DGIWG 253

Defence Topographic Exchange (DTOX)
Data Product Specification (DPS)

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Abstract:	This is a data product specification describing the exchange of basic topographic vector data from a GML application schema, derived from Defence Geospatial Information Framework (DGIF).
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i. Contributing organizations

Nation	Parent organization
Denmark	Agency for Data Supply and Efficiency
France	Institut Géographique National

ii. Revision history

Date	Release	Primary clauses modified	Description

Introduction

This Data Product Specification (DPS) describes how to exchange topographic vector data based on a flattened profile of the DGIM model using a GML encoding.

The format of this document is based on the “DGIWG – 16-002 DGIWG profile of ISO 19131 Geographic information – Data product specification”. This DGIWG profile extends the ISO standard to provide a definition of the format, content and structure of a specification for geospatial data products meeting military requirements.

This DPS is part of the Defence Geospatial Information Framework (DGIF) and utilizes the artefacts and specifications defined therein. That does not preclude this specification from being used in a national context but it would have to be adjusted to national specifications.

Comments, questions, or suggestions to improve this document should be addressed to the Defence Geospatial Information Working Group secretariat@dgiwg.org.

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1 Overview

This standard defines the exchange requirements for topographic data/datasets. It specifies the feature concepts, metadata, and exchange schema for data/datasets, which are conformant to the Defence Geospatial Information Framework (DGIF). Additional information regarding the content and encoding of data may be found in one of the following support documents to this standard.

- 253 SD 1: Defence Topographic Exchange (DTOX) GML-Application Schema (.xsd)
- 253 SD 2: Defence Topographic Exchange (DTOX) Metadata Schema (.xsd)
- 253 SD 3: Defence Topographic Exchange (DTOX) Feature Catalogue. (.html)

GML application schemas are required in order to facilitate exchange of topographic geospatial data in accordance with a Defence Geospatial Information Model (DGIM). Topographic data only represents a small portion of overall DGIM content. Hence, the Defence Topographic Exchange (DTOX) schema defined in this DPS is a profile of the full DGIM.

To fully deliver data in accordance with the DGIM profile, a 1:1 GML application schema is needed. This would be a full-complex GML application schema derived from DGIM with the elements belonging to the DTOX profile. A full-complex means a schema derived directly from the DGIM UML-model using ISO 19136. However, in most cases, the user does not need the full-complex GML-application schema because of data, the use of data, or the user/provider does not have the capability to ingest or produce data according to the full-complex GML application schema. Therefore, this DPS provides a “flattened” and simplified GML application schema derived from the DGIM using a set of flattening-rules[1].

The Defence Topographic Exchange (DTOX) GML-Application Schema is a simplified and “flattened” schema, derived from the DGIM DTOX-profile, which gives the ability to produce a data set that includes limited cardinality, metadata information, complex data types, etc.

The “flattening” process includes, but is not limited to, the following flattening-rules:

- Flattening inheritance. No abstract feature types are included.
- All associations are removed.
- Cardinality of any attribute occurrence is set to a maximum of 3.
- No complex data types in the schema.
- Only the basic geometry types are supported (point, curve, surface).

The following information provides an overview for the creation of the data product specification (DPS).

[1] Future versions of this DPS are anticipated to include more complex applications schemas.

1.1 Specification title

DGIWG 253: Defence Topographic Exchange (DTOX) Data product Specification (DPS).

1.2 Version

Version 1.

1.3 DPS Reference Date

16 November 2017

1.4 Language

The English is used according to Shorter Oxford English Dictionary (5th edition).

1.5 Classification

UNCLASSIFIED

1.6 Contact

Comments, questions, or suggestions to improve this document should be addressed to the Defence Geospatial Information Working Group “secretariat@dgiwg.org”

1.7 DPS identifier

DGIWG-253_DTOX_DPS_1.0

1.8 Maintenance

This DPS shall be reviewed in order to be compliant with the latest DGIF baseline and the latest version of DMF.

1.9 Keywords

GML, DPS, profile, Topographic Data Exchange, Data Exchange Schema, Topographic Vector data, ShapeChange.

1.10 DPS topic categories

List of topic categories selected from Topic Category Enumeration from ISO 19115-1.

002: Biota

003: Boundaries

006: Elevation

007: Environment

008: GeoscientifiInformation

011: IntelligenceMilitary

012: InlandWaters

013: Location

014: Oceans

016: Society

017: Structure

018: Transportation

019: UtilityCommunication

1.11 DPS distribution format

This document is distributed in Portable Document Format (PDF).

1.12 Terms and definitions

1.12.1 Data product

Dataset or dataset series that conforms to a data product specification

1.12.2 Data product specification

Detailed description of a dataset or dataset series together with additional information that will enable it to be created, supplied to and used by another party.

NOTE: A data product specification provides a description of the universe of discourse and a specification for mapping the universe of discourse to a dataset. It may be used for production, sales, end-use or other purposes.

1.12.3 Dataset

Identifiable collection of data

NOTE: A dataset may be a smaller grouping of data which, though limited by some constraint such as spatial extent or feature type, is located physically within a larger dataset. Theoretically, a dataset may be as small as a single feature or feature attribute contained within a larger dataset. A hardcopy map or chart may be considered a dataset.

1.12.4 Dataset series

Collection of datasets sharing the same product specification.

1.13 Abbreviations

DGIF: DGIWG Geospatial Information Framework

DGIM: DGIWG Geographic Information Model

DMF: DGIWG Metadata Foundation

DPS: Data Product Specification

DTOX: Defence Topographic Exchange

EGM: Earth Gravity Model

EPSG: European Petroleum Survey Group

FFLA: Full Flat

GML: Geographic Markup Language

MDS: Metadata Schema

UTF-8: Unicode Transformation Format 8-bit

WGS84: World Geodetic System 1984

XML: eXtended Markup Language

1.14 Product title

Defence Topographic Exchange Dataset.

1.15 Abstract

This product specification contains schemas and feature catalogue to encode topographic vector data encoded in GML and metadata in XML.

1.16 Content

Topographic data encoded in GML.

1.17 Spatial extent

Not applicable.

A dataset in accordance with this DPS is not bound to any specific area or region.

1.18 Specific purpose

The purpose of the DTOX DPS is to describe how to exchange topographic data encoded in GML, compliant with a DGIF baseline.

2 Specification scope

The scope of this DPS is to define the product for exchange of topographic vector data.

2.1 Scope Identification

Dataset.

3 Data product identification

3.1 Title

Defence Topographic Exchange Dataset.

3.2 Abstract

A GML file for exchanging topographic data and a XML file with the corresponding dataset metadata.

3.3 Purpose

The purpose of this product is to exchange topographic vector data according to the DGIF information model (DGIM) in a standardized way.

3.4 Topic category

The main topics covered by DTOX are listed in annex C.

3.5 Geographic extent

The geographic extent of the topographic data set intended to be exchanged.

3.6 Language

The languages shall always be English.

3.7 Classifier/Classification System

Each topographic dataset is provided with a security classification, and shall also contain downgrading/declassification instructions. The appropriate note or statement shall be determined in accordance with the provisions of the producing nation or organization. The specific note shall be indicated in pertinent security classification guidance for the project, operation, or exercise.

3.8 Classification

The level of classification is determined in accordance with the provisions and regulations of the producing nation or organization. The appropriate classification shall be indicated in the security classification guidance for the project, operation, or exercise.

The security classification of the products generated by the use of this specification should be the lowest category practicable – normally UNCLASSIFIED with some form of restricted dissemination.

3.9 Point of contact

The point of contact for Defence Topographic Exchange Data products are defined by each nation or organization and shall be contained in the product metadata file.

3.10 Identification scope

Dataset.

4 Data content and structure

4.1 Narrative description

Defence Topographic Data Exchange is done via GML 3.2.1 format. The content of the GML file is defined in a GML application schema derived from the DGIM (vector model).

4.2 GML application schema

The GML application schema is based on a simplified and flattened version of the DGIM model.

The name of GML application schema is: Defence Topographic Exchange (DTOX) GML-Application Schema.

4.3 Feature catalogue

The content of the Defence Topographic Exchange (DTOX) Feature Catalogue (FC) is based on the flattened version of the Defence Geospatial Information Model (DGIM) consisting of the features required for topographic exchange. The feature catalogue is in accordance with ISO 19110 Geographic information – Methodology for feature cataloguing, provided as an HTML-document.

The name of feature catalogue is: Defence Topographic Exchange (DTOX) Feature Catalogue.

5 Reference systems

5.1 Spatial reference system

World Geodetic System 1984 (WGS84).

5.1.1 Ellipsoid

The ellipsoid shall be World Geodetic System 1984 (WGS84).

5.1.2 Horizontal datum

The horizontal datum shall be World Geodetic System 1984 (WGS84).

- Code: 4326
- Code space: EPSG

5.1.3 Vertical datum

The vertical datum shall be Mean Sea Level (MSL) as determined by the appropriate Earth Gravity Model (EGM).

- Code: 5100
- Code space: EPSG

5.2 Scope

See chapter 2

6 Data quality

6.1 Data quality

This DPS does not specify any quality requirements about the actual data delivered conformant to the DTOX schema (e.g. positional accuracy, topology requirements, etc.). However, the encoding must be in accordance with the provided GML application schema as well as the metadata XML application schema.

Information about the quality of the exchanged data should be described in the associated dataset metadata.

Data Quality Element – 1 - Format consistency

Measure

Scope	Dataset
Name of measure	Format consistency
Measure Description	conceptual schema non-compliance

Result (Conformance)

Scope	Dataset
Pass	True
Specification	GML Application Schema (Defence Topographic Exchange (DTOX) GML-Application Schema)
Explanation	If any items in the GML file is not compliant with GML ISO 19136-2:2015 this result shall return false.

Data Quality Element – 2 - Conceptual Consistency

Measure

Scope	Dataset
Name of measure	Conceptual consistency
Measure Description	conceptual schema non-compliance

Result (Conformance)

Scope	Dataset
Pass	True
Specification	GML Application Schema (Defence Topographic Exchange (DTOX) GML-Application Schema)
Explanation	If any items in the GML file is not compliant with the Defence Topographic Exchange (DTOX) GML-Application Schema this result shall return false.

Data Quality Element – 3 - Spatial Conformance

Measure

Scope	Dataset
Name of measure	Spatial consistency
Measure Description	Spatial non-compliance

Result (Conformance)

Scope	Dataset
Pass	True
Specification	EPSG 4326
Explanation	If any features in the GML file is not compliant with the allowed spatial reference system this result shall return false.

Data Quality Element – 4 – Metadata Consistency

Measure

Scope	Metadata file
Name of measure	Conceptual consistency
Measure Description	Metadata Consistency – compliance

Result (Conformance)

Scope	Metadata file
Pass	True
Specification	DMF XML schema (Defence Topographic Exchange (DTOX) Metadata Schema)
Explanation	If any items in the metadata xml file is not compliant with the Defence Topographic Exchange (DTOX) Metadata Schema this result shall return false.

6.2 Scope

Dataset.

6.3 Result

The GML and XML files must be validated according to the schemas.

7 Data production

Not applicable.

This DPS only address data exchange and not data production.

8 Data maintenance

Not applicable.

This DPS only address data exchange and not data maintenance.

9 Portrayal

Not applicable.

This DPS only address data exchange and not portrayal.

10 Delivery information

10.1 Delivery scope

Dataset.

10.2 Delivery format

Vector data:

Format name: GML

Version: 3.2.1

Language: English

Characterset: UTF-8

Metadata:

Format name: XML

Version: 1.0

Language: English

Characterset: UTF-8

10.3 File naming

The structure for naming files according the DTOX DPS is defined below:

1. Producer identifier
2. Data Product acronym
3. DPS version

4. Producer allocated numeric identifier
5. File edition
6. File extension

Example: DNK_DTOX_1.0_4711_27.gml

11 Metadata

11.1 Overview/Guidance

Metadata for DGIWG is defined in the DGIWG Metadata Foundation (DMF) version 2.0 and defines both the mandatory and optional metadata elements for a resource or data product.

This section lists the DMF metadata elements applicable to a Topographic Data Exchange (DTOX). Many of these elements are described more fully elsewhere in this document; this section is meant to be a complete listing for reference purposes.

11.2 DMF Metadata Applicable to the Defence Topographic Exchange

Annex B describes those Topographic Exchange Data metadata elements that correspond to mandatory or optional DMF metadata elements.

11.3 Metadata schema

In support of the metadata described above, an XML schema compliant to DMF 2.0 is delivered as part of the DTOX DPS.

The name of XML schema is: Defence Topographic Exchange (DTOX) 253-3 Metadata Schema.

The DTOX metadata XML-schema is considered a valid implementation of DMF even though DTOX XML-metadata file would not validate against the ISO metadata schemas. This lack of validation is due to the DMF extensions (e.g. the use of shortnames, security extensions etc.).

11.4 DMF Metadata Not Applicable

The following DMF metadata elements have been identified as not applicable:

- Resource category
- Hierarchy level
- Hierarchy level name

Annex A. DTOX Metadata elements

The source of the table is DMF version 2.0., except for the examples. The structure of the table is as follows:

- Name: The name of the metadata element.
- Description: Description of the element.
- Cardinality (Card): The number of values this element may represent.
- Data Type: The data type of the element.
- Conformance class: The conformance class as described in DMF version 2.0

Metadata element	Description	Card	Datatype	Conformance class
Metadata Set Identifier (MDSID)	This is a value uniquely identifying the original and published versions of the metadata set. Constraint: Mandatory when used in a catalogue. In this case, it should be the value which enables the user to access a metadata set by its identifier. It is usually generated automatically by the catalogue system. Example: b6986b32-1336-487a-8d4d-45b317d8a31f	1	String (UUID)	Core
Metadata Linkage (MDLINK)	This element refers to the online location where the metadata is available. Example: https://portal.dgiwg.org/files/?artifact_id=67339	0..1	URL	Specific
Metadata Default Locale (MDDLOC)	This is the locale in which the metadata elements are primarily expressed. Example: eng	1	Locale (complex data type)	Core
Metadata Responsible Party (MDRPTY)	Information about the party responsible for the metadata. The party.role is usually defaulted to pointOfContact. The party.orgName can be defaulted to "To be determined" but it is strongly recommended that each organization set up its own default values. Example: Danish Defence Acquisition and Logistics Organisation	1..*	Responsible party (complex data type)	Core

Metadata element	Description	Card	Datatype	Conformance class
	Email: fmi@mil.dk Role: pointOfContact			
Metadata Date Stamp (MDDATE)	The date which specifies when the metadata record was created or updated. Example: 2017-10-12 or 2017-10-12T11:15:00	1	Date or DateTime	Core
Metadata Standard (MDSTD)	This is a citation of the metadata standard to which the metadata set conforms. Constraints: • The values for Metadata Standard (MDSTD) shall be MDSTD.title='urn:dgiwg:metadata:dmf:2.0:profile:all' and MDSTD.version='2.0' for the 'all' profile, MDSTD.title='urn:dgiwg:metadata:dmf:2.0:profile:core' and MDSTD.version='2.0' for the 'core' profile, or the values of one of the registered DMF Profiles: (MDSTD.title='urn:dgiwg:metadata:dmf:2.0:profile:<ProfileName>' and MDSTD.version='<ProfileVersion>').Note: For backward compatibility use MDSTD.title='STANAG 2586' and MDSTD.version='Edition 1' for STANAG 2586 Example: urn:dgiwg:metadata:dmf:2.0:profile:all	1	Citation (complex datatype)	Core
Metadata Security Constraint (MDSCST)	This element provides a means to express a set of security constraints applicable to the metadata. Example: unclassified	0..*	Security Constraint (complex datatype)	Common
Metadata Releasability Addressee (MDREL)	This element establishes bodies to which the metadata can be released. Example: Releasable to NATO	0..*	String In a NATO context, the String value is expected to be a 3-character	Defence

Metadata element	Description	Card	Datatype	Conformance class
			country codes from STANAG 1059 if available	
Metadata Legal Constraint (MDLCST)	This element provides a means to express a set of legal constraints applicable to the metadata. Example: Copyright	0..*	Legal Constraint (complex data type)	Common
Resource Title (RSTITLE)	This is a characteristic and often unique name by which the resource is known. Default value is “To be determined” but it is strongly recommended to find a better and proper title for the resource. Recommendations: • Include an indication on the geographic area covered by the data • Include the version of the data if several versions are available • Avoid any reference to a responsible party • Avoid acronyms or define them (either in the title or in the abstract). Example : ProductName_MapSeries_SheetNumber_edition (SAC_M5219A_2_28-GSGS)	1	Free text	Core
Resource Alternate Title (RSALT)	This is a short name, a more colloquial name or a name in another language by which the resource is known. Example: ProductName_MapSeries/ShortName (SAC_M5219A/Sheet2-SouthEastEngland)	0..1	Free text	Common
Resource Abstract (RSABSTR)	This is a brief textual summary of the content of the resource. Default value is “To be determined” but it is strongly recommended to find a better and proper abstract for the resource. Recommendation: • The abstract should include human-readable information to explain the product specificity.	1	Free text	Core

Metadata element	Description	Card	Datatype	Conformance class
	Example: This product provides a rapid mapping from MGCP (Multinational Geospatial Coproduction Program) data focusing on Mali.			
Resource Type Code (RSTYPE)	This is the type code of the resource described by the metadata: dataset and dataset series, services, tiles and nonGeographicDataset are the only types of resources in the scope of DMF. Fixed value: Dataset.	1	Codelist	Core
Resource Edition (RSED)	This is the version identifier of the resource Example: Ed. 1.	0..1	String	Core
Resource Edition Date (RSEDDAT)	This is the reference date of this edition of the resource (see Resource Edition). Example: 2017-10-12 or 2017-10-12T11:15:00	0..1	Date or DateTime	Core
Resource Identifier (RSID)	This is a value uniquely identifying the resource within a specific context. It is highly recommended to provide at least a unique identifier code value (i.e., a code independent of any namespace), typically a URI. Example: code: lakes codeSpace: urn:eu:europa:ec:jrc:rdsi:id:dataset:ccm2.1	1..*	Identifier	Core
Resource Keyword Set (RSKWDS)	Set of keywords used to describe the resource. NOTE: Always include DTOX in this context. Example: Mali, topographic map, DTOX	0..*	String or Controlled Vocabulary	Core
Resource Spatial Resolution (RSSRES)	Factor which provides a general understanding of the density of spatial data in the resource or describes the range of resolution in which a digital resource may be used. NOTE: This element should be repeated when describing the upper and lower range. It is not applicable to non-geo data. Example: 1:50000 or 1:40000 – 1:60000	0..*	Resolution (complex data type)	Core
Resource Temporal	Smallest resolvable temporal period in a resource. Example: 2008-01-01T11:45:30 to 2008-12-31T09:10:00	0..*	Interval Length	Common

Metadata element	Description	Card	Datatype	Conformance class
Resolution (RSTRES)				
Resource Spatial Representation Type (RSRPTP)	This describes the method used to spatially represent geographic information. Fixed value: Vector	0..1	Codelist	Core
Resource Topic Category (RSTOPIC)	The topic category is a high-level classification scheme to assist in the grouping and topic-based search of available spatial data resources. Note: There is no specific topic category defined for topographic dataset and series. The best match is imageryBaseMapsEarthCover code. Examples: • intelligenceMilitary • boundaries • society • disaster	1..*	Codelist	Core
Resource Default Locale (RSDLOC)	The default locale used within the resource. Constraint: RSDLOC.identifier is never set. Fixed value: eng	1	Locale (complex data type)	Core
Resource Other Locale (RSTLOC)	The other locale(s) used within the resource. Constraint: Resource Other Locale identifier is never set. Example: swe	0..*	Locale (complex data type)	Core
Geospatial Information Type (DGITYP)	Information about the type of geospatial information provided by the resource. Fixed value: vector2D	1	Codelist	Core
Resource Theme (RSTHEME)	Theme provides more precise thematic information enabling discovery of data.	0..*	Codelist	Core

Metadata element	Description	Card	Datatype	Conformance class
	Note: Name(s) of populated DGIF leaves Example from Agriculture: AgriculturalBuildingsStructures, AnimalLivestockFeatures, AquacultureFishingFeatures, CropLand			
Resource Remark (RSREM)	Any remark about the resource.	0..1	String	Common
Resource Format (RSFMT)	This is the description of the computer language construct that specifies the representation of data objects in the producer system (native format of the resource). NOTE: This element may be used to evaluate the impact of the transformation of the data from the Resource Format to the Resource Distribution Format. Although the Resource Distribution Format is in the Core metadata class, the Resource Format stands in the Data metadata class. Constraint: This element should only be used if different from the Resource Distribution Format. Note: Default: GML including version of GML Example: GML 3.2.1	0..1	Format (complex data type)	Data
Topology Level (VCTOLVL)	Code which identifies the degree of complexity of the spatial relationships. Default: geometryOnly and Cardinality =1	0..1	Codelist	Data
Feature Catalogue Description (FCDESC)	Description of the feature catalogues Note: For this DTOX FCDESC = “Defence Topographic Exchange (DTOX) Feature Catalogue”	1	Feature Cataloue infomation	Data

Metadata element	Description	Card	Datatype	Conformance class
			(Complex datatype)	
Resource Extent (RSEXT)	This is either a positional extent, either a temporal extent or a vertical extent. Constraint: One extent of type bounding box or geographic identifier is mandatory. Example:8.07 15.2 57.75 54.56 (bounding box) or Denmark	1..*	Extent (complex datatype)	Core
Resource Reference System (RSRSYS)	This is a spatial or temporal reference system used in the resource. Note: The code property of the identifier should be a URI. Fixed: EPSG code 4326	1	Identifier	Core
Resource Status (RSSTAT)	This is information about the status of the resource. Example: completed	0..1	Codelist	Common
Resource Reference Date (RSDATE)	Reference date of the cited resource. The type of date may be creation, publication or revision. Constraints: • When RSTYPE is dataset or series, there should be one creation date. • The resource publication date occurs as many times as the resource has been published. For a service, use the publication date of the service. Example: 2017-10-31 or 2017-05-15 T05:23:30Z	1..*	Date or DateTime	Core
Resource Responsible Party (RSRPTY)	This is the description of the organization(s) associated with the resource, e.g. the originating organization, custodian. Example: Danish Defence Acquisition and Logistics Organisation Email: fmi@mil.dk Role: originator	1..*	Responsible party (complex data type)	Core

Metadata element	Description	Card	Datatype	Conformance class
Resource Maintenance (RSMTNC)	This is a set of information about the maintenance of the resource. Example: unknown	0..1	Maintenance information (complex data type)	Common
Resource Security Constraint (RSSCST)	This element provides a means to express a set of security constraints applicable to the resource. Example: restricted	0..*	Security Constraint (complex data type)	Core
Resource Releasability (RSREL)	This element provides a means to express a set of releasability information applicable to the resource. Note: Default value for this element should be set by the implementer's security policy	0..*	Releasability (complex data type)	Defence
Resource Use Limitation (RSUSE)	This element provides a means to express general use limitations (limitations not implied by security or legal constraints) of the resource.	0..*	String	Core
Resource Legal Constraint (RSLCST)	This element provides a means to express a set of legal constraints applicable to the resource. Example: restricted	0..*	Legal Constraint (complex data type)	Core
Resource Lineage (RSLING)	This is a statement on process history and/or overall quality of the resource. Where appropriate it may include a statement whether the data set has been validated or quality assured, whether it is the official version (if multiple versions exist), and whether it has legal validity. Example: Data from the wave measurement stations is continuously sent to the Coastal Directorate, where various types of quality control have been performed with the data over time. Users of data should be aware of the varying data quality.	1	String	Core

Metadata element	Description	Card	Datatype	Conformance class
Resource Regulated Quality Report (RSRQR)	Information related to the result of a quality evaluation following a pre-defined registered data quality measure. A list of predefined quality measure is defined in Annex C. It includes positional and vertical accuracy measures, product specification compliancy, and imagery quality measures like NIIRS, snow cover, etc. Note: Depend on the product and a fixed list if used	0..*	Regulated Quality Report (complex data type)	Common
Resource Unspecified Quality Report (RSUQR)	Information related to the result of an unspecified quality evaluation. Note: Depend on the product and a fixed list if used	0..*	Unspecified Quality Report (complex data type)	Common
Source of the Resource (RSSRC)	This element provides information about the source data used in creating the resource. Example: Digitized aerial photos	0..*	Source (complex data type)	Common
Resource Process Step (RSPRST)	This element provides information about an event or transformation in the life of a resource including the process used to maintain the resource. Example: Manually digitized	0..*	Process Step (complex data type)	Common
Resource Usage (RSSPUS)	This metadata element may be used to provide information about the intended usage of the data, or recommendations about how to use the data, for example, the projection in which the data can be displayed. Example: Navigation on land Responsible SDFE Role: producer	0..*	Usage (complex data type)	Common
Resource Distribution Format (RSDFMT)	This is the description of the computer language construct that specifies the representation of data objects in a record, file, message, storage device or transmission channel. Recommended value: GML 3.2.1	1..*	Format (complex data type)	Core

Metadata element	Description	Card	Datatype	Conformance class
Resource Online Location (RSONLLC)	This element provides the link(s) to the resource and, or the link to additional information about the resource. Example: FTP-server or WFS	0..*	Online Location (complex data type)	Core
Resource Unit of Distribution (RSUD)	This is the description of the unit (tiles, layers, geographic areas, etc.), in which data are available. Example: The geographic area of Sweden	0..1	String	Data
Resource Transfer Size (RSTS)	This is the estimated size of a unit in the specified transfer format, expressed in megabytes. The transfer size is > 0.0 Example: 849,64 MB	0..1	Float	Data
Resource Offline Distribution Medium (RSOFDM)	Information about offline media on which the resource can be obtained.	0..*	Medium (complex data type)	Data

Annex B. Data types

The source of this annex is DMF version 2.0.

B.1 Citation

The properties of Citation are listed below.

Identifier	Title / Description	Value Domain	Card
title [DMF/Core]	Title Title of the cited resource	Free Text	1
referenceDate [DMF/Core]	Reference Date Reference date of the cited resource Constraints: • It is mandatory if it is not a citation of a Format and not a citation of a MDSTD.	Reference Date	0..*
version [DMF/Core]	Version Version of the cited resource Constraints: • It is mandatory if it is a citation of a Format or a citation of a MDSTD.	String	0..1
identifier [DMF/Core]	Identifier Identifier of the cited resource	Identifier	0..*
location [DMF/Data+]	Location URI to localize the cited resource	URI	0..1
citedParty [DMF/Core]	Cited Party Responsible party for the cited resource	Responsible Party	0..1

B.2 Conformance Result

The properties of Conformance Result are listed below.

Identifier	Title / Description	Value Domain	Card
conformance [DMF/Common]	Conformance Statement Indication of the conformance result.	Boolean	1
explanation [DMF/Common]	Explanation Explanation of the meaning of the conformance for this result.	Free Text Default is See the referenced specification	1
specification [DMF/Common]	Specification	Citation	1

Identifier	Title / Description	Value Domain	Card
	Citation of product specification or user requirement against which the data are being evaluated. The referenceDate is mandatory.		

B.3 Distance

The properties of Distance are listed below.

Identifier	Title / Description	Value Domain	Card
value [DMF/Core]	Distance Value This is the effective distance value.	Float	1
unit [DMF/Core]	Distance Unit This is an identifier of the distance unit.	Unit of Measure Codelist	1

B.4 Extent

The properties of Distance are listed below.

Identifier	Title / Description	Value Domain	Card
description [DMF/Core]	Description to identify the extent This is a description of the extent. In case it is implemented as an anchor it can link to a register.	String or Anchor	0..1
temporalExtent [DMF/Core]	Temporal Extent This metadata element expresses the temporal extent. Constraints: • One of temporalExtent, geogId, boundingBox, boundingPolygon or verticalExtent is mandatory	Temporal Extent	0..*
boundingBox [DMF/Core]	Bounding Box This metadata element expresses the spatial extent as a bounding box. Constraints: • One of temporalExtent, geogId, boundingBox, boundingPolygon or verticalExtent is mandatory	Geographic Box	0..*
geogId [DMF/Core]	Geographic Identifier This metadata element expresses the spatial extent as a geographic identifier. Constraints:	Identifier	0..*

Identifier	Title / Description	Value Domain	Card
	• One of temporalExtent, geogId, boundingBox, boundingPolygon or verticalExtent is mandatory		
boundingPolygon [DMF/Core]	Bounding Polygon This metadata element expresses the spatial extent as a bounding polygon. Note: if several polygons are needed, then the Extent element (RSEXT) should be repeated. The resource positional extent is intended to provide the extent of the information content. If there is a need to provide extent of the computer file, then the use of the bounding box should be preferred. Regarding no-data: it is possible to have several polygons to indicate holes or void areas. But in DMF, it is preferred to provide this type of information as a coverage quality result. Constraints: • One of temporalExtent, geogId, boundingBox, boundingPolygon or verticalExtent is mandatory	Polygon	0..1
verticalExtent [DMF/Core]	Vertical Extent The lowest and highest vertical extent contained in the dataset. It is expressed in metres. Constraints: • One of temporalExtent, geogId, boundingBox, boundingPolygon or verticalExtent is mandatory	Vertical Extent	0..1

B.5 Feature Catalogue Information

The properties of Feature Catalogue Information are listed below.

Identifier	Title / Description	Value Domain	Card
citation [DMF/Data]	Feature Catalogue Citation Citation of the feature catalogue. The referenceDate is mandatory.	Citation	1..*
language [DMF/Data]	Feature Catalogue Language Language used in the feature catalogues.	Language Codelist	0..*
isoCompliance [DMF/Data]	ISO Compliance of the Feature Catalogue Indication of whether or not the cited feature catalogue complies with ISO 19110.	Boolean Default is false	1

Identifier	Title / Description	Value Domain	Card
fcInclusion [DMF/Data]	Inclusion of the Feature Catalogues Indication of whether or not the cited feature catalogues are included.	Boolean Default is false	1
featureTypes [DMF/Data]	Realised Feature Type Feature Type from feature catalogues occurring in the data.	String	0..*

B.6 Format

The properties of Format are listed below.

Identifier	Title / Description	Value Domain	Card
citation [DMF/Core]	Format Citation This is the name and version of the format.	Citation Default values are “To be determined” for title and version	1
decompression [DMF/Data]	File Decompression Technique These are the recommended algorithms or processes that can be applied to read or expand resources to which compression techniques have been applied.	Free Text	0..1

B.7 Geographic Box

Note: North/South and East/West coordinates should not be equal. If the data are a point or a line, please provide four (4) different coordinates with at least an epsilon difference between them (e.g. 0.001).

The bounding box is used mainly to enable spatial searches and data comparison and is standardized using geographic WGS84 coordinates.

It should be for the information content at a minimum. It may include no-data areas since it is a rectangle, whereas the content can be something else. There could also be 'holes' within the data. Based on security issues, some portions may not be releasable.

The properties of Geographic Box are listed below.

Identifier	Title / Description	Value Domain	Card
west [DMF/Core]	Western Most Longitude This is the WGS84 Western most longitude of the geographic object.	Float Default is -180	1
east [DMF/Core]	Eastern Most Longitude This is the WGS84 Eastern most longitude of the geographic object.	Float Default is 180	1
south [DMF/Core]	Southern Most Latitude This is the WGS84 Southern most latitude of the geographic object.	Float Default is -90	1
north [DMF/Core]	Northern Most Latitude This is the WGS84 Northern most latitude of the geographic object.	Float Default is 90	1

B.8 Legal Constraint

The properties of Legal Constraint are listed below.

Identifier	Title / Description	Value Domain	Card
statement [DMF/Core]	Legal Constraint Statement This is a textual statement of the conditions resulting from the application of the legal constraints.	Free Text	0..*
access [DMF/Common]	Access Restriction This element expresses a legal constraint that impacts the access conditions.	Restriction Codelist	0..*
use [DMF/Common]	Use Restriction This element expresses a legal constraint that impacts the conditions of use.	Restriction Codelist	0..*
other [DMF/Common]	Other Restriction This element expresses other applicable legal constraints.	Free Text	0..*

B.9 Locale

The properties of Locale are listed below. Note: The term 'locale' is used following the standard, ISO 19115, even if there is no effective localization (no mention of the country).

Identifier	Title / Description	Value Domain	Card
language [DMF/Core]	Locale Language Designation of the locale Language.	Language Codelist Default is eng	1
encoding [DMF/Core]	Character Encoding Designation of the character set to be used to encode the textual value of the locale. Constraints: Fixed to utf8 for MDDLOC	Character Set Codelist Default is utf8	1
identifier [DMF/Core]	Locale Identifier Identifier to be used to refer to the Locale in a Free Text. Constraints: Mandatory if Locale is applied to MDTLOC	String	0..1

B.10 Maintenance Information

The properties of Maintenance Information are listed below.

Identifier	Title / Description	Value Domain	Card
maintenanceDate [DMF/Common]	Maintenance Date This is the scheduled revision date for resource.	Date or DateTime	0..1
maintenanceFrequency [DMF/Common]	Maintenance Frequency This element provides information on the frequency at which changes and additions are made to the resource after the initial resource is completed.	Frequency Codelist Default is unknown	1
maintenanceNote [DMF/Common]	Maintenance Note This element provides more information regarding specific requirements for maintaining the resource.	Free Text	0..1

B.11 Medium

The properties of Medium Information are listed below.

Identifier	Title / Description	Value Domain	Card
name [DMF/Data]	Name This is the name of the medium on which the resource can be received.	Medium Name Codelist	1
volume	Volume	Integer	0..1

Identifier	Title / Description	Value Domain	Card
[DMF/Data]	This is the number of items in the medium identified.		

B.12 Online Location

The properties of Online Location are listed below.

Identifier	Title / Description	Value Domain	Card
location [DMF/Core]	Online Location URL This is the effective location of the resource.	URL	1
function [DMF/Common]	Online Location Function This defines the function performed by the online resource.	Online Function Codelist	0..1

B.13 Party

The properties of Party are listed below where at least one of the orgName, name, or position element should be supplied.

Identifier	Title / Description	Value Domain	Card
orgName [DMF/Core]	Organization Name of the Party This is the organization name of the party.	Free Text	0..1
name [DMF/Core]	Party Name This is the name of the individual representing the party.	String	0..1
position [DMF/Core]	Party Position This is the position of the individual representing the party.	Free Text	0..1
address [DMF/Common]	Party Address This is the postal address line for the location of the party.	String	0..*
postalCode [DMF/Common]	Party Postal Code This is the ZIP or other postal code of the party location.	String	0..1
administrativeArea [DMF/Common]	Party state, province This is the state or province of the party location.	String	0..1
city [DMF/Common]	Party City This is the city of the party location.	String	0..1

Identifier	Title / Description	Value Domain	Card
country [DMF/Core]	Party Country This is the country of the party location.	String	0..1
phone [DMF/Common]	Party Phone Number This is a phone number to be used in order to contact a representative of the party.	String	0..*
fax [DMF/Common]	Party Fax Number This is a facsimile number to be used in order to contact a representative of the party.	String	0..*
email [DMF/Common]	Party E-mail This is an e-mail to be used in order to contact a representative of the party.	String	0..*

B.14 Polygon

A polygon is composed of one exterior patch (GM_Surface accordingly to ISO 19107).

The properties of Polygon are listed below.

Identifier	Title / Description	Value Domain	Card
exterior [DMF/Core]	Exterior Patch Exterior patch describing the surface.	Patch	1
crs [DMF/Core]	CRS CRS of the polygon expressed as a URI.	URI	1

B.15 Process Step

The properties of Process Step are listed below.

Identifier	Title / Description	Value Domain	Card
description [DMF/Common]	Description of the Process Step This is a general description of the process step explaining what has been processed.	Free Text	1
rationale [DMF/Common]	Rationale of the Process Step This element explains why this process step has been performed.	Free Text	0..1
date [DMF/Common]	Date and Time of the Process Step This element describes when the step has been processed.	DateTime	0..1

Identifier	Title / Description	Value Domain	Card
processor [DMF/Common]	Process Step Party This element describes the Party who has processed the step.	Responsible Party	0..*

B.16 Quantitative Result

The properties of Quantitative Result are listed below.

Identifier	Title / Description	Value Domain	Card
unit [DMF/Common]	Unit of Measure Value unit for reporting a data quality result.	Unit of Measure Codelist use the code "unity" when no units are applicable	1
result [DMF/Common]	Result This is the result of the quality evaluation. The result is expressed either as a Date, DateTime, Float, Integer, Boolean, Support File, or Citation. Note: In case it is expressed as a Citation the referenceDate is mandatory.	Date, DateTime, Float, Integer, Boolean, Support File, Citation or Record	1

B.17 Reference Date

The properties of Reference Date are listed below.

Identifier	Title / Description	Value Domain	Card
date [DMF/Core]	Date Reference date Default date is “9999”. It does mean the date has to be determined.	Date or DateTime Default is 9999	1
Type [DMF/Core]	Type of Reference Date Event used for reference date.	Date Type Codelist Default is publication	1

B.18 Regulated Quality Report

Warning: Minimum one kind of result and maximum two kinds of results: a conformance result and a quantitative or coverage or descriptive result.

The properties of Regulated Quality Report are listed below.

Identifier	Title / Description	Value Domain	Card
identifier [DMF/Common]	Measure Identifier This is the key identifier of the reported quality measure. Each measure identifier can be seen as a specific quality element.	Identifier	1
method [DMF/Common]	Description of the Evaluation Method Details about the method used for performing the evaluation.	Free Text	0..1
cnfResult [DMF/Common]	Conformance Result The result of the evaluation is reported as a conformance statement.	Conformance Result	0..1
qtyResult [DMF/Common]	Quantitative Result The result of the evaluation is reported as a quantitative information.	Quantitative Result	0..1
descResult [DMF/Common]	Descriptive Result The result of the evaluation is reported as a descriptive information.	String, Free Text or Anchor	0..1

B.19 Releasability

The properties of Releasability are listed below.

Identifier	Title / Description	Value Domain	Card
addressee [DMF/Defence]	Releasability Addressee This element establishes a body to which the resource can be released.	String If available, the String value is expected to be a 3-character country codes from STANAG 1059.	0..*
statement [DMF/Defence]	Releasability Statement This element established the statement of the releasability. Default value for this element should be set by the implementer's security policy.	Free Text	1
statementExtension [DMF/Defence]	Releasability Statement Extension This element provides complementary information related to the Releasability Statement.	Free Text	0..1

Identifier	Title / Description	Value Domain	Card
disseminationConstraints [DMF/Defence]	Dissemination constraints Additional components in determining releasability.	Dissemination Constraint Codelist Any other appropriate codelist can be defined according to the security management system.	0..*

B.20 Resolution

The properties of Resolution are listed below.

Identifier	Title / Description	Value Domain	Card
equivalentScale [DMF/Core]	Equivalent Scale Level of detail expressed as the scale of a comparable hardcopy map or chart. Constraints: • It is mandatory to provide one of equivalentScale, distance, vertical or levelOfDetail.	Integer	0..1
distance [DMF/Core]	Ground Sample Distance Horizontal ground sample distance of the resource (typically for gridded data and imagery-derived products). A resolution distance shall be expressed as a distance. Note: Not applicable to non-geographic data. Constraints: • It is mandatory to provide one of equivalentScale, distance, vertical or levelOfDetail.	Distance	0..1
vertical [DMF/Common]	Vertical Vertical sampling distance. Constraints: • It is mandatory to provide one of equivalentScale, distance, vertical or levelOfDetail.	Distance	0..1
levelOfDetail [DMF/Common]	Level of detail Brief textual description of the spatial resolution of the resource. Constraints:	Free Text	0..1

Identifier	Title / Description	Value Domain	Card
	• It is mandatory to provide one of equivalentScale, distance, vertical or levelOfDetail.		

B.21 Responsible Party

The properties of Responsible Party are listed below.

Identifier	Title / Description	Value Domain	Card
party [DMF/Core]	Description of the Party This is the description of the party.	Party	1
role [DMF/Core]	Role of the Party This is the role played by the party.	Role Codelist	1

B.22 Security constraint

The properties of Security Constraint are listed below.

Identifier	Title / Description	Value Domain	Card
level [DMF/Core]	Classification Level This is the security classification level of the resource or metadata. Constraints: • This metadata element applies only if a classification level has been established for the resource.	Classification Level Codelist Any other codelist can be defined to fit to other classification systems. Default is unclassified	1
system [DMF/Core]	Classification System This is the classification system related to the classification level. The classification system is expressed as a code of the corresponding country or body. Constraints: • This metadata element is strongly recommended. It is mandated in a context of international exchange and if is implemented using a different codelist from the one in DMF.	String If available, the String value is expected to be a 3-character country code from STANAG 1059.	0..1
note [DMF/Common]	Security Note This is an explanation of the application of the security constraints or other restrictions and	Free Text	0..1

Identifier	Title / Description	Value Domain	Card
	prerequisites for obtaining and using the resource or metadata.		
handling [DMF/Common]	Handling Description This is additional information about the restrictions on handling the resource or metadata. Note: one typical example is “limdis” (“limited distribution”, used by MGCP).	Free Text	0..1
limitation [DMF/Common]	Limitation Additional information about the limitations applicable for security reasons.	Free Text	0..*

B.23 Source

The properties of Source are listed below.

Identifier	Title / Description	Value Domain	Card
Description [DMF/Common]	Description of the Source This is a general description of the source data. When a full source citation is not provided, this metadata element will typically contain a combination of series – sheet name – edition – edition date of the source data, enabling a loose reference to the source. Constraints: • Mandatory if an extent is not provided.	Free Text	0..1
Extent [DMF/Common]	Extent of the Source This is the spatial extent covered by the source within the current set of data. Constraints: • Mandatory when a description is not provided.	Extent	0..*
equivalentScale [DMF/Common]	Equivalent Scale for the Source The equivalent scale is expressed as an integer value expressing the scale denominator.	Integer	0..1
Distance [DMF/Data+]	Distance of the Source Ground sample distances of the source (typically for gridded data and imagery-derived products). A resolution distance shall be expressed as a distance.	Distance	0..1

Identifier	Title / Description	Value Domain	Card
Citation [DMF/Common]	Citation of the Source Reference to the source data. The identifier or title of the citation is typically a combination of series – sheet name – edition – edition date of the source, enabling a loose reference to the source. The referenceDate is mandatory.	Citation	0..1
sourceMetadata [DMF/Common]	Identifier of the metadata of the source This element provides a unique reference to the metadata of the source.	URI, URL or UUID	0..1

B.24 Temporal Extent

The properties of Temporal Extent are listed below.

Identifier	Title / Description	Value Domain	Card
start [DMF/Core]	Start Point of the Temporal Extent This metadata element expresses the start point of the temporal extent.	Date or DateTime	1
end [DMF/Core]	End Point of the Temporal Extent This metadata element expresses the end point of the temporal extent. When it is not set, the temporal extent is expressed as a single instant defined by the start point.	Date or DateTime	0..1

B.25 Unspecified Quality Report

Warning: Minimum one kind of result and maximum two kinds of results: a conformance result and a quantitative or coverage or descriptive result.

The properties of Unspecified Quality Report are listed below. See DGIWG Metadata Guidelines Document for examples of quality reports.

Identifier	Title / Description	Value Domain	Card
qualityElement [DMF/Common]	Quality Element This is the type of quality element evaluated. The appropriate value depends on the quality criteria concerned by the quality measure.	Quality element Codelist Default is DQ_ConceptualConsistency	1
measureName [DMF/Common]	Measure Name This is the name of the measure applied.	Free Text	0..1

Identifier	Title / Description	Value Domain	Card
measureDescription [DMF/Common]	Measure Description This is the description of the measure applied.	Free Text	0..1
method [DMF/Common]	Description of the Evaluation Method Details about the method used for performing the evaluation.	Free Text	0..1
cnfResult [DMF/Common]	Conformance Result The result of the evaluation is reported as a conformance statement.	Conformance Result	0..1
qtyResult [DMF/Common]	Quantitative Result The result of the evaluation is reported is quantitative.	Quantitative Result	0..1
descResult [DMF/Common]	Descriptive Result The result of the evaluation is reported as a descriptive information.	String, Free Text or Anchor	0..1

B.26 Usage

One example of usage could be the mention of the appropriate font to display the nation language elements.

In this case, the name element should be fixed to: font-<Name of the font>. The limitation element would be a way to provide a url to get this font.

As an example for the Latin alphabet the Vera font can be used:

Name: font-Vera

Limitation: The Vera font is under an Open source license and is available here: http://ftp.gnome.org/pub/GNOME/sources/ttf-bitstream-vera/1.10/ttf-bitstream-vera-1.10.tar.gz

Identifier	Title / Description	Value Domain	Card
name [DMF/Common]	Resource Specific Usage This metadata element expresses a brief description of the resource usage.	Free Text	1
limitation [DMF/Common]	User Determined Limitati on This metadata element identifies applications, determined by the	Free Text	0..1

Identifier	Title / Description	Value Domain	Card
	user, for which the resource is not suitable.		
userContact [DMF/Common]	User Contact Information Identification of and means of communicating with person(s) and organization(s) using the resource(s).	Responsible Party party.role defaulted to "user" and party.orgName defaulted to "undefined".	1

B.27 Vertical Extent

The properties of Vertical Extent are listed below.

Identifier	Title / Description	Value Domain	Card
minz [DMF/Core]	Resource Minimum Z value This metadata element expresses the minimum vertical value contained in the dataset. It is expressed in meters. The vertical datum is the WGS84 ellipsoid .	Integer	1
maxz [DMF/Core]	Resource Maximum Z value This metadata element expresses the maximum vertical value contained in the dataset. It is expressed in meters. The vertical datum is the WGS84 ellipsoid.	Integer	1
verticalCRS [DMF/Core]	Vertical Extent reference datum This metadata element defines in which vertical datum the vertical extent is expressed.	URI Default is http://www.opengis.net/def/crs/EPSG/0/4979” (height above WGS84 ellipsoid)	1

Annex C. Codelists

The source of this annex is DMF version 2.0.

C.1 Character Set Codelist

The value domain of Character Set Codelist is defined in the following table.

#	Code	English Name	Definition
1	ucs2	2 byte fixed UCS	16-bit fixed size Universal Character Set, based on ISO/IEC 10646
2	ucs4	4 byte fixed UCS	32-bit fixed size Universal Character Set, based on ISO/IEC 10646
3	utf7	UCS Transformation Format – 7 bits	7-bit variable size UCS Transfer Format, based on ISO/IEC 10646
4	utf8	UCS Transformation Format – 8 bits	Character Set defined by IETF RFC 3629
5	utf16	UCS Transformation Format – 16 bits	16-bit variable size UCS Transfer Format, based on ISO/IEC 10646
6	8859part1	ISO/IEC 8859-1	Information technology – 8-bit single-byte coded graphic character sets – Part 1: Latin alphabet No. 1
7	8859part2	ISO/IEC 8859-2	Information technology – 8-bit single-byte coded graphic character sets – Part 2: Latin alphabet No. 2
8	8859part3	ISO/IEC 8859-3	Information technology – 8-bit single-byte coded graphic character sets – Part 3: Latin alphabet No. 3
9	8859part4	ISO/IEC 8859-4	Information technology – 8-bit single-byte coded graphic character sets – Part 4: Latin alphabet No. 4
10	8859part5	ISO/IEC 8859-5	Information technology – 8-bit single-byte coded graphic character sets – Part 5: Latin/Cyrillic alphabet
11	8859part6	ISO/IEC 8859-6	Information technology – 8-bit single-byte coded graphic character sets – Part 6: Latin/Arabic alphabet
12	8859part7	ISO/IEC 8859-7	Information technology – 8-bit single-byte coded graphic character sets – Part 7: Latin/Greek alphabet

#	Code	English Name	Definition
13	8859part8	ISO/IEC 8859-8	Information technology – 8-bit single-byte coded graphic character sets – Part 8: Latin/Hebrew alphabet
14	8859part9	ISO/IEC 8859-9	Information technology – 8-bit single-byte coded graphic character sets – Part 9: Latin alphabet No. 5
15	8859part10	ISO/IEC 8859-10	Information technology – 8-bit single-byte coded graphic character sets – Part 10: Latin alphabet No. 6
16	8859part11	ISO/IEC 8859-11	Information technology – 8-bit single-byte coded graphic character sets – Part 11: Latin/Thai alphabet
17	8859part13	ISO/IEC 8859-13	Information technology – 8-bit single-byte coded graphic character sets – Part 13: Latin alphabet No. 7
18	8859part14	ISO/IEC 8859-14	Information technology – 8-bit single-byte coded graphic character sets – Part 14: Latin alphabet No. 8 (Celtic)
19	8859part15	ISO/IEC 8859-15	Information technology – 8-bit single-byte coded graphic character sets – Part 15: Latin alphabet No. 9
20	8859part16	ISO/IEC 8859-16	Information technology – 8-bit single-byte coded graphic character sets – Part 15: Part 16: Latin alphabet No. 10
21	Jis	JIS	Japanese code set used for electronic transmission
22	shiftJIS	Shift JIS	Japanese code set used on MS-DOS based machines
23	eucJP	EUC JAPAN	Japanese code set used on UNIX based machines
24	usAscii	US ASCII	United states ASCII code set (ISO 646 US)
25	Ebcdic	EBCDIC	IBM mainframe code set
26	eucKR	EUC KOREA	Korean code set
27	big5	BIG5	Traditional Chinese code set used in Taiwan, Hong Kong of China and other areas
28	GB2312	GB2312	Simplified Chinese code set

C.2 Classification Level Codelist

The value domain of Classification Level Codelist is defined in the following table.

#	Code	English Name	Definition
1	unclassified	Unclassified	Available for general disclosure
2	restricted	Restricted	Not for general disclosure
3	confidential	Confidential	Available for someone who can be entrusted with information
4	Secret	Secret	Kept or meant to be kept private, unknown, or hidden from all but a select group of people
5	topSecret	TopSecret	Of the highest secrecy

C.3 Date Type Codelist

The value domain of Date Type Codelist is defined in the following table.

#	Code	English Name	Definition
1	Creation	Creation	date identifies when the resource was brought into existence
2	Revision	Revision	date identifies when the resource was examined or re-examined and improved or amended
3	publication	Publication	date identifies when the resource was issued
4	Expiry	Expiry	date identifies when the resource expires
5	adopted	Adopted	date identifies when the resource was adopted
6	validityBegins	ValidityBegins	time at which the data are considered to become valid. NOTE: There could be quite a delay between creation and validity begins
7	validityExpires	ValidityExpires	time at which the data are no longer considered to be valid
8	released	Released	the date that the resource shall be released for public access

C.4 Dissemination Constraint Codelist

The value domain of Dissemination Constraint Codelist is defined in the following table.

#	Code	English Name	Definition
1	restricted	restricted	withheld from general circulation or disclosure
2	otherRestrictions	otherRestrictions	limitation not listed
3	unrestricted	unrestricted	no constraints exist
4	Private	private	protects rights of individual or organisations from observation, intrusion, or attention of others
5	statutory	statutory	prescribed by law
6	confidential	confidential	not available to the public contains information that could be prejudicial to a commercial, industrial, or national interest
7	sensitiveButUnclassified	SBU	although unclassified, requires strict controls over its distribution.
8	in-confidence	in-confidence	with trust

C.5 Frequency Codelist

The value domain of Frequency Codelist is defined in the following table.

#	Code	English Name	Definition
1	continual	Continual	Data is repeatedly and frequently updated
2	Daily	Daily	Data is updated each day
3	weekly	Weekly	Data is updated on a weekly basis
4	fortnightly	Fortnightly	Data is updated every two weeks
5	monthly	Monthly	Data is updated each month
6	quarterly	Quarterly	Data is updated every three months
7	biannually	Biannually	Data is updated twice each year
8	annually	Annually	Data is updated every year
9	asNeeded	As needed	Data is updated as deemed necessary
10	irregular	Irregular	Data is updated in intervals that are uneven in duration

#	Code	English Name	Definition
11	notPlanned	Not planned	There are no plans to update the data
12	unknown	Unknown	Frequency of maintenance for the data is not known
13	semimonthly	Semimonthly	resource updated twice a month
14	periodic	periodic	resource is updated at regular intervals
15	biennially	biennially	resource is updated every 2 years

C.6 Geospatial Information Type Codelist

The value domain of Geospatial Information Type Codelist is defined in the following table.

#	Code	English Name	Definition
1	mapSheet	Map Sheet	Interpreted graphical abstraction of the geometric and semantic situation for a particular (often rectangular) part of the Earth's surface using a symbolic signature defined in a legend with marginalia being part of the map. Examples: scanned topographic map, rendered feature data as a topographic or thematic map
3	elevationModel	Elevation Model	Mathematical representation of heights of the terrain above or below a reference surface. Examples: TIN, DTED or LIDAR measurements
5	Gazetteer	Gazetteer	geographical directory of information about places and place names
8	vector2D	Vector 2D	Structured data representing geospatial features. The geometrical aspect of the features is represented using point, line, or area geometric primitives which do not provide a full 3D representation of the real world (e.g., buildings may be represented by an area geometric primitive, possibly with vertices having 2 or 3 spatial coordinates, corresponding to the border of their rooves).
9	vector3D	Vector 3D	Structured data representing geospatial features. The geometrical aspect of the features is represented using point, line, area and solid geometric primitives providing a 3D representation of the real world (e.g.,

#	Code	English Name	Definition
			buildings may be represented by set of primitives and typically solids, describing their shape in more or less detail).

C.7 Language Codelist

The value domain of the Language Codelist is limited to the Bibliographic form of the official languages listed in ISO 639-2, amended for NATO use. The following table provides a list of codes for the common official languages of the NATO countries.

#	Code	English Name	Definition
1	afr	Afrikaans	Afrikaans is an official language of South Africa
2	alb	Albanian	The dominant and official language of Albania.
3	bul	Bulgarian	Bulgarian is the official language of Bulgaria.
4	cze	Czech	Czech is an official language in Czech Republic.
5	dan	Danish	Danish is the official language of Denmark.
6	dut	Dutch (Flemish)	Dutch is the official language of Netherlands. It is also an official language in Belgium.
7	eng	English	English is the de facto official language in United Kingdom. It is also an official language in Canada, Australia, New Zealand, South Africa and NATO. It is the official language of at least 28 states in United States where it is the de facto language of American government and the sole language spoken at home by 80% of the Americans age five and older.
8	est	Estonian	Estonian is the official language in Estonia.
9	fre	French	French is the official Language in France. It is also an official language in Canada, Belgium, Luxembourg and NATO.
10	ger	German	German is the official language of Germany and Austria. It is also an official language in

#	Code	English Name	Definition
			Switzerland, Liechtenstein, Belgium and Luxembourg.
11	gre	Greek	Greek is the official language in Greece. English name for code „gre“ provided in some versions of ISO 639-2 register is not correct. Be aware to use the names provided in this table
12	hrv	Croatian	Croatian is the official language in Croatia.
13	hun	Hungarian	Hungarian is the official language in Hungary.
14	ice	Icelandic	Icelandic is the de facto official language in Iceland.
15	ita	Italian	Italian is the de facto official language in Italy.
16	lav	Latvian	Latvian is the official language in Latvia.
17	lit	Lithuanian	Lithuanian is the official language in Lithuania.
18	ltz	Luxembourgish (Letzeburgesch)	Luxembourgish is the de jure official language in Luxembourg.
19	nbl	South Ndebele	South Ndebele is an official language of South Africa.
20	nor	Norwegian	Norwegian is the official language in Norway.
21	nso	Northern Sotho, Pedi, Sepedi	Northern Sotho, Pedi, Sepedi is an official language of South Africa.
22	pol	Polish	Polish is the official language in Poland.
23	por	Portuguese	Portuguese is the official language in Portugal.
24	rar	Rarotongan, Cook Islands Maori	Rarotongan, Cook Islands Maori is an official language of New Zealand.
25	rum	Romanian (Moldavian/Moldovan)	Romanian is the official language at the national level (other official languages, such as Hungarian or German are official at a local level) in Romania.
26	slo	Slovak	Slovak is the official language in Slovakia.

#	Code	English Name	Definition
27	slv	Slovenian	Slovenian is the official language in Slovenia (Italian and Hungarian are also official languages in the residential areas of the Italian and Hungarian national community).
28	sot	Southern Sotho	Southern Sotho is an official language of South Africa.
29	spa	Spanish (Castillan)	Spanish is the national official language in Spain (other official languages exist at local level).
30	ssw	Swati/Swazi	Swati is an official language of South Africa.
31	swe	Swedish	Swedish is the national official language in Sweden. It is also an official language in Finland.
32	tsn	Tswana	Tswana is an official language of South Africa.
33	tso	Tsonga	Tsonga is an official language of South Africa.
34	tur	Turkish	Turkish is the national official language in Turkey.
35	ven	Venda	Venda is an official language of South Africa.
36	xho	Xhosa	Xhosa is an official language of South Africa.
37	zul	Zulu	Zulu is an official language of South Africa.

C.8 Medium Name Codelist

The value domain of Medium Name Codelist is defined in the following table. Some elements are considered as out of technology and should not be used any more.

#	Code	English Name	Definition
1	cdRom	CD Rom	read-only optical disk
2	dvd	DVD	digital versatile disk
3	dvdRom	DVD Rom	digital versatile disk, read only
4	3halfInchFloppy	3 Half Inch Floppy (obsolete)	3,5 inch magnetic disk

#	Code	English Name	Definition
5	5quarterInchFloppy	5 Quarter Inch Floppy (obsolete)	5,25 inch magnetic disk
6	7trackTape	7 Track Tape (obsolete)	7 track magnetic tape
7	9trackTape	9 Track Tape (obsolete)	9 track magnetic tape
8	3480Cartridge	3480 Cartridge (obsolete)	3480 cartridge tape drive
9	3490Cartridge	3490 Cartridge (obsolete)	3490 cartridge tape drive
10	3580Cartridge	3580 Cartridge (obsolete)	3580 cartridge tape drive
11	4mmCartridgeTape	4 mm Cartridge Tape (obsolete)	4 millimetre magnetic tape
12	8mmCartridgeTape	8 mm Cartridge Tape (obsolete)	8 millimetre magnetic tape
13	1quarterInchCartridge Tape	1 Quarter Inch Cartridge Tape (obsolete)	0,25 inch magnetic tape
14	digitalLinearTape	Digital Linear Tape (obsolete)	half inch cartridge streaming tape drive
15	onLine	On Line	direct computer linkage
16	satellite	Satellite	linkage through a satellite communication system
17	telephoneLink	Telephone Link	communication through a telephone network
18	hardcopy	Hardcopy	pamphlet or leaflet giving descriptive information
19	rdxRds	RDX Removable Disk Storage	Combines the Disk and Tape
20	bluRay	BD Blu-ray disc	Digital Optical Disc Data Storage-High-density optical disc (single layer-dual layer)
21	lto	LTO Linear Tape Open	magnetic tape data storage (LTO-1 100 GB,LTO-2 200 GB, LTO-3 400 GB, LTO-4 800 GB, LTO-5 1500 GB, LTO-6 2500 GB)
22	hardDrive	HDD Hard Disk Drive	data storage device, SATA, SAS,USB

#	Code	English Name	Definition
23	flashDrive	SSd Solid-state drive	flash drives

C.9 Online Function Codelist

The value domain of the Online Function Codelist is defined in the following table.

#	Code	English Name	Definition
1	download	Download	Online instructions for transferring data from one storage device or system to another.
2	information	Information	Online information about the resource
3	offlineAccess	Offline Access	Online instructions for requesting the resource from the provider
4	Order	Order	Online order process for obtaining the resource
5	Search	Search	Online search interface for seeking out information about the resource

C.10 Quality element Codelist

The value domain of Quality element Codelist is defined in the following table.

#	Code	English Name	Definition
1	DQ_CompletenessCommission	Commission	excess data present in the dataset
2	DQ_CompletenessOmission	Omission	data absent from the dataset
3	DQ_ConceptualConsistency	Conceptual Consistency	adherence to rules of the conceptual schema
4	DQ_DomainConsistency	Domain Consistency	adherence of values to the value domains
5	DQ_FormatConsistency	Format Consistency	degree to which data is stored in accordance with the physical structure of the dataset
6	DQ_TopologicalConsistency	Topological Consistency	correctness of the explicitly encoded topological characteristics of the dataset
7	DQ_AbsoluteExternalPositionalAccuracy	Absolute External Positional Accuracy	closeness of reported coordinate values to values accepted as or being true

#	Code	English Name	Definition
9	DQ_RelativeInternalPositionalAccuracy	Relative Internal Positional Accuracy	closeness of the relative positions of features in the scope to their respective relative positions accepted as or being true
10	DQ_AccuracyOfATimeMeasurement	Accuracy of a Time Measurement	correctness of the temporal references of an item (reporting of error in time measurement)
11	DQ_TemporalConsistency	Temporal Consistency	correctness of ordered events or sequences, if reported
12	DQ_TemporalValidity	Temporal Validity	validity of data with respect to time
13	DQ_ThematicClassificationCorrectness	Thematic Classification Correctness	comparison of the classes assigned to features or their attributes to a universe of discourse
14	DQ_NonQuantitativeAttributeAccuracy	Non Quantitative Attribute Accuracy	accuracy of non-quantitative attributes
15	DQ_QuantitativeAttributeAccuracy	Quantitative Attribute Accuracy	accuracy of quantitative attributes

C.11 Resource Type Codelist

The value domain of Resource Type Codelist is defined in the following table.

#	Code	English Name	Definition
1	Dataset	Dataset	Identifiable collection of data.
2	Series	Dataset series	A dataset series is a collection of spatial data that shares similar characteristics of theme, source date, resolution, and methodology. The exact definition of what constitutes a series entry will be determined by the data provider.
3	Service	Service	capability which a service provider entity makes available to a service user entity through a set of interfaces that define a behaviour.
4	Tile	Tile	spatial subset of geographic data. Many large remotely sensed datasets are split into

#	Code	English Name	Definition
			multiple tiles in order to simplify access and transfer of subsets.
5	nonGeographicDataset	Non Geographic Dataset	information without geographic aspect.
6	Document	document	information applies to a document.
7	Product	product	metadata describing an ISO 19131 data product specification.

C.12 Restriction Codelist

The value domain of Restriction Codelist is defined in the following table.

#	Code	English Name	Definition
1	Copyright	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
5	License	License	Formal permission to do something
6	intellectualPropertyRights	Intellectual Property Rights	Rights to financial benefit from and control of distribution of non-tangible property that is a result of creativity
7	Restricted	Restricted	Withheld from general circulation or disclosure
8	in-confidence	in-confidence	with trust

C.13 Role Codelist

The value domain of Role Codelist is defined in the following table.

#	Code	English Name	Definition
1	resourceProvider	Resource Provider	party that supplies the resource Note: if possible, the value “distributor” should be used instead of “resourceProvider”.
2	Custodian	Custodian	party that accepts accountability and responsibility for the data and ensures

#	Code	English Name	Definition
			appropriate care and maintenance of the resource. It is the party that maintains the resource even if it is not directly the owner and if it did not necessarily pay for the acquisition of the data.
3	Owner	Owner	party who owns the resource
4	User	User	party who uses the resource
5	distributor	Distributor	party who distributes the resource
6	Originator	Originator	main entity responsible for the initial creation of the resource
7	pointOfContact	Point Of Contact	party who can be contacted for acquiring knowledge about or acquisition of the resource
8	principalInvestigator	Principal Investigator	key party responsible for gathering information and conducting research
9	Processor	Processor	party who has processed the data in a manner such that the resource has been modified, but is not primarily responsible for the creation of the resource
10	Publisher	Publisher	The entity responsible for making the resource officially available.
11	Author	Author	party who authored the resource Note: if possible, the value “owner“ should be used to declare ownership information (which could be associated with rights on the resource) and the value “originator” should be used for the creator of the resource
12	rightsHolder	rightsHolder	party owning or managing rights over the resource
13	contributor	contributor	party contributing to the resource
14	Editor	editor	party who reviewed or modified the resource to improve the content

C.14 Spatial Representation Type Codelist

The value domain of the Spatial Representation Type Codelist is defined in the following table.

#	Code	English Name	Definition
1	Vector	Vector	Vector data is used to represent geographic data.
2	Grid	Grid	Grid data is used to represent geographic data.
3	textTable	Text table	Textual or tabular data is used to represent geographic data.
4	Tin	TIN	Triangulated irregular network is used to represent geographic data.
5	stereoModel	Stereo Model	Three-dimensional view formed by the intersecting homologous rays of an overlapping pair of images.
6	Video	Video	Scene from a video recording.

C.15 Status Codelist

The value domain of Status Codelist is defined in the following table.

#	Code	English Name	Definition
1	completed	Completed	Has been completed. NOTE: Data produced, existing but not currently in holdings
2	historicalArchive	Historical Archive	Stored in an offline storage facility
3	Obsolete	Obsolete	No longer relevant
4	Ongoing	On going	Continually being updated
5	Planned	Planned	Fixed date has been established upon or by which the data will be created or updated. NOTE: Production is planned
6	Required	Required	Data needs to be generated or updated
7	underDevelopment	Under development	Data is currently in the process of being created. NOTE: data is not produced/completed
8	latestAvailable	Latest available	The latest version/edition of the data is available

#	Code	English Name	Definition
9	olderAvailable	Older available	An older version/edition of the data is available. NOTE: Data has been updated, but the latest version/edition is not yet available
10	notReleasable	Not releasable	Data produced, but not releasable
11	superseded	superseded	replaced by new

C.16 Thematic Codelist

The value domain of Thematic Codelist is defined in the following table. This list of codes is derived from baseline 2010-2 of DFDD.

#	Code	English Name	Definition
1	Extraction	Extraction	This Subgroup consists of Concepts which relate to the extraction of raw materials and the excavation of soil.
2	FabricationProcessing	Fabrication and/or Processing	This Subgroup consists of Concepts which relate to the production and/or processing of materials.
3	Agriculture	Agriculture	This Subgroup consists of Concepts which are associated with agriculture.
4	PowerSupplies	Power Supplies	This Subgroup consists of Concepts which relate to the production, transportation and distribution of energy, whereas energy is mostly electricity.
5	Communication	Communication	This Subgroup consists of Concepts which relate to any kind of communication.
6	AssociatedSupportStruct	Associated Support Structures	This Subgroup consists of Concepts which support Concepts stored in the other industrial and services Group (01).
7	StorageProvision	Storage and/or Provision	This Subgroup consists of Concepts which are used to store, provide and to protect any kind of goods.
8	WasteManagement	Waste Management	This Subgroup consists of Concepts which relate to the collection, storage, processing or recycling of waste.

#	Code	English Name	Definition
9	Habitats	Habitats	This Subgroup consists of Concepts which relate to settlements and buildings.
10	SettlementsAssociated	Settlements-associated	This Subgroup consists of Concepts which are associated with settlements or related to an urban area.
11	EconomicCommercial	Economic and/or Commercial	This Subgroup consists of Concepts which relate to trade and/or economy.
12	Leisure	Leisure	This Subgroup consists of Concepts which relate to recreational activities of people.
13	PoliticsAdministration	Politics and/or Administration	This Subgroup consists of Concepts which relate to politics and/or which describe administrative issues.
14	SciencesEducation	Sciences and/or Education	This Subgroup consists of Concepts which describe scientific issues and/or Concepts which relate to education.
15	CulturalContext	Cultural Context	This Subgroup consists of Concepts which relate to cultures, population and its characteristics.
16	Railways	Railways	This Subgroup consists of Concepts which relate to land transportation based on rails.
17	RoadsTracks	Roads and/or Tracks	This Subgroup consists of Concepts which are related to road-like Concepts, mainly which can be used by wheeled vehicles.
18	GuidedTransportation	Guided Transportation	This Subgroup consists of Concepts which relate to a guided transportation like a cableway or a teleferic.
19	WaterBorneTransportation	Water-borne Transportation	This Subgroup consists of Concepts which relate to any transportation on water.
20	AirTransportation	Air Transportation	This Subgroup consists of Concepts which relate to transportation in the air.
21	Restrictions	Restrictions	This Subgroup consists of Concepts which relate to a restriction.

#	Code	English Name	Definition
22	CrossingsLinks	Crossings and/or Links	This Subgroup consists of Concepts which relate to any kind of land transportation route crossing.
23	TransportationAssociated	Transportation-associated	This Subgroup consists of Concepts which support Concepts stored in the other land transportation Group (03).
24	SpaceTransportation	Space Transportation	This Subgroup consists of Concepts which relate to and are essential to servicing spacecraft, enabling spacecraft to launch or re-enter, or transferring passengers or space cargo to or from spacecraft, including launch control centres and rocket assembly facilities.
25	DistributionNetworks	Distribution Networks	This Subgroup consists of Concepts which relate to the transport in networks, such as pipelines or channels, above or below surface.
26	CoastalLittoralZones	Coastal and/or Littoral Zones	This Subgroup consists of Concepts which describe the coast and/or the littoral zones like beaches.
27	PortsHarbours	Ports and/or Harbours	This Subgroup consists of Concepts which relate to ports, harbours and/or places where vessels can be moored.
28	Depths	Depths	This Subgroup consists of Concepts which are used to describe the depths of waterbodies.
29	NatureSeabed	Nature of Seabed	This Subgroup consists of Concepts which describe the bottom of a waterbody.
30	OffshoreConstructInstall	Offshore Constructions and/or Installations	This Subgroup consists of Concepts which relate to constructions and production installations which are placed in the offshore area.
31	TidesCurrents	Tides and/or Currents	This Subgroup consists of Concepts which relate to tidal issues and/or to the currents of water.
32	RoutesNavigation	Routes and/or Navigation	This Subgroup consists of Concepts which relate to the navigation on sea.

#	Code	English Name	Definition
33	HazardsObstructions	Hazards and/or Obstructions	This Subgroup consists of Concepts which relate to a hazard and/or an obstruction for navigation on sea.
34	SeaIce	Sea Ice	This Subgroup consists of Concepts which relate to sea ice.
35	RegulatedRestrictedZones	Regulated and/or Restricted Zones	This Subgroup consists of Concepts which are used to describe water zones where special actions and/or behaviours are restricted, regulated or permitted.
36	InlandWaters	Inland Waters	This Subgroup consists of Concepts which relate to waterbodies without tides.
37	PhysicsWater	Physics of Water	This Subgroup consists of Concepts which describe the physical conditions of water, for example temperature or density.
38	Hypsography	Hypsography	This Subgroup consists of Concepts which describe the form (positions and heights) of the terrain surface.
39	Geomorphology	Geomorphology	This Subgroup consists of Concepts which describe the earth's surface and Concepts which relate to the shaping of land forms.
40	Rocks	Rocks	This Subgroup consists of Concepts which relate to rocks and rocks on and beneath the surface.
41	Soils	Soils	This Subgroup consists of Concepts which relate to the soil, which means the upper layer of the surface.
42	NaturalResources	Natural Resources	This Subgroup consists of Concepts which relate to raw materials and their deposits.
43	SeismologyVolcanology	Seismology and/or Volcanology	This Subgroup consists of Concepts which relate to volcanoes, earthquakes and/or other seismic occurrences on and beneath the surface.
44	Glaciers	Glaciers	This Subgroup consists of Concepts which relate to glaciers and glacial phenomena.

#	Code	English Name	Definition
45	Anomalies	Anomalies	This Subgroup consists of Concepts which describe anomalies in the gravity or magnetic field of earth or the fields themselves.
46	GlobalEarthCover	Global Earth Cover	This Subgroup consists of Concepts which describe the coverage of earth's surface in a global perspective.
47	CultivatedLand	Cultivated Land	This Subgroup consists of Concepts which describe the land use for agriculture.
48	Rangeland	Rangeland	This Subgroup consists of Concepts which relate to areas that are uncultivated and that are usually covered with low growing grass-like vegetation.
49	Woodland	Woodland	This Subgroup consists of Concepts which relate to a tree or wood covered area.
50	Wetland	Wetland	This Subgroup consists of Concepts which relate to areas that are permanently or temporarily moist or covered by water.
51	AridAreas	Arid Areas	This Subgroup consists of Concepts which describe very dry regions.
52	RegionsRestrictedAreas	Regions and/or Restricted Areas	This Subgroup consists of Concepts which relate to areas that are designated as special and/or restricted regions based on their natural characteristics.
53	Fauna	Fauna	This Subgroup consists of Concepts which relate to animal organisms.
54	Flora	Flora	This Subgroup consists of Concepts which relate to members of the Plant Kingdom.
55	BoundariesLimits	Boundaries and/or Limits	This Subgroup consists of Concepts which relate to the official, legal or recognised boundary and/or designation of parts of earth's surface.
56	LandSurveyRealEstate	Land-survey and/or Real Estate	This Subgroup consists of Concepts which are used to designate official or

#	Code	English Name	Definition
			legal properties and/or which are used for surveying purposes.
57	AerodromesMoveSurfLighting	Aerodromes, Movement Surfaces and/or Lighting	This Subgroup consists of Concepts which define areas on land or water (including buildings, installations and equipment) and which are intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft/helicopters.
58	AirspaceRoutes	Airspace and/or Routes	This Subgroup consists of Concepts which contain information about defined regions in the air used for navigation under a specific authority.
59	NavaidsLandAidsPointsObst	NAVAIDS, Landing Aids, Points and/or Obstacles	This Subgroup consists of Concepts which describe a collection of technical or other types of aids for the navigation and/or landing of aircraft and specify geographical locations, that are either used for navigation or pose a danger to it.
60	ServicesOrgsTimetables	Services, Organisations and/or Timetables	This Subgroup consists of Concepts which are used for services furnished to personnel and/or institutions concerned with flight operations, various Organisations and Authorities.
61	TerminalProcedures	Terminal Procedures	This Subgroup consists of Concepts which describes a series of predetermined manoeuvres for an aircraft, in order to perform a safe landing or take-off.
62	DefensiveOperationalStruct	Defensive and/or Operational Structures	This Subgroup consists of Concepts which relate to military installations and facilities and/or to operational structures.
63	RestrictedAreasBoundaries	Restricted Areas and/or Boundaries	This Subgroup consists of Concepts which define borders or zones of military used areas in which special restrictions are applied and/or which are of special interest for military purposes.
64	OperationsEvents	Operations and/or Events	This Subgroup consists of Concepts which relate to certain operations or

#	Code	English Name	Definition
			special events for military or security purposes.
65	WeatherPhenomena	Weather Phenomena	This Subgroup consists of Concepts describing relatively stable weather phenomena like wind conditions.
66	ClimateConditions	Climate Conditions	This Subgroup consists of Concepts describing climate conditions like temperature or precipitation.
67	ClimateZonesRegions	Climate Zones and/or Regions	This Subgroup consists of Concepts describing climate zones and/or regions with special climate conditions.

C.17 Topic Category Enumeration

The value domain of Topic Category Enumeration is defined in the following table.

#	Code	English Name	Definition
1	Farming	Farming	rearing of animals and/or cultivation of plants (Examples: agriculture, irrigation, aquaculture, plantations, herding, pests and diseases affecting crops and livestock)
2	Biota	Biota	flora and/or fauna in natural environment (e.g., wildlife, vegetation, biological sciences, ecology, wilderness, sealife, wetlands, habitat)
3	boundaries	Boundaries	legal land descriptions (e.g., political and administrative boundaries)
5	Economy	Economy	economic activities, conditions and employment (e.g., 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)
6	Elevation	Elevation	height above or below sea level (e.g.: altitude, bathymetry, digital elevation models, slope, derived products)
7	environment	Environment	environmental resources, protection and conservation (e.g., environmental pollution, waste storage and treatment, environmental

#	Code	English Name	Definition
			impact assessment, monitoring environmental risk, nature reserves, landscape)
8	geoscientificInformation	Geoscientific Information	information pertaining to earth sciences (e.g., 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)
9	Health	Health	health, health services, human ecology, and safety (e.g., disease and illness, factors affecting health, hygiene, substance abuse, mental and physical health, health services)
11	intelligenceMilitary	Intelligence / Military	military bases, structures, activities (e.g., barracks, training grounds, military transportation, information collection)
12	inlandWaters	Inland Waters	inland water features, drainage systems and their characteristics (e.g., rivers and glaciers, salt lakes, water utilisation plans, dams, currents, floods, water quality, hydrographic charts)
13	Location	Location	positional information and services (e.g., addresses, geodetic networks, control points, postal zones and services, place names)
14	Oceans	Oceans	features and characteristics of salt water bodies, excluding inland waters (e.g., tides, tidal waves, coastal information, reefs)
16	Society	Society	characteristics of society and cultures (e.g., settlements, anthropology, archaeology, education, traditional beliefs, manners and customs, demographic data, recreational areas and activities, social impact assessments, crime and justice, census information)
17	Structure	Structure	man-made construction (e.g., buildings, museums, churches, factories, housing, monuments, shops, towers)
18	transportation	Transportation	means and aids for conveying persons and/or goods (e.g., roads, airports/airstrips, shipping

#	Code	English Name	Definition
			routes, tunnels, nautical charts, vehicle or vessel location, aeronautical charts, railways)
19	utilitiesCommunication	Utilities / Communication	energy, water and waste systems and communications infrastructure and services (e.g., 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)

C.18 Topology Level Codelist

The value domain of Topology Level Codelist is defined in the following table.

#	Code	English Name	Definition
1	geometryOnly	Geometry Only	Geometry objects without any additional structure which describes topology.
2	topology1D	Topology 1D	1-dimensional topological complex - commonly called "chain-node" topology
7	topology3D	Topology 3D	3-dimensional topological complex. A topological complex is a collection of topological primitives that are closed under the boundary operations.
8	fullTopology3D	Full Topology 3D	complete coverage of a 3D Euclidean coordinate space
9	Abstract	Abstract	topological complex without any specified geometric realisation.

C.19 Unit of Measure Codelist

The value domain of Unit of Measure Codelist is defined in the following table.

#	Code	English Name	Definition
1	Metre	Metre	The metre is the length of the path travelled by light in a vacuum during a time interval of 1/299 792 458 of a second.
2	Degree	Degree	Measure of angle equal to Pi/180 radians, widely used in geography

#	Code	English Name	Definition
3	arcSecond	Arc Second	Measure of angle equal to Pi/648000 radians, widely used in geography
4	Radian	Radian	Radian is an unit of angle measure. It is defined as the ratio of arc length to the radius of the circle.
5	Grad	Grad	A unit of angle, equal to one-hundredth of a right angle expressed in degree.
6	squareMetre	Square metre	Area of a square whose sides measure exactly one metre
7	Percent	Percent	One one-hundredth part
8	Unity	Unity	For value without unit of measure
9	Day	Day	Unit of time defined as 24 hours
10	Hour	Hour	Unit of time defined as 3600 seconds
11	Second	Second	Unit of time defined as 9 thousand million periods of radiation of the caesium atom.

C.20 Vector Geometry Codelist

The value domain of Vector Geometry Codelist is defined in the following table.

#	Code	English Name	Definition
1	Point	Point	Zero-dimensional geometric primitive
2	Curve	Curve	Bounded, 1-dimensional geometric primitive, representing the continuous image of a line.
3	Surface	Surface	Bounded, 2-dimensional geometric primitive, representing the continuous image of a region of a plane.