, aircraft or spacecraft.
Super-classes	<a href="#">EngineeringCRS</a>

### 6.1.4. Class: geosrs:GeocentricCRS

**Table 12** — geosrs:GeocentricCRS

URI	<a href="https://w3id.org/geosrs/srs/GeocentricCRS">https://w3id.org/geosrs/srs/GeocentricCRS</a>
Definition	A cartesian coordinate reference system that represents locations in the vicinity of the Earth (including its surface, interior, atmosphere, and surrounding outer space) as X, Y, and Z measurements from its center of mass. Commonly used to track the orbits of satellites.
Super-classes	<a href="#">GeocentricCRS</a>
Example	geosrs:GeocentricCRS[ <a href="https://opengeospatial.github.io/ontology-crs/data/def/crs/EPSPG/0//20044">https://opengeospatial.github.io/ontology-crs/data/def/crs/EPSPG/0//20044</a> ]

|URI |<https://w3id.org/geosrs/srs/GeodeticCRS>]

|Definition |Coordinate Reference System associated with a geodetic datum. Cf. ISO 19111:2007:2007-07, part 8.2.2.a, table 10 and annex B.1.2.1.a.

|Super-classes |<https://w3id.org/geosrs/srs/GeodeticCRS>[GeodeticCRS]

Table 13

==== Class: geosrs:GeographicCRS .geosrs:GeographicCRS [cols="1,1"]

|URI |<https://w3id.org/geosrs/srs/GeographicCRS>]

|Definition |Coordinate Reference System that has a geodetic reference frame and an ellipsoidal coordinate system

|Super-classes |<https://w3id.org/geosrs/srs/GeographicCRS>[GeographicCRS]

|Example |geosrs:GeographicCRS[<https://opengeospatial.github.io/ontology-crs/data/def/crs/EPSSG/0//20046>] |==

### 6.1.5. Class: geosrs:ParametricCRS

Table 14 — geosrs:ParametricCRS

URI	<a href="https://w3id.org/geosrs/srs/ParametricCRS">https://w3id.org/geosrs/srs/ParametricCRS</a>
Definition	Coordinate Reference System based on a parametric datum
Super-classes	<a href="#">ParametricCRS</a>

### 6.1.6. Class: geosrs:ProjectedCRS

Table 15 — geosrs:ProjectedCRS

URI	<a href="https://w3id.org/geosrs/srs/ProjectedCRS">https://w3id.org/geosrs/srs/ProjectedCRS</a>
Definition	Coordinate Reference System derived from a two-dimensional geodetic coordinate reference system by applying a map projection. Cf. ISO 19111:2007:2007-07, part 8.2.3.b, table 11 and annex B.1.2.3.
Super-classes	<a href="#">ProjectedCRS</a>
Example	geosrs:ProjectedCRS[ <a href="https://opengeospatial.github.io/ontology-crs/data/def/crs/EPSSG/0//29903">https://opengeospatial.github.io/ontology-crs/data/def/crs/EPSSG/0//29903</a> ]

|URI |<https://w3id.org/geosrs/srs/SelenographicCRS>]

|Definition |Coordinate Reference System to refer locations on the surface of the Earth's Moon.

|Super-classes |<https://w3id.org/geosrs/srs/SelenographicCRS>[SelenographicCRS]

Table 16

```
==== Class: geosrs:ReferenceSystem .geosrs:ReferenceSystem [cols="1,1"]
```

|URI |<https://w3id.org/geosrs/srs/ReferenceSystem>[]

|Definition |An abstract coordinate system, whose origin, orientation and scale are specified in physical space. It is based on a set of reference points, defined as geometric points whose position is identified physically and mathematically.

Table 17

```
==== Class: geosrs:SingleCRS .geosrs:SingleCRS [cols="1,1"]
```

|URI |<https://w3id.org/geosrs/srs/SingleCRS>[]

|Definition |Coordinate reference system consisting of one coordinate system and one datum. Cf. ISO 19111:2007:2007-07, table 5.

|Super-classes |<https://w3id.org/geosrs/srs/SingleCRS>[SingleCRS]

Table 18

```
==== Class: geosrs:SpatialReferenceSystem .geosrs:SpatialReferenceSystem [cols="1,1"]
```

|URI |<https://w3id.org/geosrs/srs/SpatialReferenceSystem>[]

|Definition |A spatial reference system (SRS) is a system for establishing spatial position. A spatial reference system can use geographic identifiers (place names, for example), coordinates (in which case it is a coordinate reference system), or identifiers with structured geometry (in which case it is a discrete global grid system).

|Super-classes |<https://w3id.org/geosrs/srs/SpatialReferenceSystem>[SpatialReferenceSystem]

Table 19

```
==== Class: geosrs:SpatioParametricCompoundCRS .geosrs:SpatioParametricCompoundCRS [cols="1,1"]
```

|URI |<https://w3id.org/geosrs/srs/SpatioParametricCompoundCRS>[]

|Definition |A spatio-parametric coordinate reference system is a compound CRS in which one component is a geographic 2D, projected 2D or engineering 2D CRS, supplemented by a parametric CRS to create a three-dimensional CRS

|Super-classes |<https://w3id.org/geosrs/srs/>  
SpatioParametricCompoundCRS[SpatioParametricCompoundCRS]

Table 20

==== Class: geosrs:SpatioParametricTemporalCompoundCRS .geosrs:SpatioParametricTemporalCompoundCRS  
[cols="1,1"]

|URI |[https://w3id.org/geosrs/srs/SpatioParametricTemporalCompoundCRS\[\]](https://w3id.org/geosrs/srs/SpatioParametricTemporalCompoundCRS[])

|Definition |Coordinate reference system combining a spatio-parametric reference system with  
at least one temporal reference system

|Super-classes |<https://w3id.org/geosrs/srs/>  
SpatioParametricTemporalCompoundCRS[SpatioParametricTemporalCompoundCRS]

Table 21

==== Class: geosrs:SpatioTemporalCompoundCRS .geosrs:SpatioTemporalCompoundCRS [cols="1,1"]

|URI |[https://w3id.org/geosrs/srs/SpatioTemporalCompoundCRS\[\]](https://w3id.org/geosrs/srs/SpatioTemporalCompoundCRS[])

|Definition |Coordinate reference system combining a spatial reference system with at least one  
temporal reference system

|Super-classes |<https://w3id.org/geosrs/srs/>  
SpatioTemporalCompoundCRS[SpatioTemporalCompoundCRS]

Table 22

==== Class: geosrs:StaticCRS .geosrs:StaticCRS [cols="1,1"]

|URI |[https://w3id.org/geosrs/srs/StaticCRS\[\]](https://w3id.org/geosrs/srs/StaticCRS[])

|Definition |Coordinate Reference System that has a static reference frame

|Super-classes |[https://w3id.org/geosrs/srs/StaticCRS\[StaticCRS\]](https://w3id.org/geosrs/srs/StaticCRS[StaticCRS])

Table 23

==== Class: geosrs:TemporalCRS .geosrs:TemporalCRS [cols="1,1"]

|URI |[https://w3id.org/geosrs/srs/TemporalCRS\[\]](https://w3id.org/geosrs/srs/TemporalCRS[])

|Definition |Coordinate Reference System based on a temporal datum

|Super-classes |[https://w3id.org/geosrs/srs/TemporalCRS\[TemporalCRS\]](https://w3id.org/geosrs/srs/TemporalCRS[TemporalCRS])



Table 24

```
==== Class: geosrs:VerticalCRS .geosrs:VerticalCRS [cols="1,1"]
```

|URI |<https://w3id.org/geosrs/srs/VerticalCRS>]

|Definition |One-dimensional coordinate reference system associated with a vertical datum and used for recording heights or depths. Ellipsoidal heights are not captured in a vertical coordinate reference system but as part of a 3D coordinates tuple defined in a geodetic 3D coordinate reference system. Cf. ISO 19111:2007:2007-07, parts 8.2.2.b, table 14 and annex B.1.2.1.b.

|Super-classes |<https://w3id.org/geosrs/srs/VerticalCRS>[VerticalCRS]

|Example |geosrs:VerticalCRS[<https://opengeospatial.github.io/ontology-crs/data/def/crs/EPSG/0//20036>] |==



7

# COORDINATE OPERATION MODULE

---

## COORDINATE OPERATION MODULE

This clause establishes the **Co** Requirements class, with IRI `/req/co`, which has a corresponding Conformance Class, **Co**, with IRI `/conf/co`.

### REQUIREMENTS CLASS 2: 07-CO\_EXTENSION.ADOC EXTENSION

IDENTIFIER	<code>/req/07-co_extension.adoc</code>
TARGET TYPE	Implementation Specification
REQUIREMENT	<code>/req/Coordinate_Operation_Methods</code>
	<code>/req/Coordinate_Operation_Parameters</code>
	<code>/req/Coordinate_Operation_Categories</code>
	<code>/req/Coordinate_Operation_Properties</code>

## 7.1. Coordinate Operation Categories

### REQUIREMENT 2: COORDINATE OPERATION CATEGORIES

IDENTIFIER	<code>/req/Coordinate_Operation_Categories</code>
STATEMENT	Implementations shall allow the RDFS classes <code>geosrs:GeographicObject</code> , <code>geosrs:RegisterOperations</code> , <code>geosrs:ScaleOperation</code> , <code>geosrs:RotationOperation</code> , <code>geosrs:IdentityOperation</code> , <code>geosrs:ShearOperation</code> , <code>geosrs:TranslationOperation</code> , <code>geosrs:AffineTransformationOperation</code> , <code>geocrs:CoordinateTransformationOperation</code> to be used in SPARQL graph patterns.

### 7.1.1. Class: `geosrs:GeographicObject`

Table 25 — `geosrs:GeographicObject`

URI	<a href="https://w3id.org/geosrs/co/GeographicObject">https://w3id.org/geosrs/co/GeographicObject</a>
Definition	Identifier of a geographic feature of which the coordinates are used as operation parameters.

Super-classes	<a href="#">GeographicObject</a>
---------------	----------------------------------

### 7.1.2. Class: geosrs:RegisterOperations

**Table 26** — geosrs:RegisterOperations

URI	<a href="https://w3id.org/geosrs/co/RegisterOperations">https://w3id.org/geosrs/co/RegisterOperations</a>
Definition	Operations supported in the Coordinate Operations package.

### 7.1.3. Class: geosrs:ScaleOperation

**Table 27** — geosrs:ScaleOperation

URI	<a href="https://w3id.org/geosrs/co/ScaleOperation">https://w3id.org/geosrs/co/ScaleOperation</a>
Definition	Scale transformation operation
Super-classes	<a href="#">ScaleOperation</a>

### 7.1.4. Class: geosrs:RotationOperation

**Table 28** — geosrs:RotationOperation

URI	<a href="https://w3id.org/geosrs/co/RotationOperation">https://w3id.org/geosrs/co/RotationOperation</a>
Definition	Rotation transformation operation
Super-classes	<a href="#">RotationOperation</a>

### 7.1.5. Class: geosrs:IdentityOperation

**Table 29** — geosrs:IdentityOperation

URI	<a href="https://w3id.org/geosrs/co/IdentityOperation">https://w3id.org/geosrs/co/IdentityOperation</a>
-----	---

Definition	Identity transformation operation
Super-classes	<a href="#"><u>IdentityOperation</u></a>

### 7.1.6. Class: geosrs:ShearOperation

**Table 30** — geosrs:ShearOperation

URI	<a href="https://w3id.org/geosrs/co/ShearOperation"><u>https://w3id.org/geosrs/co/ShearOperation</u></a>
Definition	Shear transformation operation
Super-classes	<a href="#"><u>ShearOperation</u></a>

### 7.1.7. Class: geosrs:TranslationOperation

**Table 31** — geosrs:TranslationOperation

URI	<a href="https://w3id.org/geosrs/co/TranslationOperation"><u>https://w3id.org/geosrs/co/TranslationOperation</u></a>
Definition	Translation transformation operation
Super-classes	<a href="#"><u>TranslationOperation</u></a>

### 7.1.8. Class: geosrs:AffineTransformationOperation

**Table 32** — geosrs:AffineTransformationOperation

URI	<a href="https://w3id.org/geosrs/co/AffineTransformationOperation"><u>https://w3id.org/geosrs/co/AffineTransformationOperation</u></a>
Definition	Affine coordinate transformation operation
Super-classes	<a href="#"><u>CoordinateTransformationOperation</u></a> []

### 7.1.9. Class: geocrs:CoordinateTransformationOperation

**Table 33** — geocrs:CoordinateTransformationOperation

URI	geocrs:CoordinateTransformationOperation[]
Definition	Coordinate operation in which the two coordinate reference systems are based on different datums.
Super-classes	geocrs:CoordinateTransformationOperation[geocrs:CoordinateTransformationOperation]

## 7.2. Coordinate Operation Methods

### REQUIREMENT 3: COORDINATE OPERATION METHODS

IDENTIFIER	/req/Coordinate_Operation_Methods
STATEMENT	Implementations shall allow the RDFS classes geocrs:CoordinateOperation, geocrs:PassThroughOperation, geocrs:ConcatenatedOperation, geocrs:SingleOperation, geocrs:Transformation, geocrs:Conversion, geocrs:PointMotionOperation, geocrs:OperationMethod to be used in SPARQL graph patterns.

### 7.2.1. Class: geocrs:PassThroughOperation

**Table 34** — geocrs:PassThroughOperation

URI	<a href="https://w3id.org/geocrs/co/PassThroughOperation">https://w3id.org/geocrs/co/PassThroughOperation</a>
Definition	Specification of a subset of coordinate tuples that is subject to a coordinate operation
Super-classes	<a href="#">PassThroughOperation</a>

### 7.2.2. Class: geocrs:ConcatenatedOperation

**Table 35** — geocrs:ConcatenatedOperation

URI	<a href="https://w3id.org/geocrs/co/ConcatenatedOperation">https://w3id.org/geocrs/co/ConcatenatedOperation</a>
Definition	Ordered sequence of two or more single coordinate operations. Note: The sequence of coordinate operations is constrained by the requirement that the source

coordinate reference system of step (n + 1) shall be the same as the target coordinate reference system of step (n). The source coordinate reference system of the first step and the target coordinate reference system of the last step are the source and target coordinate reference system associated with the concatenated coordinate operation. For a concatenated coordinate operation sequence of n coordinate operations: source CRS (concatenated coordinate operation) .eq. source CRS (coordinate operation step 1) target CRS (coordinate operation step i) .eq. source CRS (coordinate operation step i + 1); i .eq. 1 ... (n – 1) target CRS (concatenated coordinate operation) .eq. target CRS (coordinate operation step n) Instead of a forward coordinate operation, an inverse coordinate operation may be used for one or more of the coordinate operation steps mentioned above, if the inverse coordinate operation is uniquely defined by the forward coordinate operation method.

Super-classes	<a href="#">ConcatenatedOperation</a>
---------------	---------------------------------------

### 7.2.3. Class: geosrs:PointMotionOperation

Table 36 — geosrs:PointMotionOperation

URI	<a href="https://w3id.org/geosrs/co/PointMotionOperation">https://w3id.org/geosrs/co/PointMotionOperation</a>
Definition	Mathematical operation that describes the change of coordinate values within one coordinate reference system due to the motion of the point between one coordinate epoch and another coordinate epoch Note: In this document the motion is due to tectonic plate movement or deformation.
Super-classes	<a href="#">PointMotionOperation</a>

## 7.3. Coordinate Operation Parameters

## REQUIREMENT 4: COORDINATE OPERATION PARAMETERS

IDENTIFIER	/req/Coordinate_Operation_Parameters
STATEMENT	Implementations shall allow the RDFS classes geosrs:GeneralOperationParameter, geosrs:OperationParameterGroup, geosrs:OperationParameter, geosrs:GeneralParameterValue, geosrs:ParameterValueGroup, geosrs:OperationParameterValue to be used in SPARQL graph patterns.

### 7.3.1. Class: geosrs:OperationParameterGroup

Table 37 — geosrs:OperationParameterGroup

URI	<a href="https://w3id.org/geosrs/co/OperationParameterGroup">https://w3id.org/geosrs/co/OperationParameterGroup</a>
Definition	Definition of a group of related parameters used by a coordinate operation method.
Super-classes	<a href="#">OperationParameterGroup</a>

### 7.3.2. Class: geosrs:ParameterValueGroup

Table 38 — geosrs:ParameterValueGroup

URI	<a href="https://w3id.org/geosrs/co/ParameterValueGroup">https://w3id.org/geosrs/co/ParameterValueGroup</a>
Definition	Group of related parameter values. Note: The same group can be repeated more than once in a coordinate operation or higher level ParameterValueGroup, if those instances contain different values of one or more ParameterValues which suitably distinguish among those groups.
Super-classes	<a href="#">ParameterValueGroup</a>

## 7.4. Coordinate Operation Properties



## REQUIREMENT 5: COORDINATE OPERATION PROPERTIES

IDENTIFIER	/req/Coordinate_Operation_Properties
STATEMENT	Implementations shall allow the RDFS classes geosrs:derivingConversion, geosrs:parameter, geosrs:sourceCRS, geosrs:targetCRS to be used in SPARQL graph patterns.



8

# COORDINATE SYSTEM MODULE

---

This clause establishes the **CS** Requirements class, with IRI `/req/cs`, which has a corresponding Conformance Class, **CS**, with IRI `/conf/cs`.

The coordinate system module introduces different types of coordinate systems which are distinguished in geospatial science and applications. Coordinate systems are distinguished by their area of use, i.e planetary or interstellar and by their multidimensionality.

## REQUIREMENTS CLASS 3: 08-CS\_EXTENSION.ADOC EXTENSION

IDENTIFIER	<code>/req/08-cs_extension.adoc</code>
TARGET TYPE	Implementation Specification
REQUIREMENT	<code>/req/Coordinate_System_Types</code>
	<code>/req/Celestial_Coordinate_Systems</code>
	<code>/req/Orthogonal_Coordinate_Systems</code>
	<code>/req/3D_Coordinate_Systems</code>
	<code>/req/Temporal_Coordinate_Systems</code>
	<code>/req/Coordinate_System_Parameters</code>

## 8.1. 3D Coordinate Systems

### REQUIREMENT 6: 3D COORDINATE SYSTEMS

IDENTIFIER	<code>/req/3D_Coordinate_Systems</code>
STATEMENT	Implementations shall allow the RDFS classes <code>geosrs:CylindricalCoordinateSystem</code> , <code>geosrs:SphericalCoordinateSystem</code> to be used in SPARQL graph patterns.

#### 8.1.1. Class: `geosrs:CylindricalCoordinateSystem`

**Table 39** — geosrs:CylindricalCoordinateSystem

URI	<a href="https://w3id.org/geosrs/cs/CylindricalCoordinateSystem">https://w3id.org/geosrs/cs/CylindricalCoordinateSystem</a>
Definition	Three-dimensional coordinate system in Euclidean space in which position is specified by two linear coordinates and one angular coordinate
Super-classes	<a href="#">CylindricalCoordinateSystem</a>

## 8.2. Celestial Coordinate Systems

### REQUIREMENT 7: CELESTIAL COORDINATE SYSTEMS

IDENTIFIER	/req/Celestial_Coordinate_Systems
STATEMENT	Implementations shall allow the RDFS classes geosrs:CelestialCoordinateSystem, geosrs:EclipticCoordinateSystem, geosrs:EquatorialCoordinateSystem, geosrs:GalacticCoordinateSystem, geosrs:HorizontalCoordinateSystem, geosrs:PerifocalCoordinateSystem, geosrs:SuperGalacticCS to be used in SPARQL graph patterns.

#### 8.2.1. Class: geosrs:CelestialCoordinateSystem

**Table 40** — geosrs:CelestialCoordinateSystem

URI	<a href="https://w3id.org/geosrs/cs/CelestialCoordinateSystem">https://w3id.org/geosrs/cs/CelestialCoordinateSystem</a>
Definition	A coordinate system for specifying positions of celestial objects relative to physical reference points
Super-classes	<a href="#">CelestialCoordinateSystem</a>

#### 8.2.2. Class: geosrs:EclipticCoordinateSystem

**Table 41** — geosrs:EclipticCoordinateSystem

URI	<a href="https://w3id.org/geosrs/cs/EclipticCoordinateSystem">https://w3id.org/geosrs/cs/EclipticCoordinateSystem</a>
Definition	An ecliptic coordinate system is used for representing the apparent positions and orbits of solar system objects.

Super-classes	<a href="#">EclipticCoordinateSystem</a>
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### 8.2.3. Class: geosrs:EquatorialCoordinateSystem

**Table 42** — geosrs:EquatorialCoordinateSystem

URI	<a href="https://w3id.org/geosrs/cs/EquatorialCoordinateSystem">https://w3id.org/geosrs/cs/EquatorialCoordinateSystem</a>
Definition	A celestial coordinate system in which an object's position on the celestial sphere is described in terms of its north-south declination and east-west right ascension, measured relative to the celestial equator and vernal equinox, respectively.
Super-classes	<a href="#">EquatorialCoordinateSystem</a>

### 8.2.4. Class: geosrs:GalacticCoordinateSystem

**Table 43** — geosrs:GalacticCoordinateSystem

URI	<a href="https://w3id.org/geosrs/cs/GalacticCoordinateSystem">https://w3id.org/geosrs/cs/GalacticCoordinateSystem</a>
Definition	A coordinate system with the Sun as its center, the primary direction aligned with the approximate center of the Milky Way Galaxy, and the fundamental plane parallel to an approximation of the galactic plane but offset to its north.
Super-classes	<a href="#">CelestialCoordinateSystem</a> <a href="#">3DCoordinateSystem</a>

### 8.2.5. Class: geosrs:HorizontalCoordinateSystem

**Table 44** — geosrs:HorizontalCoordinateSystem

URI	<a href="https://w3id.org/geosrs/cs/HorizontalCoordinateSystem">https://w3id.org/geosrs/cs/HorizontalCoordinateSystem</a>
Definition	A horizontal coordinate system is a celestial coordinate system that uses the observer's local horizon as the fundamental plane.
Super-classes	<a href="#">HorizontalCoordinateSystem</a>

## 8.2.6. Class: geosrs:PerifocalCoordinateSystem

**Table 45** — geosrs:PerifocalCoordinateSystem

URI	<a href="https://w3id.org/geosrs/cs/PerifocalCoordinateSystem">https://w3id.org/geosrs/cs/PerifocalCoordinateSystem</a>
Definition	A frame of reference centered at the focus of the orbit, i. e. the celestial body about which the orbit is centered.
Super-classes	<a href="#">PerifocalCoordinateSystem</a>

## 8.2.7. Class: geosrs:SuperGalacticCS

**Table 46** — geosrs:SuperGalacticCS

URI	<a href="https://w3id.org/geosrs/cs/SuperGalacticCS">https://w3id.org/geosrs/cs/SuperGalacticCS</a>
Definition	A reference frame for the supercluster of galaxies that contains the Milky Way galaxy, referenced to a local relatively flat collection of galaxy clusters used to define the supergalactic plane.
Super-classes	<a href="#">CelestialCoordinateSystem</a> <a href="#">3DCoordinateSystem</a>

## 8.3. Coordinate System Parameters

### REQUIREMENT 8: COORDINATE SYSTEM PARAMETERS

IDENTIFIER	/req/Coordinate_System_Parameters
STATEMENT	Implementations shall allow the RDFS classes geosrs:axis, geosrs:axisDirection to be used in SPARQL graph patterns.

## 8.4. Coordinate System Types

## REQUIREMENT 9: COORDINATE SYSTEM TYPES

**IDENTIFIER** /req/Coordinate\_System\_Types

**STATEMENT** Implementations shall allow the RDFS classes geosrs:1DCoordinateSystem, geosrs:3DCoordinateSystem, geosrs:AffineCoordinateSystem, geosrs:BarycentricCoordinateSystem, geosrs:CartesianCoordinateSystem, geosrs:CurvilinearCoordinateSystem, geosrs:EngineeringCoordinateSystem, geosrs:GeodeticCoordinateSystem, geosrs:GridCoordinateSystem, geosrs:HexagonalCoordinateSystem, geosrs:LocalCoordinateSystem, geosrs:ObliqueCoordinateSystem, geosrs:OrdinalCoordinateSystem, geosrs:PlanarCoordinateSystem, geosrs:PolarCoordinateSystem to be used in SPARQL graph patterns.

### 8.4.1. Class: geosrs:1DCoordinateSystem

**Table 47** — geosrs:1DCoordinateSystem

URI	<a href="https://w3id.org/geosrs/cs/1DCoordinateSystem">https://w3id.org/geosrs/cs/1DCoordinateSystem</a>
Definition	Non-repeating sequence of coordinate system axes that spans a given coordinate space in one dimension
Super-classes	<a href="#">1DCoordinateSystem</a>

### 8.4.2. Class: geosrs:3DCoordinateSystem

**Table 48** — geosrs:3DCoordinateSystem

URI	<a href="https://w3id.org/geosrs/cs/3DCoordinateSystem">https://w3id.org/geosrs/cs/3DCoordinateSystem</a>
Definition	Non-repeating sequence of coordinate system axes that spans a given coordinate space in three dimensions
Super-classes	<a href="#">3DCoordinateSystem</a>
Example	geosrs:3DCoordinateSystem[ <a href="https://opengeospatial.github.io/ontology-crs/data/def/crs/EPSG/0//20045">https://opengeospatial.github.io/ontology-crs/data/def/crs/EPSG/0//20045</a> cs]

|URI |<https://w3id.org/geosrs/cs/AffineCoordinateSystem>]

|Definition |Coordinate system in Euclidean space with straight axes that are not necessarily mutually perpendicular

|Super-classes |<https://w3id.org/geosrs/cs/AffineCoordinateSystem>[AffineCoordinateSystem]

Table 49

==== Class: geosrs:BarycentricCoordinateSystem .geosrs:BarycentricCoordinateSystem [cols="1,1"]

|URI |<https://w3id.org/geosrs/cs/BarycentricCoordinateSystem>]

|Definition |A coordinate system in which the location of a point is specified by reference to a simplex (a triangle for points in a plane, a tetrahedron for points in three-dimensional space, etc.)

|Super-classes |<https://w3id.org/geosrs/cs/BarycentricCoordinateSystem>[BarycentricCoordinateSystem]

Table 50

==== Class: geosrs:CurvilinearCoordinateSystem .geosrs:CurvilinearCoordinateSystem [cols="1,1"]

|URI |<https://w3id.org/geosrs/cs/CurvilinearCoordinateSystem>]

|Definition |A coordinate system for the Euclidean space in which the coordinate lines may be curved

|Super-classes |<https://w3id.org/geosrs/cs/CurvilinearCoordinateSystem>[CurvilinearCoordinateSystem]

Table 51

==== Class: geosrs:EngineeringCoordinateSystem .geosrs:EngineeringCoordinateSystem [cols="1,1"]

|URI |<https://w3id.org/geosrs/cs/EngineeringCoordinateSystem>]

|Definition |Coordinate system used by an engineering coordinate reference system, one of an affine coordinate system, a Cartesian coordinate system, a cylindrical coordinate system, a linear coordinate sytem, an ordinal coordinate system, a polar coordinate system or a spherical coordinate system

|Super-classes |<https://w3id.org/geosrs/cs/EngineeringCoordinateSystem>[EngineeringCoordinateSystem]

Table 52

==== Class: geosrs:GeodeticCoordinateSystem .geosrs:GeodeticCoordinateSystem [cols="1,1"]

|URI |<https://w3id.org/geosrs/cs/GeodeticCoordinateSystem>]

|Definition |Coordinate system used by a Geodetic CRS, one of a Cartesian coordinate system or a spherical coordinate system.



|Super-classes |<https://w3id.org/geosrs/cs/GeodeticCoordinateSystem>[GeodeticCoordinateSystem]

Table 53

==== Class: geosrs:GridCoordinateSystem .geosrs:GridCoordinateSystem [cols="1,1"]

|URI |<https://w3id.org/geosrs/cs/GridCoordinateSystem>[]

|Definition |A grid coordinate system identifies areas within a grid.

|Super-classes |<https://w3id.org/geosrs/cs/GridCoordinateSystem>[GridCoordinateSystem]

Table 54

==== Class: geosrs:HexagonalCoordinateSystem .geosrs:HexagonalCoordinateSystem [cols="1,1"]

|URI |<https://w3id.org/geosrs/cs/HexagonalCoordinateSystem>[]

|Definition |A hexagonal coordinate system identifies areas within a hexagonal lattice.

|Super-classes |<https://w3id.org/geosrs/cs/HexagonalCoordinateSystem>[HexagonalCoordinateSystem]

Table 55

==== Class: geosrs:LocalCoordinateSystem .geosrs:LocalCoordinateSystem [cols="1,1"]

|URI |<https://w3id.org/geosrs/cs/LocalCoordinateSystem>[]

|Definition |Coordinate system with a point of local reference.

|Super-classes |<https://w3id.org/geosrs/cs/LocalCoordinateSystem>[LocalCoordinateSystem]

Table 56

==== Class: geosrs:ObliqueCoordinateSystem .geosrs:ObliqueCoordinateSystem [cols="1,1"]

|URI |<https://w3id.org/geosrs/cs/ObliqueCoordinateSystem>[]

|Definition |A plane coordinate system whose axes are not perpendicular.

|Super-classes |<https://w3id.org/geosrs/cs/ObliqueCoordinateSystem>[ObliqueCoordinateSystem]

Table 57

==== Class: geosrs:PlanarCoordinateSystem .geosrs:PlanarCoordinateSystem [cols="1,1"]
URI   <a href="https://w3id.org/geosrs/cs/PlanarCoordinateSystem">https://w3id.org/geosrs/cs/PlanarCoordinateSystem</a> ]
Definition  A two-dimensional measurement system that locates features on a plane based on their distance from an origin (0,0) along two perpendicular axes.
Super-classes   <a href="https://w3id.org/geosrs/cs/PlanarCoordinateSystem">https://w3id.org/geosrs/cs/PlanarCoordinateSystem</a> [PlanarCoordinateSystem]
Example  geosrs:PlanarCoordinateSystem[ <a href="https://opengeospatial.github.io/ontology-crs/data/def/crs/EPSG/0//29903_cs">https://opengeospatial.github.io/ontology-crs/data/def/crs/EPSG/0//29903_cs</a> ]  ===

## 8.5. Orthogonal Coordinate Systems

REQUIREMENT 10: ORTHOGONAL COORDINATE SYSTEMS	
IDENTIFIER	/req/Orthogonal_Coordinate_Systems
STATEMENT	Implementations shall allow the RDFS classes geosrs:ConicalCoordinateSystem, geosrs:EllipsoidalCoordinateSystem to be used in SPARQL graph patterns.

### 8.5.1. Class: geosrs:ConicalCoordinateSystem

Table 58 — geosrs:ConicalCoordinateSystem

URI	<a href="https://w3id.org/geosrs/cs/ConicalCoordinateSystem">https://w3id.org/geosrs/cs/ConicalCoordinateSystem</a>
Definition	A conical coordinate system is a three-dimensional orthogonal coordinate system consisting of concentric spheres (described by their radius <i>r</i> ) and by two families of perpendicular cones, aligned along the z- and x-axes, respectively
Super-classes	<a href="#">ConicalCoordinateSystem</a>

# 8.6. Temporal Coordinate Systems

Requirement 11: Temporal Coordinate Systems	
IDENTIFIER	/req/Temporal_Coordinate_Systems
STATEMENT	Implementations shall allow the RDFS classes geosrs:DateTimeTemporalCoordinateSystem, geosrs:TemporalCountCoordinateSystem, geosrs:TemporalCoordinateSystem, geosrs:TemporalMeasureCoordinateSystem to be used in SPARQL graph patterns.

## 8.6.1. Class: geosrs:DateTimeTemporalCoordinateSystem

Table 59 — geosrs:DateTimeTemporalCoordinateSystem

URI	<a href="https://w3id.org/geosrs/cs/DateTimeTemporalCoordinateSystem">https://w3id.org/geosrs/cs/DateTimeTemporalCoordinateSystem</a>
Definition	One-dimensional coordinate system used to record time in dateTime representation as defined in ISO 8601.
Super-classes	<a href="https://w3id.org/geosrs/cs/DateTimeTemporalCoordinateSystem">DateTimeTemporalCoordinateSystem</a>

## 8.6.2. Class: geosrs:TemporalCountCoordinateSystem

Table 60 — geosrs:TemporalCountCoordinateSystem

URI	<a href="https://w3id.org/geosrs/cs/TemporalCountCoordinateSystem">https://w3id.org/geosrs/cs/TemporalCountCoordinateSystem</a>
Definition	One-dimensional coordinate system used to record time as an integer count.
Super-classes	<a href="https://w3id.org/geosrs/cs/TemporalCountCoordinateSystem">TemporalCountCoordinateSystem</a>

## 8.6.3. Class: geosrs:TemporalCoordinateSystem

Table 61 — geosrs:TemporalCoordinateSystem

URI	<a href="https://w3id.org/geosrs/cs/TemporalCoordinateSystem">https://w3id.org/geosrs/cs/TemporalCoordinateSystem</a>
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Definition	One-dimensional coordinate system where the axis is time.
Super-classes	<a href="#"><u>TemporalCoordinateSystem</u></a>

## 8.6.4. Class: geosrs:TemporalMeasureCoordinateSystem

**Table 62** — geosrs:TemporalMeasureCoordinateSystem

URI	<a href="https://w3id.org/geosrs/cs/TemporalMeasureCoordinateSystem"><u>https://w3id.org/geosrs/cs/TemporalMeasureCoordinateSystem</u></a>
Definition	One-dimensional coordinate system used to record a time as a real number.
Super-classes	<a href="#"><u>TemporalMeasureCoordinateSystem</u></a>

9

# DATUM MODULE

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This clause establishes the **Datum** Requirements class, with IRI `/req/datum`, which has a corresponding Conformance Class, **Datum**, with IRI `/conf/datum`.

#### REQUIREMENTS CLASS 4: 09-DATUM\_EXTENSION.ADOC EXTENSION

IDENTIFIER	<code>/req/09-datum_extension.adoc</code>
TARGET TYPE	Implementation Specification
REQUIREMENT	<code>/req/Datum_Types</code>
	<code>/req/Datum_Parameters</code>
	<code>/req/Spheroid_Types</code>
	<code>/req/Datum_Properties</code>
	<code>/req/Spheroid_Properties</code>

## 9.1. Datum Parameters

#### REQUIREMENT 12: DATUM PARAMETERS

IDENTIFIER	<code>/req/Datum_Parameters</code>
STATEMENT	Implementations shall allow the RDFS classes <code>geosrs:PrimeMeridian</code> , <code>geosrs:DefiningParameter</code> to be used in SPARQL graph patterns.

### 9.1.1. Class: `geosrs:DefiningParameter`

Table 63 — `geosrs:DefiningParameter`

URI	<a href="https://w3id.org/geosrs/datum/DefiningParameter">https://w3id.org/geosrs/datum/DefiningParameter</a>
Definition	Parameter value, an ordered sequence of values, or a reference to a file of parameter values that define

a paramtric datum. Cf. ISO 19111:2019 Geographic information — Referencing by coordinates.

## 9.2. Datum Properties

Requirement 13: Datum Properties	
IDENTIFIER	/req/Datum_Properties
STATEMENT	Implementations shall allow the RDFS classes geosrs:datumDefiningParameter, geosrs:ellipsoid, geosrs:primeMeridian to be used in SPARQL graph patterns.

## 9.3. Datum Types

Requirement 14: Datum Types	
IDENTIFIER	/req/Datum_Types
STATEMENT	Implementations shall allow the RDFS classes geosrs:Datum, geosrs:GeodeticDatum, geosrs:DynamicGeodeticReferenceFrame, geosrs:VerticalDatum, geosrs:DynamicVerticalDatum, geosrs:ParametricDatum, geosrs:EngineeringDatum, geosrs:TemporalDatum, geosrs:DatumEnsemble to be used in SPARQL graph patterns.

### 9.3.1. Class: geosrs:DynamicGeodeticReferenceFrame

Table 64 — geosrs:DynamicGeodeticReferenceFrame

URI	<a href="https://w3id.org/geosrs/datum/DynamicGeodeticReferenceFrame">https://w3id.org/geosrs/datum/DynamicGeodeticReferenceFrame</a>
Definition	Geodetic reference frame in which some of the parameters describe time evolution of defining station coordinatesExample: defining station coordinates having linear velocities to account for crustal motion.
Super-classes	<a href="#">DynamicGeodeticReferenceFrame</a>

### 9.3.2. Class: geosrs:DynamicVerticalDatum

**Table 65** — geosrs:DynamicVerticalDatum

URI	<a href="https://w3id.org/geosrs/datum/DynamicVerticalDatum">https://w3id.org/geosrs/datum/DynamicVerticalDatum</a>
Definition	Vertical reference frame in which some of the defining parameters have time dependencyExample: Defining station heights have velocity to account for post-glacial isostatic rebound motion. Cf. ISO 19111:2019 Geographic information — Referencing by coordinates.
Super-classes	<a href="#">DynamicVerticalDatum</a>

### 9.3.3. Class: geosrs:ParametricDatum

**Table 66** — geosrs:ParametricDatum

URI	<a href="https://w3id.org/geosrs/datum/ParametricDatum">https://w3id.org/geosrs/datum/ParametricDatum</a>
Definition	Textual description and/or a set of parameters identifying a particular reference surface used as the origin of a parametric coordinate system, including its position with respect to the Earth. Cf. ISO 19111:2019 Geographic information — Referencing by coordinates.
Super-classes	<a href="#">ParametricDatum</a>

### 9.3.4. Class: geosrs:EngineeringDatum

**Table 67** — geosrs:EngineeringDatum

URI	<a href="https://w3id.org/geosrs/datum/EngineeringDatum">https://w3id.org/geosrs/datum/EngineeringDatum</a>
Definition	Definition of the origin and orientation of an engineering coordinate reference systemNote: The origin can be fixed with respect to the Earth (such as a defined point at a construction site), or be a defined point on a moving vehicle (such as on a ship or satellite), or a defined point of an image. Cf. ISO 19111:2019 Geographic information — Referencing by coordinates.



Super-classes	<a href="#">EngineeringDatum</a>
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### 9.3.5. Class: geosrs:TemporalDatum

Table 68 — geosrs:TemporalDatum

URI	<a href="https://w3id.org/geosrs/datum/TemporalDatum">https://w3id.org/geosrs/datum/TemporalDatum</a>
Definition	Definition of the relationship of a temporal coordinate system to an objectNote: The object is normally time on the Earth. Cf. ISO 19111:2019 Geographic information — Referencing by coordinates.
Super-classes	<a href="#">TemporalDatum</a>

### 9.3.6. Class: geosrs:DatumEnsemble

Table 69 — geosrs:DatumEnsemble

URI	<a href="https://w3id.org/geosrs/datum/DatumEnsemble">https://w3id.org/geosrs/datum/DatumEnsemble</a>
Definition	A collection of two or more datums (or if geodetic or vertical, a collection of two or more reference frames) that are realizations of one Conventional Reference System and which for all but the highest accuracy requirements may be considered to be insignificantly different from each other. Note: Within the datum ensemble every frame or datum is constrained to be a realization of the same reference system. Cf. ISO 19111:2019 Geographic information — Referencing by coordinates.

## 9.4. Spheroid Properties

Requirement 15: Spheroid Properties	
IDENTIFIER	/req/Spheroid_Properties

REQUIREMENT 15: SPHEROID PROPERTIES

STATEMENT	Implementations shall allow the RDFS classes <code>geosrs:eccentricity</code> , <code>geosrs:inverseFlattening</code> , <code>geosrs:isSphere</code> , <code>geosrs:semiMajorAxis</code> , <code>geosrs:semiMinorAxis</code> to be used in SPARQL graph patterns.
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## 9.5. Spheroid Types

REQUIREMENT 16: SPHEROID TYPES

IDENTIFIER	<code>/req/Spheroid_Types</code>
STATEMENT	Implementations shall allow the RDFS classes <code>geosrs:Ellipsoid</code> , <code>geosrs:TriaxialEllipsoid</code> to be used in SPARQL graph patterns.

### 9.5.1. Class: `geosrs:TriaxialEllipsoid`

Table 70 — `geosrs:TriaxialEllipsoid`

URI	<a href="https://w3id.org/geosrs/datum/TriaxialEllipsoid">https://w3id.org/geosrs/datum/TriaxialEllipsoid</a>
Definition	Surface of an analytic ellipsoid defined by three axes of different length. Also referred as scalene ellipsoid.

10

# SRS APPLICATION MODULE

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This clause establishes the **SRSAPP** Requirements class, with IRI /req/srsapp, which has a corresponding Conformance Class, **SRSAPP**, with IRI /conf/srsapp.



11

# PROJECTIONS MODULE

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This clause establishes the **PROJ** Requirements class, with IRI /req/proj, which has a corresponding Conformance Class, **PROJ**, with IRI /conf/proj.

## REQUIREMENTS CLASS 5: 11-PROJECTIONS\_EXTENSION.ADOC EXTENSION

IDENTIFIER	/req/11-projections_extension.adoc
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TARGET TYPE	Implementation Specification
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	/req/Lenticular_Projections
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	/req/Conformal_Projections
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	/req/Minimum_Error_Projections
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	/req/Pseudo_Azimuthal_Projections
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	/req/Equal_Area_Projections
--	-----------------------------

	/req/Pseudo_Conical_Projections
--	---------------------------------

	/req/Globular_Projections
--	---------------------------

	/req/Pseudo_Cylindrical_Projections
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REQUIREMENT	/req/Cylindrical_Projections
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	/req/Compromise_Projections
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	/req/Polyhedral_Projections
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	/req/Equidistant_Projections
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	/req/Conical_Projections
--	--------------------------

	/req/Azimuthal_Projections
--	----------------------------

	/req/Perspective_Projections
--	------------------------------

	/req/Polyconic_Projections
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	/req/Stereographic_Projections
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# 11.1. Azimuthal Projections

Requirement 17: Azimuthal Projections	
IDENTIFIER	/req/Azimuthal_Projections
STATEMENT	Implementations shall allow the RDFS classes geosrs:BreusingGeometricProjection, geosrs:BreusingHarmonicProjection, geosrs:GinzburgIIProjection, geosrs:GinzburgIProjection, geosrs:GnomonicProjection, geosrs:JamesAzimuthalProjection to be used in SPARQL graph patterns.

## 11.1.1. Class: geosrs:BreusingGeometricProjection

Table 71 — geosrs:BreusingGeometricProjection

URI	<a href="https://w3id.org/geosrs/projection/BreusingGeometricProjection">https://w3id.org/geosrs/projection/BreusingGeometricProjection</a>
Super-classes	<a href="#">BreusingGeometricProjection</a>

## 11.1.2. Class: geosrs:BreusingHarmonicProjection

Table 72 — geosrs:BreusingHarmonicProjection

URI	<a href="https://w3id.org/geosrs/projection/BreusingHarmonicProjection">https://w3id.org/geosrs/projection/BreusingHarmonicProjection</a>
Super-classes	<a href="#">BreusingHarmonicProjection</a>

## 11.1.3. Class: geosrs:GinzburgIIProjection

Table 73 — geosrs:GinzburgIIProjection

URI	<a href="https://w3id.org/geosrs/projection/GinzburgIIProjection">https://w3id.org/geosrs/projection/GinzburgIIProjection</a>
Super-classes	<a href="#">GinzburgIIProjection</a>

### 11.1.4. Class: geosrs:GinzburgIProjection

Table 74 — geosrs:GinzburgIProjection

URI	<a href="https://w3id.org/geosrs/projection/GinzburgIProjection">https://w3id.org/geosrs/projection/GinzburgIProjection</a>
Super-classes	<a href="#">GinzburgIProjection</a>

### 11.1.5. Class: geosrs:GnomonicProjection

Table 75 — geosrs:GnomonicProjection

URI	<a href="https://w3id.org/geosrs/projection/GnomonicProjection">https://w3id.org/geosrs/projection/GnomonicProjection</a>
Super-classes	<a href="#">GnomonicProjection</a>

### 11.1.6. Class: geosrs:JamesAzimuthalProjection

Table 76 — geosrs:JamesAzimuthalProjection

URI	<a href="https://w3id.org/geosrs/projection/JamesAzimuthalProjection">https://w3id.org/geosrs/projection/JamesAzimuthalProjection</a>
Super-classes	<a href="#">JamesAzimuthalProjection</a>

## 11.2. Compromise Projections

### REQUIREMENT 18: COMPROMISE PROJECTIONS

IDENTIFIER /req/Compromise\_Projections

STATEMENT

Implementations shall allow the RDFS classes geosrs:ArmadilloProjection, geosrs:BakerDinomic Projection, geosrs:BertinProjection, geosrs:ChamberlinTrimetricProjection, geosrs:DenoyerSemi EllipticalProjection, geosrs:FairgrieveProjection, geosrs:LarriveeProjection, geosrs:PetermannStar Projection, geosrs:SpilhausOceanicProjection, geosrs:VanDerGrintenIIIProjection, geosrs:Winkel



## REQUIREMENT 18: COMPROMISE PROJECTIONS

IIProjection, geosrs:WinkelIIProjection, geosrs:WinkelSnyderProjection to be used in SPARQL graph patterns.

### 11.2.1. Class: geosrs:ArmadilloProjection

Table 77 — geosrs:ArmadilloProjection

URI	<a href="https://w3id.org/geosrs/projection/ArmadilloProjection">https://w3id.org/geosrs/projection/ArmadilloProjection</a>
Super-classes	<a href="#">ArmadilloProjection</a>

### 11.2.2. Class: geosrs:BakerDinomicProjection

Table 78 — geosrs:BakerDinomicProjection

URI	<a href="https://w3id.org/geosrs/projection/BakerDinomicProjection">https://w3id.org/geosrs/projection/BakerDinomicProjection</a>
Super-classes	<a href="#">BakerDinomicProjection</a>

### 11.2.3. Class: geosrs:BertinProjection

Table 79 — geosrs:BertinProjection

URI	<a href="https://w3id.org/geosrs/projection/BertinProjection">https://w3id.org/geosrs/projection/BertinProjection</a>
Super-classes	<a href="#">BertinProjection</a>

### 11.2.4. Class: geosrs:ChamberlinTrimetricProjection

Table 80 — geosrs:ChamberlinTrimetricProjection

URI	<a href="https://w3id.org/geosrs/projection/ChamberlinTrimetricProjection">https://w3id.org/geosrs/projection/ChamberlinTrimetricProjection</a>
Super-classes	<a href="#">ChamberlinTrimetricProjection</a>

### 11.2.5. Class: geosrs:DenoyerSemiEllipticalProjection

**Table 81** — geosrs:DenoyerSemiEllipticalProjection

URI	<a href="https://w3id.org/geosrs/projection/DenoyerSemiEllipticalProjection">https://w3id.org/geosrs/projection/DenoyerSemiEllipticalProjection</a>
Super-classes	<a href="#">DenoyerSemiEllipticalProjection</a>

### 11.2.6. Class: geosrs:FairgrieveProjection

**Table 82** — geosrs:FairgrieveProjection

URI	<a href="https://w3id.org/geosrs/projection/FairgrieveProjection">https://w3id.org/geosrs/projection/FairgrieveProjection</a>
Super-classes	<a href="#">FairgrieveProjection</a>

### 11.2.7. Class: geosrs:LarriveeProjection

**Table 83** — geosrs:LarriveeProjection

URI	<a href="https://w3id.org/geosrs/projection/LarriveeProjection">https://w3id.org/geosrs/projection/LarriveeProjection</a>
Super-classes	<a href="#">LarriveeProjection</a>

### 11.2.8. Class: geosrs:PetermannStarProjection

**Table 84** — geosrs:PetermannStarProjection

URI	<a href="https://w3id.org/geosrs/projection/PetermannStarProjection">https://w3id.org/geosrs/projection/PetermannStarProjection</a>
Super-classes	<a href="#">PetermannStarProjection</a>

### 11.2.9. Class: geosrs:SpilhausOceanicProjection

**Table 85** — geosrs:SpilhausOceanicProjection

URI	<a href="https://w3id.org/geosrs/projection/SpilhausOceanicProjection">https://w3id.org/geosrs/projection/SpilhausOceanicProjection</a>
Super-classes	<a href="#">SpilhausOceanicProjection</a>

### 11.2.10. Class: geosrs:VanDerGrintenIIIProjection

**Table 86** — geosrs:VanDerGrintenIIIProjection

URI	<a href="https://w3id.org/geosrs/projection/VanDerGrintenIIIProjection">https://w3id.org/geosrs/projection/VanDerGrintenIIIProjection</a>
Super-classes	<a href="#">VanDerGrintenIIIProjection</a>

### 11.2.11. Class: geosrs:WinkelIIIProjection

**Table 87** — geosrs:WinkelIIIProjection

URI	<a href="https://w3id.org/geosrs/projection/WinkelIIIProjection">https://w3id.org/geosrs/projection/WinkelIIIProjection</a>
Super-classes	<a href="#">WinkelIIIProjection</a>

### 11.2.12. Class: geosrs:WinkelIIProjection

**Table 88** — geosrs:WinkelIIProjection

URI	<a href="https://w3id.org/geosrs/projection/WinkelIIProjection">https://w3id.org/geosrs/projection/WinkelIIProjection</a>
Super-classes	<a href="#">WinkelIIProjection</a>

### 11.2.13. Class: geosrs:WinkelSnyderProjection

**Table 89** — geosrs:WinkelSnyderProjection

URI	<a href="https://w3id.org/geosrs/projection/WinkelSnyderProjection">https://w3id.org/geosrs/projection/WinkelSnyderProjection</a>
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Super-classes	<a href="#">WinkelSnyderProjection</a>
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## 11.3. Conformal Projections

### REQUIREMENT 19: CONFORMAL PROJECTIONS

IDENTIFIER	/req/Conformal_Projections
STATEMENT	Implementations shall allow the RDFS classes geosrs:AdamsProjection, geosrs:AdamsWorldInASquarellProjection, geosrs:AdamsWorldInASquarelProjection, geosrs:AugustEpicycloidalProjection, geosrs:CoxConformalProjection, geosrs:EisenlohrProjection, geosrs:GS50Projection, geosrs:PeirceQuincuncialProjection, geosrs:StereographicProjection to be used in SPARQL graph patterns.

#### 11.3.1. Class: geosrs:AdamsProjection

Table 90 — geosrs:AdamsProjection

URI	<a href="https://w3id.org/geosrs/projection/AdamsProjection">https://w3id.org/geosrs/projection/AdamsProjection</a>
Super-classes	<a href="#">AdamsProjection</a>

#### 11.3.2. Class: geosrs:AdamsWorldInASquarellProjection

Table 91 — geosrs:AdamsWorldInASquarellProjection

URI	<a href="https://w3id.org/geosrs/projection/AdamsWorldInASquarellProjection">https://w3id.org/geosrs/projection/AdamsWorldInASquarellProjection</a>
Super-classes	<a href="#">AdamsWorldInASquarellProjection</a>

#### 11.3.3. Class: geosrs:AdamsWorldInASquarelProjection

**Table 92** — geosrs:AdamsWorldInASquareProjection

URI	<a href="https://w3id.org/geosrs/projection/AdamsWorldInASquareProjection">https://w3id.org/geosrs/projection/AdamsWorldInASquareProjection</a>
Super-classes	<a href="#">AdamsWorldInASquareProjection</a>

### 11.3.4. Class: geosrs:AugustEpicycloidalProjection

**Table 93** — geosrs:AugustEpicycloidalProjection

URI	<a href="https://w3id.org/geosrs/projection/AugustEpicycloidalProjection">https://w3id.org/geosrs/projection/AugustEpicycloidalProjection</a>
Definition	A projection in which every angle between two curves that cross each other on a celestial body is preserved in the image of the projection
Super-classes	<a href="#">AugustEpicycloidalProjection</a>

### 11.3.5. Class: geosrs:CoxConformalProjection

**Table 94** — geosrs:CoxConformalProjection

URI	<a href="https://w3id.org/geosrs/projection/CoxConformalProjection">https://w3id.org/geosrs/projection/CoxConformalProjection</a>
Super-classes	<a href="#">CoxConformalProjection</a>

### 11.3.6. Class: geosrs:EisenlohrProjection

**Table 95** — geosrs:EisenlohrProjection

URI	<a href="https://w3id.org/geosrs/projection/EisenlohrProjection">https://w3id.org/geosrs/projection/EisenlohrProjection</a>
Super-classes	<a href="#">EisenlohrProjection</a>

### 11.3.7. Class: geosrs:GS50Projection

**Table 96** — geosrs:GS50Projection

URI	<a href="https://w3id.org/geosrs/projection/GS50Projection">https://w3id.org/geosrs/projection/GS50Projection</a>
Super-classes	<a href="#">GS50Projection</a>

### 11.3.8. Class: geosrs:PeirceQuincuncialProjection

**Table 97** — geosrs:PeirceQuincuncialProjection

URI	<a href="https://w3id.org/geosrs/projection/PeirceQuincuncialProjection">https://w3id.org/geosrs/projection/PeirceQuincuncialProjection</a>
Super-classes	<a href="#">PeirceQuincuncialProjection</a>

### 11.3.9. Class: geosrs:StereographicProjection

**Table 98** — geosrs:StereographicProjection

URI	<a href="https://w3id.org/geosrs/projection/StereographicProjection">https://w3id.org/geosrs/projection/StereographicProjection</a>
Super-classes	<a href="#">StereographicProjection</a>

## 11.4. Conical Projections

REQUIREMENT 20: CONICAL PROJECTIONS	
IDENTIFIER	/req/Conical_Projections
STATEMENT	Implementations shall allow the RDFS classes geosrs:BipolarObliqueConicConformalProjection, geosrs:CentralConicProjection, geosrs:HerschelConformalConicProjection, geosrs:Krovak, geosrs:LambertConformalConicProjection, geosrs:MurdochIIIProjection, geosrs:MurdochIIProjection, geosrs:MurdochIProjection, geosrs:SchjernerIProjection, geosrs:VitkovskyIProjection to be used in SPARQL graph patterns.

### 11.4.1. Class: geosrs:BipolarObliqueConicConformalProjection

Table 99 — geosrs:BipolarObliqueConicConformalProjection

URI	<a href="https://w3id.org/geosrs/projection/BipolarObliqueConicConformalProjection">https://w3id.org/geosrs/projection/BipolarObliqueConicConformalProjection</a>
Super-classes	<a href="#">BipolarObliqueConicConformalProjection</a>

### 11.4.2. Class: geosrs:CentralConicProjection

Table 100 — geosrs:CentralConicProjection

URI	<a href="https://w3id.org/geosrs/projection/CentralConicProjection">https://w3id.org/geosrs/projection/CentralConicProjection</a>
Super-classes	<a href="#">CentralConicProjection</a>

### 11.4.3. Class: geosrs:HerschelConformalConicProjection

Table 101 — geosrs:HerschelConformalConicProjection

URI	<a href="https://w3id.org/geosrs/projection/HerschelConformalConicProjection">https://w3id.org/geosrs/projection/HerschelConformalConicProjection</a>
Super-classes	<a href="#">HerschelConformalConicProjection</a>

### 11.4.4. Class: geosrs:Krovak

Table 102 — geosrs:Krovak

URI	<a href="https://w3id.org/geosrs/projection/Krovak">https://w3id.org/geosrs/projection/Krovak</a>
Super-classes	<a href="#">Krovak</a>

### 11.4.5. Class: geosrs:LambertConformalConicProjection

**Table 103** — geosrs:LambertConformalConicProjection

URI	<a href="https://w3id.org/geosrs/projection/LambertConformalConicProjection">https://w3id.org/geosrs/projection/LambertConformalConicProjection</a>
Super-classes	<a href="#">LambertConformalConicProjection</a>

#### 11.4.6. Class: geosrs:MurdochIIIProjection

**Table 104** — geosrs:MurdochIIIProjection

URI	<a href="https://w3id.org/geosrs/projection/MurdochIIIProjection">https://w3id.org/geosrs/projection/MurdochIIIProjection</a>
Super-classes	<a href="#">MurdochIIIProjection</a>

#### 11.4.7. Class: geosrs:MurdochIIProjection

**Table 105** — geosrs:MurdochIIProjection

URI	<a href="https://w3id.org/geosrs/projection/MurdochIIProjection">https://w3id.org/geosrs/projection/MurdochIIProjection</a>
Super-classes	<a href="#">MurdochIIProjection</a>

#### 11.4.8. Class: geosrs:MurdochIProjection

**Table 106** — geosrs:MurdochIProjection

URI	<a href="https://w3id.org/geosrs/projection/MurdochIProjection">https://w3id.org/geosrs/projection/MurdochIProjection</a>
Super-classes	<a href="#">MurdochIProjection</a>

#### 11.4.9. Class: geosrs:SchjernerIProjection

**Table 107** — geosrs:SchjernerIProjection

URI	<a href="https://w3id.org/geosrs/projection/SchjernerIProjection">https://w3id.org/geosrs/projection/SchjernerIProjection</a>
Super-classes	<a href="#">SchjernerIProjection</a>



### 11.4.10. Class: geosrs:VitkovskyIProjection

Table 108 — geosrs:VitkovskyIProjection

URI	<a href="https://w3id.org/geosrs/projection/VitkovskyIProjection">https://w3id.org/geosrs/projection/VitkovskyIProjection</a>
Super-classes	<a href="#">VitkovskyIProjection</a>

## 11.5. Cylindrical Projections

### REQUIREMENT 21: CYLINDRICAL PROJECTIONS

IDENTIFIER /req/Cylindrical\_Projections

STATEMENT

Implementations shall allow the RDFS classes geosrs:ArdenCloseProjection, geosrs:BraunPerspectiveProjection, geosrs:CompactMillerProjection, geosrs:CylindricalStereographicProjection, geosrs:KarchenkoShabanovaProjection, geosrs:LabordeProjection, geosrs:MercatorProjection, geosrs:MillerProjection, geosrs:PattersonCylindricalProjection, geosrs:PavlovProjection, geosrs:ToblerCylindricalIIIProjection, geosrs:ToblerCylindricalIIProjection, geosrs:UrmayevIIIProjection, geosrs:WebMercatorProjection to be used in SPARQL graph patterns.

### 11.5.1. Class: geosrs:ArdenCloseProjection

Table 109 — geosrs:ArdenCloseProjection

URI	<a href="https://w3id.org/geosrs/projection/ArdenCloseProjection">https://w3id.org/geosrs/projection/ArdenCloseProjection</a>
Super-classes	<a href="#">ArdenCloseProjection</a>

### 11.5.2. Class: geosrs:BraunPerspectiveProjection

Table 110 — geosrs:BraunPerspectiveProjection

URI	<a href="https://w3id.org/geosrs/projection/BraunPerspectiveProjection">https://w3id.org/geosrs/projection/BraunPerspectiveProjection</a>
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Super-classes	<a href="#">BraunPerspectiveProjection</a>
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### 11.5.3. Class: geosrs:CompactMillerProjection

**Table 111** — geosrs:CompactMillerProjection

URI	<a href="https://w3id.org/geosrs/projection/CompactMillerProjection">https://w3id.org/geosrs/projection/CompactMillerProjection</a>
Super-classes	<a href="#">CompactMillerProjection</a>

### 11.5.4. Class: geosrs:CylindricalStereographicProjection

**Table 112** — geosrs:CylindricalStereographicProjection

URI	<a href="https://w3id.org/geosrs/projection/CylindricalStereographicProjection">https://w3id.org/geosrs/projection/CylindricalStereographicProjection</a>
Super-classes	<a href="#">CylindricalStereographicProjection</a>

### 11.5.5. Class: geosrs:KarchenkoShabanovaProjection

**Table 113** — geosrs:KarchenkoShabanovaProjection

URI	<a href="https://w3id.org/geosrs/projection/KarchenkoShabanovaProjection">https://w3id.org/geosrs/projection/KarchenkoShabanovaProjection</a>
Super-classes	<a href="#">KarchenkoShabanovaProjection</a>

### 11.5.6. Class: geosrs:LabordeProjection

**Table 114** — geosrs:LabordeProjection

URI	<a href="https://w3id.org/geosrs/projection/LabordeProjection">https://w3id.org/geosrs/projection/LabordeProjection</a>
Super-classes	<a href="#">LabordeProjection</a>

### 11.5.7. Class: geosrs:MercatorProjection

Table 115 — geosrs:MercatorProjection

URI	<a href="https://w3id.org/geosrs/projection/MercatorProjection">https://w3id.org/geosrs/projection/MercatorProjection</a>
Super-classes	<a href="#">MercatorProjection</a>

### 11.5.8. Class: geosrs:MillerProjection

Table 116 — geosrs:MillerProjection

URI	<a href="https://w3id.org/geosrs/projection/MillerProjection">https://w3id.org/geosrs/projection/MillerProjection</a>
Super-classes	<a href="#">MillerProjection</a>

### 11.5.9. Class: geosrs:PattersonCylindricalProjection

Table 117 — geosrs:PattersonCylindricalProjection

URI	<a href="https://w3id.org/geosrs/projection/PattersonCylindricalProjection">https://w3id.org/geosrs/projection/PattersonCylindricalProjection</a>
Super-classes	<a href="#">PattersonCylindricalProjection</a>

### 11.5.10. Class: geosrs:PavlovProjection

Table 118 — geosrs:PavlovProjection

URI	<a href="https://w3id.org/geosrs/projection/PavlovProjection">https://w3id.org/geosrs/projection/PavlovProjection</a>
Super-classes	<a href="#">PavlovProjection</a>

### 11.5.11. Class: geosrs:ToblerCylindricalIIIProjection

**Table 119** — geosrs:ToblerCylindricalIIIProjection

URI	<a href="https://w3id.org/geosrs/projection/ToblerCylindricalIIIProjection">https://w3id.org/geosrs/projection/ToblerCylindricalIIIProjection</a>
Super-classes	<a href="#">ToblerCylindricalIIIProjection</a>

### 11.5.12. Class: geosrs:ToblerCylindricalIIIProjection

**Table 120** — geosrs:ToblerCylindricalIIIProjection

URI	<a href="https://w3id.org/geosrs/projection/ToblerCylindricalIIIProjection">https://w3id.org/geosrs/projection/ToblerCylindricalIIIProjection</a>
Super-classes	<a href="#">ToblerCylindricalIIIProjection</a>

### 11.5.13. Class: geosrs:UrmayevIIIProjection

**Table 121** — geosrs:UrmayevIIIProjection

URI	<a href="https://w3id.org/geosrs/projection/UrmayevIIIProjection">https://w3id.org/geosrs/projection/UrmayevIIIProjection</a>
Super-classes	<a href="#">UrmayevIIIProjection</a>

### 11.5.14. Class: geosrs:WebMercatorProjection

**Table 122** — geosrs:WebMercatorProjection

URI	<a href="https://w3id.org/geosrs/projection/WebMercatorProjection">https://w3id.org/geosrs/projection/WebMercatorProjection</a>
Super-classes	<a href="#">WebMercatorProjection</a>

## 11.6. Equal Area Projections

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## REQUIREMENT 22: EQUAL AREA PROJECTIONS

**IDENTIFIER**     /req/Equal\_Area\_Projections

**STATEMENT**

Implementations shall allow the RDFS classes `geosrs:AlbersEqualAreaProjection`, `geosrs:AzimuthalEqualAreaProjection`, `geosrs:CylindricalEqualArea`, `geosrs:GallPetersProjection`, `geosrs:HoboDyerProjection`, `geosrs:LambertAzimuthalEqualArea`, `geosrs:TrystanEdwardsProjection`, `geosrs:WiechelProjection` to be used in SPARQL graph patterns.

### 11.6.1. Class: `geosrs:AlbersEqualAreaProjection`

**Table 123** — `geosrs:AlbersEqualAreaProjection`

URI	<a href="https://w3id.org/geosrs/projection/AlbersEqualAreaProjection">https://w3id.org/geosrs/projection/AlbersEqualAreaProjection</a>
Super-classes	<a href="#">AlbersEqualAreaProjection</a>

### 11.6.2. Class: `geosrs:AzimuthalEqualAreaProjection`

**Table 124** — `geosrs:AzimuthalEqualAreaProjection`

URI	<a href="https://w3id.org/geosrs/projection/AzimuthalEqualAreaProjection">https://w3id.org/geosrs/projection/AzimuthalEqualAreaProjection</a>
Super-classes	<a href="#">AzimuthalEqualAreaProjection</a>

### 11.6.3. Class: `geosrs:CylindricalEqualArea`

**Table 125** — `geosrs:CylindricalEqualArea`

URI	<a href="https://w3id.org/geosrs/projection/CylindricalEqualArea">https://w3id.org/geosrs/projection/CylindricalEqualArea</a>
Super-classes	<a href="#">CylindricalEqualArea</a>

### 11.6.4. Class: `geosrs:GallPetersProjection`

**Table 126** — geosrs:GallPetersProjection

URI	<a href="https://w3id.org/geosrs/projection/GallPetersProjection">https://w3id.org/geosrs/projection/GallPetersProjection</a>
Super-classes	<a href="#">GallPetersProjection</a>

### 11.6.5. Class: geosrs:HoboDyerProjection

**Table 127** — geosrs:HoboDyerProjection

URI	<a href="https://w3id.org/geosrs/projection/HoboDyerProjection">https://w3id.org/geosrs/projection/HoboDyerProjection</a>
Super-classes	<a href="#">HoboDyerProjection</a>

### 11.6.6. Class: geosrs:LambertAzimuthalEqualArea

**Table 128** — geosrs:LambertAzimuthalEqualArea

URI	<a href="https://w3id.org/geosrs/projection/LambertAzimuthalEqualArea">https://w3id.org/geosrs/projection/LambertAzimuthalEqualArea</a>
Super-classes	<a href="#">LambertAzimuthalEqualArea</a>

### 11.6.7. Class: geosrs:TrystanEdwardsProjection

**Table 129** — geosrs:TrystanEdwardsProjection

URI	<a href="https://w3id.org/geosrs/projection/TrystanEdwardsProjection">https://w3id.org/geosrs/projection/TrystanEdwardsProjection</a>
Super-classes	<a href="#">TrystanEdwardsProjection</a>

### 11.6.8. Class: geosrs:WiechelProjection

**Table 130** — geosrs:WiechelProjection

URI	<a href="https://w3id.org/geosrs/projection/WichelProjection">https://w3id.org/geosrs/projection/WichelProjection</a>
Super-classes	<a href="#">WiechelProjection</a>

# 11.7. Equidistant Projections

## REQUIREMENT 23: EQUIDISTANT PROJECTIONS

**IDENTIFIER**     /req/Equidistant\_Projections

**STATEMENT**     Implementations shall allow the RDFS classes geosrs:AzimuthalEquidistantProjection, geosrs:BerghausStarProjection, geosrs:CassiniProjection, geosrs:EquidistantConicProjection, geosrs:EquidistantCylindricalProjection, geosrs:EquirectangularProjection, geosrs:ObliquePlateCarreeProjection, geosrs:PlateCarreeProjection, geosrs:TwoPointEquidistantProjection to be used in SPARQL graph patterns.

### 11.7.1. Class: geosrs:AzimuthalEquidistantProjection

Table 131 — geosrs:AzimuthalEquidistantProjection

URI	<a href="https://w3id.org/geosrs/projection/AzimuthalEquidistantProjection">https://w3id.org/geosrs/projection/AzimuthalEquidistantProjection</a>
Super-classes	<a href="#">AzimuthalEquidistantProjection</a>

### 11.7.2. Class: geosrs:BerghausStarProjection

Table 132 — geosrs:BerghausStarProjection

URI	<a href="https://w3id.org/geosrs/projection/BerghausStarProjection">https://w3id.org/geosrs/projection/BerghausStarProjection</a>
Super-classes	<a href="#">BerghausStarProjection</a>

### 11.7.3. Class: geosrs:CassiniProjection

Table 133 — geosrs:CassiniProjection

URI	<a href="https://w3id.org/geosrs/projection/CassiniProjection">https://w3id.org/geosrs/projection/CassiniProjection</a>
Definition	A map projection first described in an approximate form by César-François Cassini de Thury in 1745

Super-classes	<a href="#">CassiniProjection</a>
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#### 11.7.4. Class: geosrs:EquidistantConicProjection

**Table 134** — geosrs:EquidistantConicProjection

URI	<a href="https://w3id.org/geosrs/projection/EquidistantConicProjection">https://w3id.org/geosrs/projection/EquidistantConicProjection</a>
Super-classes	<a href="#">EquidistantConicProjection</a>

#### 11.7.5. Class: geosrs:EquidistantCylindricalProjection

**Table 135** — geosrs:EquidistantCylindricalProjection

URI	<a href="https://w3id.org/geosrs/projection/EquidistantCylindricalProjection">https://w3id.org/geosrs/projection/EquidistantCylindricalProjection</a>
Super-classes	<a href="#">EquidistantCylindricalProjection</a>

#### 11.7.6. Class: geosrs:EquirectangularProjection

**Table 136** — geosrs:EquirectangularProjection

URI	<a href="https://w3id.org/geosrs/projection/EquirectangularProjection">https://w3id.org/geosrs/projection/EquirectangularProjection</a>
Super-classes	<a href="#">EquirectangularProjection</a>

#### 11.7.7. Class: geosrs:ObliquePlateCarreeProjection

**Table 137** — geosrs:ObliquePlateCarreeProjection

URI	<a href="https://w3id.org/geosrs/projection/ObliquePlateCarreeProjection">https://w3id.org/geosrs/projection/ObliquePlateCarreeProjection</a>
Super-classes	<a href="#">ObliquePlateCarreeProjection</a>



### 11.7.8. Class: geosrs:PlateCarreeProjection

Table 138 — geosrs:PlateCarreeProjection

URI	<a href="https://w3id.org/geosrs/projection/PlateCarreeProjection">https://w3id.org/geosrs/projection/PlateCarreeProjection</a>
Super-classes	<a href="#">PlateCarreeProjection</a>

### 11.7.9. Class: geosrs:TwoPointEquidistantProjection

Table 139 — geosrs:TwoPointEquidistantProjection

URI	<a href="https://w3id.org/geosrs/projection/TwoPointEquidistantProjection">https://w3id.org/geosrs/projection/TwoPointEquidistantProjection</a>
Super-classes	<a href="#">TwoPointEquidistantProjection</a>

## 11.8. Globular Projections

### REQUIREMENT 24: GLOBULAR PROJECTIONS

IDENTIFIER	/req/Globular_Projections
STATEMENT	Implementations shall allow the RDFS classes geosrs:ApianGlobularIProjection, geosrs:BaconGlobularProjection, geosrs:FournierGlobularIProjection to be used in SPARQL graph patterns.

### 11.8.1. Class: geosrs:ApianGlobularIProjection

Table 140 — geosrs:ApianGlobularIProjection

URI	<a href="https://w3id.org/geosrs/projection/ApianGlobularIProjection">https://w3id.org/geosrs/projection/ApianGlobularIProjection</a>
Super-classes	<a href="#">ApianGlobularIProjection</a>

### 11.8.2. Class: geosrs:BaconGlobularProjection

Table 141 — geosrs:BaconGlobularProjection

URI	<a href="https://w3id.org/geosrs/projection/BaconGlobularProjection">https://w3id.org/geosrs/projection/BaconGlobularProjection</a>
Super-classes	<a href="#">BaconGlobularProjection</a>

### 11.8.3. Class: geosrs:FournierGlobularIProjection

Table 142 — geosrs:FournierGlobularIProjection

URI	<a href="https://w3id.org/geosrs/projection/FournierGlobularIProjection">https://w3id.org/geosrs/projection/FournierGlobularIProjection</a>
Super-classes	<a href="#">FournierGlobularIProjection</a>

## 11.9. Lenticular Projections

### REQUIREMENT 25: LENTICULAR PROJECTIONS

IDENTIFIER	/req/Lenticular_Projections
STATEMENT	Implementations shall allow the RDFS classes geosrs:A4Projection, geosrs:BriesemeisterProjection, geosrs:CiricIProjection, geosrs:CupolaProjection, geosrs:DedistortProjection, geosrs:DietrichKitadaProjection, geosrs:FranculaIIIProjection, geosrs:FranculaIVProjection, geosrs:FranculaIXProjection, geosrs:FranculaVIIIProjection, geosrs:FranculaVProjection, geosrs:FranculaXIIIProjection, geosrs:FranculaXIIProjection, geosrs:FranculaXIVProjection, geosrs:HamusoidalProjection, geosrs:KissProjection to be used in SPARQL graph patterns.

### 11.9.1. Class: geosrs:A4Projection

Table 143 — geosrs:A4Projection

URI	<a href="https://w3id.org/geosrs/projection/A4Projection">https://w3id.org/geosrs/projection/A4Projection</a>
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Super-classes	<a href="#">A4Projection</a>
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### 11.9.2. Class: geosrs:BriesemeisterProjection

**Table 144** — geosrs:BriesemeisterProjection

URI	<a href="https://w3id.org/geosrs/projection/BriesemeisterProjection">https://w3id.org/geosrs/projection/BriesemeisterProjection</a>
Super-classes	<a href="#">BriesemeisterProjection</a>

### 11.9.3. Class: geosrs:CiricIProjection

**Table 145** — geosrs:CiricIProjection

URI	<a href="https://w3id.org/geosrs/projection/CiricIProjection">https://w3id.org/geosrs/projection/CiricIProjection</a>
Super-classes	<a href="#">CiricIProjection</a>

### 11.9.4. Class: geosrs:CupolaProjection

**Table 146** — geosrs:CupolaProjection

URI	<a href="https://w3id.org/geosrs/projection/CupolaProjection">https://w3id.org/geosrs/projection/CupolaProjection</a>
Super-classes	<a href="#">CupolaProjection</a>

### 11.9.5. Class: geosrs:DedistortProjection

**Table 147** — geosrs:DedistortProjection

URI	<a href="https://w3id.org/geosrs/projection/DedistortProjection">https://w3id.org/geosrs/projection/DedistortProjection</a>
Super-classes	<a href="#">DedistortProjection</a>

### 11.9.6. Class: geosrs:DietrichKitadaProjection

Table 148 — geosrs:DietrichKitadaProjection

URI	<a href="https://w3id.org/geosrs/projection/DietrichKitadaProjection">https://w3id.org/geosrs/projection/DietrichKitadaProjection</a>
Super-classes	<a href="#">DietrichKitadaProjection</a>

### 11.9.7. Class: geosrs:FranculaIIIProjection

Table 149 — geosrs:FranculaIIIProjection

URI	<a href="https://w3id.org/geosrs/projection/FranculaIIIProjection">https://w3id.org/geosrs/projection/FranculaIIIProjection</a>
Super-classes	<a href="#">FranculaIIIProjection</a>

### 11.9.8. Class: geosrs:FranculaIVProjection

Table 150 — geosrs:FranculaIVProjection

URI	<a href="https://w3id.org/geosrs/projection/FranculaIVProjection">https://w3id.org/geosrs/projection/FranculaIVProjection</a>
Super-classes	<a href="#">FranculaIVProjection</a>

### 11.9.9. Class: geosrs:FranculaIXProjection

Table 151 — geosrs:FranculaIXProjection

URI	<a href="https://w3id.org/geosrs/projection/FranculaIXProjection">https://w3id.org/geosrs/projection/FranculaIXProjection</a>
Super-classes	<a href="#">FranculaIXProjection</a>

### 11.9.10. Class: geosrs:FranculaVIIIProjection

**Table 152** — geosrs:FraculaVIIIProjection

URI	<a href="https://w3id.org/geosrs/projection/FraculaVIIIProjection">https://w3id.org/geosrs/projection/FraculaVIIIProjection</a>
Super-classes	<a href="#">FraculaVIIIProjection</a>

### 11.9.11. Class: geosrs:FraculaVProjection

**Table 153** — geosrs:FraculaVProjection

URI	<a href="https://w3id.org/geosrs/projection/FraculaVProjection">https://w3id.org/geosrs/projection/FraculaVProjection</a>
Super-classes	<a href="#">FraculaVProjection</a>

### 11.9.12. Class: geosrs:FraculaXIIIProjection

**Table 154** — geosrs:FraculaXIIIProjection

URI	<a href="https://w3id.org/geosrs/projection/FraculaXIIIProjection">https://w3id.org/geosrs/projection/FraculaXIIIProjection</a>
Super-classes	<a href="#">FraculaXIIIProjection</a>

### 11.9.13. Class: geosrs:FraculaXIIProjection

**Table 155** — geosrs:FraculaXIIProjection

URI	<a href="https://w3id.org/geosrs/projection/FraculaXIIProjection">https://w3id.org/geosrs/projection/FraculaXIIProjection</a>
Super-classes	<a href="#">FraculaXIIProjection</a>

### 11.9.14. Class: geosrs:FraculaXIVProjection

**Table 156** — geosrs:FraculaXIVProjection

URI	<a href="https://w3id.org/geosrs/projection/FraculaXIVProjection">https://w3id.org/geosrs/projection/FraculaXIVProjection</a>
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Super-classes

[FranculaXIVProjection](#)

### 11.9.15. Class: geosrs:HamusoidalProjection

Table 157 — geosrs:HamusoidalProjection

URI	<a href="https://w3id.org/geosrs/projection/HamusoidalProjection">https://w3id.org/geosrs/projection/HamusoidalProjection</a>
Super-classes	<a href="#">HamusoidalProjection</a>

### 11.9.16. Class: geosrs:KissProjection

Table 158 — geosrs:KissProjection

URI	<a href="https://w3id.org/geosrs/projection/KissProjection">https://w3id.org/geosrs/projection/KissProjection</a>
Super-classes	<a href="#">KissProjection</a>

## 11.10. Minimum Error Projections

### REQUIREMENT 26: MINIMUM ERROR PROJECTIONS

IDENTIFIER	/req/Minimum_Error_Projections
STATEMENT	Implementations shall allow the RDFS classes geosrs:AiryProjection to be used in SPARQL graph patterns.

### 11.10.1. Class: geosrs:AiryProjection

Table 159 — geosrs:AiryProjection

URI	<a href="https://w3id.org/geosrs/projection/AiryProjection">https://w3id.org/geosrs/projection/AiryProjection</a>
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Definition	An azimuthal minimum error projection for the region within the small or great circle defined by an angular distance, from the tangency point of the plane
Super-classes	<a href="#">AiryProjection</a>

# 11.11. Perspective Projections

## REQUIREMENT 27: PERSPECTIVE PROJECTIONS

IDENTIFIER	/req/Perspective_Projections
STATEMENT	Implementations shall allow the RDFS classes geosrs:CentralCylindricalProjection, geosrs:GeneralVerticalPerspectiveProjection, geosrs:GilbertTwoWorldPerspectiveProjection, geosrs:LaHireProjection, geosrs:LorgnaProjection, geosrs:LowryProjection, geosrs:OrthographicProjection, geosrs:PerspectiveConicProjection, geosrs:TiltedPerspectiveProjection, geosrs:VerticalPerspectiveProjection to be used in SPARQL graph patterns.

### 11.11.1. Class: geosrs:CentralCylindricalProjection

Table 160 — geosrs:CentralCylindricalProjection

URI	<a href="https://w3id.org/geosrs/projection/CentralCylindricalProjection">https://w3id.org/geosrs/projection/CentralCylindricalProjection</a>
Super-classes	<a href="#">CentralCylindricalProjection</a>

### 11.11.2. Class: geosrs:GeneralVerticalPerspectiveProjection

Table 161 — geosrs:GeneralVerticalPerspectiveProjection

URI	<a href="https://w3id.org/geosrs/projection/GeneralVerticalPerspectiveProjection">https://w3id.org/geosrs/projection/GeneralVerticalPerspectiveProjection</a>
Super-classes	<a href="#">GeneralVerticalPerspectiveProjection</a>

### 11.11.3. Class: geosrs:GilbertTwoWorldPerspectiveProjection

Table 162 — geosrs:GilbertTwoWorldPerspectiveProjection

URI	<a href="https://w3id.org/geosrs/projection/GilbertTwoWorldPerspectiveProjection">https://w3id.org/geosrs/projection/GilbertTwoWorldPerspectiveProjection</a>
Super-classes	<a href="#">GilbertTwoWorldPerspectiveProjection</a>

### 11.11.4. Class: geosrs:LaHireProjection

Table 163 — geosrs:LaHireProjection

URI	<a href="https://w3id.org/geosrs/projection/LaHireProjection">https://w3id.org/geosrs/projection/LaHireProjection</a>
Super-classes	<a href="#">LaHireProjection</a>

### 11.11.5. Class: geosrs:LorgnaProjection

Table 164 — geosrs:LorgnaProjection

URI	<a href="https://w3id.org/geosrs/projection/LorgnaProjection">https://w3id.org/geosrs/projection/LorgnaProjection</a>
Super-classes	<a href="#">LorgnaProjection</a>

### 11.11.6. Class: geosrs:LowryProjection

Table 165 — geosrs:LowryProjection

URI	<a href="https://w3id.org/geosrs/projection/LowryProjection">https://w3id.org/geosrs/projection/LowryProjection</a>
Super-classes	<a href="#">LowryProjection</a>

### 11.11.7. Class: geosrs:OrthographicProjection



**Table 166** — geosrs:OrthographicProjection

URI	<a href="https://w3id.org/geosrs/projection/OrthographicProjection">https://w3id.org/geosrs/projection/OrthographicProjection</a>
Super-classes	<a href="#">OrthographicProjection</a>

### 11.11.8. Class: geosrs:PerspectiveConicProjection

**Table 167** — geosrs:PerspectiveConicProjection

URI	<a href="https://w3id.org/geosrs/projection/PerspectiveConicProjection">https://w3id.org/geosrs/projection/PerspectiveConicProjection</a>
Super-classes	<a href="#">PerspectiveConicProjection</a>

### 11.11.9. Class: geosrs:TiltedPerspectiveProjection

**Table 168** — geosrs:TiltedPerspectiveProjection

URI	<a href="https://w3id.org/geosrs/projection/TiltedPerspectiveProjection">https://w3id.org/geosrs/projection/TiltedPerspectiveProjection</a>
Super-classes	<a href="#">TiltedPerspectiveProjection</a>

### 11.11.10. Class: geosrs:VerticalPerspectiveProjection

**Table 169** — geosrs:VerticalPerspectiveProjection

URI	<a href="https://w3id.org/geosrs/projection/VerticalPerspectiveProjection">https://w3id.org/geosrs/projection/VerticalPerspectiveProjection</a>
Super-classes	<a href="#">VerticalPerspectiveProjection</a>

## 11.12. Polyconic Projections

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## REQUIREMENT 28: POLYCONIC PROJECTIONS

**IDENTIFIER** /req/Polyconic\_Projections

**STATEMENT** Implementations shall allow the RDFS classes geosrs:GinzburgIVProjection, geosrs:GinzburgIXProjection, geosrs:GinzburgVIPProjection, geosrs:GinzburgVProjection, geosrs:GottWagnerProjection, geosrs:HillEucyclicProjection, geosrs:LagrangeProjection, geosrs:LaskowskiProjection, geosrs:RectangularPolyconicProjection, geosrs:StabiusWernerIIIProjection, geosrs:StabiusWernerIProjection, geosrs:VanDerGrintenIIProjection, geosrs:VanDerGrintenIProjection, geosrs:VanDerGrintenIVProjection, geosrs:WagnerIXProjection, geosrs:WagnerVIIIProjection, geosrs:WagnerVIIProjection to be used in SPARQL graph patterns.

### 11.12.1. Class: geosrs:GinzburgIVProjection

**Table 170** — geosrs:GinzburgIVProjection

URI	<a href="https://w3id.org/geosrs/projection/GinzburgIVProjection">https://w3id.org/geosrs/projection/GinzburgIVProjection</a>
Super-classes	<a href="#">GinzburgIVProjection</a>

### 11.12.2. Class: geosrs:GinzburgIXProjection

**Table 171** — geosrs:GinzburgIXProjection

URI	<a href="https://w3id.org/geosrs/projection/GinzburgIXProjection">https://w3id.org/geosrs/projection/GinzburgIXProjection</a>
Super-classes	<a href="#">GinzburgIXProjection</a>

### 11.12.3. Class: geosrs:GinzburgVIPProjection

**Table 172** — geosrs:GinzburgVIPProjection

URI	<a href="https://w3id.org/geosrs/projection/GinzburgVIPProjection">https://w3id.org/geosrs/projection/GinzburgVIPProjection</a>
Super-classes	<a href="#">GinzburgVIPProjection</a>

### 11.12.4. Class: geosrs:GinzburgVProjection

**Table 173** — geosrs:GinzburgVProjection

URI	<a href="https://w3id.org/geosrs/projection/GinzburgVProjection">https://w3id.org/geosrs/projection/GinzburgVProjection</a>
Super-classes	<a href="#">GinzburgVProjection</a>

### 11.12.5. Class: geosrs:GottWagnerProjection

**Table 174** — geosrs:GottWagnerProjection

URI	<a href="https://w3id.org/geosrs/projection/GottWagnerProjection">https://w3id.org/geosrs/projection/GottWagnerProjection</a>
Super-classes	<a href="#">GottWagnerProjection</a>

### 11.12.6. Class: geosrs:HillEucyclicProjection

**Table 175** — geosrs:HillEucyclicProjection

URI	<a href="https://w3id.org/geosrs/projection/HillEucyclicProjection">https://w3id.org/geosrs/projection/HillEucyclicProjection</a>
Super-classes	<a href="#">HillEucyclicProjection</a>

### 11.12.7. Class: geosrs:LagrangeProjection

**Table 176** — geosrs:LagrangeProjection

URI	<a href="https://w3id.org/geosrs/projection/LagrangeProjection">https://w3id.org/geosrs/projection/LagrangeProjection</a>
Super-classes	<a href="#">LagrangeProjection</a>

### 11.12.8. Class: geosrs:LaskowskiProjection

**Table 177** — geosrs:LaskowskiProjection

URI	<a href="https://w3id.org/geosrs/projection/LaskowskiProjection">https://w3id.org/geosrs/projection/LaskowskiProjection</a>
Super-classes	<a href="#">LaskowskiProjection</a>

### 11.12.9. Class: geosrs:RectangularPolyconicProjection

Table 178 — geosrs:RectangularPolyconicProjection

URI	<a href="https://w3id.org/geosrs/projection/RectangularPolyconicProjection">https://w3id.org/geosrs/projection/RectangularPolyconicProjection</a>
Super-classes	<a href="#">RectangularPolyconicProjection</a>

### 11.12.10. Class: geosrs:StabiusWernerIIIProjection

Table 179 — geosrs:StabiusWernerIIIProjection

URI	<a href="https://w3id.org/geosrs/projection/StabiusWernerIIIProjection">https://w3id.org/geosrs/projection/StabiusWernerIIIProjection</a>
Super-classes	<a href="#">StabiusWernerIIIProjection</a>

### 11.12.11. Class: geosrs:StabiusWernerIProjection

Table 180 — geosrs:StabiusWernerIProjection

URI	<a href="https://w3id.org/geosrs/projection/StabiusWernerIProjection">https://w3id.org/geosrs/projection/StabiusWernerIProjection</a>
Super-classes	<a href="#">StabiusWernerIProjection</a>

### 11.12.12. Class: geosrs:VanDerGrintenIIProjection

Table 181 — geosrs:VanDerGrintenIIProjection

URI	<a href="https://w3id.org/geosrs/projection/VanDerGrintenIIProjection">https://w3id.org/geosrs/projection/VanDerGrintenIIProjection</a>
Super-classes	<a href="#">VanDerGrintenIIProjection</a>

### 11.12.13. Class: geosrs:VanDerGrintenIProjection

**Table 182** — geosrs:VanDerGrintenIProjection

URI	<a href="https://w3id.org/geosrs/projection/VanDerGrintenIProjection">https://w3id.org/geosrs/projection/VanDerGrintenIProjection</a>
Super-classes	<a href="#">VanDerGrintenIProjection</a>

#### 11.12.14. Class: geosrs:VanDerGrintenIVProjection

**Table 183** — geosrs:VanDerGrintenIVProjection

URI	<a href="https://w3id.org/geosrs/projection/VanDerGrintenIVProjection">https://w3id.org/geosrs/projection/VanDerGrintenIVProjection</a>
Super-classes	<a href="#">VanDerGrintenIVProjection</a>

#### 11.12.15. Class: geosrs:WagnerIXProjection

**Table 184** — geosrs:WagnerIXProjection

URI	<a href="https://w3id.org/geosrs/projection/WagnerIXProjection">https://w3id.org/geosrs/projection/WagnerIXProjection</a>
Super-classes	<a href="#">WagnerIXProjection</a>

#### 11.12.16. Class: geosrs:WagnerVIIIProjection

**Table 185** — geosrs:WagnerVIIIProjection

URI	<a href="https://w3id.org/geosrs/projection/WagnerVIIIProjection">https://w3id.org/geosrs/projection/WagnerVIIIProjection</a>
Super-classes	<a href="#">WagnerVIIIProjection</a>

#### 11.12.17. Class: geosrs:WagnerVIIProjection

**Table 186** — geosrs:WagnerVIIProjection

URI	<a href="https://w3id.org/geosrs/projection/WagnerVIIProjection">https://w3id.org/geosrs/projection/WagnerVIIProjection</a>
Super-classes	<a href="#">WagnerVIIProjection</a>

# 11.13. Polyhedral Projections

## REQUIREMENT 29: POLYHEDRAL PROJECTIONS

IDENTIFIER	/req/Polyhedral_Projections
STATEMENT	Implementations shall allow the RDFS classes geosrs:AuthaGraphProjection, geosrs:CahillKeyesProjection, geosrs:CollignonButterflyProjection, geosrs:DodecahedralProjection, geosrs:DymaxionProjection, geosrs:GnomonicButterflyProjection, geosrs:GnomonicCubedSphereProjection, geosrs:GnomonicIcosahedronProjection, geosrs:GuyouProjection, geosrs:IcosahedralProjection, geosrs:LeeProjection, geosrs:MyrahedalProjection, geosrs:OctantProjection, geosrs:QuadrilateralizedSphericalCubeProjection, geosrs:WatermanButterflyProjection to be used in SPARQL graph patterns.

### 11.13.1. Class: geosrs:AuthaGraphProjection

Table 187 — geosrs:AuthaGraphProjection

URI	<a href="https://w3id.org/geosrs/projection/AuthaGraphProjection">https://w3id.org/geosrs/projection/AuthaGraphProjection</a>
Super-classes	<a href="#">AuthaGraphProjection</a>

### 11.13.2. Class: geosrs:CahillKeyesProjection

Table 188 — geosrs:CahillKeyesProjection

URI	<a href="https://w3id.org/geosrs/projection/CahillKeyesProjection">https://w3id.org/geosrs/projection/CahillKeyesProjection</a>
Super-classes	<a href="#">CahillKeyesProjection</a>

### 11.13.3. Class: geosrs:CollignonButterflyProjection

Table 189 — geosrs:CollignonButterflyProjection

URI	<a href="https://w3id.org/geosrs/projection/CollignonButterflyProjection">https://w3id.org/geosrs/projection/CollignonButterflyProjection</a>
Super-classes	<a href="#">CollignonButterflyProjection</a>

#### 11.13.4. Class: geosrs:DodecahedralProjection

Table 190 — geosrs:DodecahedralProjection

URI	<a href="https://w3id.org/geosrs/projection/DodecahedralProjection">https://w3id.org/geosrs/projection/DodecahedralProjection</a>
Super-classes	<a href="#">DodecahedralProjection</a>

#### 11.13.5. Class: geosrs:DymaxionProjection

Table 191 — geosrs:DymaxionProjection

URI	<a href="https://w3id.org/geosrs/projection/DymaxionProjection">https://w3id.org/geosrs/projection/DymaxionProjection</a>
Super-classes	<a href="#">DymaxionProjection</a>

#### 11.13.6. Class: geosrs:GnomonicButterflyProjection

Table 192 — geosrs:GnomonicButterflyProjection

URI	<a href="https://w3id.org/geosrs/projection/GnomonicButterflyProjection">https://w3id.org/geosrs/projection/GnomonicButterflyProjection</a>
Super-classes	<a href="#">GnomonicButterflyProjection</a>

#### 11.13.7. Class: geosrs:GnomonicCubedSphereProjection

Table 193 — geosrs:GnomonicCubedSphereProjection

URI	<a href="https://w3id.org/geosrs/projection/GnomonicCubedSphereProjection">https://w3id.org/geosrs/projection/GnomonicCubedSphereProjection</a>
Super-classes	<a href="#">GnomonicCubedSphereProjection</a>

#### 11.13.8. Class: geosrs:GnomonicIcosahedronProjection

**Table 194** — geosrs:GnomonicCosahedronProjection

URI	<a href="https://w3id.org/geosrs/projection/GnomonicCosahedronProjection">https://w3id.org/geosrs/projection/GnomonicCosahedronProjection</a>
Super-classes	<a href="#">GnomonicCosahedronProjection</a>

### 11.13.9. Class: geosrs:GuyouProjection

**Table 195** — geosrs:GuyouProjection

URI	<a href="https://w3id.org/geosrs/projection/GuyouProjection">https://w3id.org/geosrs/projection/GuyouProjection</a>
Super-classes	<a href="#">GuyouProjection</a>

### 11.13.10. Class: geosrs:IcosahedralProjection

**Table 196** — geosrs:IcosahedralProjection

URI	<a href="https://w3id.org/geosrs/projection/IcosahedralProjection">https://w3id.org/geosrs/projection/IcosahedralProjection</a>
Super-classes	<a href="#">IcosahedralProjection</a>

### 11.13.11. Class: geosrs:LeeProjection

**Table 197** — geosrs:LeeProjection

URI	<a href="https://w3id.org/geosrs/projection/LeeProjection">https://w3id.org/geosrs/projection/LeeProjection</a>
Super-classes	<a href="#">LeeProjection</a>

### 11.13.12. Class: geosrs:MyrahedralProjection

**Table 198** — geosrs:MyrahedralProjection

URI	<a href="https://w3id.org/geosrs/projection/MyrahedralProjection">https://w3id.org/geosrs/projection/MyrahedralProjection</a>
Super-classes	<a href="#">MyrahedralProjection</a>



### 11.13.13. Class: geosrs:OctantProjection

Table 199 — geosrs:OctantProjection

URI	<a href="https://w3id.org/geosrs/projection/OctantProjection">https://w3id.org/geosrs/projection/OctantProjection</a>
Super-classes	<a href="#">OctantProjection</a>

### 11.13.14. Class: geosrs:QuadrilateralizedSphericalCubeProjection

Table 200 — geosrs:QuadrilateralizedSphericalCubeProjection

URI	<a href="https://w3id.org/geosrs/projection/QuadrilateralizedSphericalCubeProjection">https://w3id.org/geosrs/projection/QuadrilateralizedSphericalCubeProjection</a>
Super-classes	<a href="#">QuadrilateralizedSphericalCubeProjection</a>

### 11.13.15. Class: geosrs:WatermanButterflyProjection

Table 201 — geosrs:WatermanButterflyProjection

URI	<a href="https://w3id.org/geosrs/projection/WatermanButterflyProjection">https://w3id.org/geosrs/projection/WatermanButterflyProjection</a>
Super-classes	<a href="#">WatermanButterflyProjection</a>

## 11.14. Pseudo Azimuthal Projections

#### REQUIREMENT 30: PSEUDO AZIMUTHAL PROJECTIONS

IDENTIFIER	/req/Pseudo_Azimuthal_Projections
STATEMENT	Implementations shall allow the RDFS classes geosrs:AitoffObliqueProjection, geosrs:Aitoff Projection, geosrs:HammerProjection, geosrs:Strebe1995Projection, geosrs:WinkelTripel Projection to be used in SPARQL graph patterns.

### 11.14.1. Class: geosrs:AitoffObliqueProjection

Table 202 — geosrs:AitoffObliqueProjection

URI	<a href="https://w3id.org/geosrs/projection/AitoffObliqueProjection">https://w3id.org/geosrs/projection/AitoffObliqueProjection</a>
Super-classes	<a href="#">AitoffObliqueProjection</a>

### 11.14.2. Class: geosrs:AitoffProjection

Table 203 — geosrs:AitoffProjection

URI	<a href="https://w3id.org/geosrs/projection/AitoffProjection">https://w3id.org/geosrs/projection/AitoffProjection</a>
Definition	A modified azimuthal projection whose graticule takes the form of an ellipse
Super-classes	<a href="#">AitoffProjection</a>

### 11.14.3. Class: geosrs:HammerProjection

Table 204 — geosrs:HammerProjection

URI	<a href="https://w3id.org/geosrs/projection/HammerProjection">https://w3id.org/geosrs/projection/HammerProjection</a>
Super-classes	<a href="#">HammerProjection</a>

### 11.14.4. Class: geosrs:Strebe1995Projection

Table 205 — geosrs:Strebe1995Projection

URI	<a href="https://w3id.org/geosrs/projection/Strebe1995Projection">https://w3id.org/geosrs/projection/Strebe1995Projection</a>
Super-classes	<a href="#">Strebe1995Projection</a>

### 11.14.5. Class: geosrs:WinkelTripelProjection

Table 206 — geosrs:WinkelTripelProjection

URI	<a href="https://w3id.org/geosrs/projection/WinkelTripelProjection">https://w3id.org/geosrs/projection/WinkelTripelProjection</a>
Super-classes	<a href="#">WinkelTripelProjection</a>

## 11.15. Pseudo Conical Projections

### REQUIREMENT 31: PSEUDO CONICAL PROJECTIONS

IDENTIFIER	/req/Pseudo_Conical_Projections
STATEMENT	Implementations shall allow the RDFS classes geosrs:AmericanPolyconicProjection, geosrs:BonneProjection, geosrs:BottomleyProjection, geosrs:NicolosiGlobularProjection, geosrs:PtolemyIIProjection, geosrs:WernerProjection to be used in SPARQL graph patterns.

### 11.15.1. Class: geosrs:AmericanPolyconicProjection

Table 207 — geosrs:AmericanPolyconicProjection

URI	<a href="https://w3id.org/geosrs/projection/AmericanPolyconicProjection">https://w3id.org/geosrs/projection/AmericanPolyconicProjection</a>
Super-classes	<a href="#">AmericanPolyconicProjection</a>

### 11.15.2. Class: geosrs:BonneProjection

Table 208 — geosrs:BonneProjection

URI	<a href="https://w3id.org/geosrs/projection/BonneProjection">https://w3id.org/geosrs/projection/BonneProjection</a>
Super-classes	<a href="#">BonneProjection</a>

### 11.15.3. Class: geosrs:BottomleyProjection

Table 209 — geosrs:BottomleyProjection

URI	<a href="https://w3id.org/geosrs/projection/BottomleyProjection">https://w3id.org/geosrs/projection/BottomleyProjection</a>
Super-classes	<a href="#">BottomleyProjection</a>

### 11.15.4. Class: geosrs:NicolosiGlobularProjection

Table 210 — geosrs:NicolosiGlobularProjection

URI	<a href="https://w3id.org/geosrs/projection/NicolosiGlobularProjection">https://w3id.org/geosrs/projection/NicolosiGlobularProjection</a>
Super-classes	<a href="#">NicolosiGlobularProjection</a>

### 11.15.5. Class: geosrs:PtolemyIIProjection

Table 211 — geosrs:PtolemyIIProjection

URI	<a href="https://w3id.org/geosrs/projection/PtolemyIIProjection">https://w3id.org/geosrs/projection/PtolemyIIProjection</a>
Super-classes	<a href="#">PtolemyIIProjection</a>

### 11.15.6. Class: geosrs:WernerProjection

Table 212 — geosrs:WernerProjection

URI	<a href="https://w3id.org/geosrs/projection/WernerProjection">https://w3id.org/geosrs/projection/WernerProjection</a>
Super-classes	<a href="#">WernerProjection</a>

# 11.16. Pseudo Cylindrical Projections

## REQUIREMENT 32: PSEUDO CYLINDRICAL PROJECTIONS

IDENTIFIER	/req/Pseudo_Cylindrical_Projections
STATEMENT	Implementations shall allow the RDFS classes geosrs:ApianIIProjection, geosrs:AtlantisProjection, geosrs:BaranyIIIIProjection, geosrs:BaranyIIProjection, geosrs:BaranyIProjection, geosrs:BaranyiIVProjection, geosrs:BoggsEumorphicProjection, geosrs:BromleyProjection, geosrs:CabotProjection, geosrs:CollignonProjection, geosrs:CrasterParabolicProjection, geosrs:DeakinMinimumErrorProjection, geosrs:Eckert1Projection, geosrs:Eckert2Projection, geosrs:Eckert3Projection, geosrs:Eckert4Projection, geosrs:Eckert5Projection, geosrs:Eckert6Projection, geosrs:EqualEarthProjection, geosrs:FaheyProjection, geosrs:FoucautProjection, geosrs:FoucautSinusoidalProjection, geosrs:FournierIIProjection, geosrs:GinzburgVIIIProjection, geosrs:GoodeHomolosineProjection, geosrs:HEALPixProjection, geosrs:HufnagelProjection, geosrs:Kavrayskiy7Projection, geosrs:LoximuthalProjection, geosrs:MayrProjection, geosrs:McBrydeThomasFlatPolarParabolicProjection, geosrs:McBrydeThomasFlatPolarQuarticProjection, geosrs:McBrydeThomasFlatPolarSinusoidalProjection, geosrs:McBrydeThomasIIProjection, geosrs:McBrydeThomasIProjection, geosrs:NaturalEarth2Projection, geosrs:NaturalEarthProjection, geosrs:NellHammerProjection, geosrs:NellProjection, geosrs:OrteliusOvalProjection, geosrs:PutninsP1Projection, geosrs:PutninsP2Projection, geosrs:PutninsP3Projection, geosrs:PutninsP5Projection, geosrs:PutninsP6Projection, geosrs:QuarticAuthalicProjection, geosrs:RobinsonProjection, geosrs:SinusoidalProjection, geosrs:TheTimesProjection, geosrs:ToblerG1Projection, geosrs:ToblerHyperellipticalProjection, geosrs:WagnerIIIProjection, geosrs:WagnerIIProjection, geosrs:WagnerIProjection, geosrs:WagnerIVProjection, geosrs:WagnerVProjection, geosrs:WagnerVProjection, geosrs:WerenskioldIProjection, geosrs:PutninsP3'Projection, geosrs:PutninsP4'Projection, geosrs:PutninsP5'Projection, geosrs:PutninsP6'Projection to be used in SPARQL graph patterns.

### 11.16.1. Class: geosrs:ApianIIProjection

Table 213 – geosrs:ApianIIProjection

URI	<a href="https://w3id.org/geosrs/projection/ApianIIProjection">https://w3id.org/geosrs/projection/ApianIIProjection</a>
Super-classes	<a href="#">ApianIIProjection</a>

### 11.16.2. Class: geosrs:AtlantisProjection

**Table 214** — geosrs:AtlantisProjection

URI	<a href="https://w3id.org/geosrs/projection/AtlantisProjection">https://w3id.org/geosrs/projection/AtlantisProjection</a>
Super-classes	<a href="#">AtlantisProjection</a>

### 11.16.3. Class: geosrs:BaranyillProjection

**Table 215** — geosrs:BaranyillProjection

URI	<a href="https://w3id.org/geosrs/projection/BaranyillProjection">https://w3id.org/geosrs/projection/BaranyillProjection</a>
Super-classes	<a href="#">BaranyillProjection</a>

### 11.16.4. Class: geosrs:BaranyillProjection

**Table 216** — geosrs:BaranyillProjection

URI	<a href="https://w3id.org/geosrs/projection/BaranyillProjection">https://w3id.org/geosrs/projection/BaranyillProjection</a>
Super-classes	<a href="#">BaranyillProjection</a>

### 11.16.5. Class: geosrs:BaranyilProjection

**Table 217** — geosrs:BaranyilProjection

URI	<a href="https://w3id.org/geosrs/projection/BaranyilProjection">https://w3id.org/geosrs/projection/BaranyilProjection</a>
Super-classes	<a href="#">BaranyilProjection</a>

### 11.16.6. Class: geosrs:BaranyilVProjection

**Table 218** — geosrs:BaranyilVProjection

URI	<a href="https://w3id.org/geosrs/projection/BaranyilVProjection">https://w3id.org/geosrs/projection/BaranyilVProjection</a>
Super-classes	<a href="#">BaranyilVProjection</a>

### 11.16.7. Class: geosrs:BoggsEumorphicProjection

Table 219 — geosrs:BoggsEumorphicProjection

URI	<a href="https://w3id.org/geosrs/projection/BoggsEumorphicProjection">https://w3id.org/geosrs/projection/BoggsEumorphicProjection</a>
Super-classes	<a href="#">BoggsEumorphicProjection</a>

### 11.16.8. Class: geosrs:BromleyProjection

Table 220 — geosrs:BromleyProjection

URI	<a href="https://w3id.org/geosrs/projection/BromleyProjection">https://w3id.org/geosrs/projection/BromleyProjection</a>
Super-classes	<a href="#">BromleyProjection</a>

### 11.16.9. Class: geosrs:CabotProjection

Table 221 — geosrs:CabotProjection

URI	<a href="https://w3id.org/geosrs/projection/CabotProjection">https://w3id.org/geosrs/projection/CabotProjection</a>
Super-classes	<a href="#">CabotProjection</a>

### 11.16.10. Class: geosrs:CollignonProjection

Table 222 — geosrs:CollignonProjection

URI	<a href="https://w3id.org/geosrs/projection/CollignonProjection">https://w3id.org/geosrs/projection/CollignonProjection</a>
Definition	An equal-area pseudocylindrical projection that maps the sphere onto a triangle or diamond
Super-classes	<a href="#">CollignonProjection</a>

### 11.16.11. Class: geosrs:CrasterParabolicProjection

Table 223 — geosrs:CrasterParabolicProjection

URI	<a href="https://w3id.org/geosrs/projection/CrasterParabolicProjection">https://w3id.org/geosrs/projection/CrasterParabolicProjection</a>
Super-classes	<a href="#">CrasterParabolicProjection</a>

### 11.16.12. Class: geosrs:DeakinMinimumErrorProjection

Table 224 — geosrs:DeakinMinimumErrorProjection

URI	<a href="https://w3id.org/geosrs/projection/DeakinMinimumErrorProjection">https://w3id.org/geosrs/projection/DeakinMinimumErrorProjection</a>
Super-classes	<a href="#">DeakinMinimumErrorProjection</a>

### 11.16.13. Class: geosrs:Eckert1Projection

Table 225 — geosrs:Eckert1Projection

URI	<a href="https://w3id.org/geosrs/projection/Eckert1Projection">https://w3id.org/geosrs/projection/Eckert1Projection</a>
Super-classes	<a href="#">Eckert1Projection</a>

### 11.16.14. Class: geosrs:Eckert2Projection

Table 226 — geosrs:Eckert2Projection

URI	<a href="https://w3id.org/geosrs/projection/Eckert2Projection">https://w3id.org/geosrs/projection/Eckert2Projection</a>
Super-classes	<a href="#">Eckert2Projection</a>

### 11.16.15. Class: geosrs:Eckert3Projection



**Table 227** — geosrs:Eckert3Projection

URI	<a href="https://w3id.org/geosrs/projection/Eckert3Projection">https://w3id.org/geosrs/projection/Eckert3Projection</a>
Super-classes	<a href="#">Eckert3Projection</a>

### 11.16.16. Class: geosrs:Eckert4Projection

**Table 228** — geosrs:Eckert4Projection

URI	<a href="https://w3id.org/geosrs/projection/Eckert4Projection">https://w3id.org/geosrs/projection/Eckert4Projection</a>
Super-classes	<a href="#">Eckert4Projection</a>

### 11.16.17. Class: geosrs:Eckert5Projection

**Table 229** — geosrs:Eckert5Projection

URI	<a href="https://w3id.org/geosrs/projection/Eckert5Projection">https://w3id.org/geosrs/projection/Eckert5Projection</a>
Super-classes	<a href="#">Eckert5Projection</a>

### 11.16.18. Class: geosrs:Eckert6Projection

**Table 230** — geosrs:Eckert6Projection

URI	<a href="https://w3id.org/geosrs/projection/Eckert6Projection">https://w3id.org/geosrs/projection/Eckert6Projection</a>
Super-classes	<a href="#">Eckert6Projection</a>

### 11.16.19. Class: geosrs:EqualEarthProjection

**Table 231** — geosrs:EqualEarthProjection

URI	<a href="https://w3id.org/geosrs/projection/EqualEarthProjection">https://w3id.org/geosrs/projection/EqualEarthProjection</a>
Super-classes	<a href="#">EqualEarthProjection</a>

### 11.16.20. Class: geosrs:FaheyProjection

Table 232 — geosrs:FaheyProjection

URI	<a href="https://w3id.org/geosrs/projection/FaheyProjection">https://w3id.org/geosrs/projection/FaheyProjection</a>
Super-classes	<a href="#">FaheyProjection</a>

### 11.16.21. Class: geosrs:FoucautProjection

Table 233 — geosrs:FoucautProjection

URI	<a href="https://w3id.org/geosrs/projection/FoucautProjection">https://w3id.org/geosrs/projection/FoucautProjection</a>
Super-classes	<a href="#">FoucautProjection</a>

### 11.16.22. Class: geosrs:FoucautSinusoidalProjection

Table 234 — geosrs:FoucautSinusoidalProjection

URI	<a href="https://w3id.org/geosrs/projection/FoucautSinusoidalProjection">https://w3id.org/geosrs/projection/FoucautSinusoidalProjection</a>
Super-classes	<a href="#">FoucautSinusoidalProjection</a>

### 11.16.23. Class: geosrs:FournierIIProjection

Table 235 — geosrs:FournierIIProjection

URI	<a href="https://w3id.org/geosrs/projection/FournierIIProjection">https://w3id.org/geosrs/projection/FournierIIProjection</a>
Super-classes	<a href="#">FournierIIProjection</a>

### 11.16.24. Class: geosrs:GinzburgVIIIProjection

**Table 236** — geosrs:GinzburgVIIIProjection

URI	<a href="https://w3id.org/geosrs/projection/GinzburgVIIIProjection">https://w3id.org/geosrs/projection/GinzburgVIIIProjection</a>
Super-classes	<a href="#">GinzburgVIIIProjection</a>

### 11.16.25. Class: geosrs:GoodeHomolosineProjection

**Table 237** — geosrs:GoodeHomolosineProjection

URI	<a href="https://w3id.org/geosrs/projection/GoodeHomolosineProjection">https://w3id.org/geosrs/projection/GoodeHomolosineProjection</a>
Super-classes	<a href="#">GoodeHomolosineProjection</a>

### 11.16.26. Class: geosrs:HEALPixProjection

**Table 238** — geosrs:HEALPixProjection

URI	<a href="https://w3id.org/geosrs/projection/HEALPixProjection">https://w3id.org/geosrs/projection/HEALPixProjection</a>
Super-classes	<a href="#">HEALPixProjection</a>

### 11.16.27. Class: geosrs:HufnagelProjection

**Table 239** — geosrs:HufnagelProjection

URI	<a href="https://w3id.org/geosrs/projection/HufnagelProjection">https://w3id.org/geosrs/projection/HufnagelProjection</a>
Super-classes	<a href="#">HufnagelProjection</a>

### 11.16.28. Class: geosrs:Kavrayskiy7Projection

**Table 240** — geosrs:Kavrayskiy7Projection

URI	<a href="https://w3id.org/geosrs/projection/Kavrayskiy7Projection">https://w3id.org/geosrs/projection/Kavrayskiy7Projection</a>
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Super-classes	<a href="#">Kavrayskiy7Projection</a>
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### 11.16.29. Class: geosrs:LoximuthalProjection

**Table 241** — geosrs:LoximuthalProjection

URI	<a href="https://w3id.org/geosrs/projection/LoximuthalProjection">https://w3id.org/geosrs/projection/LoximuthalProjection</a>
Super-classes	<a href="#">LoximuthalProjection</a>

### 11.16.30. Class: geosrs:MayrProjection

**Table 242** — geosrs:MayrProjection

URI	<a href="https://w3id.org/geosrs/projection/MayrProjection">https://w3id.org/geosrs/projection/MayrProjection</a>
Super-classes	<a href="#">MayrProjection</a>

### 11.16.31. Class: geosrs:McBrydeThomasFlatPolarParabolicProjection

**Table 243** — geosrs:McBrydeThomasFlatPolarParabolicProjection

URI	<a href="https://w3id.org/geosrs/projection/McBrydeThomasFlatPolarParabolicProjection">https://w3id.org/geosrs/projection/McBrydeThomasFlatPolarParabolicProjection</a>
Super-classes	<a href="#">McBrydeThomasFlatPolarParabolicProjection</a>

### 11.16.32. Class: geosrs:McBrydeThomasFlatPolarQuarticProjection

**Table 244** — geosrs:McBrydeThomasFlatPolarQuarticProjection

URI	<a href="https://w3id.org/geosrs/projection/McBrydeThomasFlatPolarQuarticProjection">https://w3id.org/geosrs/projection/McBrydeThomasFlatPolarQuarticProjection</a>
Super-classes	<a href="#">McBrydeThomasFlatPolarQuarticProjection</a>

### 11.16.33. Class: geosrs:McBrydeThomasFlatPolarSinusoidalProjection

Table 245 — geosrs:McBrydeThomasFlatPolarSinusoidalProjection

URI	<a href="https://w3id.org/geosrs/projection/McBrydeThomasFlatPolarSinusoidalProjection">https://w3id.org/geosrs/projection/McBrydeThomasFlatPolarSinusoidalProjection</a>
Super-classes	<a href="#">McBrydeThomasFlatPolarSinusoidalProjection</a>

### 11.16.34. Class: geosrs:McBrydeThomasIIProjection

Table 246 — geosrs:McBrydeThomasIIProjection

URI	<a href="https://w3id.org/geosrs/projection/McBrydeThomasIIProjection">https://w3id.org/geosrs/projection/McBrydeThomasIIProjection</a>
Super-classes	<a href="#">McBrydeThomasIIProjection</a>

### 11.16.35. Class: geosrs:McBrydeThomasIProjection

Table 247 — geosrs:McBrydeThomasIProjection

URI	<a href="https://w3id.org/geosrs/projection/McBrydeThomasIProjection">https://w3id.org/geosrs/projection/McBrydeThomasIProjection</a>
Super-classes	<a href="#">McBrydeThomasIProjection</a>

### 11.16.36. Class: geosrs:NaturalEarth2Projection

Table 248 — geosrs:NaturalEarth2Projection

URI	<a href="https://w3id.org/geosrs/projection/NaturalEarth2Projection">https://w3id.org/geosrs/projection/NaturalEarth2Projection</a>
Super-classes	<a href="#">NaturalEarth2Projection</a>

### 11.16.37. Class: geosrs:NaturalEarthProjection

**Table 249** — geosrs:NaturalEarthProjection

URI	<a href="https://w3id.org/geosrs/projection/NaturalEarthProjection">https://w3id.org/geosrs/projection/NaturalEarthProjection</a>
Definition	A pseudocylindrical map projection designed by Tom Patterson and introduced in 2008
Super-classes	<a href="#">NaturalEarthProjection</a>

### 11.16.38. Class: geosrs:NellHammerProjection

**Table 250** — geosrs:NellHammerProjection

URI	<a href="https://w3id.org/geosrs/projection/NellHammerProjection">https://w3id.org/geosrs/projection/NellHammerProjection</a>
Super-classes	<a href="#">NellHammerProjection</a>

### 11.16.39. Class: geosrs:NellProjection

**Table 251** — geosrs:NellProjection

URI	<a href="https://w3id.org/geosrs/projection/NellProjection">https://w3id.org/geosrs/projection/NellProjection</a>
Super-classes	<a href="#">NellProjection</a>

### 11.16.40. Class: geosrs:OrteliusOvalProjection

**Table 252** — geosrs:OrteliusOvalProjection

URI	<a href="https://w3id.org/geosrs/projection/OrteliusOvalProjection">https://w3id.org/geosrs/projection/OrteliusOvalProjection</a>
Super-classes	<a href="#">OrteliusOvalProjection</a>

### 11.16.41. Class: geosrs:PutninsP1Projection

**Table 253 — geosrs:PutninsP1Projection**

URI	<a href="https://w3id.org/geosrs/projection/PutninsP1Projection">https://w3id.org/geosrs/projection/PutninsP1Projection</a>
Super-classes	<a href="#">PutninsP1Projection</a>

### 11.16.42. Class: geosrs:PutninsP2Projection

**Table 254 — geosrs:PutninsP2Projection**

URI	<a href="https://w3id.org/geosrs/projection/PutninsP2Projection">https://w3id.org/geosrs/projection/PutninsP2Projection</a>
Super-classes	<a href="#">PutninsP2Projection</a>

### 11.16.43. Class: geosrs:PutninsP3Projection

**Table 255 — geosrs:PutninsP3Projection**

URI	<a href="https://w3id.org/geosrs/projection/PutninsP3Projection">https://w3id.org/geosrs/projection/PutninsP3Projection</a>
Super-classes	<a href="#">PutninsP3Projection</a>

### 11.16.44. Class: geosrs:PutninsP5Projection

**Table 256 — geosrs:PutninsP5Projection**

URI	<a href="https://w3id.org/geosrs/projection/PutninsP5Projection">https://w3id.org/geosrs/projection/PutninsP5Projection</a>
Super-classes	<a href="#">PutninsP5Projection</a>

### 11.16.45. Class: geosrs:PutninsP6Projection

**Table 257 — geosrs:PutninsP6Projection**

URI	<a href="https://w3id.org/geosrs/projection/PutninsP6Projection">https://w3id.org/geosrs/projection/PutninsP6Projection</a>
Super-classes	<a href="#">PutninsP6Projection</a>

## 11.16.46. Class: geosrs:QuarticAuthalicProjection

Table 258 — geosrs:QuarticAuthalicProjection

URI	<a href="https://w3id.org/geosrs/projection/QuarticAuthalicProjection">https://w3id.org/geosrs/projection/QuarticAuthalicProjection</a>
Super-classes	<a href="#">QuarticAuthalicProjection</a>

## 11.16.47. Class: geosrs:RobinsonProjection

Table 259 — geosrs:RobinsonProjection

URI	<a href="https://w3id.org/geosrs/projection/RobinsonProjection">https://w3id.org/geosrs/projection/RobinsonProjection</a>
Super-classes	<a href="#">RobinsonProjection</a>

## 11.16.48. Class: geosrs:SinusoidalProjection

Table 260 — geosrs:SinusoidalProjection

URI	<a href="https://w3id.org/geosrs/projection/SinusoidalProjection">https://w3id.org/geosrs/projection/SinusoidalProjection</a>
Super-classes	<a href="#">SinusoidalProjection</a>

## 11.16.49. Class: geosrs:TheTimesProjection

Table 261 — geosrs:TheTimesProjection

URI	<a href="https://w3id.org/geosrs/projection/TheTimesProjection">https://w3id.org/geosrs/projection/TheTimesProjection</a>
Super-classes	<a href="#">TheTimesProjection</a>

## 11.16.50. Class: geosrs:ToblerG1Projection



**Table 262** — geosrs:ToblerG1Projection

URI	<a href="https://w3id.org/geosrs/projection/ToblerG1Projection">https://w3id.org/geosrs/projection/ToblerG1Projection</a>
Super-classes	<a href="#">ToblerG1Projection</a>

### 11.16.51. Class: geosrs:ToblerHyperellipticalProjection

**Table 263** — geosrs:ToblerHyperellipticalProjection

URI	<a href="https://w3id.org/geosrs/projection/ToblerHyperellipticalProjection">https://w3id.org/geosrs/projection/ToblerHyperellipticalProjection</a>
Super-classes	<a href="#">ToblerHyperellipticalProjection</a>

### 11.16.52. Class: geosrs:WagnerIIIProjection

**Table 264** — geosrs:WagnerIIIProjection

URI	<a href="https://w3id.org/geosrs/projection/WagnerIIIProjection">https://w3id.org/geosrs/projection/WagnerIIIProjection</a>
Super-classes	<a href="#">WagnerIIIProjection</a>

### 11.16.53. Class: geosrs:WagnerIIProjection

**Table 265** — geosrs:WagnerIIProjection

URI	<a href="https://w3id.org/geosrs/projection/WagnerIIProjection">https://w3id.org/geosrs/projection/WagnerIIProjection</a>
Super-classes	<a href="#">WagnerIIProjection</a>

### 11.16.54. Class: geosrs:WagnerIProjection

**Table 266** — geosrs:WagnerIProjection

URI	<a href="https://w3id.org/geosrs/projection/WagnerIProjection">https://w3id.org/geosrs/projection/WagnerIProjection</a>
Super-classes	<a href="#">WagnerIProjection</a>

### 11.16.55. Class: geosrs:WagnerIVProjection

Table 267 — geosrs:WagnerIVProjection

URI	<a href="https://w3id.org/geosrs/projection/WagnerIVProjection">https://w3id.org/geosrs/projection/WagnerIVProjection</a>
Super-classes	<a href="#">WagnerIVProjection</a>

### 11.16.56. Class: geosrs:WagnerVIProjection

Table 268 — geosrs:WagnerVIProjection

URI	<a href="https://w3id.org/geosrs/projection/WagnerVIProjection">https://w3id.org/geosrs/projection/WagnerVIProjection</a>
Super-classes	<a href="#">WagnerVIProjection</a>

### 11.16.57. Class: geosrs:WagnerVProjection

Table 269 — geosrs:WagnerVProjection

URI	<a href="https://w3id.org/geosrs/projection/WagnerVProjection">https://w3id.org/geosrs/projection/WagnerVProjection</a>
Super-classes	<a href="#">WagnerVProjection</a>

### 11.16.58. Class: geosrs:WerenskioldIProjection

Table 270 — geosrs:WerenskioldIProjection

URI	<a href="https://w3id.org/geosrs/projection/WerenskioldIProjection">https://w3id.org/geosrs/projection/WerenskioldIProjection</a>
Super-classes	<a href="#">WerenskioldIProjection</a>

### 11.16.59. Class: geosrs:PutninsP3'Projection

**Table 271** — geosrs:PutninsP3'Projection

URI	<a href="https://w3id.org/geosrs/projection/PutninsP3'Projection">https://w3id.org/geosrs/projection/PutninsP3'Projection</a>
Super-classes	<a href="#">PutninsP3'Projection</a>

### 11.16.60. Class: geosrs:PutninsP4'Projection

**Table 272** — geosrs:PutninsP4'Projection

URI	<a href="https://w3id.org/geosrs/projection/PutninsP4'Projection">https://w3id.org/geosrs/projection/PutninsP4'Projection</a>
Super-classes	<a href="#">PutninsP4'Projection</a>

### 11.16.61. Class: geosrs:PutninsP5'Projection

**Table 273** — geosrs:PutninsP5'Projection

URI	<a href="https://w3id.org/geosrs/projection/PutninsP5'Projection">https://w3id.org/geosrs/projection/PutninsP5'Projection</a>
Super-classes	<a href="#">PutninsP5'Projection</a>

### 11.16.62. Class: geosrs:PutninsP6'Projection

**Table 274** — geosrs:PutninsP6'Projection

URI	<a href="https://w3id.org/geosrs/projection/PutninsP6'Projection">https://w3id.org/geosrs/projection/PutninsP6'Projection</a>
Super-classes	<a href="#">PutninsP6'Projection</a>

## 11.17. Stereographic Projections

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REQUIREMENT 33: STEREOGRAPHIC PROJECTIONS

IDENTIFIER	/req/Stereographic_Projections
STATEMENT	Implementations shall allow the RDFS classes geosrs:MillerOblatedStereographicProjection, geosrs:RoussilheProjection to be used in SPARQL graph patterns.

11.17.1. Class: geosrs:MillerOblatedStereographicProjection

Table 275 — geosrs:MillerOblatedStereographicProjection

URI	<a href="https://w3id.org/geosrs/projection/MillerOblatedStereographicProjection">https://w3id.org/geosrs/projection/MillerOblatedStereographicProjection</a>
Super-classes	<a href="#">MillerOblatedStereographicProjection</a>

11.17.2. Class: geosrs:RoussilheProjection

Table 276 — geosrs:RoussilheProjection

URI	<a href="https://w3id.org/geosrs/projection/RoussilheProjection">https://w3id.org/geosrs/projection/RoussilheProjection</a>
Super-classes	<a href="#">RoussilheProjection</a>



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# PLANET MODULE

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This clause establishes the **PLANET** Requirements class, with IRI /req/planet, which has a corresponding Conformance Class, **PLANET**, with IRI /conf/planet.









# ANNEX A (INFORMATIVE) ALIGNMENTS

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# ANNEX A (INFORMATIVE) ALIGNMENTS

## Overview

## Overview

The prefixes used for the ontologies mapped to in all following sections are given in the following table.

**Table A.1** — Alignment: Namespaces

ign:	<a href="http://data.ign.fr/def/ignf#">http://data.ign.fr/def/ignf#</a>
iso19111:	<a href="http://def.isotc211.org/iso19112/2019/SpatialReferencingByGeographicIdentifier#">http://def.isotc211.org/iso19112/2019/SpatialReferencingByGeographicIdentifier#</a>
geosrs:	<a href="http://www.opengis.net/ont/geosparql#">http://www.opengis.net/ont/geosparql#</a>
ifc:	<a href="https://standards.buildingsmart.org/IFC/DEV/IFC4/ADD2_TC1/OWL/">https://standards.buildingsmart.org/IFC/DEV/IFC4/ADD2_TC1/OWL/</a>
owl:	<a href="http://www.w3.org/2002/07/owl#">http://www.w3.org/2002/07/owl#</a>
prov:	<a href="http://www.w3.org/ns/prov#">http://www.w3.org/ns/prov#</a>
rdf:	<a href="http://www.w3.org/1999/02/22-rdf-syntax-ns#">http://www.w3.org/1999/02/22-rdf-syntax-ns#</a>
rdfs:	<a href="http://www.w3.org/2000/01/rdf-schema#">http://www.w3.org/2000/01/rdf-schema#</a>

## A.1. IGN Ontology

**Table A.2 – Alignment: IGN Ontology**

FROM ELEMENT	MAPPING RELATION	TO ELEMENT	NOTES
<a href="#">geosrs:CoordinateSystem</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:CoordinateSystem</a>	-
<a href="#">geosrs:Datum</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:Datum</a>	-
<a href="#">geosrs:Ellipsoid</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:Ellipsoid</a>	-
<a href="#">geosrs:Conversion</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:Conversion</a>	-
<a href="#">geosrs:CoordinateOperation</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:CoordinateOperation</a>	-
<a href="#">geosrs:OperationMethod</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:OperationMethod</a>	-
<a href="#">geosrs:OperationParameter</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:OperationParameter</a>	-
<a href="#">geosrs:OperationParameterValue</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:OperationParameterValue</a>	-
<a href="#">geosrs:SingleOperation</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:SingleOperation</a>	-
<a href="#">geosrs:Transformation</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:Transformation</a>	-
<a href="#">geosrs:CartesianCoordinateSystem</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:CartesianCS</a>	-
<a href="#">geosrs:CoordinateSystem</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:CoordinateSystem</a>	-
<a href="#">geosrs:CoordinateSystemAxis</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:CoordinateSystemAxis</a>	-
<a href="#">geosrs:EllipsoidalCoordinateSystem</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:EllipsoidalCS</a>	-
<a href="#">geosrs:VerticalCoordinateSystem</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:VerticalCS</a>	-
<a href="#">geosrs:Datum</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:Datum</a>	-
<a href="#">geosrs:Ellipsoid</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:Ellipsoid</a>	-
<a href="#">geosrs:GeodeticDatum</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:GeodeticDatum</a>	-
<a href="#">geosrs:PrimeMeridian</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:PrimeMeridian</a>	-
<a href="#">geosrs:VerticalDatum</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:VerticalDatum</a>	-
<a href="#">geosrs:AxesList</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:AxesList</a>	-

FROM ELEMENT	MAPPING RELATION	TO ELEMENT	NOTES
<a href="#">geosrs:CRS</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:CRS</a>	-
<a href="#">geosrs:CompoundCRS</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:CompoundCRS</a>	-
<a href="#">geosrs:Extent</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:Extent</a>	-
<a href="#">geosrs:GeodeticCRS</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:GeodeticCRS</a>	-
<a href="#">geosrs:GeographicBoundingBox</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:GeographicBoundingBox</a>	-
<a href="#">geosrs:ProjectedCRS</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:ProjectedCRS</a>	-
<a href="#">geosrs:SingleCRS</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:SingleCRS</a>	-
<a href="#">geosrs:SingleCRSList</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:SingleCRSList</a>	-
<a href="#">geosrs:VerticalCRS</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ign:VerticalCRS</a>	-

## A.2. ISO19111 Ontology

**Table A.3** – Alignment: ISO19111 Ontology

FROM ELEMENT	MAPPING RELATION	TO ELEMENT	NOTES
<a href="#">geosrs:CoordinateSystem</a>	<a href="#">owl:equivalentClass</a>	<a href="#">iso19111:CoordinateSystem</a>	-
<a href="#">geosrs:Datum</a>	<a href="#">owl:equivalentClass</a>	<a href="#">iso19111:Datum</a>	-
<a href="#">geosrs:Ellipsoid</a>	<a href="#">owl:equivalentClass</a>	<a href="#">iso19111:Ellipsoid</a>	-
<a href="#">geosrs:CRS</a>	<a href="#">owl:equivalentClass</a>	<a href="#">iso19111:CRS</a>	-
<a href="#">geosrs:CompoundCRS</a>	<a href="#">owl:equivalentClass</a>	<a href="#">iso19111:CompoundCRS</a>	-
<a href="#">geosrs:EngineeringCRS</a>	<a href="#">owl:equivalentClass</a>	<a href="#">iso19111:EngineeringCRS</a>	-
<a href="#">geosrs:GeodeticCRS</a>	<a href="#">owl:equivalentClass</a>	<a href="#">iso19111:GeodeticCRS</a>	-

FROM ELEMENT	MAPPING RELATION	TO ELEMENT	NOTES
<a href="#">geosrs:GeographicCRS</a>	<a href="#">owl:equivalentClass</a>	<a href="#">iso19111:GeographicCRS</a>	-
<a href="#">geosrs:ParametricCRS</a>	<a href="#">owl:equivalentClass</a>	<a href="#">iso19111:ParametricCRS</a>	-
<a href="#">geosrs:ProjectedCRS</a>	<a href="#">owl:equivalentClass</a>	<a href="#">iso19111:ProjectedCRS</a>	-
<a href="#">geosrs:SingleCRS</a>	<a href="#">owl:equivalentClass</a>	<a href="#">iso19111:SingleCRS</a>	-
<a href="#">geosrs:TemporalCRS</a>	<a href="#">owl:equivalentClass</a>	<a href="#">iso19111:TemporalCRS</a>	-
<a href="#">geosrs:VerticalCRS</a>	<a href="#">owl:equivalentClass</a>	<a href="#">iso19111:VerticalCRS</a>	-

## A.3. IFC Ontology

**Table A.4** – Alignment: IFC Ontology

FROM ELEMENT	MAPPING RELATION	TO ELEMENT	NOTES
<a href="#">geosrs:AxisDirection</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ifc:IfcDirection</a>	-
<a href="#">geosrs:CRS</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ifc:IfcCoordinateReferenceSystem</a>	-
<a href="#">geosrs:CoordinateOperation</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ifc:IfcCoordinateOperation</a>	-
<a href="#">geosrs:ProjectedCRS</a>	<a href="#">owl:equivalentClass</a>	<a href="#">ifc:IfcProjectedCRS</a>	-
<a href="#">geosrs:axis</a>	<a href="#">owl:equivalentProperty</a>	<a href="#">ifc:axis_IfcAxis1Placement</a>	-
<a href="#">geosrs:sourceCRS</a>	<a href="#">owl:equivalentProperty</a>	<a href="#">ifc:sourceCRS</a>	-
<a href="#">geosrs:targetCRS</a>	<a href="#">owl:equivalentProperty</a>	<a href="#">ifc:targetCRS</a>	-



# ANNEX B (INFORMATIVE) SHACL SHAPES

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## ANNEX B (INFORMATIVE) SHACL SHAPES

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Overview

### Overview

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# ANNEX C (INFORMATIVE) REVISION HISTORY

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## ANNEX C (INFORMATIVE) REVISION HISTORY

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DATE	RELEASE	AUTHOR	PRIMARY CLAUSES MODIFIED	DESCRIPTION
2016-04-28	0.1	G. Editor	all	initial version



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## BIBLIOGRAPHY

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**NOTE:** The TC has approved Springer LNCS as the official document citation type. Springer LNCS is widely used in technical and computer science journals and other publications. For citations in the text please use square brackets and consecutive numbers: [1], [2], [3]. Actual References: [n] Journal: Author Surname, A.: Title. Publication Title. Volume number, Issue number, Pages Used (Year Published)

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