

OGC® DOCUMENT: 18-053R2

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



Open
Geospatial
Consortium

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

Notice: This document is an OGC Member approved international standard. This document is available on a royalty free, non-discriminatory basis. Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

License Agreement

Use of this document is subject to the license agreement at <https://www.ogc.org/license>

Copyright notice

Copyright © 2025 Open Geospatial Consortium

To obtain additional rights of use, visit <https://www.ogc.org/legal>

Note

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. The Open Geospatial Consortium shall not be held responsible for identifying any or all such patent rights.

Recipients of this document are requested to submit, with their comments, notification of any relevant patent claims or other intellectual property rights of which they may be aware that might be infringed by any implementation of the standard set forth in this document, and to provide supporting documentation.

CONTENTS

I. ABSTRACT	x
II. KEYWORDS	x
III. PREFACE	xi
IV. SECURITY CONSIDERATIONS	xii
V. SUBMITTERS	xii
VI. SOURCE OF THE CONTENT FOR THIS OGC DOCUMENT	xii
VII. VALIDITY OF CONTENT	xii
VIII. FUTURE WORK	xii
IX. CONTRIBUTORS	xiii
1. SCOPE	2
2. CONFORMANCE	4
3. NORMATIVE REFERENCES	6
4. TERMS AND DEFINITIONS	8
5. CONVENTIONS	10
5.1. Identifiers	10
5.2. Other conventions	10
6. CORE	12
6.1. CRSTypes	12
7. COORDINATE OPERATION MODULE	17
8. COORDINATE SYSTEM MODULE	19
8.1. CSTypes	19
8.2. Orthogonal Coordinate Systems	22
8.3. Celestial Coordinate Systems	23
9. DATUM MODULE	27

9.1. DatumTypes	27
10. SRS APPLICATION MODULE	31
11. PROJECTIONS MODULE	33
11.1. Lenticular Projections	33
11.2. Conformal Projections	37
11.3. Minimum Error Projections	40
11.4. Equal Area Projections	40
11.5. Compromise Projections	42
11.6. Polyhedral Projections	46
11.7. Equidistant Projections	50
11.8. Conical Projections	52
11.9. Cylindrical Projections	55
11.10. Azimuthal Projections	58
11.11. Polyconic Projections	60
11.12. Stereographic Projections	64
12. PLANET MODULE	66
ANNEX A (INFORMATIVE) ALIGNMENTS	68
Overview	
A.1. IGN Ontology	68
A.2. ISO19111 Ontology	70
A.3. IFC Ontology	71
ANNEX B (INFORMATIVE) SHACL SHAPES	73
Overview	
ANNEX C (INFORMATIVE) REVISION HISTORY	75
BIBLIOGRAPHY	77

LIST OF TABLES

Table 1 — geosrs:BoundCRS	12
Table 2 — geosrs:CompoundCRS	13
Table 3 — geosrs:GeocentricCRS	13
Table 4 — geosrs:ParametricCRS	13
Table 5 — geosrs:SelenographicCRS	13
Table 6 — geosrs:SpatioParametricCompoundCRS	14
Table 7 — geosrs:SpatioParametricTemporalCompoundCRS	14
Table 8 — geosrs:SpatioTemporalCompoundCRS	14

Table 9 – geosrs:StaticCRS	15
Table 10 – geosrs:TemporalCRS	15
Table 11 – geosrs:VerticalCRS	15
Table 12 – geosrs:1DCoordinateSystem	19
Table 13 – geosrs:3DCoordinateSystem	20
Table 14 – geosrs:AffineCoordinateSystem	20
Table 15 – geosrs:BarycentricCoordinateSystem	20
Table 16 – geosrs:CelestialCoordinateSystem	21
Table 17 – geosrs:CurvilinearCoordinateSystem	21
Table 18 – geosrs:GeodeticCoordinateSystem	21
Table 19 – geosrs:GridCoordinateSystem	21
Table 20 – geosrs:LocalCoordinateSystem	22
Table 21 – geosrs:ObliqueCoordinateSystem	22
Table 22 – geosrs:PlanarCoordinateSystem	22
Table 23 – geosrs:ConicalCoordinateSystem	23
Table 24 – geosrs:EclipticCoordinateSystem	23
Table 25 – geosrs:EquatorialCoordinateSystem	24
Table 26 – geosrs:GalacticCoordinateSystem	24
Table 27 – geosrs:HorizontalCoordinateSystem	24
Table 28 – geosrs:PerifocalCoordinateSystem	25
Table 29 – geosrs:SuperGalacticCS	25
Table 30 – geosrs:DynamicGeodeticReferenceFrame	27
Table 31 – geosrs:DynamicVerticalDatum	28
Table 32 – geosrs:ParametricDatum	28
Table 33 – geosrs:EngineeringDatum	28
Table 34 – geosrs:TemporalDatum	29
Table 35 – geosrs:DatumEnsemble	29
Table 36 – geosrs:A4Projection	34
Table 37 – geosrs:BriesemeisterProjection	34
Table 38 – geosrs:CiricIProjection	34
Table 39 – geosrs:CupolaProjection	34
Table 40 – geosrs:DedistortProjection	35
Table 41 – geosrs:DietrichKitadaProjection	35
Table 42 – geosrs:FranculaIIIProjection	35
Table 43 – geosrs:FranculaIVProjection	35
Table 44 – geosrs:FranculaIXProjection	36
Table 45 – geosrs:FranculaVIIIProjection	36
Table 46 – geosrs:FranculaVProjection	36
Table 47 – geosrs:FranculaXIIIProjection	36
Table 48 – geosrs:FranculaXIIProjection	36
Table 49 – geosrs:FranculaXIVProjection	37

Table 50 – geosrs:HamusoidalProjection	37
Table 51 – geosrs:KissProjection	37
Table 52 – geosrs:AdamsProjection	38
Table 53 – geosrs:AdamsWorldInASquareIIProjection	38
Table 54 – geosrs:AdamsWorldInASquareIProjection	38
Table 55 – geosrs:AugustEpicycloidalProjection	38
Table 56 – geosrs:CoxConformalProjection	39
Table 57 – geosrs:EisenlohrProjection	39
Table 58 – geosrs:GS50Projection	39
Table 59 – geosrs:PeirceQuincuncialProjection	39
Table 60 – geosrs:StereographicProjection	40
Table 61 – geosrs:AiryProjection	40
Table 62 – geosrs:AlbersEqualAreaProjection	41
Table 63 – geosrs:AzimuthalEqualAreaProjection	41
Table 64 – geosrs:CylindricalEqualArea	41
Table 65 – geosrs:GallPetersProjection	41
Table 66 – geosrs:HoboDyerProjection	42
Table 67 – geosrs:LambertAzimuthalEqualArea	42
Table 68 – geosrs:TrystanEdwardsProjection	42
Table 69 – geosrs:WiechelProjection	42
Table 70 – geosrs:ArmadilloProjection	43
Table 71 – geosrs:BakerDinomicProjection	43
Table 72 – geosrs:BertinProjection	43
Table 73 – geosrs:ChamberlinTrimetricProjection	43
Table 74 – geosrs:DenoyerSemiEllipticalProjection	44
Table 75 – geosrs:FairgrieveProjection	44
Table 76 – geosrs:LarriveeProjection	44
Table 77 – geosrs:PetermannStarProjection	44
Table 78 – geosrs:SpilhausOceanicProjection	45
Table 79 – geosrs:VanDerGrintenIIIProjection	45
Table 80 – geosrs:WinkelIIProjection	45
Table 81 – geosrs:WinkelIProjection	45
Table 82 – geosrs:WinkelSnyderProjection	46
Table 83 – geosrs:AuthaGraphProjection	46
Table 84 – geosrs:CahillKeyesProjection	46
Table 85 – geosrs:CollignonButterflyProjection	47
Table 86 – geosrs:DodecahedralProjection	47
Table 87 – geosrs:DymaxionProjection	47
Table 88 – geosrs:GnomonicButterflyProjection	47
Table 89 – geosrs:GnomonicCubedSphereProjection	47
Table 90 – geosrs:GnomonicIcosahedronProjection	48

Table 91 – geosrs:GuyouProjection	48
Table 92 – geosrs:IcosahedralProjection	48
Table 93 – geosrs:LeeProjection	48
Table 94 – geosrs:MyrahedralProjection	49
Table 95 – geosrs:OctantProjection	49
Table 96 – geosrs:QuadrilateralizedSphericalCubeProjection	49
Table 97 – geosrs:WatermanButterflyProjection	49
Table 98 – geosrs:AzimuthalEquidistantProjection	50
Table 99 – geosrs:BerghausStarProjection	50
Table 100 – geosrs:CassiniProjection	50
Table 101 – geosrs:EquidistantConicProjection	51
Table 102 – geosrs:EquidistantCylindricalProjection	51
Table 103 – geosrs:EquirectangularProjection	51
Table 104 – geosrs:ObliquePlateCarreeProjection	51
Table 105 – geosrs:PlateCarreeProjection	52
Table 106 – geosrs:TwoPointEquidistantProjection	52
Table 107 – geosrs:BipolarObliqueConicConformalProjection	52
Table 108 – geosrs:CentralConicProjection	53
Table 109 – geosrs:HerschelConformalConicProjection	53
Table 110 – geosrs:Krovak	53
Table 111 – geosrs:LambertConformalConicProjection	53
Table 112 – geosrs:MurdochIIIProjection	53
Table 113 – geosrs:MurdochIIProjection	54
Table 114 – geosrs:MurdochIProjection	54
Table 115 – geosrs:SchjerningIProjection	54
Table 116 – geosrs:VitkovskyIProjection	54
Table 117 – geosrs:BraunPerspectiveProjection	55
Table 118 – geosrs:CompactMillerProjection	55
Table 119 – geosrs:CylindricalStereographicProjection	55
Table 120 – geosrs:KarchenkoShabanovaProjection	56
Table 121 – geosrs:LabordeProjection	56
Table 122 – geosrs:MercatorProjection	56
Table 123 – geosrs:MillerProjection	56
Table 124 – geosrs:PattersonCylindricalProjection	57
Table 125 – geosrs:PavlovProjection	57
Table 126 – geosrs:ToblerCylindricalIIProjection	57
Table 127 – geosrs:ToblerCylindricalIProjection	57
Table 128 – geosrs:UrmayevIIProjection	57
Table 129 – geosrs:WebMercatorProjection	58
Table 130 – geosrs:BreusingGeometricProjection	58
Table 131 – geosrs:BreusingHarmonicProjection	58

Table 132 – geosrs:GinzburgIIProjection	59
Table 133 – geosrs:GinzburgIProjection	59
Table 134 – geosrs:GnomonicProjection	59
Table 135 – geosrs:JamesAzimuthalProjection	59
Table 136 – geosrs:GinzburgIVProjection	60
Table 137 – geosrs:GinzburgIXProjection	60
Table 138 – geosrs:GinzburgVIPProjection	60
Table 139 – geosrs:GinzburgVProjection	61
Table 140 – geosrs:GottWagnerProjection	61
Table 141 – geosrs:HillEucyclicProjection	61
Table 142 – geosrs:LagrangeProjection	61
Table 143 – geosrs:LaskowskiProjection	61
Table 144 – geosrs:RectangularPolyconicProjection	62
Table 145 – geosrs:StabiusWernerIIIProjection	62
Table 146 – geosrs:StabiusWernerIProjection	62
Table 147 – geosrs:VanDerGrintenIIProjection	62
Table 148 – geosrs:VanDerGrintenIProjection	63
Table 149 – geosrs:VanDerGrintenIVProjection	63
Table 150 – geosrs:WagnerIXProjection	63
Table 151 – geosrs:WagnerVIIIProjection	63
Table 152 – geosrs:WagnerVIIProjection	63
Table 153 – geosrs:MillerOblatedStereographicProjection	64
Table 154 – geosrs:RoussilheProjection	64
Table A.1 – Alignment: Namespaces	68
Table A.2 – Alignment: IGN Ontology	69
Table A.3 – Alignment: ISO19111 Ontology	70
Table A.4 – Alignment: IFC Ontology	71

LIST OF RECOMMENDATIONS

.....	12
.....	19
.....	27
.....	33
.....	12
.....	19
.....	23
.....	23

.....	27
.....	33
.....	37
.....	40
.....	40
.....	43
.....	46
.....	50
.....	52
.....	55
.....	58
.....	60
.....	64



ABSTRACT

<Insert Abstract Text here>



KEYWORDS

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

keyword_1, keyword_2, keyword_3, etc.



PREFACE

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.

There are two ways to specify the Preface: “simple clause” or “full clause”

If the Preface does not contain subclauses, it is considered a simple preface clause. This one is entered as text after the `.Preface` label and must be placed between the AsciiDoc document attributes and the first AsciiDoc section title. It should not be give a section title of its own.

If the Preface contains subclauses, it needs to be encoded as a full preface clause. This one is recognized as a full Metanorma AsciiDoc section with the title “Preface”, i.e. `== Preface`. (Simple preface content can also be encoded like full preface.)

IV

SECURITY CONSIDERATIONS

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:

NAME	AFFILIATION	OGC MEMBER
Steve Liang	University of Calgary, Canada / SensorUp Inc.	Yes

VI

SOURCE OF THE CONTENT FOR THIS OGC DOCUMENT

VII

VALIDITY OF CONTENT

VIII

FUTURE WORK

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



CONTRIBUTORS

Additional contributors to this Standard include the following:

Individual name(s), Organization



1

SCOPE



SCOPE

<Insert Scope text here>

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



2

CONFORMANCE



CONFORMANCE

<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

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

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

6

CORE

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

Requirements class 1: 06-core.adoc Extension	
IDENTIFIER	<code>/req/06-core.adoc</code>
TARGET TYPE	Implementation Specification
REQUIREMENT	<code>/req/CRSTypes</code>

6.1. CRSTypes

Requirement 1: Requirement CRSTypes	
IDENTIFIER	<code>/req/CRSTypes</code>
STATEMENT	Requirement Text

6.1.1. Class: geosrs:BoundCRS

Table 1 — geosrs:BoundCRS

URI	https://w3id.org/geosrs/srs/BoundCRS
Super-classes	BoundCRS

6.1.2. Class: geosrs:CompoundCRS

Table 2 — geosrs:CompoundCRS

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	CompoundCRS

6.1.3. Class: geosrs:GeocentricCRS

Table 3 — geosrs:GeocentricCRS

URI	https://w3id.org/geosrs/srs/GeocentricCRS
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	GeocentricCRS

6.1.4. Class: geosrs:ParametricCRS

Table 4 — geosrs:ParametricCRS

URI	https://w3id.org/geosrs/srs/ParametricCRS
Definition	Coordinate Reference System based on a parametric datum
Super-classes	ParametricCRS

6.1.5. Class: geosrs:SelenographicCRS

Table 5 — geosrs:SelenographicCRS

URI	https://w3id.org/geosrs/srs/SelenographicCRS
-----	---

Definition	Coordinate Reference System to refer locations on the surface of the Earth's Moon.
Super-classes	SelenographicCRS

6.1.6. Class: geosrs:SpatioParametricCompoundCRS

Table 6 — geosrs:SpatioParametricCompoundCRS

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	SpatioParametricCompoundCRS

6.1.7. Class: geosrs:SpatioParametricTemporalCompoundCRS

Table 7 — geosrs:SpatioParametricTemporalCompoundCRS

URI	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	SpatioParametricTemporalCompoundCRS

6.1.8. Class: geosrs:SpatioTemporalCompoundCRS

Table 8 — geosrs:SpatioTemporalCompoundCRS

URI	https://w3id.org/geosrs/srs/SpatioTemporalCompoundCRS
Definition	Coordinate reference system combining a spatial reference system with at least one temporal reference system
Super-classes	SpatioTemporalCompoundCRS

6.1.9. Class: geosrs:StaticCRS

Table 9 — geosrs:StaticCRS

URI	https://w3id.org/geosrs/srs/StaticCRS
Definition	Coordinate Reference System that has a static reference frame
Super-classes	StaticCRS

6.1.10. Class: geosrs:TemporalCRS

Table 10 — geosrs:TemporalCRS

URI	https://w3id.org/geosrs/srs/TemporalCRS
Definition	Coordinate Reference System based on a temporal datum
Super-classes	TemporalCRS

6.1.11. Class: geosrs:VerticalCRS

Table 11 — geosrs:VerticalCRS

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	VerticalCRS

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.



8

COORDINATE SYSTEM MODULE

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.

Requirements class 2: 08-cs_extension.adoc Extension

IDENTIFIER	/req/08-cs_extension.adoc
TARGET TYPE	Implementation Specification
	/req/CSTypes
REQUIREMENT	/req/Orthogonal_Coordinate_Systems
	/req/Celestial_Coordinate_Systems

8.1. CSTypes

Requirement 2: Requirement CSTypes

IDENTIFIER	/req/CSTypes
STATEMENT	Requirement Text

8.1.1. Class: geosrs:1DCoordinateSystem

Table 12 — geosrs:1DCoordinateSystem

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

8.1.2. Class: geosrs:3DCoordinateSystem

Table 13 — geosrs:3DCoordinateSystem

URI	https://w3id.org/geosrs/cs/3DCoordinateSystem
Definition	Non-repeating sequence of coordinate system axes that spans a given coordinate space in three dimensions
Super-classes	3DCoordinateSystem

8.1.3. Class: geosrs:AffineCoordinateSystem

Table 14 — geosrs:AffineCoordinateSystem

URI	https://w3id.org/geosrs/cs/AffineCoordinateSystem
Definition	Coordinate system in Euclidean space with straight axes that are not necessarily mutually perpendicular
Super-classes	AffineCoordinateSystem

8.1.4. Class: geosrs:BarycentricCoordinateSystem

Table 15 — geosrs:BarycentricCoordinateSystem

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	BarycentricCoordinateSystem

8.1.5. Class: geosrs:CelestialCoordinateSystem

Table 16 — geosrs:CelestialCoordinateSystem

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

8.1.6. Class: geosrs:CurvilinearCoordinateSystem

Table 17 — geosrs:CurvilinearCoordinateSystem

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	CurvilinearCoordinateSystem

8.1.7. Class: geosrs:GeodeticCoordinateSystem

Table 18 — geosrs:GeodeticCoordinateSystem

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	GeodeticCoordinateSystem

8.1.8. Class: geosrs:GridCoordinateSystem

Table 19 — geosrs:GridCoordinateSystem

URI	https://w3id.org/geosrs/cs/GridCoordinateSystem
Definition	A grid coordinate system identifies areas within a grid.
Super-classes	GridCoordinateSystem

8.1.9. Class: geosrs:LocalCoordinateSystem

Table 20 — geosrs:LocalCoordinateSystem

URI	https://w3id.org/geosrs/cs/LocalCoordinateSystem
Definition	Coordinate system with a point of local reference.
Super-classes	LocalCoordinateSystem

8.1.10. Class: geosrs:ObliqueCoordinateSystem

Table 21 — geosrs:ObliqueCoordinateSystem

URI	https://w3id.org/geosrs/cs/ObliqueCoordinateSystem
Definition	A plane coordinate system whose axes are not perpendicular.
Super-classes	ObliqueCoordinateSystem

8.1.11. Class: geosrs:PlanarCoordinateSystem

Table 22 — geosrs:PlanarCoordinateSystem

URI	https://w3id.org/geosrs/cs/PlanarCoordinateSystem
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	PlanarCoordinateSystem

8.2. Orthogonal Coordinate Systems

Requirement 3: Requirement Orthogonal Coordinate Systems

IDENTIFIER	/req/Orthogonal_Coordinate_Systems
------------	------------------------------------

STATEMENT	Requirement Text
-----------	------------------

8.2.1. Class: geosrs:ConicalCoordinateSystem

Table 23 — geosrs:ConicalCoordinateSystem

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

8.3. Celestial Coordinate Systems

Requirement 4: Requirement Celestial Coordinate Systems

IDENTIFIER	/req/Celestial_Coordinate_Systems
------------	-----------------------------------

STATEMENT	Requirement Text
-----------	------------------

8.3.1. Class: geosrs:EclipticCoordinateSystem

Table 24 — geosrs:EclipticCoordinateSystem

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

Super-classes	EclipticCoordinateSystem
---------------	--

8.3.2. Class: geosrs:EquatorialCoordinateSystem

Table 25 — geosrs:EquatorialCoordinateSystem

URI	https://w3id.org/geosrs/cs/EquatorialCoordinateSystem
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	EquatorialCoordinateSystem

8.3.3. Class: geosrs:GalacticCoordinateSystem

Table 26 — geosrs:GalacticCoordinateSystem

URI	https://w3id.org/geosrs/cs/GalacticCoordinateSystem
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	CelestialCoordinateSystem 3DCoordinateSystem

8.3.4. Class: geosrs:HorizontalCoordinateSystem

Table 27 — geosrs:HorizontalCoordinateSystem

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

8.3.5. Class: geosrs:PerifocalCoordinateSystem

Table 28 — geosrs:PerifocalCoordinateSystem

URI	https://w3id.org/geosrs/cs/PerifocalCoordinateSystem
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	PerifocalCoordinateSystem

8.3.6. Class: geosrs:SuperGalacticCS

Table 29 — geosrs:SuperGalacticCS

URI	https://w3id.org/geosrs/cs/SuperGalacticCS
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	CelestialCoordinateSystem 3DCoordinateSystem

9

DATUM MODULE

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

Requirements class 3: 09-datum_extension.adoc Extension

IDENTIFIER	/req/09-datum_extension.adoc
TARGET TYPE	Implementation Specification
REQUIREMENT	/req/DatumTypes

9.1. DatumTypes

Requirement 5: Requirement DatumTypes

IDENTIFIER	/req/DatumTypes
STATEMENT	Requirement Text

9.1.1. Class: geosrs:DynamicGeodeticReferenceFrame

Table 30 — geosrs:DynamicGeodeticReferenceFrame

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

9.1.2. Class: geosrs:DynamicVerticalDatum

Table 31 — geosrs:DynamicVerticalDatum

URI	https://w3id.org/geosrs/datum/DynamicVerticalDatum
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	DynamicVerticalDatum

9.1.3. Class: geosrs:ParametricDatum

Table 32 — geosrs:ParametricDatum

URI	https://w3id.org/geosrs/datum/ParametricDatum
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	ParametricDatum

9.1.4. Class: geosrs:EngineeringDatum

Table 33 — geosrs:EngineeringDatum

URI	https://w3id.org/geosrs/datum/EngineeringDatum
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	EngineeringDatum
---------------	----------------------------------

9.1.5. Class: geosrs:TemporalDatum

Table 34 — geosrs:TemporalDatum

URI	https://w3id.org/geosrs/datum/TemporalDatum
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	TemporalDatum

9.1.6. Class: geosrs:DatumEnsemble

Table 35 — geosrs:DatumEnsemble

URI	https://w3id.org/geosrs/datum/DatumEnsemble
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.

10

SRS APPLICATION MODULE

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

PROJECTIONS MODULE

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

Requirements class 4: 11-projections_extension.adoc Extension

IDENTIFIER	/req/11-projections_extension.adoc
------------	------------------------------------

TARGET TYPE	Implementation Specification
-------------	------------------------------

REQUIREMENT	/req/Lenticular_Projections
	/req/Conformal_Projections
	/req/Minimum_Error_Projections
	/req/Equal_Area_Projections
	/req/Compromise_Projections
	/req/Polyhedral_Projections
	/req/Equidistant_Projections
	/req/Conical_Projections
	/req/Cylindrical_Projections
	/req/Azimuthal_Projections
/req/Polyconic_Projections	
/req/Stereographic_Projections	

11.1. Lenticular Projections

Requirement 6: Requirement Lenticular Projections

IDENTIFIER	/req/Lenticular_Projections
------------	-----------------------------

Requirement 6: Requirement Lenticular Projections

STATEMENT	Requirement Text
-----------	------------------

11.1.1. Class: geosrs:A4Projection

Table 36 — geosrs:A4Projection

URI	https://w3id.org/geosrs/projection/A4Projection
Super-classes	A4Projection

11.1.2. Class: geosrs:BriesemeisterProjection

Table 37 — geosrs:BriesemeisterProjection

URI	https://w3id.org/geosrs/projection/BriesemeisterProjection
Super-classes	BriesemeisterProjection

11.1.3. Class: geosrs:CiriclProjection

Table 38 — geosrs:CiriclProjection

URI	https://w3id.org/geosrs/projection/CiriclProjection
Super-classes	CiriclProjection

11.1.4. Class: geosrs:CupolaProjection

Table 39 — geosrs:CupolaProjection

URI	https://w3id.org/geosrs/projection/CupolaProjection
Super-classes	CupolaProjection

11.1.5. Class: geosrs:DedistortProjection

Table 40 — geosrs:DedistortProjection

URI	https://w3id.org/geosrs/projection/DedistortProjection
Super-classes	DedistortProjection

11.1.6. Class: geosrs:DietrichKitadaProjection

Table 41 — geosrs:DietrichKitadaProjection

URI	https://w3id.org/geosrs/projection/DietrichKitadaProjection
Super-classes	DietrichKitadaProjection

11.1.7. Class: geosrs:FranculaIIIProjection

Table 42 — geosrs:FranculaIIIProjection

URI	https://w3id.org/geosrs/projection/FranculaIIIProjection
Super-classes	FranculaIIIProjection

11.1.8. Class: geosrs:FranculaIVProjection

Table 43 — geosrs:FranculaIVProjection

URI	https://w3id.org/geosrs/projection/FranculaIVProjection
Super-classes	FranculaIVProjection

11.1.9. Class: geosrs:FranculaIXProjection

Table 44 — geosrs:FraculaIXProjection

URI	https://w3id.org/geosrs/projection/FraculaIXProjection
Super-classes	FraculaIXProjection

11.1.10. Class: geosrs:FraculaVIIIProjection

Table 45 — geosrs:FraculaVIIIProjection

URI	https://w3id.org/geosrs/projection/FraculaVIIIProjection
Super-classes	FraculaVIIIProjection

11.1.11. Class: geosrs:FraculaVProjection

Table 46 — geosrs:FraculaVProjection

URI	https://w3id.org/geosrs/projection/FraculaVProjection
Super-classes	FraculaVProjection

11.1.12. Class: geosrs:FraculaXIIIProjection

Table 47 — geosrs:FraculaXIIIProjection

URI	https://w3id.org/geosrs/projection/FraculaXIIIProjection
Super-classes	FraculaXIIIProjection

11.1.13. Class: geosrs:FraculaXIIProjection

Table 48 — geosrs:FraculaXIIProjection

URI	https://w3id.org/geosrs/projection/FraculaXIIProjection
Super-classes	FraculaXIIProjection

11.1.14. Class: geosrs:FranculaXIVProjection

Table 49 — geosrs:FranculaXIVProjection

URI	https://w3id.org/geosrs/projection/FranculaXIVProjection
Super-classes	FranculaXIVProjection

11.1.15. Class: geosrs:HamusoidalProjection

Table 50 — geosrs:HamusoidalProjection

URI	https://w3id.org/geosrs/projection/HamusoidalProjection
Super-classes	HamusoidalProjection

11.1.16. Class: geosrs:KissProjection

Table 51 — geosrs:KissProjection

URI	https://w3id.org/geosrs/projection/KissProjection
Super-classes	KissProjection

11.2. Conformal Projections

Requirement 7: Requirement Conformal Projections

IDENTIFIER	/req/Conformal_Projections
STATEMENT	Requirement Text

11.2.1. Class: geosrs:AdamsProjection

Table 52 — geosrs:AdamsProjection

URI	https://w3id.org/geosrs/projection/AdamsProjection
Super-classes	AdamsProjection

11.2.2. Class: geosrs:AdamsWorldInASquareIIProjection

Table 53 — geosrs:AdamsWorldInASquareIIProjection

URI	https://w3id.org/geosrs/projection/AdamsWorldInASquareIIProjection
Super-classes	AdamsWorldInASquareIIProjection

11.2.3. Class: geosrs:AdamsWorldInASquareIProjection

Table 54 — geosrs:AdamsWorldInASquareIProjection

URI	https://w3id.org/geosrs/projection/AdamsWorldInASquareIProjection
Super-classes	AdamsWorldInASquareIProjection

11.2.4. Class: geosrs:AugustEpicycloidalProjection

Table 55 — geosrs:AugustEpicycloidalProjection

URI	https://w3id.org/geosrs/projection/AugustEpicycloidalProjection
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	AugustEpicycloidalProjection

11.2.5. Class: geosrs:CoxConformalProjection

Table 56 — geosrs:CoxConformalProjection

URI	https://w3id.org/geosrs/projection/CoxConformalProjection
Super-classes	CoxConformalProjection

11.2.6. Class: geosrs:EisenlohrProjection

Table 57 — geosrs:EisenlohrProjection

URI	https://w3id.org/geosrs/projection/EisenlohrProjection
Super-classes	EisenlohrProjection

11.2.7. Class: geosrs:GS50Projection

Table 58 — geosrs:GS50Projection

URI	https://w3id.org/geosrs/projection/GS50Projection
Super-classes	GS50Projection

11.2.8. Class: geosrs:PeirceQuincuncialProjection

Table 59 — geosrs:PeirceQuincuncialProjection

URI	https://w3id.org/geosrs/projection/PeirceQuincuncialProjection
Super-classes	PeirceQuincuncialProjection

11.2.9. Class: geosrs:StereographicProjection

Table 60 — geosrs:StereographicProjection

URI	https://w3id.org/geosrs/projection/StereographicProjection
Super-classes	StereographicProjection

11.3. Minimum Error Projections

Requirement 8: Requirement Minimum Error Projections

IDENTIFIER	/req/Minimum_Error_Projections
STATEMENT	Requirement Text

11.3.1. Class: geosrs:AiryProjection

Table 61 — geosrs:AiryProjection

URI	https://w3id.org/geosrs/projection/AiryProjection
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	AiryProjection

11.4. Equal Area Projections

Requirement 9: Requirement Equal Area Projections

IDENTIFIER	/req/Equal_Area_Projections
STATEMENT	Requirement Text

11.4.1. Class: geosrs:AlbersEqualAreaProjection

Table 62 — geosrs:AlbersEqualAreaProjection

URI	https://w3id.org/geosrs/projection/AlbersEqualAreaProjection
Super-classes	AlbersEqualAreaProjection

11.4.2. Class: geosrs:AzimuthalEqualAreaProjection

Table 63 — geosrs:AzimuthalEqualAreaProjection

URI	https://w3id.org/geosrs/projection/AzimuthalEqualAreaProjection
Super-classes	AzimuthalEqualAreaProjection

11.4.3. Class: geosrs:CylindricalEqualArea

Table 64 — geosrs:CylindricalEqualArea

URI	https://w3id.org/geosrs/projection/CylindricalEqualArea
Super-classes	CylindricalEqualArea

11.4.4. Class: geosrs:GallPetersProjection

Table 65 — geosrs:GallPetersProjection

URI	https://w3id.org/geosrs/projection/GallPetersProjection
Super-classes	GallPetersProjection

11.4.5. Class: geosrs:HoboDyerProjection

Table 66 — geosrs:HoboDyerProjection

URI	https://w3id.org/geosrs/projection/HoboDyerProjection
Super-classes	HoboDyerProjection

11.4.6. Class: geosrs:LambertAzimuthalEqualArea

Table 67 — geosrs:LambertAzimuthalEqualArea

URI	https://w3id.org/geosrs/projection/LambertAzimuthalEqualArea
Super-classes	LambertAzimuthalEqualArea

11.4.7. Class: geosrs:TrystanEdwardsProjection

Table 68 — geosrs:TrystanEdwardsProjection

URI	https://w3id.org/geosrs/projection/TrystanEdwardsProjection
Super-classes	TrystanEdwardsProjection

11.4.8. Class: geosrs:WiechelProjection

Table 69 — geosrs:WiechelProjection

URI	https://w3id.org/geosrs/projection/WichelProjection
Super-classes	WiechelProjection

11.5. Compromise Projections

Requirement 10: Requirement Compromise Projections

IDENTIFIER	/req/Compromise_Projections
------------	-----------------------------

STATEMENT	Requirement Text
-----------	------------------

11.5.1. Class: geosrs:ArmadilloProjection

Table 70 — geosrs:ArmadilloProjection

URI	https://w3id.org/geosrs/projection/ArmadilloProjection
-----	---

Super-classes	ArmadilloProjection
---------------	-------------------------------------

11.5.2. Class: geosrs:BakerDinomicProjection

Table 71 — geosrs:BakerDinomicProjection

URI	https://w3id.org/geosrs/projection/BakerDinomicProjection
-----	---

Super-classes	BakerDinomicProjection
---------------	--

11.5.3. Class: geosrs:BertinProjection

Table 72 — geosrs:BertinProjection

URI	https://w3id.org/geosrs/projection/BertinProjection
-----	---

Super-classes	BertinProjection
---------------	----------------------------------

11.5.4. Class: geosrs:ChamberlinTrimetricProjection

Table 73 — geosrs:ChamberlinTrimetricProjection

URI	https://w3id.org/geosrs/projection/ChamberlinTrimetricProjection
-----	---

Super-classes	ChamberlinTrimetricProjection
---------------	---

11.5.5. Class: geosrs:DenoyerSemiEllipticalProjection

Table 74 — geosrs:DenoyerSemiEllipticalProjection

URI	https://w3id.org/geosrs/projection/DenoyerSemiEllipticalProjection
Super-classes	DenoyerSemiEllipticalProjection

11.5.6. Class: geosrs:FairgrieveProjection

Table 75 — geosrs:FairgrieveProjection

URI	https://w3id.org/geosrs/projection/FairgrieveProjection
Super-classes	FairgrieveProjection

11.5.7. Class: geosrs:LarriveeProjection

Table 76 — geosrs:LarriveeProjection

URI	https://w3id.org/geosrs/projection/LarriveeProjection
Super-classes	LarriveeProjection

11.5.8. Class: geosrs:PetermannStarProjection

Table 77 — geosrs:PetermannStarProjection

URI	https://w3id.org/geosrs/projection/PetermannStarProjection
Super-classes	PetermannStarProjection

11.5.9. Class: geosrs:SpilhausOceanicProjection

Table 78 — geosrs:SpilhausOceanicProjection

URI	https://w3id.org/geosrs/projection/SpilhausOceanicProjection
Super-classes	SpilhausOceanicProjection

11.5.10. Class: geosrs:VanDerGrintenIIIProjection

Table 79 — geosrs:VanDerGrintenIIIProjection

URI	https://w3id.org/geosrs/projection/VanDerGrintenIIIProjection
Super-classes	VanDerGrintenIIIProjection

11.5.11. Class: geosrs:WinkelIIIProjection

Table 80 — geosrs:WinkelIIIProjection

URI	https://w3id.org/geosrs/projection/WinkelIIIProjection
Super-classes	WinkelIIIProjection

11.5.12. Class: geosrs:WinkelIIProjection

Table 81 — geosrs:WinkelIIProjection

URI	https://w3id.org/geosrs/projection/WinkelIIProjection
Super-classes	WinkelIIProjection

11.5.13. Class: geosrs:WinkelSnyderProjection

Table 82 — geosrs:WinkelSnyderProjection

URI	https://w3id.org/geosrs/projection/WinkelSnyderProjection
Super-classes	WinkelSnyderProjection

11.6. Polyhedral Projections

Requirement 11: Requirement Polyhedral Projections

IDENTIFIER	/req/Polyhedral_Projections
STATEMENT	Requirement Text

11.6.1. Class: geosrs:AuthaGraphProjection

Table 83 — geosrs:AuthaGraphProjection

URI	https://w3id.org/geosrs/projection/AuthaGraphProjection
Super-classes	AuthaGraphProjection

11.6.2. Class: geosrs:CahillKeyesProjection

Table 84 — geosrs:CahillKeyesProjection

URI	https://w3id.org/geosrs/projection/CahillKeyesProjection
Super-classes	CahillKeyesProjection

11.6.3. Class: geosrs:CollignonButterflyProjection

Table 85 — geosrs:CollignonButterflyProjection

URI	https://w3id.org/geosrs/projection/CollignonButterflyProjection
Super-classes	CollignonButterflyProjection

11.6.4. Class: geosrs:DodecahedralProjection

Table 86 — geosrs:DodecahedralProjection

URI	https://w3id.org/geosrs/projection/DodecahedralProjection
Super-classes	DodecahedralProjection

11.6.5. Class: geosrs:DymaxionProjection

Table 87 — geosrs:DymaxionProjection

URI	https://w3id.org/geosrs/projection/DymaxionProjection
Super-classes	DymaxionProjection

11.6.6. Class: geosrs:GnomonicButterflyProjection

Table 88 — geosrs:GnomonicButterflyProjection

URI	https://w3id.org/geosrs/projection/GnomonicButterflyProjection
Super-classes	GnomonicButterflyProjection

11.6.7. Class: geosrs:GnomonicCubedSphereProjection

Table 89 — geosrs:GnomonicCubedSphereProjection

URI	https://w3id.org/geosrs/projection/GnomonicCubedSphereProjection
-----	---

Super-classes	GnomonicCubedSphereProjection
---------------	---

11.6.8. Class: geosrs:GnomonicIcosahedronProjection

Table 90 — geosrs:GnomonicIcosahedronProjection

URI	https://w3id.org/geosrs/projection/GnomonicIcosahedronProjection
Super-classes	GnomonicIcosahedronProjection

11.6.9. Class: geosrs:GuyouProjection

Table 91 — geosrs:GuyouProjection

URI	https://w3id.org/geosrs/projection/GuyouProjection
Super-classes	GuyouProjection

11.6.10. Class: geosrs:IcosahedralProjection

Table 92 — geosrs:IcosahedralProjection

URI	https://w3id.org/geosrs/projection/IcosahedralProjection
Super-classes	IcosahedralProjection

11.6.11. Class: geosrs:LeeProjection

Table 93 — geosrs:LeeProjection

URI	https://w3id.org/geosrs/projection/LeeProjection
Super-classes	LeeProjection

11.6.12. Class: geosrs:MyrahedalProjection

Table 94 — geosrs:MyrahedalProjection

URI	https://w3id.org/geosrs/projection/MyrahedalProjection
Super-classes	MyrahedalProjection

11.6.13. Class: geosrs:OctantProjection

Table 95 — geosrs:OctantProjection

URI	https://w3id.org/geosrs/projection/OctantProjection
Super-classes	OctantProjection

11.6.14. Class: geosrs:QuadrilateralizedSphericalCubeProjection

Table 96 — geosrs:QuadrilateralizedSphericalCubeProjection

URI	https://w3id.org/geosrs/projection/QuadrilateralizedSphericalCubeProjection
Super-classes	QuadrilateralizedSphericalCubeProjection

11.6.15. Class: geosrs:WatermanButterflyProjection

Table 97 — geosrs:WatermanButterflyProjection

URI	https://w3id.org/geosrs/projection/WatermanButterflyProjection
Super-classes	WatermanButterflyProjection

11.7. Equidistant Projections

Requirement 12: Requirement Equidistant Projections	
IDENTIFIER	/req/Equidistant_Projections
STATEMENT	Requirement Text

11.7.1. Class: geosrs:AzimuthalEquidistantProjection

Table 98 — geosrs:AzimuthalEquidistantProjection

URI	https://w3id.org/geosrs/projection/AzimuthalEquidistantProjection
Super-classes	AzimuthalEquidistantProjection

11.7.2. Class: geosrs:BerghausStarProjection

Table 99 — geosrs:BerghausStarProjection

URI	https://w3id.org/geosrs/projection/BerghausStarProjection
Super-classes	BerghausStarProjection

11.7.3. Class: geosrs:CassiniProjection

Table 100 — geosrs:CassiniProjection

URI	https://w3id.org/geosrs/projection/CassiniProjection
Definition	A map projection first described in an approximate form by César-François Cassini de Thury in 1745
Super-classes	CassiniProjection

11.7.4. Class: geosrs:EquidistantConicProjection

Table 101 — geosrs:EquidistantConicProjection

URI	https://w3id.org/geosrs/projection/EquidistantConicProjection
Super-classes	EquidistantConicProjection

11.7.5. Class: geosrs:EquidistantCylindricalProjection

Table 102 — geosrs:EquidistantCylindricalProjection

URI	https://w3id.org/geosrs/projection/EquidistantCylindricalProjection
Super-classes	EquidistantCylindricalProjection

11.7.6. Class: geosrs:EquirectangularProjection

Table 103 — geosrs:EquirectangularProjection

URI	https://w3id.org/geosrs/projection/EquirectangularProjection
Super-classes	EquirectangularProjection

11.7.7. Class: geosrs:ObliquePlateCarreeProjection

Table 104 — geosrs:ObliquePlateCarreeProjection

URI	https://w3id.org/geosrs/projection/ObliquePlateCarreeProjection
Super-classes	ObliquePlateCarreeProjection

11.7.8. Class: geosrs:PlateCarreeProjection

Table 105 — geosrs:PlateCarreeProjection

URI	https://w3id.org/geosrs/projection/PlateCarreeProjection
Super-classes	PlateCarreeProjection

11.7.9. Class: geosrs:TwoPointEquidistantProjection

Table 106 — geosrs:TwoPointEquidistantProjection

URI	https://w3id.org/geosrs/projection/TwoPointEquidistantProjection
Super-classes	TwoPointEquidistantProjection

11.8. Conical Projections

Requirement 13: Requirement Conical Projections

IDENTIFIER	/req/Conical_Projections
STATEMENT	Requirement Text

11.8.1. Class: geosrs:BipolarObliqueConicConformalProjection

Table 107 — geosrs:BipolarObliqueConicConformalProjection

URI	https://w3id.org/geosrs/projection/BipolarObliqueConicConformalProjection
Super-classes	BipolarObliqueConicConformalProjection

11.8.2. Class: geosrs:CentralConicProjection

Table 108 — geosrs:CentralConicProjection

URI	https://w3id.org/geosrs/projection/CentralConicProjection
Super-classes	CentralConicProjection

11.8.3. Class: geosrs:HerschelConformalConicProjection

Table 109 — geosrs:HerschelConformalConicProjection

URI	https://w3id.org/geosrs/projection/HerschelConformalConicProjection
Super-classes	HerschelConformalConicProjection

11.8.4. Class: geosrs:Krovak

Table 110 — geosrs:Krovak

URI	https://w3id.org/geosrs/projection/Krovak
Super-classes	Krovak

11.8.5. Class: geosrs:LambertConformalConicProjection

Table 111 — geosrs:LambertConformalConicProjection

URI	https://w3id.org/geosrs/projection/LambertConformalConicProjection
Super-classes	LambertConformalConicProjection

11.8.6. Class: geosrs:MurdochIIIProjection

Table 112 — geosrs:MurdochIIIProjection

URI	https://w3id.org/geosrs/projection/MurdochIIIProjection
-----	---

Super-classes

[MurdochIIIProjection](#)

11.8.7. Class: geosrs:MurdochIIProjection

Table 113 — geosrs:MurdochIIProjection

URI

<https://w3id.org/geosrs/projection/MurdochIIProjection>

Super-classes

[MurdochIIProjection](#)

11.8.8. Class: geosrs:MurdochIProjection

Table 114 — geosrs:MurdochIProjection

URI

<https://w3id.org/geosrs/projection/MurdochIProjection>

Super-classes

[MurdochIProjection](#)

11.8.9. Class: geosrs:SchjerningIProjection

Table 115 — geosrs:SchjerningIProjection

URI

<https://w3id.org/geosrs/projection/SchjerningIProjection>

Super-classes

[SchjerningIProjection](#)

11.8.10. Class: geosrs:VitkovskyIProjection

Table 116 — geosrs:VitkovskyIProjection

URI

<https://w3id.org/geosrs/projection/VitkovskyIProjection>

Super-classes

[VitkovskyIProjection](#)

11.9. Cylindrical Projections

Requirement 14: Requirement Cylindrical Projections	
IDENTIFIER	/req/Cylindrical_Projections
STATEMENT	Requirement Text

11.9.1. Class: geosrs:BraunPerspectiveProjection

Table 117 — geosrs:BraunPerspectiveProjection

URI	https://w3id.org/geosrs/projection/BraunPerspectiveProjection
Super-classes	BraunPerspectiveProjection

11.9.2. Class: geosrs:CompactMillerProjection

Table 118 — geosrs:CompactMillerProjection

URI	https://w3id.org/geosrs/projection/CompactMillerProjection
Super-classes	CompactMillerProjection

11.9.3. Class: geosrs:CylindricalStereographicProjection

Table 119 — geosrs:CylindricalStereographicProjection

URI	https://w3id.org/geosrs/projection/CylindricalStereographicProjection
Super-classes	CylindricalStereographicProjection

11.9.4. Class: geosrs:KarchenkoShabanovaProjection

Table 120 — geosrs:KarchenkoShabanovaProjection

URI	https://w3id.org/geosrs/projection/KarchenkoShabanovaProjection
Super-classes	KarchenkoShabanovaProjection

11.9.5. Class: geosrs:LabordeProjection

Table 121 — geosrs:LabordeProjection

URI	https://w3id.org/geosrs/projection/LabordeProjection
Super-classes	LabordeProjection

11.9.6. Class: geosrs:MercatorProjection

Table 122 — geosrs:MercatorProjection

URI	https://w3id.org/geosrs/projection/MercatorProjection
Super-classes	MercatorProjection

11.9.7. Class: geosrs:MillerProjection

Table 123 — geosrs:MillerProjection

URI	https://w3id.org/geosrs/projection/MillerProjection
Super-classes	MillerProjection

11.9.8. Class: geosrs:PattersonCylindricalProjection

Table 124 — geosrs:PattersonCylindricalProjection

URI	https://w3id.org/geosrs/projection/PattersonCylindricalProjection
Super-classes	PattersonCylindricalProjection

11.9.9. Class: geosrs:PavlovProjection

Table 125 — geosrs:PavlovProjection

URI	https://w3id.org/geosrs/projection/PavlovProjection
Super-classes	PavlovProjection

11.9.10. Class: geosrs:ToblerCylindricalIIIProjection

Table 126 — geosrs:ToblerCylindricalIIIProjection

URI	https://w3id.org/geosrs/projection/ToblerCylindricalIIIProjection
Super-classes	ToblerCylindricalIIIProjection

11.9.11. Class: geosrs:ToblerCylindricalIIProjection

Table 127 — geosrs:ToblerCylindricalIIProjection

URI	https://w3id.org/geosrs/projection/ToblerCylindricalIIProjection
Super-classes	ToblerCylindricalIIProjection

11.9.12. Class: geosrs:UrmayevIIIProjection

Table 128 — geosrs:UrmayevIIIProjection

URI	https://w3id.org/geosrs/projection/UrmayevIIIProjection
-----	---

Super-classes	UrmayevIIIProjection
---------------	--------------------------------------

11.9.13. Class: geosrs:WebMercatorProjection

Table 129 — geosrs:WebMercatorProjection

URI	https://w3id.org/geosrs/projection/WebMercatorProjection
Super-classes	WebMercatorProjection

11.10. Azimuthal Projections

Requirement 15: Requirement Azimuthal Projections	
IDENTIFIER	/req/Azimuthal_Projections
STATEMENT	Requirement Text

11.10.1. Class: geosrs:BreusingGeometricProjection

Table 130 — geosrs:BreusingGeometricProjection

URI	https://w3id.org/geosrs/projection/BreusingGeometricProjection
Super-classes	BreusingGeometricProjection

11.10.2. Class: geosrs:BreusingHarmonicProjection

Table 131 — geosrs:BreusingHarmonicProjection

URI	https://w3id.org/geosrs/projection/BreusingHarmonicProjection
Super-classes	BreusingHarmonicProjection

11.10.3. Class: geosrs:GinzburgIIProjection

Table 132 — geosrs:GinzburgIIProjection

URI	https://w3id.org/geosrs/projection/GinzburgIIProjection
Super-classes	GinzburgIIProjection

11.10.4. Class: geosrs:GinzburgIProjection

Table 133 — geosrs:GinzburgIProjection

URI	https://w3id.org/geosrs/projection/GinzburgIProjection
Super-classes	GinzburgIProjection

11.10.5. Class: geosrs:GnomonicProjection

Table 134 — geosrs:GnomonicProjection

URI	https://w3id.org/geosrs/projection/GnomonicProjection
Super-classes	GnomonicProjection

11.10.6. Class: geosrs:JamesAzimuthalProjection

Table 135 — geosrs:JamesAzimuthalProjection

URI	https://w3id.org/geosrs/projection/JamesAzimuthalProjection
Super-classes	JamesAzimuthalProjection

11.11.1. Polyconic Projections

Requirement 16: Requirement Polyconic Projections	
IDENTIFIER	/req/Polyconic_Projections
STATEMENT	Requirement Text

11.11.1.1. Class: geosrs:GinzburgIVProjection

Table 136 — geosrs:GinzburgIVProjection

URI	https://w3id.org/geosrs/projection/GinzburgIVProjection
Super-classes	GinzburgIVProjection

11.11.1.2. Class: geosrs:GinzburgIXProjection

Table 137 — geosrs:GinzburgIXProjection

URI	https://w3id.org/geosrs/projection/GinzburgIXProjection
Super-classes	GinzburgIXProjection

11.11.1.3. Class: geosrs:GinzburgVIPProjection

Table 138 — geosrs:GinzburgVIPProjection

URI	https://w3id.org/geosrs/projection/GinzburgVIPProjection
Super-classes	GinzburgVIPProjection

11.11.1.4. Class: geosrs:GinzburgVProjection

Table 139 — geosrs:GinzburgVProjection

URI	https://w3id.org/geosrs/projection/GinzburgVProjection
Super-classes	GinzburgVProjection

11.11.5. Class: geosrs:GottWagnerProjection

Table 140 — geosrs:GottWagnerProjection

URI	https://w3id.org/geosrs/projection/GottWagnerProjection
Super-classes	GottWagnerProjection

11.11.6. Class: geosrs:HillEucyclicProjection

Table 141 — geosrs:HillEucyclicProjection

URI	https://w3id.org/geosrs/projection/HillEucyclicProjection
Super-classes	HillEucyclicProjection

11.11.7. Class: geosrs:LagrangeProjection

Table 142 — geosrs:LagrangeProjection

URI	https://w3id.org/geosrs/projection/LagrangeProjection
Super-classes	LagrangeProjection

11.11.8. Class: geosrs:LaskowskiProjection

Table 143 — geosrs:LaskowskiProjection

URI	https://w3id.org/geosrs/projection/LaskowskiProjection
Super-classes	LaskowskiProjection

11.11.9. Class: geosrs:RectangularPolyconicProjection

Table 144 — geosrs:RectangularPolyconicProjection

URI	https://w3id.org/geosrs/projection/RectangularPolyconicProjection
Super-classes	RectangularPolyconicProjection

11.11.10. Class: geosrs:StabiusWernerIIIProjection

Table 145 — geosrs:StabiusWernerIIIProjection

URI	https://w3id.org/geosrs/projection/StabiusWernerIIIProjection
Super-classes	StabiusWernerIIIProjection

11.11.11. Class: geosrs:StabiusWernerIProjection

Table 146 — geosrs:StabiusWernerIProjection

URI	https://w3id.org/geosrs/projection/StabiusWernerIProjection
Super-classes	StabiusWernerIProjection

11.11.12. Class: geosrs:VanDerGrintenIIProjection

Table 147 — geosrs:VanDerGrintenIIProjection

URI	https://w3id.org/geosrs/projection/VanDerGrintenIIProjection
Super-classes	VanDerGrintenIIProjection

11.11.13. Class: geosrs:VanDerGrintenIProjection

Table 148 — geosrs:VanDerGrintenIProjection

URI	https://w3id.org/geosrs/projection/VanDerGrintenIProjection
Super-classes	VanDerGrintenIProjection

11.11.14. Class: geosrs:VanDerGrintenIVProjection

Table 149 — geosrs:VanDerGrintenIVProjection

URI	https://w3id.org/geosrs/projection/VanDerGrintenIVProjection
Super-classes	VanDerGrintenIVProjection

11.11.15. Class: geosrs:WagnerIXProjection

Table 150 — geosrs:WagnerIXProjection

URI	https://w3id.org/geosrs/projection/WagnerIXProjection
Super-classes	WagnerIXProjection

11.11.16. Class: geosrs:WagnerVIIIProjection

Table 151 — geosrs:WagnerVIIIProjection

URI	https://w3id.org/geosrs/projection/WagnerVIIIProjection
Super-classes	WagnerVIIIProjection

11.11.17. Class: geosrs:WagnerVIIProjection

Table 152 — geosrs:WagnerVIIProjection

URI	https://w3id.org/geosrs/projection/WagnerVIIProjection
Super-classes	WagnerVIIProjection

11.12. Stereographic Projections

Requirement 17: Requirement Stereographic Projections	
IDENTIFIER	/req/Stereographic_Projections
STATEMENT	Requirement Text

11.12.1. Class: geosrs:MillerOblatedStereographicProjection

Table 153 — geosrs:MillerOblatedStereographicProjection

URI	https://w3id.org/geosrs/projection/MillerOblatedStereographicProjection
Super-classes	MillerOblatedStereographicProjection

11.12.2. Class: geosrs:RoussilheProjection

Table 154 — geosrs:RoussilheProjection

URI	https://w3id.org/geosrs/projection/RoussilheProjection
Super-classes	RoussilheProjection



12

PLANET MODULE

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



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

A.1. IGN Ontology

Table A.2 – Alignment: IGN Ontology

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

FROM ELEMENT	MAPPING RELATION	TO ELEMENT	NOTES
geosrs:CRS	owl:equivalentClass	ign:CRS	-
geosrs:CompoundCRS	owl:equivalentClass	ign:CompoundCRS	-
geosrs:Extent	owl:equivalentClass	ign:Extent	-
geosrs:GeodeticCRS	owl:equivalentClass	ign:GeodeticCRS	-
geosrs:GeographicBoundingBox	owl:equivalentClass	ign:GeographicBoundingBox	-
geosrs:ProjectedCRS	owl:equivalentClass	ign:ProjectedCRS	-
geosrs:SingleCRS	owl:equivalentClass	ign:SingleCRS	-
geosrs:SingleCRSList	owl:equivalentClass	ign:SingleCRSList	-
geosrs:VerticalCRS	owl:equivalentClass	ign:VerticalCRS	-

A.2. ISO19111 Ontology

Table A.3 – Alignment: ISO19111 Ontology

FROM ELEMENT	MAPPING RELATION	TO ELEMENT	NOTES
geosrs:CoordinateSystem	owl:equivalentClass	iso19111:CoordinateSystem	-
geosrs:Datum	owl:equivalentClass	iso19111:Datum	-
geosrs:Ellipsoid	owl:equivalentClass	iso19111:Ellipsoid	-
geosrs:CRS	owl:equivalentClass	iso19111:CRS	-
geosrs:CompoundCRS	owl:equivalentClass	iso19111:CompoundCRS	-
geosrs:EngineeringCRS	owl:equivalentClass	iso19111:EngineeringCRS	-
geosrs:GeodeticCRS	owl:equivalentClass	iso19111:GeodeticCRS	-

FROM ELEMENT	MAPPING RELATION	TO ELEMENT	NOTES
geosrs:GeographicCRS	owl:equivalentClass	iso19111:GeographicCRS	-
geosrs:ParametricCRS	owl:equivalentClass	iso19111:ParametricCRS	-
geosrs:ProjectedCRS	owl:equivalentClass	iso19111:ProjectedCRS	-
geosrs:SingleCRS	owl:equivalentClass	iso19111:SingleCRS	-
geosrs:TemporalCRS	owl:equivalentClass	iso19111:TemporalCRS	-
geosrs:VerticalCRS	owl:equivalentClass	iso19111:VerticalCRS	-

A.3. IFC Ontology

Table A.4 – Alignment: IFC Ontology

FROM ELEMENT	MAPPING RELATION	TO ELEMENT	NOTES
geosrs:AxisDirection	owl:equivalentClass	ifc:IfcDirection	-
geosrs:CRS	owl:equivalentClass	ifc:IfcCoordinateReferenceSystem	-
geosrs:CoordinateOperation	owl:equivalentClass	ifc:IfcCoordinateOperation	-
geosrs:ProjectedCRS	owl:equivalentClass	ifc:IfcProjectedCRS	-
geosrs:axis	owl:equivalentProperty	ifc:axis_IfcAxis1Placement	-
geosrs:sourceCRS	owl:equivalentProperty	ifc:sourceCRS	-
geosrs:targetCRS	owl:equivalentProperty	ifc:targetCRS	-



ANNEX B (INFORMATIVE) SHACL SHAPES



ANNEX B (INFORMATIVE) SHACL SHAPES

Overview

Overview



ANNEX C (INFORMATIVE) REVISION HISTORY



ANNEX C (INFORMATIVE) REVISION HISTORY

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



BIBLIOGRAPHY





BIBLIOGRAPHY

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)

- [1] ISO: ISO 19142, *Geographic information – Web Feature Service*. International Organization for Standardization, Geneva <https://www.iso.org/standard/42136.html>.
- [2] W3C: **Data Catalog Vocabulary**, W3C Recommendation 16 January 2014, <https://www.w3.org/TR/vocab-dcat/>
- [3] IANA: **Link Relation Types**, <https://www.iana.org/assignments/link-relations/link-relations.xml>
- [4] W3C/OGC: **Spatial Data on the Web Best Practices**, W3C Working Group Note 28 September 2017, <https://www.w3.org/TR/sdw-bp/>
- [5] W3C: **Data on the Web Best Practices**, W3C Recommendation 31 January 2017, <https://www.w3.org/TR/dwbp/>
- [6] Ben-Kiki, O., Evans, C., Ingy döt Net: **YAML Ain't Markup Language**, <https://yaml.org/>
- [7] OGC: **Web Feature Service 2.0**, <http://docs.opengeospatial.org/is/09-025r2/09-025r2.html>
- [8] Berners-Lee, T., Fielding, R., Masinter, L.: **IETF RFC 3986 – Uniform Resource Identifier (URI): Generic Syntax**, <http://tools.ietf.org/rfc/rfc3986.txt>