

# SeaDataNet CSR metadata profile

---

Author: Enrico Boldrini (CNR - Institute of Atmospheric Pollution Research)

Editor: Stefano Nativi (CNR - Institute of Atmospheric Pollution Research)

Date: 2019-01-18

Version: 4.0.0

Document type: specification

Status: Public

## Description:

Definition of SeaDataNet CSR metadata profile, according to ISO 19115 international standard specification

This document has been drafted in the context of the EU H2020 project SeaDataCloud, grant agreement 730960.

Document Version	Date	Status	Author(s)	Description
1.0.0	2013-05-20	Creation	Boldrini, Nativi	First implementation after check and merge of previous CSR/SeaDataNet documents, schemas, ...
2.0.0	2013-07-17	Revision	Boldrini	Added codelists descriptions, revised mandatory elements
3.0.0	2013-09-02	Revision	Boldrini	
3.0.1	2017-09-19	Revision	Boldrini, Duthie	Bugfix of CSR Schematron schema, to obtain validation against official ISO Schematron 2006 Relax NG Compact schema used by lxml Python library
4.0.0	2019-01-18	Revision	Boldrini	Updated schemas caused by ISO TC211 schemas relocation. Decision has been made to use schemas from OGC, as suggested by INSPIRE technical guidelines. E.g. previous location: <a href="http://www.isotc211.org/schemas/2005/gmd/gmd.xsd">http://www.isotc211.org/schemas/2005/gmd/gmd.xsd</a> -> current location: <a href="http://schemas.opengis.net/iso/19139/20060504/gmd/gmd.xsd">http://schemas.opengis.net/iso/19139/20060504/gmd/gmd.xsd</a> Important: this major change affects only the online version of the schemas

## Table of contents

Foreword .....	6
Introduction.....	6
Scope .....	6
Metadata elements .....	7
Elements from ISO 19115-2.....	7
A.1      Imagery and gridded data metadata package data dictionaries .....	8
A.1.1   Metadata entity set information – Extension.....	8
A.1.5   Acquisition Information .....	8
Elements from ISO 19115.....	13
B.2      Metadata package data dictionaries .....	13
B.2.1   Metadata information .....	13
B.2.2 Identification information (data and service identification) .....	15
B.2.3   Constraint information (includes legal and security).....	22
B.2.4   Data quality information.....	23
B.2.5   Maintenance information.....	26
B.2.6   Spatial representation information (includes grid and vector representation) .....	26
B.2.7   Reference system information (includes temporal, coordinate and geographic identifiers) .....	28
B.2.8   Content information .....	30
B.2.9   Portrayal catalogue information.....	30
B.2.10   Distribution information.....	30
B.2.11   Metadata extension information .....	33
B.2.12   Application schema information .....	35
B.3      Data type information .....	35
B.3.1   Extent information.....	36
B.3.2   Citation and responsible party information .....	39
B.4      Externally referenced classes.....	46
B.4.1   Introduction .....	46
B.4.2   Date and DateTime information.....	46

B.4.3	Distance, angle, measure, number, record, recordType, scale and UomLength information .....	46
B.4.5	PeriodDuration and temporal primitive information .....	47
B.4.6	Point and Object information .....	47
B.4.9	Vertical datum information .....	47
B.5	CodeLists and enumerations .....	48
B.5.1	Introduction .....	48
B.5.2	CI_DateTypeCode <<CodeList>> .....	48
B.5.3	CI_OnLineFunctionCode <<CodeList>> .....	49
B.5.5	CI_RoleCode <<CodeList>> .....	49
B.5.6	DS_AssociationTypeCode <<CodeList>> .....	50
B.5.7	DS_InitiativeTypeCode <<CodeList>> .....	50
B.5.8	MD_CellGeometryCode <<CodeList>> .....	51
B.5.9	MD_CharacterSetCode <<CodeList>> restricted .....	52
B.5.12	MD_DatatypeCode <<CodeList>> .....	52
B.5.13	MD_DimensionNameTypeCode <<CodeList>> .....	53
B.5.14	MD_GeometricObjectTypeCode <<CodeList>> restricted .....	53
B.5.16	MD_KeywordTypeCode <<CodeList>> .....	54
B.5.14	MD_MaintenanceFrequencyCode <<CodeList>> .....	55
B.5.24	MD_RestrictionCode <<CodeList>> .....	56
B.5.25	MD_ScopeCode <<CodeList>> restricted .....	56
B.5.26	LanguageCode <<CodeList>> restricted .....	56
B.5.27	MD_TopicCategoryCode << Enumeration>> .....	57
B.5.28	MD_ObligationCode <<Enumeration>> .....	59
B.5.29	MD_DatatypeCode <<CodeList>> .....	59
B.5.30	MI_ContextCode <<CodeList>> .....	60
B.5.31	MI_ObjectiveTypeCode <<CodeList>> .....	61
B.5.32	MI_SequenceCode <<CodeList>> .....	61
B.5.33	MI_TriggerCode <<CodeList>> .....	61
B.6.1	SDN_FormatNameCode <<CodeList>> .....	61
B.6.2	SDN_HierarchyLevelNameCode <<CodeList>> .....	62
B.6.3	SDN_DeviceCategoryCode <<CodeList>> .....	62

B.6.4	SDN_PlatformCategoryCode <<CodeList>> .....	63
B.6.5	SDN_ParameterDiscoveryCode <<CodeList>>.....	63
B.6.6	SDN_CRSCode <<CodeList>> .....	64
B.6.7	SDN_CSRCODE <<CodeList>>.....	64
B.6.8	SDN_CountryCode <<CodeList>>.....	65
B.6.9	SDN_EDMERPCode <<CodeList>>.....	65
B.6.10	SDN_EDMOCODE <<CodeList>>.....	66
B.6.11	SDN_EDMEDCODE <<CodeList>> .....	66
B.6.11	SDN_PortCode <<CodeList>> .....	66
B.6.12	SDN_CountryCode <<CodeList>> .....	67
B.6.13	SDN_PlatformCode <<CodeList>> .....	67
B.6.14	SDN_WaterBodyCode <<CodeList>>.....	67
B.6.15	SDN_MarsdenCode <<CodeList>>.....	68
B.6.16	SDN_DataCategoryCode <<CodeList>> .....	68
B.6.17	SDN_CSRUnitCode <<CodeList>> .....	69
Elements from ISO 19139.....		69
Extended elements.....		70
Null elements use .....		72
SeaDataNet specific constraints .....		72
INSPIRE specific constraints.....		73
Normative references.....		74

## Foreword

This document has been drafted in the context of the EU FP7 SeaDataNet II project and EU H2020 SeaDataCloud project by CNR. “ISO/IEC Directives, Part 2: Rules for the structure and drafting of International Standards” was used as a reference for the drafting.

## Introduction

**Cruise Summary Reports** (CSR = former ROSCOPs) are the usual means in SeaDataNet for reporting on cruises or field experiments at sea. Traditionally, it is the Chief Scientist's obligation to submit a CSR to his/her National Oceanographic Data Centre (NODC) not later than two weeks after the cruise. This provides a first level inventory of measurements and samples collected at sea. Information such as the ship track, objectives of the cruise and principal investigators contacts are also included among other metadata elements tested to be useful in by the marine community practice.

Currently, the Cruise Summary Reports directory covers cruises from 1873 till today from more than 2.000 research vessels: a total of nearly 40.000 cruises, in all European waters and global oceans. This also includes historic CSRs from European countries, that have been loaded from the ICES database from 1960 onwards.

The Reports have been compiled over time and encoded using a XML schema derived from ISO 19115 DTD. Nowadays the ISO 19139 Schema is mature and widely adopted; it is as well part of the EU INSPIRE Directive Implementing Rules. Therefore an analysis for upgrading the CSR metadata profile and its encoding to ensure ISO and INSPIRE compliance is currently being performed by CNR, with support of MARIS, BSH, IFREMER, BODC. The experience acquired for the drafting of the CDI metadata profile is being used as a solid guidance. As a result of the standardization, interoperability with international initiatives and communities, such as OGC, INSPIRE and GEOSS is foreseen, as well as a wider, international outreach of SeaDataNet products.

Products of the CSR standardization effort include a new (ISO 19115-2 based) metadata profile documentation for the CSR data model (adding also a number of missing elements and corrections to the legacy CSR model) and a new encoding documentation which defines and details the XML encoding implementation for this metadata profile, based on the XML schema defined in ISO 19139:2006 TS plus additional definitions and Schematron rules.

## Scope

Based on the CSR legacy, this document aims to define a ISO 19115:2003 IS compliant profile for the SeaDataNet CSR. The profile consists of a set of metadata elements both taken from ISO 19115-2 and defined by the SeaDataNet community.

A related document (*SeaDataNet CSR ISO 19115-2 profile – XML encoding*) defines and details a XML schema implementation for this metadata profile, based on the XML schema defined in ISO 19139:2006 plus additional definitions and Schematron rules.

## Metadata elements

In the following sections the metadata elements that compose the profile are listed, each one in a separate row.

Modifications from ISO 19115:2003 data model are recorded in the table; the interested cells are highlighted in **red**. In particular the following modification types have been considered:

- **Change of an obligation or condition:** the obligation or condition column contains the original ISO19115, followed by an arrow, followed by the new obligation or condition. E.g. **O -> M** indicates a change from an optional (in ISO 19115) to a mandatory obligation (in the profile).

### Elements from ISO 19115-2

The CSR metadata profile is based on ISO 19115-2. The following table lists the metadata elements that are part of it (for individual descriptions you can refer to ISO 19115-2). The light gray rows contain elements from the ISO 19115 Core metadata element set.

	Name / Role name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
1.	MI_Metadata	root entity which defines metadata about imagery or gridded data	M	1	Specified Class (MD_Metadata)	Lines 2	
2.	<i>Role name:</i> acquisitionInformation	provides information about the acquisition of the data	<b>O -&gt; M</b>	<b>N -&gt; 1</b>	CharacterString	MI_AcquisitionInformation	SeaDataNet requires one file identifier urn, starting with the default string urn:SDN:CDI:. ISO has Optional fileIdentifier.

## A.1 Imagery and gridded data metadata package data dictionaries

### A.1.1 Metadata entity set information – Extension

The CSR metadata profile is based on ISO 19115-2. The following table lists the metadata elements that are part of it (for individual descriptions you can refer to ISO 19115-2).

	Name	Definition	Obligation	Max Occurrence	Data Type	Domain
1.	MI_Metadata	root entity that defines information about imagery or gridded data (MD_Metadata extended)	M	1	Specified Class (MD_Metadata)	Line 2 (MD_Metadata, ISO 19115:2003, B.2.1)
2.	<i>Role name:</i> acquisitionInformation	provides information about the acquisition of the data	O	N	Association	MI_AcquisitionInformation

### A.1.5 Acquisition Information

#### A.1.5.1 General

- UML model shown in Figures A.8 and A.9.

	Name	Definition	Obligation	Max Occurrence	Data Type	Domain
62.	MI_AcquisitionInformation	designations for the measuring instruments, the platform carrying them, and the mission to which the data contributes	Use obligation from referencing object	Use maximum occurrence from referencing object	Aggregated Class (MI_Metadata)	Lines 66 to 69
66.	<i>Role name:</i> instrument	general information about the instrument used in data acquisition	O	N	Association	MI_Instrument



67.	<i>Role name:</i> objective	identification of the area or object to be sensed	O	N	Association	MI_Objective
68.	<i>Role name:</i> operation	general information about an identifiable activity which provided the data	O	N	Association	MI_Operation
69.	<i>Role name:</i> platform	general information about the platform from which the data were taken	O	N	Association	MI_Platform

### A.1.5.3 Event identification

	Name	Definition	Obligation	Max Occurrence	Data Type	Domain
75.	MI_Event	identification of a significant collection point within an operation	Use obligation from referencing object	Use maximum occurrence from referencing object	Aggregated Class (MI_Operation)	Lines 75 to 82
76.	identifier	event name or number	M	1	Class	<<DataType>> MD_Identifier (ISO 19115:2003, B.2.7.3)
77.	trigger	initiator of the event	M	1	Class	<<CodeList>> MI_TriggerCode
78.	context	meaning of the event	M	1	Class	<<CodeList>> MI_ContextCode
79.	sequence	relative time ordering of the event	M	1	Class	<<CodeList>> MI_SequenceCode
80.	time	time the event occurred	M	1	Class	<<Type>> DateTime
81.	<i>Role name:</i> expectedObjective	objective or objectives satisfied by an event	O	N	Association	MI_Objective
82.	<i>Role name:</i> relatedPass	pass during which an event occurs	O	1	Association	MI_PlatformPass
83.	<i>Role name:</i> relatedSensor	instrument or instruments for which the event is meaningful	O	N	Association	MI_Instrument

#### A.1.5.4 Instrument identification

	Name	Definition	Obligation	Max Occurrence	Data Type	Domain
84.	MI_Instrument	designations for the measuring instruments	Use obligation from referencing object	Use maximum occurrence from referencing object	Aggregated Class (MI_Acquisition Information)	Lines 83 to 88
85.	citation	complete citation of the instrument	O	N	Class	<<DataType>> CI_Citation (ISO 19115:2003, B.3.2)
86.	identifier	unique identification of the instrument	M	1	Class	<<Date Type>> MD_Identifier (ISO 19115:2003, B.2.7.3)
87.	type	name of the type of instrument Examples: framing, line-scan, push-broom, pan-frame	M	1	CharacterString	Free text
88.	description	textual description of the instrument	O	1	CharacterString	Free text
89.	<i>Role name:</i> mountedOn	platform the instrument is mounted on	O	1	Association	MI_Platform

#### A.1.5.5 Objective information

	Name	Definition	Obligation	Max Occurrence	Data Type	Domain
90.	MI_Objective	describes the characteristics, spatial and temporal extent of the intended object to be observed	Use obligation from referencing object	Use maximum occurrence from referencing object	Aggregated Class (MI_Acquisition Information, MI_Operation)	Lines 90 to 97
91.	identifier	code used to identify the objective	M	N	Class	<<DataType>> MD_Identifier (ISO 19115:2003, B.2.7.3)
92.	priority	priority applied to the target	O	1	CharacterString	Free text
93.	type	collection technique for the objective	O	N	Class	<<CodeList>> MI_ObjectiveTypeCode
94.	function	role or purpose performed by or activity performed at the objective	O	N	CharacterString	Free text

	Name	Definition	Obligation	Max Occurrence	Data Type	Domain
95.	extent	extent information including the bounding box, bounding polygon, vertical and temporal extent of the objective	O	N	Class	<<DataType>> EX_Extent (ISO 19115:2003, B.3.1)
96.	<i>Role name:</i> objectiveOccurrence	event or events associated with objective completion.	M	N	Association	MI_Event
97.	<i>Role name:</i> pass	pass of the platform over the objective	O	N	Association	MI_PlatformPass
98.	<i>Role name:</i> sensingInstrument	instrument which sensed the objective data	O	N	Association	MI_Instrument

#### A.1.5.6 Operation information

	Name	Definition	Obligation	Max Occurrence	Data Type	Domain
99.	MI_Operation	designations for the operation used to acquire the dataset	Use obligation from referencing object	Use maximum occurrence from referencing object	Aggregated Class (MI_Acquisition Information, MI_Operation)	Lines 99 to 108
100.	description	description of the mission on which the platform observations are made and the objectives of that mission	O	1	CharacterString	Free text
101.	citation	identification of the mission	O	1	Class	<<DataType>> CI_Citation (ISO 19115:2003, B.3.2)
102.	identifier	unique identification of the operation	M	1	Class	<<DataType>> MD_Identifier (ISO 19115:2003, B.2.7.3)
103.	status	status of the data acquisition	M	1	Class	<<CodeList>> MD_ProgressCode
104.	type	collection technique for the operation	O	1	Class	<<CodeList>> MI_OperationTypeCode
105.	<i>Role name:</i> childOperation	sub-missions that make up part of a larger mission	O	N	Association	MI_Operation

	Name	Definition	Obligation	Max Occurrence	Data Type	Domain
106.	<i>Role name:</i> objective	object(s) or area(s) of interest to be sensed	O	N	Association	MI_Objective
107.	<i>Role name:</i> parentOperation	heritage of the operation	M	1	Association	MI_Operation
108.	<i>Role name:</i> plan	plan satisfied by the operation	O	1	Association	MI_Plan
109.	<i>Role name:</i> platform	platform (or platforms) used in the operation	O	N	Association	MI_Platform
110.	<i>Role name:</i> significantEvent	record of an event occurring during an operation	O	N	Association	MI_Event

#### A.1.5.8 Platform identification

	Name	Definition	Obligation	Max Occurrence	Data Type	Domain
117.	MI_Platform	designation of the platform used to acquire the dataset	Use obligation from referencing object	Use maximum occurrence from referencing object	Aggregated Class (MI_Acquisition Information, MI_Operation)	Lines 116 to 120
118.	citation	source where information about the platform is described	O	1	Class	<<DataType>> CI_Citation ("ISO 19115:2003, B.3.2)
119.	identifier	unique identification of the platform.	M	1	Class	<<DataType>> MD_Identifier (ISO 19115:2003, B.2.7.3)
120.	description	narrative description of the platform supporting the instrument	M	1	CharacterString	Free text
121.	sponsor	organization responsible for building, launch, or operation of the platform	O	N	Class	<<DataType>> CI_ResponsibleParty ("ISO 19115:2003, B.3.2)
122.	<i>Role name:</i> instrument	instrument(s) mounted on a platform	M	N	Association	MI_Instrument

## Elements from ISO 19115

The most part of the elements included in the profile is taken from ISO 19115. The following table lists them all (for individual descriptions you can refer to ISO 19115).

### B.2 Metadata package data dictionaries

#### B.2.1 Metadata information

	Name / Role name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
1.	MD_Metadata	root entity which defines metadata about a resource or resources	Use obligation from referencing object	Use maximum occurrence from referencing object	Class	Lines 2-6-15, 17, 18	
2.	fileIdentifier	unique identifier for this metadata file	O -> M	1	CharacterString	Free text -> urn as defined in RFC 1737 and starting with the string "urn:SDN:CDI:"	SeaDataNet requires one file identifier urn, starting with the default string urn:SDN:CDI:. ISO has Optional fileIdentifier.
3.	language	language used for documenting metadata	C -> M	1	CharacterString -> LanguageCode class	Free text -> LanguageCode <<CodeList>> restricted to value "eng"	SeaDataNet is more restrictive (fixed to "eng"). ISO 19115 has C / not defined by encoding.

	Name / Role name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
4.	characterSet	name/identifier of the character coding standard used for the metadata set	C -> M	1	Class	MD_CharacterSetCode <<CodeList>> -> MD_CharacterSetCode <<CodeList>> restricted to value "utf8"	SeaDataNet is more restrictive (fixed to "utf8"). ISO 19115 has C / ISO IEC 10646-1 not used and not defined by encoding.
5.	parentIdentifier	file identifier of the metadata to which this metadata is a subset (child)	C / hierarchyLevel is not equal to "dataset"? -> O	1	CharacterString	Free text	
6.	hierarchyLevel	scope to which the metadata applies (see Annex H for more information about metadata hierarchy levels)	C -> M	N -> 1	Class	MD_ScopeCode <<CodeList>> -> MD_ScopeCode <<CodeList>> restricted to value "dataset"	SeaDataNet is more restrictive (fixed to "dataset"). ISO 19115 has C / hierarchyLevel is not equal to "dataset"
7.	hierarchyLevelName	name of the hierarchy levels for which the metadata is provided	C -> M	N -> 1	CharacterString -> CodeList	Free text -> HierarchyLevelNameCode <<CodeList>> restricted to value "Common Data Index record"	Values for this codelists are from SDN vocabulary at: <a href="http://www.seadatanet.org/urnurl/SDN:L23">http://www.seadatanet.org/urnurl/SDN:L23</a>
8.	contact	party responsible for the metadata information	M	N	Class	CI_ResponsibleParty (B.3.2)	As for INSPIRE SC16: The value of MD_Metadata.contact.CI_ResponsibleParty.role.CI_RoleCode shall be pointOfContact.
9.	dateStamp	date that the metadata was created	M	1	Class	DateTime (B.4.2)	
10.	metadataStandardName	name of the metadata standard (including profile name) used	O -> M	1	CharacterString	Free text -> "ISO 19115/SeaDataNet profile"	

	Name / Role name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
11.	metadataStandardVersion	version of the metadata standard (version of the profile) used	O -> M	1	CharacterString	Free text	
12.	<i>Role name:</i> spatialRepresentationInfo	digital representation of spatial information in the resource	O	N	Association	MD_SpatialRepresentation <<Abstract>> (B.2.6)	
13.	<i>Role name:</i> referenceSystemInfo	description of the spatial and temporal reference systems used in the resource	O	N -> 1	Association	MD_ReferenceSystem (B.2.7)	
14.	<i>Role name:</i> metadataExtensionInfo	information describing metadata extensions	O -> M	N	Association	MD_MetadataExtension Information (B.2.11)	
15.	<i>Role name:</i> identificationInfo	basic information about the resource(s) to which the metadata applies	M	N -> 1	Association	MD_Identification (B.2.2) <<Abstract>>	
17.	<i>Role name:</i> distributionInfo	information about the distributor of and options for obtaining the resource(s)	O -> M	N -> 1	Association	MD_Distribution (B.2.10)	
18.	<i>Role name:</i> dataQualityInfo	overall assessment of quality of a resource(s)	O -> M	N -> 1	Association	DQ_DataQuality (B.2.4)	

## B.2.2 Identification information (data and service identification)

### B.2.2.1 General

	Name / Role name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
23.	MD_Identification	basic information required to uniquely identify a resource or resources	Use obligation from referencing object	Use maximum occurrence from referencing object	Aggregated Class (MD_Metadata) <<Abstract>>	Lines 24, 25, 29, 33, 35, 35.1	

	Name / Role name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
24.	citation	citation for the resource(s)	M	1	Class	CI_Citation (B.3.2)	As for INSPIRE SC7: There shall not be more than one instance of MD_Metadata.identificationInfo[1].MD_Identification.citation.CI_Citation. date declared as a creation date  As for INSPIRE SC8: MD_Metadata.identificationInfo[1].MD_DataIdentification.citation.CI_Citation.identifier is mandatory for metadata sets related to spatial dataset and spatial dataset series
25.	abstract	brief narrative summary of the content of the resource(s)	M	1	CharacterString	Free text	
26.	purpose	Summary of the intentions with which the resource(s) was developed	O	1	CharacterString	Free text	
29.	pointOfContact	identification of, and means of communication with, person(s) and organisation(s) associated with the resource(s)	O -> M	N -> 1	Class	CI_ResponsibleParty (B.3.2)	Use "custodian" for role code). Use EDMO Code : SDN:EDMO::EDMO as xlink:href of the organisation
30.	Role name: resourceMaintenance	Provides information about the frequency of resource updates, and the scope of those updates	O	N	Association	MD_MaintenanceInformation (B 2.5)	



	Name / Role name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
33.	<i>Role name:</i> descriptiveKeywords	category keywords, their type, and reference source	O -> M	N	Association	MD_GenericKeywords (B.2.2.3)	At least two descriptive keywords must be present, one for type "platform_class", one or more for type "parameter"  As for INSPIRE SC17: For datasets and series at least one keyword of GEMET thesaurus shall be documented using MD_Metadata.identificationInfo[1].MD_DataIdentification.descriptiveKeywords.
35.	<i>Role name:</i> resourceConstraints	information about constraints which apply to the resource(s)	O -> M	N	Association	MD_Constraints (B.2.3)	
35.1	<i>Role name:</i> aggregationInfo	associated resource information	O	N	Association	MD_AggregationInformation (B.2.2.7)	
36.	MD_DataIdentification	information required to identify a resource	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (MD_Identification)	Lines 38-41, 45 and 24, 25, 29, 33, 35, 35.1	
38.	spatialResolution	factor which provides a general understanding of the density of spatial data in the resource	O	N	Class	MD_Resolution <<Union>> (B.2.2.5)	Used in SDN to provide general information of spatial/temporal resolution (resolutions of the most relevant dimensions)
39.	language	language(s) used within the resource	M	N -> 1	CharacterString -> CodeList	Free text -> MD_LanguageCode <<CodeList>> restricted to value: "eng"	

	Name / Role name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
40.	characterSet	full name of the character coding standard used for the dataset	C/ISO/IEC 10646-1 not used? -> M	N -> 1	CodeList	MD_CharacterSetCode <<CodeList>> (B.5.10) -> MD_CharacterSetCode <<CodeList>> restricted to value: "utf8"	
41.	topicCategory	main theme(s) of the resource	O -> M	N -> 1	Class	MD_TopicCategoryCode <<CodeList>> restricted to value: "oceans"	
45.	extent	spatial and temporal extent of the resource	O -> M	N	Class	EX_Extent (B.3.1)	As for INSPIRE SC10: There is at least one instance of MD_Metadata.identificationInfo[1].MD_DataIdentification.extent defining the geographic location of the resource as a geographic bounding box (i.e. an instance of EX_GeographicBoundingBox or one of its subclasses).

### B.2.2.2 Browse graphic information

No elements from this ISO 19115 metadata section were selected

### B.2.2.3 Keyword information

	Name / Role name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
52.	MD_Keywords	keywords, their type and reference source	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (MD_GenericKeywords)	Lines 53-55	

	Name / Role name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
53.	keyword	commonly used word(s) or formalised word(s) or phrase(s) used to describe the subject	M	N	CharacterString -> CharacterString or CodeList	Free text -> Free text or SDN_DeviceCategoryCode <<CodeList>> or SDN_PlatformCategoryCode <<CodeList>> or SDN_ParameterDiscoveryCode <<CodeList>> or SDN_EDMERPCode <<CodeList>> or SDN_PortCode or <<CodeList>> SDN_CountryCode <<CodeList>> or SDN_PlatformCode <<CodeList>> or SDN_WaterBodyCode <<CodeList>> or SDN_MarsdenCode <<CodeList>>	The values for the given codelists are from the SDN vocabularies P02, L05, L06, EDMERP E.g. "Bathymetry and Elevation"
54.	type	subject matter used to group similar keywords	O	1	Class	MD_KeywordTypeCode <<CodeList>> (B.5.16)	
55.	thesaurusName	name of the formally registered thesaurus or a similar authoritative source of keywords	O	1	Class	CI_Citation (B.3.2)	

#### ***B.2.2.4 Representative fraction information***

No elements from this ISO 19115 metadata section were selected

### B.2.2.5 Resolution information

	Name / Role name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
59.	MD_Resolution	level of detail expressed as a scale factor or a distance	Use obligation from referencing object	Use maximum occurrence from referencing object	Class <<Union>>	Lines 60-61 -> Line 61	
60.							
61.	distance	ground sample distance	C / equivalentS cale not documented? -> M	1	Class	Distance (B.4.3) -> Distance (B.4.3), including the distance value and the distance unit of measure attribute ('uom'). The latter has a restricted domain: only the codes from the vocabulary <a href="http://www.seadatanet.org/urn:SDN:P06">http://www.seadatanet.org/urn:SDN:P06</a> are allowed 'uom's values (e.g. <a href="http://www.seadatanet.org/urn:SDN:P06::ULA">http://www.seadatanet.org/urn:SDN:P06::ULA</a> A). For spatial measures uom is fixed to metres.	E.g. distance value = 50 distance uom= <a href="http://www.seadatanet.org/urn:SDN:P06::ULA">http://www.seadatanet.org/urn:SDN:P06::ULA</a> A

### B.2.2.6 Usage information

No elements from this ISO 19115 metadata section were selected

### B.2.2.7 Aggregation information

	Name / Role name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
66.1	MD_AggregateInformation	associated resource information Note: An associated resource is a dataset composed of a collection of datasets	Use obligation from referencing object	Use maximum occurrence from referencing object	Aggregated Class (MD_Identifier)	Lines 66.2-66.5	
66.2	aggregateDataSetName	citation information about the associated resource	C / if aggregateDataSet Identifier not documented?	1	Class	CI_Citation (B.3.2) -> CI_Citation (B.3.2) with the following mandatory elements: title, alternateTitle, date	
66.3	aggregateDataSetIdentifier	21 identifier and codespace of the associated resource	C / if aggregateDataSet Name not documented?	1	Class	MD_Identifier (B.2.7.3)	
66.4	associationType	type of relation between the resources	M	1	Class	DS_AssociationTypeCode (B.5.7) <<CodeList>>	
66.5	initiativeType	type of initiative under which the associated resource was produced Note: the activity that resulted in the associated resource	O -> M	1	Class	DS_InitiativeTypeCode (B.5.8) <<CodeList>>	

### B.2.3 Constraint information (includes legal and security)

	Name / Role name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
67.	MD_Constraints	restrictions on the access and use of a resource or metadata	Use obligation from referencing object	Use maximum occurrence from referencing object	Aggregated Class (MD_Metadata and MD_Identification)	Lines 68	
68.	useLimitation	limitation affecting the fitness for use of the resource or metadata. Example, "not to be used for navigation"	O	N	CharacterString	Free text	
69.	MD_LegalConstraints	restrictions and legal prerequisites for accessing and using the resource or metadata	Use obligation from referencing object	N	Specified Class (MD_Constraints)	Lines 70,72 and 68	
70.	accessConstraints	access constraints applied to assure the protection of privacy or intellectual property, and any special restrictions or limitations on obtaining the resource or metadata	O	N	Class	MD_RestrictionCode <<CodeList>> (B.5.24)	
72.	otherConstraints	other restrictions and legal prerequisites for accessing and using the resource or metadata	C / accessConstraints or useConstraints equal "otherRestrictions"?	N	CharacterString	Free text	

## B.2.4 Data quality information

### B.2.4.1 General

	Name / Role name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comments
78.	DQ_DataQuality	Quality information for the data specified by a data quality scope	Use obligation from referencing object	Use maximum occurrence from referencing object	Aggregated Class (MD_Metadata)	Lines 79-81	
79.	scope	The specific data to which the data quality information applies	M	1	Class	DQ_Scope <<DataType>> (B.2.4.5)	
80.	Role name: report	Quantitative quality information for the data specified by the scope	C / lineage not provided? -> M	N	Association	DQ_Element <<Abstract>> (B.2.4.3)	There shall be a conformance result report against the latest INSPIRE commission regulation about metadata or other relevant regulations
81.	Role name: lineage	Non-quantitative quality information about the lineage of the data specified by the scope	C / report not provided -> M	1	Association	LI_Lineage (B.2.4.2)	

### B.2.4.2 Lineage information

#### B.2.4.2.1 General

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
82.	LI_Lineage	information about the events or source data used in constructing the data specified by the scope or lack of knowledge about lineage	Use obligation from referencing object	Use maximum occurrence from referencing object	Aggregated Class (DQ_DataQuality)	Line 83	

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
83.	statement	general explanation of the data producer's knowledge about the lineage of a resource	C / (DQ_DataQuality.scope.DQ_Scope.level = "dataset" or "series")? - > M	1	CharacterString	Free text.	This element has been included with mandatory obligation to comply with INSPIRE.

#### B.2.4.2.2 Process step information

No elements from this ISO 19115 metadata section were selected

#### B.2.4.2.3 Source information

No elements from this ISO 19115 metadata section were selected

#### B.2.4.3 Data quality element information

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
99.	DQ_Element	Aspect of quantitative quality information	Use obligation from referencing object	Use maximum occurrence from referencing object	Aggregated Class (DQ_DataQuality) <<Abstract>>	Line 107	
107.	result	Value (or set of values) obtained from applying a data quality measure or the outcome of evaluating the obtained value (or set of values) against a specified acceptable conformance quality level	M	2	Class	DQ_Result <<Abstract>> (B.2.4.4)	



#### B.2.4.4 Result information

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
128.	DQ_Result	Generalization of more specific result classes	Use obligation from referencing object	Use maximum occurrence from referencing object	Class <<Abstract>>		
129.	DQ_ConformanceResult	Information about the outcome of evaluating the obtained value (or set of values) against a specified acceptable conformance quality level	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (DQ_Result)	Lines 130-132	
130.	specification	Citation of product specification or user requirement against which data is being evaluated	M	1	Class	CI_Citation <<DataType>> (B.3.2)	
131.	explanation	Explanation of the meaning of conformance for this result	M	1	CharacterString	Free text	
132.	pass	Indication of the conformance result where 0=fail and 1=pass	M	1	Boolean	1 = yes 0 = no	

#### B.2.4.5 Scope information

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
138.	DQ_Scope	Extent of characteristic(s) of the data for which quality information is reported	Use obligation from referencing object	Use maximum occurrence from referencing object	Class <<DataType>>	Line 139	
139.	level	hierarchical level of the data specified by the scope	M	1	Class	MD_ScopeCode <<CodeList>> (B.5.25)	

## B.2.5 Maintenance information

### B.2.5.1 General

	Name / Role name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comments
142.	MD_MaintenanceInformation	Information about the scope and frequency of updating	Use obligation from referencing object	Use maximum occurrence from referencing object	Aggregated Class (MD_Metadata and MD_Identifier)	Lines 143,145	
143.	maintenanceAndUpdateFrequency	Frequency with which changes and additions are made to the resource after the initial resource is completed	M	1	Class	MD_MaintenanceFrequencyCode <<CodeList>> (B.5.18)	
144.							
145.	userDefinedMaintenanceFrequency	Maintenance period other than those defined	O	1	Class	TM_PeriodDuration (B.4.5)	

## B.2.6 Spatial representation information (includes grid and vector representation)

### B.2.6.1 General

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comments
156.	MD_SpatialRepresentation	digital mechanism used to represent spatial information	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Aggregated Class (MD_Metadata) <<Abstract>>		
157.	MD_GridSpatialRepresentation	information about grid spatial objects in the resource	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Specified Class (MD_SpatialRepresentation)	Lines 158-161	

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comments
158.	numberOfDimensions	number of independent spatial-temporal axes	M	1	Integer	Integer	
159.	axisDimensionsProperties	information about spatial-temporal axis properties	M	1	Sequence (B.4.7)	MD_Dimension <<DataType>> (B.2.6.2)	
160.	cellGeometry	identification of grid data as point or cell	M	1	Class	MD_CellGeometryCode <<CodeList>> (B.5.9)	
161.	transformationParameter Availability	indication of whether or not parameters for transformation between image coordinates and geographic or map coordinates exist (are available)	M	1	Boolean	1 = yes 0 = no	
176.	MD_VectorSpatial Representation	information about the vector spatial objects in the resource	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Specified Class (MD_Spatial Representation)	Line 178	
178.	geometricObjects	information about the geometric objects used in the resource	O -> M	N -> 1	Class	MD_GeometricObjects <<DataType>> (B.2.6.3)	

### B.2.6.2 Dimension information

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
179.	MD_Dimension	axis properties	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Class <<DataType>>	Lines 180-182	
180.	dimensionName	name of the axis	M	1	Class	MD_DimensionNameType Code <<CodeList>> (B.5.13)	
181.	dimensionSize	number of elements along the axis	M	1	Integer	Integer	

### B.2.6.3 Geometric object information

### B.2.7 Reference system information (includes temporal, coordinate and geographic identifiers)

UML model shown in Figure A.9

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
186.	MD_ReferenceSystem	information about the reference system	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Aggregated Class (MD_Metadata)	Line 187	
187.	referenceSystemIdentifier	Name of reference system	C / MD_CRS.projection, MD_CRS.ellipsoid, and MD_CRS.datum not documented?	1	Class	RS_Identifier (B.2.7.3)	
189.	MD_CRS	Metadata about a coordinate system in which attributes have been derived from SC_CRS as defined in ISO 19111 – Spatial referencing by coordinates	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Specified Class (MD_ReferenceSystem)	Line 187	

### *B.2.7.2 Ellipsoid parameter information*

### *B.2.7.3 Identifier information*

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
205.	MD_Identifier	value uniquely identifying an object within a namespace	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Class	Lines 206-207 -> Lines 206-207 with code data type = <b>CharacterString</b> , code domain = <b>Free text</b>	
205.	authority	Citation for the code namespace and optionally the person or party responsible for maintenance of that namespace	O	1	Class	CI_Citation (B.3.2)	

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
206.	code	alphanumeric value identifying an instance in the namespace e.g. 4326	M	1	CharacterString -> Class <<Union>>	Free text -> Free text or SDN_EDMEDCode <<CodeList>> or SDN_CRSCCode <<CodeList>> values from L10 vocabulary	E.g. 4326
207.	RS_Identifier	identifier used for reference systems	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Specified Class (MD_Identifier)	Lines 206-207 and 208.1-208.2 -> Lines 206-207 and 208.1 with code data type = Class, code domain = SDN_CRSCCode <<CodeList>>	
208.1	codeSpace	Identifier or namespace in which the code is valid	O -> M	1	CharacterString	Free text	This element has been included with mandatory obligation to comply with INSPIRE.

## B.2.8 Content information

## B.2.9 Portrayal catalogue information

## B.2.10 Distribution information

### B.2.10.1 General

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
270.	MD_Distribution	information about the distributor of and options for obtaining the resource	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Aggregated Class (MD_Metadata)	Lines 271-273	

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
271.	<i>Role name:</i> distributionFormat	provides a description of the format of the data to be distributed	C / MD_Distributor. distributorFormat not documented? -> M	N	Class	MD_Format (B.2.10.4)	
272.	<i>Role name:</i> distributor	provides information about the distributor	O -> M	N -> 1	Class	MD_Distributor (B.2.10.3)	
273.	<i>Role name:</i> transferOptions	provides information about technical means and media by which a resource is obtained from the distributor	O -> M	N	Class	MD_DigitalTransferOptions (B.2.10.2)	

### B.2.10.2 Digital transfer options information

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
274.	MD_DigitalTransferOptions	technical means and media by which a resource is obtained from the distributor	Use obligation/condition from referencing object (If this class is used at least one attribute must be provided)	Use maximum occurrence from referencing object	Aggregated Class (MD_Distributor and MD_Distributor)	Lines 276-277	
276.	transferSize	estimated size of a unit in the specified transfer format, expressed in megabytes. The transfer size is > 0.0	O	1	Real	> 0,0	
277.	onLine	information about online sources from which the resource can be obtained	O -> M	N	Class	CI_OnlineResource (B.3.2.5)	

### B.2.10.3 Distributor information

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
279.	MD_Distributor	information about the distributor	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Aggregated Class (MD_Distribution and MD_Format)	Line 280	
280.	distributorContact	party from whom the resource may be obtained. This list need not be exhaustive	M	1	Class	CI_ResponsibleParty (B.3.2)	

### B.2.10.4 Format information

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
284.	MD_Format	description of the computer language construct that specifies the representation of data objects in a record, file, message, storage device or transmission channel	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Aggregated Class (MD_Distribution, MD_Identification, and MD_Distributor)	Lines 285-286	
285.	name	name of the resource format(s)	M	1	CharacterString -> Class	Free text -> SDN_FormatNameCode <<CodeList>>	Values for this codelist are populated from the vocabulary at <a href="http://www.seadatanet.org/urn:SDN:L24">http://www.seadatanet.org/urn:SDN:L24</a> E.g. <a href="http://www.seadatanet.org/urn:SDN:L24::CF">http://www.seadatanet.org/urn:SDN:L24::CF</a>
286.	version	version of the resource format (date, number, etc.)	M	1	CharacterString	Free text	

### B.2.10.5 Medium information

No elements from this ISO 19115 metadata section were selected



### B.2.10.6 Standard order process information

No elements from this ISO 19115 metadata section were selected

## B.2.11 Metadata extension information

### B.2.11.1 General

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
303.	MD_MetadataExtension Information	information describing metadata extensions	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Aggregated Class (MD_Metadata)	Lines 304-305	
304.	extensionOnLineResource	information about on-line sources containing the community profile name and the extended metadata elements. Information for all new metadata elements	O -> M	1	Class	CI_OnlineResource (B.3.2.5)	The pointer to the online profile documentation about the extended metadata elements. Recommended values are linkage= <a href="http://www.sea-data.net.org/urnurl/metadataprofile">http://www.sea-data.net.org/urnurl/metadataprofile</a> , name=SeaDataNet metadata profile of ISO 19115
305.	Role name: extendedElementInformation	Provides information about a new metadata element, not found in ISO 19115, which is required to describe geographic data	O	N	Association	MD_ExtendedElementInformation (B.2.11.2)	

### B.2.11.2 *Extended element information*

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
306.	MD_ExtendedElementInformation	new metadata element, not found in ISO 19115, which is required to describe geographic data	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Aggregated Class (MD_MetadataExtensionInformation)	Lines 307-319	
307.	name	name of the extended metadata element	M	1	CharacterString	Free text	
308.	shortName	short form suitable for use in an implementation method such as XML or SGML. NOTE other methods may be used	C / dataType not Equal "codelistElement"?	1	CharacterString	Free text	
309.	domainCode	three digit code assigned to the extended element	C / is dataType "codelistElement"?	1	Integer	Integer	
310.	definition	definition of the extended element	M	1	CharacterString	Free text	
311.	obligation	obligation of the extended element	C / dataType not "codelist", "enumeration" or "codelistElement"?	1	Class	MD_ObligationCode <<Enumeration>> (B.5.21)	
312.	condition	condition under which the extended element is mandatory	C / obligation = "conditional"?	1	CharacterString	Free text	
313.	dataType	code which identifies the kind of value provided in the extended element	M	1	Class	MD_DatatypeCode <<CodeList>> (B.5.13)	
314.	maximumOccurrence	maximum occurrence of the extended element	C / dataType not "codelist", "enumeration" or "codelistElement"?	1	CharacterString	N or any integer	

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
315.	domainValue	valid values that can be assigned to the extended element	C / dataType not "codelist", "enumeration" or "codelistElement"?	1	CharacterString	Free text	
316.	parentEntity	name of the metadata entity(s) under which this extended metadata element may appear. The name(s) may be standard metadata element(s) or other extended metadata element(s)	M	N	CharacterString	Free text	
317.	rule	specifies how the extended element relates to other existing elements and entities	M	1	CharacterString	Free text	
318.	rationale	reason for creating the extended element	O	N	CharacterString	Free text	
319.	source	name of the person or organisation creating the extended element	M	N	Class	CI_ResponsibleParty (B.3.2)	

### B.2.12 Application schema information

## B.3 Data type information

No elements from this ISO 19115 metadata section were selected

## B.3.1 Extent information

### B.3.1.1 General

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
334.	EX_Extent	extent of the resource	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	<<DataType>> Class	Lines 336-338	
336.	Role name: geographicElement	provides spatial component of the extent of the referring object	C / description and temporalElement and verticalElement not documented?	N	Association	EX_GeographicExtent <<Abstract>> (B.3.1.2)	
337.	Role name: temporalElement	provides temporal component of the extent of the referring object	C / description and geographicElement and verticalElement not documented?	N	Association	EX_TemporalExtent (B.3.1.3)	
338.	Role name: verticalElement	provides vertical component of the extent of the referring object	C / description and geographicElement and temporalElement not documented? -> O	N	Association	EX_VerticalExtent (B.3.1.4)	

### B.3.1.2 Geographic extent information

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
339.	EX_GeographicExtent	geographic area of the dataset	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Aggregated Class (EX_Extent and EX_SpatialTemporal Extent) <<Abstract>>		
341.	EX_BoundingPolygon	enclosing geometric object which locates the resource, expressed as a set of (x,y) coordinate (s) NOTE: If a polygon is used it should be closed (last point replicates first point)	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Specified Class (EX_GeographicExtent)	Line 340 and 342 -> Line 342	The extentTypeCode is removed from the profile. The bounding polygon always encompasses an area covered by the data.
342.	polygon	sets of points defining the bounding polygon or any other GM_Object geometry (point, line or polygon)	M	N	Class	GM_Object (B.4.6)	
343.	EX_GeographicBoundingBox	geographic position of the resource NOTE This is only an approximate reference so specifying the coordinate reference system is unnecessary and need only be provided with a precision of up to two decimal places	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Specified Class (EX_GeographicExtent)	Lines 340 and 344-347 -> Lines 344-347	The extentTypeCode is removed from the profile. The bounding polygon always encompasses an area covered by the data.
344.	westBoundLongitude	western-most coordinate of the limit of the resource extent, expressed in longitude in decimal degrees (positive east)	M	1	Decimal	-180,0 <= West Bounding Longitude Value <= 180,0	
345.	eastBoundLongitude	eastern-most coordinate of the limit of the resource extent, expressed in longitude in decimal degrees (positive east)	M	1	Decimal	-180,0 <= East Bounding Longitude Value <= 180,0	
346.	southBoundLatitude	southern-most coordinate of the limit of the resource extent, expressed in latitude in decimal degrees (positive north)	M	1	Decimal	-90,0 <= South Bounding Latitude Value <= 90,0; South Bounding Latitude Value <= North bounding Latitude Value	

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
347.	northBoundLatitude	northern-most, coordinate of the limit of the resource extent expressed in latitude in decimal degrees (positive north)	M	1	Decimal	-90,0 <= North Bounding Latitude Value <= 90,0; North Bounding Latitude Value >= South Bounding Latitude Value	
348.	EX_GeographicDescription	description of the geographic area using identifiers	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Specified Class (EX_GeographicExtent)	Line 349 and 340 -> Line 349	
349.	geographicIdentifier	identifier used to represent a geographic area	M	1	Class	MD_Identifier (B.2.7.3)	

### B.3.1.3 Temporal extent information

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
350.	EX_TemporalExtent	time period covered by the content of the resource	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Aggregated Class (EX_Extent)	Line 351	
351.	extent	date and time for the content of the resource	M	1	Class	TM_Primitive (B.4.5) -> TM_Period (B.4.5)	

### B.3.1.4 Vertical extent information

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
354.	EX_VerticalExtent	vertical domain of resource	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Aggregated Class (EX_Extent)	Lines 355-358	
355.	minimumValue	lowest vertical extent contained in the resource	M	1	Real	Real	
356.	maximumValue	highest vertical extent contained in the resource	M	1	Real	Real	
357.	unitOfMeasure	vertical units used for vertical extent information Examples: metres, feet, millimetres, hectopascals	M	1	Class	UomLength (B.4.3) -> fixed value to "metres"	
358.	role name: verticalDatum	provides information about the origin from which the maximum and minimum elevation values are measured	M	1	Association	SC_Vertical Datum (B.4.9) -> SC_Vertical Datum (B.4.9) with identifier allowed values from vocabulary at <a href="http://www.seadatanet.org/urn:sdn:L11">http://www.seadatanet.org/urn:sdn:L11</a>	e.g. VerticalDatum.identifier = <a href="http://www.seadatanet.org/urn:sdn:L11::D99">http://www.seadatanet.org/urn:sdn:L11::D99</a>

## B.3.2 Citation and responsible party information

### B.3.2.1 Citation information

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
359.	CI_Citation	standardized resource reference	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Class	Lines 360-365, 367, 369-370, 372-373	

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
360.	title	name by which the cited resource is known	M	1	CharacterString	Free text	
361.	alternateTitle	short name or other language name by which the cited information is known. Example: "DCW" as an alternative title for "Digital Chart of the World"	O	N	CharacterString	Free text	
362.	date	reference date for the cited resource	M	N	Class	CI_Date (B.3.2.4) <<DataType>>	
363.	edition	version of the cited resource	O	1	CharacterString	Free text	
364.	editionDate	date of the edition	O	1	Class	Date (B.4.2)	
365.	identifier	value uniquely identifying an object within a namespace	O	N	Class	MD_Identifier	
367.	citedResponsibleParty	name and position information for an individual or organisation that is responsible for the resource	O	N	Class	CI_ResponsibleParty <<DataType>> (B.3.2)	
369.	series	information about the series, or aggregate dataset, of which the dataset is a part	O	1	Class	CI_Series <<DataType>> (B.3.2.6)	
370.	otherCitationDetails	other information required to complete the citation that is not recorded elsewhere	O	1	CharacterString	Free text	
372.	ISBN	international Standard Book Number	O	1	CharacterString	Free text	
373.	ISSN	international Standard Serial Number	O	1	CharacterString	Free text	
374.	CI_ResponsibleParty	identification of, and means of communication with, person(s) and organisations associated with the resource	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Specified class	Lines 375, 376, 378, 379	



	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
375.	individualName	name of the responsible person-surname, given name, title separated by a delimiter	C / organisationName and positionName not documented? -> C / organisationName not documented?	1	CharacterString	Free text	
376.	organisationName	name of the responsible organisation	C / individualName and positionName not documented? -> individualName not documented?	1	CharacterString -> CodeList	Free text -> SDN_EDMOCCode <<CodeList>>	e.g. IFREMER
378.	contactInfo	address of the responsible party	O -> M	N -> 1	Class	CI_Contact <<DataType>> (B.3.2.3)	
379.	role	function performed by the responsible party	M	1	Class	CI_RoleCode <<CodeList>> (B 5.5)	

### B.3.2.2 Address information

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
380.	CI_Address	location of the responsible individual or organisation	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Class	Lines 381-386	
381.	deliveryPoint	address line for the location (as described in ISO 11180, Annex A)	O	N	CharacterString	Free text	

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
382.	city	city of the location	O	1	CharacterString	Free text	
383.	administrativeArea	state, province of the location	O	1	CharacterString	Free text	
384.	postalCode	ZIP or other postal code	O	1	CharacterString	Free text	
385.	country	country of the physical address	O	1	CharacterString -> Class	ISO 3166 -> SDN_CountryCode <<CodeList>>	
386.	electronicMailAddress	address of the electronic mailbox of the responsible organisation or individual	O -> M	N	CharacterString	Free text	

### B.3.2.3 Contact information

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
387.	CI_Contact	information required to enable contact with the responsible person and/or organisation	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Class	Lines 388-390	
388.	phone	telephone numbers at which the organisation or individual may be contacted	O	N	Class	CI_Telephone (B.3.2.7)	
389.	address	physical and email address at which the organisation or individual may be contacted	O -> M	N	Class	CI_Address (B.3.2.2)	
390.	onlineResource	on-line information that can be used to contact the individual or organisation	O	N	Class	CI_OnlineResource (B.3.2.5)	

### B.3.2.4 Date information

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
393.	CI_Date	reference date and event used to describe it	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Class <<DataType>>	Lines 394-395	
394.	date	reference date for the cited resource	M	1	Class	Date (B.4.2)	
395.	dateType	event used for reference date	M	1	CodeList	CI_DateTypeCode <<CodeList>> (B.5.2)	

### B.3.2.5 OnLine resource information

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
396.	CI_OnlineResource	information about on-line sources from which the resource, specification, or community profile name and extended metadata elements can be obtained	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Class <<DataType>>	Lines 397-398,400-402	
397.	linkage	location (address) for on-line access using a Uniform Resource Locator/Uniform Resource Identifier address or similar addressing scheme such as http://www.statkart.no/isotc211	M	1	Class	URL (IETF RFC1738 IETF RFC 2056) -> URL (IETF RFC1738 IETF RFC 2056) with restriction: linkage should start with "http://", "https://" or "ftp://"	
398.	protocol	connection protocol to be used e.g. http, ftp, file	O	1	CharacterString	Free text	
400.	name	name of the online resource	O	1	CharacterString	Free text	
401.	description	detailed text description of what the online resource is/does	O	1	CharacterString	Free text	

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
402.	function	code for function performed by the online resource	O	1	Codelist	CI_OnLineFunctionCode <<CodeList>> (B.5.3)	

### *B.3.2.6 Series information*

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
403.	CI_Series	information about the series, or aggregate dataset, to which a dataset belongs	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Class <<DataType>>	Lines 404-406	
404.	name	Name of the series, or aggregate dataset, of which the dataset is a part	O	1	CharacterString	Free text	
405.	issueIdentification	Information identifying the issue of the series	O	1	CharacterString	Free text	
406.	page	details on which pages of the publication the article was published	O	1	CharacterString	Free text	

### *B.3.2.7 Telephone information*

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
407.	CI_Telephone	telephone numbers for contacting the responsible individual or organisation	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Class <<DataType>>	Lines 408-409	
408.	voice	telephone number by which individuals can speak to the responsible organisation or individual	O	N	CharacterString	Free text	



	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain	Comment
409.	facsimile	telephone number of a facsimile machine for the responsible organisation or individual	O	N	CharacterString	Free text	

## B.4 Externally referenced classes

### B.4.1 Introduction

There are several classes referenced by this International Standard that are documented by another, external, standard. Those externally referenced entities are explained below.

### B.4.2 Date and DateTime information

**Date:** gives values for year, month and day. Character encoding of a date is a string which shall follow the format for date specified by ISO 8601. This class is documented in full in ISO/TS 19103.

**Note:** the precision of the date can be defined by showing a combination of century plus year plus month plus day. Eg. YY (century), YYYY (year), YYYY-MM (year-month), YYYY-MM-DD or YYYYMMDD (year, month and day)

**DateTime:** combination of a date and a time type (given by an hour, minute and second). Character encoding of a DateTime shall follow ISO 8601. This class is documented in full in ISO/TS 19103.

**Note:** although the DateTime definition allows for more precise temporal statements, the less precise values can also be used. For example, YY (century), YYYY (year), YYYY-MM (year, month), YYYY-MM-DD or YYYYMMDD (year, month, day), YYYY-MM-DDTHH (year, month, day, hour), YYYY-MM-DDThh:mm (year, month, day, hour, minute), YYYY-MM-DDThh:mm:ss.d or YYYYMMDDThhmmss.d (year, month, day, hour, minute, second and decimals of seconds). The time zone should also be added. EG. YYYY-M-DDThh:mm:ss.d+hh:mm

### B.4.3 Distance, angle, measure, number, record, recordType, scale and UomLength information

**Distance:** This class is documented in full in ISO/TS 19103.

**Angle:** Amount of rotation need to bring one line or plane into coincidence with another, generally measured in radians or degrees. This class is documented in full in ISO/TS 19103.

**Measure:** result from performing the act or process of ascertaining the extent, dimensions, or quantity of some entity. This class is documented in full in ISO/TS 19103.

Number: abstract class that can be sub-typed to a specific number type (real, integer, decimal, double, float). This class is documented in full in ISO/TS 19103.

Record: This class is documented in full in ISO/TS 19103.

RecordType: This class is documented in full in ISO/TS 19103.

Scale: This class is documented in full in ISO/TS 19103.

UnitOfMeasure: This class is documented in full in ISO/TS 19103.

UomLength: any of the measuring systems to measure the length, distance between two entities. This class is documented in full in ISO/TS 19103.

#### **B.4.5 PeriodDuration and temporal primitive information**

TM\_PeriodDuration: duration of a period as specified by ISO 8601. This class is fully documented in ISO 19108.

TM\_Duration: duration of time as specified by ISO 8601. This class is fully documented in ISO 19108.

TM\_Primitive: an abstract class representing a non-decomposed element of geometry or topology. This class is fully documented in ISO 19108.

#### **B.4.6 Point and Object information**

GM\_Point: 0-dimensional geometric primitive, representing a position, but not having extent. This class is fully documented in ISO 19107.

GM\_Object: root class of the geometric object taxonomy and supports interfaces common to all geographically referenced geometric objects. This class is fully documented in ISO 19107.

#### **B.4.9 Vertical datum information**

SC\_VerticalDatum: set of parameters describing the relation of gravity-related heights to the Earth. This class is fully documented in ISO 19111.

## B.5 CodeLists and enumerations

### B.5.1 Introduction

The stereotype classes <<CodeList>> and <<Enumeration>> can be found below. These two stereotype classes also do not contain any “other” values as <<Enumeration>>s are closed (not extendable) and <<CodeList>>s are extendable. Consult Annex C and Annex F for information about how to extend <<CodeList>>s. The concept name is the name of the item (English is this version of the standard and should be translated into the language of the nation or entity developing a profile). The code is a language neutral identifier.

The following section lists the ISO 19115 codelists used within this metadata profile, including modified ones (restricted or extended).

The modified ISO codelists are online published in a codelist catalogue, at: <http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/gmxCodeLists.xml>

The gmi codelists from ISO 19115-2 are then listed.

These lists are online available at: <http://www.isotc211.org/2005/resources/Codelist/gmiCodelists.xml>

Finally, the new SeadataNet codelists are presented, defined in this metadata profile. Pointers to the online codelist catalogues are provided as well.

### B.5.2 CI\_DateTypeCode <<CodeList>>

	Concept name	Definition
1.	CI_DateTypeCode	identification of when a given event occurred
2.	creation	date identifies when the resource was brought into existence
3.	publication	date identifies when the resource was issued
4.	revision	date identifies when the resource was examined or re-examined and improved or amended



### B.5.3 CI\_OnLineFunctionCode <<CodeList>>

	Concept name	Definition
1.	CI_OnLineFunctionCode	function performed by the resource
2.	download	online instructions for transferring data from one storage device or system to another
3.	information	online information about the resource
4.	offlineAccess	online instructions for requesting the resource from the provider
5.	order	online order process for obtaining the resource
6.	search	online search interface for seeking out information about the resource
7.	<<new>> downloadRegistration	manual interaction with an on-line system by registered users following successful authentication and authorisation
8.	<<new>> URL	online resource locator for accessing data using a specific web protocol
9.	<<new>> hrsvsRegistration	online system for visualisation of high resolution seismic data by registered users following successful authentication and authorisation

### B.5.5 CI\_RoleCode <<CodeList>>

	Concept name	Definition
1.	CI_RoleCode	function performed by the responsible party
2.	resourceProvider	party that supplies the resource
3.	custodian	party that accepts accountability and responsibility for the data and ensures appropriate care and maintenance of the resource
4.	owner	party that owns the resource
5.	user	party who uses the resource
6.	distributor	party who distributes the resource

	Concept name	Definition
7.	originator	party who created the resource
8.	pointOfContact	party who can be contacted for acquiring knowledge about or acquisition of the resource
9.	principalInvestigator	key party responsible for gathering information and conducting research
10.	processor	party who has processed the data in a manner such that the resource has been modified
11.	publisher	party who published the resource
12.	author	party who authored the resource

#### B.5.6 DS\_AssociationTypeCode <<CodeList>>

	Concept name	Definition
1.	DS_AssociationTypeCode	justification for the correlation of two resources
2.	crossReference	reference from one resource to another
3.	largerWorkCitation	reference to a master resource of which this one is a part
4.	partOfSeamlessDatabase	part of same structured set of data held in a computer
5.	Source	mapping and charting information from which the resource content originates (use Lineage in the future)
6.	stereoMate	part of a set of imagery that when used together, provides three-dimensional images

#### B.5.7 DS\_InitiativeTypeCode <<CodeList>>

	Concept name	Definition
1.	DS_InitiativeTypeCode	type of aggregation activity in which resources are related

	Concept name	Definition
2.	campaign	series of organized planned actions
3.	collection	accumulation of resources assembled for a specific purpose
4.	exercise	specific performance of a function or group of functions
5.	experiment	process designed to find if something is effective or valid
6.	investigation	search or systematic inquiry
7.	mission	specific operation of a data collection system
8.	sensor	device or piece of equipment which detects or records
9.	operation	action that is part of a series of actions
10.	platform	vehicle or other support base that holds a sensor
11.	process	method of doing something involving a number of steps
12.	program	specific planned activity
13.	project	organized undertaking, research, or development
14.	study	examination or investigation
15.	task	piece of work
16.	trial	process of testing to discover or demonstrate something

#### B.5.8 MD\_CellGeometryCode <<CodeList>>

	Concept name	Definition
1.	MD_CellGeometryCode	code indicating the geometry represented by the grid cell value
2.	point	each cell represents a point
3.	area	each cell represents an area

## B5.9 MD\_CharacterSetCode <<CodeList>> restricted

	Concept name	Definition
1.	MD_CharacterSetCode	name of the character coding standard used for the resource
5.	utf8	8-bit variable size UCS Transfer Format, based on ISO/IEC 10646

## B.5.12 MD\_DatatypeCode <<CodeList>>

	Concept name	Definition
1.	MD_DatatypeCode	datatype of element or entity
2.	class	descriptor of a set of objects that share the same attributes, operations, methods, relationships, and behaviour
3.	codelist	flexible enumeration useful for expressing a long list of values, can be extended
4.	enumeration	data type whose instances form a list of named literal values, not extendable
5.	codelistElement	permissible value for a codelist or enumeration
6.	abstractClass	class that cannot be directly instantiated
7.	aggregateClass	class that is composed of classes it is connected to by an aggregate relationship
8.	specifiedClass	subclass that may be substituted for its superclass
9.	datatypeClass	class with few or no operations whose primary purpose is to hold the abstract state of another class for transmittal, storage, encoding or persistent storage
10.	interfaceClass	named set of operations that characterize the behaviour of an element
11.	unionClass	class describing a selection of one of the specified types
12.	metaClass	class whose instances are classes
13.	typeClass	class used for specification of a domain of instances (objects), together with the operations applicable to the objects. A type may have attributes and associations

	Concept name	Definition
14.	characterString	free text field
15.	integer	numerical field
16.	association	semantic relationship between two classes that involves connections among their instances

### B.5.13 MD\_DimensionNameTypeCode <<CodeList>>

	Concept name	Definition
1.	MD_DimensionNameTypeCode	name of the dimension
2.	row	ordinate (y) axis
3.	column	abscissa (x) axis
4.	vertical	vertical (z) axis
5.	track	along the direction of motion of the scan point
6.	crossTrack	perpendicular to the direction of motion of the scan point
7.	line	scan line of a sensor
8.	sample	element along a scan line
9.	time	duration

### B.5.14 MD\_GeometricObjectTypeCode <<CodeList>> restricted

	Concept name	Definition
1.	MD_GeometricObjectTypeCode	name of point or vector objects used to locate zero-, one-, two-, or three-dimensional spatial locations in the dataset
4.	curve	bounded, 1-dimensional geometric primitive, representing the continuous image of a line
5.	point	zero-dimensional geometric primitive, representing a position but not having an extent

	Concept name	Definition
7.	surface	bounded, connected 2-dimensional geometric primitive, representing the continuous image of a region of a plane

#### B.5.16 MD\_KeywordTypeCode <<CodeList>>

	Concept name	Definition
1.	MD_KeywordType Code	methods used to group similar keywords
2	discipline	keyword identifies a branch of instruction or specialized learning
3	place	keyword identifies a location
4	stratum	keyword identifies the layer(s) of any deposited substance or levels within an ordered system
5	temporal	keyword identifies a time period related to the resource
6	theme	keyword identifies a particular subject or topic
7	<<new>> instrument	keyword describes or categorises sample collection or data production tools
8	<<new>> project	keyword describes a strategic undertaking encompassing an organised set of activities
8	<<new>> parameter	keyword identifies a phenomenon or group of phenomena in the dataset
9	<<new>> platform	keyword identifies a specific vehicle, object, structure or organism capable of bearing instruments or tools for the collection of physical, chemical, geological or biological samples.
10	<<new>> platform_class	keyword identifies groups of vehicles, objects, structures or organisms capable of bearing instruments or tools for the collection of physical, chemical, geological or biological samples.
11	<<new>> departure_place	keyword identifies a location where an activity starts

	Concept name	Definition
12	<<new>> departure_country	keyword identifies the country where an activity starts
13	<<new>> arrival_place	keyword identifies a location where an activity finishes
14	<<new>> arrival_country	keyword identifies the country where an activity begins
15	<<new>> marsden_square	keyword identifies a location as encoded geographic co-ordinates for a rectangular polygon following WMO conventions

#### B.5.14 MD\_MaintenanceFrequencyCode <<CodeList>>

	Concept name	Definition
1.	MD_MaintenanceFrequencyCode	Frequency with which modifications and deletions are made to the data after it is first produced
2.	continual	Data is repeatedly and frequently updated
3.	daily	Data is updated each day
4.	weekly	Data is updated on a weekly basis
5.	fortnightly	Data is updated every two weeks
6.	monthly	Data is updated each month
7.	quarterly	Data is updated every three months
8.	biannually	Data is updated twice each year
9.	annually	Data is updated every year
10.	asNeeded	Data is updated as deemed necessary
11.	irregular	Data is updated in intervals that are uneven in duration
12.	notPlanned	There are no plans to update the data
13.	unknown	Frequency of maintenance for the data is not known

#### B.5.24 MD\_RestrictionCode <<CodeList>>

	Concept name	Definition
1.	MD_RestrictionCode	limitation(s) placed upon the access or use of the data
2.	copyright	exclusive right to the publication, production, or sale of the rights to a literary, dramatic, musical, or artistic work, or to the use of a commercial print or label, granted by law for a specified period of time to an author, composer, artist, distributor
3.	patent	government has granted exclusive right to make, sell, use or license an invention or discovery
4.	patentPending	produced or sold information awaiting a patent
5.	trademark	a name, symbol, or other device identifying a product, officially registered and legally restricted to the use of the owner or manufacturer
6.	license	formal permission to do something
7.	intellectualPropertyRights	rights to financial benefit from and control of distribution of non-tangible property that is a result of creativity
8.	restricted	withheld from general circulation or disclosure
9.	otherRestrictions	limitation not listed

#### B.5.25 MD\_ScopeCode <<CodeList>> **restricted**

	Concept name	Definition
1.	MD_ScopeCode	class of information to which the referencing entity applies
6.	dataset	information applies to the dataset

#### B.5.26 LanguageCode <<CodeList>> **restricted**

	Concept name	Definition
1.	MD_LanguageCode	International language



	Concept name	Definition
1.	eng	English

### B.5.27 MD\_TopicCategoryCode << Enumeration>>

	Concept name	Definition
1.	MD_TopicCategoryCode	high-level geographic data thematic classification to assist in the grouping and search of available geographic data sets. Can be used to group keywords as well. Listed examples are not exhaustive. NOTE It is understood there are overlaps between general categories and the user is encouraged to select the one most appropriate.
2.	farming	rearing of animals and/or cultivation of plants Examples: agriculture, irrigation, aquaculture, plantations, herding, pests and diseases affecting crops and livestock
3.	biota	flora and/or fauna in natural environment Examples: wildlife, vegetation, biological sciences, ecology, wilderness, sealife, wetlands, habitat
4.	boundaries	legal land descriptions Examples: political and administrative boundaries
5.	climatologyMeteorologyAtmosphere	processes and phenomena of the atmosphere Examples: cloud cover, weather, climate, atmospheric conditions, climate change, precipitation
6.	economy	economic activities, conditions and employment Examples: production, labour, revenue, commerce, industry, tourism and ecotourism, forestry, fisheries, commercial or subsistence hunting, exploration and exploitation of resources such as minerals, oil and gas
7.	elevation	height above or below a vertical datum Examples: altitude, bathymetry, digital elevation models, slope, derived products
8.	environment	environmental resources, protection and conservation Examples: environmental pollution, waste storage and treatment, environmental impact assessment, monitoring environmental risk, nature reserves, landscape

	Concept name	Definition
9.	geoscientificInformation	information pertaining to earth sciences Examples: geophysical features and processes, geology, minerals, sciences dealing with the composition, structure and origin of the earth's rocks, risks of earthquakes, volcanic activity, landslides, gravity information, soils, permafrost, hydrogeology, erosion
10.	health	health, health services, human ecology, and safety Examples: disease and illness, factors affecting health, hygiene, substance abuse, mental and physical health, health services
11.	imageryBaseMapsEarthCover	base maps Examples: land cover, topographic maps, imagery, unclassified images, annotations
12.	intelligenceMilitary	military bases, structures, activities Examples: barracks, training grounds, military transportation, information collection
13.	inlandWaters	inland water features, drainage systems and their characteristics Examples: rivers and glaciers, salt lakes, water utilization plans, dams, currents, floods, water quality, hydrographic charts
14.	location	positional information and services Examples: addresses, geodetic networks, control points, postal zones and services, place names
15.	oceans	features and characteristics of salt water bodies (excluding inland waters) Examples: tides, tidal waves, coastal information, reefs
16.	planningCadastral	information used for appropriate actions for future use of the land Examples: land use maps, zoning maps, cadastral surveys, land ownership
17.	society	characteristics of society and cultures Examples: settlements, anthropology, archaeology, education, traditional beliefs, manners and customs, demographic data, recreational areas and activities, social impact assessments, crime and justice, census information
18.	structure	man-made construction Examples: buildings, museums, churches, factories, housing, monuments, shops, towers

	Concept name	Definition
19.	transportation	means and aids for conveying persons and/or goods Examples: roads, airports/airstrips, shipping routes, tunnels, nautical charts, vehicle or vessel location, aeronautical charts, railways
20.	utilitiesCommunication	energy, water and waste systems and communications infrastructure and services Examples: hydroelectricity, geothermal, solar and nuclear sources of energy, water purification and distribution, sewage collection and disposal, electricity and gas distribution, data communication, telecommunication, radio, communication networks
21.	extraTerrestrial	region more than 100 km above the surface of the Earth

#### B.5.28 MD\_ObligationCode <<Enumeration>>

	Concept name	Definition
1.	MD_ObligationCode	obligation of the element or entity
2.	mandatory	element is always required
3.	optional	element is not required
4.	conditional	element is required when a specific condition is met

#### B.5.29 MD\_DatatypeCode <<CodeList>>

	Concept name	Definition
1.	MD_DatatypeCode	datatype of element or entity
2.	class	descriptor of a set of objects that share the same attributes, operations, methods, relationships, and behaviour
3.	codelist	flexible enumeration useful for expressing a long list of values, can be extended
4.	enumeration	data type whose instances form a list of named literal values, not extendable
5.	codelistElement	permissible value for a codelist or enumeration

	Concept name	Definition
6.	abstractClass	class that cannot be directly instantiated
7.	aggregateClass	class that is composed of classes it is connected to by an aggregate relationship
8.	specifiedClass	subclass that may be substituted for its superclass
9.	datatypeClass	class with few or no operations whose primary purpose is to hold the abstract state of another class for transmittal, storage, encoding or persistent storage
10.	interfaceClass	named set of operations that characterize the behaviour of an element
11.	unionClass	class describing a selection of one of the specified types
12.	metaClass	class whose instances are classes
13.	typeClass	class used for specification of a domain of instances (objects), together with the operations applicable to the objects. A type may have attributes and associations
14.	characterString	free text field
15.	integer	numerical field
16.	association	semantic relationship between two classes that involves connections among their instances

### B.5.30 MI\_ContextCode <<Codelist>>

	Name	Definition
1.	MI_ContextCode	designation of criterion for defining the context of the scanning process event
2.	acquisition	event related to a specific collection
3.	pass	event related to a sequence of collections
4.	wayPoint	event related to a navigational manoeuvre

### B.5.31 MI\_ObjectiveTypeCode <<Codelist>>

	Name	Definition
1.	MI_ObjectiveTypeCode	temporal persistence of collection objective
2.	instantaneousCollection	single instance of collection
3.	persistentView	multiple instances of collection
4.	survey	collection over specified domain

### B.5.32 MI\_SequenceCode <<Codelist>>

	Name	Definition
1.	MI_SequenceCode	temporal relation of activation
2.	start	beginning of a collection
3.	end	end of a collection
4.	instantaneous	collection without a significant duration

### B.5.33 MI\_TriggerCode <<Codelist>>

	Name	Definition
1.	MI_TriggerCode	mechanism of activation
2.	automatic	event due to external stimuli
3.	manual	event manually instigated
4.	preProgrammed	event instigated by planned internal stimuli

### B.6.1 SDN\_FormatNameCode <<CodeList>>

This codelist is a ISO version of the SeaDataNet list L24 defining “Formats used for data delivery by SeaDataNet”.

The reference ISO CodeList catalogue is published at: [http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicrCodeList.xml#SDN\\_FormatNameCode](http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicrCodeList.xml#SDN_FormatNameCode)

The original list can be found at:

<http://www.seadatanet.org/urnurl/SDN:L24>

To obtain the ISO list the following mapping has been used:

- Concept.prefLabel elements in the original list map to ISO concept names
- Concept.definition elements in the original list map to ISO concept definitions

#### **B.6.2 SDN\_HierarchyLevelNameCode <<CodeList>>**

This codelist is a ISO version of the SeaDataNet list L23 defining “Types of metadata record in the SeaDataNet metadata”.

The reference ISO CodeList catalogue is published at:

[http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicrCodeList.xml#SDN\\_HierarchyLevelNameCode](http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicrCodeList.xml#SDN_HierarchyLevelNameCode)

The original list can be found at:

<http://www.seadatanet.org/urnurl/SDN:L23>

To obtain the ISO list the following mapping has been used:

- Concept.prefLabel elements in the original list map to ISO concept names
- Concept.definition elements in the original list map to ISO concept definitions

#### **B.6.3 SDN\_DeviceCategoryCode <<CodeList>>**

This codelist is a ISO version of the SeaDataNet list L05 defining “SeaDataNet device categories”.

The reference ISO CodeList catalogue is published at: [http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicrCodeList.xml#SDN\\_DeviceCategoryCode](http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicrCodeList.xml#SDN_DeviceCategoryCode)

The original list can be found at:

[www.seadatanet.org/urnurl/SDN:L05](http://www.seadatanet.org/urnurl/SDN:L05)

To obtain the ISO list the following mapping has been used:

- Concept.prefLabel elements in the original list map to ISO concept names
- Concept.definition elements in the original list map to ISO concept definitions

#### **B.6.4 SDN\_PlatformCategoryCode <<CodeList>>**

This codelist is a ISO version of the SeaDataNet list L06 defining “SeaVoX Platform Categories”.

The reference ISO CodeList catalogue is published at:

[http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicrCodeList.xml#SDN\\_PlatformCategoryCode](http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicrCodeList.xml#SDN_PlatformCategoryCode)

The original list can be found at:

[www.seadatanet.org/urnurl/SDN:L06](http://www.seadatanet.org/urnurl/SDN:L06)

To obtain the ISO list the following mapping has been used:

- Concept.prefLabel elements in the original list map to ISO concept names
- Concept.definition elements in the original list map to ISO concept definitions

#### **B.6.5 SDN\_ParameterDiscoveryCode <<CodeList>>**

This codelist is a ISO version of the SeaDataNet list P02 defining “SeaDataNet Parameter Discovery Vocabulary”.

The reference ISO CodeList catalogue is published at:

[http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicrCodeList.xml#SDN\\_ParameterDiscoveryCode](http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicrCodeList.xml#SDN_ParameterDiscoveryCode)

The original list can be found at:

[www.seadatanet.org/urnurl/SDN:P02](http://www.seadatanet.org/urnurl/SDN:P02)

To obtain the ISO list the following mapping has been used:

- Concept.prefLabel elements in the original list map to ISO concept names
- Concept.definition elements in the original list map to ISO concept definitions

#### **B.6.6 SDN\_CRSCode <<CodeList>>**

This codelist is a ISO version of the SeaDataNet list L10 defining “Co-ordinate reference systems used for positions (latitude/longitude or grid references) in SeaDataNet metadata.”.

The reference ISO CodeList catalogue is published at: [http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicrCodeList.xml#SDN\\_CRSCode](http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicrCodeList.xml#SDN_CRSCode)

The original list can be found at:

[www.seadatanet.org/urnurl/SDN:L10](http://www.seadatanet.org/urnurl/SDN:L10)

To obtain the ISO list the following mapping has been used:

- Concept.prefLabel elements in the original list map to ISO concept names
- Concept.definition elements in the original list map to ISO concept definitions

#### **B.6.7 SDN\_CSRCode <<CodeList>>**

This codelist is a ISO version of the SeaDataNet CSR codes list.

The reference ISO CodeList catalogue is published at: [http://seadata.bsh.de/isoCodelists/sdnCodelists/csrCodeList.xml#SDN\\_CSRCode](http://seadata.bsh.de/isoCodelists/sdnCodelists/csrCodeList.xml#SDN_CSRCode)



#### B.6.8 SDN\_CountryCode <<CodeList>>

This codelist is a ISO version of the SeaDataNet list C32 defining “International Standards Organisation countries”.

The reference ISO CodeList catalogue is published at: [http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicrCodeList.xml#SDN\\_CountryCode](http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicrCodeList.xml#SDN_CountryCode)

The original list can be found at:

[www.seadatanet.org/urnurl/SDN:C32](http://www.seadatanet.org/urnurl/SDN:C32)

To obtain the ISO list the following mapping has been used:

- Concept.prefLabel elements in the original list map to ISO concept names
- Concept.definition elements in the original list map to ISO concept definitions

#### B.6.9 SDN\_EDMERPCode <<CodeList>>

This codelist is a ISO version of the SeaDataNet list EDMERP defining “European Directory of Marine Environmental Research Projects”.

The reference ISO CodeList catalogue is published at: [http://seadatanet.maris2.nl/isocodelists/sdncodelists/edmo-edmerp-Codelists.xml#SDN\\_EDMERPCode](http://seadatanet.maris2.nl/isocodelists/sdncodelists/edmo-edmerp-Codelists.xml#SDN_EDMERPCode)

The original list can be found at:

[www.seadatanet.org/urnurl/SDN:EDMERP](http://www.seadatanet.org/urnurl/SDN:EDMERP)

To obtain the ISO list the following mapping has been used:

- SimpleMetadata.Acronym elements in the original list map to ISO concept names
- SimpleMetadata.Title elements in the original list map to ISO concept definitions

#### **B.6.10 SDN\_EDMOCODE <<CodeList>>**

This codelist is a ISO version of the SeaDataNet list EDMO defining “European Directory of Marine Organisations”.

The reference ISO CodeList catalogue is published at: [http://seadatanet.maris2.nl/isocodelists/sdncodelists/edmo-edmerp-Codelists.xml#SDN\\_EDMERPCode](http://seadatanet.maris2.nl/isocodelists/sdncodelists/edmo-edmerp-Codelists.xml#SDN_EDMERPCode)

The original list can be found at:

[www.seadatanet.org/urnurl/SDN:EDMO](http://www.seadatanet.org/urnurl/SDN:EDMO)

To obtain the ISO list the following mapping has been used:

- Organisation.n\_code elements in the original list map to ISO concept names
- Organisation.name elements in the original list map to ISO concept definitions

#### **B.6.11 SDN\_EDMEDCODE <<CodeList>>**

This codelist is a ISO version of the SeaDataNet list EDMED defining “European Directory of Marine Environmental Data”.

The reference ISO CodeList catalogue is published at: [http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/edmedCodeList.xml#SDN\\_EDMEDCODE](http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/edmedCodeList.xml#SDN_EDMEDCODE)

The original list can be found at:

[http://www.bodc.ac.uk/data/information\\_and\\_inventories/edmed](http://www.bodc.ac.uk/data/information_and_inventories/edmed)

#### **B.6.11 SDN\_PortCode <<CodeList>>**

This codelist is a ISO version of the SeaDataNet list C38 defining “SeaDataNet Ports Gazetteer”.

The reference ISO CodeList catalogue is published at: [http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicsrCodeList.xml#SDN\\_PortCode](http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicsrCodeList.xml#SDN_PortCode)

The original list can be found at:

[www.seadatanet.org/urnurl/SDN:C38](http://www.seadatanet.org/urnurl/SDN:C38)

To obtain the ISO list the following mapping has been used:

- Concept.prefLabel elements in the original list map to ISO concept names
- Concept.definition elements in the original list map to ISO concept definitions

#### **B.6.12 SDN\_CountryCode <<CodeList>>**

This is a ISO codelist catalogue version of the ISO country codes from ISO3166-1

The reference ISO CodeList catalogue is published at: [http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicsrCodeList.xml#SDN\\_CountryCode](http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicsrCodeList.xml#SDN_CountryCode)

#### **B.6.13 SDN\_PlatformCode <<CodeList>>**

This codelist is a ISO version of the SeaDataNet list C17 defining “SeaDataNet Cruise Summary Report ship metadata”.

The reference ISO CodeList catalogue is published at: [http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicsrCodeList.xml#SDN\\_PlatformCode](http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicsrCodeList.xml#SDN_PlatformCode)

The original list can be found at:

[www.seadatanet.org/urnurl/SDN:C17](http://www.seadatanet.org/urnurl/SDN:C17)

To obtain the ISO list the following mapping has been used:

- Concept.prefLabel elements in the original list map to ISO concept names
- Concept.definition elements in the original list map to ISO concept definitions

#### **B.6.14 SDN\_WaterBodyCode <<CodeList>>**

This codelist is a ISO version of the SeaDataNet list C19 defining “Water Body Gazetteer”.

The reference ISO CodeList catalogue is published at: [http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicsrCodeList.xml#SDN\\_WaterBodyCode](http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicsrCodeList.xml#SDN_WaterBodyCode)

The original list can be found at:

[www.seadatanet.org/urnurl/SDN:C19](http://www.seadatanet.org/urnurl/SDN:C19)

To obtain the ISO list the following mapping has been used:

- Concept.prefLabel elements in the original list map to ISO concept names

Concept.definition elements in the original list map to ISO concept definitions

#### **B.6.15 SDN\_MarsdenCode <<CodeList>>**

This codelist is a ISO version of the SeaDataNet list C37 defining “Ten-degree Marsden Squares”.

The reference ISO CodeList catalogue is published at: [http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicrCodeList.xml#SDN\\_MarsdenCode](http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicrCodeList.xml#SDN_MarsdenCode)

The original list can be found at:

[www.seadatanet.org/urnurl/SDN:C37](http://www.seadatanet.org/urnurl/SDN:C37)

To obtain the ISO list the following mapping has been used:

- Concept.prefLabel elements in the original list map to ISO concept names
- Concept.definition elements in the original list map to ISO concept definitions

#### **B.6.16 SDN\_DataCategoryCode <<CodeList>>**

This codelist is a ISO version of the SeaDataNet list C77 defining “SeaDataNet Cruise Summary Report data categories”.

The reference ISO CodeList catalogue is published at: [http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicrCodeList.xml#SDN\\_DataCategoryCode](http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicrCodeList.xml#SDN_DataCategoryCode)

The original list can be found at:

[www.seadatanet.org/urnurl/SDN:C77](http://www.seadatanet.org/urnurl/SDN:C77)

To obtain the ISO list the following mapping has been used:

- Concept.prefLabel elements in the original list map to ISO concept names
- Concept.definition elements in the original list map to ISO concept definitions

#### **B.6.17 SDN\_CSRUnitCode <<CodeList>>**

This codelist is a ISO version of the SeaDataNet list L18 defining “SeaDataNet Cruise Summary Report quantification units”.

The reference ISO CodeList catalogue is published at: [http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicrCodeList.xml#SDN\\_CSRUnitCode](http://vocab.nerc.ac.uk/isoCodelists/sdnCodelists/cdicrCodeList.xml#SDN_CSRUnitCode)

The original list can be found at:

[www.seadatanet.org/urnurl/SDN:L18](http://www.seadatanet.org/urnurl/SDN:L18)

To obtain the ISO list the following mapping has been used:

- Concept.prefLabel elements in the original list map to ISO concept names
- Concept.definition elements in the original list map to ISO concept definitions

### **Elements from ISO 19139**

The following table list the elements from ISO 19139.

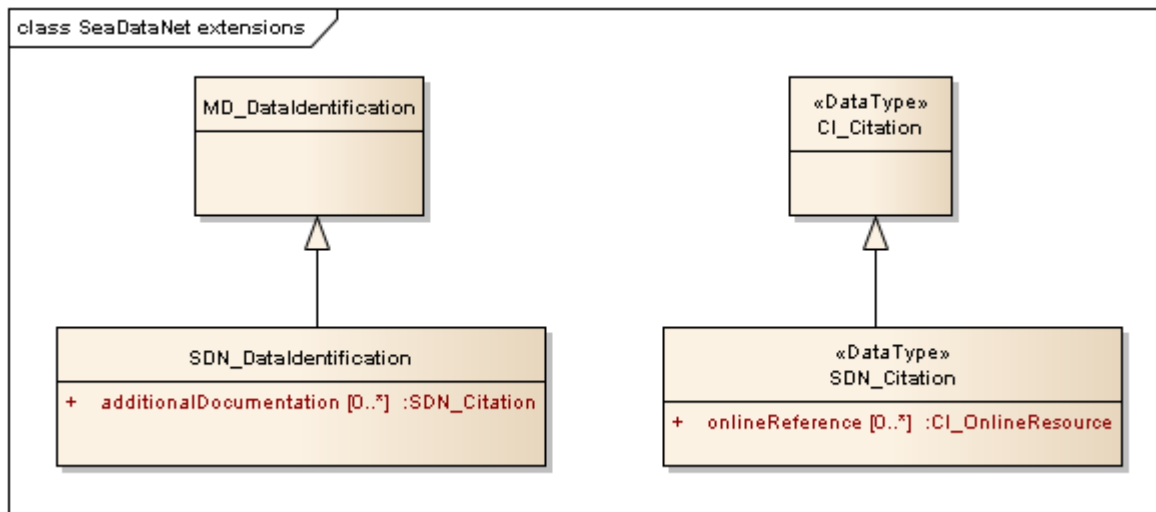
### B.7.1.1 Web environment extensions

#### B.7.1.1.1 Anchor

	Name / Role Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain
1.	Anchor	Supports hyper-linking capabilities and ensures a web-like implementation of CharacterStrings	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Class	Lines 411
2.	href	Supplies the data that allows an XLink application to find a remote resource (or resource fragment) [W3C XLINK]	M	1	CharacterString	Free text

### Extended elements

The following figure presents a UML model of the extension information that is part of the SeaDataNet profile. SDN\_DataIdentification is a sub class of MD\_DataIdentification, containing the (optional) attribute additionalDocumentation of type SDN\_Citation to collect bibliographic references to the dataset, such as articles and related publications. SDN\_Citation is as well an extension, of class CI\_Citation: it adds (optional) online references to the cited documentation.



The following table list the data dictionary of the extended elements that are part of the profile.

Name	Short Name	Definition	Obligation/Condition	Data Type	Domain	Max Occur	Parent Entity	Rule	Rationale	Source
SDN_DataIdentification	SDNDataIdent	information required to identify a resource within SeaDataNet	Use obligation from referencing object	Specified Class (MD_Identification)	Lines 38-45, 24-35.1 and additional Documentation	Use maximum occurrence from referencing object	MD_Metadata	New Metadata class	To provide additionalDocumentation information	SeaDataNet
additionalDocumentation	idAdditionalDocumentation	other documentation associated with the resource (e.g.	O	Class	SDN_Citation()	N	SDN_DataIdentification	New Metadata class	To provide bibliographic references related to	SeaDataNet

		related articles, publications)							the resource	
SDN_Citation	SDNCitation	standardized resource reference within SeaDataNet	Use obligation from referencing object	Specified Class (CI_Citation)	Lines 360-373 and onlineReference	Use Maximum occurrence from referencing object	additionalDocumentation	New Metadata a class	To provide citation completed with online references	SeaDataNet
onlineReference	onlineReference	online reference to the cited documentation	O	Class	CI_Online Resource <<DataType>> (B.3.2.5)	1	SDN_Citation	New Metadata a class	To provide pointers to online references	SeaDataNet

## Null elements use

Null elements (i.e. elements without content) are not permitted to appear in instance documents of this profile in place of mandatory elements. They have instead an use when documenting a missing optional element. Indeed two methods are available to document a missing optional element:

1. Skip the element entirely
2. Document a null element (element without content) along with a nilReason attribute explaining the reason for the null element. A possible encoding using the ISO 19139 schema is the following: <gmd:alternateTitle gco:nilReason="missing"></gmd:alternateTitle>

A null element is also allowed if containing an xlink attribute pointing to the element actual content.

## SeaDataNet specific constraints

Additional SeaDataNet specific constraints are below listed:



- The reference system identifier (RS\_Identifier) should be documented along with the authority.CI\_Citation, with values:
  - alternateTitle='L101'
  - identifier. MD\_Identifier.code.CharacterString=' http://www.seadatanet.org/urnurl/SDN:L101'
- The thesaurus used for keywords should be correctly referenced. E.g. for code list SDN\_ParameterDiscoveryCode:
  - alternateTitle='P021'
  - identifier. MD\_Identifier.code.CharacterString=' http://www.seadatanet.org/urnurl/SDN:P021'
- At least one keyword with type 'parameter' should be documented
- At least one keyword with type 'platform\_class' should be documented
- A maximum of one associationType.AssociationTypeCode/@codeListValue = 'source' for all aggregationInfo

## INSPIRE specific constraints

To be compliant with the European Directive INSPIRE, this profile include the following additional constraints:

- **SC7.** There shall not be more than one instance of MD\_Metadata.identificationInfo[1].MD\_Identification.citation.CI\_Citation.date declared as a creation date (i.e. CI\_Date.dateType having the 'creation' value)
- **SC8.** MD\_Metadata.identificationInfo[1].MD\_DataIdentification.citation.CI\_Citation.identifier is mandatory for metadata sets related to spatial dataset and spatial dataset series;
- **SC10.** There is at least one instance of MD\_Metadata.identificationInfo[1].MD\_DataIdentification.extent defining the geographic location of the resource as a geographic bounding box (i.e. an instance of EX\_GeographicBoundingBox or one of its subclasses).
- **SC16.** The value of MD\_Metadata.contact[1].CI\_ResponsibleParty.role.CI\_RoleCode shall be pointOfContact.
- **SC17.** For datasets and series at least one keyword of GEMET thesaurus shall be documented using MD\_Metadata.identificationInfo[1].MD\_DataIdentification.descriptiveKeywords.
- There shall be a **conformance result report** against the latest INSPIRE commission regulation about metadata or other relevant regulations. E.g. a DQ\_DataQuality.report.DQ\_ConformanceResult with values:
  - specification.CI\_Citation.title.CharacterString = 'COMMISSION REGULATION (EC) No 1205/2008 of 3 December 2008 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards metadata'
  - specification.CI\_Citation.date.CI\_Date.date.Date = '2008-12-04'
  - specification.CI\_Citation.date.CI\_Date.dateType.CI\_DateTypeCode.@codeListValue = 'publication'

- explanation.CharacterString = 'See the referenced specification'
- pass.Boolean = 'true'

## Normative references

- ISO 19115:2003, Geographic information – Metadata
- ISO 19115:2003/Cor 1:2006, Geographic information – Metadata, Corrigendum
- ISO 19115-2:2009, Geographic information — Metadata — Part 2: Extensions for imagery and gridded data
- ISO/TS 19139:2007, Geographic information – Metadata – XML schema implementation
- ISO 19106:2004, Geographic information – Profiles
- INSPIRE Metadata Implementing Rules: Technical Guidelines based on EN ISO 19115 and EN ISO 19119