DGIWG 114

DGIWG Metadata Foundation

Document type:	Standard
Document subtype:	Implementation Profile
Document date:	12 July 2017
Edition:	2.0
Supersedes:	This document supersedes DGIWG 114 Ed. 1.0.1, DGIWG Metadata Foundation, 21 November 2014.
Responsible Party:	Defence Geospatial Information Working Group
Audience:	This document is approved for public release and is available on the DGIWG website, http://www.dgiwg.org/dgiwg/
Abstract:	Geospatial metadata profile for the military community, based on ISO 19115, ISO 19115-1 and ISO 19115-2.
Copyright:	(C) Copyright DGIWG, some rights reserved - (CC) (By:) Attribution

Contents

List of Figures

List of Tables

i. Submitting organizations

ii. Document point of contact

All questions regarding this document are to be directed to secretariat@dgiwg.org

iii. Revision history

Date	Release	Primary clauses modified	Description
March 2012	0.1.0	all	Creation of the document, based on STANAG 2586
May 2012	0.2.0	Part 5.3 and 5.4	Update following DGIWG technical panels
October 2012	0.3.0	Part 2, 5 and 6.4	National requirements, MGCP
November 2012	0.4	Future work, scope, addition of Annex A and B	Application of decisions from Antalya's meeting.
April 2013	0.5	Resolutions of D31 comments	Addition of service metadata elements. Technical adjustments of the requirements. Editorial corrections
May 2013	0.6	Resolutions of D31 comments	Application of decisions discussed at Copenhagen meeting
June 2013	0.7	Annex A, B, C and G	Addition of new annexes
July 2013	0.9		Integration of T01 comments. Submission to ballot
October 2013	1.0		Resolution of nation comments on version 0.9, decided in Technical Panel
November 2013			Last review by D31 members before publication
November 2014	1.0.1		Addition of clarifications Improvement of conformance clauses. Default values for mandatory elements, Improvement of quality part, addition of explanations regarding roles codes, clarifications in the implementation part
February 2016	Pre-2.0		Addition of sensor extension Addition of mapping with ISO 19115-1/19115-3 Addition of the Registered Quality Measure Annex Addition of a selection of new elements and codelists elements from ISO 19115-1 Deletion of General mapping and Metadata classes parts
July 2016	Pre 2.0 consolidated		Resolution of comments
April 2017	2.0		Final version. Addition of disseminationConstraints to allow compliance with STANAG 4774.

iv. Future Work

The DGIWG Metadata foundation defines several metadata classes. Other metadata classes may be added in future versions of DMF.

The next version of the DMF should integrate the following aspects:

- Results from the DGIWG Namespace Identifier (NID) document
- Feature level metadata.

Introduction

Metadata is essential for dealing with geospatial data. On printed maps the user can find information about the content, its product specification, the currency of the data sources, the producer, the distributor, scale and other relevant data important for the usage of the map. For digital geospatial data this metadata has to be provided in addition to the actual data. Digital metadata needs to be structured, i.e. metadata elements, their value types, obligations and multiplicities of occurrences have to be defined.

While metadata has been used in the past to facilitate the interchange of geospatial data, it becomes a core component of the emerging civilian and military spatial data infrastructures. Interoperability of the different components of a spatial data infrastructure implies:

- A standard metadata structure;
- Standard interchange mechanisms;
- Well defined vocabularies.

Each spatial data infrastructure remains specific in terms of users, requirements, practices, cultures, and policies. If the adoption of standards is a challenge from this perspective, it becomes a necessity when there are requirements to interface different spatial data infrastructures.

The military community is widely adopting the civilian metadata standards (ISO 19115, ISO/TS 19139, etc.) and there is a growing requirement to develop a general metadata profile for the military community harmonising the existing practices and addressing emerging requirements. The development of this general metadata profile is conducted by the Defence Geospatial Information Working Group (DGIWG).

This document defines a set of metadata elements, which form the DGIWG Metadata Foundation (DMF). This version address a number of new metadata requirements stemming from:

- NATO Command Structure[1]
- Defence community via a survey. This includes metadata for services.
- Imagery and gridded metadata requirements to support the DGIWG's Elevation Surface Model (ESM) profile and GeoTiFF profile.
- Review of existing profiles of the ISO Geographic Information Metadata profiles, including the MGCP Metadata Specification.

[1] STANAG 2586, Edition 1, and its standard, AGeoP-08, is a profile of the DMF Ed. 1.

1 Scope

This document defines the DGIWG Metadata Foundation, a general Defence metadata profile for datasets, series, services, tiles, documents, products and non-geographic datasets, based on the ISO metadata standards of the ISO 19100 series of standards.

2 Conformance

The framework, concepts, and methodology for testing, and the criteria to be achieved to claim conformance to DMF, are specified in ISO 19105.

Conformance to DMF may apply to:

- A candidate Metadata Set, i.e. a set of metadata elements describing a dataset, series, tile or service.
- A candidate Metadata Catalogue, i.e. software able to produce, ingest, use and manage conformant DMF Metadata Set.
- A candidate Profile of the DMF, i.e. a Metadata Specification using a subset of the DMF metadata elements and possibly extending the DMF.

For each type of candidate, requirements are established throughout the DMF. Those requirements are defined throughout the clauses and summarized below.

For a candidate Metadata Catalogue:

Req 1. A candidate Metadata Catalogue shall take into account the DMF metadata element viewpoints in the interactions with the users (user interface, sets of metadata elements provided to the users in a given context).

Req 2. A candidate Metadata Catalogue shall take into account the DMF metadata element sets in the interactions with the users.

Req 3. The documentation of a candidate Metadata Catalogue shall list the supported DMF metadata classes as defined in clause 5.1.3 of this document.

Req 4. A candidate Metadata Catalogue shall support at least the DMF/Core.

Req 5. A candidate Metadata Catalogue having an output facility shall propose a mechanism to output a DMF Metadata Set conforming to one of the supported DMF metadata classes.

Req 11. A candidate Metadata Catalogue shall be able to manage each of the metadata elements, data types and complex data type properties pertaining to the supported metadata classes, whether it is optional or not.

Req 12. A candidate Metadata Catalogue shall at least be able to ingest and/or output DMF Conformant Metadata Sets, depending on the user requirements.

Req 14. A candidate Metadata Catalogue shall be able to input and/or output compliant DMF metadata sets.

Req 16. A DMF/Specific candidate Metadata Catalogue shall be able to implement the DMF extension of the ISO metadata standards, i.e. to use the DMF XML Schema implementation of the DMF Codelists defined in Annex C instead of the default character string implementation. The DMF catalogue should then show the human readable values provided in the DMF vocabulary.

Req 18. Any Candidate Metadata Catalogue shall be able to implement the DMF Codelist URI Schema for a DMF Metadata Element or Property Codelist mapped to an ISO 19115/ISO

19139 character string metadata element. The DMF catalogue shall show the values as they are defined in DMF vocabulary.

For a candidate Metadata Set

Req 8. Within a DMF Metadata Set describing a dataset, dataset series, service, tile, or nonGeographicDataset, each metadata element of the supported metadata classes shall occur as many times as specified by the cardinality and constraint statements.

Req 9. Within a DMF Metadata Set describing a dataset, dataset series, service, tile, or nonGeographicDataset, each instance of a property or metadata element having a complex data type shall comprise the property instances applicable to the supported metadata classes according to the data type definition.

Req 10. The content of each occurrence of a DMF Metadata Set shall conform to the value domain (including the data type definition) and description (including the identified constraints) of the metadata element.

Req 13. A candidate DMF Metadata Set shall be composed of a set of well-formed XML Documents valid with respect to XML Schemas conformant to the standard encoding of the geographic information concepts defined by ISO (ISO/TS 19139 for the first generation of standards). These XML Documents shall also conform to one of the mappings between the DMF Metadata elements and the geographic information standards defined in clauses 6.2 and 6.3.

Req 15. In order to meet the requirements expressed by a DMF Metadata Set, the XML Documents implementing a DMF metadata set shall meet the applicable DMF Specific Constraints.

Req 17. A DMF/Specific candidate Metadata set shall implement the DMF extension of the ISO metadata standards each time it is applicable.

Req 19. In a candidate DMF Metadata Set, any value of ISO 19115/ISO 19139 CharacterString metadata element mapped to a DMF Codelist shall conform to the DMF Codelist URI Scheme.

For a candidate Profile of the DMF:

Req 6. A candidate profile of the DMF shall define the profiled DMF metadata classes. It shall respect the rules for profiling a DMF metadata class defined in Annex A.

Req 7. A candidate profile of the DMF can define one or more metadata classes extending the DMF. It shall respect the rules for extending DMF defined in Annex A.

3 Normative references

The following documents contain provisions that, through reference in this text, constitute provisions of this document.

ISO 639-2*:2016 Codes for the representation of names of languages - Part 2: Alpha-3 code*

ISO 8601*:2004, Data elements and interchange formats -- Information interchange -- Representation of dates and times*

ISO/TS 19103*:2015, Geographic information – Conceptual Schema Language*

ISO 19105:*2000, Geographic information -- Conformance and testing*

ISO 19106*:2004, Geographic information - Profiles*

ISO 19107*:2003, Geographic information - Spatial schema*

ISO 19108*:2002, Geographic information – Temporal Schema*

ISO 19111:*2007, Geographic information - Spatial referencing by coordinates*

ISO 19115:*2003, Geographic information - Metadata*[2]

ISO 19115/Cor.1:*2006, Geographic information – Metadata, Technical Corrigendum 1*

ISO 19115-1:2014, *Geographic information – Metadata – Part 1:Fundamentals*[3]

ISO 19115-2:*2009, Geographic information — Metadata – Part2: Extensions for imagery and gridded data* (under revision process)

ISO 19115-3:*2016, Geographic information — Metadata – XML schema implementation*

of metadata fundamentals

ISO 19119*:2005, Geographic information - Services*

ISO 19119:*2005* **DAM 1:2008**, *Geographic information – Services (replaced by* **ISO 19119***:2016 Geographic information – Services)*

ISO/TS 19130:*2010*, *Geographic information – Imagery sensor models for geopositioning*

ISO/TS 19130-2:*2014*, *Geographic information – Imagery sensor models for geopositioning -- Part 2: SAR, InSAR, lidar and sonar*

ISO/TS 19139*:2007, Geographic information - Metadata - XML schema implementation (under revision, partly replaced by ISO 19115-3:2016)*

ISO/TS 19139-2*:2012, Geographic information - Metadata - Part2: Extensions for imagery and gridded data XML schema implementation*

ISO 19157:2013, *Geographic information - Data Quality*

ISO/TS 19157-2*:2016, Geographic information -- Data quality -- Part 2: XML schema implementation*

ISO/TS 19159-1:*2014*, *Geographic information – Calibration and validation of remote sensing imagery sensors and data -- Part 1: Optical sensors*

DGIWG Metadata Roadmap: ENT-15-035, *Edition 2.1 dated 2017,* http://www.dgiwg.org/dgiwg/htm/documents/committee_enterprise_documents.htm (To be published)

IETF RFC 3629 *UTF-8, a transformation format of ISO 10646*

IETF RFC 3986, *Uniform Resource Identifier (URI): Generic Syntax*

IETF RFC 4122, *A Universally Unique IDentifier (UUID) URN Namespace*

MC 0296/2, *NATO Geospatial Policy, IMSTAM(GE0)-0001-2010 (SD3) dated 27 September 2010*

STANAG 2586*, NATO Geospatial Metadata Profile, Edition 1, Ratification draft 1*

AGeoP8*, NATO Geospatial Metadata Profile (NGMP), Edition A, version 1, Ratification draft 1*

[2] ISO 19115 have been superseded by ISO 19115-1:2014.
[3] Revision of ISO 19115:2003

4 Terms, definitions and abbreviations

4.1 Definitions

4.1.1 Catalogue

collection of items or an electronic or paper document that contains information about the collection of items [ISO 10303-227:2005, definition 3.3.10]

4.1.2 Dataset

identifiable collection of data [ISO 19115-1:2014]

4.1.3 Dataset series

collection of datasets sharing common characteristics [ISO 19115-1:2014]

4.1.4 Metadata

information about a resource [ISO 19115-1:2014]

4.1.5 Metadata Set

set of metadata elements grouping elements covering the different aspects of the resources

4.1.6 Profile

set of one or more base standards or subsets of base standards, and, where applicable, the identification of chosen clauses, classes, options and parameters of those base standards, that are necessary for accomplishing a particular function [ISO 19106]

4.1.7 Resource

identifiable asset or means that fulfils a requirement [ISO 19115-1:2014]

EXAMPLE Dataset, dataset series, service, document, initiative, software, person or organization.

4.1.8 Service

distinct part of the functionality that is provided by an entity through interfaces [adapted from ISO/IEC TR 14252]

4.1.9 Tile

spatial subset of geographic data [ISO 19115:2003]

Note: spatio-temporal tiles could be found, for example for METOC use cases.

4.2 Abbreviated terms

CRS	Coordinate Reference System
CSW	Catalogue Service for the Web
DGIWG	Defence Geospatial Information Working Group
DMF	DGIWG Metadata Foundation
ESM	Elevation Surface Model
GI	Geospatial Information
ISO	International Organization for Standardization
MD	Metadata Package (UML from ISO 19115)

MGCP	Multinational Geospatial Co-production Program
NATO	North Atlantic Treaty Organisation
NGMP	NATO Geospatial Metadata Profile
OGC	Open Geospatial Consortium
STANAG	STANdardisation AGreement
UML	Unified Modelling Language
URI	Unique Resource Identifier
URL	Uniform Resource Locator
URN	Uniform Resource Name
UUID	Universal Unique Identifier
WMS	Web Map Service
WMTS	Web Map Tile Service
WFS	Web Feature Service
XML	Extensible markup language

5 DMF metadata elements

5.1 General

5.1.1 Viewpoints

The DGIWG Metadata Vision defines a general metadata use case involving metadata elements in four different contexts (i.e. use case scenarios):

- **D**iscovery concerns the most important metadata elements, i.e. the metadata elements involved when a user needs to discover existing resources;
- **E**valuation concerns the metadata elements needed to understand whether the discovered resources meet the user requirements;
- **U**se concerns the metadata elements needed to access and use the resource;
- **M**anagement concerns the metadata elements needed to manage the existing resources.

From a user viewpoint, the involved DMF metadata elements depend on these four contexts. Four viewpoints corresponding each to one of these four contexts are expressed here as sets of metadata elements applicable to the specific context.

Req 1. A candidate Metadata Catalogue shall take into account the DMF metadata element viewpoints in the interactions with the users (user interface, sets of metadata elements provided to the users in a given context).

5.1.2 Metadata element sets

The DMF metadata elements document different aspects of the resources including their identification, the related quality information, the spatial representation and the content description of the resource data. Each aspect is dealt with by the definition of an identified element set grouping the metadata elements covering the documentation of the aspect.

This grouping mechanism is important for the users especially when the number of metadata elements to be considered becomes high.

Req 2. A candidate Metadata Catalogue shall take into account the DMF metadata element sets in the interactions with the users.

5.1.3 Metadata classes

The DGIWG Metadata Foundation defines several metadata classes:

- DMF/Core defines the minimum set of metadata elements to be implemented by any metadata catalogue. This set satisfies the discovery use case.
- DMF/Common is an additional set of metadata elements for a more complete description of any type of resource supported by DMF. It extends DMF/Core and covers discovery and basic evaluation use cases.
- DMF/Services extends DMF/Core for service metadata and can be used together with DMF/Common (i.e. it is possible to use DMF/Services on top of DMF/Core (if DMF/Common elements are not needed) or on top of DMF/Common for an extensive profile).
- DMF/Data extends DMF/Common for data related resources (i.e. dataset, series and tile). DMF/Data adds metadata elements for evaluation and use.

- DMF/Data+ extends DMF/Data for the implementation of coverage quality results and other metadata elements introduced in ISO 19115-2 but having some applications for any geospatial product.
- A DMF/Sensor class extending DMF/Data for sensors.
- DMF/Defence extends DMF/Core or DMF/Common for military oriented needs including NATO needs (extensions defined in NGMP, particularly security). It is needed to handle metadata to be exchanged with NATO in conformance with NGMP. DMF/Defence can be implemented with DMF/Core and possibly any other metadata class.
- DMF/Specific is an extension of the ISO metadata standards for high level military implementation of the DMF metadata elements.

Req 3. The documentation of a candidate Metadata Catalogue shall list the supported DMF metadata classes as defined in clause 5.1.3 of this document.

Req 4. A candidate Metadata Catalogue shall support at least the DMF/Core.

Req 5. A candidate Metadata Catalogue having an output facility shall propose a mechanism to output a DMF Metadata Set conforming to one of the supported DMF metadata classes.

Req 6. A candidate profile of the DMF shall define the profiled DMF metadata classes. It shall respect the rules for profiling a DMF metadata class defined in Annex A.

Req 7. A candidate profile of the DMF can define one or more metadata class extending the DMF. It shall respect the rules for extending DMF defined in Annex A.

5.1.4 Metadata element requirements

Each DMF metadata element pertains to one metadata class. Each metadata element of the DMF has:

- A unique **Identifier** introduced for consistency of the documentation;
- A **Title** serving as a human-oriented comprehensive identifier;
- An indication of the related **metadata class**;
- A **Description** statement which may include the expression of constraints (preceded by “Constraints:”) applicable to the metadata element;
- A **Value Domain** defining the applicable data types and vocabularies, as well as the applicable restrictions of the domain of values. Individual values are expressed in bold.
- A **Cardinality** statement.

Each basic type and vocabulary also pertains to one metadata class. Some data types are complex, i.e. they comprise of a set of properties also having an identifier, a title, a description, an indication of the related metadata class, a value domain and a cardinality. A complex data type implicitly pertains to the metadata classes defined for its properties (i.e. the complex type properties may relate to different metadata classes).

The cardinality statement may be expressed as:

- a number of occurrences (typically **1** indicates that one and only one occurrence is expected), or;
- a range expressing a minimum and maximum number of occurrences. The format of a range of occurrences is ***n…m*** where:

- **n** is a positive integer or **0** indicating that the field is optional, i.e. it may not occur on any resource;
- **m** is a positive integer or ***** indicating that the maximum is unbounded.

The cardinality statement defines the minimum and maximum number of occurrences of the DMF metadata elements in terms of relevance for the types of resources supported by DMF. A metadata element is optional (i.e., its minimum occurrence is set to 0) when it may not occur when documenting any resource in the scope of DMF. Constraints are expressed when the relevance of the metadata elements is specific to some resource types or depends on the value of other metadata elements.

Req 8. Within a DMF Metadata Set describing a dataset, dataset series, service, tile, or nonGeographicDataset, each metadata element of the supported metadata classes shall occur as many times as specified by the cardinality and constraint statements.

Req 9. Within a DMF Metadata Set describing a dataset, dataset series, service, tile, or nonGeographicDataset, each instance of a property or metadata element having a complex data type shall comprise the property instances applicable to the supported metadata classes according to the data type definition.

Req 10. The content of each occurrence of a DMF Metadata Set shall conform to the value domain (including the data type definition) and description (including the identified constraints) of the metadata element.

Req 11. A candidate Metadata Catalogue shall be able to manage each of the metadata elements, data types and complex data type properties pertaining to the supported metadata classes, whether it is optional or not.

Reciprocally, a mandatory metadata element (i.e., its minimum occurrence is set to 1 or more) does not have to be implemented by a metadata catalogue if it is not part of the supported metadata classes.

Req 12. A candidate Metadata Catalogue shall at least be able to ingest and/or output DMF Conformant Metadata Sets, depending on the user requirements.

The constraints applicable to DMF profiles with respect to the cardinality of the metadata elements are part of the rules for profiling defined in Annex A.

The following documentation of the DMF metadata elements is composed of:

- The overview of the DMF metadata elements (see clause 5.2) which expresses the identifier, the title, the metadata class and the cardinality statement of the DMF Metadata Elements. It also organizes the metadata elements into four different viewpoints
- The detailed description of the DMF metadata elements organised by metadata element sets (see clause **Error! Reference source not found.**).

5.2 Metadata Element Overview

For a detailed description of the metadata elements see clause 5.3.

Identifier	Title	Card	Metadata Class	Viewpoints			
				D	E	U	M
MDSID	Metadata Set Identifier	0..1	DMF/Core				X
MDLINK	Metadata Linkage	0..1	DMF/Specific				X
MDPTMD	Parent Metadata Set	0..1	DMF/Common				X
MDDLOC	Metadata Default Locale	1	DMF/Core		X	X	X

Identifier	Title	Card	Metadata Class	Viewpoints			
				D	E	U	M
MDTLOC	Metadata Translation	0..*	DMF/Common			X	X
MDRPTY	Metadata Responsible Party	1..*	DMF/Core	X	X	X	X
MDDATE	Metadata Date Stamp	1	DMF/Core	X	X	X	X
MDSTD	Metadata Standard	1	DMF/Core		X	X	X
MDSCST	Metadata Security Constraint	0..*	DMF/Common	X	X	X	X
MDREL	Metadata Releasability Addressee	0..*	DMF/Defence	X	X	X	X
MDLCST	Metadata Legal Constraint	0..*	DMF/Common		X	X	X
MDMFRQ	Metadata Maintenance Frequency	0..1	DMF/Common		X	X	X
RSTITLE	Resource Title	1	DMF/Core	X	X	X	X
RSALT	Resource Alternate Title	0..1	DMF/Common		X	X	X
RSABSTR	Resource Abstract	1	DMF/Core	X	X	X	X
RSPURP	Resource Purpose	0..1	DMF/Core	X	X	X	X
RSTYPE	Resource Type Code	1	DMF/Core	X	X	X	X
RSTYPN	Resource Type Name	0..1	DMF/Core	X	X	X	X
RSED	Resource Edition	0..1	DMF/Core		X	X	X
RSEDDAT	Resource Edition Date	0..1	DMF/Core		X	X	X
RSID	Resource Identifier	0..*	DMF/Core	X	X	X	X
RSKWDS	Resource Keyword Set	0..*	DMF/Core	X	X	X	X
THUMB	Resource Thumbnail	0..1	DMF/Core	X	X	X	X
GPHICS	Resource Graphics	0..*	DMF/Common		X	X	X
RSSRES	Resource Spatial Resolution	0..*	DMF/Core	X	X	X	X
RSTRES	Resource Temporal Resolution	0..*	DMF/Common		X	X	X
RSRPTP	Resource Spatial Representation Type	0..1	DMF/Core	X	X	X	X
RSTOPIC	Resource Topic Category	0..*	DMF/Core	X	X	X	X
RSDLOC	Resource Default Locale	1	DMF/Core		X	X	X
RSTLOC	Resource Other Locale	0..*	DMF/Core		X	X	X
DGITYP	Geospatial Information Type	0..1	DMF/Core	X	X	X	X
RSGFLV	Resource Georeferencing Level	0..1	DMF/Core	X	X	X	X
RSPREF	Resource Representation Form	0..1	DMF/Core	X	X	X	X
RSDTLVL	Resource Data Level	0..1	DMF/Defence	X	X	X	X
RSTHEME	Resource Theme	0..*	DMF/Core	X	X	X	X
RSSERI	Name of Resource Series	0..1	DMF/Core	X	X	X	X
RSSHNA	Resource Sheet Name	0..1	DMF/Core	X	X	X	X
RSENVD	Resource Environment Description	0..1	DMF/Data			X	X
RSREM	Resource Remark	0..1	DMF/Common	X	X	X	X
RSFMT	Resource Format	0..1	DMF/Data		X	X	X

Identifier	Title	Card	Metadata Class	Viewpoints			
				D	E	U	M
SRTYPE	Service Type	1	DMF/Services	X	X	X	X
SRTVER	Service Type Version	1	DMF/Services	X	X	X	X
SRSTD	Service Standard	0..1	DMF/Services		X	X	X
SRCPLING	Service Coupling Type	1	DMF/Services		X	X	X
SROPRS	Resource Operated by the Service	0..*	DMF/Services		X	X	X
SROPER	Service Operation	1..*	DMF/Services		X	X	X
SRCORS	Service Coupled Resource	0..*	DMF/Services			X	X
RCGRSPREP	Spatial Representation of a Georectified Gridded Coverage	0..1	DMF/Data			X	X
RFGRSPREP	Spatial Representation of a Georeferenceable Gridded Coverage	0..1	DMF/Sensor			X	X
GRCINF	Content Information of the Coverage	0..1	DMF/Data+			X	X
ASSOC	Image Association Type	0..1	DMF/Sensor		X	X	X
SPECTMOD	Spectral Mode	0..1	DMF/Sensor		X	X	X
VCTOLVL	Topology Level	0..1	DMF/Data			X	X
VGEOM	Geometric Object	0..*	DMF/Data			X	X
FCDESC	Feature Catalogue Description	0..1	DMF/Data			X	X
RSEXT	Resource Extent	0..*	DMF/Core	X	X	X	X
RSRSYS	Resource Reference System	0..*	DMF/Core			X	X
RSSTAT	Resource Status	0..1	DMF/Common				X
RSDATE	Resource Reference Date	1..*	DMF/Core	X	X	X	X
RSRPTY	Resource Responsible Party	0..*	DMF/Core		X	X	X
RSMTNC	Resource Maintenance	0..1	DMF/Common		X	X	X
RSSCST	Resource Security Constraint	0..*	DMF/Core	X	X	X	X
RSREL	Resource Releasability	0..*	DMF/Defence	X	X	X	X
RSUSE	Resource Use Limitation	0..*	DMF/Core		X	X	X
RSLCST	Resource Legal Constraint	0..*	DMF/Core		X	X	X
RSLING	Resource Lineage	1	DMF/Core	X	X	X	X
RSRQR	Resource Regulated Quality Report	0..*	DMF/Common		X	X	X
RSUQR	Resource Unspecified Quality Report	0..*	DMF/Common		X	X	X
RSSRC	Source of the Resource	0..*	DMF/Common		X	X	X
RSPRST	Resource Process Step	0..*	DMF/Common		X	X	X
RSSPUS	Resource Usage	0..*	DMF/Common			X	X
RSDFMT	Resource Distribution Format	1..*	DMF/Core	X	X	X	X
RSONLLC	Resource Online Location	0..*	DMF/Core		X	X	X
RSUD	Resource Unit of Distribution	0..1	DMF/Data			X	X
RSTS	Resource Transfer Size	0..1	DMF/Data			X	X

Identifier	Title	Card	Metadata Class	Viewpoints			
				D	E	U	M
RSOFDM	Resource Offline Distribution Medium	0..*	DMF/Data			X	X
ACINS	Acquisition Instrument	1..*	DMF/Sensor	X	X	X	X
ACPLAT	Acquisition Platform Information	0..1	DMF/Sensor		X	X	X
ACMETCD	Meteorological Conditions of Acquisition	0..1	DMF/Sensor			X	X
ACDATE	Acquisition Date Time	0..1	DMF/Sensor	X	X	X	X
SUNAZ	Sun Azimuth	0..1	DMF/Sensor		X	X	X
SUNEL	Sun Elevation	0..1	DMF/Sensor		X	X	X

5.3 Detailed Requirements

5.3.1 Metadata

The following metadata elements are applicable to all resources.

Identifier	Title / Description	Value Domain	Card
MDSID [DMF/Core]	Metadata Set Identifier This is a value uniquely identifying the original and published versions of the metadata set. *Constraints:* • *Mandatory if 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.*	String It is strongly recommended to provide a unique identifier (e.g. UUID, URI, URN or URL). The value shall be the identifier of an existing metadata set.	0..1
MDLINK [DMF/Specific]	Metadata Linkage This element refers to the online location where the metadata is available.	URL	0..1
MDPTMD [DMF/Common]	Parent Metadata Set This refers to the metadata set of a resource to which this resource is a subset (child). Typically, the parent metadata set of a dataset metadata set is the metadata set of the corresponding dataset series. *Constraints:* • *This element is not applicable to services.* • *It is mandatory if an upper-level hierarchy exists, typically if a dataset pertains to a dataset series.*	Parent Metadata Reference	0..1
MDDLOC [DMF/Core]	Metadata Default Locale This is the locale in which the metadata elements are primarily expressed. *Constraints:* • *MDDLOC.identifier is never set.*	Locale	1
MDTLOC [DMF/Common]	Metadata Translation This defines the locale in which some metadata elements may be translated	Locale	0..*
MDRPTY [DMF/Core]	Metadata Responsible Party Information about the party responsible for the metadata.	Responsible Party	1..*

Identifier	Title / Description	Value Domain	Card
	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.		
MDDATE [DMF/Core]	Metadata Date Stamp The date which specifies when the metadata record was created or updated.	Date or DateTime Default value is the date of the current day.	1
MDSTD [DMF/Core]	Metadata Standard This is a citation of the metadata standard to which the metadata set conforms. *Constraints:* • *The values for 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.*	Citation	1
MDSCST [DMF/Common]	Metadata Security Constraint This element provides a means to express a set of security constraints applicable to the metadata.	Security Constraint	0..*
MDREL [DMF/Defence]	Metadata Releasability Addressee This element establishes a body to which the metadata can be released.	String In a NATO context, the String value is expected to be a 3-character country codes from STANAG 1059 if available.	0..*
MDLCST [DMF/Common]	Metadata Legal Constraint This element provides a means to express a set of legal constraints applicable to the metadata.	Legal Constraint	0..*
MDMFRQ [DMF/Common]	Metadata Maintenance Frequency This element provides information on the frequency with which changes and additions are made to the metadata after the initial metadata is completed.	Frequency Codelist	0..1

5.3.2 Identification

The following metadata elements are applicable to all resources

Identifier	Title / Description	Value Domain	Card
RSTITLE [DMF/Core]	Resource Title This is a characteristic and often a 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	Free Text Default is **To be determined**	1

Identifier	Title / Description	Value Domain	Card
	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: “50K single product made from MGCP data on Mali”		
RSALT [DMF/Common]	Resource Alternate Title This is a short name, a more colloquial name or a name in another language by which the resource is known.	Free Text	0..1
RSABSTR [DMF/Core]	Resource Abstract 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. Recommendations: • The abstract should include human-readable information to explain the product specificity. Example: This product provides a rapid mapping from MGCP (Multinational Geospatial Coproduction Program) data focusing on Mali.	Free Text Default is **To be determined**	1
RSPURP [DMF/Core]	Resource Purpose This is a summary of the intentions with which the resource was developed.	Free Text	0..1
RSTYPE [DMF/Core]	Resource Type Code This is the type code of the resource described by the metadata: resources listed in the codelist are the only types of resources in the scope of DMF.	Resource Type Codelist Default is **dataset**	1
RSTYPN [DMF/Core]	Resource Type Name This is the type name of the resource described by the metadata. *Constraints:* • *RSTYPN value shall differ from RSTYPE when it is set, in order to provide a more comprehensive name for the type of resource.* • *RSTYPN should be documented if RSTYPE not equal to dataset*	Free Text	0..1
RSED [DMF/Core]	Resource Edition This is the version identifier of the resource.	String	0..1
RSEDDAT [DMF/Core]	Resource Edition Date This is the reference date of this edition of the resource (see RSED).	Date or DateTime	0..1
RSID [DMF/Core]	Resource Identifier This is a value uniquely identifying the resource within a	Identifier	0..*

Identifier	Title / Description	Value Domain	Card
	specific context. It is highly recommended to provide at least a unique identifier code value (i.e., a code independent of any namespace).		
RSKWDS [DMF/Core]	Resource Keyword Set Set of keywords used to describe the resource.	Controlled Vocabulary	0..*
THUMB [DMF/Core]	Resource Thumbnail Link access to the thumbnail of the resource.	URI URL or File Path	0..1
GPHICS [DMF/Common]	Resource Graphics Sample, overview or other illustration of the resource. *Constraints:* • *One value of the following values should be used for GPHICS.description: 'Overview' (overall illustration for the resource), 'Sample' (representative extract of the resource, illustrating data density), 'Legend' (legend for the resource) or 'TilingScheme' (partitioning of the space).*	Browse Graphic	0..*
RSSRES [DMF/Core]	Resource Spatial Resolution 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. *Constraints:* • *One instance of Resolution containing a horizontal ground sample distance is mandatory for the sensor class.*	Resolution	0..*
RSTRES [DMF/Common]	Resource Temporal Resolution Smallest resolvable temporal period in a resource.	Interval Length	0..*
RSRPTP [DMF/Core]	Resource Spatial Representation Type This describes the method used to spatially represent geographic information. Note: Not applicable to analogue data.	Spatial Representation Type Codelist	0..1
RSTOPIC [DMF/Core]	Resource Topic Category 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. *Constraints:* • *Mandatory if RSTYPE equal to dataset or series*	Topic Category Enumeration Default is **imageryBaseMapsEarthCover**	0..*

5.3.3 Data Identification

The following metadata elements are applicable to all resources except services.

Identifier	Title / Description	Value Domain	Card
RSDLOC [DMF/Core]	Resource Default Locale The default locale used within the resource. *Constraints:* • *RSDLOC.identifier is never set.*	Locale It may be defaulted to the metadata default locale.	1

Identifier	Title / Description	Value Domain	Card
RSTLOC [DMF/Core]	Resource Other Locale The other locale(s) used within the resource. *Constraints:* • *RSTLOC.identifier is never set.*	Locale	0..*
DGITYP [DMF/Core]	Geospatial Information Type Information about the type of geospatial information provided by the resource. Note: Not applicable to non-geographic data.	Geospatial Information Type Codelist	0..1
RSGFLV [DMF/Core]	Resource Georeferencing Level Level of georeferencing of the resource. Note: Not applicable to non-geographic data. *Constraints:* • *Mandatory for DMF/Sensor.*	Geopositioning Level Codelist	0..1
RSPREF [DMF/Core]	Resource Representation Form This metadata element defines whether the resource is analogue or digital.	Representation Form Codelist	0..1
RSDTLVL [DMF/Defence]	Resource Data Level The Resource Data Level is a method of categorizing resolution bands of digital geospatial information (including imagery) by equivalence to paper map scales. Note: Not applicable to non-geographic data. List of available levels should be documented.	String	0..1
RSTHEME [DMF/Core]	Resource Theme Theme provides more precise thematic information enabling discovery of data.	Thematic Codelist	0..*
RSSERI [DMF/Core]	Name of Resource Series When the resource pertains to a series, this is the name of the series. *Constraints:* • *This metadata element is not applicable to series and services.*	String	0..1
RSSHNA [DMF/Core]	Resource Sheet Name When the resource pertains to a series, this is the name or identifier of the resource as part of the series. The term “Sheet Name” is used by analogy with map series and map sheets, but it is applicable to other types of data. *Constraints:* • *This metadata element is not applicable to series and services.*	String	0..1
RSENVD [DMF/Data]	Resource Environment Description This element is provided in order to give information about the producer’s processing environment, including items such as the software, the computer operating system, file name, and the dataset size.	Free Text	0..1
RSREM [DMF/Common]	Resource Remark Any remark about the resource.	Free Text	0..1
RSFMT [DMF/Data]	Resource Format This is the description of the computer language construct that specifies the representation of data objects in the	Format	0..1

Identifier	Title / Description	Value Domain	Card
	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. *Constraints:* • *This element should only be used if different from the Resource Distribution Format.*		

5.3.4 Service Identification

The following metadata elements are only applicable to services.

A service instance may be either tightly coupled with a dataset instance, loosely coupled (i.e. non associated with specific dataset instances), or it may be "mixed coupled."

In the tightly coupled case, the service metadata shall describe both the service and the geographic dataset. Dataset metadata need not be provided in the service metadata for the loosely coupled case. Information about data could be given either with SROPRS or SRCORS.

Identifier	Title / Description	Value Domain	Card
SRTYPE [DMF/Services]	Service Type A service type name. For OGC Web Services, the value defined by the applicable OGC Specification has to be used (e.g. 'WMS', WFS', 'CSW', 'WMTS', ...)	String Default is **unknown**	1
SRTVER [DMF/Services]	Service Type Version Version of the service type. For OGC Web Services, the value defined by the applicable OGC Specification has to be used.	String Default is **unknown**	1
SRSTD [DMF/Services]	Service Standard Standard to which the service adheres. This element can be used to mention to which DGIWG profile the service is compliant with.	Citation	0..1
SRCPLING [DMF/Services]	Service Coupling Type Type of coupling between service and associated data (if exists)	Coupling Type Codelist Default is **loose**	1
SROPRS [DMF/Services]	Resource Operated by the Service Provides a reference to the dataset on which the service operates *Constraints:* • *Mandatory if coupling type is tight or mixed.*	URI (URI of the metadata of the dataset on which the service operates.)	0..*
SROPER [DMF/Services]	Service Operation Provides information about the operations that comprise the service	Service Operation	1..*
SRCORS [DMF/Services]	Service Coupled Resource Further description of the data coupling in the case of tightly coupled services. It links a given operationName with a data set identified by an "identifier". And it requires that a given operationName or identifier shall refer to an existing operationName given by SROPER.name or an identifier	Service Coupling	0..*

Identifier	Title / Description	Value Domain	Card
	given by RSID.code, respectively. *Constraints:* • *Only applicable to tightly coupled services.*		

5.3.5 Coverage Description

The following metadata elements are only applicable to coverage data.

Identifier	Title / Description	Value Domain	Card
RCGRSPREP [DMF/Data]	Spatial Representation of a Georectified Gridded Coverage The spatial representation of the grid provides the parameters needed to compute the location of any cell of a georectified grid. *Constraints:* • *When the coverage is a georectified grid.*	Georectified Grid Spatial Representation	0..1
RFGRSPREP [DMF/Sensor]	Spatial Representation of a Georeferenceable Gridded Coverage The spatial representation of the grid provides the parameters needed to georeference the cell of the grid. *Constraints:* • *When the coverage is a georeferenceable grid.*	Georeferenceable Grid Spatial Representation	0..1
GRCINF [DMF/Data+]	Content Information of the Coverage Describes the coverage content.	Coverage Content Information	0..1
ASSOC [DMF/Sensor]	Image Association Type Mentions association (pair, triplet, n-uplet) for Optical imagery data.	Imagery Association Codelist	0..1
SPECTMOD [DMF/Sensor]	Spectral Mode Mentions the spectral mode used (panchromatic, multi or hyper spectral)	Spectral Mode Information Codelist	0..1

5.3.6 Vector Representation

The following metadata elements are only applicable to vector data.

Identifier	Title / Description	Value Domain	Card
VCTOLVL [DMF/Data]	Topology Level Code which identifies the degree of complexity of the spatial relationships.	Topology Level Codelist	0..1
VGEOM [DMF/Data]	Geometric Object Type and count of geometric object. *Constraints:* • *There shall be one and only one VGEOM per geometry available in the data.*	Geometric Objects	0..*

5.3.7 Feature Catalogue

The following metadata elements are not applicable to service.

Identifier	Title / Description	Value Domain	Card
FCDESC [DMF/Data]	Feature Catalogue Description Description of the feature catalogues.	Feature Catalogue Information	0..1

5.3.8 Spatiotemporal

The following metadata elements are applicable to all resources except non-geographic data.

Identifier	Title / Description	Value Domain	Card
RSEXT [DMF/Core]	Resource Extent This is either a positional extent, or a temporal extent or a vertical extent. *Constraints:* • *Except for non-geographic data and loose services, one extent of type bounding box or geographic identifier is mandatory.*	Extent	0..*
RSRSYS [DMF/Core]	Resource Reference System This is a spatial or temporal reference system used in the resource. Note: the code property of the identifier should be a URI.	Identifier	0..*

5.3.9 Management

The following metadata elements are applicable to all resources.

Identifier	Title / Description	Value Domain	Card
RSSTAT [DMF/Common]	Resource Status This is information about the status of the resource.	Status Codelist	0..1
RSDATE [DMF/Core]	Resource Reference Date 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.*	Reference Date	1..*
RSRPTY [DMF/Core]	Resource Responsible Party This is the description of the organization(s) associated with the resource, e.g. the originating organization, custodian.	Responsible Party	0..*
RSMTNC [DMF/Common]	Resource Maintenance This is a set of information about the maintenance of the resource.	Maintenance Information	0..1

5.3.10 Constraint

The following metadata elements are applicable to all resources.

Identifier	Title / Description	Value Domain	Card
RSSCST [DMF/Core]	Resource Security Constraint This element provides a means to express a set of security constraints applicable to the resource	Security Constraint	0..*
RSREL [DMF/Defence]	Resource Releasability This element provides a means to express a set of releasability information applicable to the resource.	Releasability	0..*
RSUSE [DMF/Core]	Resource Use Limitation	Free Text	0..*

Identifier	Title / Description	Value Domain	Card
	This element provides a means to express general use limitations (limitations not implied by security or legal constraints) of the resource.		
RSLCST [DMF/Core]	Resource Legal Constraint This element provides a means to express a set of legal constraints applicable to the resource.	Legal Constraint	0..*

5.3.11 Quality

The following metadata elements are applicable to all resources.

Identifier	Title / Description	Value Domain	Card
RSLING [DMF/Core]	Resource Lineage 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.	Free Text Default is **To be determined**	1
RSRQR [DMF/Common]	Resource Regulated Quality Report 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 DGIWG Metadata Guidelines document. It includes positional and vertical accuracy measures, product specification compliancy, and imagery quality measures like NIIRS, snow cover, etc.	Regulated Quality Report	0..*
RSUQR [DMF/Common]	Resource Unspecified Quality Report Information related to the result of an unspecified quality evaluation.	Unspecified Quality Report	0..*
RSSRC [DMF/Common]	Source of the Resource This element provides information about the source data used in creating the resource.	Source	0..*
RSPRST [DMF/Common]	Resource Process Step This element provides information about an event or transformation in the life of a resource including the process used to maintain the resource. *Constraints:* • *Strongly recommended for DMF/Sensor, in order to be able to trace all the processing steps*	Process Step	0..*
RSSPUS [DMF/Common]	Resource Usage 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.	Usage	0..*

5.3.12 Distribution

The following metadata elements are applicable to all resources.

Identifier	Title / Description	Value Domain	Card
RSDFMT [DMF/Core]	Resource Distribution Format 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.	Format	1..*
RSONLLC [DMF/Core]	Resource Online Location This element provides the link(s) to the resource and, or the link to additional information about the resource. *Constraints:* • *Mandatory for services*	Online Location	0..*
RSUD [DMF/Data]	Resource Unit of Distribution This is the description of the unit (tiles, layers, geographic areas, etc.), in which data are available.	Free Text	0..1
RSTS [DMF/Data]	Resource Transfer Size This is the estimated size of a unit in the specified transfer format, expressed in megabytes. The transfer size is > 0.0	Float	0..1
RSOFDM [DMF/Data]	Resource Offline Distribution Medium information about offline media on which the resource can be obtained.	Medium	0..*

5.3.13 Acquisition Information

The following metadata elements are applicable to sensor imagery class.

Identifier	Title / Description	Value Domain	Card
ACINS [DMF/Sensor]	Acquisition Instrument This is information about the instrument (sensor) used in data acquisition.	Instrument	1..*
ACPLAT [DMF/Sensor]	Acquisition Platform Information This element provides designation of the platform used to acquire the dataset.	Platform	0..1
ACMETCD [DMF/Sensor]	Meteorological Conditions of Acquisition This describes the meteorological conditions in the area at collection time. This element is intended for airborne or in-situ acquisition.	Meteorological Condition	0..1
ACDATE [DMF/Sensor]	Acquisition Date Time Date and time of the collection.	DateTime	0..1
SUNAZ [DMF/Sensor]	Sun Azimuth Clockwise angle in degrees from north to the centre of the sun's disc. (ESA definition) Note: This angle is calculated from the nadir point of the sensor, not at the centre point of the image. *Constraints:* • *Because of implementation issues, this element can only be used with a Georeferenceable Grid Spatial Representation.*	Float 0…360	0..1

Identifier	Title / Description	Value Domain	Card
SUNEL [DMF/Sensor]	Sun Elevation Angle between the horizon and the center of the sun's disc (ESA definition). Note: This angle is calculated from the nadir point of the sensor, not at the centre point of the image. *Constraints:* • *Because of implementation issues, this element can only be used with a Georeferenceable Grid Spatial Representation.*	Float -90..90	0..1

5.4 Data types

5.4.1 Basic Types

5.4.1.1 Any

This type stands for any type.

5.4.1.2 Date

This is a calendar date indicating year, month and day. The format is conformant to ISO 8601: **YYYY-MM-DD**
Where:

- YYYY is a four digit code representing the year,
- MM is a two digit code representing the month and
- DD is a two digit code representing the day of the month.

If only the year is known, use YYYY.
If only the year and month is known, use YYYY-MM.

5.4.1.3 DateTime

This is a combined Date and Time. The format is conformant to ISO 8601: **YYYY-MM-DDThh:mm:ssZ**
Where:

- YYYY is a four-digit code representing the year,
- MM is a two digit code representing the month (01= January, etc.)
- DD is a two digit code representing the day of the month (01 through 31)
- hh is a two digit code representing the hour (00 through 23) (am/pm NOT allowed)
- mm is a two digit code representing the minutes (00 through 59)
- ss is a two digit code representing the seconds (00 through 59)
- T indicates the start of the required time section
- Z represents the time zone designator in Coordinated Universal Time (UTC)

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

5.4.1.4 Float

A float is a finite representation of a decimal number. Values will be entered with a ‘full stop’ or ‘decimal point’ as the decimal separator.

5.4.1.5 Integer

It is an exact, signed whole number, with no fractional part.

5.4.1.6 String

An arbitrary-length sequence of characters. A string property or element can be represented as a URI, URL, URN or UUID string even if the value domain does not explicitly refer to the corresponding data types.

5.4.1.7 URI

A Uniform Resource Identifier is a String compliant with IETF RFC 3986 used to reference information either collocated with or external to the referencing data. A URI property or element can be represented as URL even if the value domain does not explicitly refer to the corresponding data types.

5.4.1.8 URL

A Uniform Resource Locator is a String compliant with IETF RFC 3986 used to reference information either collocated with or external to the referencing data.

5.4.1.9 UUID

A Universal Unique Identifier is a String compliant with IETF RFC 4122 used to reference information either collocated with or external to the referencing data.

5.4.2 Complex Types

5.4.2.1 Anchor

The properties of Anchor are listed below.

Identifier	Title / Description	Value Domain	Card
`value` [DMF/Data+]	Anchor Textual Value This is the nominal value of the free text metadata element. It is a simple objectCount expressed in the Metadata Default Locale (See MDDLOC).	String	1
`reference` [DMF/Data+]	Anchor Reference This is an identifier or locator of the anchor textual value.	URI	0..1

5.4.2.2 Browse Graphic

The properties of Browse Graphic are listed below.

Identifier	Title / Description	Value Domain	Card
`name` [DMF/Common]	Name of the File This is the name of the file.	String or URI	1
`description` [DMF/Common]	Description of the File This is the description of the file.	Free Text	1
`linkage` [DMF/Specific]	Link to browse graphic Link to browse graphic.	URL	0..1

5.4.2.3 Citation

The properties of Citation are listed below.

Identifier	Title / Description	Value Domain	Card

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

5.4.2.4 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 of product specification or user requirement against which the data are being evaluated. The referenceDate is mandatory.	Citation	1

5.4.2.5 Controlled Vocabulary

The properties of Controlled Vocabulary are listed below.

Identifier	Title / Description	Value Domain	Card
`keyword` [DMF/Core]	Keyword Commonly used word(s) or formalised word(s) or phrase(s) used to describe the subject	String or Anchor	1..*
`thesaurus` [DMF/Core]	Thesaurus Citation of the formally registered thesaurus or a similar authoritative source of keywords. The referenceDate is mandatory. It is strongly recommended to use keywords from an identified thesaurus.	Citation	0..1

Identifier	Title / Description	Value Domain	Card
type [DMF/Core]	Type Subject matter used to group similar keywords	Keyword Type Codelist	0..1

5.4.2.6 Coverage Content Information

A coverage is the distribution of a set of properties (or ranges) on a spatiotemporal domain. When the content type of the coverage is image, there is an implicit interdependency between the coverage properties. Typically, the color of an RGB image cell is the combination of the values of the red, green and blue properties. When the content type of the coverage is physical measurement or classifications, there is barely this kind of interdependency between the different properties even if each property contributes to the definition of the cell range. When the content type is mixed, there is no explicit interdependency but they may exist implicitly (a classification range can be combined with red, green, and blue ranges).

Special Cells may be used to:

- provide a meaning to a full cell sample, typically to define the red, green, and blue values of the "transparent" pixel of an RGB image, and more generally to the values of an interdependent set of properties.
- provide a meaning to values of a single range, typically when the content type of the coverage is not image.

In the first case, the record implementing the Special Cell Value shall provide a value for each of the interdependent range elements, e.g. a value for each of the red, green, and blue bands of an RGB image. There isn't necessarily a special cell defined for each of the coverage cells (i.e. for each combination of red, green, and blue in the image) since the intent is to provide a meaning to some specific cells.

In the second case, the Special Cell Value only provides a name, definition for a single value of only one of the range elements. Each record implementing a Special Cell Value provides a value for only one of the range elements. For a given range, there is either no special cells (because there is no predefined domain of value) typically when the range contains a measurement, or a special cell for each value of the range in order to fully document its domain of value.

In mixed coverage, the two types of special cells may occur depending on the interdependency of the ranges.

The properties of Coverage Content Information are listed below.

Identifier	Title / Description	Value Domain	Card
contentType [DMF/Data]	Content Type Type of information represented by the cell value.	Coverage Content Type Codelist	1
range [DMF/Data]	Range Information on the range of the cell measurement value.	Range	0..*
specialCell [DMF/Specific]	Special Cell Cell playing a specific role (e.g. no data or cloud) in the coverage. When the content type of the coverage is a thematic Classification, each thematic class is represented by a special cell.	Special Cell Values	0..*
imagingCondition [DMF/Sensor]	Imaging Condition Conditions affecting the image.	Imaging Condition Codelist	0..1

Identifier	Title / Description	Value Domain	Card
	Note: if multiple reasons for bad condition exist, use the worst case.		

5.4.2.7 Coverage Result

See example of coverage results in Annex H.3.

The properties of Coverage Result are listed below.

Identifier	Title / Description	Value Domain	Card
`format` [DMF/Data+]	Format Format of the coverage result.	Format	1
`geometry` [DMF/Data+]	Geometry Type of geometry of a resulting vector coverage. *Constraints:* • *When the coverage has a vector geometry*	Vector Geometry Codelist	0..1
`gridRep` [DMF/Data+]	Spatial Representation of the Grid Spatial representation of a resulting georectified grid coverage. *Constraints:* • *When the coverage is a georectified grid.*	Georectified Grid Spatial Representation	0..1
`content` [DMF/Data+]	Content Description of the content of the resulting coverage.	Coverage Content Information	1
`file` [DMF/Data+]	File Information about the data file containing the coverage result.	Support File	1

5.4.2.8 Dimension

The properties of Dimension are listed below.

Identifier	Title / Description	Value Domain	Card
`dimensionName` [DMF/Data]	Dimension Name Name of the dimension.	Dimension Name Codelist	1
`dimensionSize` [DMF/Data]	Dimension Size Size (number of elements) along the dimension axis.	Integer	1
`resolution` [DMF/Data]	Resolution Degree of detail of the axis.	Distance	0..1

5.4.2.9 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

5.4.2.10 Extent

The properties of Extent 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:* • *One of temporalExtent, geogId, boundingBox, boundingPolygon or verticalExtent is mandatory*	Identifier	0..*
`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 intented 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 nodata: it is possible to have several polygons to indicate holes or void areas. But in DMF, we made the choice 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

5.4.2.11 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	Citation	1..*

Identifier	Title / Description	Value Domain	Card
	mandatory.		
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
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..*

5.4.2.12 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

5.4.2.13 Free Text

The properties of Free Text are listed below.

Identifier	Title / Description	Value Domain	Card
value [DMF/Core]	Free Text Value This is the nominal value of the free text metadata element. It is a simple String expressed in the Metadata Default Locale (See MDDLOC).	String	1
translation [DMF/Core]	Free Text Translation This is the translation of the nominal value in a locale.	Translation	0..*

5.4.2.14 Geographic Box

Note: North/South and East/West coordinates should not be equal. If the data are a point or a line, please provide 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. By the way, it needs to be standardized and that is why it must be expressed 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

5.4.2.15 Geometric Objects

The properties of Geometric Objects are listed below.

Identifier	Title / Description	Value Domain	Card
`objectType` [DMF/Data]	Type of the geometric object Type of the geometric object.	Geometric Object Type Codelist	1
`objectCount` [DMF/Data]	Count of the geometric objects Count of the geometric objects.	Integer	0..1

5.4.2.16 Georectified Grid Spatial Representation

The properties of Georectified Grid Spatial Representation are listed below.

Identifier	Title / Description	Value Domain	Card
`axisDimProp` [DMF/Data]	Axis Dimension Properties Properties of each dimension axis.	Dimension	1..*
`cellGeom` [DMF/Data]	Cell Geometry Identification of grid data as point or cell.	Cell Geometry Codelist	1
`transParamAvailability` [DMF/Data]	Transformation Parameter Availability Indication of whether or not parameters for transformation between image coordinates and geographic or map coordinates exist (are available).	Boolean Default is **true**	1
`gridLocation` [DMF/Data]	Grid Location CornerPoints and associated crs of the grid spatial representation.	GridLocation	0..1

5.4.2.17 Georeferenceable Grid Spatial Representation

The properties of Georeferenceable Grid Spatial Representation are listed below.

Identifier	Title / Description	Value Domain	Card
`axisDimensionsProperties` [DMF/Sensor]	Axis Dimension Properties Properties of each dimension axis.	Dimension	1..*
`cellGeom` [DMF/Sensor]	Cell Geometry Identification of grid data as point or cell.	Cell Geometry Codelist	1
`transParamAvailability` [DMF/Sensor]	Transformation Parameter Availability Indication of whether or not parameters for transformation between image coordinates and geographic or map coordinates exist (are available).	Boolean Default is **false**	1
`controlPointAvailability` [DMF/Sensor]	Control Point Availability Indication of whether or not control point(s) exists.	Boolean Default is **false**	1
`orientationParameterAvailability` [DMF/Sensor]	Orientation Parameter Availability Indication of whether or not orientation parameters are available.	Boolean Default is **true**	1
`georefParam` [DMF/Sensor]	GeoreferencingParameters Geometric acquisition parameters which could be used to support grid data georeferencing. Note: The intent is not to enable geopositionning of pixel, but to enable discovery of imagery data on the basis of acquisition information.	Georeferencing Parameters	1

5.4.2.18 Georeferencing Parameters

The properties of Georeferencing Parameters are listed below. The intent is not to enable geopositionning of pixel but to enable discovery of imagery data, on the basis on acquisition information.

Identifier	Title / Description	Value Domain	Card
`azimuth` [DMF/Sensor]	Instrument Azimuth Horizontal angle to the measuring instrument counted counterclockwise from North (source ISO 19159-1). It is expressed in decimal degrees. Note: This angle should be measured at the center of the image. *Constraints:* • *mandatory for radar*	Float 0…360	0..1
`elevationAngle` [DMF/Sensor]	Instrument Elevation Elevation angle between the horizontal plane and the line of sight, measured in the vertical plane. Note: This angle should be measured at the center of the image. *Constraints:*	Float -90..90	0..1

Identifier	Title / Description	Value Domain	Card
	• *mandatory for radar*		
sensLat [DMF/Sensor]	Sensor latitude Sensor latitude in WGS84 horizontal datum, expressed in decimal degrees.	Float -90…+90	0..1
sensLong [DMF/Sensor]	Sensor longitude Sensor longitude in WGS84 horizontal datum, expressed in decimal degrees.	Float -180…+180	0..1
sensHeight [DMF/Sensor]	Sensor height Sensor height above WGS84 ellipsoid, expressed in meters.	Float	0..1
geoposModelType [DMF/Sensor]	Geopositioning Model Type Type of geopositioning model.	Geopositioning Model Type Codelist	1
calFocalLength [DMF/Sensor]	Calibrated Focal Length Distance between the perspective centre and the image plane that is the result of balancing positive and negative radial lens distortions during sensor calibration (source ISO 19130). It is expressed in millimeters. *Constraints:* • *Only applicable to electro optical sensors*	Float	0..1
horFoV [DMF/Sensor]	Horizontal field of view Instantaneous region seen by a sensor, provided in angular measure (source ISO 19130-2).	Float	0..1

5.4.2.19 GridLocation

The properties of GridLocation are listed below.

Identifier	Title / Description	Value Domain	Card
cornerPoints [DMF/Data]	Corner Points Earth location of the cells at opposite ends of grid coverage along two diagonals in the grid spatial dimensions, in the coordinate system defined by the Spatial Reference System and the grid coordinate. There are four corner points in a georectified grid; at least two corner points along one diagonal are required. The first corner point corresponds to the origin of the grid. The coordinates corresponds to the centre of the pixel. The grid coordinate of any node P is noted P.indice[i] along the axis number i (i goes from 1 to the number of axisDimension properties). P.indice[i] goes from 1 to axisDimensionProperties[i].dimensionSize. When the orientation of the geographic coordinate axis matches the orientation of the grid axis, a single corner Point P1 can be expressed. The geographic coordinates of any node P follows this formula P.coordinate[i] = P1.coordinate[i] + axisDimensionProperties[i].resolution * (indice[i]-1). When the axis orientation does not match, 2 corner points are needed the formula becomes: P.coordinate[i] = (P1.coordinate[i] * (axisDimensionProperties[i].dimensionSize - indice[i]) + (indice[i]-1) * P2.coordinate[i]) /	Point	1..2

Identifier	Title / Description	Value Domain	Card
	(axisDimensionProperties[i].dimensionSize-1)		
crs [DMF/Data]	CRS of the corner points CRS of the corner points expressed as a URI. Example: http://www.opengis.net/def/crs/EPSG/0/4326	URI	1

5.4.2.20 Identifier

The properties of Identifier are listed below.

Identifier	Title / Description	Value Domain	Card
code [DMF/Core]	Code Alphanumeric value identifying an instance either universally or within in the namespace. Note: For CRS, use URIs.	String or Anchor	1
namespace [DMF/Core]	Namespace Namespace of the code.	String, Anchor or Free Text	0..1
description [DMF/Specific]	Description Natural language description of the meaning of the code value. e.g. for CRS description = WGS-84	String	0..1

5.4.2.21 Instrument

The properties of Instrument are listed below.

Identifier	Title / Description	Value Domain	Card
instrumentId [DMF/Sensor]	Identifier of the instrument Identifier of the instrument.	Identifier	1
instrumentType [DMF/Sensor]	Type of the instrument Name of the type of instrument Note: To facilitate queries this should be duplicated within Keywords (RSKWDS)	Sensor Type Codelist	1
instrumentDesc [DMF/Sensor]	Description of the instrument Textual description of the instrument.	String	0..1
sarColMode [DMF/Sensor]	Collection Mode collection mode for SAR / INSAR. *Constraints:* • *Only applicable to radar.* • *Because of implementation issues, this element can only be used with a Georeferenceable Grid Spatial Representation.*	SAR Collection Mode Codelist	0..1

5.4.2.22 Interval Length

The properties of Interval Length are listed below.

Identifier	Title / Description	Value Domain	Card
value [DMF/Common]	Interval Value length of the time interval as an integer multiple of one	Integer	1

Identifier	Title / Description	Value Domain	Card
	10 (-factor) of the specified unit.		
unit [DMF/Common]	Interval Unit name of the unit of measure used to express the length of the interval.	Unit of Measure Codelist	1
factor [DMF/Common]	Unit factor integer that is the exponent of 10.	Integer Default is **1**	1

5.4.2.23 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..*

5.4.2.24 Locale

The properties of Locale are listed below. Note: The term 'locale' is used here in analogy with ISO 19115, even if there is no effective localisation (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

5.4.2.25 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

5.4.2.26 Medium

The properties of Medium 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 [DMF/Data]	Volume This is the number of items in the medium identified.	Integer	0..1

5.4.2.27 Meteorological Condition

The properties of Meteorological Condition are listed below.

Identifier	Title / Description	Value Domain	Card
avAirTemp [DMF/Sensor]	Average Air Temperature Average air temperature at flight level along the flight path during the data acquisition.	Float	1
maxRelHum [DMF/Sensor]	Maximum Relative Humidity Maximum relative humidity at flight level along the flight path during the data acquisition.	Float	1
maxAlt [DMF/Sensor]	Maximum Altitude Maximum altitude above mean sea level during the data acquisition (used to define pressure conditions).	Float	1
metCond [DMF/Sensor]	Supplemental meteorological conditions Meteorological conditions in the data acquisition area, in particular clouds, snow and wind.	String	1

5.4.2.28 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

5.4.2.29 Parent Metadata Reference

The properties of Parent Metadata Reference are listed below.

Identifier	Title / Description	Value Domain	Card
mdIdentifier [DMF/Common]	Parent Metadata Set Identifier Identifies the metadata set identifier of a resource to which this resource is a subset (child). *Constraints:* • *This element is not applicable to services.* • *It is mandatory if an upper-level hierarchy exists, typically if a dataset pertains to a dataset series.*	String It is strongly recommended to provide a unique identifier (e.g. UUID or URI) or a locator (e.g. URL). The value shall be the identifier of an existing metadata set.	1
mdLink [DMF/Data+]	Parent Metadata Set Link Online location to the metadata set of a resource to which this resource is a subset (child).	URL	0..1

5.4.2.30 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

Identifier	Title / Description	Value Domain	Card
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
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..*

5.4.2.31 Patch

The properties of Patch are listed below.

Identifier	Title / Description	Value Domain	Card
point [DMF/Core]	Point These are the points describing the polygon. They are ordered. The last point is different from the first point. *Constraints:* • *Points should be 2-dimensional coordinates.*	Point	3..*

5.4.2.32 Platform

The properties of Platform are listed below.

Identifier	Title / Description	Value Domain	Card
platformId [DMF/Sensor]	Identifier of the platform Identifier of the platform.	Identifier	1
platformDesc [DMF/Sensor]	Description of the platform Textual description of the platform.	String	0..1

5.4.2.33 Point

The properties of Point are listed below.

Identifier	Title / Description	Value Domain	Card
coordinate [DMF/Core]	Coordinates of the point This metadata expresses the coordinates of the point. The dimension of the coordinates depends on the reference system used.	Float	2..*

5.4.2.34 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

5.4.2.35 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
processor [DMF/Common]	Process Step Party This element describes the Party who has processed the step.	Responsible Party	0..*

5.4.2.36 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

5.4.2.37 Range

The properties of Range are listed below.

Identifier	Title / Description	Value Domain	Card
identifier [DMF/Data]	Identifier	String	1

Identifier	Title / Description	Value Domain	Card
	Number that uniquely identifies instances of bands of wavelengths on which a sensor operates.		
`type` [DMF/Data]	Type Description of the type of a cell measurement value.	Type Codelist	1
`descriptor` [DMF/Data]	Descriptor Description of the range of a cell measurement value.	Free Text	0..1
`maxValue` [DMF/Data]	Maximum Value Longest wavelength that the sensor is capable of collecting within a designated band.	Float	0..1
`minValue` [DMF/Data]	Minimum Value Shortest wavelength that the sensor is capable of collecting within a designated band.	Float	0..1
`units` [DMF/Data]	Units Units in which sensor wavelengths are expressed. *Constraints:* • *It is mandatory if maxValue or minValue are provided.* • *The codelist value shall correspond to a unit of length*	Unit of Measure Codelist	0..1
`bitsPerValue` [DMF/Data]	Bits Per Value Maximum number of significant bits in the uncompressed representation for the value in each band of each pixel.	Integer	0..1
`transPolarisation` [DMF/Sensor]	transmitted polarisation polarization of the radiation transmitted Note: for HH polarization, for example, please select horizontal both for the transPolarisation and for the detPolarisation attibute.	Polarisation Codelist	0..1
`detPolarisation` [DMF/Sensor]	detected polarisation polarization of the radiation detected Note: for HH polarization, for example, please select horizontal both for the transPolarisation and for the detPolarisation attibute.	Polarisation Codelist	0..1

5.4.2.38 Record

The properties of Record are listed below.

Identifier	Title / Description	Value Domain	Card
`property` [DMF/Specific]	A Record is a mean to express value according to a complex structure from various type. Each part of record is stored in a "property" element.	Record Property	1..*

5.4.2.39 Record Property

The properties of Record Property are listed below.

Identifier	Title / Description	Value Domain	Card
name [DMF/Specific]	Name of the property	String	1
value [DMF/Specific]	Value for the property. This element can be of any AbstractObject element. For examples, see DGIWG Metadata Guidelines Document. The type depends on the type of the property, see 6.2.4.4	Any	1

5.4.2.40 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

5.4.2.41 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
covResult	Coverage Result	Coverage Result	0..1

Identifier	Title / Description	Value Domain	Card
[DMF/Data+]	The result of the quality evaluation is provided as a coverage.		

5.4.2.42 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
`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..*

5.4.2.43 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. This element is used to give a general overview of the resolution of the data. If more accurate resolution elements are needed they can be encoded as quality results. *Constraints:*	Distance	0..1

Identifier	Title / Description	Value Domain	Card
	• *It is mandatory to provide one of equivalentScale, distance, vertical or levelOfDetail.*		
`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:* • *It is mandatory to provide one of equivalentScale, distance, vertical or levelOfDetail.*	Free Text	0..1

5.4.2.44 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

5.4.2.45 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 level 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 prerequisites for obtaining and using the resource or metadata.	Free Text	0..1
`handling`	Handling Description	Free Text	0..1

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

5.4.2.46 Service Coupling

The properties of Service Coupling are listed below.

Identifier	Title / Description	Value Domain	Card
operationName [DMF/Services]	Operation Name Name of the operation.	String	1
identifier [DMF/Services]	Identifier Identifier of the tightly coupled dataset.	String	1
scope [DMF/Services]	Scope Scope of the coupling (e.g. name of the WMS layer in which the coupled data are provided when a GetMap operation is called). *Constraints:* • *Anchor complex type is not allowed for scope.code and scope.namespace which are necessarily implemented as String*	Identifier	0..1

5.4.2.47 Service Operation

Here are the properties of Service Operation.

Identifier	Title / Description	Value Domain	Card
name [DMF/Services]	Name of the service operation Name of the operation.	String Default is **unknown**	1
platform [DMF/Services]	Platform of the service operation Distributed computing Platform.	Distributed Computing Platform Codelist Default is **WebServices**	1..*
connectPoint [DMF/Services]	Connect point Handle for accessing the service interface.	Online Location Default value: one instance of RSONLLC	1..*

5.4.2.48 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,	Free Text	0..1

Identifier	Title / Description	Value Domain	Card
	enabling a loose reference to the source. *Constraints:* • *=CONCATENER("Mandatory if an ";B250;" is not provided.")*		
extent [DMF/Common]	Extent of the Source This is the spatial extent covered by the source within the current set of data. *Constraints:* • *=CONCATENER("Mandatory if a ";B249;" 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
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

5.4.2.49 Special Cell Values

The properties of Special Cell Values are listed below.

Identifier	Title / Description	Value Domain	Card
name [DMF/Specific]	Name of the Special Cell Name identifying the special cell.	String	1
definition [DMF/Specific]	Definition of the Special Cell Full description of the specific meaning or intended use of the special cell.	Free Text	1
cellValue [DMF/Specific]	Cell Value Values of the attributes of the cell.	Record	1..*

5.4.2.50 Support File

The properties of Support File are listed below.

Identifier	Title / Description	Value Domain	Card
name [DMF/Common]	Name of the File This is the name of the file.	String, URI or Anchor	1
description [DMF/Common]	Description of the File This is the description of the file.	Free Text	1

5.4.2.51 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

5.4.2.52 Translation

The properties of Translation are listed below.

Identifier	Title / Description	Value Domain	Card
`translatedText` [DMF/Core]	Translated Text This is the translation of the nominal value.	String	1
`localeId` [DMF/Core]	Locale This is the identifier of locale in which the nominal value is translated. *Constraints:* • *This attribute should be implemented by reference, using the identifier of the Locale.*	String	1

5.4.2.53 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
`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	Conformance Result	0..1

Identifier	Title / Description	Value Domain	Card
	The result of the evaluation is reported as a conformance statement.		
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
covResult [DMF/Data+]	Coverage Result The result of the quality evaluation is provided as a coverage.	Coverage Result	0..1

5.4.2.54 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

The properties of Usage are listed below.

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 Limitation This metadata element identifies applications, determined by the user, for which the resource is not suitable.	Free Text	0..1
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

5.4.2.55 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	Integer	1

Identifier	Title / Description	Value Domain	Card
	minimum vertical value contained in the dataset. It is expressed in meters. The vertical datum is the WGS84 ellipsoid.		
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

5.5 Vocabularies

5.5.1 Boolean

The value domain of Boolean is defined in the following table.

#	Code	English Name	Definition
1	false	False	Value indicating that the relation of a proposition to truth is false.
2	true	True	Value indicating that the relation of a proposition to truth is true.

5.5.2 Cell Geometry Codelist

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

#	Code	English Name	Definition
1	point	Point Geometry	Each cell represents a point.
2	area	Area Geometry	Each cell represents an area.
3	voxel	voxel	each cell represents a volumetric measurement on a regular grid in three dimensional space
4	stratum	stratum	height range for a single point vertical profile

5.5.3 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

#	Code	English Name	Definition
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
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

5.5.4 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

#	Code	English Name	Definition
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

5.5.5 Coupling Type Codelist

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

#	Code	English Name	Definition
1	loose	Loose	service instance is loosely coupled with a data instance. This means that the service operates on unspecified datasets, i.e. no Resource Operated by the Service (SROPRS) can be described
2	mixed	Mixed	service instance is mixed coupled with a data instance, i.e. Resource Operated by the Service (SROPRS) describes the associated data instance and additionally the service instance might work with other external data instances
3	tight	Tight	service instance is tightly coupled with a data instance. This means that the service operates on specific datasets that are detailed in the metadata, i.e. Resource Operated by the Service (SROPRS) MUST be described

5.5.6 Coverage Content Type Codelist

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

#	Code	English Name	Definition
1	image	image	meaningful numerical representation of a physical parameter that is not the actual value of the physical parameter
2	thematicClassification	thematic classification	code value with no quantitative meaning, used to represent a physical quantity
3	physicalMeasurement	physical measurement	value in physical units of the quantity being measured
4	mixed	mixed	mixed content type
5	qualityInformation	qualityInformation	data used to characterize the quality of the physicalMeasurement coverages in the dataset. Typically included in a gmi:QE_CoverageResult.

5.5.7 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

#	Code	English Name	Definition
8	released	Released	the date that the resource shall be released for public access

5.5.8 Dimension Name Codelist

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

#	Code	English Name	Definition
1	row	Row	ordinate (y) axis
2	column	Column	abscissa (x) axis
3	vertical	Vertical	vertical (z) axis
4	track	Track	along the direction of motion of the scan point
5	crossTrack	CrossTrack	perpendicular to the direction of motion of the scan point
6	line	Line	scan line of a sensor
7	sample	Sample	element along a scan line
8	time	Time	duration

5.5.9 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

5.5.10 Distributed Computing Platform Codelist

The value domain of Distributed Computing Platform Codelist is defined in the following table.

#	Code	English Name	Definition
1	XML	XML	The Extensible Markup Language (XML) is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable.
2	CORBA	Corba	The Common Object Request Broker Architecture (CORBA) is a standard defined by the Object Management Group (OMG) that enables software components written in multiple computer languages and running on multiple computers to work together (i.e., it supports multiple platforms).
3	JAVA	Java	Java is a set of several computer software products and specifications that together provide a system for developing application software and deploying it in a cross-platform computing environment.

#	Code	English Name	Definition
4	COM	COM	The Component Object Model (COM) is a binary-interface standard for software componentry. It is used to enable interprocess communication and dynamic object creation in a large range of programming languages.
5	SQL	SQL	Structured Query Language (SQL) is a special-purpose programming language designed for managing data held in a relational database management system (RDBMS).
6	WebServices	Web services	A web service is a method of communication between two electronic devices over the World Wide Web.
7	SOAP	SOAP	Simple Object Access Protocol
8	Z3950	Z3950	ISO 23950
9	HTTP	HTTP	HyperText Transfer Protocol
10	FTP	FTP	File Transfer Protocol

5.5.11 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
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

5.5.12 Geometric Object Type Codelist

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

#	Code	English Name	Definition
1	complex	Complex	A set of geometric primitives such that their boundaries can be represented as a union of other primitives.
2	composite	Composite	A connected set of curves, solids and/or surfaces.
3	curve	Curve	A bounded, 1-dimensional geometric primitive, representing the continuous image of a line.
4	point	Point	A zero-dimensional geometric primitive, representing a position but not having an extent.
5	solid	Solid	A bounded, connected 3-dimensional geometric primitive, representing the continuous image of a region of space.
6	surface	Surface	A bounded, connected 2-dimensional geometric primitive, representing the continuous image of a region of a plane.

5.5.13 Geopositioning Level Codelist

The value domain of Geopositioning Level Codelist is defined in the following table. It also corresponds to Product Preprocessing Level, as specified by some major imagery data vendors.

#	Code	English Name	Definition
1	ungeoreferenced	Ungeoreferenced	No geographic location information is supplied. Examples: sketch or photo.
2	georeferenceable	Georeferenceable	Available with external geographic location information. Examples: "raw" image with auxiliary data like control points and/or sensor (geometric) model parameters.
3	l1a	GeoreferenceableL1A	- (for optical) Level 1A data have been corrected for detector radiometric variations within the sensor. Note: This processing level is the closest to the natural image acquired by the sensor, aimed at restoring perfect collection radiometric conditions. However, internal geometric distortion due to sensor persists within the image. - (for SAR) L1A or Single-look Complex Slant (SCS) products in slant range and zero Doppler projection.
4	l1b	GeoreferenceableL1B	- (for optical) Level 1B data have been corrected for predictable and measurable systematic distortions in the geometry of the imagery such as mis-aligned scan lines and non-uniform pixel sizes. (include same radiometric correction as L1A). Note: this level is also called “Primary”. This processing level is the closest to the natural image acquired by the sensor, aimed at restoring perfect collection conditions: the sensor is placed in rectilinear geometry, and the image is clear of all radiometric distortion. - (for SAR), Detected Ground Multilook (MDG) products, radiometrically equalized and in ground range/azimuth projection.
5	georectified	Georectified	Geocoded to include geographic location information in a given ellipsoid or datum. Examples: GeoTIFF image, terrain elevation model.
6	georectified1C	Georectified1C	(for SAR only) For CSK, Geocoded Ellipsoid Corrected (GEC) products: geo-located on the reference ellipsoid and represented in a uniform pre-selected cartographic presentation.
7	georectified2A	Georectified2A	(for optical) Radiometric correction identical to that of level 1A, geometrical

#	Code	English Name	Definition
			correction in a standard cartographic projection (UTM WGS84 by default), not tied to ground control points, at a given height (usually estimated average height on the area covered by image). Note: This product level is commonly called “Ortho ready” product.
8	georectified2B	Georectified2B	(for optical) In addition to above level 2A, use of ground control points in geometric correction.
9	orthorectified	Orthorectified	Georectified and corrected for positional displacement with respect to the surface of the earth using a Digital Terrain Model. Examples: orthophoto. Note: called Level 3 by some vendors. For SAR, this correspond to Level1D products (e.g. for CSK).
10	trueOrthorectified	True orthorectified	Orthorectified and corrected for positional displacement with respect to the geometric properties of the features, generally using a Digital Surface Model. Examples: an ortho image where pixels corresponding to bridges or buildings have been corrected to take into account the difference of elevation with the ground.

5.5.14 Geopositioning Model Type Codelist

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

#	Code	English Name	Definition
1	correspondenceM	Correspondence Model	functional relationship between ground and image coordinates based on the correlation between a set of ground control points and their corresponding image coordinates (source 19130)
2	trM	True Replacement Model	model using functions whose coefficients are based on a Physical Sensor Model (source 19130)
3	physicalM	Physical sensor model	sensor model based on the physical configuration of a sensing system (source 19130)
4	gridM	Grid Model	True Replacement Model based on grid interpolation (from 19130)

5.5.15 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
2	mapCoverage	Map Coverage	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 where marginalia have been cropped from the map to build a seamless mosaic of map sheets without the marginalia. Examples: scanned and Georeferenced topographic maps building a mosaic of more than one sheet
3	elevationModel	Elevation Model	Mathematical representation of heights of the terrain above or below a reference surface. Examples: TIN, DTED or LIDAR measurements
4	imageMap	Image Map	Overlay of annotations and rendered features in a specific transparent symbology to Orthorectified imagery
5	gazetteer	Gazetteer	geographical directory of information about places and place names

#	Code	English Name	Definition
6	rawImage	Raw Image	Matrix of pixel values as they are delivered as raw data from a sensor
7	imageCoverage	Image Coverage	Georectified image files seamlessly covering an area of interest
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., buildings may be represented by set of primitives and typically solids, describing their shape in more or less detail).

5.5.16 Imagery Association Codelist

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

#	Code	English Name	Definition
1	pair	Pair	Associated with one pair image
2	triplet	Triplet	Associated with 2 other images
3	n-upplet	n-upplet	Associated with n other images

5.5.17 Imaging Condition Codelist

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

#	Code	English Name	Definition
1	blurredImage	Blurred Image	portion of the image is blurred
2	cloud	Cloud	portion of the image is partially obscured by cloud cover
3	degradingObliquity	Degrading Obliquity	acute angle between the plane of the ecliptic (the plane of the Earth's orbit) and the plane of the celestial equator
4	fog	Fog	portion of the image is partially obscured by fog
5	heavySmokeOrDust	Heavy Smoke Or Dust	portion of the image is partially obscured by heavy smoke or dust
6	night	Night	image was taken at night
7	rain	Rain	image was taken during rainfall
8	semiDarkness	Semi Darkness	image was taken during semi-dark conditions—twilight conditions
9	shadow	Shadow	portion of the image is obscured by shadow
10	snow	Snow	portion of the image is obscured by snow
11	terrainMasking	Terrain Masking	the absence of collection data of a given point or area caused by the relative location of topographic features which obstruct the collection path between the collector(s) and the subject(s) of interest

5.5.18 Keyword Type Codelist

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

#	Code	English Name	Definition

#	Code	English Name	Definition
1	discipline	Discipline	keyword identifies a branch of instruction or specialized learning
2	place	Place	keyword identifies a location
3	stratum	Stratum	keyword identifies the layer(s) of any deposited substance
4	temporal	Temporal	keyword identifies a time period related to the dataset
5	theme	Theme	keyword identifies a particular subject or topic
6	instrument	Instrument	keyword identifies a device used to measure or compare physical properties
7	platform	Platform	keyword identifies a structure upon which an instrument is mounted
8	product	Product	keyword identifies a type of product
9	subTopicCategory	SubTopicCategory	refinement of a topic category for the purpose of geographic data classification

5.5.19 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 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.

#	Code	English Name	Definition
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.
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.

5.5.20 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
5	5quarterInchFloppy	5 Quarter Inch Floppy (obsolete)	5,25 inch magnetic disk

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

5.5.21 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

5.5.22 Polarisation Codelist

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

Note: Following ISO 19115-2, DMF defined 2 attribute (transPolarisation and setPolarization) for transmitted and detected polarisation. In order to provide HH, VV or mixte male, please select either the horizontal, or the vertical value of the codelist for both attibutes.

#	Code	English Name	Definition
1	horizontal	Horizontal polarization	Linear polarisation with the lone electric vector oriented in the horizontal direction in antenna co-ordinates. (earth.esa.int)
2	vertical	Vertical polarization	Linear polarisation with the lone electric vector oriented in the vertical direction in antenna co-ordinates.(earth.esa.int)
3	leftCircular	Left Circular	polarization of the sensor oriented in the left circular plane in relation to swath direction (cf. ISO 19115-2)
4	rightCircular	Right Circular	polarization of the sensor oriented in the right circular plane in relation to swath direction (cf. ISO 19115-2)

5.5.23 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
8	DQ_GriddedDataPositionalAccuracy	Gridded Data Positional Accuracy	closeness of gridded data position values to values accepted as or being true
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

5.5.24 Representation Form Codelist

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

#	Code	English Name	Definition
1	analogue	Analogue	Data represented as continuous values. The focus is hardcopy, i.e., permanent reproduction, or copy, in the form of a physical object, of any media suitable for direct use by a person (in particular paper), of displayed or transmitted data. Magnetic tapes and diskettes are not hard copies and may contain either analogue or digital data. Examples: analogue photography, paper map.
2	digital	Digital	Data represented as discrete (discontinuous) values. Examples: files in a designated geospatial format stored on a electro-magnetic or electro-optical device or transmitted through a computer network

5.5.25 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 behavior.
4	tile	Tile	spatial subset of geographic data. Many large remotely sensed datasets are split into 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.

5.5.26 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
2	patent	Patent	Government has granted exclusive right to make, sell, use or license an invention or discovery
3	patentPending	Patent Pending	Produced or sold information awaiting a patent
4	trademark	Trademark	A name, symbol, or other device identifying a product, officially registered and legally restricted to the use of the owner or manufacturer
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

5.5.27 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 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

5.5.28 SAR Collection Mode Codelist

The value domain of SAR Collection Mode Codelist is defined in the following table.

#	Code	English Name	Definition
1	spotlight	Spotlight	antenna is steered to keep approximately the same ground area illuminated by the beam (source 19130-2)
2	stripmap	Stripmap	beam sweeps a swath along a strip of terrain that is parallel to the path of motion (source 19130-2)
3	scan	Scan	beam is steered to illuminate a strip of terrain that can be at any angle with respect to the direction of motion (source 19130-2)
4	wideSwath	Wide swath	In the Wide Swath Mode, the ScanSAR technique is used, providing images of a wider strip with medium-resolution in HH or VV polarisation. The total swath consists of several (e.g five) subswaths and the ASAR transmits bursts of pulses to each of the subswaths in turn in such a way that a continuous along-track image is built up for each subswath. Note: For Interferometric ASAR only.
5	hugeRegion	Huge region	ScanSAR HUGE is one of the modes in which the COSMO-SkyMed SAR can operate, right and left looking acquisition.

5.5.29 Sensor Type Codelist

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

#	Code	English Name	Definition
1	Optical	Optical sensor	Passive optical sensor (visible or IR) that detects and collects energy from an independent source
2	ElectroOptical	Electro optical sensor	Passive electro-optical sensor (visible or IR) that detects and collects energy from an independent source
3	OpticalFrame	Electro optical sensor: Optical frame	Subclass of Electro optical sensor that detects and collects all of the data for an image (frame / rectangle) at an instant of time (from 19130)
4	OpticalPushbroom	Electro optical sensor: Optical pushbroom	Subclass of Electro optical sensor that collects a single cross-track image line at one time and constructs a larger image from a set of adjacent lines resulting from the along-track motion of the sensor (from 19130)
5	OpticalWhiskbroom	Electro optical sensor: Optical whiskbroom	Subclass of Electro optical sensor that sweeps a detector forming cross-track image line(s) and constructs a larger image from a set of adjacent lines using the along-track motion of the sensor's collection platform (source 19130)
6	Radar	Radar	Radio Detection and Ranging is an object-detection system that uses radio waves to determine the range, altitude, direction, and speed of objects (This code shall be only when the radar sensor type is not one of the types specified below.)
7	RadarSAR	Radar: SAR	Imaging radar system that simulates the use of a long physical antenna by collecting multiple returns from each target as the actual antenna moves along the track (source 19130) Note: SAR: Synthetic Aperture Radar
8	RadarInSAR	Radar: InSAR	Interferometric SAR that takes advantage of the coherence between the phases of two SAR scenes from the same satellite orbit/geometry. (from 19130-2)
9	RadarPolarimetric	Radar: Polarimetric	A radar which permits measurement of the full polarisation signature of every resolution element. (source earth.esa.int)

#	Code	English Name	Definition
10	RadarSLAR	Radar: SLAR	A high-resolution real aperture radar (RAR) having antennas aimed to the right or left of the flight path (source earth.esa.int)
11	Lidar	Lidar	Light detection and ranging system consisting of 1) a photon source (frequently, but not necessarily, a laser), 2) a photon detection system, 3) a timing circuit, and 4) optics for both the source and the receiver that uses emitted laser light to measure ranges to and/or properties of solid objects, gases, or particulates in the atmosphere (source 19130)
12	LidarRangeFinder	Lidar: Range finder	Range finders Lidars are used to measure the distance from the lidar sensor to a solid or hard target. (from 19130-2)
13	LidarDIAL	Lidar: DIAL	Differential Absorption lidar (DIAL), used to measure chemical concentrations (such as ozone, water vapour and pollutants) in the atmosphere. (from 19130-2)
14	LidarDoppler	Lidar: Doppler	Doppler lidar is used to measure the velocity of a target. (from 19130-2)
15	LidarMultipleReceiver	Lidar: Multiple receiver	Lidar using multiple receivers at different locations and triangulating the results allows accurate location of a target in three dimensions. (from 19130-2)
16	LidarFullWaveform	Lidar: Full waveform	Lidar Used for studies of soft targets. (from 19130-2)
17	Sonar	Sonar	Sound Navigation And Ranging. Sensor that uses sound navigation and ranging technology for sensing (from 19130-2)
18	SonarSingleBeam	Sonar: Single beam	Type of SONAR that produces one narrow SONAR beam directly beneath the transducer /receiver and receives a return echo from the closest object (source 19130-2)
19	SonarSweep	Sonar: Sweep Sonar	Type of sonar that has several single beam transducer /receivers mounted on a boom, which is then operated parallel to the water's surface and orthogonal to the vessel's direction of travel (source 19130-2)
20	SonarMultibeam	Sonar: Multibeam also called wideswath	Wide swath echo sounder for use in seabed mapping and surveying using the multi-beam principle (source 19130-2)
21	SonarSidescan	Sonar: Sidescan	Type of SONAR that transmits sound energy from the sides of a towfish, creating a fanlike beam on either side that sweeps the seafloor, and continuously records return signals, creating a "picture" of the seafloor and any other objects (source 19130-2)

5.5.30 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.

5.5.31 Spectral Mode Information Codelist

The value domain of Spectral Mode Information Codelist is defined in the following table.

#	Code	English Name	Definition
1	panchromatic	Panchromatic	One band
2	multi-spectral	Multi-spectral	From 2 to 16 bands
3	hyper-spectral	Hyper-spectral	From 16 bands

5.5.32 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
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 available yet
10	notReleasable	Not releasable	Data produced, but not releasable
11	superseded	superseded	replaced by new

5.5.33 Thematic Codelist

The value domain of Thematic Codelist is defined in the following table. This list of codes is derived form 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	This Subgroup consists of Concepts which support

#	Code	English Name	Definition
		Structures	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.
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.
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.

#	Code	English Name	Definition
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.
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.
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

#	Code	English Name	Definition
			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 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 describe 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 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.

#	Code	English Name	Definition
67	ClimateZonesRegions	Climate Zones and/or Regions	This Subgroup consists of Concepts describing climate zones and/or regions with special climate conditions.

5.5.34 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)
4	climatologyMeteorologyAtmosphere	Climatology, Meteorology and Atmosphere	processes and phenomena of the atmosphere (e.g., cloud cover, weather, climate, atmospheric conditions, climate change, precipitation)
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 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)
10	imageryBaseMapsEarthCover	Imagery Base Maps Earth Cover	base maps (e.g., land cover, topographic maps, imagery, unclassified images, annotations)
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,

#	Code	English Name	Definition
			excluding inland waters (e.g., tides, tidal waves, coastal information, reefs)
15	planningCadastre	Planning / Cadastre	information used for appropriate actions for future use of the land (e.g., land use maps, zoning maps, cadastral surveys, land ownership)
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 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)
20	disaster	Disaster	Information related to disasters Examples: site of the disaster, evacuation zone, disaster-prevention facility, disaster relief activities

5.5.35 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
3	planarGraph	Planar Graph	1-dimensional topological complex that is planar. A planar graph is a graph that can be drawn in a plane in such a way that no two edges intersect except at a vertex.
4	fullPlanarGraph	Full Planar Graph	2-dimensional topological complex that is planar (A 2-dimensional topological complex is commonly called "full topology" in a cartographic 2D environment)
5	surfaceGraph	Surface Graph	1-dimensional topological complex that is isomorphic to a subset of a surface. A geometric complex is isomorphic to a topological complex if their elements are in a one-to-one, dimensional- and boundary-preserving correspondence to one another.
6	fullSurfaceGraph	Full Surface Graph	2-dimensional topological complex that is isomorphic to a subset of a surface.
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.

5.5.36 Type Codelist

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

#	Code	English Name	Definition
1	integer	Integer	The attribute is of type integer.
2	real	Real	The attribute is of type real.
3	boolean	Boolean	The attribute is of type Boolean.
4	string	String	The attribute is of type string (monolingual character string).

5.5.37 Unit of Measure Codelist

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

#	Code	English Name	Definition
1	meter	Meter	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
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	squareMeter	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.

5.5.38 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.

6 Standard interchange of the DMF metadata elements

6.1 Requirements

This clause defines a standard-based mechanism to interchange the DMF Metadata Elements defined in clause 5. This mechanism is based on:

- a mapping between the DMF metadata elements and the geographic information metadata concepts defined by ISO standards.
- a standard rule-based XML Schema Implementation of the geographic information metadata concepts defined by ISO standards.

The ISO standards specifying the geographic information metadata concepts and their XML Schema implementation are evolving. A first generation of standards is currently in use (ISO 19115, ISO 19115-2, ISO 19119, ISO/TS 19139 and ISO/TS 19139-2) while a new generation of standards is emerging (revision of ISO 19115 / ISO 19157 and their standardised implementations).

As a consequence, the standard based mechanism to interchange DMF Metadata is replicated for both generations. Clause 6.2 presents the mapping and implementation according to the first generation of ISO standards, whereas Clause 6.3 deals with the new generation of ISO standards.

Req 13. A candidate DMF Metadata Set shall be composed of a set of well-formed XML Documents valid with respect to XML Schemas conformant to the standard encoding of the geographic information concepts defined by ISO (ISO/TS 19139 for the first generation of standards). These XML Documents shall also conform to one of the mappings between the DMF Metadata elements and the geographic information standards defined in clauses 6.2 and 6.3.

Req 14. A candidate Metadata Catalogue shall be able to input and/or output compliant DMF metadata sets.

The composition of a metadata set is directly dependent on the implemented metadata classes. The packaging of the metadata classes takes into account the modular definition of the geographic information metadata concepts in ISO standards. The mappings documented hereafter document the interchange of the full set of metadata elements (all metadata classes), but the application of these mappings to the DMF metadata elements involves only the geographic metadata standards listed in Clause 2 for each metadata class.

The interchange of the DMF Metadata Elements is also based on registers of metadata items, especially regarding codelists.

The implementation of the DMF Metadata elements implied specific constraints on the instantiation of the geographic information concepts. These specific constraints apply to the geographic information metadata concepts for the two generations of standards. They are documented as a numbered list of textual constraints.

Req 15. In order to meet the requirements expressed by a DMF Metadata Set, the XML Documents implementing a DMF metadata set shall meet the applicable DMF Specific Constraints.

6.2 Mapping between DMF Metadata Elements and the first generation of ISO standards

6.2.1 DMF Class 2 profile of the first generation of ISO Standards

According to ISO 19106, this clause is a class 2 profile of ISO 19115, ISO 19115-2, ISO 19119, ISO/TS 19139 and ISO/TS 19139-2. Annex C defines a DMF extension of ISO 19115. Annex D defines a NGMP extension of ISO 19115 applicable to DMF.

The standard interchange of the DMF Metadata Elements is based on a standard XML implementation of:

a) the conceptual schema defined by ISO 19115 as well as the part ISO/TS 19103, ISO 19107, ISO 19108 and ISO 19111 involved in the implementation of ISO 19115,

b) the conceptual schema of ISO 19115-2,

c) the conceptual schema of ISO 19119,

d) the conceptual schema extension of ISO 19115 defined in ISO/TS 19139, and,

e) the DMF and NGMP extensions of ISO 19115 defined in Annex C and Annex D

This Schema implementation is based on the encoding rules defined in ISO/TS 19139 and the resulting XML Schemas developed in compliance with ISO/TS 19139, ISO/TS 19139-2, CSW ISO AP developed by OGC and the XML Implementation of the DMF and NGMP extensions of ISO 19115 defined in Annex C and Annex D.

6.2.2 Detailed mapping

Description

The detailed mapping is presented as a set of template instances of the geographic information metadata classes. The template instance of a class is defined by a set of property instances. The description of each property instance is composed of:

- A plus (“+”) sign starting the description of the property instance;
- The property label as appearing in ISO 19115 UML Models (if the property label does not exist, (metadataElementTitle)) ;
- A presence requirement expressed with a cardinality statement between square brackets (“[...]”). This cardinality statement expresses DGIWG requirements which implies possible differences with the ISO 19115 cardinality;
- A colon (“:”);
- The property type name. The property type is implemented as a sub-element of the property. This sub-element can be an instance of the property type or an instance of one of its derived types. In the latter case, the derived type is either an ISO type or an extension type defined in a profile; and
- A property instance statement which describes how the property type is implemented.

Additional information is provided in a Note section, at the bottom of each table.

This hierarchical set of labels acts as an instance template. This template only shows the properties in the scope of DGIWG metadata elements, which encompass the mandatory properties of ISO 19115. The other optional properties of ISO 19115 are not described, but can be present in a real instance.

Additional properties defined in a profile of ISO 19115 compliant with DGIWG metadata can be expressed but are not documented here.

6.2.2.1 Resource Metadata Set

A Resource Metadata Set is an instance of the class MD_Metadata (from ISO 19115), the class MI_Metadata (from ISO 19115-2) or any community specialisation of one of these two classes.

This instance is composed at least of the following property instances:

+ fileIdentifier[0..1]:CharacterString	MDSID (when MDLINK is not set)
+ fileIdentifier[0..1]:Anchor	MDSID (when MDLINK is set)
+ href[0..1]:CharacterString	MDLINK
+ language[1]:LanguageCode	MDDLOC.language
+ characterSet[1]:MD_CharacterSetCode	MDDLOC.encoding - See Note 8
+ parentIdentifier[0..1]:CharacterString	MDPTMD.mdIdentifier (when MDPTMD.mdLink is not set)
+ parentIdentifier[0..1]:Anchor	MDPTMD.mdIdentifier (when MDPTMD.mdLink is set)
+ href[1]:CharacterString	MDPTMD.mdLink
+ hierarchyLevel[1]:MD_ScopeCode	RSTYPE - Default is **dataset**
+ hierarchyLevelName[0..1]:CharacterString	RSTYPN (when set) - See Note 6
+ contact[1..*]:CI_ResponsibleParty	MDRPTY (for each) - See Responsible Party and Note 7
+ dateStamp[1]:Date	MDDATE
+ metadataStandardName[1]:CharacterString	MDSTD.title - See Note 1
+ metadataStandardVersion[1]:CharacterString	MDSTD.version - See Note 1
+ locale[0..*]:PT_Locale	MDTLOC (for each) - See Locale
+ spatialRepresentationInfo[0..1]:MD_GridSpatialRepresentation	RCGRSPREP (when gridLocation is not set) - See Grid Spatial Representation
+ spatialRepresentationInfo[0..1]:MD_Georectified	RCGRSPREP (when gridLocation is set) - See Georectified Grid Parameters
+ spatialRepresentationInfo[0..1]:MD_Georeferenceable	RFGRSPREP (when set) - See Georeferenceable Grid
+ spatialRepresentationInfo[0..1]:MD_VectorSpatialRepresentation	When VCTOLVL is set
+ topologyLevel[0..1]:MD_TopologyLevelCode	VCTOLVL
+ geometricObjects[0..*]:MD_GeometricObjects	VGEOM (for each)
+ geometricObjectType[1]:MD_GeometricObjectTypeCode	objectType
+ geometricObjectCount[0..1]:Integer	objectCount
+ referenceSystemInfo[0..*]:MD_ReferenceSystem	For each RSRSYS
+ referenceSystemIdentifier[1]:RS_Identifier	RSRSYS - See Identifier
+ identificationInfo[1]:MD_DataIdentification	When RSTYPE is not equal to service - See Data Identification and Note 3
+ identificationInfo[1]:SV_ServiceIdentification	When RSTYPE is equal to service - See Service Identification and Note 3
+ distributionInfo[1]:MD_Distribution	See Distribution Information
+ contentInfo[0..1]:MD_FeatureCatalogueDescription	FCDESC (when set)
+ complianceCode[1]:Boolean	isoCompliance - Default is **false**
+ language[0..*]:LanguageCode	language (for each)
+ includedWithDataset[1]:Boolean	fcInclusion - Default is **false**
+ featureTypes[0..*]:GenericName	featureTypes (for each)
+ featureCatalogueCitation[1..*]:CI_Citation	citation (for each) - See Citation
+ contentInfo[0..1]:MI_CoverageDescription	GRCINF (when set) - See Coverage Description
+ contentInfo[0..1]:MD_ImageDescription	When imagingCondition is set
+ attributeDescription[1]:RecordType	**Record**
+ href[1]:CharacterString	**urn:dgiwg:xmlns:dmf:1.0:iso-g1:egco:Record** See Note 2
+ contentType[1]:MD_CoverageContentTypeCode	**qualityInformation**
+ imagingCondition[0..1]:MD_ImagingConditionCode	imagingCondition
+ dataQualityInfo[1]:DQ_DataQuality	See Quality Information
+ metadataConstraints[0..*]:MD_SecurityConstraints	MDSCST (for each) (when set) - See Security Constraints and Note 5
+ metadataConstraints[0..1]:NGMP_Constraints	When MDREL is set - See Notes 4, 5
+ releasability[1]:NGMP_Releasability	
+ addressee[0..*]:CI_ResponsibleParty	For each MDREL
+ organisationName[1]:CharacterString	MDREL
+ role[1]:gmd:CI_RoleCode	**user**
+ metadataConstraints[0..*]:MD_LegalConstraints	MDLCST (for each) (when set) - See Legal Constraints

+ metadataMaintenance[0..1]:MD_MaintenanceInformation	When MDMFRQ is set
+ maintenanceAndUpdateFrequency[1]:MD_MaintenanceFrequencyCode	MDMFRQ
+ acquisitionInformation[0..1]:MI_AcquisitionInformation	See Acquisition Information

Notes:

1. metadataStandardName (respectively metadataStandardVersion) shall contain DMF (respectively 2.0) or the name (respectively the version) of one of the DMF registered profiles, e.g. STANAG 2586 (respectively Edition 1).
2. xlink:href is instanciated as an XML attribute
3. If there is more than one instance of identificationInfo property, only the first one is taken into consideration.
4. If there is more than one instance of metadataConstraints property of type NGMP_Constraints (or one of its subclasses), only the first one is taken into consideration.
5. The security constraints may appear before or after the releasabilty constraints
6. When hierarchyLevel is not "dataset", hierarchyLevelName is mandated. If RSTYPN is not set, the hierarchyLevelName value is defaulted to the value of RSTYPE.
7. Default is "pointOfContact" for the role and "To be determined" for the party.orgName
8. Fixed to utf8.

6.2.2.2 Data Identification

A Data Identification is an instance of gmd:MD_DataIdentification or one of its subclasses.

Its property instances are described below:

+ citation[1]:CI_Citation	
+ title[1]:CharacterString	RSTITLE - Default is **To be determined**
+ alternateTitle[0..1]:CharacterString	RSALT (when set)
+ date[1..*]:CI_Date	RSDATE (for each) - See Note 1
+ date[1]:Date	date - Default is **9999**
+ dateType[1]:CI_DateTypeCode	type - Default is **publication**
+ edition[0..1]:CharacterString	RSED (when set)
+ editionDate[0..1]:Date	RSEDDAT (when set)
+ identifier[0..1]:RS_Identifier	When RSSHNA is set - See Note 2
+ code[1]:CharacterString	RSSHNA
+ codeSpace[1]:CharacterString	
+ identifier[0..*]:RS_Identifier	RSID (for each) - See Identifier and Note 2
+ series[0..1]:CI_Series	When RSSERI is set
+ name[1]:CharacterString	RSSERI
+ abstract[1]:CharacterString	RSABSTR - Default is **To be determined**
+ purpose[0..1]:CharacterString	RSPURP (when set)
+ status[0..1]:MD_ProgressCode	RSSTAT (when set)
+ pointOfContact[0..*]:CI_ResponsibleParty	RSRPTY (for each) - See Responsible Party
+ resourceMaintenance[0..1]:MD_MaintenanceInformation	RSMTNC (when set)
+ maintenanceAndUpdateFrequency[1]:MD_MaintenanceFrequencyCode	maintenanceFrequency - Default is **unknown**
+ dateOfNextUpdate[0..1]:Date	maintenanceDate
+ maintenanceNote[0..1]:CharacterString	maintenanceNote
+ graphicOverview[0..1]:MD_BrowseGraphic	When THUMB is set
+ fileName[1]:CharacterString	THUMB
+ fileDescription[1]:CharacterString	**thumbnail**
+ graphicOverview[0..*]:MD_BrowseGraphic	GPHICS (for each)
+ fileName[1]:CharacterString	name (when linkage is not set)
+ fileName[1]:Anchor	name (when linkage is set)
+ href[1]:CharacterString	linkage
+ fileDescription[1]:CharacterString	description
+ resourceFormat[0..1]:MD_Format	RSFMT (when set) - See Format
+ descriptiveKeywords[0..1]:MD_Keywords	When DGITYP is set - See Geospatial Information Type and Note 3
+ descriptiveKeywords[0..1]:MD_Keywords	When RSGFLV is set - See Resource Georeferencing Level and Note 3
+ descriptiveKeywords[0..1]:MD_Keywords	When RSPREF is set - See Resource Representation Form and Note 3
+ descriptiveKeywords[0..1]:MD_Keywords	When RSDTLVL is set - See Resource Data Level and Note 3
+ descriptiveKeywords[0..1]:MD_Keywords	When RSTHEME is set - See Resource Theme and Note 3
+ descriptiveKeywords[0..1]:MD_Keywords	When ASSOC is set - See Image Association Type and Note 3
+ descriptiveKeywords[0..1]:MD_Keywords	When SPECTMOD is set - See Spectral Mode and Note 3
+ descriptiveKeywords[0..*]:MD_Keywords	RSKWDS (for each) - See Resource Keyword Set and Note 3

+ resourceSpecificUsage[0..*]:MD_Usage	RSSPUS (for each)
+ specificUsage[1]:CharacterString	name
+ userDeterminedLimitations[0..1]:CharacterString	limitation (when set)
+ userContactInfo[1]:CI_ResponsibleParty	userContact - See Note 10
+ resourceConstraints[0..*]:MD_SecurityConstraints	RSSCST (when set) - See Security Constraints and Note 4
+ resourceConstraints[0..*]:NGMP_Constraints	RSREL (for each)
+ useLimitation[0..1]:CharacterString	statementExtension
+ releasability[1]:NGMP_Releasability	
+ addressee[0..*]:CI_ResponsibleParty	For each addressee
+ organisationName[1]:CharacterString	addressee
+ role[1]:CI_RoleCode	**user**
+ statement[1]:CharacterString	statement - See Note 9
+ statement[0..*]:CharacterString	disseminationConstraints (for each)
+ resourceConstraints[0..*]:MD_Constraints	For each RSUSE
+ useLimitation[1]:CharacterString	RSUSE
+ resourceConstraints[0..*]:MD_LegalConstraints	RSLCST (for each) - See Legal Constraints
+ spatialRepresentationType[0..1]:MD_SpatialRepresentationTypeCode	RSRPTP
+ spatialResolution[0..1]:MD_Resolution	RSSRES (for each) (when RSSRES.distance is set) - See Note 6
+ distance[1]:Distance	distance - See Note 8
+ spatialResolution[0..*]:MD_Resolution	RSSRES (for each) (when RSSRES.equivalentScale is set) - See Note 6
+ equivalentScale[1]:MD_RepresentativeFraction	
+ denominator[1]:Integer	equivalentScale
+ language[1]:LanguageCode	RSDLOC.language - See Note 7
+ language[0..*]:LanguageCode	RSTLOC.language (for each) (when RSTLOC is set)
+ characterSet[1..*]:MD_CharacterSetCode	RSDLOC.encoding
+ characterSet[1..*]:MD_CharacterSetCode	RSTLOC.encoding (for each) (when RSTLOC is set)
+ topicCategory[1..*]:MD_TopicCategoryCode	RSTOPIC (for each) - Default is **imageryBaseMapsEarthCover** - See Note 14
+ environmentDescription[0..1]:CharacterString	RSENVD
+ extent[0..*]:EX_Extent	RSEXT (for each) - See Extent and Note 5
+ extent[0..*]:EX_Extent	RSSRES (for each) (when RSSRES.levelOfDetail is set)
+ description[1]:CharacterString	levelOfDetail - See Note 11
+ extent[0..*]:EX_Extent	RSSRES (for each) (when RSSRES.vertical is set)
+ description[1]:CharacterString	vertical - See Note 12
+ extent[0..*]:EX_Extent	RSTRES (for each) (when set)
+ description[1]:CharacterString	**value &" 10^-"& factor & unit** See Note 13
+ supplementalInformation[0..1]:CharacterString	RSREM

Notes:

1. There may be many instances of the date property with different date types including publication, revision or creation. The order of these instances is not fixed.
2. There may be many instances of the identifier property corresponding to RSSHNA, RSID or identifiers out of DMF scope. The one corresponding to RSSHNA is the first one for which the codeSpace value matches RSSERI.
3. There may be many instances of the descriptiveKeywords property providing keywords from different thesauri. The order of these instances is not fixed.
4. There may be many instances of the resourceConstraints property. The order of these instances is not fixed.
5. Except for non-geographic data and loose services, one of boundingBox or geogId is mandatory.
6. There may be many instances of the spatialResolution property providing either equivalent scales or ground sample distances. The order of these instances is not fixed.
7. The language property can be defaulted to the value of the Metadata Language when the resource does not contain textual information.
8. Units of measures are implemented in the ISO metadata by reference to a unit of measure register. The URL of the reference can be derived from the codelist value of the DMF Property. See Additional Instructions
9. Default value for this element should be set by the implementer's security policy.
10. Default values are role=user and organisationName=undefined
11. Preceded by "Level of detail: "
12. Preceded by "Vertical resolution: ". Value and unit are concatenated. Eg: 'Vertical resolution: 2 m'.
13. Preceded by "Temporal resolution: ". Eg: 'Temporal resolution: 5 10-3s'
14. If TopicCategory is "disaster" it should be mapped to a keyword.

6.2.2.3 Service Identification

A Service Identification is an instance of srv:SV_ServiceIdentification or one of its subclasses.

Its property instances are described below:

+ citation[1]:CI_Citation	
+ title[1]:CharacterString	RSTITLE - Default is **To be determined**
+ alternateTitle[0..1]:CharacterString	RSALT (when set)
+ date[1..*]:CI_Date	RSDATE (for each) - See Note 1
+ date[1]:Date	date - Default is **9999**
+ dateType[1]:CI_DateTypeCode	type - Default is **publication**
+ edition[0..1]:CharacterString	RSED (when set)
+ editionDate[0..1]:CharacterString	RSEDDAT (when set)
+ identifier[0..*]:RS_Identifier	RSID (for each) - See Identifier
+ abstract[1]:CharacterString	RSABSTR - Default is **To be determined**
+ purpose[0..1]:CharacterString	RSPURP (when set)
+ status[0..1]:MD_ProgressCode	RSSTAT (when set)
+ pointOfContact[0..*]:CI_ResponsibleParty	RSRPTY (for each) - See Responsible Party
+ resourceMaintenance[0..1]:MD_MaintenanceInformation	RSMTNC (when maintenanceFrequency is set)
+ maintenanceAndUpdateFrequency[1]:MD_MaintenanceFrequencyCode	maintenanceFrequency - Default is **unknown**
+ dateOfNextUpdate[0..1]:Date	maintenanceDate
+ maintenanceNote[0..1]:CharacterString	maintenanceNote
+ graphicOverview[0..1]:MD_BrowseGraphic	When THUMB is set
+ fileName[1]:CharacterString	THUMB
+ fileDescription[0..1]:CharacterString	**thumbnail**
+ graphicOverview[0..*]:MD_BrowseGraphic	GPHICS (for each)
+ fileName[1]:CharacterString	name (when linkage is not set)
+ fileName[1]:Anchor	name (when linkage is set)
+ href[1]:CharacterString	linkage
+ fileDescription[0..1]:CharacterString	description
+ descriptiveKeywords[0..*]:MD_Keywords	RSKWDS (for each) - See Resource Keyword Set and Note 2
+ descriptiveKeywords[0..1]:MD_Keywords	When RSRPTP is set - See Resource Spatial Representation Type and Note 2
+ descriptiveKeywords[0..1]:MD_Keywords	When RSTOPIC is set - See Resource Topic Category and Note 2
+ resourceSpecificUsage[0..*]:MD_Usage	RSSPUS (for each)
+ specificUsage[1]:CharacterString	name
+ userDeterminedLimitations[0..1]:CharacterString	limitation (when set)
+ userContactInfo[1]:CI_ResponsibleParty	userContact - See Responsible Party and Note 10
+ resourceConstraints[0..*]:MD_SecurityConstraints	RSSCST (when set) - See Security Constraints and Note 3
+ resourceConstraints[0..*]:NGMP_Constraints	RSREL (for each)
+ useLimitation[0..1]:CharacterString	statementExtension
+ releasability[1]:NGMP_Releasability	
+ addressee[0..*]:CI_ResponsibleParty	For each addressee
+ organisationName[1]:CharacterString	addressee
+ role[1]:CI_RoleCode	**user**
+ statement[1]:CharacterString	statement - See Note 12
+ statement[0..*]:CharacterString	disseminationConstraints (for each)
+ resourceConstraints[0..*]:MD_Constraints	For each RSUSE
+ useLimitation[0..*]:CharacterString	RSUSE
+ resourceConstraints[0..*]:MD_LegalConstraints	RSLCST (for each) - See Legal Constraints
+ serviceType[1]:GenericName	SRTYPE - Default is **unknown**
+ serviceTypeVersion[1]:CharacterString	SRTVER - Default is **unknown**
+ extent[0..*]:EX_Extent	RSEXT (for each) - See Extent and Note 4
+ extent[0..*]:EX_Extent	RSSRES (when RSSRES.distance is set)
+ description[1]:CharacterString	distance - See Note 5
+ extent[0..*]:EX_Extent	RSSRES (when RSSRES.equivalentScale is set)
+ description[1]:CharacterString	equivalentScale - See Note 6
+ extent[0..*]:EX_Extent	RSSRES (when RSSRES.levelOfDetail is set)
+ description[1]:CharacterString	levelOfDetail - See Note 7
+ extent[0..*]:EX_Extent	RSSRES (when RSSRES.vertical is set)
+ description[1]:CharacterString	vertical - See Note 8
+ extent[0..*]:EX_Extent	RSTRES (for each) (when set)
+ description[1]:CharacterString	**value &" 10^-"& factor & unit** See Note 9
+ couplingType[1]:SV_CouplingType	SRCPLING - Default is **loose**
+ coupledResource[0..*]:SV_CoupledResource	SRCORS (for each)
+ operationName[1]:CharacterString	operationName
+ identifier[1]:CharacterString	identifier
+ ScopedName[0..1]:CodeType	scope - See Note 13
+ operatesOn[0..*]:MD_DataIdentification	SROPRS (for each) - See Note 9

+ containsOperations[1..*]:SV_OperationMetadata	SROPER (for each)
+ operationName[1]:CharacterString	name - Default is **unknown**
+ DCP[1..*]:DCPList	platform (for each) - Default is **WebServices**
+ connectPoint[1..*]:CI_OnlineResource	connectPoint (for each) - See Online Location and Note 11

Notes:

1. There may be many instances of the date property with different date types including publication, revision or creation. The order of these instances is not fixed.
2. There may be many instances of the descriptiveKeywords property providing keywords from different thesaurus. The order of these instances is not fixed.
3. There may be many instances of the resourceConstraints property. The order of these instances is not fixed.
4. Except for non-geographic data and loose services, one of boundingBox and geogId is mandatory. Each boundingBox corresponds to a dataset subregion which implies that each boundingBox should be implemented as an instance of the extent property, possibly with the instances of geogId and boundingPolygon corresponding to the same subregion. For the same reasons, each boundingPolygon should be implemented as an instance of the extent property.
5. Preceded by "Ground sample distance: ", value and unit separated by a blank.
6. Preceded by "Equivalent scale: "
7. Preceded by "Level of detail: "
8. Preceded by "Vertical resolution: "
9. Preceded by "Temporal resolution: "
10. Default values are role=user and organisationName=undefined
11. The value may be defaulted to one instance of RSONLLC.
12. Default value for this element should be set by the implementer's security policy.
13. gco:ScopedName is implemented as an XML global element of type gml:CodeType. The suggested Path is expressed with respect to the conceptual model, but there is no gml:CodeType element in the XML. scope.code and scope.namespace are respectively implemented in XML as the value of gco:ScopedName and the value of its codeSpace attribute

6.2.2.4 Extent

A Extent is an instance of gmd:EX_Extent or one of its subclasses.

Its property instances are described below:

+ description[0..1]:CharacterString	description
+ geographicElement[0..*]:EX_GeographicBoundingBox	boundingBox - See Note 1
+ westBoundLongitude[1]:Decimal	west - Default is **-180**
+ eastBoundLongitude[1]:Decimal	east - Default is **180**
+ southBoundLatitude[1]:Decimal	south - Default is **-90**
+ northBoundLatitude[1]:Decimal	north - Default is **90**
+ geographicElement[0..*]:EX_GeographicDescription	For each geogId
+ geographicIdentifier[1]:RS_Identifier	geogId - See Identifier and Note 2
+ geographicElement[0..1]:EX_BoundingPolygon	boundingPolygon - See Note 1
+ polygon[1]:GM_Surface	exterior
+ @srsName[1]:AnyURI	crs - See Note 5
+ temporalElement[0..*]:EX_TemporalExtent	For each temporalExtent - See Note 3
+ extent[1]:TM_Primitive	temporalExtent - See Note 4
+ verticalElement[0..1]:EX_VerticalExtent	verticalExtent
+ minimumValue[1]:Real	minz
+ maximumValue[1]:Real	maxz
+ verticalCRS[1]:SC_CRS	**http://www.opengis.net/def/crs/EPSG/0/4979**

Notes:

1. Each boundingBox corresponds to a dataset subregion which implies that each boundingBox should be implemented as an instance of the extent property, possibly with the instances of geogId and boundingPolygon corresponding to the same subregion. For similar reasons, each boundingPolygon should be implemented as an instance of the extent property.
2. By default, each geogId is implemented as a dedicated extent, but it is acceptable to group many geogId in a single extent possibly with other metadata elements (Integer, boundingPolygon, …)
3. There may be different instances of temporalElement defining the temporal extent of the resource. By default, they are in a single instance of extent, but they may also be in different instances of extent, one of them possibly handling the geographic bounding box.
4. Start and end properties of Temporal Extent are instantiated as TM_Instant. If both are defined, a TM_Period instance links the beginning and ending TM_Instant.
5. The srsName attribute is instantiated as an XML attribute.

6.2.2.5 Quality Information

A Quality Information is an instance of gmd:DQ_DataQuality or one of its subclasses.

Its property instances are described below:

+ scope[1]:DQ_Scope	
+ level[1]:MD_ScopeCode	RSTYPE - Default is **dataset**
+ levelDescription[0..1]:MD_ScopeDescription	When RSTYPE is not equal to dataset
+ other[1]:CharacterString	RSTYPN
+ extent[0]:EX_Extent	See Note 3
+ report[0..*]:DQ_Element	RSRQR (for each) (when set) - See Note 1
+ measureIdentification[1]:RS_Identifier	identifier - See Identifier
+ evaluationMethodDescription[0..1]:CharacterString	method
+ result[0..1]:DQ_ConformanceResult	cnfResult (when set) - See Conformance Result and Note 4
+ result[0..1]:DQ_QuantitativeResult	When descResult is set - See Descriptive Result and Note 4
+ result[0..1]:DQ_QuantitativeResult	qtyResult (when set) - See Quantitative Result and Note 4
+ result[0..1]:QE_CoverageResult	covResult (when set) - See Coverage Result and Note 4
+ report[0..*]:DQ_Element	RSUQR (for each) (when set) - See Note 1
+ nameOfMeasure[0..1]:CharacterString	measureName
+ measureDescription[0..1]:CharacterString	measureDescription
+ evaluationMethodDescription[0..1]:CharacterString	method
+ result[0..1]:DQ_ConformanceResult	cnfResult (when set) - See Conformance Result and Note 4
+ result[0..1]:DQ_QuantitativeResult	When descResult is set - See Descriptive Result and Note 4
+ result[0..1]:DQ_QuantitativeResult	qtyResult (when set) - See Quantitative Result and Note 4
+ result[0..1]:QE_CoverageResult	covResult (when set) - See Coverage Result and Note 4
+ report[0..*]:DQ_DomainConsistency	When SRSTD is set
+ nameOfMeasure[1]:CharacterString	**Service standard compliancy**
+ measureDescription[1]:CharacterString	**This describes the standard or profile the service is conformant to.**
+ result[1]:DQ_ConformanceResult	
+ specification[1]:CI_Citation	SRSTD - See Citation
+ explanation[1]:CharacterString	**Service standard**
+ pass[1]:Boolean	**true**
+ lineage[1]:LI_Lineage	
+ statement[1]:CharacterString	RSLING - Default is **To be determined**
+ processStep[0..*]:LI_ProcessStep	RSPRST (for each) (when set)
+ description[1]:CharacterString	description
+ rationale[0..1]:CharacterString	rationale
+ dateTime[0..1]:DateTime	date
+ processor[0..*]:CI_ResponsibleParty	processor - See Responsible Party
+ source[0..*]:LI_Source	RSSRC (for each) (when set)
+ description[0..1]:CharacterString	description (when sourceMetadata is not set)
+ description[0..1]:Anchor	description (when sourceMetadata is set)
+ href[1]:CharacterString	sourceMetadata
+ scaleDenominator[0..1]:MD_RepresentativeFraction	
+ denominator[1]:Integer	equivalentScale
+ sourceExtent[0..*]:EX_Extent	extent (for each) - See Extent
+ sourceCitation[0..1]:CI_Citation	citation (when set) - See Citation
+ resolution[0..1]:LE_NominalResolution	When distance is set
+ groundResolution[1]:Distance	distance - See Note 2
+ lineage[0..1]:LI_Lineage	When ACDATE is set
+ processStep[1]:LI_ProcessStep	
+ description[1]:CharacterString	**acquisition**
+ dateTime[0..1]:DateTime	ACDATE

Notes:

1. DQ_Element is an abstract class. It has to be instantiated through one of its concrete subclasses. The appropriate subclass depends on the quality criteria concerned by the quality measure. For the unspecified quality report, the value of RSUQR.qualityElement has to be used to declare the concrete subclass used (for exemple DQ_CompletenessOmission shall be used instead of DQ_Element, the default one is DQ_ConceptualConsistency). For regulated quality, the registered measures precise which data quality element is to be used.
2. Units of measures are implemented in the ISO metadata by reference to a unit of measure register. The URL of the reference can be derived from the codelist value of the DMF Property. See Additional Instructions
3. In DMF, the measure applies to the extent of the data so the "extent" element should not be instanciated.
4. There shall be one or two results. When there are two, there shall be at least one conformance result.

6.2.2.6 Conformance Result

A Conformance Result is an instance of gmd:DQ_ConformanceResult or one of its subclasses.

Its property instances are described below:

+ specification[1]:CI_Citation	specification - See Citation
+ explanation[1]:CharacterString	explanation - Default is **See the referenced specification**
+ pass[1]:Boolean	conformance

6.2.2.7 Descriptive Result

A Descriptive Result is an instance of gmd:DQ_QuantitativeResult or one of its subclasses.

Its property instances are described below:

+ valueType[1]:RecordType	**xs:string** See Note 1
+ valueUnit[1]:UnitOfMeasure	**unity**
+ value[1]:Record	descResult

Notes:

1. Can be defined as xs:string, gmx:Anchor or gmd;PT_FreeText depending on the type of result.

6.2.2.8 Quantitative Result

A Quantitative Result is an instance of gmd:DQ_QuantitativeResult or one of its subclasses.

Its property instances are described below:

+ valueType[1]:RecordType	See Note 1
+ valueUnit[1]:UnitOfMeasure	unit - See Note 2
+ value[1]:Record	result

Notes:

1. =CONCATENER("The value of the metadata element depends on the type of the DMF ";Requirements!B231;" property. The value of the metadata element is the name of the concept implementing this DMF type and the xlink:href shall refer to the XML Schema Implementation of the concept. See DGIWG Metadata Guidelines for examples.")
2. Units of measures are implemented in the ISO metadata by reference to a unit of measure register. The URL of the reference can be derived from the codelist value of the unit DMF Property. See Additional Instructions

6.2.2.9 Coverage Result

A Coverage Result is an instance of gmi:QE_CoverageResult or one of its subclasses.

Its property instances are described below:

+ spatialRepresentationType[0..1]:MD_SpatialRepresentationTypeCode	**vector** (when geometry is set)
+ spatialRepresentationType[0..1]:MD_SpatialRepresentationTypeCode	**grid** (when geometry is not set)
+ resultFile[1]:MX_DataFile	file
+ resultSpatialRepresentation[0..1]:MD_VectorSpatialRepresentation	When geometry is set
+ geometricObjects[0..1]:MD_GeometricObjects	
+ geometricObjectType[1]:MD_GeometricObjectTypeCode	geometry
+ resultSpatialRepresentation[0..1]:MD_GridSpatialRepresentation	gridRep (when gridLocation is not set) - See Grid Spatial Representation
+ resultSpatialRepresentation[0..1]:MD_Georectified	gridRep (when gridLocation is set) - See Georectified Grid Parameters
+ resultContentDescription[1]:MI_CoverageDescription	content - See Coverage Description
+ resultFormat[1]:MD_Format	format - See Format

6.2.2.10 Distribution Information

A Distribution Information is an instance of gmd:MD_Distribution or one of its subclasses.

Its property instances are described below:

+ distributionFormat[1..*]:MD_Format	RSDFMT (for each) - See Format
+ transferOptions[0..1]:MD_DigitalTransferOptions	See Note 1

+ unitsOfDistribution[0..1]:CharacterString	RSUD
+ transferSize[0..1]:Real	RSTS
+ onLine[0..*]:CI_OnlineResource	RSONLLC (for each) - See Online Location
+ transferOptions[0..*]:MD_DigitalTransferOptions	For each RSOFDM
+ offLine[0..1]:MD_Medium	RSOFDM (when set)
+ name[1]:MD_MediumNameCode	name
+ volumes[0..1]:Integer	volume

Notes:

1. By default, all instances of RSONLLC, RSUD and RSTS are provided in a single instance of gmd:transferOptions, but they may occur in different instances. If RSUD or RSTS is repeated, only the first occurrence is taken into account.

6.2.2.11 Online Location

An Online Location is an instance of gmd:CI_OnlineResource or one of its subclasses.

Its property instances are described below:

+ linkage[1]:URL	location
+ function[0..1]:CI_OnLineFunctionCode	function

6.2.2.12 Responsible Party

A Responsible Party is an instance of gmd:CI_ResponsibleParty or one of its subclasses.

Its property instances are described below:

+ individualName[0..1]:CharacterString	party.name (when set) - See Note 1
+ organisationName[0..1]:CharacterString	party.orgName (when set) - See Note 1
+ positionName[0..1]:CharacterString	party.position (when set) - See Note 1
+ contactInfo[0..1]:CI_Contact	
+ phone[0..1]:CI_Telephone	
+ voice[0..*]:CharacterString	party.phone (for each)
+ facsimile[0..*]:CharacterString	party.fax (for each)
+ address[0..1]:CI_Address	
+ deliveryPoint[0..*]:CharacterString	party.address (for each)
+ city[0..1]:CharacterString	party.city
+ administraiveArea[0..1]:CharacterString	party.administrativeArea
+ postalCode[0..1]:CharacterString	party.postalCode
+ country[0..1]:CharacterString	party.country
+ electronicMailAddress[0..*]:CharacterString	party.email (for each)
+ role[1]:CI_RoleCode	role

Notes:

1. At least one of party.name, party.orgName and party.position has to be provided for ISO compliance.

6.2.2.13 Geospatial Information Type

A Geospatial Information Type is an instance of gmd:MD_Keywords or one of its subclasses.

Its property instances are described below:

+ keyword[1]:NGMP_GeospatialInformationTypeCode	DGITYP
+ thesaurusName[1]:CI_Citation	
+ title[1]:CharacterString	**NGMP_GeospatialInformationTypeCode**
+ date[1]:CI_Date	
+ date[1]:Date	**2011-09-16**
+ dateType[1]:CI_DateTypeCode	**creation**

6.2.2.14 Resource Georeferencing Level

A Resource Georeferencing Level is an instance of gmd:MD_Keywords or one of its subclasses.

Its property instances are described below:

+ keyword[1]:NGMP_GeoreferencingLevelCode	RSGFLV
+ thesaurusName[1]:CI_Citation	
+ title[1]:CharacterString	**NGMP_GeoreferencingLevelCode**
+ date[1]:CI_Date	
+ date[1]:Date	**2011-09-16**
+ dateType[1]:CI_DateTypeCode	**creation**

6.2.2.15 Resource Representation Form

A Resource Representation Form is an instance of gmd:MD_Keywords or one of its subclasses.

Its property instances are described below:

+ keyword[1]:NGMP_RepresentationFormCode	RSPREF
+ thesaurusName[1]:CI_Citation	
+ title[1]:CharacterString	**NGMP_RepresentationFormCode**
+ date[1]:CI_Date	
+ date[1]:Date	**2011-09-16**
+ dateType[1]:CI_DateTypeCode	**creation**

6.2.2.16 Resource Data Level

A Resource Data Level is an instance of gmd:MD_Keywords or one of its subclasses.

Its property instances are described below:

+ keyword[1]:CharacterString	RSDTLVL
+ thesaurusName[1]:CI_Citation	
+ title[1]:CharacterString	**DataLevelCodeList** See Note 1
+ date[1]:CI_Date	
+ date[1]:Date	**2011-09-16**
+ dateType[1]:CI_DateTypeCode	**creation**

Notes:

1. If resource data level is implemented as a string please provide here any reference to document where levels are described.
2. Should be replaced by a reference to the list of value used.

6.2.2.17 Resource Theme

A Resource Theme is an instance of gmd:MD_Keywords or one of its subclasses.

Its property instances are described below:

+ keyword[1..*]:NGMP_ThematicCode	RSTHEME (for each)
+ thesaurusName[1]:CI_Citation	
+ title[1]:CharacterString	**NGMP_ThematicCode**
+ date[1]:CI_Date	
+ date[1]:Date	**2011-09-16**
+ dateType[1]:CI_DateTypeCode	**creation**

6.2.2.18 Image Association Type

A Image Association Type is an instance of gmd:MD_Keywords or one of its subclasses.

Its property instances are described below:

+ keyword[1]:CharacterString	ASSOC
+ thesaurusName[1]:CI_Citation	
+ title[1]:CharacterString	**Imagery Association Codelist**

+ date[1]:CI_Date	
+ date[1]:Date	**2016-02-04**
+ dateType[1]:CI_DateTypeCode	**creation**

6.2.2.19 Resource Spatial Representation Type

A Resource Spatial Representation Type is an instance of gmd:MD_Keywords or one of its subclasses.

Its property instances are described below:

+ keyword[1]:MD_SpatialRepresentationTypeCode	RSRPTP
+ thesaurusName[1]:CI_Citation	
+ title[1]:CharacterString	**Spatial Representation Type Codelist**
+ date[1]:CI_Date	
+ date[1]:Date	**2017-04-27**
+ dateType[1]:CI_DateTypeCode	**creation**

6.2.2.20 Spectral Mode

A Spectral Mode is an instance of gmd:MD_Keywords or one of its subclasses.

Its property instances are described below:

+ keyword[1]:CharacterString	SPECTMOD
+ thesaurusName[1]:CI_Citation	
+ title[1]:CharacterString	**Spectral Mode Codelist**
+ date[1]:CI_Date	
+ date[1]:Date	**2016-02-04**
+ dateType[1]:CI_DateTypeCode	**creation**

6.2.2.21 Resource Topic Category

A Resource Topic Category is an instance of gmd:MD_Keywords or one of its subclasses.

Its property instances are described below:

+ keyword[1..*]:MD_TopicCategoryCode	RSTOPIC (for each) - Default is **imageryBaseMapsEarthCover**
+ thesaurusName[1]:CI_Citation	
+ title[1]:CharacterString	**Topic Category Codelist**
+ date[1]:CI_Date	
+ date[1]:Date	**2017-04-27**
+ dateType[1]:CI_DateTypeCode	**creation**

6.2.2.22 Resource Keyword Set

Resource Keyword Set is implemented through a single instance of gmd:MD_Keywords or one of its subclasses.

Its property instances are described below:

+ keyword[1..*]:CharacterString	keyword (for each)
+ type[0..1]:MD_KeywordTypeCode	type
+ thesaurusName[0..1]:CI_Citation	thesaurus - See Citation

6.2.2.23 Legal Constraints

Each set of Legal Constraints is implemented through a single instance of gmd:MD_LegalConstraints or one of its subclasses.

Its property instances are described below:

+ useLimitation[0..*]:CharacterString	statement (for each)
+ accessConstraints[0..*]:MD_RestrictionCode	access (for each)
+ accessConstraints[0..1]:MD_RestrictionCode	**otherRestrictions** (when other is set)
+ useConstraints[0..*]:MD_RestrictionCode	use (for each)
+ useConstraints[0..1]:MD_RestrictionCode	**otherRestrictions** (when other is set)
+ otherConstraints[0..*]:CharacterString	other (for each)

6.2.2.24 Security Constraints

Each set of Security Constraints is implemented through a single instance of gmd:MD_SecurityConstraint or one of its subclasses.

Its property instances are described below:

+ useLimitation[0..*]:CharacterString	limitation (for each)
+ classification[1]:MD_ClassificationCode	level - Default is **unclassified** - See Note 1
+ userNote[0..1]:CharacterString	note
+ classificationSystem[0..1]:CharacterString	system
+ handlingDescription[0..1]:CharacterString	handling

Notes:

1. Or any other codelists if a different one is defined.

6.2.2.25 Citation

Each Citation is implemented through a single instance of gmd:CI_Citation or one of its subclasses.

To implement the location property of DMF Citation using ISO 19115:2003/19139, it is handled through an Anchor.reference.

Its property instances are described below:

+ title[1]:Anchor	title (when Citation.location is set)
+ href[1]:AnyURI	location
+ title[1]:CharacterString	title (when Citation.location is not set)
+ date[1..*]:CI_Date	referenceDate (for each)
+ date[1]:Date	date - Default is **9999**
+ dateType[1]:CI_DateTypeCode	type - Default is **publication**
+ edition[0..1]:CharacterString	version (when set)
+ identifier[0..*]:RS_Identifier	identifier (for each) - See Identifier
+ citedResponsibleParty[0..1]:CI_ResponsibleParty	citedParty (when set) - See Responsible Party

6.2.2.26 Format

Each Format is implemented through a single instance of gmd:MD_Format or one of its subclasses.

Its property instances are described below:

+ name[1]:CharacterString	citation.title
+ version[1]:CharacterString	citation.version
+ fileDecompressionTechnique[0..1]:CharacterString	decompression

6.2.2.27 Acquisition Information

Each Acquisition Information is implemented through a single instance of gmi:MI_AcquisitionInformation or one of its subclasses.

Its property instances are described below:

+ environmentalConditions[0..1]:MI_EnvironmentalRecord	ACMETCD (when set)
+ averageAirTemperature[1]:Real	avAirTemp
+ maxRelativeHumidity[1]:Real	maxRelHum
+ maxAltitude[1]:Real	maxAlt
+ meteorologicalConditions[1]:CharacterString	metCond
+ instrument[1..*]:MI_Instrument	ACINS (for each)
+ @id[1]:CharacterString	instrumentId.code
+ identifier[1]:RS_Identifier	instrumentId - See Identifier
+ type[1]:CharacterString	instrumentType
+ description[0..1]:CharacterString	instrumentDesc
+ platform[0..1]:MI_Platform	ACPLAT (when set)
+ identifier[1]:RS_Identifier	platformId - See Identifier
+ description[0..1]:CharacterString	platformDesc
+ instrument[1..*]:MI_Instrument	For each ACINS
+ href[1]:CharacterString	instrumentId.code

6.2.2.28 Coverage Description

Each Coverage Description is implemented through a single instance of gmi:MI_CoverageDescription or one of its subclasses.

Its property instances are described below:

+ attributeDescription[1]:RecordType	**Record** See Note 1
+ href[1]:CharacterString	**urn:dgiwg:xmlns:dmf:1.0:iso-g1:egco:Record** See Note 2
+ contentType[1]:MD_CoverageContentTypeCode	contentType
+ dimension[0..*]:MI_Band	range (for each)
+ sequenceIdentifier[1]:MemberName	
+ aName[1]:CharacterString	identifier
+ attributeType[1]:gcoName	type
+ descriptor[0..1]:CharacterString	descriptor
+ maxValue[0..1]:Real	maxValue
+ minValue[0..1]:Real	minValue
+ units[0..1]:UomLength	units
+ bitsPerValue[0..1]:Integer	bitsPerValue
+ transmittedPolarisation[0..1]:MI_PolarisationOrientationCode	transPolarisation
+ detectedPolarisation[0..1]:MI_PolarisationOrientationCode	detPolarisation
+ rangeElementDescription[0..*]:MI_RangeElementDescription	specialCell
+ name[1]:CharacterString	name
+ definition[1]:CharacterString	definition
+ rangeElement[1..*]:Record	cellValue (for each) - See Record

Notes:

1. DMF defines a default data type for the implementation of ISO Records: egco:Record. This ISO metadata element is by default referring to this default data type. This reference has no impact on the metadata class as long as there are no special cells in the description of the coverage.
2. xlink:href is instanciated as an XML attribute

6.2.2.29 Georectified Grid Parameters

Each set of Georectified Grid Parameters is implemented through a single instance of gmd:MD_Georectified or one of its subclasses.

Its property instances are described below:

+ numberOfDimensions[1]:Integer	**cardinality of axisDimProp**
+ axisDimensionProperties[1..*]:MD_Dimension	axisDimProp
+ dimensionName[1]:MD_DimensionNameTypeCode	dimensionName
+ dimensionSize[1]:Integer	dimensionSize
+ resolution[0..1]:Measure	resolution
+ cellGeometry[1]:MD_CellGeometryCode	cellGeom

+ transformationParameterAvailability[1]:Boolean	transParamAvailability - Default is **true**
+ checkPointAvailability[1]:Boolean	**false** (when gridLocation is set)
+ cornerPoints[1..2]:GM_Point	gridLocation.cornerPoints - See Note 1
+ pointInPixel[1]:MD_PixelOrientationCode	**center** (when gridLocation is set)

Notes:

1. The srsName attribute is instantiated using the crs element.

6.2.2.30 Grid Spatial Representation

Each set of Grid Spatial Representation is implemented through a single instance of gmd:MD_GridSpatialRepresentation or one of its subclasses.

Its property instances are described below:

+ numberOfDimensions[1]:Integer	**cardinality of axisDimProp**
+ axisDimensionProperties[1..*]:MD_Dimension	axisDimProp
+ dimensionName[1]:MD_DimensionNameTypeCode	dimensionName
+ dimensionSize[1]:Integer	dimensionSize
+ resolution[0..1]:Measure	resolution
+ cellGeometry[1]:MD_CellGeometryCode	cellGeom
+ transformationParameterAvailability[1]:Boolean	transParamAvailability - Default is **true**

6.2.2.31 Georeferenceable Grid

Each set of Georeferenceable Grid is implemented through a single instance of gmi:MI_Georeferenceable or one of its subclasses.

Its property instances are described below:

+ numberOfDimensions[1]:Integer	**cardinality of axisDimensionsProperties**
+ axisDimensionProperties[1..*]:MD_Dimension	axisDimensionsProperties
+ dimensionName[1]:MD_DimensionNameTypeCode	dimensionName
+ dimensionSize[1]:Integer	dimensionSize
+ resolution[0..1]:Measure	resolution
+ cellGeometry[1]:MD_CellGeometryCode	cellGeom
+ transformationParameterAvailability[1]:Boolean	transParamAvailability - Default is **false**
+ controlPointAvailability[1]:Boolean	controlPointAvailability - Default is **false**
+ orientationParameter Availability[1]:Boolean	orientationParameterAvailability - Default is **true**
+ georeferencedParameters[1]:Record	georefParam
+ property[0..1]:Quantity	SUNAZ (when set)
+ @name[1]:CharacterString	**Sun Azimuth** See Note 1
+ property[0..1]:Quantity	SUNEL (when set)
+ @name[1]:CharacterString	**Sun Elevation** See Note 1
+ property[0..1]:Quantity	azimuth (when set)
+ @name[1]:CharacterString	**Instrument Azimuth** See Note 1
+ property[0..1]:Quantity	elevationAngle (when set)
+ @name[1]:CharacterString	**Instrument Elevation** See Note 1
+ property[0..1]:Quantity	sensLat
+ @name[1]:CharacterString	**Sensor latitude** See Note 1
+ property[0..1]:Quantity	sensLong
+ @name[1]:CharacterString	**Sensor longitude** See Note 1
+ property[0..1]:Quantity	sensHeight
+ @name[1]:CharacterString	**Sensor height** See Note 1
+ property[0..1]:Category	geoposModelType
+ @name[1]:CharacterString	**Geopositioning Model Type** See Note 1
+ property[0..1]:Quantity	calFocalLength (when set)
+ @name[1]:CharacterString	**Calibrated Focal Length** See Note 1
+ property[0..1]:Quantity	horFoV (when set)
+ @name[1]:CharacterString	**Horizontal field of view** See Note 1
+ property[0..*]:Category	sarColMode (for each) (when set)
+ @name[1]:CharacterString	**Collection Mode of instrumentId.code** See Note 1

Notes:
1. name is instanciated as an XML attribute.

6.2.2.32 Record

Each set of Record is implemented through a single instance of egco:Record or one of its subclasses.

Its property instances are described below:

+ property[1..*]:ValuePropertyType	property.value - See Note 2
+ @name[1]:CharacterString	property.name - See Note 1

Notes:
1. name is instanciated as an XML attribute.
2. See Additional Instructions for subtypes of gml:ValuePropertyType.

6.2.2.33 Identifier

Each set of Identifier is implemented through a single instance of gmd:RS_Identifier or one of its subclasses.

Its property instances are described below:

+ code[1]:CharacterString	code (when description is not set)
+ code[1]:Anchor	description (when set)
+ href[0..1]:CharacterString	code - See Note 1
+ codeSpace[0..1]:CharacterString	namespace

Notes:
1. code is instanciated as an XML attribute. The element description can only be used if the code element is of type Anchor.

6.2.2.34 Anchor

Each set of Anchor is implemented through a single instance of gmx:Anchor or one of its subclasses.

Its property instances are described below:

+ (metadataElementTitle)[1]:String	value
+ href[0..1]:AnyURI	reference - See Note 1

Notes:
1. href is instanciated as an XML attribute.

6.2.2.35 Free Text

Each set of Free Text is implemented through a gco:CharacterString and a gmd:PT_FreeText or one of its subclasses.

Its property instances are described below:

+ (metadataElementTitle)[1]:CharacterString	value
+ (metadataElementTitle)[0..1]:PT_FreeText	translation (when set)
+ textGroup[0..*]:LocalisedCharacterString	translation.translatedText (for each)
+ @locale[1]:anyURI	translation.localeId - See Note 1

Notes:
1. locale is instanciated as an XML attribute.

6.2.2.36 Locale

Each set of Locale is implemented through a gmd:PT_Locale or one of its subclasses.

Its property instances are described below:

+ languageCode[1]:LanguageCode	language - Default is **eng**
+ characterEncoding[1]:MD_CharacterSetCode	encoding - Default is **utf8**
+ @id[0..1]:String	identifier - See Note 1

Notes:

1. The identifier property defined by DMF for Locale is handled as an XML identifier (inside the tags). It is never set for MDDLOC.

6.2.3 DMF SPECIFIC CONSTRAINTS

SC01 MD_Metadata.language is mandatory;

SC02 MD_Metadata.characterSet is mandatory and fixed to **utf8**

SC03 MD_Metadata.hierarchyLevel is mandatory

SC04 MD_Metadata.standardName is mandatory.

SC05 MD_Metadata.standardVersion is mandatory.

SC06 When RSTYPE is not **nonGeographicDataset** or **service**, there shall be at least one instance of identificationInfo[1]/*/extent defining the geographic location of the resource as a geographic bounding box (i.e. an instance of EX_GeographicBoundingBox) or a geographic identifier(i.e. an instance of EX_GeographicDescription).

SC07 identificationInfo[1]/*/characterSet is mandatory;

SC08 SV_ServiceIdentification.serviceTypeVersion is mandatory;

SC09 LI_Lineage.statement is mandatory;

SC10 MD_Distribution.distributionFormat is mandatory;

SC11 MD_DigitalTransferOptions.onLine is mandatory for services;

SC12 MD_Metadata.fileIdentifier is mandatory when the metadata is used in a catalogue;

SC13 MD_FeatureCatalogueDescription.complianceCode is mandatory, when a Feature Catalogue information is given;

SC14 MD_BrowseGraphic.fileDescription is mandatory, when a graphic illustration of the resource is provided;

SC15 MD_SecurityConstraints.classificationSystem is mandated in a context of international exchange, when a Security Constraint information is given;

SC16 Resource Format should be used only if different from Resource Distribution Format;

SC17 One instance of spatialResolution.distance is mandatory for sensor class.

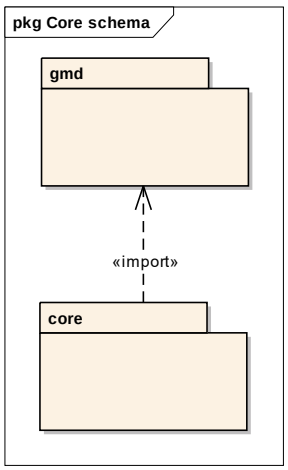
SC18 One descriptiveKeywords containing the resource georeferencing level is mandatory for sensor class.

6.2.4 IMPLEMENTATION

The XSD schemas that should be used for the implementation of DMF metadata according to the first generation of ISO standards are described below.

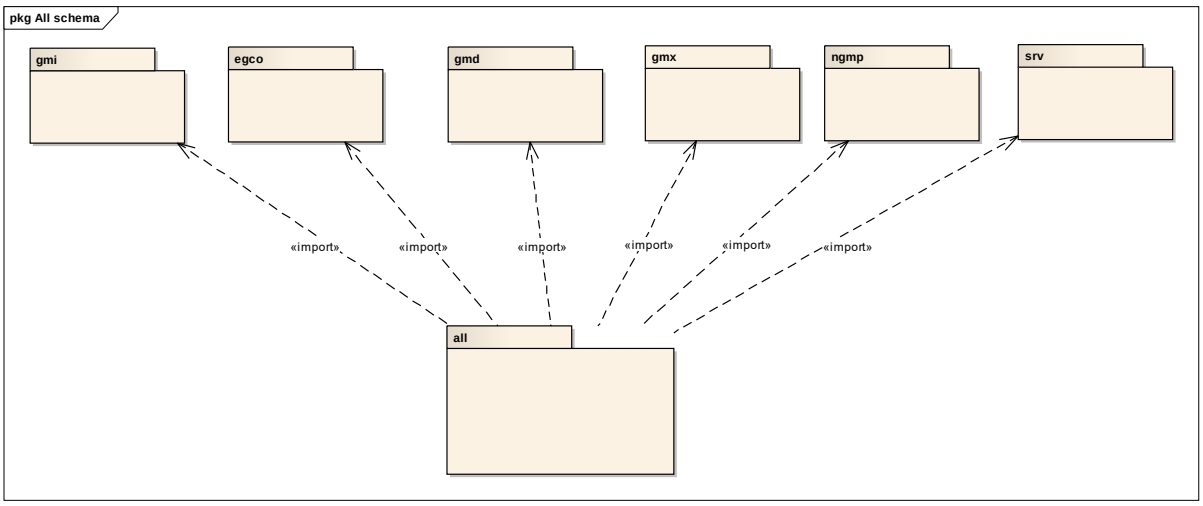
Two different profiles are defined (see Annex F for more explanation). In order to implement those profiles, it is necessary to import the related schemas, including generation 1 ISO namespaces and extensions if applicable, by declaring them at the beginning of the XML file using the XML fragment below.

Implementation of the Core profile (see F.1): **core.xsd**:




```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:core=" http://www.dgiwg.org/xmlns/dmf/iso-g1/
core/1.0" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:gmd="http://www.isotc211.org/2005/gmd" targetNamespace="
http://www.dgiwg.org/xmlns/dmf/iso-g1/core/1.0" elementFormDefault="qualified" version="2013-05-
24">
      <xs:import namespace="http://www.isotc211.org/2005/gmd"
schemaLocation="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schemas/gmd/
gmd.xsd"/>
</xs:schema>
```

Implementation of the All profile (see F.3): **all.xsd**:




```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:all=" http://www.dgiwg.org/xmlns/dmf/iso-g1/all/1.0"
xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:gco="http://www.isotc211.org/2005/gco" xmlns:egco=" http://www.dgiwg.org/xmlns/dmf/iso-
g1/egco/1.0" xmlns:gsr="http://www.isotc211.org/2005/gsr"
xmlns:gss="http://www.isotc211.org/2005/gss" xmlns:gts="http://www.isotc211.org/2005/gts"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:gmx="http://www.isotc211.org/2005/gmx"
xmlns:srv="http://www.isotc211.org/2005/srv" xmlns:gmi="http://www.isotc211.org/2005/gmi"
xmlns:ngmp="urn:int:nato:geometoc:geo:metadata:ngmp:1.0" targetNamespace="
```

```
http://www.dgiwg.org/xmlns/dmf/iso-g1/all/1.0" elementFormDefault="qualified" version="2013-05-
24">
    <xs:import namespace=" http://www.dgiwg.org/xmlns/dmf/iso-g1/egco/1.0"
schemaLocation="http://www.dgiwg.org/xmlns/dmf/iso-g1/egco/egco.xsd"/>
    <xs:import namespace="http://www.isotc211.org/2005/gmx"
schemaLocation="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schemas/gmx/g
mx.xsd"/>
    <xs:import namespace="http://www.isotc211.org/2005/srv"
schemaLocation="http://www.dgiwg.org/xmlns/isotc211/srv/1.0/srv.xsd"/>
    <xs:import namespace="http://www.isotc211.org/2005/gmi"
schemaLocation="http://www.dgiwg.org/xmlns/isotc211/gmi/1.0/gmi.xsd"/>
    <xs:import namespace="urn:int:nato:geometoc:geo:metadata:ngmp:1.0" schemaLocation="
http://www.dgiwg.org/xmlns/nato/GeoMetOc/metadata/ngmp/1.0/ngmp.xsd"/>
</xs:schema>
```

For any other profile definition, the mapping between metadata classes and XSD schemas is below:

- DMF/Core: gmd.xsd
- DMF/Common: gmd.xsd
- DMF/Services:srv.xsd
- DMF/Data: gmd.xsd
- DMF/Data+:gmi.xsd
- DMF/Defence: ngmp.xsd
- DMF/Sensor: gmd.xsd, gmi.xsd
- DMF/Specific: gmx.xsd, egco.xsd

6.3 Mapping between DMF Metadata Elements and the new generation of ISO standards

6.3.1 DMF Class 2 profile of the new generation of ISO Standards

ISO 19115 has been revised as ISO 19115-1. The service metadata model of 19119 is integrated to the comprehensive ISO 19115-1. The revision also deals with inconsistencies revealed by current implementations. A revision of ISO 19115-2 is also being published.

ISO 19157 is the new data quality standard. It includes the data quality UML models previously defined in ISO 19115. ISO 19115-1 needs to be implemented jointly with ISO 19157 to cover the concepts previously incorporated in ISO 19115.

The XML implementation of ISO 19115-1 and ISO 19157 are documented respectively in ISO 19115-3 and ISO 19157-2. When ISO 19115-2 will be published its XML schema implementation will be published by XMG without any technical specification associated to it.

According to ISO 19106, this clause will define a class 2 profile of the different parts of ISO 19115-1 and of ISO 19157.

6.3.2 Detailed mapping

6.3.2.1 Resource Metadata Set

A Resource Metadata Set is an instance of the class MD_Metadata (from ISO 19115-1), the class MI_Metadata (from ISO 19115-2) or any community specialisation of one of these two classes.

This instance is composed at least of the following property instances:

+ metadataIdentifier[0..1]:MD_Identifier	When MDSID is set
+ code[1]:CharacterString	MDSID
+ defaultLocale[1]:PT_Locale	MDDLOC - See Locale
+ parentMetadata[0..1]:CI_Citation	MDPTMD (when set)
+ title[1]:CharacterString	mdIdentifier - See Note 7
+ identifier[0..1]:MD_Identifier	
+ code[1]:CharacterString	mdIdentifier - See Note 7
+ onlineResource[0..*]:CI_OnlineResource	When mdLink is set
+ linkage[1]:CharacterString	mdLink
+ contact[1..*]:CI_Responsibility	MDRPTY (for each) - See Responsible Party and Note 4
+ dateInfo[1]:CI_Date	
+ date[1]:DateTime	MDDATE
+ dateType[1]:CI_DateTypeCode	**creation**
+ metadataStandard[1]:CI_Citation	MDSTD - See Citation and Note 1
+ otherLocale[0..*]:PT_Locale	MDTLOC (for each) (when set) - See Locale
+ metadataLinkage[0..1]:CI_OnlineResource	When MDLINK is set
+ linkage[1]:CharacterString	MDLINK
+ metadataScope[1]:MD_MetadataScope	
+ resourceScope[1]:MD_ScopeCode	RSTYPE - Default is **dataset**
+ name[0..1]:CharacterString	RSTYPN (when set) - See Note 6
+ spatialRepresentationInfo[0..1]:MD_GridSpatialRepresentation	RCGRSPREP (when gridLocation is not set) - See Grid Spatial Representation
+ spatialRepresentationInfo[0..1]:MD_Georectified	RCGRSPREP (when gridLocation is set) - See Georectified Grid Parameters
+ spatialRepresentationInfo[0..1]:MD_Georeferenceable	RFGRSPREP (when set) - See Georeferenceable Grid
+ spatialRepresentationInfo[0..1]:MD_VectorSpatialRepresentation	When VCTOLVL is set
+ topologyLevel[0..1]:MD_TopologyLevelCode	VCTOLVL
+ geometricObjects[0..*]:MD_GeometricObjects	VGEOM (for each)

+ geometricObjectType[1]:MD_GeometricObjectTypeCode	objectType
+ geometricObjectCount[0..1]:Integer	objectCount
+ referenceSystemInfo[0..*]:MD_ReferenceSystem	For each RSRSYS
+ referenceSystemIdentifier[1]:MD_Identifier	RSRSYS - See Identifier
+ distributionInfo[1]:MD_Distribution	See Distribution Information
+ contentInfo[0..1]:MD_FeatureCatalogueDescription	FCDESC (when set)
+ complianceCode[1]:Boolean	isoCompliance - Default is **false**
+ locale[0..*]:PT_Locale	For each language
+ language[1]:LanguageCode	language
+ includedWithDataset[1]:Boolean	fcInclusion - Default is **false**
+ featureTypes[0..*]:MD_FeatureTypeInfo	For each featureTypes
+ featureTypeName[1]:GenericName	featureTypes
+ featureCatalogueCitation[1..*]:CI_Citation	citation (for each) - See Citation
+ contentInfo[0..1]:MI_CoverageDescription	GRCINF (when set) - See Coverage Description
+ contentInfo[0..1]:MD_ImageDescription	When imagingCondition is set
+ attributeDescription[1]:RecordType	**Record**
+ href[1]:CharacterString	**urn:dgiwg:xmlns:dmf:1.0:iso-g1:egco:Record** See Note 2
+ imagingCondition[0..1]:MD_ImagingConditionCode	imagingCondition
+ identificationInfo[0..1]:MD_DataIdentification	When RSTYPE is not equal to service - See Data Identification and Note 3
+ identificationInfo[0..1]:SV_ServiceIdentification	When RSTYPE is equal to service - See Service Identification and Note 3
+ dataQualityInfo[1]:DQ_DataQuality	See Quality Information
+ resourceLineage[0..*]:LI_Lineage	See Resource Lineage
+ resourceLineage[0..1]:LI_Lineage	When ACDATE is set
+ processStep[1]:LI_ProcessStep	
+ description[1]:CharacterString	**acquisition**
+ stepDateTime[0..1]:TimeInstant	
+ timePosition[1]:DateTime	ACDATE
+ metadataConstraints[0..*]:MD_SecurityConstraints	MDSCST (for each) (when set) - See Security Constraints and Note 5
+ metadataConstraints[0..1]:MD_Constraints	When MDREL is set - See Note 5
+ releasability[1]:MD_Releasability	
+ addressee[0..*]:CI_Responsibility	For each MDREL
+ role[1]:CI_RoleCode	**user**
+ party[1]:CI_Organisation	
+ name[1]:CharacterString	MDREL
+ metadataConstraints[0..*]:MD_LegalConstraints	MDLCST (for each) (when set) - See Legal Constraints
+ metadataMaintenance[0..1]:MD_MaintenanceInformation	When MDMFRQ is set
+ maintenanceAndUpdateFrequency[1]:MD_MaintenanceFrequencyCode	MDMFRQ
+ acquisitionInformation[0..1]:MI_AcquisitionInformation	See Acquisition Information

Notes:

1. metadataStandardName (respectively metadataStandardVersion) shall contain DMF (respectively 1.0) or the name (respectively the version) of one of the DMF registered profiles, e.g. STANAG 2586 (respectively Edition 1).
2. xlink:href is instantiated as an XML attribute
3. If there is more than one instance of identificationInfo property, only the first one is taken into consideration.
4. Default is "pointOfContact" for the role and "To be determined" for the party.orgName
5. The security constraints may appear before or after the releasabilty constraints
6. When hierarchyLevel is not "dataset", hierarchyLevelName is mandated. If RSTYPN is not set, the hierarchyLevelName value is defaulted to the value of RSTYPE.
7. As title is mandatory in ISO mdIdentifier will be mapped both to identifier and title

6.3.2.2 Data Identification

A Data Identification is an instance of mri:MD_DataIdentification or one of its subclasses.

Its property instances are described below:

+ citation[1]:CI_Citation	
+ title[1]:CharacterString	RSTITLE - Default is **To be determined**
+ alternateTitle[0..1]:CharacterString	RSALT
+ date[1..*]:CI_Date	RSDATE (for each) - See Note 1
+ date[1]:DateTime	date - Default is **9999**

+ dateType[1]:CI_DateTypeCode	type - Default is **publication**
+ edition[0..1]:CharacterString	RSED
+ editionDate[0..1]:DateTime	RSEDDAT
+ identifier[0..1]:MD_Identifier	When RSSHNA is set - See Note 2
+ code[1]:CharacterString	RSSHNA
+ codeSpace[1]:CharacterString	RSSERI
+ identifier[0..*]:MD_Identifier	RSID (for each) - See Identifier and Note 2
+ series[0..1]:CI_Series	When RSSERI is set
+ name[1]:CharacterString	RSSERI
+ onlineResource[0..*]:CI_OnlineResource	RSONLLC (for each) - See Online Location
+ abstract[1]:CharacterString	RSABSTR - Default is **To be determined**
+ purpose[0..1]:CharacterString	RSPURP
+ status[0..1]:MD_ProgressCode	RSSTAT
+ pointOfContact[0..*]:CI_Responsibility	RSRPTY (for each) - See Responsible Party
+ spatialRepresentationType[0..1]:MD_SpatialRepresentationTypeCode	RSRPTP
+ spatialResolution[0..*]:MD_Resolution	RSSRES (for each) (when RSSRES.distance is set) - See Note 8
+ distance[1]:Distance	distance - See Note 13
+ spatialResolution[0..*]:MD_Resolution	RSSRES (for each) (when RSSRES.equivalentScale is set) - See Note 8
+ equivalentScale[1]:MD_RepresentativeFraction	
+ denominator[1]:Integer	equivalentScale
+ spatialResolution[0..*]:MD_Resolution	RSSRES (for each) (when RSSRES.levelOfDetail is set) - See Note 8
+ levelOfDetail[1]:CharacterString	levelOfDetail
+ spatialResolution[0..*]:MD_Resolution	RSSRES (for each) (when RSSRES.vertical is set) - See Note 8
+ vertical[1]:Distance	vertical
+ temporalResolution[0..*]:TM_IntervalLength	RSTRES (for each) (when set)
+ unit[1]:CharacterString	unit
+ radix[1]:Integer	**10**
+ factor[1]:Integer	factor - Default is **1**
+ value[1]:Integer	value
+ topicCategory[0..*]:MD_TopicCategoryCode	RSTOPIC (for each) - Default is **imageryBaseMapsEarthCover**
+ extent[0..*]:EX_Extent	RSEXT (for each) - See Note 5
+ description[0..1]:CharacterString	description
+ geographicElement[0..*]:EX_GeographicBoundingBox	boundingBox (for each) (when set) - See Note 6
+ westBoundLongitude[1]:Decimal	west - Default is **-180**
+ eastBoundLongitude[1]:Decimal	east - Default is **180**
+ southBoundLatitude[1]:Decimal	south - Default is **-90**
+ northBoundLatitude[1]:Decimal	north - Default is **90**
+ geographicElement[0..*]:EX_GeographicDescription	For each geogId
+ geographicIdentifier[1]:MD_Identifier	geogId - See Identifier and Note 7
+ geographicElement[0..1]:EX_BoundingPolygon	boundingPolygon - See Note 6
+ polygon[1]:GM_Surface	exterior
+ @srsName[1]:AnyURI	crs - See Note 12
+ temporalElement[0..*]:EX_TemporalExtent	For each temporalExtent - See Note 10
+ extent[1]:TM_Primitive	temporalExtent - See Note 11
+ verticalElement[0..1]:EX_VerticalExtent	verticalExtent
+ minimumValue[1]:Real	minz
+ maximumValue[1]:Real	maxz
+ verticalCRS[1]:SC_CRS	**http://www.opengis.net/def/crs/EPSG/0/7030**
+ processingLevel[0..1]:MD_Identifier	When RSGFLV is set
+ code[1]:CharacterString	RSGFLV
+ codeSpace[0..1]:CharacterString	**NGMP_GeoreferencingLevelCode**
+ resourceMaintenance[0..1]:MD_MaintenanceInformation	RSMTNC (when maintenanceFrequency is set)
+ maintenanceAndUpdateFrequency[1]:MD_MaintenanceFrequencyCode	maintenanceFrequency - Default is **unknown**
+ maintenanceDate[0..1]:CI_Date	When maintenanceDate is set
+ date[1]:DateTime	maintenanceDate
+ dateType[1]:CI_DateTypeCode	**nextUpdate**
+ maintenanceNote[0..1]:CharacterString	maintenanceNote
+ graphicOverview[0..1]:MD_BrowseGraphic	When THUMB is set
+ fileName[1]:CharacterString	THUMB
+ fileDescription[1]:CharacterString	**thumbnail**
+ graphicOverview[0..*]:MD_BrowseGraphic	GPHICS (for each)
+ fileName[1]:CharacterString	name

+ fileDescription[1]:CharacterString	description
+ linkage[0..1]:CI_OnlineResource	When linkage is set
+ linkage[1]:CharacterString	linkage
+ resourceFormat[0..1]:MD_Format	RSFMT - See Format
+ descriptiveKeywords[0..1]:MD_Keywords	When DGITYP is set - See Geospatial Information Type and Note 3
+ descriptiveKeywords[0..1]:MD_Keywords	When RSPREF is set - See Resource Representation Form and Note 3
+ descriptiveKeywords[0..1]:MD_Keywords	When RSDTLVL is set - See Resource Data Level and Note 3
+ descriptiveKeywords[0..1]:MD_Keywords	When RSTHEME is set - See Resource Theme and Note 3
+ descriptiveKeywords[0..1]:MD_Keywords	When ASSOC is set - See Image Association Type and Note 3
+ descriptiveKeywords[0..1]:MD_Keywords	When SPECTMOD is set - See Spectral Mode and Note 3
+ descriptiveKeywords[0..*]:MD_Keywords	RSKWDS (for each) - See Resource Keyword Set and Note 3
+ resourceSpecificUsage[0..*]:MD_Usage	RSSPUS (for each) (when set)
+ specificUsage[1]:CharacterString	name
+ userDeterminedLimitations[0..1]:CharacterString	limitation (when set)
+ userContactInfo[1]:CI_Responsibility	userContact - See Responsible Party and Note 15
+ resourceConstraints[0..*]:MD_SecurityConstraints	RSSCST (for each) (when set) - See Security Constraints and Note 4
+ resourceConstraints[0..*]:MD_Constraints	RSREL (for each)
+ useLimitation[0..1]:CharacterString	statementExtension
+ releasability[1]:MD_Releasability	
+ addressee[0..*]:CI_Responsibility	For each addressee
+ role[1]:CI_RoleCode	**user**
+ party[1]:CI_Organisation	
+ name[1]:CharacterString	addressee
+ statement[1]:CharacterString	statement - See Note 14
+ disseminationConstraints[0..*]:MD_RestrictionCode	disseminationConstraints
+ resourceConstraints[0..*]:MD_Constraints	For each RSUSE
+ useLimitation[0..*]:CharacterString	RSUSE
+ resourceConstraints[0..*]:MD_LegalConstraints	RSLCST (for each) - See Legal Constraints
+ defaultLocale[1]:PT_Locale	RSDLOC - See Locale and Note 9
+ otherLocale[0..*]:PT_Locale	RSTLOC (for each) (when set) - See Locale
+ environmentDescription[0..1]:CharacterString	RSENVD
+ supplementalInformation[0..1]:CharacterString	RSREM

Notes:

1. There may be many instances of the date property with different date types including publication, revision or creation. The order of these instances is not fixed.
2. There may be many instances of the identifier property corresponding to RSSHNA, RSID or identifiers out of DMF scope. The one corresponding to RSSHNA is the first one for which the codeSpace value matches RSSERI.
3. There may be many instances of the descriptiveKeywords property providing keywords from different thesauri. The order of these instances is not fixed.
4. There may be many instances of the resourceConstraints property. The order of these instances is not fixed.
5. Except for non-geographic data and loose services, one of boundingBox or geogId is mandatory.
6. Each boundingBox corresponds to a dataset subregion which implies that each boundingBox should be implemented as an instance of the extent property, possibly with the instances of geogId and boundingPolygon corresponding to the same subregion. For similar reasons, each boundingPolygon should be implemented as an instance of the extent property.
7. By default, each geogId is implemented as a dedicated extent, but it is acceptable to group many geogId in a single extent possibly with other metadata elements (method, boundingPolygon, …)
8. There may be many instances of the spatialResolution property providing equivalent scales, ground sample distances, vertical resolution or level of details. The order of these instances is not fixed.
9. The language property can be defaulted to the value of the Metadata Language when the resource does not contain textual information.
10. There may be different instances of temporalElement defining the temporal extent of the resource. By default, they are in a single instance of extent, but they may also be in different instances of extent, one of them possibly handling the geographic bounding box.
11. Start and end properties of Temporal Extent are instantiated as TM_Instant. If both are defined, a TM_Period instance links the beginning and ending TM_Instant.
12. The srsName is instantiated as an XML attribute.
13. Units of measures are implemented in the ISO metadata by reference to a unit of measure register. The URL of the reference can be derived from the codelist value of the DMF Property. See Additional Instructions
14. Default value for this element should be set by the implementer's security policy.
15. Default values are role=user and organisationName=undefined

6.3.2.3 Service Identification

A Service Identification is an instance of srv:SV_ServiceIdentification or one of its subclasses.

Its property instances are described below:

+ citation[1]:CI_Citation	
+ title[1]:CharacterString	RSTITLE - Default is **To be determined**
+ alternateTitle[0..1]:CharacterString	RSALT (when set)
+ date[1..*]:CI_Date	RSDATE (for each) - See Note 1
+ date[1]:DateTime	date - Default is **9999**
+ dateType[1]:CI_DateTypeCode	type - Default is **publication**
+ edition[0..1]:CharacterString	RSED (when set)
+ editionDate[0..1]:DateTime	RSEDDAT (when set)
+ identifier[0..*]:MD_Identifier	RSID (for each) - See Identifier
+ onlineResource[0..*]:CI_OnlineResource	RSONLLC (for each) - See Online Location
+ abstract[1]:CharacterString	RSABSTR - Default is **To be determined**
+ purpose[0..1]:CharacterString	RSPURP (when set)
+ status[0..1]:MD_ProgressCode	RSSTAT (when set)
+ pointOfContact[0..*]:CI_Responsibility	RSRPTY (for each) - See Responsible Party
+ spatialRepresentationType[0..1]:MD_SpatialRepresentationTypeCode	RSRPTP
+ spatialResolution[0..1]:MD_Resolution	RSSRES (for each) (when RSSRES.distance is set) - See Note 15
+ distance[1]:Distance	distance - See Note 16
+ spatialResolution[0..1]:MD_Resolution	RSSRES (for each) (when RSSRES.equivalentScale is set) - See Note 15
+ equivalentScale[1]:MD_RepresentativeFraction	
+ denominator[1]:Integer	equivalentScale - See Note 15
+ spatialResolution[0..1]:MD_Resolution	RSSRES (for each) (when RSSRES.levelOfDetail is set)
+ levelOfDetail[1]:CharacterString	levelOfDetail
+ spatialResolution[0..1]:MD_Resolution	RSSRES (for each) (when RSSRES.vertical is set) - See Note 15
+ vertical[1]:Distance	vertical
+ temporalResolution[0..*]:TM_IntervalLength	RSTRES (for each) (when set)
+ unit[1]:CharacterString	unit
+ radix[1]:Integer	**10**
+ factor[1]:Integer	factor - Default is **1**
+ value[1]:Integer	value
+ topicCategory[0..*]:MD_TopicCategoryCode	RSTOPIC (for each) - Default is **imageryBaseMapsEarthCover**
+ extent[0..*]:EX_Extent	RSEXT (for each) - See Note 4
+ description[0..1]:CharacterString	description
+ geographicElement[0..*]:EX_GeographicBoundingBox	boundingBox - See Note 4
+ westBoundLongitude[1]:Decimal	west - Default is **-180**
+ eastBoundLongitude[1]:Decimal	east - Default is **180**
+ southBoundLatitude[1]:Decimal	south - Default is **-90**
+ northBoundLatitude[1]:Decimal	north - Default is **90**
+ geographicElement[0..*]:EX_GeographicDescription	For each geogId - See Note 5
+ geographicIdentifier[1]:MD_Identifier	geogId - See Identifier
+ geographicElement[0..1]:EX_BoundingPolygon	boundingPolygon - See Note 4
+ polygon[1]:GM_Surface	exterior
+ @srsName[1]:AnyURI	crs - See Note 8
+ temporalElement[0..*]:EX_TemporalExtent	For each temporalExtent - See Note 6
+ extent[1]:TM_Primitive	temporalExtent - See Note 7
+ verticalElement[0..1]:EX_VerticalExtent	verticalExtent
+ minimumValue[1]:Real	minz
+ maximumValue[1]:Real	maxz
+ verticalCRS[1]:SC_CRS	**http://www.opengis.net/def/crs/EPSG/0/7030**
+ resourceMaintenance[0..1]:MD_MaintenanceInformation	RSMTNC (when maintenanceFrequency is set)
+ maintenanceAndUpdateFrequency[1]:MD_MaintenanceFrequencyCode	maintenanceFrequency - Default is **unknown**
+ maintenanceDate[0..1]:CI_Date	When maintenanceDate is set
+ date[1]:DateTime	maintenanceDate
+ dateType[1]:CI_DateTypeCode	**nextUpdate**
+ maintenanceNote[0..1]:CharacterString	maintenanceNote
+ graphicOverview[0..1]:MD_BrowseGraphic	When THUMB is set
+ fileName[1]:CharacterString	THUMB
+ fileDescription[1]:CharacterString	**thumbnail**
+ graphicOverview[0..*]:MD_BrowseGraphic	GPHICS (for each)

+ fileName[1]:CharacterString	name
+ fileDescription[1]:CharacterString	description
+ linkage[0..1]:CI_OnlineResource	When linkage is set
+ linkage[1]:CharacterString	linkage
+ descriptiveKeywords[0..*]:MD_Keywords	RSKWDS (for each) - See Resource Keyword Set and Note 2
+ resourceSpecificUsage[0..*]:MD_Usage	RSSPUS (for each)
+ specificUsage[1]:CharacterString	name
+ userDeterminedLimitations[0..1]:CharacterString	limitation (when set)
+ userContactInfo[1]:CI_Responsibility	userContact - See Responsible Party and Note 10
+ resourceConstraints[0..*]:MD_SecurityConstraints	RSSCST (when set) - See Security Constraints and Note 3
+ resourceConstraints[0..*]:MD_Constraints	RSREL (for each)
+ useLimitation[0..1]:CharacterString	statementExtension
+ releasability[1]:MD_Releasability	
+ addressee[0..*]:CI_Responsibility	For each addressee - See Responsible Party
+ role[1]:CI_RoleCode	**user**
+ party[1]:CI_Organisation	addressee
+ statement[1]:CharacterString	statement - See Note 12
+ disseminationConstraints[0..*]:MD_RestrictionCode	disseminationConstraints
+ resourceConstraints[0..*]:MD_Constraints	For each RSUSE
+ useLimitation[0..*]:CharacterString	RSUSE
+ resourceConstraints[0..*]:MD_LegalConstraints	RSLCST (for each) - See Legal Constraints
+ serviceType[1]:GenericName	SRTYPE - Default is **unknown**
+ serviceTypeVersion[1]:CharacterString	SRTVER - Default is **unknown**
+ couplingType[1]:SV_CouplingType	SRCPLING - Default is **loose**
+ coupledResource[0..*]:SV_CoupledResource	SRCORS (for each) (when set)
+ scopedName[0..1]:ScopedName	scope - See Note 13
+ resourceReference[0..*]:CI_Citation	
+ title[1]:CharacterString	identifier
+ identifier[1]:MD_Identifier	
+ code[1]:CharacterString	identifier
+ operation[0..1]:SV_OperationMetadata	When operationName is set
+ href[1]:AnyURI	operationName See Note 14
+ operatedDataset[0..*]:CI_Citation	For each SROPRS - See Note 9
+ title[1]:CharacterString	SROPRS
+ identifier[0..1]:MD_Identifier	
+ code[1]:CharacterString	SROPRS
+ serviceStandard[0..1]:CI_Citation	SRSTD - See Citation
+ containsOperations[1..*]:SV_OperationMetadata	SROPER (for each)
+ operationName[1]:CharacterString	name - Default is **unknown**
+ distributedComputingPlatform[1..*]:DCPList	platform (for each) - Default is **WebServices**
+ connectPoint[1..*]:CI_OnlineResource	connectPoint (for each) - See Online Location and Note 11
+ operatesOn[0..*]:MD_DataIdentification	For each SROPRS - See Note 9
+ href[1]:CharacterString	SROPRS

Notes:

1. There may be many instances of the date property with different date types including publication, revision or creation. The order of these instances is not fixed.
2. There may be many instances of the descriptiveKeywords property providing keywords from different thesaurus. The order of these instances is not fixed.
3. There may be many instances of the resourceConstraints property. The order of these instances is not fixed.
4. Except for non-geographic data and loose services, one of boundingBox and geogId is mandatory. Each boundingBox corresponds to a dataset subregion which implies that each boundingBox should be implemented as an instance of the extent property, possibly with the instances of geogId and boundingPolygon corresponding to the same subregion. For the same reasons, each boundingPolygon should be implemented as an instance of the extent property.
5. By default, each geogId is implemented as a dedicated extent, but it is acceptable to group many geogId in a single extent possibly with other metadata elements (boundingBox, boundingPolygon, …)
6. There may be different instances of temporalElement defining the temporal extent of the resource. By default, they are in a single instance of extent, but they may also be in different instances of extent, one of them possibly handling the geographic bounding box.
7. Start and end properties of Temporal Extent are instantiated as TM_Instant. If both are defined, a TM_Period instance links the beginning and ending TM_Instant.
8. The srsName is instantiated as an XML attribute
9. The domain value of SROPRS is the URI of the metadata of the dataset on which the service operates. Mandatory when coupling type is tight or mixed. For one resource either operatedDataset or operatesOn may be used (not both for the same resource).
10. Default values are role=user and organisationName=undefined
11. The value may be defaulted to one instance of RSONLLC.
12. Default value for this element should be set by the implementer's security policy.

13. srv:scopedName is implemented as an XML global element of type ScopedName. The suggested Path is expressed with respect to the conceptual model, but there is no ScopedName element in the XML. scope.code and scope.namespace are respectively implemented in XML as the value of srv:scopedName and the value of its codeSpace attribute
14. Implemented by reference with a link to the element of type SV_OperationMetadata with the corresponding operationName.
15. There may be many instances of the spatialResolution property providing either equivalent scales or ground sample distances or vertical resolution, or level of details. The order of these instances is not fixed.
16. Units of measures are implemented in the ISO metadata by reference to a unit of measure register. The URL of the reference can be derived from the codelist value of the DMF Property. See Additional Instructions

6.3.2.4 Quality Information

A Quality Information is an instance of mdq:DQ_DataQuality or one of its subclasses.

Its property instances are described below:

+ scope[1]:MD_Scope	
+ level[1]:MD_ScopeCode	RSTYPE
+ levelDescription[0..1]:MD_ScopeDescription	When RSTYPE is not equal to dataset
+ other[1]:CharacterString	RSTYPN
+ extent[0]:EX_Extent	See Note 3
+ report[0..*]:DQ_Element	RSRQR (for each) (when set) - See Note 1
+ measure[1]:DQ_MeasureReference	
+ measureIdentification[1]:MD_Identifier	identifier - See Identifier
+ evaluationMethod[0..1]:DQ_EvaluationMethod	When method is set
+ evaluationMethodDescription[0..1]:CharacterString	method
+ result[0..*]:DQ_ConformanceResult	cnfResult (when set) - See Conformance Result and Note 2
+ result[0..*]:DQ_DescriptiveResult	When descResult is set - See Descriptive Result and Note 2
+ result[0..*]:DQ_QuantitativeResult	qtyResult (when set) - See Quantitative Result and Note 2
+ result[0..*]:QE_CoverageResult	covResult (when set) - See Coverage Result and Note 2
+ report[0..*]:DQ_Element	RSUQR (for each) (when set) - See Note 1
+ measure[1]:DQ_MeasureReference	
+ nameOfMeasure[1]:CharacterString	measureName
+ measureDescription[0..1]:CharacterString	measureDescription
+ evaluationMethod[0..1]:DQ_EvaluationMethod	When method is set
+ evaluationMethodDescription[0..1]:CharacterString	method
+ result[0..*]:DQ_ConformanceResult	cnfResult (when set) - See Conformance Result and Note 2
+ result[0..*]:DQ_DescriptiveResult	When descResult is set - See Descriptive Result and Note 2
+ result[0..*]:DQ_QuantitativeResult	qtyResult (when set) - See Quantitative Result and Note 2
+ result[0..*]:QE_CoverageResult	covResult (when set) - See Coverage Result and Note 2

Notes:

1. DQ_Element is an abstract class. It has to be instantiated through one of its concrete subclasses. The appropriate subclass depends on the quality criteria concerned by the quality measure. For the unspecified quality report, the value of RSUQR.qualityElement has to be used to declare the concrete subclass used (for example DQ_CompletenessOmission shall be used instead of DQ_Element, the default one is DQ_ConceptualConsistency). For regulated quality, the registered measures precise which data quality element is to be used.
2. There shall at least one result.
3. In DMF, the measure applies to the extent of the data so the "extent" element should not be instantiated.

6.3.2.5 Resource Lineage

A Resource Lineage is an instance of mrl:LI_Lineage or one of its subclasses.

Its property instances are described below:

+ statement[1]:CharacterString	RSLING - Default is **To be determined**
+ processStep[0..*]:LI_ProcessStep	RSPRST (for each) (when set)
+ description[1]:CharacterString	description
+ rationale[0..1]:CharacterString	rationale
+ stepDateTime[0..1]:TM_Instant	When date is set
+ position[1]:TM_Position	
+ dateTime8601[1]:DateTime	date
+ processor[0..*]:CI_Responsibility	processor - See Responsible Party
+ source[0..*]:LI_Source	RSSRC (for each) (when set)
+ description[0..1]:CharacterString	description

+ sourceSpatialResolution[0..1]:MD_Resolution	When equivalentScale is set - See Note 2
+ equivalentScale[1]:MD_RepresentativeFraction	
+ denominator[1]:Integer	equivalentScale
+ sourceSpatialResolution[0..1]:MD_Resolution	When distance is set - See Note 2
+ distance[1]:Distance	distance - See Note 1
+ scope[0..1]:MD_Scope	When extent is set
+ level[1]:MD_ScopeCode	**dataset**
+ extent[0..*]:EX_Extent	extent (for each)
+ sourceCitation[0..1]:CI_Citation	citation (when set) - See Citation
+ sourceMetadata[0..1]:CI_Citation	When sourceMetadata is set
+ title[1]:CharacterString	**Source Metadata Reference**
+ identifier[0..*]:MD_Identifier	
+ code[1]:CharacterString	sourceMetadata

Notes:

1. Units of measures are implemented in the ISO metadata by reference to a unit of measure register. The URL of the reference can be derived from the codelist value of the unit DMF Property. See Additional Instructions
2. Either RSSRC.equivalentScale or RSSRC.distance could be set for a Source

6.3.2.6 Conformance Result

A Conformance Result is an instance of mqd:DQ_ConformanceResult or one of its subclasses.

Its property instances are described below:

+ specification[1]:CI_Citation	specification - See Citation
+ explanation[1]:CharacterString	explanation - Default is **See the referenced specification**
+ pass[1]:Boolean	conformance

6.3.2.7 Descriptive Result

A Descriptive Result is an instance of mqd:DQ_DescriptiveResult or one of its subclasses.

Its property instances are described below:

+ statement[1]:CharacterString	descResult

6.3.2.8 Quantitative Result

A Quantitative Result is an instance of mqd:DQ_QuantitativeResult or one of its subclasses.

Its property instances are described below:

+ valueRecordType[0..1]:RecordType	See Note 1
+ valueUnit[0..1]:UnitOfMeasure	unit - See Note 2
+ value[1]:Record	result

Notes:

1. The value of the metadata element depends on the type of the DMF result property. The value of the metadata element is the name of the concept implementing this DMF type and the xlink:href shall refer to the XML Schema Implementation of the concept. See DGIWG Metadata Guidelines document for examples.
2. Units of measures are implemented in the ISO metadata by reference to a unit of measure register. The URL of the reference can be derived from the codelist value of the unit DMF Property. See Additional Instructions

6.3.2.9 Coverage Result

A Coverage Result is an instance of mdq:QE_CoverageResult or one of its subclasses.

Its property instances are described below:

+ spatialRepresentationType[0..1]:MD_SpatialRepresentationTypeCode	**vector** (when geometry is set)
+ spatialRepresentationType[0..1]:MD_SpatialRepresentationTypeCode	**grid** (when geometry is not set)

+ resultFile[1]:QualityResultFile	file
+ resultSpatialRepresentation[0..1]:MD_VectorSpatialRepresentation	When geometry is set
+ geometricObjects[0..1]:MD_GeometricObjects	
+ geometricObjectType[1]:MD_GeometricObjectTypeCode	geometry
+ resultSpatialRepresentation[0..1]:MD_GridSpatialRepresentation	gridRep (when gridLocation is not set) - See Grid Spatial Representation
+ resultSpatialRepresentation[0..1]:MD_Georectified	gridRep (when gridLocation is set) - See Georectified Grid Parameters
+ resultSpatialRepresentation[1]:MD_CoverageDescription	content - See Coverage Description
+ resultFormat[1]:MD_Format	format - See Format

6.3.2.10 Distribution Information

A Distribution Information is an instance of mrd:MD_Distribution or one of its subclasses.

Its property instances are described below:

+ distributionFormat[1..*]:MD_Format	RSDFMT (for each) - See Format
+ transferOptions[0..1]:MD_DigitalTransferOptions	See Note 1
+ unitsOfDistribution[0..1]:CharacterString	RSUD
+ transferSize[0..1]:Real	RSTS
+ onLine[0..*]:CI_OnlineResource	RSONLLC (for each) - See Online Location
+ transferOptions[0..1]:MD_DigitalTransferOptions	When RSOFDM is set
+ offLine[0..*]:MD_Medium	RSOFDM (for each)
+ name[1]:CI_Citation	name
+ volumes[0..1]:Integer	volume

Notes:

1. By default, all instances of RSONLLC, RSUD and RSTS are provided in a single instance of mrd:transferOptions, but they may occur in different instances. If RSUD or RSTS is repeated, only the first occurrence is taken into account.

6.3.2.11 Online Location

An Online Location is an instance of cit:CI_OnlineResource or one of its subclasses.

Its property instances are described below:

+ linkage[1]:CharacterString	location
+ function[0..1]:CI_OnLineFunctionCode	function

6.3.2.12 Responsible Party

A Responsible Party is an instance of cit:CI_Responsibility or one of its subclasses.

Its property instances are described below:

+ role[1]:CI_RoleCode	role
+ party[0..1]:CI_Organisation	See Note 1
+ name[0..1]:CharacterString	party.orgName
+ contactInfo[0..1]:CI_Contact	
+ phone[0..*]:CI_Telephone	For each
+ number[1]:CharacterString	party.phone
+ numberType[0..1]:CI_TelephoneTypeCode	**voice**
+ phone[0..*]:CI_Telephone	For each
+ number[1]:CharacterString	party.fax
+ numberType[0..1]:CI_TelephoneTypeCode	**facsimile**
+ address[0..1]:CI_Address	
+ deliveryPoint[0..*]:CharacterString	party.address (for each)
+ city[0..1]:CharacterString	party.city
+ administraiveArea[0..1]:CharacterString	party.administrativeArea
+ postalCode[0..1]:CharacterString	party.postalCode
+ country[0..1]:CharacterString	party.country

+ electronicMailAddress[0..*]:CharacterString	party.email (for each)
+ party[0..1]:CI_Individual	See Note 1
+ name[0..1]:CharacterString	party.name (when set)
+ contactInfo[0..1]:CI_Contact	
+ phone[0..*]:CI_Telephone	For each
+ number[1]:CharacterString	party.phone
+ numberType[0..1]:CI_TelephoneTypeCode	**voice**
+ phone[0..*]:CI_Telephone	For each
+ number[1]:CharacterString	party.fax
+ numberType[0..1]:CI_TelephoneTypeCode	**facsimile**
+ address[0..1]:CI_Address	
+ deliveryPoint[0..*]:CharacterString	party.address (for each)
+ city[0..1]:CharacterString	party.city
+ administraiveArea[0..1]:CharacterString	party.administrativeArea
+ postalCode[0..1]:CharacterString	party.postalCode
+ country[0..1]:CharacterString	party.country
+ electronicMailAddress[0..*]:CharacterString	party.email (for each)
+ positionName[0..1]:CharacterString	party.position (when set)

Notes:

1. Party can be implemented either as cit:CI_Organisation when party.orgName is provided or as cit:CI_Individual when party.name or party.position are provided. At least one of party.name, party.orgName and party.position has to be provided for ISO compliance

6.3.2.13 Geospatial Information Type

A Geospatial Information Type is an instance of mri:MD_Keywords or one of its subclasses.

Its property instances are described below:

+ keyword[1]:NGMP_GeospatialInformationTypeCode	DGITYP
+ thesaurusName[1]:CI_Citation	
+ title[1]:CharacterString	**NGMP_GeospatialInformationTypeCode**
+ date[1]:CI_Date	
+ date[1]:Date	**2011-09-16**
+ dateType[1]:CI_DateTypeCode	**creation**

6.3.2.14 Resource Representation Form

A Resource Representation Form is an instance of mri:MD_Keywords or one of its subclasses.

Its property instances are described below:

+ keyword[1]:NGMP_RepresentationFormCode	RSPREF
+ thesaurusName[1]:CI_Citation	
+ title[1]:CharacterString	**NGMP_RepresentationFormCode**
+ date[1]:CI_Date	
+ date[1]:Date	**2011-09-16**
+ dateType[1]:CI_DateTypeCode	**creation**

6.3.2.15 Resource Data Level

A Resource Data Level is an instance of mri:MD_Keywords or one of its subclasses.

Its property instances are described below:

+ keyword[1]:CharacterString	RSDTLVL
+ thesaurusName[1]:CI_Citation	
+ title[1]:CharacterString	**DataLevelCodeList** See Note 1
+ date[1]:CI_Date	
+ date[1]:Date	**2011-09-16**
+ dateType[1]:CI_DateTypeCode	**creation**

Notes:

1. Should be replaced by a reference to the list of value used.

6.3.2.16 Image Association Type

A Image Association Type is an instance of mri:MD_Keywords or one of its subclasses.

Its property instances are described below:

+ keyword[1]:NGMP_ThematicCode	ASSOC
+ thesaurusName[1]:CI_Citation	
+ title[1]:CharacterString	**Imagery Association Codelist**
+ date[1]:CI_Date	
+ date[1]:Date	**2016-02-04**
+ dateType[1]:CI_DateTypeCode	**creation**

6.3.2.17 Spectral Mode

A Spectral Mode is an instance of mri:MD_Keywords or one of its subclasses.

Its property instances are described below:

+ keyword[1..*]:CharacterString	SPECTMOD
+ thesaurusName[1]:CI_Citation	
+ title[1]:CharacterString	**Spectral Mode Codelist**
+ date[1]:CI_Date	
+ date[1]:Date	**2016-02-04**
+ dateType[1]:CI_DateTypeCode	**creation**

6.3.2.18 Resource Theme

A Resource Theme is an instance of mri:MD_Keywords or one of its subclasses.

Its property instances are described below:

+ keyword[1..*]:NGMP_ThematicCode	RSTHEME (for each)
+ thesaurusName[1]:CI_Citation	
+ title[1]:CharacterString	**NGMP_ThematicCode**
+ date[1]:CI_Date	
+ date[1]:Date	**2011-09-16**
+ dateType[1]:CI_DateTypeCode	**creation**

6.3.2.19 Resource Keyword Set

Resource Keyword Set is implemented through a single instance of gmd:MD_Keywords or one of its subclasses.

Its property instances are described below:

+ keyword[1..*]:CharacterString	keyword (for each)
+ thesaurusName[0..1]:CI_Citation	thesaurus - See Citation
+ type[0..1]:MD_KeywordTypeCode	type

6.3.2.20 Legal Constraints

Each set of Legal Constraints is implemented through a single instance of mco:MD_LegalConstraints or one of its subclasses.

Its property instances are described below:

+ useLimitation[0..*]:CharacterString	statement (for each)
+ accessConstraints[0..*]:MD_RestrictionCode	access (for each)
+ accessConstraints[0..1]:MD_RestrictionCode	**otherRestrictions** (when other is set)
+ useConstraints[0..*]:MD_RestrictionCode	use (for each)
+ useConstraints[0..1]:MD_RestrictionCode	**otherRestrictions** (when other is set)
+ otherConstraints[0..*]:CharacterString	other (for each)

6.3.2.21 Security Constraints

Each set of Security Constraints is implemented through a single instance of mco:MD_SecurityConstraint or one of its subclasses.

Its property instances are described below:

+ useLimitation[0..*]:CharacterString	limitation (for each)
+ classification[1]:MD_ClassificationCode	level - Default is **unclassified**
+ userNote[0..1]:CharacterString	note
+ classificationSystem[0..1]:CharacterString	system - See Note 1
+ handlingDescription[0..1]:CharacterString	handling

Notes:
1.

6.3.2.22 Citation

Each Citation is implemented through a single instance of cit:CI_Citation or one of its subclasses.

Its property instances are described below:

+ title[1]:CharacterString	title
+ date[0..*]:CI_Date	referenceDate (for each)
+ date[1]:DateTime	date - Default is **9999**
+ dateType[1]:CI_DateTypeCode	type - Default is **publication**
+ edition[0..1]:CharacterString	version
+ identifier[0..*]:MD_Identifier	identifier (for each) - See Identifier
+ citedResponsibleParty[0..1]:CI_Responsibility	citedParty - See Responsible Party
+ onlineResource[0..1]:CI_OnlineResource	When location is set
+ linkage[1]:CharacterString	location

6.3.2.23 Format

Each Format is implemented through a single instance of mrd:MD_Format or one of its subclasses.

Its property instances are described below:

+ formatSpecificationCitation[1]:CI_Citation	
+ title[1]:CharacterString	citation.title
+ edition[1]:CharacterString	citation.version
+ fileDecompressionTechnique[0..1]:CharacterString	decompression

6.3.2.24 Coverage Description

Each Coverage Description is implemented through a single instance of gmi:MI_CoverageDescription or one of its subclasses.

Its property instances are described below:

+ attributeDescription[1]:RecordType	**Record** See Note 1
+ href[1]:CharacterString	**urn:dgiwg:xmlns:dmf:1.0:iso-g1:egco:Record** See Note 2
+ attributeGroup[1]:MD_AttributeGroup	
+ contentType[1]:MD_CoverageContentTypeCode	contentType
+ groupAttribute[0..*]:MI_Band	range (for each)
+ sequenceIdentifier[1]:MemberName	
+ aName[1]:CharacterString	identifier
+ attributeType[1]:CharacterString	type
+ description[0..1]:CharacterString	descriptor
+ maxValue[0..1]:Real	maxValue
+ minValue[0..1]:Real	minValue
+ units[0..1]:UomLength	units
+ bitsPerValue[0..1]:Integer	bitsPerValue
+ transmittedPolarisation[0..1]:MI_PolarisationOrientationCode	transPolarisation
+ detectedPolarisation[0..1]:MI_PolarisationOrientationCode	detPolarisation
+ rangeElementDescription[0..*]:MI_RangeElementDescription	specialCell
+ name[1]:CharacterString	name
+ definition[1]:CharacterString	definition
+ rangeElement[1..*]:Record	cellValue

Notes:

1. DMF defines a default data type for the implementation of ISO Records: egco:Record. This ISO metadata element is by default referring to this default data type. This reference has no impact on the metadata class as long as there are no special cells in the description of the coverage.
2. xlink:href is instantiated as an XML attribute

6.3.2.25 Georectified Grid Parameters

Each set of Georectified Grid Parameters is implemented through a single instance of msr:MD_Georectified or one of its subclasses.

Its property instances are described below:

+ numberOfDimensions[1]:Integer	**cardinality of axisDimProp**
+ axisDimensionProperties[1..*]:MD_Dimension	axisDimProp
+ dimensionName[1]:MD_DimensionNameTypeCode	dimensionName
+ dimensionSize[1]:Integer	dimensionSize
+ resolution[0..1]:Measure	resolution
+ cellGeometry[1]:MD_CellGeometryCode	cellGeom
+ transformationParameterAvailability[1]:Boolean	transParamAvailability - Default is **true**
+ checkPointAvailability[1]:Boolean	**false** (when gridLocation is set)
+ cornerPoints[1..2]:GM_Point	gridLocation.cornerPoints - See Note 1
+ pointInPixel[1]:MD_PixelOrientationCode	**center** (when gridLocation is set)

Notes:

1. The srsName attribute is instantiated using the crs element.

6.3.2.26 Grid Spatial Representation

Each set of Grid Spatial Representation is implemented through a single instance of msr:MD_GridSpatialRepresentation or one of its subclasses.

Its property instances are described below:

+ numberOfDimensions[1]:Integer	**cardinality of axisDimProp**
+ axisDimensionProperties[1..*]:MD_Dimension	axisDimProp
+ dimensionName[1]:MD_DimensionNameTypeCode	dimensionName
+ dimensionSize[1]:Integer	dimensionSize
+ resolution[0..1]:Measure	resolution
+ cellGeometry[1]:MD_CellGeometryCode	cellGeom
+ transformationParameterAvailability[1]:Boolean	transParamAvailability - Default is **true**

6.3.2.27 Georeferenceable Grid

Each set of Georeferenceable Grid is implemented through a single instance of msr:MD_Georeferenceable or one of its subclasses.

Its property instances are described below:

+ numberOfDimensions[1]:Integer	**cardinality of axisDimensionsProperties**
+ axisDimensionProperties[1..*]:MD_Dimension	axisDimensionsProperties
+ dimensionName[1]:MD_DimensionNameTypeCode	dimensionName
+ dimensionSize[1]:Integer	dimensionSize
+ resolution[0..1]:Measure	resolution
+ cellGeometry[1]:MD_CellGeometryCode	cellGeom
+ transformationParameterAvailability[1]:Boolean	transParamAvailability - Default is **false**
+ controlPointAvailability[1]:Boolean	controlPointAvailability - Default is **false**
+ orientationParameter Availability[1]:Boolean	orientationParameterAvailability - Default is **true**
+ georeferencedParameters[1]:Record	georefParam
+ property[0..1]:Quantity	SUNAZ (when set)
+ @name[1]:CharacterString	**Sun Azimuth** See Note 1
+ property[0..1]:Quantity	SUNEL (when set)
+ @name[1]:CharacterString	**Sun Elevation** See Note 1
+ property[0..1]:Quantity	azimuth (when set)
+ @name[1]:CharacterString	**Instrument Azimuth** See Note 1
+ property[0..1]:Quantity	elevationAngle (when set)
+ @name[1]:CharacterString	**Instrument Elevation** See Note 1
+ property[0..1]:Quantity	sensLat
+ @name[1]:CharacterString	**Sensor latitude** See Note 1
+ property[0..1]:Quantity	sensLong
+ @name[1]:CharacterString	**Sensor longitude** See Note 1
+ property[0..1]:Quantity	sensHeight
+ @name[1]:CharacterString	**Sensor height** See Note 1
+ property[0..1]:Category	geoposModelType
+ @name[1]:CharacterString	**Geopositioning Model Type** See Note 1
+ property[0..1]:Quantity	calFocalLength (when set)
+ @name[1]:CharacterString	**Calibrated Focal Length** See Note 1
+ property[0..1]:Quantity	horFoV (when set)
+ @name[1]:CharacterString	**Horizontal field of view** See Note 1
+ property[0..*]:Category	sarColMode (for each) (when set)
+ @name[1]:CharacterString	**Collection Mode of instrumentId.code** See Note 1

Notes:

1. name is instantiated as an XML attribute.

6.3.2.28 Acquisition Information

Each set of Acquisition Information is implemented through a single instance of gmi:MI_AcquisitionInformation or one of its subclasses.

Its property instances are described below:

+ environmentalConditions[0..1]:MI_EnvironmentalRecord	ACMETCD (when set)
+ averageAirTemperature[1]:Real	avAirTemp
+ maxRelativeHumidity[1]:Real	maxRelHum
+ maxAltitude[1]:Real	maxAlt
+ meteorologicalConditions[1]:CharacterString	metCond
+ instrument[1..*]:MI_Instrument	ACINS (for each)
+ @id[1]:CharacterString	instrumentId.code
+ identifier[1]:MD_Identifier	instrumentId - See Identifier
+ type[1]:CharacterString	instrumentType
+ description[0..1]:CharacterString	instrumentDesc
+ platform[0..1]:MI_Platform	ACPLAT
+ identifier[1]:MD_Identifier	platformId - See Identifier
+ description[0..1]:CharacterString	platformDesc
+ instrument[1..*]:MI_Instrument	For each ACINS

+ href[1]:CharacterString	instrumentId.code

6.3.2.29 Record

Each set of Record is implemented through a single instance of egco:Record or one of its subclasses.

Its property instances are described below:

+ property[1..*]:ValuePropertyType	value - See Note 2
+ @name[1]:CharacterString	name - See Note 1

Notes:

1. name is instantiated as an XML attribute.
2. See Additional Instructions for subtypes of gml:ValuePropertyType.

6.3.2.30 Identifier

Each set of Identifier is implemented through a single instance of mcc:MD_Identifier or one of its subclasses.

Its property instances are described below:

+ code[1]:CharacterString	code
+ codeSpace[0..1]:CharacterString	namespace
+ description[0..1]:CharacterString	description

6.3.2.31 Anchor

Each set of Anchor is implemented through a single instance of gcx:Anchor or one of its subclasses.

Its property instances are described below:

+ (metadataElementTitle)[1]:String	value
+ href[0..1]:AnyURI	reference - See Note 1

Notes:

1. href is instantiated as an XML attribute.

6.3.2.32 Free Text

Each set of Free Text is implemented through a gco:CharacterString and a gmd:PT_FreeText or one of its subclasses.

Its property instances are described below:

+ (metadataElementTitle)[1]:CharacterString	value
+ (metadataElementTitle)[0..1]:PT_FreeText	translation (when set)
+ textGroup[0..*]:LocalisedCharacterString	translation.translatedText (for each)
+ @locale[1]:anyURI	translation.localeId - See Note 1

Notes:

1. locale is instantiated as an XML attribute.

6.3.2.33 Locale

Each set of Locale is implemented through a lan:PT_Locale or one of its subclasses.

Its property instances are described below:

+ language[1]:LanguageCode	language - Default is **eng**
+ characterEncoding[1]:MD_CharacterSetCode	encoding - Default is **utf8**

+ @id[0..1]:String	identifier - See Note 1

Notes:

1. The identifier property defined by DMF for Locale is handled as an XML identifier (inside the tags). It is never set for MDDLOC.

6.3.3 DMF Specific Constraints

SC01 MD_Metadata.defaultLocale.language is mandatory;

SC02 MD_Metadata.defaultLocale.characterSet is mandatory and fixed to **utf8**

SC03 MD_Metadata. metadataScope/MD_MetadataScope/resourceScope is mandatory

SC04 MD_Metadata.standard.title is mandatory.

SC05 MD_Metadata.standard.edition is mandatory.

SC06 When RSTYPE is not **nonGeographicDataset** or **service**, there shall be at least one instance of identificationInfo[1]/*/extent defining the geographic location of the resource as a geographic bounding box (i.e. an instance of EX_GeographicBoundingBox) or a geographic identifier(i.e. an instance of EX_GeographicDescription).

SC07 identificationInfo[1]/defaultLocale/characterSet is mandatory;

SC08 SV_ServiceIdentification.serviceTypeVersion is mandatory;

SC09 LI_Lineage.statement is mandatory;

SC10 MD_Distribution.distributionFormat is mandatory;

SC11 identificatioInfo[1].citation.onLineResource is mandatory for services;

SC12 MD_Metadata.metadataIdentifier is mandatory when the metadata is used in a catalogue;

SC13 MD_FeatureCatalogueDescription.complianceCode is mandatory, when a Feature Catalogue information is given;

SC14 MD_BrowseGraphic.fileDescription is mandatory, when a graphic illustration of the resource is provided;

SC15 MD_SecurityConstraints.classificationSystem is mandated in a context of international exchange, when a Security Constraint information is given;

SC16 Resource Format should be used only if different from Distribution Format;

SC17 One instance of spatialResolution.distance is mandatory for sensor conformance class.

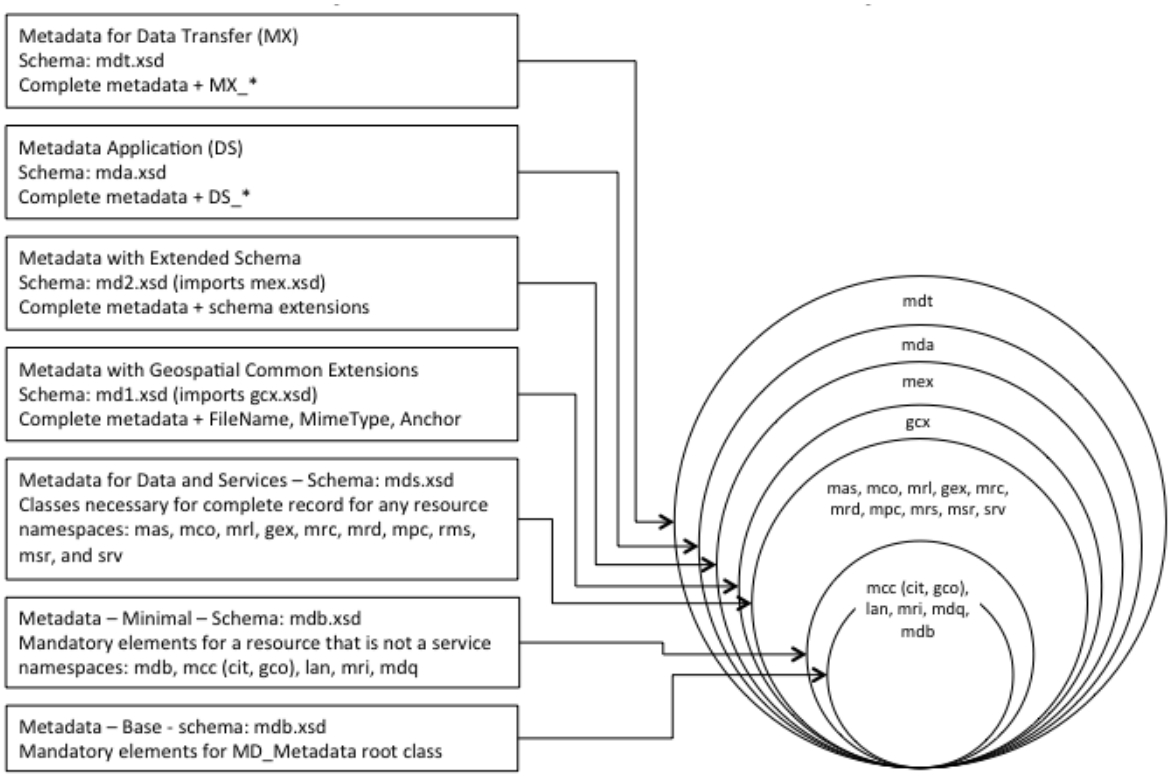
SC18 identificationInfo[1].processingLevel level is mandatory for sensor conformance class.

6.3.4 Implementation

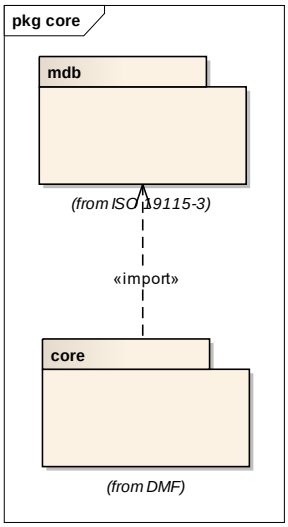
The XSD schemas that should be used for the implementation of DMF metadata according to the second generation of ISO standards are described below.

Two different profiles are defined (see Annex F for more explanation). In order to implement those profiles, it is necessary to import the related schemas, including generation 2 ISO namespaces and extensions if applicable, by declaring them at the beginning of the XML file using the XML fragment below.

Generation 2 namespaces contain the following namespaces:



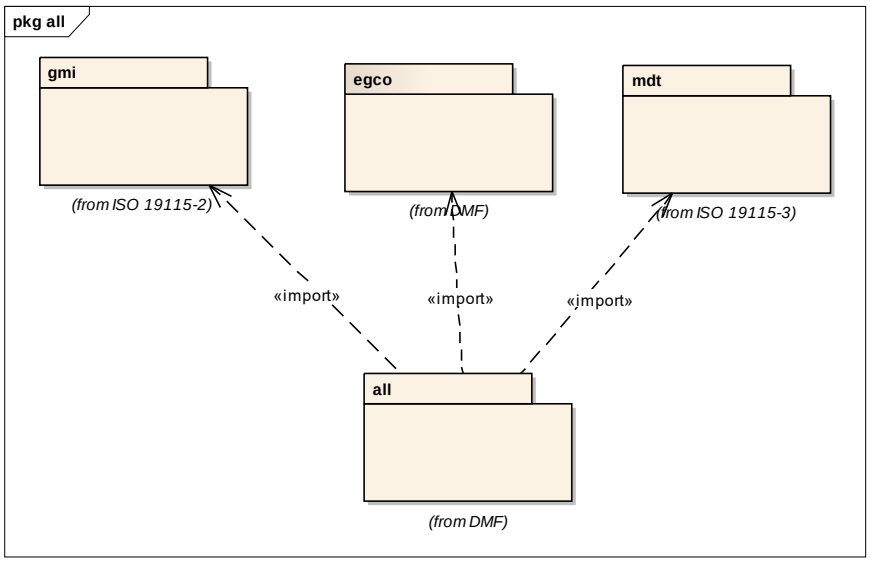
Implementation of the Core profile (see F.1): **core.xsd**:




```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:core=" http://www.dgiwg.org/xmlns/dmf/iso-
g2/profile/core " xmlns:dqc="http://standards.iso.org/iso/19157/-
2/dqc/1.0"xmlns:gco="http://standards.iso.org/iso/19115/-
3/gco/1.0" xmlns:lan="http://standards.iso.org/iso/19115/-
3/lan/1.0"xmlns:mcc="http://standards.iso.org/iso/19115/-
3/mcc/1.0" xmlns:mdb="http://standards.iso.org/iso/19115/-
3/mdb/1.0"xmlns:cit="http://standards.iso.org/iso/19115/-
3/cit/1.0" xmlns:mri="http://standards.iso.org/iso/19115/-
```

3/mri/1.0"xmlns:gex="http://standards.iso.org/iso/19115/-3/gex/1.0" targetNamespace="
http://www.dgiwg.org/xmlns/dmf/iso-g2/profile/core " elementFormDefault="qualified" version="2013-
05-24">
<xs:import namespace=" http://standards.iso.org/iso/19115/-3/mdb/1.0"
schemaLocation=" http://standards.iso.org/iso/19115/-3/mdb/1.0/mdb.xsd"/>
</xs:schema>

Implementation of the All profile (see F.3): **all.xsd**:



<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:all=" http://www.dgiwg.org/xmlns/dmf/iso-g2/profile/all "
xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:cat="http://standards.iso.org/iso/19115/-
3/cat/1.0"xmlns:mrl="http://standards.iso.org/iso/19115/-
3/mrl/1.0" xmlns:mcc="http://standards.iso.org/iso/19115/-
3/mcc/1.0"xmlns:mri="http://standards.iso.org/iso/19115/-
3/mri/1.0" xmlns:mpc="http://standards.iso.org/iso/19115/-
3/mpc/1.0"xmlns:srv="http://standards.iso.org/iso/19115/-
3/srv/2.0" xmlns:mac="http://standards.iso.org/iso/19115/-
3/mac/1.0"xmlns:mrs="http://standards.iso.org/iso/19115/-
3/mrs/1.0" xmlns:mco="http://standards.iso.org/iso/19115/-
3/mco/1.0"xmlns:lan="http://standards.iso.org/iso/19115/-
3/lan/1.0" xmlns:cit="http://standards.iso.org/iso/19115/-
3/cit/1.0"xmlns:mas="http://standards.iso.org/iso/19115/-
3/mas/1.0" xmlns:mda="http://standards.iso.org/iso/19115/-
3/mda/1.0"xmlns:msr="http://standards.iso.org/iso/19115/-
3/msr/1.0" xmlns:mdb="http://standards.iso.org/iso/19115/-
3/mdb/1.0"xmlns:gco="http://standards.iso.org/iso/19115/-
3/gco/1.0" xmlns:gex="http://standards.iso.org/iso/19115/-
3/gex/1.0"xmlns:gcx="http://standards.iso.org/iso/19115/-
3/gcx/1.0" xmlns:mex="http://standards.iso.org/iso/19115/-
3/mex/1.0"xmlns:mdq="http://standards.iso.org/iso/19157/-
2/mdq/1.0" xmlns:mmi="http://standards.iso.org/iso/19115/-
3/mmi/1.0"xmlns:mdt="http://standards.iso.org/iso/19115/-
3/mdt/1.0" xmlns:mds=http://standards.iso.org/iso/19115/-3/mds/1.0
xmlns:gmi=http://standards.iso.org/iso/19115/-2/gmi/1.0
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:gml="http://www.opengis.ne
t/gml/3.2"xmlns:mrc="http://standards.iso.org/iso/19115/-
3/mrc/1.0" xmlns:mrd="http://standards.iso.org/iso/19115/-3/mrd/1.0"

```
targetNamespace=" http://www.dgiwg.org/xmlns/dmf/iso-g2/profile/all " elementFormDefault="qualified"
version="2013-05-24">
    <xs:import namespace="http://standards.iso.org/iso/19115/-3/mdt/1.0"
schemaLocation="http://standards.iso.org/iso/19115/-3/mdt/1.0/mdt.xsd"/>
    <xs:import namespace=" http://www.dgiwg.org/xmlns/dmf/iso-g2/egco "
schemaLocation="http://www.dgiwg.org/xmlns/dmf/iso-g2/egco/egco.xsd"/>
    <xs:import namespace="http://standards.iso.org/iso/19115/-2/gmi/1.0"
schemaLocation="http://standards.iso.org/iso/19115/-2/gmi/1.0/gmi.xsd"/>
</xs:schema>
```

For any other profile definition, the mapping between metadata classes and XSD schemas is below:

- DMF/Core: mdb.xsd
- DMF/Common: mds.xsd
- DMF/Services:md1.xsd
- DMF/Data: md1.xsd
- DMF/Data+:gmi.xsd
- DMF/Defence: mdb.xsd
- DMF/Sensor: mds.xsd, gmi.xsd
- DMF/Specific: mdt.xsd

The XML Schema implementation of the merging generation of standards is provided with a set of XML Style sheets enabling the transformation of XML Documents compliant with the first generation of standards into XML Documents compliant with the new generation.

6.4 Additional instructions

6.4.1 Unit of measures

The representation of the unit of measures in DMF is achieved through a simple list of codes but is not implemented as a codelist in ISO. It is defined as a more complex definition of the unit. Nevertheless, to avoid inconsistent definition of the units of measure when interchanging metadata, it is often implemented by reference, with a reference pointing to a uom register. It has been chosen to implement the unit of measures by reference to a centralized register or repository. In XML, this by reference implementation is achieved through an xlink:href attribute which is expected to contain a Unique Resource Identifier of the resource.

Thus, the interchange of the DMF Metadata elements implies that it relies on a mechanism involving a detailed definition of the unit of measures corresponding to the codes defined in DMF. The value from the UoM Codelist of DMF needs to be transformed to a Unique Resource Identifier pointing to a register of UoM.

At this stage, this URI will point to an OGC register, and then take this form:

http://www.opengis.net/def/uom/OGC/1.0/{uom-code}

where {uom-code} is one of the value of the DMF Unit Of Measure Codelist

Example:

<gmd:units xlink:href=" http://www.opengis.net/def/uom/OGC/1.0/metre"/>

When a DGIWG registry will be available, another URI scheme will be defined.

Note: The reference to the unit of measure is implemented as a uom attribute in the Distance Type:

```
<gmd:spatialResolution>
    <gmd:MD_Resolution>
        <gmd:distance>
```

```
            <gco:Distance uom="http://www.opengis.net/def/uom/OGC/1.0/metre">15
</gco:Distance>
         </gmd:distance>
      </gmd:MD_Resolution>
</gmd:spatialResolution>
```

6.4.2 Codelists Mapped to Character Strings

Some of the DMF Metadata Elements and Properties having a Codelist Type are mapped to ISO 19115 character string (CharacterString) geographic information metadata elements. Those elements are:

- Georeferencing Level, Geospatial Information Type, Classification System, Representation Form, the resource Theme.

Note: For some elements an alternative implementation as CharacterString is allowed.

The first method to implement the DMF Codelist is to support the DMF/Specific Conformance Class. Indeed, the DMF/Specific metadata class is associated to a rigorous implementation of the DMF codelist, i.e. to the DMF extension of the ISO metadata standards defining an XML Schema implementation of the DMF Codelist (see Annex C).

Example:

```
<egco:Codelist codeListValue="georeferenced" codeList="
http://www.dgiwg.org/metadata/codelist/NGMP_GeospatialInformationTypeCode">
http://www.dgiwg.org/metadata/codelist/NGMP_GeospatialInformationTypeCode/georeferenced</egc
o:Codelist>
```

Req 16. A DMF/Specific candidate Metadata Catalogue shall be able to implement the DMF extension of the ISO metadata standards, i.e. to use the DMF XML Schema implementation of the DMF Codelists defined in Annex C instead of the default character string implementation. The DMF catalogue should then show the human readable values provided in the DMF vocabulary.

Req 17. A DMF/Specific candidate Metadata set shall implement the DMF extension of the ISO metadata standards each time it is applicable.

The second method to implement the elements is to implement them as CharacterString, as it is usually done in ISO.

Then the implementation is based on:

- a URI scheme of the codelists and their values, and
- the use of the URI as the value of the geographic information metadata element.

The value of the code list needs to be transformed to a URI with the following scheme:

http://www.dgiwg.org/metadata/codelist/{codelist-id}/{codelist-value}

where:

- {codelist-id} is the DMF identifier of the codelist;
- {codelist-value} is the code corresponding to the codelist-value;

Note: The DMF Extension of ISO metadata standards provides additional XML attributes for a standard management of codelists, **but the textual value of the XML element shall conform to the DMF Codelist URI Scheme for both DMF CodeList and CharacterString implementations.**

This alternative enables standard metadata implementations to manage DMF Metadata Sets.

Example:

<keyword>http://www.dgiwg.org/metadata/codelist/NGMP_GeospatialInformationTypeCode/georeferenced</keyword>

Req 18. Any Candidate Metadata Catalogue shall be able to implement the DMF Codelist URI Schema for a DMF Metadata Element or Property Codelist mapped to an ISO 19115/ISO 19139 character string metadata element. The DMF catalogue shall show the values as they are defined in DMF vocabulary.

Req 19. In a candidate DMF Metadata Set, any value of ISO 19115/ISO 19139 CharacterString metadata element mapped to a DMF Codelist shall conform to the DMF Codelist URI Scheme.

6.4.3 Use of nilReason attribute

ISO/TS 19139 provides a means for indicating that the contents of an element may be unknown, inapplicable, missing or withheld, through the use of the gco:nilReason attribute. However, this mechanism does not make the metadata file compliant with ISO 19115.

Consequently, the use of nilReason is not conformant with DMF. Default values have been provided to avoid missing mandatory elements. For non-mandatory elements, the best practice is not to instantiate the XML element when it is unknown/inapplicable/missing/withheld.

6.4.4 Record implementation

A record is composed of several properties. Each of them contains a name and a value. The value of the property can have different types depending on the element to be expressed.

Here are the types available:

Scalar values:

- gml:Boolean
- gml:Category: A gml:Category has an optional XML attribute codeSpace, whose value is a URI which identifies a dictionary, codelist or authority for the term.
- gml:Count
- gml:Quantity: An XML attribute uom ("unit of measure") is required, whose value is a URI which identifies the definition of a ratio scale or units by which the numeric value shall be multiplied, or an interval or position scale on which the value occurs.

Scalar values list:

- gml:BooleanList
- gml:CategoryList
- gml:CountList
- gml:QuantityList

Composite value:

- gml:CompositeValue: gml:CompositeValue is an aggregate value built from other values. It contains zero or an arbitrary number of gml:valueComponent elements, and zero or one gml:valueComponents property elements. It may be used for strongly coupled aggregates (vectors, tensors) or for arbitrary collections of values.
- gml:ValueArray: A Value Array is used for homogeneous arrays of primitive and aggregate values. The member values may be scalars, composites, arrays or lists. ValueArray has the same content model as CompositeValue, but the member values shall be homogeneous. The

element declaration contains a Schematron constraint which expresses this restriction precisely. Since the members are homogeneous, the gml:referenceSystem (uom, codeSpace) may be specified on the gml:ValueArray itself and inherited by all the members if desired.

- gml:CategoryExtent
- gml:CountExtent
- gml:QuantityExtent

Geometries:

- gml:MultiGeometry
- gml:MultiPoint
- gml:MultiCurve
- gml:MultiSurface
- gml:MultiSolid
- gml:Point
- gml:LineString
- gml:CompositeCurve
- gml:Curve
- gml:OrientableCurve
- gml:Polygon
- gml:CompositeSurface
- gml:Surface
- gml:PolyhedralSurface
- gml:TriangulatedSurface
- gml:Tin
- gml:OrientableSurface
- gml:CompositeSolid
- gml:Solid
- gml:GeometricComplex

Implicit geometries:

- gml:Grid
- gml:RectifiedGrid

Time:

- gml:TimeInstant
- gml:TimePeriod
- gml:TimeNode
- gml:TimeEdge
- gml:TimeTopologyComplex

6.4.5 FreeText implementation

The FreeText implementation allows implementing a text in the default language and in any other language. Here is an example of a FreeText implementation:

```
<gmd:abstract xsi:type="gmd:PT_FreeText_PropertyType">
    <gco:CharacterString>On this topographic map, the natural and man-made features existing on the earth are represented with cartographic symbols in accordance with plotting scale and the topography is represented with 10 meters-interval contours.
    </gco:CharacterString>
    <gmd:PT_FreeText>
        <gmd:textGroup>
          <gmd:LocalisedCharacterString locale="#locale_tur">Topoğrafik haritada, çizim ölçeğine uygun olarak; arazide mevcut doğal ve yapay detaylar kartoğrafik sembollerle, yeryüzü şekilleri (topoğrafyası) 10 metre aralıklı eş yükseklik eğrileri ile gösterilmiştir.
            </gmd:LocalisedCharacterString>
     </gmd:textGroup>
     </gmd:PT_FreeText>
</gmd:abstract>
<!-- MDTLOC -->
<gmd:locale>
    <gmd:PT_Locale id="locale_tur">
        <gmd:languageCode>
          <gmd:LanguageCode codeList="../ngmpCodelists.xml#LanguageCode"
codeListValue="tur">tur
            </gmd:LanguageCode>
        </gmd:languageCode>
        <gmd:characterEncoding>
            <gmd:MD_CharacterSetCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#MD_CharacterSetCode" codeListValue="utf8">utf8
            </gmd:MD_CharacterSetCode>
         </gmd:characterEncoding>
    </gmd:PT_Locale>
</gmd:locale>
```

Annex A Abstract Test Suite (normative)

A.1 Introduction

This Annex presents the abstract test suite for evaluating conformance to this specification. This abstract test suite contains three test modules:

- a test module for the conformance of a candidate metadata catalog (A.2);
- a test module for the conformance of a candidate metadata profile (A.3).
- a test module for the conformance of a candidate metadata set (A.4).

A.2 Test module on Candidate Metadata Catalogue

This test suite is applicable to candidate metadata catalogues. They can be declared as compliant with DMF only if tests A.2.1 to A.2.12 are satisfied.

A.2.1 Test case: Supported DMF metadata class

1) Test Purpose: Verify that the documentation of a candidate Metadata Catalogue defines the supported DMF metadata classes.

2) Test Method: Inspect the documentation of the catalogue. Pass if the metadata classes are mentioned; fail otherwise.

3) Reference: Req 1

4) Test Type: Basic.

A.2.2 Test case: DMF/Core supported

1) Test Purpose: Verify that the candidate Metadata Catalogue supports the DMF/Core metadata class.

2) Test Method: Inspect the documentation of the catalogue. Pass if the DMF/Core metadata class is mentioned as supported; fail otherwise.

3) Reference: Req 2

4) Test Type: Basic.

A.2.3 Test case: DMF metadata set as output

1) Test Purpose: Verify that the candidate Metadata Catalogue supports at least the one of metadata class as output format.

2) Test Method: Inspect the documentation of the catalogue. Pass if one of the DMF metadata class is supported as output; fail otherwise

3) Reference: Req 3

4) Test Type: Basic.

A.2.4 Test case: DMF metadata element view point

1) Test Purpose: Verify that the metadata element viewpoint defined respects the rules for extending DMF.

2) Test Method: Inspect the documentation of the application schema or profile. Pass if for each element defined the view (D, E, U, M) is mentioned; fail otherwise

3) Reference: Req 6, Annex B

4) Test Type: Basic.

A.2.5 Test case: Takes into account the DMF metadata element sets in the interactions with the users especially in terms of user interface

1) Test Purpose: Verify that the profile takes into account the DMF metadata element sets in the interactions with the users especially in terms of user interface

2) Test Method: Inspect the user interface of the catalogue. Pass if the elements set are displayed; fail otherwise

3) Reference: Req 7

4) Test Type: Basic.

A.2.6 Test case: Metadata elements of the metadata class

1) Test Purpose: Verify that the candidate Metadata Catalogue is able to manage each of the metadata elements, data types and complex data type properties pertaining to the supported metadata classes.

2) Test Method: For each metadata class supported, inspect the catalogue to check that each element of the metadata class is supported. Pass if it is true; fail otherwise

3) Reference: Req 11

4) Test Type: Basic.

A.2.7 Test case: Input DMF metadata set

1) Test Purpose: Verify that the candidate Metadata Catalogue is at least able to ingest DMF Conformant Metadata Sets, depending on the user requirements.

2) Test Method: Try to load a DMF compliant metadata on the catalogue. Pass if it succeeds; fail otherwise

3) Reference: Req 12

4) Test Type: Basic.

A.2.8 Test case: Output DMF metadata set

1) Test Purpose: Verify that the candidate Metadata Catalogue is at least able to output DMF Conformant Metadata Sets, depending on the user requirements.

2) Test Method: Try to output a DMF compliant metadata on the catalogue. Pass if it succeeds; fail otherwise

3) Reference: Req 12

4) Test Type: Basic.

A.2.9 Test case: Input or output compliant DMF metadata sets.

1) Test Purpose: Verify that the candidate metadata catalogue is able to input compliant DMF metadata sets.

2) Test Method: Try to load a DMF compliant metadata on the catalogue. Pass if it succeeds and all the elements of the metadata are still present; fail otherwise

3) Reference: Req 14

4) Test Type: Basic.

A.2.10 Test case: Output compliant DMF metadata sets.

1) Test Purpose: Verify that the candidate metadata catalogue is able to output compliant DMF metadata sets.

2) Test Method: Try to output a DMF compliant metadata on the catalogue. Pass if it succeeds and all the elements of the metadata are valid; fail otherwise

3) Reference: Req 14

4) Test Type: Basic.

A.2.11 Test case: Implements DMF extension of the ISO standard

1) Test Purpose: Verify that the implementation of the catalog uses the DMF XML schema.

2) Test Method: Inspect the implementation of the catalog. Pass if the DMF XML schema is used; fail otherwise.

3) Reference: Req 16

4) Test Type: Basic.

A.2.12 Test case: Implements DMF CodeList Uri Scheme

1) Test Purpose: Verify that the catalog implements DMF CodeList Uri Scheme or Property CodeList.

2) Test Method: Inspect the implementation of codeLists. Pass if it uses DMF codelists; fail otherwise.

3) Reference: Req 18, **Error! Reference source not found.**

4) Test Type: Basic.

A.3 Test module on Candidate DMF Profile

This test suite is applicable to candidate profiles only. They can be declared as compliant with DMF only if tests A.3.1 and A.3.2 are satisfied.

A.3.1 Test case: Respect the profiling rules

1) Test Purpose: Verify that the candidate Metadata Catalogue respects the profiling rules.

2) Test Method: Inspect the documentation of the application schema or profile. Pass if all the rules mentioned in Annex B are respected; fail otherwise

3) Reference: Req 4, Annex B

4) Test Type: Basic.

A.3.2 Test case: Additional metadata class

1) Test Purpose: Verify that if the additional metadata class defined respects the rules for extending DMF.

2) Test Method: Inspect the documentation of the application schema or profile. Pass if the declaration of the additional metadata class respects the rules; fail otherwise

3) Reference: Req 5

4) Test Type: Basic.

A.4 Test module on candidate metadata set

This test suite is applicable to candidate metadata sets. They can be declared as compliant with DMF only if tests A.4.1 to A.4.7 are satisfied.

A.4.1 Test case: Element occurrence

1) Test Purpose: Verify that, within a DMF Metadata Set describing a dataset, dataset series, service, tile, or nonGeographicDataset, each metadata element of the supported metadata classes occur as many times as specified by the cardinality and constraint statements.

2) Test Method: Inspect the metadata set. Pass if the constraints and cardinality are respected; fail otherwise

3) Reference: Req 8

4) Test Type: Basic.

A.4.2 Test case: Complex data types metadata class

1) Test Purpose: Verify that, within a DMF Metadata Set describing a dataset, dataset series, service, tile, or nonGeographicDataset, each instance of a property or metadata element having a complex data type comprise the property instances applicable to the supported metadata classes according to the data type definition.

2) Test Method: Inspect the documentation of the application schema or profile. Pass if the complex data types are valid; fail otherwise

3) Reference: Req 9

4) Test Type: Basic.

A.4.3 Test case: Value domain

1) Test Purpose: Verify that the content of each occurrence of a DMF Metadata Set conform to the value domain (including the data type definition) and description (including the identified constraints) of the metadata element.

2) Test Method: Inspect the documentation of the metadata set. Pass if for each occurrence of metadata set that conforms to the value domain and description of the metadata element in DMF; fail otherwise

3) Reference: Req 10

4) Test Type: Basic.

A.4.4 Test case: Metadata sets consistency

1) Test Purpose: Verify that the candidate DMF Metadata Sets is composed of a set of well-formed XML Documents valid with respect to XML Schemas conformant to the standard encoding of the geographic information concepts defined by ISO. These XML Documents shall also conform to the mappings between the DMF Metadata elements and the geographic information standards defined in clause 6.3.2 and 6.3.3

2) Test Method: Inspect the XML of the metadata set. Pass if the document is well-formed and valid; fail otherwise

3) Reference: Req 13

4) Test Type: Basic.

A.4.5 Test case: Validity of the XML document

1) Test Purpose: Verify that the XML document of a candidate Metadata Set meets the applicable DMF specific constraints.

2) Test Method: Inspect the XML document. Pass if the specific constraints are met; fail otherwise.

3) Reference: Req 15

4) Test Type: Basic.

A.4.6 Test case: Implements the DMF extension

1) Test Purpose: Verify that the XML document of a candidate Metadata Set implements the DMF extension of the ISO standard if needed.

2) Test Method: Inspect the XML document. Pass if, when needed, the XML extension is used; fail otherwise.

3) Reference: Req 17

4) Test Type: Basic.

A.4.7 Test case: Uses the Codelist URI Scheme

1) Test Purpose: Verify that the XML document of a candidate Metadata Set uses the DMF CodeList URI Scheme when applicable.

2) Test Method: Inspect the XML document. Pass if the DMF CodeList URI Scheme is used when applicable; fail otherwise.

3) Reference: Req 19, **Error! Reference source not found.**

4) Test Type: Basic.

Annex B Rules for profiling DMF (normative)

B.1 Basic rules

Rule 1.: A DMF Profile shall define the resource types (e.g. dataset, series, etc.) in the scope of the profile.

Rule 2.: A DMF Profile shall define the applicable metadata class, as well as the applicable metadata elements, types and properties.

Rule 3.: A DMF Profile shall only define what is specific to the profile implementations: restriction of the cardinality, domain of value of a DMF metadata element.

B.2 Creating inherited metadata elements

A DMF profile may specialize a DMF complex metadata element, in order to create a new metadata element. A specialization means that one of the attribute is fixed.

Rule 4.: When an element is specialized, the specialized value shall be compatible with the Value Domain and contraints defined in DMF.

Example: Within the STANAG NGMP, the Resource Custodian is a specialization of DMF Resource Responsible Party: the role is fixed to custodian, and only the organization name is provided. However, the value that is provided shall respect the Domain Value of the DMF complex type, in order to keep the compliancy with DMF.

Rule 5.: The specialized element shall be registered so that it can be reused in other profiles.

A DMF profile may inherit a DMF complex metadata element, in order to create a new metadata element. In this case new values can be added to the element.

Rule 6.: Inherited metadata elements shall be documented (mandatory Identifier, Title, Description, Cardinality, Value Domain, metadata class, View (D, E, U, M); Optional constraint, default or fixed value).

B.3 Extending DMF

Rule 7.: Any extension of DMF has to be handled in a new metadata class.

A DMF Profile can add a new resource type.

Rule 8.: In this case, it shall specify the DMF Metadata elements applicable to the new resource type, i.e. for each applicable DMF Metadata element, its cardinality, its domain of value, and its specific constraints.

A DMF profile can define new properties of existing DMF Complex Type and implicitly make them applicable to the DMF Metadata elements as part of a profile metadata class.

Rule 9.: In this case, it shall specify for each new property of the complex type, its cardinality, its domain of value and its specific constraints.

A DMF profile can define new codelists.

Rule 10.: Values for this list of codes have to be defined and made accessible to the audience of the profile. As long as the implementation of the new codelist uses either a URI Scheme compatible with the DMF's one or the DMF generic codelist implementation; it is not seen as an extension of DMF. Thus, any extension of the codelist is not seen as an extension of DMF. However, any restriction of

the domain of value or any new constraints applicable to the existing DMF metadata elements have to be expressed as additional requirements in a profile metadata class.

A DMF Profile may define metadata elements which are not in scope with the ISO metadata standards and the DMF/Defence metadata extensions of ISO 19115.

Rule 11.: In this case, the full documentation of the concepts (conceptual schema, data dictionary, etc) and their XML Schema Implementation shall be made available.

B.4 Registration of DMF metadata profile

Each DMF metadata profile and relative XML schemas shall be registered within the DGIWG. This registration mechanism involves the documentation of the relationship between the DMF and the profile with a set of tables:

- The metadata class table defines the DMF metadata classes in the scope of the profile as well as the profile specific metadata classes and their dependencies.
- The metadata element table defines for each DMF Metadata element, the corresponding profile metadata element (there may be many in case of an inherited metadata element), its cardinality, and inheritance criteria when applicable.

The naming of the profile should follow this template:

http://www.dgiwg.org/**std/dmf/profile/***name[/version]*

where *name* is the name of the template (see Annex F for examples of existing names) and *version* is the version of the profile, if any.

Annex C DMF Extensions of ISO 19115 (normative)

C.1 Conceptual schema

C.1.1 Overview

As depicted in Figure 1, the DMF Extensions of ISO 19115 comprised of a generic implementation of records and a generic implementation of codelists.

They are defined in an **egco** (extended gco) namespace.

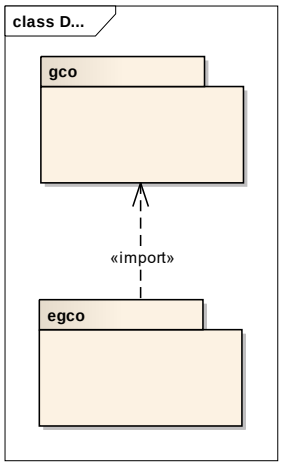


Figure 1 – Overview of DMF Extensions of ISO 19115

C.1.2 DMF Record

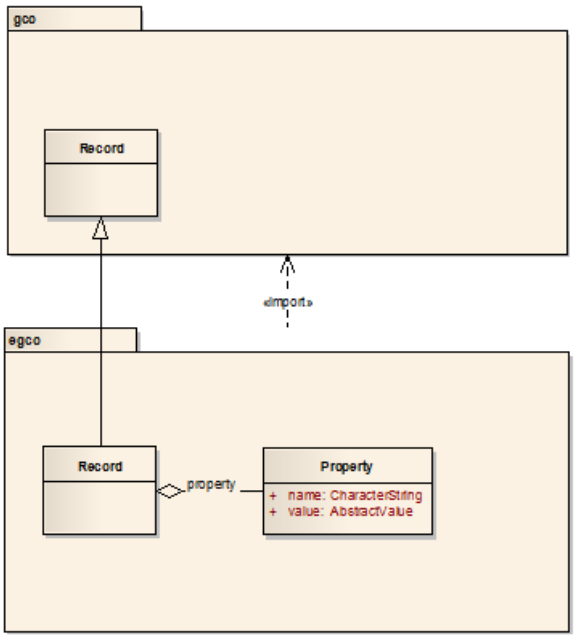


Figure 2 – Overview of DMF Record Extension of ISO 19103

C.1.3 DMF Codelist

The DMF CodeList is implemented in order to avoid the definition of XML Schema types and elements when a codelist needs to be defined and used in order to specify the domain of value of a metadata element or property.

A generic CodeList element is defined. The codeList attributes links to the urn of the codelist, codeListValue precedes the value in the codeList.

The following lines provide an example of this CodeList element:

<egco:Codelist codeListValue="eng" codeList="
http://www.dgiwg.org/metadata/dmf/codelist/LanguageCode" xmlns:egco="
http://www.dgiwg.org/xmlns/dmf/iso-g1/egco/1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation=" http://www.dgiwg.org/xmlns/dmf/iso-g1/egco/1.0
http://www.dgiwg.org/xmlns/dmf/1.0/iso-g1/egco/egco.xsd">
http://www.dgiwg.org/metadata/dmf/codelist/LanguageCode/eng</egco:Codelist>

C.2 Data dictionary

Table 1 – Record extension Data Dictionnary

	Name / Role name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain
1.	Record	Extension of ISO19103 Record.	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (gco:Record)	Lines 2 and ISO 19115 - B.4.3
2.	Role name property	Information about past modifications of the classification	M	N	Association	Property (line 3)
3.	Property	Property of the record	Use obligation from referencing object	Use maximum occurrence from referencing object	Aggregated Class (Record)	Lines 4-5
4.	name	Name of the property.	M	1	Attribute	String
5.	value	Value of the property.	M	1	Class	gco:AbstractObject

C.3 XML Schema Implementation of DMF Extensions of ISO 19115

The DMF extension is composed of one XSD file: egco.xsd

<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:egco=" http://www.dgiwg.org/xmlns/dmf/iso-g1/egco/1.0" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns:gco="http://www.isotc211.org/2005/gco" targetNamespace="
http://www.dgiwg.org/xmlns/dmf/iso-g1/egco/1.0" elementFormDefault="qualified" version="2013-05-24">

```
 <xs:import namespace="http://www.isotc211.org/2005/gco"
schemaLocation="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schemas/gco/gco.xsd"/>
 <xs:import namespace="http://www.opengis.net/gml/3.2"
schemaLocation="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19136_Schemas/gml/gml.xsd"/>
 <!--  DMF Codelist -->
 <xs:element name="Codelist" type="gco:CodeListValue_Type">
  <xs:annotation>
   <xs:documentation>This a generic element for the implementation of codelists avoiding the
definition of XML Schema types and elements when a codelist needs to be defined and used in order
to precise the domain of value of a metadata element or property.</xs:documentation>
  </xs:annotation>
 </xs:element>
 <!--
  DMF Record
 -->
 <xs:complexType name="Record_Type">
  <xs:complexContent>
   <xs:extension base="gco:AbstractObject_Type">
    <xs:sequence>
     <xs:element name="property" maxOccurs="unbounded">
      <xs:complexType>
       <xs:complexContent>
        <xs:extension base="gml:ValuePropertyType">
         <xs:attribute name="name" type="xs:string" use="required"/>
        </xs:extension>
       </xs:complexContent>
      </xs:complexType>
     </xs:element>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
 </xs:complexType>
 <!--
.....
.... -->
 <xs:element name="Record" type="egco:Record_Type" substitutionGroup="gco:Record"/>
 <!--
.....
.... -->
 <xs:complexType name="Record_PropertyType">
  <xs:sequence minOccurs="0">
   <xs:element ref="egco:Record"/>
  </xs:sequence>
  <xs:attributeGroup ref="gco:ObjectReference"/>
  <xs:attribute ref="gco:nilReason"/>
 </xs:complexType>
</xs:schema>
```

Annex D NGMP Extensions of ISO 19115 (normative)

D.1 Conceptual schema

D.1.1.1 Overview

As depicted in Figure 1, the NGMP Extensions of ISO 19115 comprises an Extension for Military Security Metadata and a set of NGMP Vocabularies.

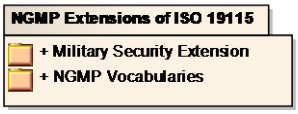


Figure 3 – Overview of NGMP Extensions of ISO 19115

D.1.1.2 Military Security Extension

ISO 19115 conceptual schema is not adequately developed for military context, especially in terms of expression of the security constraints.

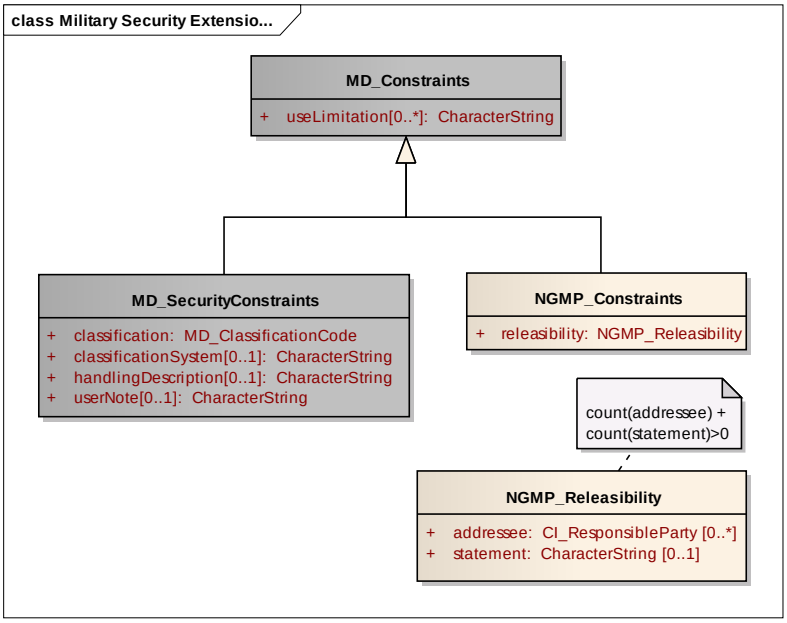


Figure 4 extends ISO 19115 to support the security requirements of NGMP and more generally of the geospatial military community.

– The requirement is to be able to express releasability information.

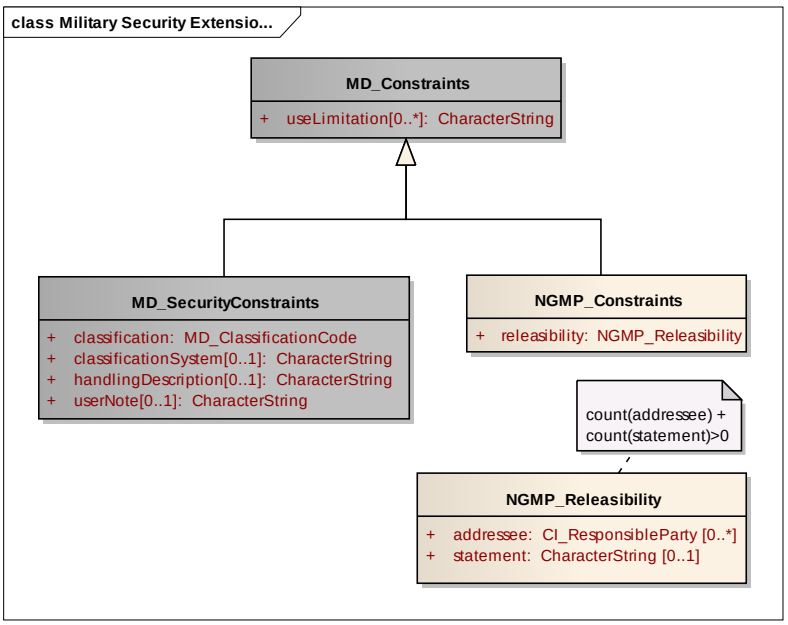
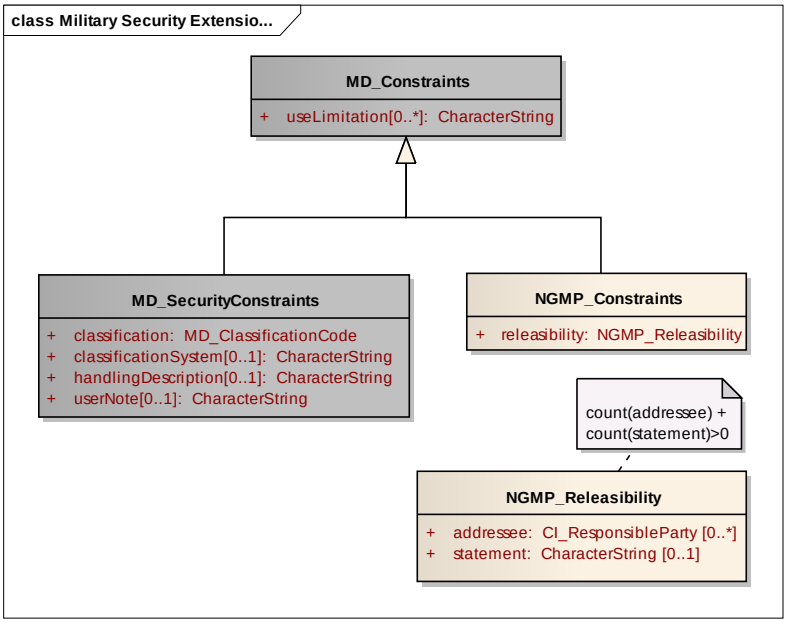


Figure 4 – Conceptual Schema of the Military Security Extension



The concepts depicted in Figure 4 are further detailed in

Table 2 of D.2.

D.2 Data dictionary

D.2.1 Military Security Extension

Table 1 further details the concepts involved in the DMF Security extension of ISO 19115.

Table 2 – Security extension Data Dictionnary

	Name / Role name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain
14.	NGMP_ Constraints	Military extension of MD_Constraints	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (MD_Constraints)	Line 15 and ISO 19115 - B.2.3
15.	releasability	Information about the releasability of the document, country or organisation	M	1	Class	NGMP_ Releasability (line 16)
16.	NGMP_Releasability	Releasability statement and list of regarded country or organisation	Use obligation from referencing object	Use maximum occurrence from referencing object	Aggregated Class (NGMP_Security Constraints)	Lines 17 - 18
17.	addressee	Regarded country or organisation	C / Mandatory if addressee not provided	N	Class	CI_Responsible Party (ISO 19115 - B.3.2.1)
18.	statement	Descriptive statement for the releasability requirement	C / Mandatory if addressee not provided	1	CharacterString	Free text

D.3 XML Schema Implementation of NGMP Extensions of ISO 19115

D.3.1 Introduction

This clause defines the XML encoding for the NGMP Extensions of ISO 19115 defined in D.1. This XML schema implementation follows the encoding rules stated in ISO/TS 19139 (8 – Encoding rules). The exceptions and the implementations based on external types are detailed in this clause. This clause uses the UML notation commonly used in the ISO 19100 series of International Standards and the specific notations defined in clause in 5.4 of ISO/TS 19139.

D.3.2 Namespaces

In the table below, the item on the left describes the common namespace prefix used to describe the elements in the namespace. The second item is an English description of the namespace prefix, and the item in parenthesis is the URI of the actual namespace.

prefix	Description	Namespace
ngmp	NATO Geospatial Metadata Profile	urn:int:nato:geometoc:geo:metadata:ngmp:1.0
gco	Geographic Common extensible markup language	http://www.isotc211.org/2005/gco
gmd	Geographic MetaData extensible markup language	http://www.isotc211.org/2005/gmd
gml	Geography Markup Language	http://www.opengis.net/gml/3.2
gmx	Geographic Metadata XML Schema	http://www.isotc211.org/2005/gmx
gss	Geographic Spatial Schema extensible markup language	http://www.isotc211.org/2005/gss
gsr	Geographic Spatial Referencing extensible markup language	http://www.isotc211.org/2005/gsr
gts	Geographic Temporal Schema extensible markup language	http://www.isotc211.org/2005/gts

D.3.3 Specification of the XML Schema implementation

D.3.3.1 Organization of the ngmp namespace

This namespace contains the XML Schema Implementation of NGMP extensions of ISO 19115. The root and unique XML Schema Document of this namespace is ngmp.xsd.

D.3.3.2 ngmp.xsd

This XML schema implements the UML conceptual schema defined in clause D.1. It directly imports the XML Schema definition from gco and gmd namespaces.

All the concepts defined in clause D.1 and described in clause D.2 are implemented in this XML schema document in conformance with the encoding rules defined in Clause 8 of ISO/TS 19139.

Annex E Use of registered items for DMF (informative)

This annex will be updated when the work on registers will be completed by DGIWG.

E.1 Schema location

DMF and NGMP schemas are available on the DGIWG website. At this stage, for validation purposes, the files have to be delivered with the metadata file or hosted by the nation. (This will be modified when the DGIWG register will be available.)

Informations concerning ISO 19115-3 namespaces can be found at: http://standards.iso.org/iso/19115/resources/namespaceSummary.html

E.2 Codelists

DMF vocabularies can have several types of implementations. Here is a table to summarize the implementation of each element.

Vocabularies in DMF	ISO CodeList	NGMP Codelist	Comment
Boolean			Not implemented as a codelist
Cell Geometry Codelist	MD_CellGeometryCode		
Character Set Codelist	MD_CharacterSetCode		
Classification Level Codelist	MD_ClassificationCode		
Coupling Type Codelist	SV_CouplingType		ISO 19119
Coverage Content Type Codelist	MD_CoverageContentTypeCode		Extended
Data Level Codelist		NGMP_DataLevelCode	
Date Type Codelist	CI_DateTypeCode		
Dimension Name Codelist	MD_DimensionNameTypeCode		
Distributed Computing Platform Codelist	DCPList		ISO 19119
Frequency Codelist	MD_MaintenanceFrequencyCode		
Geometric Object Type Codelist	MD_GeometricObjectTypeCode		
Geopositioning Level Codelist		NGMP_GeoreferencingLevelCode	Extended
Geopositioning Model Type Codelist			Implemented as a CharacterString
Geospatial Information Type Codelist		NGMP_GeospatialInformationTypeCode	
Imagery Association Codelist			Implemented as a CharacterString
Imaging Condition Codelist	MD_ImagingConditionCode		
Keyword Type Codelist	MD_KeywordTypeCode		
Language Codelist			ISO 639-2 3-alphabetic digits code
Medium Name Codelist	MD_MediumNameCode		Extended
Online Function Codelist	CI_OnLineFunctionCode		
Polarisation Codelist	MI_PolarisationOrientationCode		
Quality element Codelist			Not implemented as a codelist
Releasability Codelist		NGMP_Releasability	

		Code	
Representation Form Codelist		NGMP_Representation FormCode	
Resource Type Codelist	MD_ScopeCode		
Restriction Codelist	MD_RestrictionCode		
Role Codelist	CI_RoleCode		
SAR Collection mode Codelist			Implemented as a CharacterString
Sensor Type Codelist			Implemented as a CharacterString
Spatial Representation Type Codelist	MD_SpatialRepresentationTyp e Code		
Spectral Mode information Codelist			Implemented as a CharacterString
Status Codelist	MD_ProgressCode		Extended with the following values:latestAvailable, olderAvailable and notReleasable.
Thematic Codelist		NGMP_ThematicCode	
Topic Category Enumeration	MD_TopicCategoryCode		Enumeration in ISO
Topology Level Codelist	MD_TopologyLevelCode		
Type Codelist			Implemented as a CharacterString
Unit of Measure Codelist			Not implemented as a codelist
Vector Geometry Codelist	MD_GeometricObjectTypeCod e		
	MD_PixelOrientationCode		Fixed value

E.2.1 ISO codelists

ISO/TS 19139 codelists are available here:
http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schemas/resources/codelist/

ISO/TS 19115-3 codelists are available here:
http://standards.iso.org/iso/19115/resources/Codelist/cat/codelists.html

Note: Elements in bold have been extended with ISO 19115-1 values so, even for an ISO 19139 implementation, the ISO 19115-3 codelists should be used.

CI_DateTypeCode
CI_OnLineFunctionCode
MD_CharacterSetCode
MD_ScopeCode
CI_RoleCode
MD_CellGeometryCode
MD_ClassificationCode
MD_DimensionNameTypeCode
MD_GeometricObjectTypeCode
MD_KeywordTypeCode
MD_MaintenanceFrequencyCode
MD_PixelOrientationCode
MD_RestrictionCode
MD_ScopeCode
MD_SpatialRepresentationTypeCode
MD_TopologyLevelCode
MD_TopicCategoryCode (implemented as an enumeration)

MD_CoverageContentTypeCode
MD_ImagingConditionCode
MD_GeometricObjectTypeCode

ISO 19119 Codelists are available on the DGIWG website. At this stage, the file has to be delivered with the metadata or hosted by the nation. (This will be modified when the DGIWG register will be available.)

SV_CouplingType
DCPList

ISO 19115-2 codelists are available here:
http://www.isotc211.org/2005/resources/Codelist/gmiCodelists.xml

MI_PolarisationOrientationCode

E.2.2 DMF extensions

DMF extensions of existing codelists are available on the DGIWG website. At this stage, the file has to be delivered with the metadata or hosted by the nation. (This will be modified when the DGIWG register will be available.)

MD_MediumNameCode
MD_ProgressCode
MD_CoverageContentTypeCode

E.2.3 NGMP Codelists

NGMP Codelists are available on the DGIWG website. At this stage, the file has to be delivered with the metadata or hosted by the nation. (This will be modified when the DGIWG register will be available.)

NGMP_BaselineLevelCode
NGMP_DesignationTypeCode
NGMP_GeospatialInformationTypeCode
NGMP_GeoreferencingLevelCode
NGMP_RepresentationFormCode
NGMP_DataLevelCode
NGMP_ThematicCode
NGMP_ReleasabilityCode
NGMP_AccessibilityLevelCode

E.2.4 Codelists values translation

According to ISO 19139, the principle of the codelist is to put the code of the value in codeListValue attribute and to put a user meaningful value in the text of the XML element. This user value can then be translated to any language. The language can be specifiedin the codespace attribute.

```
<gmd:CI_RoleCode codeList="location#CI_RoleCode" codespace="tur" codeListValue="pointOfContact">irtibatNoktası </gmd:CI_RoleCode>
```

However, most software just reads the element text (`irtibatNoktası`), not the codeListValue. It is therefore recommended to avoid codelist translations for interoperability purposes.

Annex F Predefined DMF profiles (informative)

F.1 Core

This profile constitutes the minimal implementation of DMF. It only requires compliance with the DMF/Core metadata class.

The identifier of this profile is:

http://www.dgiwg.org/std/dmf/profile/core/1.0

The version number of the core profile is equal to the version of DMF.

F.2 NGMP:1.0

This profile defines an implementation of DMF compatible with the NATO STANAG 2586 edition A. It is compliant with the DMF/Core, DMF/Common and DMF/Defence metadata classes.

The identifier of this profile is:

http://www.dgiwg.org/std/dmf/profile/ngmp/1.0

The version of the profile should be incremented at each revision of the STANAG 2586.

The following table defines the mapping between DMF elements and STANAG 2586 elements:

	DMF	**STANAG 2586**	**Comment**
	Metadata elements about the metadata		
DMF/Core	MDSID	MDSID	Mandated in STANAG 2586
DMF/Core	MDPTMD.mdIdentifier	MDPTSID	
DMF/Core	MDDLOC	See MDDLOC properties	
DMF/Core	MDTLOC		No multilingual support in STANAG 2586
DMF/Core	MDRPTY	MDPOC	
DMF/Core	+ party	See party properties	
DMF/Core	+ orgName	+ PtOrgName	
DMF/Core	+ name	+ PtName	
DMF/Core	+ position	+ PtPos	
DMF/Common	+ phone	+ PtPhone	
DMF/Common	+ fax	+ PtCFax	
DMF/Common	+ email	+ PtCEmail	
DMF/Core	+ role	**pointOfContact**	
DMF/Core	MDDATE	MDDATE	
DMF/Core	MDSTD	MDSTD	Registration of STANAG 2586:
DMF/Core	+ title	CiTitle	STANAG 2586
DMF/Core	+ version	CiVersion	1.0

DMF/Common	MDSCST	Set when MDCLVL is set	
DMF/Core	+ level	MDCLVL	MDCLVL is mandatory in DMF when MDSCST is set, but this is compatible with STANAG 2586 cardinalities and constraints.
DMF/Core	+ system	MDCSYS	
DMF/Defence	MDREL	MDREL	
DMF/Core	RSTITLE	RSTITLE	
DMF/Common	RSALT	RSALT	
DMF/Core	RSABSTR	RSABSTR	
DMF/Core	RSTYPE	RSTYPE	STANAG 2586 limited to **dataset** and **series**
DMF/Core	RSED	RSED	
DMF/Core	RSEDDAT	RSEDDAT	
DMF/Core	RSID:NRN	When STANAG 2586 RSNRN is set	
DMF/Core	RSID:NSN	When STANAG 2586 RSNSN is set	
DMF/Core	RSID:uniqueCode	When STANAG 2586 RSID is set	
DMF/Core	RSSRES.equivalentScale	RSSCALE	
DMF/Core	RSSRES.distance	RSGSD	
DMF/Core	RSKWDS:RSBASLV	When RSBASLV is set	
DMF/Core	+ keyword	RSBASLV	
DMF/Core	+ thesaurus	See thesaurus properties	
DMF/Core	+ title	**NGMP_BaselineLevelCode**	
DMF/Core	+ referenceDate	See referenceDate properties	
DMF/Core	+ date	**2011-09-16**	
DMF/Core	+ type	**creation**	
DMF/Core	RSKWDS	*When RSDESTP is set*	
DMF/Core	+ keyword	RSDESTP	
DMF/Core	+ thesaurus	See thesaurus properties	
DMF/Core	+ title	**NGMP_DesignationTypeCode**	
DMF/Core	+ referenceDate	See referenceDate properties	
DMF/Core	+ date	**2011-09-16**	
DMF/Core	+ type	**creation**	
DMF/Core	RSKWDS	When EXERSET is set	
DMF/Core	+ keyword	EXERSET	
DMF/Core	+ thesaurus	See thesaurus properties	
DMF/Core	+ title	**Exercice setting thesaurus**	
DMF/Core	+ referenceDate	See referenceDate properties	

DMF/Core	+ date	**2011-09-16**	
DMF/Core	+ type	**creation**	
DMF/Core	+ citedParty	See citedParty properties	
DMF/Core	+ party	See party properties	
DMF/Core	+ orgName	**jwc**	
DMF/Core	+ role	**custodian**	
DMF/Core	RSDLOC	See RSDLOC properties	
DMF/Core	+ language	RSLANG	
DMF/Core	+ encoding	RSCSET	
DMF/Core	RSRPTP	RSRPTP	
DMF/Core	DGITYP	DGITYP	
DMF/Core	RSGFLV	RSGFLV	
DMF/Core	RSPREF	RSPREF	
DMF/Defence	RSDTLVL	RSDTLVL	
DMF/Core	RSTOPIC	RSTOPIC	
DMF/Core	RSTHEME	RSKEYWD	
DMF/Core	RSSERI	RSSERI	
DMF/Core	RSSHNA	RSSHNA	
DMF/Common	RSREM	RSREM	
DMF/Core	RSEXT	One instance for RSBBOX	
DMF/Core	+ boundingBox	RSBBOX	Mandated in STANAG 2586
DMF/Core	RSEXT	One instance for RSPEXT	
DMF/Core	+ boundingPolygon	RSPEXT	
DMF/Core	RSEXT	One instance for RSTEXT	
DMF/Core	+ temporalExtent	RSTEXT	
DMF/Core	RSRSYS	RSRSYS	Mandated in STANAG 2586
DMF/Common	RSSTAT	RSSTAT	
DMF/Core	RSDATE:creation	One instance for RSCDAT	
DMF/Core	+ date	RSCDAT	
DMF/Core	+ type	**creation**	
DMF/Core	RSDATE:revision	When RSRDAT is set	STANAG 2586 only records the latest revision date, i.e. the most recent value of RSDATE:revision
DMF/Core	RSDATE:publication	For each RSPDAT	
DMF/Core	RSRPTY	When RSONAT is set	
DMF/Core	+ party	See party properties	
DMF/Core	+ orgName	RSOORG if set, RSONAT if not	
DMF/Core	+ country	RSONAT	
DMF/Core	+ role	**originator**	
DMF/Core	RSRPTY	For each RSCUST	
DMF/Core	+ party	See party properties	
DMF/Core	+ orgName	RSCUST	
DMF/Core	+ role	**custodian**	

DMF/Common	RSMTNC	See RSMTNC properties	One instance
DMF/Common	+ maintenanceDate	RSMDAT	
DMF/Common	+ maintenanceFrequency	RSMFRQ	
DMF/Core	RSSCST	See RSSCST properties	When RSCLVL is set
DMF/Core	+ level	RSCLVL	
DMF/Core	+ system	RSCSYS	
DMF/Defence	RSREL		One and only one instance
DMF/Defence	+ addressee	RSREL	
DMF/Defence	+ statement	RSACLV	NATO Specific domain of value
DMF/Defence	+ statementExtension	RSACLVE	
DMF/Core	RSUSE	RSUSE	
DMF/Core	RSLCST	RSLCST	
DMF/Core	+ statement	+ LcStatement	
DMF/Common	+ access	+ LcAccess	
DMF/Common	+ use	+ LcUse	
DMF/Common	+ other	+ LcOther	
DMF/Core	RSLING	RSLING	
DMF/Common	RSSRC	For each STANAG 2586 RSSRC	
DMF/Common	+ description	RSSRC	
DMF/Common	RSPRST	When RSDESTD and RSDESTA are set	
DMF/Common	+ description	**Resource Designation**	
DMF/Common	+ date	RSDESTD	
DMF/Common	+ processor	See processor properties	
DMF/Core	+ orgName	RSDESTA	
DMF/Common	RSSPUS	See RSSPUS properties	
DMF/Common	+ name	**Recommended Display Projection**	
DMF/Common	+ limitation	RSRDPRJ	
DMF/Core	RSDFMT	RSDFMT	
DMF/Core	+ citation		

DMF/Core	+ title	CiTitle	
DMF/Core	+ version	CiEdition	

F.3 All

This profile constitutes the complete implementation of DMF. It is compliant with all the metadata classes: DMF/Core, DMF/Common, DMF/Service, DMF/Data, DMF/Data+, DMF/Sensor and DMF/Specific.

The identifier of this profile is:

http://www.dgiwg.org/std/dmf/profile/all/1.0