

Metadata: Limfjorden Habitat Map 2023

Introduction

Metadata contained in these forms fulfil the needs for evaluation, and to some degree use. This Standard specifies a set of metadata elements for describing the Limfjord Benthic habitat Map product. It is intended to describe metadata at the dataset level. Metadata elements are intended for use in a metadata service for discovering what resources exist and what their use can be. The elements include the mandatory core set defined in ISO 19115 Geographic information – Metadata, and comply with or exceed discovery levels 1 and 2 of the INSPIRE Implementing Rules for Metadata. The metadata elements, overlap with all INSPIRE requirements and, for the most part, with ISO 19115. Some elements extend requirements of both standards.

Datasets can be all data sets containing geographical coordinates – e.g., commonly GIS data formats as Tiff or ESRI shp .

To accommodate a fully compliant ISO metadata profile, the table should be expanded by all ISO mandatory elements, data dictionaries and code lists.

The table structure contains the following items:

- **Element name**, which adheres to name conventions used by the INSPIRE initiative. Additional elements, not included in the INSPIRE directive adhere to ISO 19115, 19115-2 and 19130 metadata standards.
- **Occurrence**, which specifies the number of occurrences of this element in the profile. N equals any number of occurrences (0 ... n).
- **Data Type**, which describes the format of data to be entered into the profile.
- **Element Description**, which describes the given element in simple terms.
- **General Rule for Implementation**, which explains rules, specific for implementing this element.
- **Domain Code Value**, which lists codes to be used to describe this element (Code Lists are given in Annex). Mandatory code are shown as grey. If only one code is listed, it is fixed and should not be changed. If more codes are shown and the cell is shaded in grey, it should be selected by the Service Provider and filled-in.
- **Metadata Information Fill-in**, which has to be filled in for all Mandatory elements (marked in light green) and is recommended to be additionally filled in for all Optional elements,

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Selection of metadata elements of this profile followed this priority:

INSPIRE discovery level 1 > INSPIRE discovery level 2 > ISO 19115 > ISO 19115-2 > ISO 19130

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This metadata checklist is based on the following documents and requirements:

- INSPIRE Drafting Team Metadata: Draft Implementing Rules for Metadata (Version 3) (including the minimum set of metadata elements required to comply to the INSPIRE Directive, Discovery level 1 and 2)
- INSPIRE Draft Metadata Implementing Rules: Relation between ISO 19115 and ISO 19119 and the elements of the INSPIRE Draft Metadata
- Boss4GMES: Metadata checklist for geospatial datasets (Land Monitoring)
- ECP 2005 GEO 038026 EGN (EuroGeoNames) Metadata Profile
- UK GEMINI Standard: A UK Standard for discovery of geographic data resources, version 2.1
- EEA: Metadata checklist for geospatial datasets - national deliveries, a subset of EEA metadata standard for geographic information (MSGI), a profile of ISO 19115
- ISO 19115: Core metadata elements required to describe a geographic dataset
- ISO 19115-2, Draft, Metadata Extension for Imagery and Gridded Data
- ISO 19130, Working Draft, Sensor Model for Imagery and Gridded Data
- Dublin Core Metadata Element Set, Version 1.1
- ISO 19119: Annex C elements

Instructions:

Obligation	Mandatory (M): the metadata element shall always be present Optional (O): the metadata element may be present or may not be present.	Multiplicity	Multiplicity (Maximum Occurrence): Specifies the maximum number of instances the metadata element may have. Single occurrences are shown by "1", when one or more occurrences are allowed, it is represented by "N".
Data Type	Free Text (FT): Free text input composed of alpha-numeric characters Integer (IN): Whole number Real (RN): Number that may include digits to the right of the decimal point Date (D): The calendar date in the format YYYYMMDD. If any part of the date is not known then it should be replaced by asterisks Code Value (CD): The code value needs to be chosen from a Code List (see Annex 3, reference given). If the entry field is shown in grey, uniform code values are given for all datasets, which must not be changed.	Code Value	Code value from Code List (CD), see Annex 3: If the entry field is shown in grey, uniform code values are given for all datasets, which must not be changed. ISO element identity names adhere to these naming conventions: MD_element name: ISO 19115 MI_element name: ISO 19115-2 ME_element name: ISO 19130

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Element name	Occurrence	Data type	Element description	General Rule for Implementation	Metadata Information	
					Domain Codes	Texts, Values, Dates, etc. (+ Instructions)
Identification: Limfjorden Benthic habitat Map 2023						
Proper identification of the dataset and its hierarchy						
Resource title	1	FT	Name by which the cited resource is known, which is characteristic and often unique.			Limfjorden Habitat Map
Abstract	1	FT	Brief narrative summary of the content of the resource			A Habitat map of Limfjorden – Denmark representing 2023. The map has been constructed from supervised classification of multi-temporary (6) index with focus on 2023. The backbone index is a novel marine index that penetrates deep and particular sensitive to microorganisms. The map contains 22 thematic classes of Soft and hard bottoms, organic bottoms, water masses, macro algae classes and Eelgrasses and associations. Map classes have been developed from various sources (see also https://www.prinsengineering.com/Climate_invasive.htm) e.g., reports, fieldwork and ortho photo interpretation. Eelgrass deep (ca > 6 m), Eelgrass has been verified against detailed MST Novana monitoring and showed a mapping accuracy > 85%. The map has 20 m spatial resolution.
Resource type	1	CD	Scope to which metadata applies. (Hierarchy level) ISO uses the term “hierarchy level”. Hierarchy is set to the dataset (product) level.	More stringent than ISO+INSPIRE In INSPIRE environment, use only three letter codes defined in ISO 639-2/B (see Annex 3, Table 1)	005	Code List: MD_ScopeCode 005 (Dataset)

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Element name	Occurrence	Data type	Element description	General Rule for Implementation	Metadata Information	
					Domain Codes	Texts, Values, Dates, etc. (+ Instructions)
Resource locator - linkage	1	FT	Location for online access using a URL address or similar addressing scheme	More stringent than ISO+INSPIRE		http://www.prinsengineering.com/Prins2023_Limfjorden.zip
Resource language	1	CD	Language in which the cited resource is described	More stringent than ISO+INSPIRE	eng	Code List: ISO 639-2 Alpha-3 code (see Annex 3, Table 2)
Spatial Representation	1	CD	Method used to spatially represent geographic information	More stringent than ISO+INSPIRE	002	Code List: MD_SpatialRepresentationTypeCode (see Annex 3, Table 3)
Equivalent Scale	1	IN	Level of detail expressed as the scale on a hardcopy map	For hardcopy products it should be given. Give denominator value (Integer)		
Status	1	CD	Status of completion of the resource		001	Code List: MD_ProgressCode (see Annex 3, Table 4)
Geographic description	1	FT	Description of the geographic area (countries / regions)			Limfjorden 2023 Denmark 2.433 km ²
Classification of spatial data and services						

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Element name	Occurrence	Data type	Element description	General Rule for Implementation	Metadata Information	
					Domain Codes	Texts, Values, Dates, etc. (+ Instructions)
Topic category	N	CD	Main theme(s) of the dataset		010	<i>Code List: MD_TopicCategoryCode</i> (see Annex 3, Table 5)
Classification of spatial data services	N	FT	A service type name from a registry of services			EU Biodiversa+ / Project: Climate Invasive
Keyword value	N	FT	Commonly used keyword(s), formalised word(s) or phrase(s) to describe the subject			Benthic habitats, Eelgrass, Soft bottom, Macro Algae, Microorganism, oxygen depletion.
Originated controlled vocabulary	1	FT	Name of the formally registered thesaurus or a similar authoritative source of keywords			Wikipedia
Geographic location						
West bounding longitude	1	RN	Western-most coordinate of the dataset extent expressed in decimal degrees (positive east), with precision of at least 2 decimals	Decimal Degree (-180.00 ... +180.00)		8.1448370
East bounding longitude	1	RN	Eastern-most coordinate of the dataset extent expressed in decimal degrees (positive east) with precision of at least 2 decimals	Decimal Degree (-180.00 ... +180.00)		10.384254091

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Element name	Occurrence	Data type	Element description	General Rule for Implementation	Metadata Information	
					Domain Codes	Texts, Values, Dates, etc. (+ Instructions)
North bounding latitude	1	RN	Northern-most coordinate of the dataset extent expressed in decimal degrees (positive east) with precision of at least 2 decimals	Decimal Degree (-90.00 ... +90.00)		57.1273761
South bounding latitude	1	RN	Southern-most coordinate of the dataset extent expressed in decimal degrees (positive north) with precision of at least 2 decimals	Decimal Degree (-90.00 ... +90.00)		56.455311230
Temporal reference						
Temporal extent	2	D	Time period covered by the content of the resource	beginning date before end date		20220417 – 20240624
Date of publication	1	D	Date of the publication of the resource			20250520
Date of last revision	1	D	Date of the last revision			20250520
Date of creation	1	D	Date of the creation of the resource			20250520
Quality and validity						

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Element name	Occurrence	Data type	Element description	General Rule for Implementation	Metadata Information	
					Domain Codes	Texts, Values, Dates, etc. (+ Instructions)
Lineage	N	FT	Description of the process history and overall quality of the dataset			<p>A Habitat map of Limfjorden – Denmark representing 2023. The map has been constructed from supervised classification of multi-temporary (6) index with focus on 2023. The backbone index is a novel marine index that penetrates deep and particular sensitive to microorganisms. The map contains 22 thematic classes of Soft and hard bottoms, organic bottoms, water masses, macro algae classes and Eelgrasses and associations.</p> <p>Map classes have been developed from various sources (see also https://www.prinsengineering.com/Climate_invasive.htm) e.g., reports, fieldwork and ortho photo interpretation. Eelgrass deep (ca > 6 m), Eelgrass has been verified against detailed MST Novana monitoring and showed a mapping accuracy > 85%. The map has 20 m spatial resolution.</p>
Spatial Resolution (Resolution distance)	1	RN	Ground sample distance (Resolution distance).	<p>More stringent than INSPIRE</p> <p>Values given in metres [m]</p>		20 m
Positional Accuracy	1	FT	Positional Accuracy is a measure of closeness of spatial objects to their true position on the earth's surface.	More stringent than ISO+INSPIRE		Horizontal RMS error 10-30 m, - determined from satellite data meta-data

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Element name	Occurrence	Data type	Element description	General Rule for Implementation	Metadata Information	
					Domain Codes	Texts, Values, Dates, etc. (+ Instructions)
Thematic accuracy	1	FT	Thematic Accuracy is a measure of expressing closeness/reliability of classes assigned to features in a dataset (pixels, polygons) to their true 'real world' class designation. It expresses how well a classification represents land use/land cover or their change in time.	As a minimum, overall accuracy has to be given. If known, all other measures of accuracy, as user's and producer's accuracy, kappa coefficient and individual classes' accuracies should also be stated. More stringent than ISO+INSPIRE		User Accuracy: Eel grass 72% - MST Eelgrass 74% - MST + Feld work Producer Accuracy: Eel grass 91% - MST Eelgrass 94% - MST + Feld work Eelgrass overall mapping accuracy: 86% MST data; 87% MST + Field work Accuracy assessment-based MST annual Eelgrass surveys covering 2021, 2022, 2023 (11.995 points) that was interpreted with orthophotos from the same year – online available via https://danmarksarealinformation.miljoportal.dk/ .

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Element name	Occurrence	Data type	Element description	General Rule for Implementation	Metadata Information	
					Domain Codes	Texts, Values, Dates, etc. (+ Instructions)
Completeness	1	FT	Completeness shows completeness of coverage, classification and verification.	More stringent than ISO+INSPIRE		<p>The Limfjord habitat mapping 2023 is complete and cloud-free. Thematic products were mapped for the whole of Limfjorden at 20 m spatial resolution and a version using MMU of 0.2 hectares. Only Eelgrass has been verified at this stage. Macroalgae has in addition been accuracy assessed for the western part of Limfjorden indicating map accuracy > 90%. The remaining classes has been carefully reviewed using orthophoto and other sources that for many classes will require more reference data to make proper accuracy assessments.</p> <ol style="list-style-type: none"> 1 Deep high productive/mean MPI 2 Deep early high MPI ca > 6 m dep 3 Deep > 3 m dept productive soft/bare bottom 4 Intertidal bare 5 Near intertidal bare 6 Soft bottom limited SMV 7 Shallow silty/org mat bottom 8 Soft predom. bare bottom with org. or algae 9 Bare org bottom high spring MPI/nutrient contamination 10 Shore/Reef type bare/limited macroalgae 11 Sandy light biogen mix 12 Opportune algae / Ruppia-algae mix incl eelgrass 13 Soft shallow org material/Ruppia/Ulva spp. post spring MPI 14 Opportune algae Chara/Petamogeton/Ruppia mix incl eelgrass 15 Opportune algae mix Chara and eelgrass 16 Eelgrass algae- blue mussel associate 17 Eelgrass mussel-algae associate 18 Eelgrass (Zostera marina) 19 Biogen/Blue mussel - eelgrass-algae association 20 Macro algae scatter beds or lower density 21 Macro algae cover - predominant brown / red algae 22 Macro algae dense cover - predominant brown / red algae

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Element name	Occurrence	Data type	Element description	General Rule for Implementation	Metadata Information	
					Domain Codes	Texts, Values, Dates, etc. (+ Instructions)
Conformity						
Conformity describes the degree of conformance with INSPIRE implementing rules.						
Specification	N	FT	Citation of the specification to which the resource is expected to conform (relevant Service Agreement)			PRINS Agreement – WP 4.1 EU Biodiversa+ Climate Invasive (2023-2026).
Explanation	N	FT	The meaning of conformance for this specification.			No specification set out
Degree	N	CD	Degree of conformity with the product specification or user requirement		Positional Accuracy: 001 Thematic Accuracy: 001 Area Coverage: 001 MMU: 001 Class Definitions: 001	Positional Accuracy: 001 Thematic Accuracy: 001 Area Coverage: 001 MMU: 001 Class Definitions: 001
Conditions applying to access and use						
Conditions for access and use - general	N	CD	Conditions for access and use of the resource		007	Code List: MD_Restriction Code (see Annex 3, Table 7). Data available at CC BY-NC 4.0

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Element name	Occurrence	Data type	Element description	General Rule for Implementation	Metadata Information	
					Domain Codes	Texts, Values, Dates, etc. (+ Instructions)
Corresponding fees	N	FT	Fees and terms for retrieving the resource or "No fees". Unless stated otherwise, fees are given as €/km².			No fees
Distribution format and version	N	FT	Provides a description of the format of the data to be distributed, e.g. JPG, WMS, Shape file.	More stringent than ISO+INSPIRE		Tiff / img
Limitations on public access						
Limitations on public access	N	CD	Access restrictions imposed on the resource for national security or similar concerns		006	006 (restricted) – CC BY-NC 4.0
Limitations on public use	N	CD	Use restrictions imposed on the resource for national security or similar concerns		006	006 (restricted) – CC BY-NC 4.0
Organisations responsible for the establishment, management, maintenance and distribution of datasets and services						
The INSPIRE directive requires information on public authorities responsible for establishment, management, maintenance and distribution of spatial datasets						
Organisation name	N	FT	Name of the responsible organisation		006	Code List: MD_RestrictionCode (see Annex 3, Table 7). Prins Engineering

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Element name	Occurrence	Data type	Element description	General Rule for Implementation	Metadata Information	
					Domain Codes	Texts, Values, Dates, etc. (+ Instructions)
Address of the responsible party	N	FT	Address of the responsible party; e-mail address and telephone is mandatory			Hyldestykket 6, DK-2970 Hørsholm, Denmark prinsengineering@gmail.com +45 45 8685 18
Role of the responsible party	N	CD	Function performed by the responsible party		002, 005, 006, 010, 011	02, 05, 06, 010, 011 (custodian, distributor, originator, publisher and author)

Metadata on Metadata

Point of contact	N	FT	Party responsible for the metadata information			Erik Prins, Prins Engineering, Denmark
Date	1	D	Date of the last modification of the metadata			20250520
Language	1	CD	Language used for documenting metadata		eng	Code List: ISO 639-2 Alpha-3 Code (see Annex 3, Table 2)
Character Set	1	CD	Character set used to describe metadata		utf8	Code List: MD_CharacterSetCode (see Annex 3, Table 9)

Reference System

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Element name	Occurrence	Data type	Element description	General Rule for Implementation	Metadata Information	
					Domain Codes	Texts, Values, Dates, etc. (+ Instructions)
Name	1	FT	Name or description of the system of spatial referencing, whether by coordinates or geographic identifiers, used in the dataset	ISO+INSPIRE		Universal Transverse Mercator (UTM)
Datum	1	FT	Name of geodetic datum	ISO+INSPIRE		ETRS_1989 / EPSG: 25832
Ellipsoid						
Name	1	CS	Name of ellipsoid	ISO+INSPIRE		GRS_1980
Semi-major axis	1	RN	Radius of the equatorial axis of the ellipsoid	Values given in metres [m]		6378137
Flattening ratio (denominator)	1	RN	Denominator of the ratio of the difference between the equatorial and polar radii of the ellipsoid to the equatorial radius when the numerator is set to 1	Give denominator value		298.25722
Projection						
Zone	1	IN	Projection zone, if applicable. Otherwise, state "n.a."	More stringent than ISO+INSPIRE		32 N

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Element name	Occurrence	Data type	Element description	General Rule for Implementation	Metadata Information	
					Domain Codes	Texts, Values, Dates, etc. (+ Instructions)
Longitude of central meridian	1	RN	Line of longitude at the centre of a map projection generally used as the basis for constructing the projection			9.0
Latitude of projection origin	1	RN	Latitude chosen as the origin of rectangular coordinates for a map projection			0.0
False easting	1	RN	Value added to all "x" values in the rectangular coordinates.			500000.000000
False northing	1	RN	Value added to all "y" values in the rectangular coordinates.			0.0
Scale factor at equator	1	RN	Ratio between physical distance and corresponding map distance, along the equator			0.999600
Additional ISO 19115 Elements						
Spatial Representation						
DimensionSize	2	IN	Number of elements along axis			X 6780, Y 3699

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Element name	Occurrence	Data type	Element description	General Rule for Implementation	Metadata Information	
					Domain Codes	Texts, Values, Dates, etc. (+ Instructions)
Pixel Orientation	1	CD	Orientation of pixel origin of the raster data. Pixel orientation depends on the used software.	ISO+ INSPIRE	005	005 (<i>Upper left</i>)
Content						
contentType	1	CD	Type of information represented by cell value		002	002 (<i>thematicClassification</i>)
bitsPerValue	1	IN	Maximum number of significant bits in the uncompressed representation of pixel values	ISO+ INSPIRE		8
Additional ISO 19119 Elements						
Service Provider						
Name	N	FT	The name of the organisation providing the service			PRINS Engineering / www.prinsengineering.com
Contact point	N	FT	Information for contacting the service provider			Hyldestykket 6, DK-2970 Hørsholm, Denmark prinsengineering@gmail.com +45 2621 8518

Metadata - Code Lists

Table 1: MD_ScopeCode

class of information to which the referencing entity applies*

Name	Domain code	Definition
attribute	001	information applies to the attribute class
attributeType	002	information applies to the characteristic of a feature
collectionHardware	003	information applies to the collection hardware class
collectionSession	004	information applies to the collection session
dataset	005	information applies to the dataset
series	006	information applies to the series
nonGeographicDataset	007	information applies to non-geographic data
dimensionGroup	008	information applies to a dimension group
feature	009	information applies to a feature
featureType	010	information applies to a feature type
propertyType	011	information applies to a property type
fieldSession	012	information applies to a field session
software	013	information applies to a computer program or routine
service	014	information applies to a capability which a service provider entity makes available to a service user entity through a set of interfaces that define a behaviour, such as a use case
model	015	information applies to a copy or imitation of an existing or hypothetical object
tile	016	information applies to a tile, a spatial subset of geographic data

* for INSPIRE, only the values: dataset, series and service are valid (marked bold)

Table 2: ISO 639-2 Alpha-3 code

for complete language list see http://en.wikipedia.org/wiki/List_of_ISO_639-2_codes

Language code	Name of the language
eng	English
fre	French
ger	German
ita	Italian
spa	Spanish
...	...

Table 3: MD_SpatialRepresentationTypeCode

method used to represent geographic information in the dataset

Name	Domain code	Definition
vector	001	vector data is used to represent geographic data
grid	002	grid data is used to represent geographic data
textTable	003	textual or tabular data is used to represent geographic data
tin	004	triangulated irregular network
stereoModel	005	three-dimensional view formed by the intersecting homologous rays of an overlapping pair of images
video	006	scene from a video recording

Table 4: MD_ProgressCode

Name	Domain code	Definition
completed	001	Production of the dataset has been completed
historicalArchive	002	data has been stored in an offline storage facility
obsolete	003	data is no longer relevant
onGoing	004	Data is continually being updated
planned	005	fixed date has been established upon or by which the data will be created or updated
required	006	data needs to be generated or updated
underDevelopment	007	data is currently in the process of being created

Table 5: MD_TopicCategoryCode

High-level thematic classification of geographic data to assist in the grouping and search of available geographic data sets. It 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.

Name	Domain code	Definition
farming	001	rearing of animals and/or cultivation of plants Examples: agriculture, irrigation, aquaculture, plantations, herding, pests and diseases affecting crops and livestock
biota	002	flora and/or fauna in natural environment Examples: wildlife, vegetation, biological sciences, ecology, wilderness, sealife, wetlands, habitat
boundaries	003	legal land descriptions Examples: political and administrative boundaries
climatologyMeteorologyAtmosphere	004	processes and phenomena of the atmosphere Examples: cloud cover, weather, climate, atmospheric conditions, climate change, precipitation
economy	005	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

elevation	006	height above or below sea level Examples: altitude, bathymetry, digital elevation models, slope, derived products
environment	007	environmental resources, protection and conservation Examples: environmental pollution, waste storage and treatment, environmental impact assessment, monitoring environmental risk, nature reserves, landscape
geoscientificInformation	008	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
health	009	health, health services, human ecology, and safety Examples: disease and illness, factors affecting health, hygiene, substance abuse, mental and physical health, health services
imageryBaseMapsEarthCover	010	base maps Examples: land cover, topographic maps, imagery, unclassified images, annotations
intelligenceMilitary	011	military bases, structures, activities Examples: barracks, training grounds, military transportation, information collection
inlandWaters	012	inland water features, drainage systems and their characteristics Examples: rivers and glaciers, salt lakes, water utilization plans, dams, currents, floods, water quality, hydrographic charts
location	013	positional information and services Examples: addresses, geodetic networks, control points, postal zones and services, place names
oceans	014	features and characteristics of salt water bodies (excluding inland waters) Examples: tides, tidal waves, coastal information, reefs
planningCadastre	015	information used for appropriate actions for future use of the land Examples: land use maps, zoning maps, cadastral surveys, land ownership
society	016	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
structure	017	man-made construction
transportation	018	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
utilitiesCommunication	019	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

Table 6: IR_ConformityDegreeCode

Degree to which the product conforms to the agreement specifications (SLA).

Name	Domain code	Definition
conformant	001	The resource is fully conformant to the cited agreement specification
notConformant	002	The resource does not fully conform to the cited specification agreement
notEvaluated	003	Conformance has not been evaluated

Table 7: MD_RestrictionCode

Limitation(s) placed upon the access or use of the data

Name	Domain code	Definition
copyright	001	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
patent	002	government has granted exclusive right to make, sell, use or license an invention or discovery
patentPending	003	produced or sold information awaiting a patent
trademark	004	a name, symbol, or other device identifying a product, officially registered and legally restricted to the use of the owner or manufacturer
license	005	formal permission to do something
intellectualPropertyRights	006	rights to financial benefit from and control of distribution of non-tangible property that is a result of creativity
restricted	007	withheld from general circulation or disclosure
otherRestrictions	008	limitation not listed

Table 8: CI_RoleCode

Function(s) performed by the responsible party

Name	Domain code	Definition
resourceProvider	001	party that supplies the resource
custodian	002	party that accepts accountability and responsibility for the data and ensures appropriate care and maintenance of the resource
owner	003	party that owns the resource
user	004	party who uses the resource
distributor	005	party who distributes the resource
originator	006	party who created the resource
pointOfContact	007	party who can be contacted for acquiring knowledge about or acquisition of the resource
principalInvestigator	008	key party responsible for gathering information and conducting research
processor	009	party who has processed the data in a manner such that the resource has been modified
publisher	010	party who published the resource
author	011	party who authored the resource

Table 9: MD_CharacterSetCode

Name of the character coding standard used for the resource

Name	Domain code	Definition
ucs2	001	16-bit fixed size Universal Character Set, based on ISO/IEC 10646
ucs4	002	32-bit fixed size Universal Character Set, based on ISO/IEC 10646
utf7	003	7-bit variable size UCS Transfer Format, based on ISO/IEC 10646
utf8	004	8-bit variable size UCS Transfer Format, based on ISO/IEC 10646
utf16	005	16-bit variable size UCS Transfer Format, based on ISO/IEC 10646
8859part1	006	ISO/IEC 8859-1, Information technology - 8-bit single-byte coded graphic character sets - Part 1: Latin alphabet No. 1
8859part2	007	ISO/IEC 8859-2, Information technology - 8-bit single-byte coded graphic character sets - Part 2: Latin alphabet No. 2
8859part3	008	ISO/IEC 8859-3, Information technology - 8-bit single-byte coded graphic character sets - Part 3: Latin alphabet No. 3
8859part4	009	ISO/IEC 8859-4, Information technology - 8-bit single-byte coded graphic character sets - Part 4: Latin alphabet No. 4
8859part5	010	ISO/IEC 8859-5, Information technology - 8-bit single-byte coded graphic character sets - Part 5: Latin/Cyrillic alphabet
8859part6	011	ISO/IEC 8859-6, Information technology - 8-bit single-byte coded graphic character sets - Part 6: Latin/Arabic alphabet
8859part7	012	ISO/IEC 8859-7, Information technology - 8-bit single-byte coded graphic character sets - Part 7: Latin/Greek alphabet
8859part8	013	ISO/IEC 8859-8, Information technology - 8-bit single-byte coded graphic character sets - Part 8: Latin/Hebrew alphabet
8859part9	014	ISO/IEC 8859-9, Information technology - 8-bit single-byte coded graphic character sets - Part 9: Latin alphabet No. 5
8859part10	015	ISO/IEC 8859-10, Information technology - 8-bit single-byte coded graphic character sets - Part 10: Latin alphabet No. 6
8859part11	016	ISO/IEC 8859-11, Information technology - 8-bit single-byte coded graphic character sets - Part 11: Latin/Thai alphabet
(reserved for future use)	017	a future ISO/IEC 8-bit single-byte coded graphic character set (e.g. possibly 8859 part 12)
8859part13	018	ISO/IEC 8859-13, Information technology - 8-bit single-byte coded graphic character sets - Part 13: Latin alphabet No. 7
8859part14	019	ISO/IEC 8859-14, Information technology - 8-bit single-byte coded graphic character sets - Part 14: Latin alphabet No. 8 (Celtic)
8859part15	020	ISO/IEC 8859-15, Information technology - 8-bit single-byte coded graphic character sets - Part 15: Latin alphabet No. 9
8859part16	021	ISO/IEC 8859-16, Information technology - 8-bit single-byte coded graphic character sets - Part 16: Latin alphabet No. 10
jis	022	japanese code set used for electronic transmission
shiftJIS	023	japanese code set used on MS-DOS based machines
eucJP	024	japanese code set used on UNIX based machines
usAscii	025	united states ASCII code set (ISO 646 US)
ebcdic	026	ibm mainframe code set
eucKR	027	korean code set

big5	028	traditional Chinese code set used in Taiwan, Hong Kong of China and other areas
GB2312	029	simplified Chinese code set

Table 10: MD_CoverageContentTypeCode

Name	Domain code	Definition
image	001	Meaningful numerical representation of a physical parameter that is not the actual value of the physical parameter
thematicClassification	002	Code value with no quantitative meaning used to represent a physical quantity

Table 11: MD_PixelOrientationCode

Name	Domain code	Definition
Lower left	002	
Upper left	005	