DGIWG - 103

Digital Geographic Information Exchange Standard (DIGEST)

Metadata Profile of ISO 19115 and ISO 19139

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Abstract:	This document defines the DIGEST metadata profile of ISO 19115 and ISO 19139.
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In memory of Hugh Bryant,

Introduction

DGIWG has developed the Digital Geographic Information Exchange Standard (DIGEST) for the exchange of geospatial data. This exchange standard has been used to support the requirements of important co-production initiatives of vector databases and national production of raster data, such as scanned maps.

The International Organization for Standardization (ISO) has developed *ISO 19115 Geospatial information – Metadata* and *ISO 19139 – Geospatial information – Metadata – XML schema implementation*. The former provides the structure and definitions for geospatial metadata at the dataset, feature and attribute levels. The latter provides an XML schema implementation of the ISO 19115 standard. These two ISO specifications open the door to a wide set of new opportunities, but raise the issue of an appropriate transition between the legacy exchange standard in use and the emerging implementations.

This document establish a profile of ISO 19115 and ISO 19139 enabling the additions of files to DIGEST interchanges in order to supply ISO compatible metadata to emerging implementations of these ISO standards;

1 Scope

This specification is the DIGEST metadata profile of ISO 19115 (as defined in Annex C of ISO 19115) and ISO 19139.

2 Conformance

The implementation of this standard shall be in conformance with the Abstract Test Suite provided in Annex A.

3 Referenced Documents

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

DIGEST Part 2, The Digital Geographic Information Exchange Standard (DIGEST) – Part 2: Theoretical Model, Exchange Structure and Encapsulation Specifications – Edition 2.1, September 2000

ISO 19115:2003, *Geographic information — Metadata*

ISO/FDIS 19115-2, *Geographic information — Metadata – Part2: Extensions for imagery and gridded data*

ISO/TS 19139, *Geographic information – Metadata – XML schema implementation (Technical Specification).*

ISO 8601:2000, Data elements and interchange formats -- Information interchange – Representation of dates and times

IETF RFC 2396, Uniform Resource Identifiers (URI): Generic Syntax

NIMA TM 8350.2, National Mapping and Imagery Agency – Technical Report – 8350.2, World Geodetic System 1984 – Third Edition, Amendment 1, 3 January 2000

4 Terms and definitions

This specification does not define any specific terms. It uses the terminology defined in the normative references, and particularly DIGEST and ISO 19115.

5 Symbols and abbreviated terms

5.1 Acronyms used within this profile:

DGIWG	Digital Geographic Information Working Group
DIGEST	Digital Geographic Information Exchange Standard
ISO	International Organization for Standardization
UML	Universal Mark-up Language
XML	Extensible Mark-up language

6 DIGEST

6.1 DIGEST exchange structure

6.1.1 Overview

DIGEST is a transfer format of digital geographic information. It defines a logical organisation of the data exchanges depicted in
.

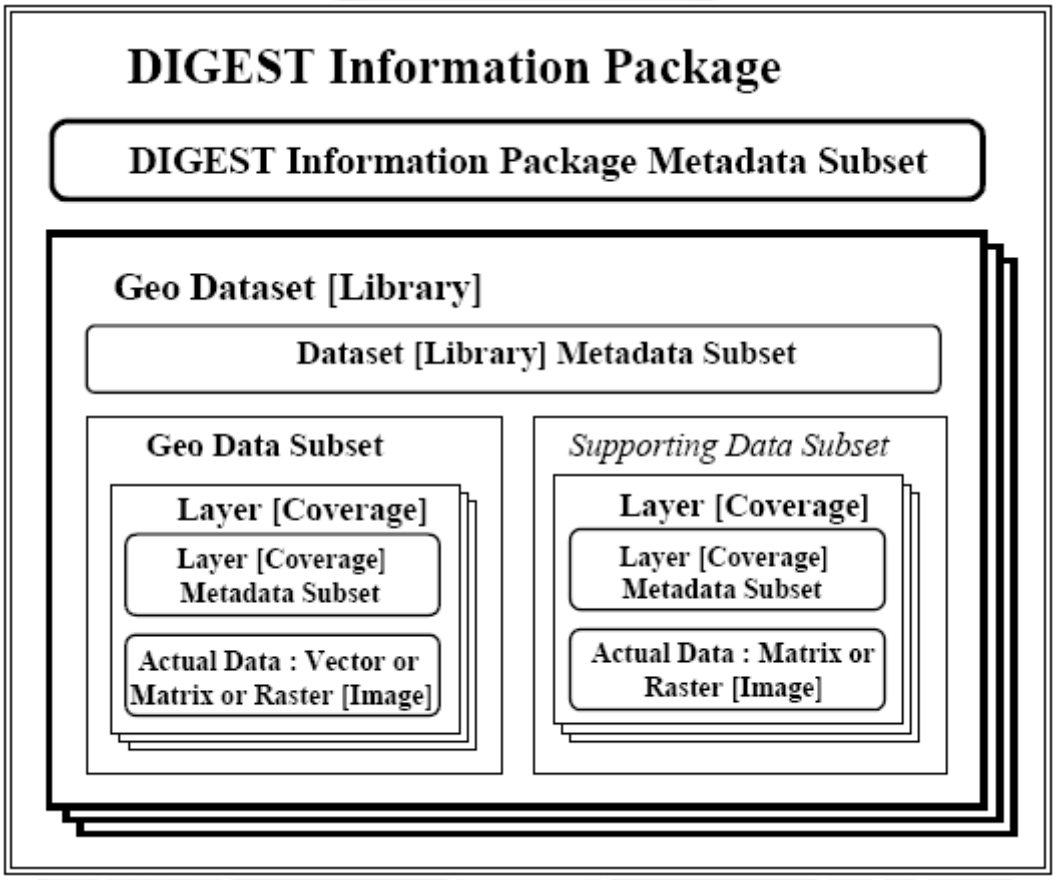

Figure 1 - Information Package Logical Model

This logical organisation is based on a three-level structure:

- the Layer (also called Coverage) level is the leaf of DIGEST tree. It comprises the actual data and the Layer Metadata Subset;
- the Geo Dataset (also called Library) level comprises the Dataset Metadata Subset (See 6.3) and:
  - The Geo Data Subset, i.e. a basic set of layers containing the geographic information of the dataset;
  - The Supporting Data Subset, i.e. a set of layers providing information such as legend graphics, colour patch and location grids related to the geographic information contained in the Geo Data Subset.
- The Digest Information Package is the upper level of the interchange structure. It comprises the DIGEST Information Package Metadata Subset (See 6.1.3.4) and a set of Geo Dataset.

6.1.2 Notation

The focus of this document is the different Metadata Subsets of the DIGEST Interchange Structure, with the aim of expressing these Metadata Subsets in conformance with ISO 19115 in complementary files encoded in conformance with ISO/TS 19139.

The following paragraphs detail the metadata elements of the different metadata subset in the perspective of expressing them in ISO 19115. They don't supersede DIGEST which remains the official specification of these metadata elements.

A DIGEST Metadata Subset is composed of metadata elements and group of metadata elements, hierarchically. The DIGEST metadata elements are described through tables providing;

- The DIGEST **name** of the metadata element or group of metadata elements preceded by a hierarchical ID;
- The DIGEST **type** of the metadata element (See 6.1.3);
- The DIGEST **obligation** of presence of the metadata element or group of metadata elements. Possible values are:
    - M when the metadata element or group of metadata elements is mandatory (in the context of their parent (group of metadata elements or metadata subset);
    - O when the metadata element or group of metadata elements is optional in its context;
    - D^x when a specific condition (where x is the condition ID) applies to the presence of the metadata element or group of metadata elements.
    - *X where X is one of the previous values means that the metadata element or group of metadata elements can be repeated.
- The DIGEST **description** of the metadata element or group of metadata elements. Complementary explanations are provided in italics. When the metadata element or group of metadata elements is not relevant for the purpose of this document, the description of the metadata is replaces by "*(omitted)*".

The table rows of groups of metadata elements are greyed.

6.1.3 Data types

6.1.3.1 General types

DIGEST defines the following data types:

- Integer: an integer number
- Real: a real number
- Date: a local calendar date
- Full date: a local calendar date and time
- Basic text: an arbitrary-length string of ASCII characters
- General text: an arbitrary-length string of characters including accents and special characters

Some textual metadata elements take their values within one of the lists of allowed values described hereafter.

6.1.3.2 Security levels

The security levels allowed by DIGEST are:

T Top Secret
S Secret
C Confidential

R Restricted (or alternatively “FOR OFFICIAL USE ONLY”, i.e. administrative classification only)
U Unclassified

6.1.3.3 Boolean

The value is **Yes** or **No**.

6.1.3.4 Data structure

The codes of data structure allowed by DIGEST are:

1 Matrix (values)
2 Matrix (Coded)
3 Raster (RGB)
4 Raster (Colour Coded)
5 Vector (Level 0 Topology – Spaghetti)
6 Vector (Level 1 Topology – Chain-node)
7 Vector (Level 2 Topology – Planar)
8 Vector (Level 3 Topology – Full topology)
9 Mixed data structures

6.1.3.5 Encapsulation

The codes identifying the encapsulation allowed by DIGEST are:

A ISO 8211 (Annex A)
B ISO 8824 (Annex B)
C VRF (Annex C)
D IIF (Annex D)
X Mixed encapsulation

6.2 The DIGEST Information Package Metadata Subset

6.2.1 Overview

The content and structure of the DIGEST Information Package Metadata Subset is depicted in

.

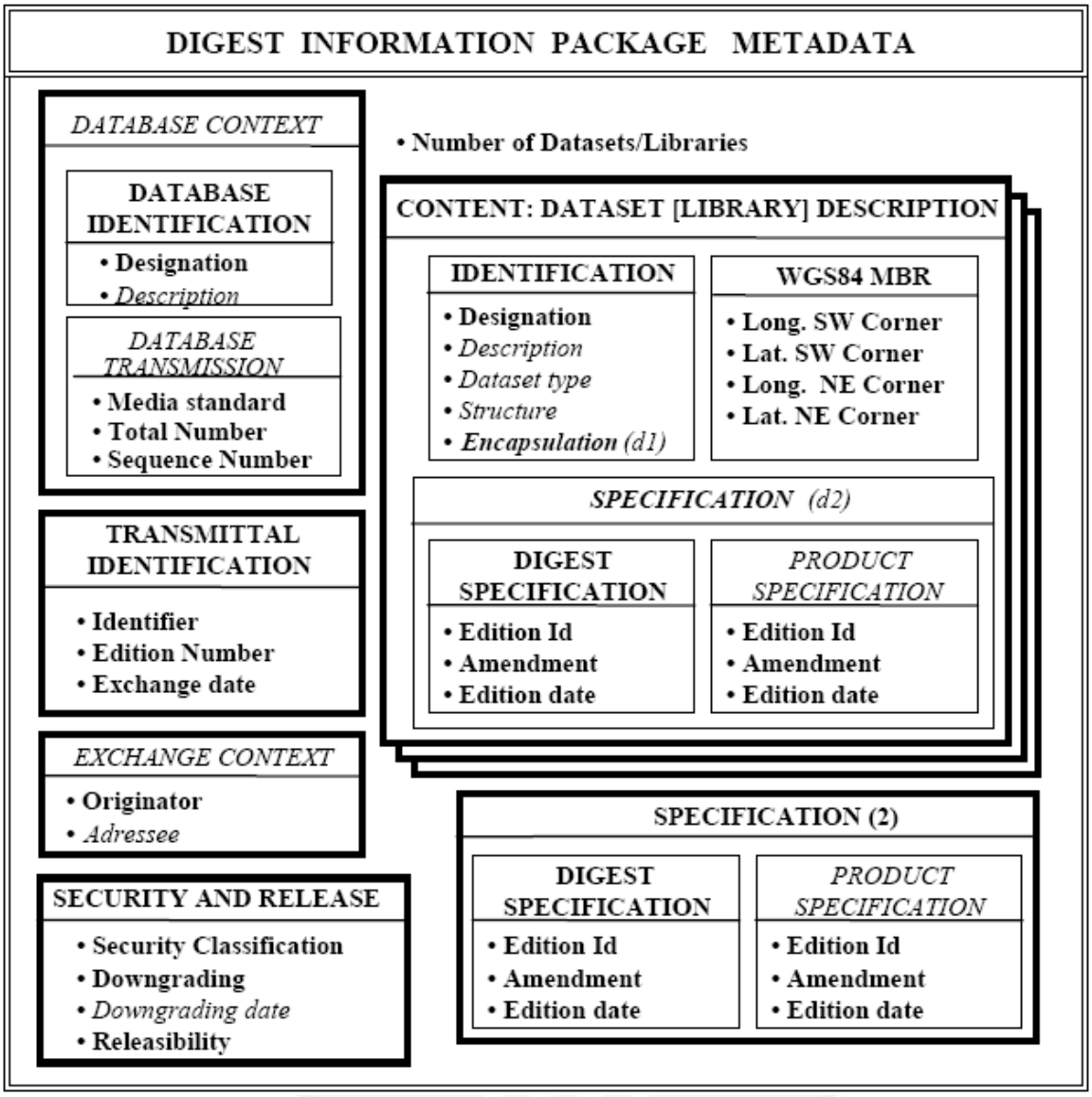

Figure 2 - Information Package Logical Model

The metadata elements provided in the DIGEST Information Package Metadata Subset relates to the DIGEST Information Package (See 6.2.2) or serves as a table of content of the Geo Datasets contained in the DIGEST Information Package (See 6.2.3)

6.2.2 Metadata related to the DIGEST Information Package

A focus is put on the DIGEST information package metadata elements related to the DIGEST Information Package itself and particularly to the discovery metadata elements that

can be used to catalogue and discover a DGIWG information package. These discovery metadata elements provide package identification, context, point of contact information, and security markings for the information package as a whole. The discovery metadata elements provided for information package discovery are listed in **Error! Reference source not found.**.

Table 1 - DGIWG Information Package Discovery Metadata Elements

Name	Type	Obligation	Description
IP1 DATABASE CONTEXT		O	*Information related to the database, i.e. the larger body of work (parent resource) that this package is part of*
IP1.1 DATABASE IDENTIFICATION		M	Identifies the database
IP1.1.1 Designation	Basic text	M	Short, unique designation of the database
IP1.1.2 Description	General text	O	*(ignored)*
IP1.2 DATABASE TRANSMISSION		O	*(ignored)*
IP2 TRANSMITTAL IDENTIFICATION		O	Identifies the DIGEST information package
IP2.1 Identifier	Basic text	M	Unique ID for this DIGEST information package.
IP2.2 Edition Number	Basic text	M	Edition number for this information package
IP2.3 Exchange Date	Date	M	Creation date of the information package
IP3 EXCHANGE CONTEXT		O	Identifies the originator and addressee of the DIGEST Information Package
IP3.1 Originator	General text	M	Free text for title and address of the originator. (A back slash "\" is used as a line separator.)
IP3.2 Addressee	General text	O	(ignored)
IP4 Number of Datasets/Libraries	Integer	M	Number of Datasets [Libraries] within this database.

Name	Type	Obligation	Description
IP5 SPECIFICATION		D[1]	Identifies the format and product specifications according to which the whole DIGEST information package has been produced.
IP5.1 DIGEST SPECIFICATION		M	Identifies the edition of DIGEST used for producing the whole DIGEST information package
IP5.1.1 Edition Id	Basic Text	M	Identifier of DIGEST edition number used for this Information Package (e.g., **DIGEST 2.1**).
IP5.1.2 Amendment	Basic Text	O	DIGEST amendment number (e.g., 0 if this edition of DIGEST has not been amended).
IP5.1.3 Edition date	Date	M	Publication date of that edition of DIGEST
IP5.2 PRODUCT SPECIFICATION		O	Identifies the product specification used for producing the whole DIGEST information package
IP5.2.1 Edition Id	Basic Text	M	Identifier of product specification used for this Information Package.
IP5.2.2 Amendment	Basic Text	O	Amendment number of product specification (e.g., 0 if this edition of the product specification has not been amended).
IP5.2.3 Edition date	Date	M	Publication date of product specification
IP6 SECURITY AND RELEASE		M	Identifies the security and release restrictions for the complete DIGEST information package
IP6.1 Security Classification	See 6.1.3.2	M	Security classification of DIGEST information package
IP6.2 Downgrading	See 6.1.3.3	M	Originator's permission for downgrading required. (Yes or No)
IP6.3 Downgrading Date	date	O	Date of downgrading. (Blank if answer to previous entity is **Yes** or if security classification is **U**)
IP6.4 Releasibility	Basic text	M	Releasability restrictions for this information package. If no restriction applies, "UNRESTRICTED" shall be used.
CONDITIONS: 1. Required when all constituent datasets use the same specification.			

6.2.3 Metadata related to the Geo Datasets

As depicted in
, the DIGEST Information Package Metadata Subset contains overview metadata elements for each of the Information Package Geo Dataset. The more relevant overview metadata elements are described in
.

Table 2 – Overview of the Geo Datasets

Name	Type	Obligation	Description
DS1 CONTENT: DATASET [LIBRARY] DESCRIPTION		*M	Provides the description of a Dataset [Library]
DS1.1 IDENTIFICATION		M	Provides an identification of the Dataset [Library]
DS1.1.1 Designation	Basic text	M	Short, unique designation of the Dataset [Library]
DS1.1.2 Description	General text	O	Full Description of the Dataset [Library]
DS1.1.3 Dataset type	Basic text	O	Series designator or Product type and level
DS1.1.4 Structure	See 6.1.3.4	O	Code of data structure used primarily for this Dataset [Library]
DS1.1.5 Encapsulation	See 6.1.3.5	D[2]	Code identifying the encapsulation primarily used for the transmission of the Dataset [Library]
DS1.2 WGS84 MBR		M	Provides the approximate location of the Dataset [Library] using the WGS84 reference system. It will be used to compare the location of different datasets. This set contains latitude and longitude according to WGS84 datum. There is no accuracy requirement on the four values
DS1.2.1 Longitude of SW Corner	Real	M	Westernmost longitude of Minimum Bounding Rectangle of the Dataset [Library]
DS1.2.2 Latitude of SW Corner	Real	M	Southernmost latitude of Minimum Bounding Rectangle of the Dataset [Library]
DS1.2.3 Longitude of NE Corner	Real	M	Easternmost Longitude of Minimum Bounding Rectangle of the Dataset [Library]

Name	Type	Obligation	Description
DS1.2.4 Latitude of NE Corner	Real	M	Northernmost Latitude of Minimum Bounding Rectangle of the Dataset [Library]
DS1.3 SPECIFICATION		D[3]	Identifies the format and product specifications according to which the Dataset [Library] has been produced.
DS1.3.1 DIGEST SPECIFICATION		M	Identifies the edition of DIGEST used for producing the Dataset [Library]
DS1.3.1.1 Edition Id	Basic Text	M	Identifier of DIGEST edition number used for this Dataset (e.g., **DIGEST 2.1**).
DS1.3.1.2 Amendment	Basic Text	O	DIGEST amendment number (e.g., 0 if this edition of DIGEST has not been amended).
DS1.3.1.3 Edition date	Date	M	Publication date of that edition of DIGEST
DS1.3.2 PRODUCT SPECIFICATION		O	Identifies the product specification used for producing the Dataset [Library]
DS1.3.2.1 Edition Id	Basic Text	M	Identifier of product specification used for this Dataset [Library]
DS1.3.2.2 Amendment	Basic Text	O	Amendment number of product specification (e.g., 0 if product specification has not been amended).
DS1.3.2.3 Edition date	Date	M	Publication date of product specification
CONDITIONS: 2. Must be present when the encapsulation is not homogeneous within the DIGEST Information package. 3. This set of information is omitted when all the Datasets [Libraries] composing the DIGEST Information package are produced using the same specification. It must be present otherwise.			

6.3 The Dataset Metadata Subset

6.3.1 Overview

The dataset metadata summarizes the contents of the layers that are contained in the dataset. This set of metadata provides the elements that can be used to exploit a homogeneous dataset (heterogeneous datasets require use of the layer metadata in order to exploit the data). For convenience in this document, the dataset metadata is grouped into the following sections:

- General information as described in 6.3.2.
- Geo reference description as described in 6.3.3.
- Graphic source description as described in 6.3.4.
- Sensor parameters description as described in 6.3.5.
- Quality description as described in 6.3.6.

6.3.2 General information

The metadata elements of the general information section are depicted in
.

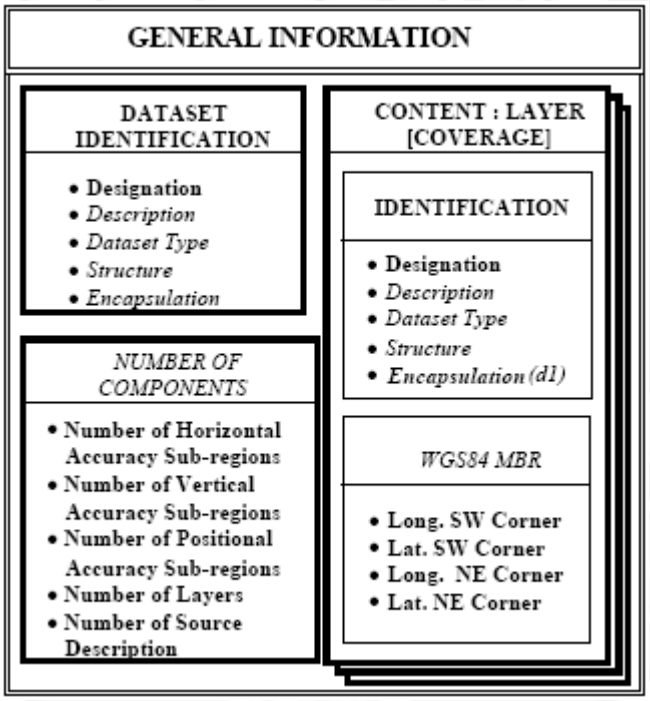

Figure 3 – Dataset general information

The “DATASET IDENTIFICATION” group of metadata elements is identical to “DS1.1 IDENTIFICATION”. The “NUMBER OF COMPONENTS” group of metadata elements is useful for parsing the DIGEST metadata elements but have no other applications. The only metadata elements of interest in this section relates to the layers. They are described in **Error! Reference source not found.**.

Table 3 – Overview of the Layers

Name	Type	Obligation	Description
LY1 CONTENT: LAYER [COVERAGE]		*M	Provides the description of a Layer [Coverage]
LY1.1 IDENTIFICATION		M	Provides an identification of the Layer [Coverage]
LY1.1.1 Designation	Basic text	M	Short, unique designation of the Layer [Coverage]
LY1.1.2 Description	General text	O	Full Description of the Layer [Coverage]
LY1.1.3 Structure	See 6.1.3.4	O	Code of data structure used primarily for this Layer [Coverage]. *Value 9 is not allowed.*
LY1.1.4 Encapsulation	See 6.1.3.5	D[4]	Code identifying the encapsulation primarily used for the encoding of this Layer [Coverage]. *Value X is not allowed*
LY1.2 WGS84 MBR		M	Provides the approximate location of the Dataset [Library] using the WGS84 reference system. It will be used to compare the location of different datasets. This set contains latitude and longitude according to WGS84 datum. There is no accuracy requirement on the four values
LY1.2.1 Longitude of SW Corner	Real	M	Westernmost longitude of Minimum Bounding Rectangle of the Dataset [Library]
LY1.2.2 Latitude of SW Corner	Real	M	Southernmost latitude of Minimum Bounding Rectangle of the Dataset [Library]
LY1.2.3 Longitude of NE Corner	Real	M	Easternmost Longitude of Minimum Bounding Rectangle of the Dataset [Library]
LY1.2.4 Latitude of NE Corner	Real	M	Northernmost Latitude of Minimum Bounding Rectangle of the Dataset [Library]
CONDITIONS: 4. Must be present when the encapsulation is not homogeneous within the Dataset [Library].			

6.3.3 Geo reference description

The metadata elements of the Geo reference description section are depicted in
.

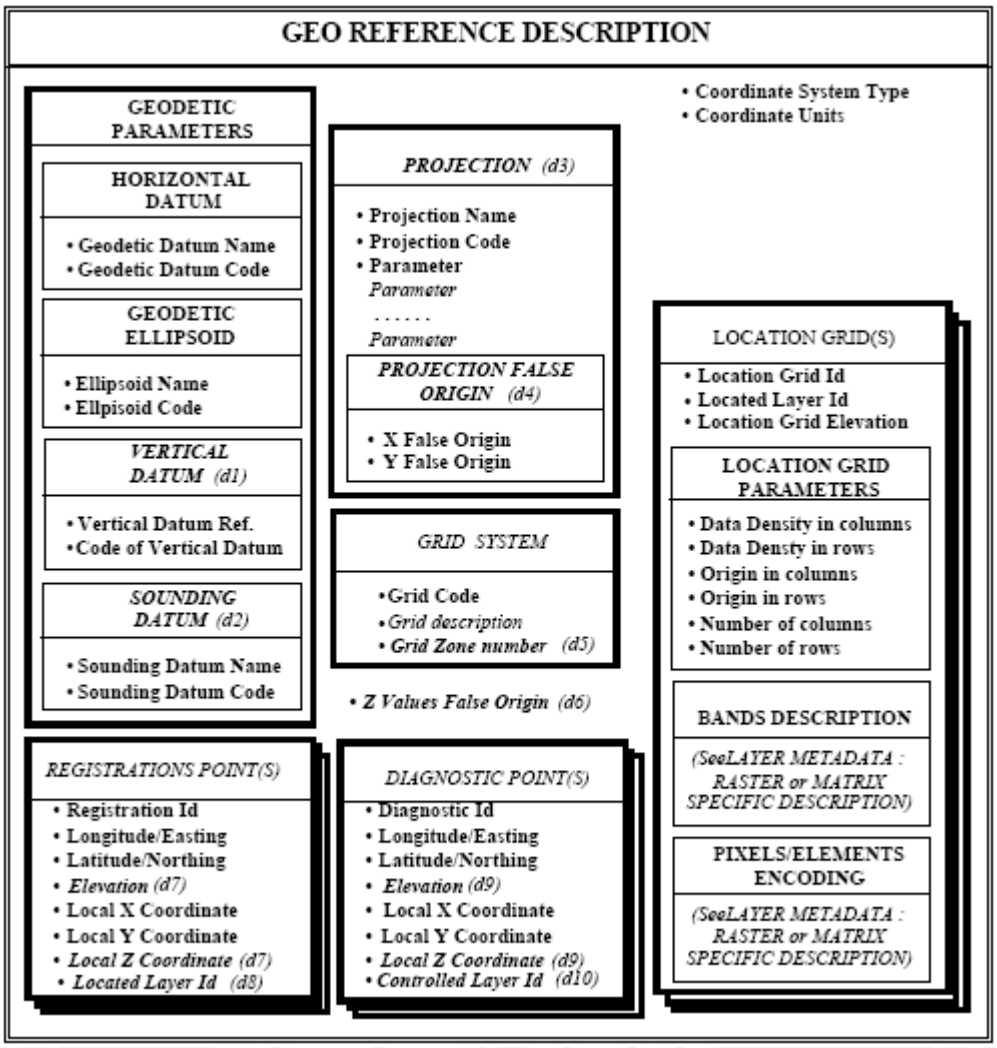

Figure 4 – Dataset geo reference description

The geodetic parameters, projection metadata elements, grid system metadata elements, Z value false origin, Coordinate system type and coordinate units provide the parameters of the coordinate reference systems applicable to the dataset. They are not detailed hereafter because ISO 19115 only handles coordinate reference system identifiers that can be used to access registers of coordinate reference systems where the parameters are defined once for many use.

Registration points and diagnostic points can be handled through ISO 19115-2. This version of the specification only focus on ISO 19115,

6.3.4 Graphic source description

The metadata elements of the graphic source description section are depicted in **Error! Reference source not found.**.

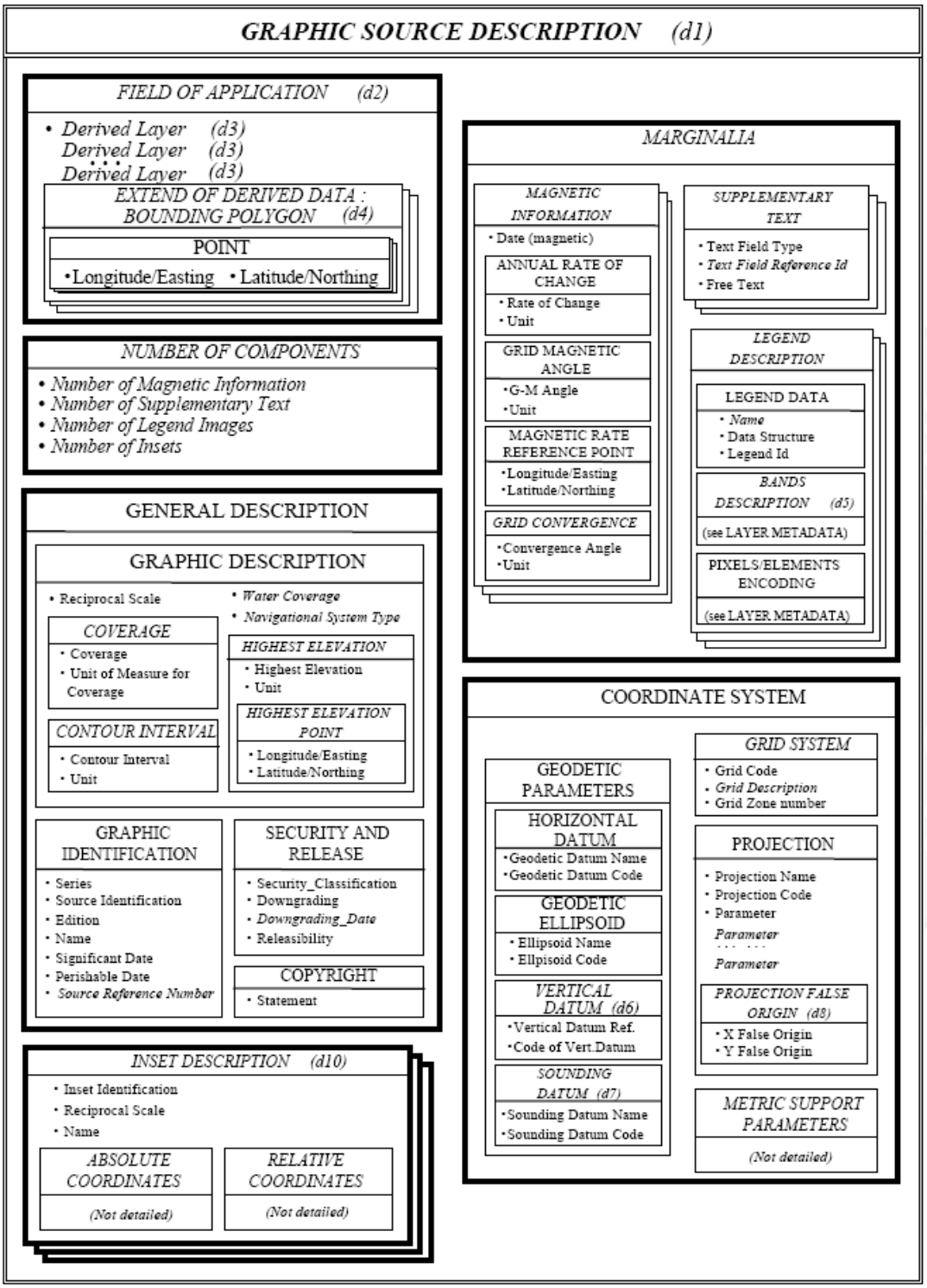

Figure 5 – Graphic source description

6.3.5 Sensor parameters description

The metadata elements of the graphic source description section are depicted in
.

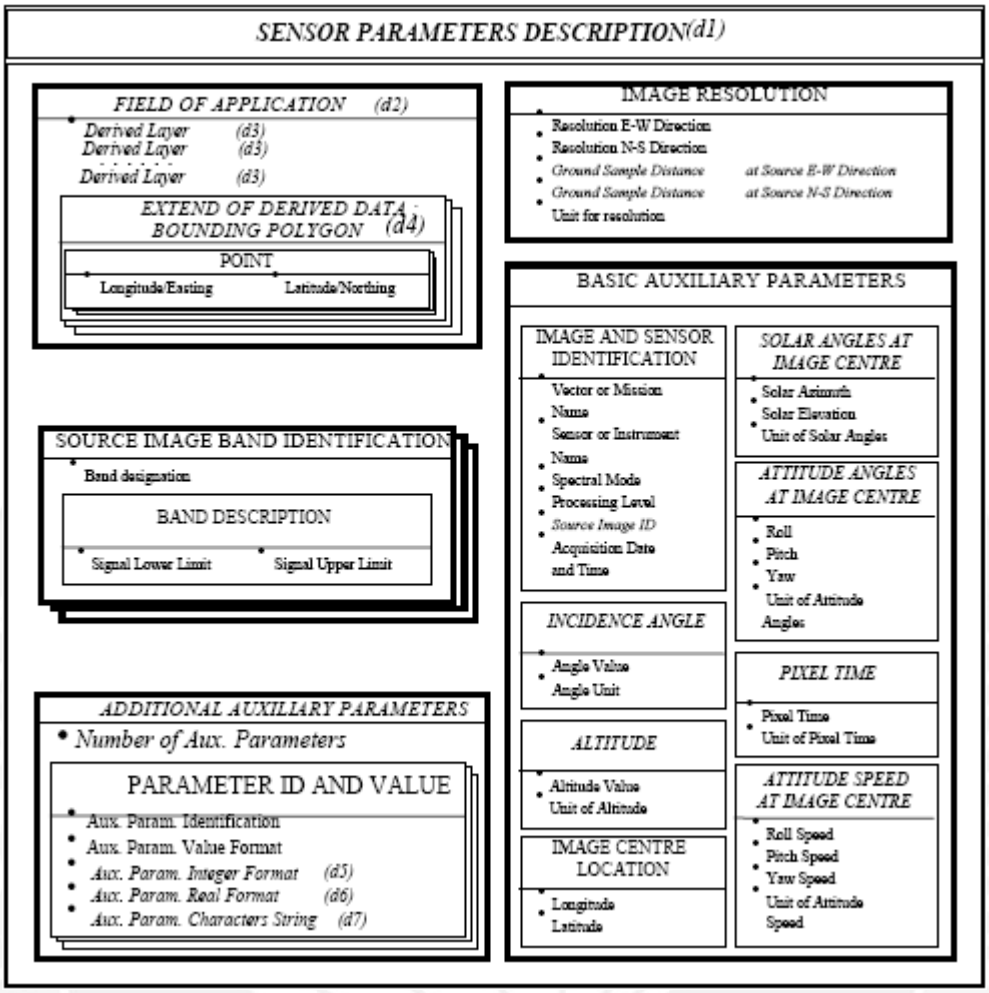

Figure 6 – Sensor parameter description

These metadata elements relate to ISO 19115-2 and will be addressed in future version of this specification.

6.3.6 Quality description

The metadata elements of the quality description section are depicted in
.

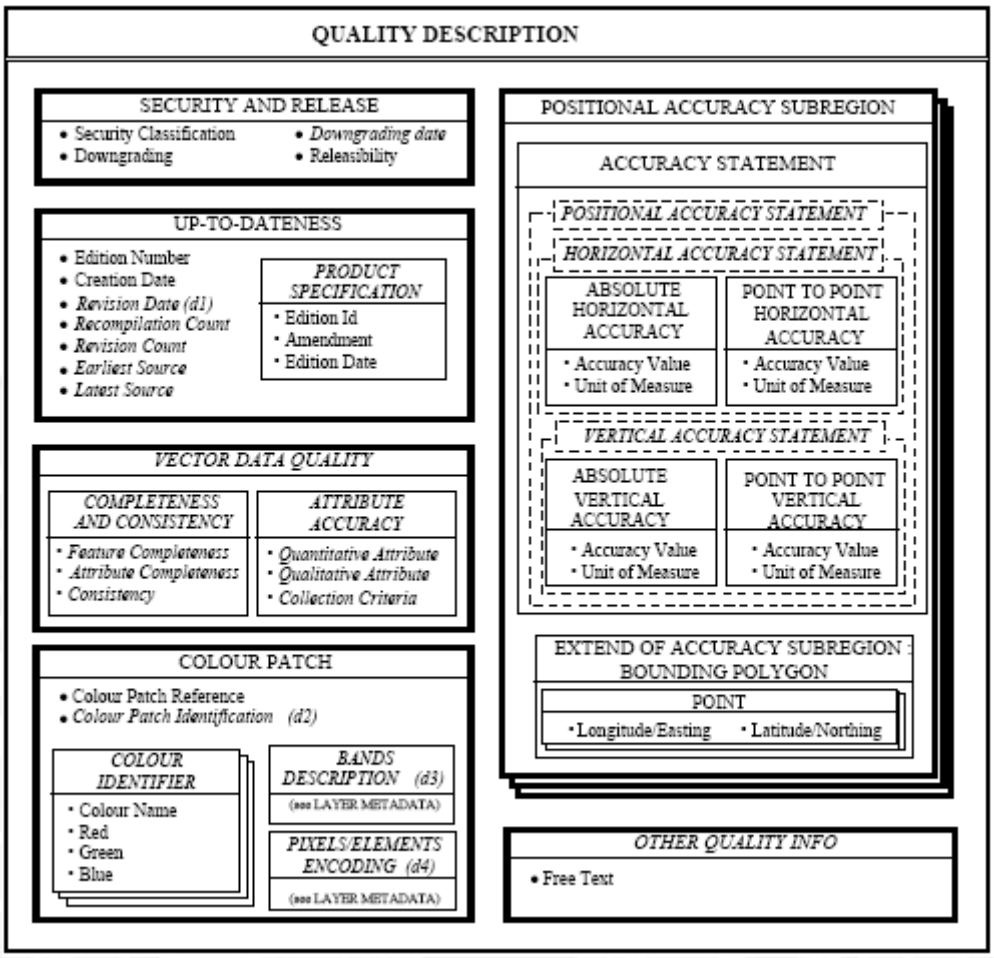

Figure 7 – Dataset quality description

Table 4 – Dataset Quality Metadata

Name	Type	Obligation	Description
DS2 QUALITY DESCRIPTION		M	*Provides the quality information related to the Dataset [Library]*
DS2.1 SECURITY AND RELEASE		M	Identifies the security and release restriction for the complete Dataset [Library]
DS2.1.1 Security classification	See 6.1.3.2	M	Security classification of Dataset [Library]
DS2.1.2 Downgrading	See 6.1.3.3	M	Originator's permission for downgrading required. (Yes or No)
DS2.1.3 Downgrading date	date	O	Date of downgrading. (Blank if answer to previous entity is **Yes** or if security classification is **U**)
DS2.1.4 Releasibility	Basic text	M	Releasability restrictions for this information package. If no restriction applies, "UNRESTRICTED" shall be used.
DS2.2 UP-TO-DATENESS		M	Provides information about the currency and the product specification of the Dataset [Library]
DS2.2.1 Edition number	Basic text	M	Edition number of dataset
DS2.2.2 Creation date	Date	M	Date of creation of dataset
DS2.2.3 Revision date	Date	D[5]	Date of revision of dataset
DS2.2.4 Recompilation count	Integer	O	*(ignored)*
DS2.2.5 Revision count	Integer	O	*(ignored)*
DS2.2.6 Earliest source	Date	O	Date of earliest source
DS2.2.7 Latest source	Date	O	Date of latest source
DS2.2.8 PRODUCT SPECIFICATION		M	*(ignored – Identical to DS1.3.2)*
DS2.3 VECTOR DATA QUALITY		O	Provides information about the attribute accuracy, completeness and consistency of the vector data included in the Dataset [Library]
DS2.3.1 COMPLETENESS AND CONSISTENCY		O	Provides information about the completeness and consistency of the Dataset [Library]
DS2.3.1.1 Feature Completeness	Integer	O	Feature completeness (percentage)
DS2.3.1.2 Attribute Completeness	Integer	O	Attribute completeness (percentage)
DS2.3.1.3 Consistency	Basic Text	O	Logical consistency

Name	Type	Obligation	Description
DS2.3.2 ATTRIBUTE ACCURACY		O	Gives information about standard deviation of quantitative values and reliability of qualitative values of the the Dataset [Library]
DS2.3.2.1 Quantitative attribute	Integer	O	Standard deviation of quantitative attributes
DS2.3.2.2 Qualitative attribute	Integer	O	Percentage reliability of qualitative attributes
DS2.3.2.3 Collection criteria	Basic text	O	Name of collection specification
DS2.4 POSITIONAL ACCURACY SUBREGION		*M	This logical set occurs as many times as necessary depending on the number of sources and accuracy subregion
DS2.4.1 HORIZONTAL ACCURACY STATEMENT		O	Absolute and point-to-point horizontal accuracy
DS2.4.1.1 Absolute Horizontal Accuracy		M	Absolute Horizontal Accuracy
DS2.4.1.1.1 Accuracy value	Real	M	Absolute horizontal accuracy of data within the subregion
DS2.4.1.1.2 Unit of measure	Basic text	M	Unit of measure for absolute horizontal accuracy
DS2.4.1.2 Point-to-point Horizontal Accuracy		M	Point-to-point Horizontal Accuracy
DS2.4.1.2.1 Accuracy value	Real	M	Point-to-point horizontal accuracy of data within the subregion
DS2.4.1.2.2 Unit of measure	Basic text	M	Unit of measure for Point-to-point horizontal accuracy
DS2.4.2 VERTICAL ACCURACY STATEMENT		O	Absolute and point-to-point vertical accuracy
DS2.4.2.1 Absolute Vertical Accuracy		M	Absolute Vertical Accuracy
DS2.4.2.1.1 Accuracy value	Real	M	Absolute vertical accuracy of data within the subregion
DS2.4.2.1.2 Unit of measure	Basic text	M	Unit of measure for absolute vertical accuracy
DS2.4.2.2 Point-to-point Vertical Accuracy		M	Point-to-point Vertical Accuracy
DS2.4.2.2.1 Accuracy value	Real	M	Point-to-point vertical accuracy of data within the subregion
DS2.4.2.2.2 Unit of measure	Basic text	M	Unit of measure for Point-to-point vertical accuracy
DS2.4.3 EXTENT OF ACCURACY SUBREGION		M	Provides the description of a bounding polygon for the accuracy region/subregion
DS2.4.3.1 Point		M	Repeats as necessary. First and last point must be the same.
DS2.4.3.1.1 Longitude/Easting	Real	M	Longitude/Easting coordinate
DS2.4.3.1.2 Latitude/Northing	Real	M	Latitude/Northing coordinate

Name	Type	Obligation	Description
DS2.5 COLOUR PATCH		O	*(ignored)*
DS2.6 OTHER QUALITY INFO		O	Provides information defining specific descriptors related to data quality
DS2.7 Free text	General text	M	Free text
CONDITIONS: 5. Must be present if Dataset has been revised			

6.4 The Layer Metadata Subset

The metadata elements of the Layer Metadata Subset are depicted in
.

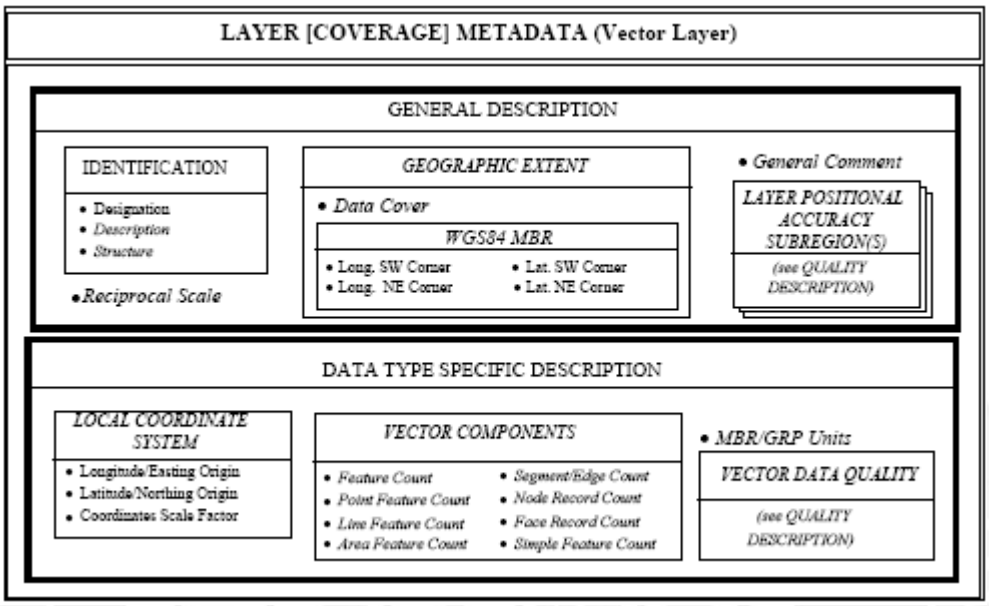

Figure 8 – Layer Metadata Subset

These metadata elements are further described in **Error! Reference source not found.**.
The Data type specific description is not further detailed.

Table 5 – Layer Metadata Subset

Name	Type	Obligation	Description
LY2 GENERAL DESCRIPTION		M	Provides the description of the Layer [Coverage]
LY2.1 IDENTIFICATION		M	*(ignored – Identical to LY1.1)*
LY2.2 RECIPROCAL SCALE	Integer	D[6]	Reciprocal scale of the Layer (e.g. 50000 for 1:50000). This is usually the scale of the source material
LY2.3 GEOGRAPHIC EXTENT		O	*Provides the approximate location and the percentage of data cover within this extent*
LY2.3.1 Data Cover	Integer	O	*(ignored)*
LY2.3.2 WGS84 MBR		O	*(ignored – Identical to LY1.2)*
LY2.4 General comment	General text	O	Free text (e.g. description of digitizing equipement)

Name	Type	Obligation	Description
LY2.5 LAYER POSITIONAL ACCURACY SUBREGION(S)		*O	This logical set occurs as many times as necessary depending on the number of sources and accuracy subregion
LY2.5.1 HORIZONTAL ACCURACY STATEMENT		O	Absolute and point-to-point horizontal accuracy
LY2.5.1.1 Absolute Horizontal Accuracy		M	Absolute Horizontal Accuracy
LY2.5.1.1.1 Accuracy value	Real	M	Absolute horizontal accuracy of data within the subregion
LY2.5.1.1.2 Unit of measure	Basic text	M	Unit of measure for absolute horizontal accuracy
LY2.5.1.2 Point-to-point Horizontal Accuracy		M	Point-to-point Horizontal Accuracy
LY2.5.1.2.1 Accuracy value	Real	M	Point-to-point horizontal accuracy of data within the subregion
LY2.5.1.2.2 Unit of measure	Basic text	M	Unit of measure for Point-to-point horizontal accuracy
LY2.5.2 VERTICAL ACCURACY STATEMENT		O	Absolute and point-to-point vertical accuracy
LY2.5.2.1 Absolute Vertical Accuracy		M	Absolute Vertical Accuracy
LY2.5.2.1.1 Accuracy value	Real	M	Absolute vertical accuracy of data within the subregion
LY2.5.2.1.2 Unit of measure	Basic text	M	Unit of measure for absolute vertical accuracy
LY2.5.2.2 Point-to-point Vertical Accuracy		M	Point-to-point Vertical Accuracy
LY2.5.2.2.1 Accuracy value	Real	M	Point-to-point vertical accuracy of data within the subregion
LY2.5.2.2.2 Unit of measure	Basic text	M	Unit of measure for Point-to-point vertical accuracy
LY2.5.3 EXTENT OF ACCURACY SUBREGION		M	Provides the description of a bounding polygon for the accuracy region/subregion
LY2.5.3.1 Point		M	Repeats as necessary. First and last point must be the same.
LY2.5.3.1.1 Longitude/Easting	Real	M	Longitude/Easting coordinate
LY2.5.3.1.2 Latitude/Northing	Real	M	Latitude/Northing coordinate
CONDITIONS: 6. Mandatory for raster maps			

7 ISO Implementation of the DIGEST Metadata

7.1 Introduction

The ISO implementation of the DIGEST Metadata is presented as a set of template instances of the concept documented in ISO 19115 and related standards. The template instance of a class is defined by a set of property instances. The description of each property instance is composed of:

- A + sign starting the description of the property instance;
- The property label as appearing in ISO 19115 UML Models;
- A presence requirement expressed with a cardinality statement between square brackets. This cardinality statement expresses the instance requirements for the specific implementation of the DIGEST metadata 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.
- 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.

An instance template is in fact a hierarchical set of labels, since the instance of a property is a set of properties defined by its type, which itself is a class.

The instance templates are established accordingly to the following principles:

- They define how to create ISO 19115 metadata from DIGEST metadata, but there is no intent to define how to populate DIGEST Metadata from ISO 19115. The goal is to define what should be the content of ISO 19115 metadata files added to DIGEST Information packages.
- They defined minimum requirements for the generation of ISO 19115 metadata files, but it is anticipated that additional metadata can be added to increase the quality of the ISO 19115 metadata.

Consequently, the instance templates only show the properties handling DIGEST metadata elements and the properties mandated by ISO 19115 and related ISO standards. 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 the DIGEST metadata elements can be expressed but are not documented here.

The template instances supporting the DIGEST Metadata elements are documented in:

- 7.2 for the DIGEST Information Package Metadata Subset;
- 7.3 for the Dataset Metadata Subset;
- 7.4for the Layer Metadata Subset.

The packaging of the DIGEST Metadata is supported through ISO 19139 extensions for metadata-based transfers of geospatial information (See clause 7.4 of ISO 19139) as described in 7.5.

7.2 Implementation of the DIGEST Information Package Metadata Subset

7.2.1 ISO 19115 Metadata Set of a DIGEST Information Package

The metadata elements of a DIGEST Information Package Metadata Subset (as described in 6.2.2) are implemented through a single instance of:

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

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

+ hierarchyLevel [1] : MX_ScopeCode	**transferAggregate**
+ hierarchyLevelName [1] : MD_ScopeCode	**DIGEST Information Package**
+ contact [1] : CI_ResponsibleParty	IP3.1 Originator (See 6.2.2, 7.6.1 and Note 1)
+ dateStamp [1] : Date	IP2.3 Exchange Date (See 6.2.2)
+ identificationInfo [1] : MD_DataIdentification	See 7.2.2

Notes :

1. There may be other instances of this property not documented here

7.2.2 Identification information of a DIGEST Information Package

The identification information of an Information Package is handled by a unique instance of MD_DataIdentification or one of its subclasses as described hereafter.

+ citation [1] : CI_Citation	
+ title [1] : CharacterString	IP2 TRANSMITTAL IDENTIFICATION (See 6.2.2 and Note 1)
+ date [1] : CI_Date	There may be other dates not documented here
+ date [1] : Date	IP2.3 Exchange Date (See 6.2.2)
+ dateType [1] : CI_DateTypeCode	**creation**
+ edition [1] : CharacterString	IP2.2 Edition Number (See 6.2.2)
+ identifier [1] : MD_Identifier	
+ code [1] : CharacterString	IP2.1 Identifier (See 6.2.2)
+ series [0..1] : CI_Series	
+ name [1] : CharacterString	IP1.1.1 Designation (See 6.2.2)
+ abstract [1] : CharacterString	IP2 TRANSMITTAL IDENTIFICATION (See 6.2.2 and Note 2)
+ pointOfContact [0..1]: CI_ResponsibleParty	IP3.1 Originator (See 6.2.2 and 7.6.1)
+ resourceFormat [0..*] : MD_Format	See 7.2.3 and Note 3
+ descriptiveKeywords [1..*] : MD_Keywords	See 7.2.4
+ resourceConstraints [1] : MD_SecurityConstraints	There may be other instances not documented here
+ useLimitation [1] : CharacterString	IP6.4Releasibility (other instances allowed)
+ classification [1] : MD_ClassificationCode	IP6.1 Security Classification (See 6.2.2 and 7.6.4)
+ handlingDescription [1] : CharacterString	See Note 5
+ language [1..*]: LanguageCode	at least one instance defaulted to **eng**
+ topicCategory [1..*] : MD_TopicCategory	at least one instance defaulted to **intelligenceMilitary**

Notes :

1. There is no specific information in DIGEST corresponding to this mandatory ISO 19115 metadata element, but it is recommended to formulate a title such as "XXX**,** YYY**,** ZZZ" where XXX is the value of IP2.1 Identifier, YYY is the value of IP2.2 Edition Number and ZZZ is the value of IP2.3 Exchange Date
2. There is no specific information in DIGEST corresponding to this mandatory ISO 19115 metadata element. It is recommended to formulate a value such as "**DIGEST Information Package n°**XXX **Ed.** YYY **dated** ZZZ" where XXX is the value of IP2.1 Identifier, YYY is the value of IP2.2 Edition Number and ZZZ is the value of IP2.3 Exchange Date.
3. Mandatory if IP5 SPECIFICATION is set
4. Mandatory if IP5.2PRODUCT SPECIFICATION is set
5. If the value of IP6.2 Downgrading is yes, the handling description should be "**Originator's permission for downgrading required**". Else it should be "**Downgrading date is** XXX" where XXX is the value of "IP6.3 Downgrading Date" (See 7.6.2)

7.2.3 DIGEST Information Package formats

When IP5 SPECIFICATION is set, there shall be an instance of resourceFormat as defined below:

+ name [1]: CharacterString	IP5.1.1Edition Id (See 6.2.2)
+ version [1]: CharacterString	IP5.1.3Edition date (See 6.2.2)
+ amendmentNumber [1]: CharacterString	IP5.1.2Amendment (See 6.2.2)

When IP5.2 PRODUCT SPECIFICATION is set, there shall be an instance of resourceFormat as defined below:

+ name [1]: CharacterString	IP5.2.1Edition Id (See 6.2.2)
+ version [1]: CharacterString	IP5.2.3Edition date (See 6.2.2)
+ amendmentNumber [1]: CharacterString	IP5.2.2Amendment (See 6.2.2)

7.2.4 DIGEST Information Package keywords

DIGEST does not provide a mechanism to provide keywords, but in order to ensure a proper cataloguing of the DIGEST Information package and more generally to properly document the DIGEST Information Package:

- There shall be an instance of the descriptiveKeywords property as defined below:

keyword [1]: CharacterString	**DIGEST**
keyword [1]: CharacterString	**Information Package**
thesaurusName [0..1]: CI_Citation	IP5.1 DIGEST SPECIFICATION (See 6.2.2) and Note 1
title [1] : CharacterString	IP5.1.1Edition Id (See 6.2.2)
date [0..*] : CI_Date	
date [1] : Date	IP5.1.3Edition date (See 6.2.2)
dateType [1] : CI_DateTypeCode	**publication**
edition [1] : CharacterString	IP5.1.2Amendment (See 6.2.2)
Notes :	
Mandatory if IP5 SPECIFICATION is set	

- When IP5 SPECIFICATION is set, there shall be another instance of the descriptiveKeywords property as defined below:

+ keyword [1]: CharacterString	IP5.1.1 Edition Id
+ keyword [0..1]: CharacterString	IP5.2.1 Edition Id (See Note 1)
Notes :	
1. Mandatory if IP5.2 PRODUCT SPECIFICATION is set	

In these instances of the descriptiveKeyword property, there may be complementary instances of the keyword property not documented here.

7.3 Implementation of the Dataset Metadata Subset

7.3.1 ISO 19115 Metadata Set of a Dataset

The metadata elements of a Dataset Metadata Subset (as described in 6.2.3 and 6.3) is implemented through a single instance of:

- the class MD_Metadata (from ISO 19115),
- the class MI_Metadata (from ISO 19115-2),

- or, an instance of any community specialisation of one of these two classes.

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

+ hierarchyLevel [1] : MX_ScopeCode ..... **transferAggregate**
+ hierarchyLevelName [1] : MD_ScopeCode ..... **DIGEST Dataset [Library]**
+ contact [1] : CI_ResponsibleParty ..... IP3.1 Originator (See 6.2.2, 7.6.1 and Note 1)
+ dateStamp [1] : Date ..... DS2.2.2 Creation date (See 6.3.6)
+ identificationInfo [1] : MD_DataIdentification ..... See 7.3.2
+ dataQualityInfo [0..*] : DQ_DataQuality ..... See 7.3.3

Notes :

1. There may be other instances of this property not documented here

7.3.2 Identification information of a Dataset

The identification information of a Dataset is handled by a unique instance of MD_DataIdentification or one of its subclasses as described hereafter.

+ citation [1] : CI_Citation
  + title [1] : CharacterString..... See 6.2.3 and Note 1
  + date [1] : CI_Date
    + date [1] : Date ..... DS2.2.2 Creation date (See 6.3.6)
    + dateType [1] : CI_DateTypeCode ..... **creation**
  + date [0..1] : CI_Date
    + date [1] : Date ..... DS2.2.3Revision date (See 6.3.6)
    + dateType [1] : CI_DateTypeCode ..... **revision**
  + edition [1] : CharacterString..... DS2.2.1 Edition number (See 6.2.3)
  + series [0..1] : CI_Series
    + name [1] : CharacterString..... DS1.1.3 Dataset type (See 6.2.3)
+ abstract [1] : CharacterString..... DS1.1.1 Designation (See 6.2.3 and Note 2)
+ pointOfContact [0..1]: CI_ResponsibleParty ..... IP3.1 Originator (See 6.2.2 and 7.6.1)
+ resourceFormat [0..*] : MD_Format..... See 7.3.4 and Note 3
+ descriptiveKeywords [1..*] : MD_Keywords..... See 7.3.5
+ resourceConstraints [1] : MD_SecurityConstraints..... There may be other instances not documented here
  + useLimitation [1] : CharacterString..... DS2.1.4 Releasibility (other instances allowed)
  + classification [1] : MD_ClassificationCode ..... DS2.1.1 Security classification (See 6.3.6 and 7.6.4)
  + handlingDescription [1] : CharacterString ..... See Note 5
+ language [1..*]: LanguageCode..... at least one instance defaulted to **eng**
+ topicCategory [1..*] : MD_TopicCategory..... at least one instance defaulted to **intelligenceMilitary**
+ extent[1] : EX_Extent.....
  + geographicElement[1] : EX_GeographicBoundingBox .....
    + westBoundLongitude [1] : Decimal ..... DS1.2.1Longitude of SW Corner
    + eastBoundLongitude [1] : Decimal..... DS1.2.3Longitude of NE Corner
    + southBoundLongitude [1] : Decimal..... DS1.2.2Latitude of SW Corner
    + northBoundLongitude [1] : Decimal ..... DS1.2.4Latitude of NE Corner
  + temporalElement[0..1] : EX_GeographicBoundingBox ..... if DS2.2.6Earliest source and DS2.2.7Latest source are set
    + extent [1] : TM_Primitve..... See Note 6

Notes :

1. The value can be simply the value of DS1.1.1 Designation or something like "XXX, YYY" where XXX is the value of DS1.1.1 Designation and YYY is the value of DS2.2.1 Edition number in order to differentiate two editions of a single dataset within a catalogue.
2. If the value is not set, the abstract property can be defaulted to "**DIGEST Dataset n°**XXX **Ed.** YYY" where XXX is the value of DS1.1.1 Designation and YYY is the value of DS2.2.1 Edition number.
3. Mandatory if DS1.3 SPECIFICATION is set
4. Mandatory if DS1.3.2 PRODUCT SPECIFICATION is set
5. If the value DS2.1.2 Downgrading is yes, the handling description should be "**Originator's permission for downgrading required**" else it should be "**Downgrading date is** XXX" where XXX is the value of DS2.1.3 Downgrading date (See 7.6.2)
6. Values of DS2.2.6 Earliest source and DS2.2.7 Latest source define the beginning and end of the temporal extent

7.3.3 Quality information of a Dataset

7.3.3.1 Overall quality information of a Dataset

The overall quality information of a Dataset is handled by a unique instance of DQ_DataQuality scoped to the whole DIGEST Dataset as described hereafter:

+ scope [1] : DQ_Scope	
+ level [1] : MD_ScopeCode	**transferAgregate**
+ extentl [0] : EX_Extent	There should not be any restriction on the extent of the resource
+ report [0..*] : DQ_Element	See Note 2
+ measureIdentification [1] : RS_Identifier	
+ code [1] : CharacterString	See column “Code” of **Error! Reference source not found.**
+ codeSpace [1] : CharacterString	**DIGEST**
+ measuredescription [1] : CharacterString	See column “Description” of **Error! Reference source not found.**
+ result [1] : DQ_QuantitativeResult	
+ valueType [1] : RecordType	See column “Value Type” of **Error! Reference source not found.**
+ value [1] : Record	Value of the DIGEST metadata elements (See Note 2)
+ lineage [1] : LI_Lineage	
+ statement [1] : CharacterString	See Note 1
+ source [0..1] : LI_Source	Mandated if DS2.2.6Earliest source is set
+ citation [1] : CI_Citation	
+ title [1] : CharacterString	**Earliest Source**
+ date [1] : CI_Date	
+ date [1] : Date	DS2.2.6Earliest source (See 7.6.2)
+ source [0..1] : LI_Source	Mandated if DS2.2.7Latest source is set
+ citation [1] : CI_Citation	
+ title [1] : CharacterString	**Earliest Source**
+ date [1] : CI_Date	
+ date [1] : Date	DS2.2.7Latest source (See 7.6.2)

Notes :

1. This statement reports about the information provided in both DS2.3.2.3 Collection criteria and DS2.7 Free text. If DS2.3.2.3 Collection criteria is set, a phrase sentence such as “Produced in conformance with XXX.” Where XXX is the value of DS2.3.2.3 Collection criteria. Then, the content of DS2.7 Free text can be added when it is set. If these two elements are not set, the statement is omitted.
2. An instance of the report property is set for each of the following DIGEST metadata elements: DS2.3.1.1 Feature Completeness, DS2.3.1.2 Attribute Completeness, DS2.3.1.3 Consistency, DS2.3.2.1 Quantitative attribute, DS2.3.2.2 Qualitative attribute. The effective instance of DQ_Element is the Subelement defined in **Error! Reference source not found.** for the DIGEST metadata element.

7.3.3.2 Scoped quality information of a Dataset

For each of the Absolute/point-to-point Horizontal/Vertical accuracy element, an instance of DQ_DataQuality shall be provided:

+ scope [1] : DQ_Scope	
+ level [1] : MD_ScopeCode	**transferAgregate**
+ extent [0] : EX_Extent	
+ geographicElement[1] : EX_GeographicBoundingBox	
+ polygon [1] : GM_Object	DS2.4.3EXTENT OF ACCURACY SUBREGION
+ report [1] : DQ_Element	
+ measureIdentification [1] : RS_Identifier	
+ code [1] : CharacterString	See column “Code” of **Error! Reference source not found.**
+ codeSpace [1] : CharacterString	**DIGEST**
+ measuredescription [1] : CharacterString	See column “Description” of **Error! Reference source not found.**
+ result [1] : DQ_QuantitativeResult	
+ valueType [1] : RecordType	See column “Value Type” of **Error! Reference source not found.**

+ value [1] : Record	Value of the accuracy element

7.3.4 Dataset formats

When DS1.3 SPECIFICATION is set, there shall be an instance of resourceFormat as defined below:

+ name [1]: CharacterString	DS1.3.1.1 Edition Id (See 6.2.3)
+ version [1]: CharacterString	DS1.3.1.3 Edition date (See 6.2.3)
+ amendmentNumber [1]: CharacterString	DS1.3.1.2 Amendment (See 6.2.3)

When DS1.3.2 PRODUCT SPECIFICATION is set, there shall be an instance of resourceFormat as defined below:

+ name [1]: CharacterString	DS1.3.2.1 Edition Id (See 6.2.3)
+ version [1]: CharacterString	DS1.3.2.3 Edition date (See 6.2.3)
+ amendmentNumber [1]: CharacterString	DS1.3.2.2 Amendment (See 6.2.3)

7.3.5 Dataset keywords

DIGEST does not provide a mechanism to provide keywords, but in order to ensure a proper cataloguing of the DIGEST Information package and more generally to properly document the DIGEST Information Package:

- There shall be an instance of the descriptiveKeywords property as defined below:

+ keyword [1]: CharacterString	**DIGEST**
+ keyword [1]: CharacterString	**Dataset**
+ keyword [1]: CharacterString	**Library**
+ thesaurusName [0..1]: CI_Citation	DS1.3 SPECIFICATION (See 6.2.3) and Note 1
+ title [1] : CharacterString	DS1.3.1.1 Edition Id (See 6.2.3)
+ date [0..*] : CI_Date	
+ date [1] : Date	DS1.3.1.3 Edition date (See 6.2.3)
+ dateType [1] : CI_DateTypeCode	**publication**
+ edition [1] : CharacterString	DS1.3.1.2 Amendment (See 6.2.3)

Notes :
1. Mandatory if IP5 SPECIFICATION is set

- When DS1.3 SPECIFICATION is set, there shall be another instance of the descriptiveKeywords property as defined below:

+ keyword [1]: CharacterString	DS1.3.1.1 Edition Id
+ keyword [0..1]: CharacterString	DS1.3.2.1 Edition Id

Notes :
1. Mandatory if DS1.3.2 PRODUCT SPECIFICATION is set

In these instances of the descriptiveKeyword property, there may be complementary instances of the keyword property not documented here.

7.4 Implementation of the Layer Metadata Subset

7.4.1 ISO 19115 Metadata Set of a Layer

The metadata elements of a Layer Metadata Subset (as described in 6.3.2 and 6.4) is implemented through a single instance of:

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

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

+ hierarchyLevel [1] : MX_ScopeCode ..... **transferAggregate**
+ hierarchyLevelName [1] : MD_ScopeCode ..... **DIGEST Layer [Coverage]**
+ contact [1] : CI_ResponsibleParty ..... IP3.1 Originator (See 6.2.2, 7.6.1 and Note 1)
+ contact [0..*] : CI_ResponsibleParty
+ dateStamp [1] : Date ..... DS2.2.2 Creation date (See 6.3.6)
+ identificationInfo [1] : MD_DataIdentification ..... See 7.4.2
+ dataQualityInfo [0..*] : DQ_DataQuality ..... See 7.4.3

Notes :

1. There may be other instances of this property not documented here

7.4.2 Identification information of a Layer

The identification information of a Layer is handled by a unique instance of MD_DataIdentification or one of its subclasses as described hereafter.

+ citation [1] : CI_Citation
  + title [1] : CharacterString..... LY1.1.1 Designation (See 6.3.2)
  + date [1] : CI_Date
    + date [1] : Date ..... DS2.2.2 Creation date (See 6.3.6)
    + dateType [1] : CI_DateTypeCode ..... **creation**
  + date [0..1] : CI_Date
    + date [1] : Date ..... DS2.2.3Revision date (See 6.3.6)
    + dateType [1] : CI_DateTypeCode ..... **revision**
+ abstract [1] : CharacterString..... LY1.1.2 Description (See 6.2.3 and Note 1)
+ pointOfContact [0..1]: CI_ResponsibleParty ..... IP3.1 Originator (See 6.2.2 and 7.6.1)
+ descriptiveKeywords [1..*] : MD_Keywords..... See 7.4.4
+ resourceConstraints [1] : MD_SecurityConstraints..... There may be other instances not documented here
  + useLimitation [1] : CharacterString..... DS2.1.4 Releasibility (other instances allowed)
  + classification [1] : MD_ClassificationCode ..... DS2.1.1 Security classification (See 6.3.6 and 7.6.4)
  + handlingDescription [1] : CharacterString ..... See Note 2
+ spatialResolution [0..1]: MD_Resolution
  + equivalentScale [1]: MD_RepresentativeFraction
    + denominator [1]: Integer..... LY2.2RECIPROCAL SCALE
+ language [1..*]: LanguageCode..... at least one instance defaulted to **eng**
+ topicCategory [1..*] : MD_TopicCategory..... at least one instance defaulted to defaulted to **intelligenceMilitary**
+ extent[1] : EX_Extent.....
  + geographicElement[1] : EX_GeographicBoundingBox
    + westBoundLongitude [1] : Decimal ..... LY1.2.1Longitude of SW Corner
    + eastBoundLongitude [1] : Decimal..... LY1.2.2Latitude of SW Corner
    + southBoundLongitude [1] : Decimal..... LY1.2.3Longitude of NE Corner
    + northBoundLongitude [1] : Decimal ..... LY1.2.4Latitude of NE Corner
+ supplementInformation [0..1] : CharacterString..... LY2.4General comment

Notes :

1. If the value of LY1.1.2 Description is not set, the abstract property can be defaulted to "**DIGEST Layer n°**XXX" where XXX is the value of LY1.1.1 Designation and YYY.
2. If the value DS2.1.2 Downgrading is yes, the handling description should be "**Originator's permission for downgrading required**" else it should be "**Downgrading date is** XXX" where XXX is the value of DS2.1.3 Downgrading date (See 7.6.2)

7.4.3 Quality information of a Layer

For each of the Absolute/point-to-point Horizontal/Vertical accuracy element, an instance of DQ_DataQuality shall be provided:

+ scope [1] : DQ_Scope

+ level [1] : MD_ScopeCode	**transferAgregate**
+ extent [0] : EX_Extent	
+ geographicElement[1] : EX_GeographicBoundingBox	
+ polygon [1] : GM_Object	LY2.5.3EXTENT OF ACCURACY SUBREGION
+ report [1] : DQ_Element	
+ measureIdentification [1] : RS_Identifier	
+ code [1] : CharacterString	See column “Code” of **Error! Reference source not found.**
+ codeSpace [1] : CharacterString	**DIGEST**
+ measuredescription [1] : CharacterString	See column “Description” of **Error! Reference source not found.**
+ result [1] : DQ_QuantitativeResult	
+ valueType [1] : RecordType	See column “Value Type” of **Error! Reference source not found.**
+ value [1] : Record	Value of the accuracy element

7.4.4 Layer keywords

DIGEST does not provide a mechanism to provide keywords, but in order to ensure a proper cataloguing of the DIGEST Information package and more generally to properly document the DIGEST Information Package: There shall be an instance of the descriptiveKeywords property as defined below:

+ keyword [1]: CharacterString	**DIGEST**
+ keyword [1]: CharacterString	**Layer**
+ keyword [1]: CharacterString	**Coverage**
+ thesaurusName [0..1]: CI_Citation	DS1.3 SPECIFICATION (See 6.2.3) and Note 1
+ title [1] : CharacterString	DS1.3.1.1 Edition Id (See 6.2.3)
+ date [0..*] : CI_Date	
+ date [1] : Date	DS1.3.1.3 Edition date (See 6.2.3)
+ dateType [1] : CI_DateTypeCode	**publication**
+ edition [1] : CharacterString	DS1.3.1.2 Amendment (See 6.2.3)

Notes :
1. Mandatory if IP5 SPECIFICATION is set

7.5 Packaging

7.5.1 Packaging of a DIGEST Information Package

In complement to the DIGEST Information Package Metadata Subset, it is possible to provide a complete description of the files associates to it and their organisation on a given transfer support. This can be achieved through a unique instance of the class MX_Aggregate as described below:

+ seriesMetadata [1] : MD_Metadata	DIGEST Information Package Metadata Subset (See 7.2)
+ subset [1..*] : MX_Agregate	DIGEST Dataset (see 7.5.2)
+ aggregateCatalogue [0..*] : CT_Catalogue	See Note 1
+ aggregateFile [1..*] : MX_SupportFile	See Note 2

Notes :
1. Catalogues (instance of CT_Catalogue subclasses) provide information necessary to exploit the data or their metadata : it may be the description of units of measure, codelists, coordinate reference systemes, feature catalogues, …. Any catalogue used by the DIGEST Information Package has to be referenced here.
2. Any file providing complementary resources or information has to be identified here, typically the file containing the DIGEST native metadata of the Information Package.

7.5.2 Packaging of a DIGEST Dataset

In complement to the DIGEST Dataset Metadata Subset, it is possible to provide a complete description of the resources and files associated to it and their organisation on a given transfer support. This can be achieved through a unique instance of the class MX_Aggregate as described below:

+ composedOf [1] : MX_Dataset.....DIGEST Layer (see 7.5.3)
+ seriesMetadata [1] : MD_Metadata.....DIGEST Dataset Metadata Subset (See 7.3)
+ superset [0..1 : MX_Agregate .....DIGEST Information Package (see 7.5.3 and Note 1)
+ aggregateCatalogue [0..*] : CT_Catalogue .....See Note 1
+ aggregateFile [1..*] : MX_SupportFile.....See Note 2

Notes :

1. Shall be provided if the packaging of the DIGEST Information Package is implemented
2. Catalogues (instance of CT_Catalogue subclasses) provide information necessary to exploit the data or their metadata : it may be the description of units of measure, codelists, coordinate reference systemes, feature catalogues, …. Any catalogue used by the DIGEST Dataset or its ISO 19115 Metadata has to be referenced here.
3. Any file providing complementary resources or information has to be identified here, typically the file containing the DIGEST native metadata of the Dataset

7.5.3 Packaging of a DIGEST Layer

In complement to the DIGEST Layer Metadata Subset, it is possible to provide a complete description of the resources and files associated to it and their organisation on a given transfer support. This can be achieved through a unique instance of the class MX_Dataset as described below:

+ has [1] : MD_Metadata .....DIGEST Layer Metadata Subset (See 7.4)
+ partOf [0..1] : MX_Agregate .....DIGEST Dataset (see 7.5.2 and Note 1)
+ dataFile [1..*] : CT_Catalogue .....See Note 2
+ datasetCatalogue [0..*] : CT_Catalogue.....See Note 3
+ supportFile [1..*] : MX_SupportFile.....See Note 4

Notes :

1. Shall be provided if the packaging of the DIGEST Dataset is implemented
2. Any data file of the layer shall be described
3. Catalogues (instance of CT_Catalogue subclasses) provide information necessary to exploit the data or their metadata : it may be the description of units of measure, codelists, coordinate reference systemes, feature catalogues, …. Any catalogue used by the DIGEST Layer or its ISO 19115 Metadata has to be referenced here.
4. Any file providing complementary resources or information has to be identified here, typically the file containing the DIGEST native metadata of the Layer

7.6 Implementing instructions

7.6.1 CI_ResponsibleParty

The DIGEST originator and addressee provide both the name of the organisation and its address using a micro-syntax (backslashes serves as separator of the different elementary information). As the structure of addresses is not unique it is not possible to extract the different components of the address using the DIGEST micro-syntax. It is consequently admitted that the value of the DIGEST metadata element be used as a whole to instantiate the organisationName property of CI_ResponsibleParty, but it is recommended to enhance the quality of the metadata in a second stage to properly instantiate the different properties of CI_ResponsaibleParty with the appropriate components of the DIGEST values.

7.6.2 Implementation of dates

ISO 19115 dates shall conform to ISO 8601 which enable at least forms:

- YYYY-MM-DD where YYYY is the year, MM is the month and DD is the day (E.g., 2007-11-15) ;
- YYYY-MM-DD**T**hh:mm:ss where hh is the hour, mm the minutes and ss the seconds (E.g. 2007-11-15T11:15:00).

DIGEST dates have to be transformed accordingly.

7.6.3 Parameters of the quality measures

The parameters of the quality measures to be used when implementing ISO 19115 are described in **Error! Reference source not found.**.

Table 6 - Parameters of the overall quality measures

DIGEST metadata elements	Code	Description	Value Type	Subelement
DS2.3.1.1 Feature Completeness	featureCompleteness	Feature completeness (percentage)	Integer	DQ_CompletenessOmission
DS2.3.1.2 Attribute Completeness	attributeCompleteness	Attribute Completeness (percentage)	Integer	DQ_CompletenessOmission
DS2.3.1.3 Consistency	consistency	Logical consistency	CharacterString	DQ_DomainConsistency
DS2.3.2.1 Quantitative attribute	quantitativeAttribute	Standard deviation of quantitative attributes	Integer	DQ_QuantitativeAttributeAccuracy
DS2.3.2.2 Qualitative attribute	qualtitativeAttribute	Percentage reliability of qualitative attribute	Integer	DQ_NonQuantitativeAttributeAccuracy
DS2.4.1.1 Absolute Horizontal Accuracy or LY2.5.1.1Absolute Horizontal Accuracy	AHZ	Absolute horizontal accuracy	Distance	DQ_AbsoluteExternalPositionalAccuracy
DS2.4.1.2Point-to-point Horizontal Accuracy or LY2.5.1.2Point-to-point Horizontal Accuracy	PHZ	Point-to-point horizontal accuracy	Distance	DQ_RelativeInternalPositionalAccuracy
DS2.4.2.1Absolute Vertical Accuracy or LY2.5.2.1Absolute Vertical Accuracy	AVT	Absolute vertical accuracy	Distance	DQ_AbsoluteExternalPositionalAccuracy
DS2.4.2.2Point-to-point Vertical Accuracy or LY2.5.2.2Point-to-point Vertical Accuracy	PVT	Point-to-point vertical accuracy	Distance	DQ_RelativeInternalPositionalAccuracy

7.6.4 Implementation of security levels

There is a direct mapping between DIGEST and ISO 19115 security levels

DIGEST	ISO 19115
T	topSecret
S	secret
C	confidential
R	restricted
U	unclassified

8 ISO 19139 Encoding

The ISO 19115 metadata and its encoding shall be encoded in conformance with ISO 19139. The XML Files shall validate against the XML Schema definitions of the namespaces defined by ISO/TS 19139:

http://www.isotc211.org/2005/gco	Geographic Common extensible markup language (gco)
http://www.isotc211.org/2005/gmd	Geographic MetaData extensible markup language (gmd)
http://www.isotc211.org/2005/gmx	Geographic Metadata XML Schema (gmx)
http://www.isotc211.org/2005/gss	Geographic Spatial Schema extensible markup language (gss)
http://www.isotc211.org/2005/gsr	Geographic Spatial Referencing extensible markup language (gsr)
http://www.isotc211.org/2005/gts	Geographic Temporal Schema extensible markup language (gts)

They shall also validate against this second list corresponding to external namespaces used by ISO/TS 19139:

- Geography Markup Language (gml) using the GML namespace URI stated in ISO 19136;
- XML Linking Language (xlink) using the XLINK namespace URI stated in the W3C XLink recommendation)
- W3C XML base schemas (xs) using the XML schema namespace URI stated in the W3C XMLSchema-1 and W3C XMLSchema-2 recommendations

All metadata of the DIGEST Information Package is provided in a single file along with the packaging metadata of the DIGEST Information Package when implemented. The root element is MD_Metadata or one of its subclasses when no packaging metadata is provided. Else, the root file is MX_Aggregate or one of its subclasses.

All metadata of a DIGEST Dataset is provided in a single file along with the packaging metadata of the DIGEST Dataset when implemented. The root element is MD_Metadata or one of its subclasses when no packaging metadata is provided. Else, the root file is MX_Aggregate or one of its subclasses.

All metadata of a DIGEST Layer is provided in a single file along with the packaging metadata of the DIGEST Layer when implemented. The root element is MD_Metadata or one of its subclasses when no packaging metadata is provided. Else, the root file is MX_Dataset or one of its subclasses.

Use of by-ref containment is not allowed expect for the implementation of the packaging mechanism: The MD_Metadata instance of the Layer, Dataset or Information Package is implemented by reference from the metadata files of the related levels of the interchange.

Annex A
Abstract Test Suite
(normative)

A.1. Conformance of an ISO 19115 metadata set related to an Information Package

The ISO 19115 metadata of a DIGEST Information Package shall satisfy the following constraints to conform to this specification:

- All the ISO 19115 metadata of the DIGEST Information Package shall pertain to a single instance of MD_Metadata or one of its subclasses as defined in 7.2.
- Within this instance of MD_Metadata or one of its subclasses:
    - There shall be one and only one instance of the hierarchyLevel property. Its value shall be **transferAggregate**
    - There shall be one and only one instance of hierarchyLevelName. Its value shall be **DIGEST Information Package**
    - There shall be only one instance of MD_Metadata.identificationInfo
- Within this instance of the identificationInfo property:
    - There shall be one and only one instance of ./*/citation/*/date with ./*/citation/*/date/*/dateType equal to **creation**
    - There shall be at least one instance of ./*/descriptiveKeywords
    - There shall be at least one instance of ./*/descriptiveKeywords/*/keyword with the value **DIGEST**
    - There shall be at least one instance of ./*/descriptiveKeywords/*/keyword with the value **Information Package**
    - There shall be at least one instance of./*/resourceConstraints of type MD_SecurityConstraints
- Within this instance of the resourceConstraints property:
    - There shall be at least one instance of ./*/useLimitation
    - There shall be an instance of ./*/handlingDescription

A.2. Conformance of an ISO 19115 metadata set related to a Dataset

The ISO 19115 metadata of a Dataset shall satisfy the following constraints to conform to this specification:

- All the ISO 19115 metadata of the Dataset shall pertain to a single instance of MD_Metadata or one of its subclasses as defined in 7.3.
- Within this instance of MD_Metadata or one of its subclasses:
    - There shall be one and only one instance of the hierarchyLevel property. Its value shall be **transferAggregate**
    - There shall be one and only one instance of hierarchyLevelName. Its value shall be **DIGEST Dataset [Library]**
    - There shall be only one instance of MD_Metadata.identificationInfo
- Within this instance of the identificationInfo property:
    - There shall be one and only one instance of ./*/citation/*/date with ./*/citation/*/date/*/dateType equal to **creation**
    - There shall be at least one instance of ./*/descriptiveKeywords
    - There shall be at least one instance of ./*/descriptiveKeywords/*/keyword with the value **DIGEST**
    - There shall be at least one instance of ./*/descriptiveKeywords/*/keyword with the value **Dataset**

    - There shall be at least one instance of ./*/descriptiveKeywords/*/keyword with the value **Library**
    - There shall be at least one instance of ./*/extent/*/geographicElement/*/EX_GeographicBoundingBox
    - There shall be at least one instance of./*/resourceConstraints of type MD_SecurityConstraints containing at least:
        - one instance of ./*/useLimitation
        - one instance of ./*/handlingDescription

A.3. Layer

The ISO 19115 metadata of a Layer shall satisfy the following constraints to conform to this specification:

- All the ISO 19115 metadata of the Layer shall pertain to a single instance of MD_Metadata or one of its subclasses as defined in 7.3.
- Within this instance of MD_Metadata or one of its subclasses:
    - There shall be one and only one instance of the hierarchyLevel property. Its value shall be **transferAggregate**
    - There shall be one and only one instance of hierarchyLevelName. Its value shall be **DIGEST Layer [Coverage]**
    - There shall be only one instance of MD_Metadata.identificationInfo
- Within this instance of the identificationInfo property:
    - There shall be one and only one instance of ./*/citation/*/date with ./*/citation/*/date/*/dateType equal to **creation**
    - There shall be at least one instance of ./*/descriptiveKeywords
    - There shall be at least one instance of ./*/descriptiveKeywords/*/keyword with the value **DIGEST**
    - There shall be at least one instance of ./*/descriptiveKeywords/*/keyword with the value **Layer**
    - There shall be at least one instance of ./*/descriptiveKeywords/*/keyword with the value **Library**
    - There shall be at least one instance of ./*/extent/*/geographicElement/*/EX_GeographicBoundingBox
    - There shall be at least one instance of./*/resourceConstraints of type MD_SecurityConstraints containing at least:
        - one instance of ./*/useLimitation
        - one instance of ./*/handlingDescription

A.4. Conformance of ISO 19139 Packaging

The ISO 19139 Packaging of DIGEST interchange can be provided at different levels:

- At the DIGEST Information Package level in conformance with the instructions provided in 7.5.1. In this case, it shall also be provided for each Dataset (in conformance with 7.5.2) and Layer (in conformance with 7.5.3) of the information Package.
- At the Dataset level in conformance with 7.5.2. In this case, it shall be provided also for each Layer (in conformance with 7.5.3) of the information Package.
- At the Layer level in conformance with 7.5.3

Annex B
ISO 19115 metadata elements related to DIGEST metadata elements (informative)

B.1. Introduction

This annex aims at defining the ISO 19115 metadata elements impacted by the DIGEST metadata elements for the three types of DIGEST Metadata subset. The ISO 19115 metadata elements are identified by an XPath. When the XPath is in italics, the value of the ISO 19115 metadata element includes the value of the DIGEST metadata element with other data.

B.2. DIGEST Information Package

DIGEST Metadata Element	ISO 19115 XPath
IP1.1.1 Designation	- MD_Metadata/identificationInfo/*/citation/*/series/*/name
IP2 TRANSMITTAL IDENTIFICATION	- MD_Metadata/identificationInfo/*/citation/*/title - MD_Metadata/identificationInfo/*/astract
IP2.1 Identifier	- *MD_Metadata/identificationInfo/*/citation/*/title* - MD_Metadata/identificationInfo/*/citation/*/identifier/*/code - *MD_Metadata/identificationInfo/*/astract*
IP2.2 Edition Number	- *MD_Metadata/identificationInfo/*/citation/*/title* - MD_Metadata/identificationInfo/*/citation/*/edition - *MD_Metadata/identificationInfo/*/astract*
IP2.3 Exchange Date	- MD_Metadata/dateStamp - *MD_Metadata/identificationInfo/*/citation/*/title* - MD_Metadata/identificationInfo/*/citation/*/date/*/date avec MD_Metadata/identificationInfo/*/citation/*/date/dateType=**creation** - *MD_Metadata/identificationInfo/*/astract*
IP3.1 Originator	- MD_Metadata/contact - MD_Metadata/identificationInfo/*/pointOfContact
IP5.1 DIGEST SPECIFICATION	- MD_Metadata/identificationInfo/*/descriptiveKeywords/*/thesaurusName - MD_Metadata/identificationInfo/*/descriptiveKeywords/*/resourceFormat
IP5.1.1Edition Id	- MD_Metadata/identificationInfo/*/descriptiveKeywords/*/thesaurusName/*/title - MD_Metadata/identificationInfo/*/descriptiveKeywords/*/keyword - MD_Metadata/identificationInfo/*/descriptiveKeywords/*/resourceFormat/*/name
IP5.1.2Amendment	- MD_Metadata/identificationInfo/*/descriptiveKeywords/*/thesaurusName/*/edition - MD_Metadata/identificationInfo/*/descriptiveKeywords/*/resourceFormat/*/amendmentNumber
IP5.1.3Edition date	- MD_Metadata/identificationInfo/*/descriptiveKeywords/*/thesaurusName/*/date/*/date avec MD_Metadata/identificationInfo/*/descriptiveKeywords/*/thesaurusName/*/date/*/dateType = **publication** - MD_Metadata/identificationInfo/*/descriptiveKeywords/*/resourceFormat/*/version
IP5.2PRODUCT SPECIFICATION	- MD_Metadata/identificationInfo/*/descriptiveKeywords/*/thesaurusName
IP5.2.1Edition Id	- MD_Metadata/identificationInfo/*/descriptiveKeywords/*/resourceFormat/*/name - MD_Metadata/identificationInfo/*/descriptiveKeywords/*/keyword
IP5.2.2Amendment	- MD_Metadata/identificationInfo/*/descriptiveKeywords/*/resourceFormat/*/amendmentNumber
IP5.2.3Edition date	- MD_Metadata/identificationInfo/*/descriptiveKeywords/*/resourceFormat/*/version
IP6.1 Security Classification	- MD_Metadata/identificationInfo/*/resourceConstraints/MD_SecurityConstraints/classification
IP6.2 Downgrading	- *MD_Metadata/identificationInfo/*/resourceConstraints/MD_SecurityConstraints/* handlingDescription
IP6.3 Downgrading Date	- *MD_Metadata/identificationInfo/*/resourceConstraints/MD_SecurityConstraints/* handlingDescription
IP6.4 Releasibility	- MD_Metadata/identificationInfo/*/resourceConstraints/MD_SecurityConstraints/useLimitation

B.3. Dataset

DIGEST Metadata Element	ISO 19115 XPath
DS1.1.1 Designation	- *MD_Metadata/identificationInfo/*/citation/*/title* - *MD_Metadata/identificationInfo/*/abstract*
DS1.1.2 Description	- *MD_Metadata/identificationInfo/*/abstract*
DS1.1.3 Dataset type	- MD_Metadata/identificationInfo/*/citation/*/series/*/name
DS2.2.1 Edition number	- *MD_Metadata/identificationInfo/*/citation/*/title* - MD_Metadata/identificationInfo/*/citation/*/edition
DS2.2.2Creation date	- MD_Metadata/dateStamp - MD_Metadata/identificationInfo/*/citation/*/date/*/date avec MD_Metadata/identificationInfo/*/citation/*/date/dateType=**creation**
DS2.2.3Revision date	- MD_Metadata/identificationInfo/*/citation/*/date/*/date avec MD_Metadata/identificationInfo/*/citation/*/date/dateType=**revision**
IP3.1 Originator	- MD_Metadata/contact - MD_Metadata/identificationInfo/*/pointOfContact
DS1.3 SPECIFICATION	- MD_Metadata/identificationInfo/*/descriptiveKeywords/*/thesaurusName - MD_Metadata/identificationInfo/*/descriptiveKeywords/*/resourceFormat
DS1.3.1.1 Edition Id	- MD_Metadata/identificationInfo/*/descriptiveKeywords/*/thesaurusName/*/title - MD_Metadata/identificationInfo/*/descriptiveKeywords/*/keyword - MD_Metadata/identificationInfo/*/descriptiveKeywords/*/resourceFormat/*/name
DS1.3.1.2 Amendment	- MD_Metadata/identificationInfo/*/descriptiveKeywords/*/thesaurusName/*/edition - MD_Metadata/identificationInfo/*/descriptiveKeywords/*/resourceFormat/*/amendmentNumber
DS1.3.1.3 Edition date	- MD_Metadata/identificationInfo/*/descriptiveKeywords/*/thesaurusName/*/date/*/date avec MD_Metadata/identificationInfo/*/descriptiveKeywords/*/thesaurusName/*/date/*/dateType = **publication** - MD_Metadata/identificationInfo/*/descriptiveKeywords/*/resourceFormat/*/version
DS1.3.2 PRODUCT SPECIFICATION	- MD_Metadata/identificationInfo/*/descriptiveKeywords/*/thesaurusName
DS1.3.2.1 Edition Id	- MD_Metadata/identificationInfo/*/descriptiveKeywords/*/resourceFormat/*/name - MD_Metadata/identificationInfo/*/descriptiveKeywords/*/keyword
DS1.3.2.2 Amendment	- MD_Metadata/identificationInfo/*/descriptiveKeywords/*/resourceFormat/*/amendmentNumber
DS1.3.2.3 Edition date	- MD_Metadata/identificationInfo/*/descriptiveKeywords/*/resourceFormat/*/version
DS2.1.1 Security classification	- MD_Metadata/identificationInfo/*/resourceConstraints/MD_SecurityConstraints/classification
DS2.1.2 Downgrading	- *MD_Metadata/identificationInfo/*/resourceConstraints/MD_SecurityConstraints/* handlingDescription
DS2.1.3 Downgrading date	- *MD_Metadata/identificationInfo/*/resourceConstraints/MD_SecurityConstraints/* handlingDescription
DS2.1.4 Releasibility	- MD_Metadata/identificationInfo/*/resourceConstraints/MD_SecurityConstraints/useLimitation
DS1.2.1Longitude of SW Corner	- MD_Metadata/identificationInfo/*/extent/*/geographicElement/*/westBoundLongitude
DS1.2.2Latitude of SW Corner	- MD_Metadata/identificationInfo/*/extent/*/geographicElement/*/southBoundLongitude
DS1.2.3Longitude of NE Corner	- MD_Metadata/identificationInfo/*/extent/*/geographicElement/*/eastBoundLongitude
DS1.2.4Latitude of NE Corner	- MD_Metadata/identificationInfo/*/extent/*/geographicElement/*/northBoundLongitude
DS2.2.6Earliest source	- *MD_Metadata/identificationInfo/*/extent/*/temporalElement/*/extent* - MD_Metadata/*/dataQualityInfo/*/lineage/*/source
DS2.2.7Latest source	- *MD_Metadata/identificationInfo/*/extent/*/temporalElement/*/extent* - MD_Metadata/*/dataQualityInfo/*/lineage/*/source
DS2.3.1.1Feature Completeness	- MD_Metadata/*/dataQualityInfo/*/lineage/*/report
DS2.3.1.2Attribute Completeness	- MD_Metadata/*/dataQualityInfo/*/lineage/*/report
DS2.3.1.3Consistency	- MD_Metadata/*/dataQualityInfo/*/lineage/*/report
DS2.3.2.1Quantitative attribute	- MD_Metadata/*/dataQualityInfo/*/lineage/*/report
DS2.3.2.2Qualitative attribute	- MD_Metadata/*/dataQualityInfo/*/lineage/*/report
DS2.3.2.3Collection criteria	- *MD_Metadata/*/dataQualityInfo/*/lineage/*/statement*
DS2.4.1.1 Absolute Horizontal Accuracy	- MD_Metadata/*/dataQualityInfo/*/lineage/*/report
DS2.4.1.2Point-to-point Horizontal Accuracy	- MD_Metadata/*/dataQualityInfo/*/lineage/*/report
DS2.4.2.1Absolute	- MD_Metadata/*/dataQualityInfo/*/lineage/*/report

Vertical Accuracy	
DS2.4.2.2Point-to-point Vertical Accuracy	- MD_Metadata/*/dataQualityInfo/*/lineage/*/report
DS2.4.3EXTENT OF ACCURACY SUBREGION	- MD_Metadata/*/dataQualityInfo/*/scope/*/extent.*/geographicElement/*/polygon
DS2.7 Free text	- *MD_Metadata/*/dataQualityInfo/*/lineage/*/statement*

B.4. Layer

DIGEST Metadata Element	ISO 19115 XPath
LY1.1.1 Designation	- *MD_Metadata/identificationInfo/*/citation/*/title* - *MD_Metadata/identificationInfo/*/abstract*
LY1.1.2 Description	- *MD_Metadata/identificationInfo/*/abstract*
DS2.2.2 Creation date	- MD_Metadata/dateStamp - MD_Metadata/identificationInfo/*/citation/*/date/*/date avec MD_Metadata/identificationInfo/*/citation/*/date/dateType=**creation**
DS2.2.3Revision date	- MD_Metadata/identificationInfo/*/citation/*/date/*/date avec MD_Metadata/identificationInfo/*/citation/*/date/dateType=**revision**
IP3.1 Originator	- MD_Metadata/contact - MD_Metadata/identificationInfo/*/pointOfContact
DS2.1.1 Security classification	- MD_Metadata/identificationInfo/*/resourceConstraints/MD_SecurityConstraints/classification
DS2.1.2 Downgrading	- *MD_Metadata/identificationInfo/*/resourceConstraints/MD_SecurityConstraints/* handlingDescription
DS2.1.3 Downgrading date	- *MD_Metadata/identificationInfo/*/resourceConstraints/MD_SecurityConstraints/* handlingDescription
DS2.1.4 Releasibility	- MD_Metadata/identificationInfo/*/resourceConstraints/MD_SecurityConstraints/useLimitation
LY1.2.1Longitude of SW Corner	- MD_Metadata/identificationInfo/*/extent/*/geographicElement/*/westBoundLongitude
LY1.2.2Latitude of SW Corner	- MD_Metadata/identificationInfo/*/extent/*/geographicElement/*/southBoundLongitude
LY1.2.3Longitude of NE Corner	- MD_Metadata/identificationInfo/*/extent/*/geographicElement/*/eastBoundLongitude
LY1.2.4Latitude of NE Corner	- MD_Metadata/identificationInfo/*/extent/*/geographicElement/*/northBoundLongitude
LY2.5.1.1Absolute Horizontal Accuracy	- MD_Metadata/*/dataQualityInfo/*/lineage/*/report
LY2.5.1.2Point-to-point Horizontal Accuracy	- MD_Metadata/*/dataQualityInfo/*/lineage/*/report
LY2.5.2.1Absolute Vertical Accuracy	- MD_Metadata/*/dataQualityInfo/*/lineage/*/report
LY2.5.2.2Point-to-point Vertical Accuracy	- MD_Metadata/*/dataQualityInfo/*/lineage/*/report
LY2.5.3EXTENT OF ACCURACY SUBREGION	- MD_Metadata/*/dataQualityInfo/*/scope/*/extent.*/geographicElement/*/polygon
LY2.4General comment	- *MD_Metadata/*/identificationInfo/*/supplementalInformation*
LY2.2RECIPROCAL SCALE	- MD_Metadata/identificationInfo/*/spatialResolution