LATIN AMERICAN

METADATA

PROFILE

Version 2

L A M P v 2

---

2 0 1 7

Title	Latin American Metadata Profile LAMP version 2
Objective	Provide a standardized way to describe geographic data and services for Latin America
Abstract	The Latin American Metadata Profile, version 2, provides a standardized and efficient way to document geographic data and services, enabling people to find, assess, gain access to and use multiple kinds of resources such as: digital datasets, databases, map documents and map services on the web, among others. This current document contains a detailed description of the second version of the Latin American Metadata Profile (LAMP), based on the ISO 19115-1:2014 standard. This is a class 1 conformity profile that has been designed to enable interoperability between systems. It is recommended that Latin American countries adopt this profile with the aim of increasing interoperability and making more harmonized the terminology that is used in the creation of metadata.
Creator	Document prepared as per the requirement set by the Pan American Institute for History and Geography (PAIGH), with the cooperation of the CAF (Development Bank of Latin America), in the context of the GeoSUR Program and the technical advice of the National Centre for Geographic Information of the National Geographic Institute of Spain.
PAIGH General Secretary	Rodrigo Barriga Vargas
GeoSUR Program Coordinator	Jesús Suniaga

LAMPv2 Editing Team	**Editor and Coordinator of the Ad Hoc LAMPv2 Working Group**	Pablo Morales Hermosilla
	PAIGH	Cintia Andrade Leiva

Techical Support	**CNIG**	Antonio F. Rodríguez Pascual Alejandra Sánchez Maganto
	GeoSUR	Santiago Borrero Mutis Miguel Blanco Calderón Emily S. Carrera Ron

Contributors to the Ad Hoc LAMPv2 Working Group	**Argentina**	National Geographic Institute Surveyor Sergio Rubén Cimbaro, Director Horacio José Castellaro Malena Libman
	Chile	Col. José Riquelme Muñoz, Director Christian Schwerter Garcia
	Colombia	Dr. Juan Antonio Nieto Escalante, General Director Leonor Ayde Rodriguez Rojas
	Ecuador	Military Geographic Institute. Col. & Ing. William Aragón Cevallos, Director Eng. Edison Bravo
	El Salvador	National Geographic and Cadastral Institute Licda. Sonia Ivette Sánchez Cuéllar, Director Blanca Isabel Gómez Eng. Enrique Canales
	Guatemala	National Geographic Institute Eng. Melida Lucia Izquierdo Del Cid, General Director Margarita del Pilar Ovalle Recinos
	Mexico	International Relations, Public Education Secretariat Dr. Benito Mirón López, General Director National Institute of Statistics and Geography José Luis Mondragon Garibay Lizbeth Covarrubias Loredo Arturo Carreón Espinoza
	Panama	"Tommy Guardia" National Geographic Service - National Authority for Land Management - ANATI. Lic. Israel Sánchez M., Director Elisenia Mendoza Elizabeth Samuels
	Paraguay	Grl. Brig. Marco Antonio Merino Amand, Director of the National Geographic Institute, Lima, Peru. Eng. Reynaldo Flores, National Geographic Institute, Lima, Peru
	Peru	Grl. Brig. Marco Antonio Merino Amand, Director of the National Geographic Institute, Lima, Peru. Eng. Reynaldo Flores, National Geographic Institute, Lima, Peru
	Dominican Republic	"José Joaquín Hungría Morell" National Geographic Institute Eng. Alejandro Jiménez Reyes, Director Wanda Lisselote Binet Juan Javier Toca

Contributors to the Ad Hoc LAMPv2 Working Group	Uruguay	Military Geographic Service Cnel. Norbertino Suárez, Director Marcelo Iturburu, Ministry of Housing, Territorial Organisation and Environment MA. Diana Comesaña, University of the Republic, Faculty of Information and Communication Bryan Barreiro, University of the Republic, Faculty of Information and Communication
	Venezuela	Simón Bolívar Geographic Institute of Venezuela (IG-VSB) Minister Ricardo José Menéndez Prieto, President
Status	Approved	
Lcence	 Latin American Metadata Profile 2 by CAF banco de Desarrollo de América Latina, IPGH Instituto Panamericano de Geografía e Historia, Programa GeoSUR, CNIG Centro Nacional de Información Geográfica is licensed under a Creative Commons Attribution 4.0 International License.	

Contents

Preface

The Pan American Institute for History and Geography (PAIGH) is pleased to present the second version of the Latin American Metadata Profile (LAMPv2). For this, and in first place, the experience acquired in establishing the first versión of April 2011 has been taken into account. The first version ceases to be in effect, being replaced by this new version.
Moreover, the interesting contributions from the Member States have been considered, while the the innovations and advantages of the standard "ISO 19115-1: 2014 Geographic Information – Metadata – Part 1: Fundamentals" have been taken as the most essential contribution. Given the complexity of the standards for metadata and the large quantity of human and other resources of all kinds that managing metadata requires, in this new version (LAMP v2) it is intended to create a profile that is as simple and clear as possible, so as to facilitate its use by organizations and, thus, its implementation in the Latin American community that manages geographic resources for this region.

It is important to highlight the fact that, for editing LAMPv2, the support of the Latin America Development Bank (CAF) has been made available through its program "GeoSUR". There has also been the specialized advice of the National Centre for Geographic Information (CNIG) of the National Geographic Institute of Spain, which has made it possible to sustain and give support to the work of the Editing Team that the PAIGH has entrusted this task to, for these purposes.

In this way, this new verion of the profile is placed at the disposal of the Pan American community, of the National Sections and of the authorities of the PAIGH, as a shared model that will encourage and facilitate the management and use of metadata catalogues. In this way it may contribute to the development of geographic information and to the interoperability of Spatial Data Infrastructures throughout our region.

Introduction

The concepts established in international standards and their implementation in technological tools provide multiple opportunities for development over a wide spectrum of human activities.

In the area of Geographic Information Science, the interaction between Information and Communication Technologies (TIC) and the 19100 family of standards produced by the ISO/TC 211 Technical Committee, provide solid foundations for achieving interoperability between platforms, services and data.

The TIC contribute to interoperability by means of a set of technologies and interfaces, while the ISO/TC 211 standards provide the international consensus about issues in the management of geographic information or its whole life cycle, including aspects of planning, development, quality control, documentation, publication and maintenance.

One of the main phases of the life cycle of information is that concerning documentation, which makes it possible to know what information is being held or to manage an institution, also to know the necessary technical features, restrictions on use, contact data, dates of updates, quality, among many other background facts. This facilitates the process of determining if the information available is useful or sufficient for satisfying some specific needs or if it is necessary to develop or acquire a new information resource.

In this context, the initiative of creating the second version of the Latin American Metadata Profile (LAMPv2) has arisen. This being presented as a class 1 profile, that is, it involves only a subset purely of elements from the ISO 19100 family of standards; so it is intended to deliver an interoperable alternative for documenting, reporting and exchanging the information resources linked to territory and produced in the Pan-American region. Digital, analogue, vector, and raster information, documents and geographic web services (such as: *Web Map Service* (WMS), *Web Feature Service* (WFS) or *Web Coverage Service* (WCS), among others) are considered to be part of these resources.

With the objective of supporting the development and validation of LAMPv2, the PAIGH set up a specialized working group, called the LAMPv2 Ad Hoc working group, in which thirteen

national sections of the Pan-american region have participated. Through this working group, the opinion of the participating countries was able to be included and consensus could be reached on the metadata elements present in this LAMPv2 version.

Outstanding among the main differences between this and the previous version, there is the use of the basic ISO standard, *"19115-1:2014 Geographic Information – Metadata – Part 1: Fundamentals"*. Moreover, it should be pointed out that the Spanish language version of the *«ISO/TC 211 Multilingual Glossary of Terms»* has been considered in the choice of technical terminology, thus enabling the use of a unified technical language in the area of the 19100 family of standards. Another of the features that distinguishes this profile is that it will have a technological implementation that facilitates its integration in the main software for handling metadata in accordance with that established in the standard *ISO/TS 19115-3:2016 Geographic information -- Metadata -- Part 3: XML schema implementation for fundamental concepts.* There is the possibility for documenting quality reports in accordance with ISO 19157:2013 - *Geographic information -- Data quality.* Finally, in accordance with the rules established in *ISO 19106:2004 Geographic information – Profiles*, some classes and relations have been simplified and some of the conditional rules and the multiplicity of rules have been modified.

1. Scope

The Latin American Metadata Profile (LAMPv2) defines a structured set of metadata elements in order to describe, in a standardized way, geographic data and services. It covers information about identification, extent, spatial and temporal aspects, the quality, the content and descriptions of it, reference systems, distribution and other properties of data and digital geographic services.

LAMPv2 is applicable to:

- cataloguing all kinds of resources and the full description of datasets and data services;

- geographic services, geographic datasets, series of datasets, individual geographic features and the properties of geographic features.

LAMPv2, for reasons of simplicity, is not applicable to:

- the description of series and other aggregated data products (DS_Aggregate) made up of units, together with descriptions of these units. In these cases it is possible to describe the series or the aggregated set, considering them as if it were a dataset, but not its units.

LAMPv2 defines:

- metadata sections, entities and elements, both obligatory and conditional;

- The minimum set of metadata required to develop the majority of metadata applications (data searches, determining the suitability of data for its use; access to, transfer of and the use of data and digital services);

- optional metadata elements for the purposes of a description of standardized resources and, if required, of wider resources.

Although LAMPv2 has been intended for digital data and services, its principles may be extended to many other types of digital and analogue resources, such as maps, tables and text documents. Certain conditional elements of metadata may not be applicable to these other kinds of resources.

2. Reference standards

The following documents are indispensable for the application of this profile. For references with a date, the last edition (including any modification) of the document being referred to is applied.
ISO 639 *(all parts), Codes for the representation of names of languages*

ISO 3166 *(all parts) Codes for the representation of names of countries and their subdivisions*

ISO 4217:2008 *Codes for the representation of currencies and funds*

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

ISO 19101-1:2014 *Geographic information — Reference model — Part 1: Fundamentals.*

ISO/TS 19103:2005 *Geographic information — Conceptual schema language*

ISO 19106:2004 *Geographic information — Profiles*

ISO 19107:2003 *Geographic information — Spatial schema*

ISO 19108:2002 *Geographic information — Temporal schema*

ISO 19109:2005 *Geographic information — Rules for application schema*

ISO 19110:2005 *Geographic information — Methodology for feature cataloguing*

ISO 19111:2007 *Geographic information — Spatial referencing by coordinates*

ISO 19111-2:2009 *Geographic information — Spatial referencing by coordinates — Part 2: Extension for parametric values*

ISO 19112:2003 *Geographic information — Spatial referencing by geographic identifiers*

ISO/TS 19115-3:2016 *Geographic information -- Metadata -- Part 3: XML schema implementation for fundamental concepts*

ISO 19119 *Geographic information — Services*

ISO 19157:20133 *Geographic information — Data Quality*

IETF RFC 3986:2005 *Uniform Resource Identifier (URI): Generic Syntax*

3. Terms and definitions

For the purposes of this document, the following terms and definitions are applied:

3.1

citation

information object containing information that directs a reader's or user's attention from one resource (3.13) to another.

[SOURCE: ISO 24619:2011, 3.1.16]

3.2

dataset

identifiable collection of data

Note 1: A dataset can be a smaller grouping of data which, though limited by some constraint such as spatial extent or feature type, is located physically within a larger dataset. Theoretically, a dataset can be as small as a single geographic feature or geographic feature attribute contained within a larger dataset. A hardcopy map or chart can be considered a dataset.
[SOURCE: ISO 191115-1:2014, 4.3]

3.3

metadata element
discrete unit of *metadata* (3.8)

Note 1 to entry: Metadata elements are unique within a metadata class.
Note 2 to entry: Equivalent to an attribute and/or an association in UML terminology.
Note 3 to entry: Class attributes and relationships are referred to collectively as metadata elements.

[SOURCE: ISO 19115-1:2014, 4.11]

3.4

metadata entity

set *of metadata elements* (3.3) describing the same aspect of data
Note 1 to entry: Can contain one or more metadata entities.
Note 2 to entry: Equivalent to a class in UML terminology.

[SOURCE: ISO 19115-1:2014, 4.10]

3.5

interface

named set *of operations* (3.11) that characterize the behaviour of an entity

[SOURCE: ISO 19119:2005, 4.2]

3.6

lineage

provenance, (3.12) source(s) and production process(es) used in producing a resource (3.13)

[SOURCE: ISO 191115-1:2014, 4.9]

3.7

grid[1]

network composed of two or more sets of curves in which the members of each set intersect the members of the other sets in an algorithmic way

[SOURCE: ISO 19123:2005, 4.1.23]

3.8

metadata

information about a resource (3.13)

[SOURCE: ISO 191115-1:2014, 4.10]

3.9

model

abstraction of some aspects of reality

[SOURCE: ISO 19119:2005, 4.3]

3.10

feature

abstraction of real world phenomena

[SOURCE: ISO 19101:2014, 4.1.11]

---

1 Note. The Spanish equivalent to "grid", which is "malla", is also called "cuadricula" (in Ecuador) and "grilla" (in Chile)

Source: ISO TC/211 Multilingual Glossary of Terms.

3.11

operation

specification of a transformation or query that an object may be called to execute
Note 1 to entry: An operation has a name and a list of parameters.

[SOURCE: ISO 19119:2005, 4.3]

3.12

provenance
information about the place and time of the origin or derivation of a resource or a record or of a test of authenticity or of the previous owner.

[SOURCE: ISO 19153:2014, 4.39]

3.13

resource

identifiable asset or means that fulfils a requirement

EXAMPLE *Dataset* (3.2), *dataset series* (3.15), *service* (3.16), document, initiative, software, person or organization.

[SOURCE: ISO 19115-1:2014, 4.17]

3.14

metadata section

subset of metadata (3.8) *which consists of a collection of related metadata entities* (3.4) *and metadata elements* (3.3)

Note 1: Equivalent to a package in UML terminology.

[SOURCE: ISO 19115-1:2014, 4.13]

3.15

dataset series

collection of datasets (3.2) sharing common characteristics

[SOURCE: ISO 191115-1:2014, 4.4]

3.16

service

distinct part of the functionality that is provided by an entity through *interfaces* (3.5)

[SOURCE: ISO 19119:2005, 4.1]

3.17

free text

textual information that can be expressed in one or many languages

[FUENTE: ISO 19115-1:2014, 4.6]

3.18

data type

specification of a value domain with operations allowed on values in this domain

EXAMPLE Integer, Real, Boolean, String, Date, and GM_Point (conversion of data into a series of codes)

Note 1: The data types include predefined primitive types and types defined by the user.

[SOURCE: ISO/TS 19103:2005, 4.1.5]

4. Symbols and abbreviated terms

4.1 Abbreviated terms

ISO International Organization for Standardization

OCL *Object Constraint Language*

OGC *Open Geospatial Consortium*

UML *Unified Modelling Language*

URI   *Uniform Resources Identifier*

XML *Extensible Markup Language*

4.2 Abbreviated terms – Packets

Two letter abbreviated terms are used to denote the package that contains a class. Those abbreviated terms precede class names, connected by an underscore «_».The International Standard in which those classes are located is indicated in parentheses. A list of those abbreviated terms follows in their original language and their translation to Spanish.

CI   Citation (ISO 19115-1) – *Cita*

DQ   Data Quality (ISO 19157) – *Calidad de datos*

DS   Dataset (ISO 19115-1) – *Conjunto de datos*

EX   Extent (ISO 19115-1) – *Extensión*

FC   Feature Catalogue (ISO 19110) – *Catálogo de objetos geográficos*

GF   General Feature (ISO 19109) – *Objetos geográficos generales*

GM   Geometry (ISO 19107) – *Geometría*

LI   Lineage (ISO 19115-1) – *Linaje*

LE   Lineage extended (ISO 19115-2) – *Linaje extendido*

MD   Metadata (ISO 19115-1) – *Metadatos*

PT   Polylinguistic Text (ISO/TS 19103) – *Texto polilinguístico*

RS   Reference System (ISO 19115-1) – *Sistema de referencia*

SC   Spatial Coordinates (ISO 19111) – *Coordenadas espaciales*

SV   Metadata for Services (ISO 19115-1) – *Metadatos para Servicios*

TM   Temporal (ISO 19108) – *Temporal*

5. Metadata sections

In ISO 19115-1, the metadata are defined and organized into one or more sections; each one of these covers a separate component of metadata information. There are 14 sections or packets that are used for organizing the metadata and putting them in order: Information about metadata, Identification information, Constraint information, Lineage information, Maintenance information, Spatial representation information, Reference system information, Content information, Distribution information, Description catalogue information, Metadata application information, Application schema information, Metadata extension information and Service metadata information. In addition to the above, there are four packets: Extent information, Responsible party and citation information, Information about the locale, and Scope information; these are used by other packages.

6. Latin American Metadata Profile (LAMPv2)

The Latin American Metadata Profile, in its second versión, covers an efficient set of metadata elements in order to facilitate searches for, comparison of and choice of resources related to geographic information.

It is made up of the packages or sections that are identified in table 6.1

6.1 Packages or sections of LAMPv2 metadata

ID	LAMPv2 sections
A.1	Metadata application information
A.2	Metadata information
A.3	Identification information
A.4	Constraints information
A.5	Lineage information
A.6	Maintenance information
A.7	Spatial representation information
A.8	Reference system information
A.9	Content information
A.10	Distribution information
A.11	Metadata service information
A.12	Extension information
A.13	Citation and responsible party information
A.14	information about the class used normally (scope)
A.15	Locale information
A.2.2.1	Data quality information

Data dictionary for geographic metadata

- **General overview of the dictionary**

This data dictionary describes the characteristics of the metadata defined in this profile. It is specified in a hierarchy to establish relationships and an organisation for the information. As follows, the descriptors placed in the table column headings are defined; the columns in turn define each class or metadata element.

- **Row Number**

This column gives the row number that appears originally in the ISO 19115-1 standard, in order to facilitate queries and to understand the relation between LAMPv2 and the ISO standard.

- **Name/role name**

A label assigned to a metadata class or to a metadata element. Metadata class names start with an upper case letter. Spaces do not appear in a metadata class name. Instead, several words may be contained with no blank spaces, with each new subword starting with a capital letter to distinguish them (example: XnnnYmmm).

Note: Role name is a noun that refers to the purpose or capability in which one class is associated with another (this comes from UML language).
Source: Quatrani T, (1999) *Visual Modeling Rational Rose 2000 and UML*. ISBN-10:0201699613

Metadata class names are unique within the data dictionary. Metadata element names are unique within a metadata class, not the entire data dictionary To make these names unique, they are combined with the name of the class (example: MD_Metadata.characterSet). Role names are used to identify the associations and are preceded by «Role name:» to distinguish them from other metadata elements.

- **Definition**

The metadata class/element description.

- **Obligation/Condition**

This is a descriptor indicating whether a metadata class or metadata element shall be documented in the metadata always or sometimes (i.e. when it contains value(s)). This descriptor may have the following values: OB (mandatory- "obligatorio" in Spanish), CO (conditional), or OP (optional).

Mandatory (OB):

The metadata class or metadata element shall be documented always.

Conditional (CO):

Specifies a condition that can be processed by a machine if the class or element is fulfilled. «Conditional» is used for one of the three following possibilities:

- Expressing a choice between two or more options. At least one option is mandatory and must be documented.

- Documenting a metadata class or a metadata element if another element has been documented.

-   Documenting a metadata element if a specific value for another metadata element has been documented. To facilitate reading by persons, the specific value is stated in plain text (e.g. Table A.1, row 17 «CO / not defined by encoding and UFT-8 not used? »). If the answer to the condition is true or yes, then the metadata class or the metadata element shall be mandatory.

Optional (OP):

The metadata class or the metadata element may or may not be documented. Optional metadata classes and elements have been defined to provide a guide to those intending to fully document their data. If an optional class is not used, the elements contained within that class (including mandatory elements) also should not be used.

NOTE Optional classes can have mandatory elements; those elements only become mandatory if the optional class is used.

-   **Maximum occurrence**

Specifies the maximum number of instances that the metadata class or the metadata element may have. Single occurrences are shown by «1»; while repeating, unbounded, occurrences are represented by «N». If occurrences of a fixed number other than one are allowed, these are represented by the corresponding number (i.e. "2", "3"...).

-   **Data type**

Specifies a generic set of values for representing the metadata elements; for example, integer, real, string, DateTime, and Boolean.

-   **Domain**

For a class, the domain indicates the line numbers covered by that class.

For a metadata element, the domain specifies the values allowed. The use of free text indicates unrestricted textual information in one or more languages.

Table A.1 – Metadata application information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
1.	D_Resource	an identifiable asset or means that fulfils a requirement	Use obligation from referencing object	Use maximum occurrence from referencing object	Class <<Abstract>>	Line 2
2.	Role name: has	resource has related metadata	OB	N	Asociation	MD_Metadata (Table A.2)
4.	DS_DataSet	identifiable collection of data	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified class (DS_Resource	Line 2
5.	SV_Service	capability which a service provider entity makes available to a service user entity through a set of interfaces that define a behaviour	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified class (DS_Resource)	Line 2

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
15.	**MD_Metadata**	**root entity which defines metadata about a resource or resources**	**OB**	**Use maximum occurrence from referencing object if referenced from DS_Resource**	**Class**	**Lines 16,17,19,20,21,22,26,27,29,30, 31,32, 37, 38**
16.	metadataIdentifier	unique Identifier for this metadata record	OP	1	Class	MD_Identifier (Table A.14.1)
17.	defaultLocale	language and character set used for documenting metadata	CO / not defined by encoding and UTF-8 not used	1	Class	PT_Locale (Table A.15)
19.	contact	party responsible for the metadata information	OB	N	Class	CI_Responsibility (Table A.13.1)
20.	dateInfo	date(s) associated with the metadata. NOTE: dates of creation" and latest update must be provided, others can also be provided.	OB	N	Class	CI_Date (Table A.13.5)
21.	metadataStandard	citation for the standard to which the metadata conforms. At least ISO 19115-1:2014 should be included. NOTE Metadata standard citations should include an identifier.	OB	N	Class	CI_Citation (Table A.13)
22.	metadataProfile	citation for the profile of the metadata standard to which the metadata conforms. At least LAMPv2 should be included NOTE Metadata profile citations should include an identifier.	OB	N	Class	CI_Citation (Table A.13)

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
26.	Role name: spatialRepresentationInfo	digital representation of spatial information in the resource	OP	N	Association	MD_SpatialRepresentation <<Abstract>> (Table A.7)
27.	Role name: referenceSystemInfo	description of the spatial and temporal reference systems used in the resource	OB	N	Association	MD_ReferenceSystem (Table A.8)
29.	Role name: identificationInfo	information about the resource(s) to which the metadata applies.	OB	1	Association	MD_Identification (Table A.3) <<Abstracta>> NOTE Caution should be taken regarding the use of multiple instances of MD_Identification.
30.	Role name: contentInfo	information about feature and coverage characteristics	OP	N	Association	MD_ContentInformation <<Abstract>> (Table A.9)
31.	Role name: distributionInfo	information about the distributor of and options for obtaining the resource(s)	OP	N	Association	MD_Distribution (Table A.10)
32.	Role name: dataQualityInfo	overall assessment of quality of a resource(s)	OP	N	Association	DQ_DataQuality (ISO 19157) (Table A.2.2.1)
37	Role name: resourceLineage	information about the provenance, source(s), and/or the production process(es) applied to the resource	OB	N	Association	LI_Lineage (Table A.5)
38	Role name: metadataScope	the scope/type of resource for which metadata is provided	OB	N	Association	MD_MetadataScope (Table A.12.1)

Table A.2.1 - Metadata scope information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
39.	**MD_MetadataScope**	**dinformation about the scope of the resource**	**Use obligation from referencing object**	**Use maximum occurrence from referencing object**	**Class**	**Line 40**
40.	resourceScope	description of the spatial and temporal reference systems used in the resource	OB (Default value is "dataset")	1	Class	MD_ScopeCode <<CodeList>> Table (A.3.16)

Table A.3 – Identification information (includes data and service identification)

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
42.	MD_Identification	basic information required to uniquely identify a resource or resources	Use obligation from referencing object	Use maximum occurrence from referencing object	Aggregated Class (MD_Metadata) <<Abstract>>	Lines 43,44,45,46,47,48,49,50,52,53, 56,57,59,61 NOTE Caution regarding the use of multiple instances of this class.
43.	citation	citation for the resource	OB	1	Class	CI_Citation (Table A.13)
44.	abstract	brief narrative summary of the resource	OB	1	CharacterString	Free text
45.	purpose	summary of the intentions with which the resource was developed	OP	1	CharacterString	Free text
46.	credit	recognition of those who contributed to the resource	OP	N	CharacterString	Free text
47.	status	status of the resource	OP	N	Class	MD_ProgressCode <<CodeList>> (A.3.14)
48.	pointOfContact	identification of, and means of communication with, person(s) and organisation(s) associated with the resource	OB	N	Class	CI_Responsibility (Table A.13.1)
49	spatialRepresentationType	method used to spatially represent geographic information	OB	N	Class	MD_SpatialRepresentationTypeCode <<CodeList>> (A.3.17)

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
50.	spatialResolution	factor which provides a general understanding of the density of spatial data in the resource or describes the range of resolutions in which a digital resource may be used NOTE This element should be repeated when describing upper and lower range.	OB	N	Class	MD_Resolution <<Unión>> (Table A.3.3)
52.	topicCategory	main theme(s) of the resource	CO / is metadataScope/ resourceScope equal to "dataset" or to "series"?	N	Class	MD_TopicCategoryCode <<Enumeración>> (A.3.18)
53.	extent	spatial and temporal extent of the resource	CO / is metadataScope/ resourceScope equal "dataset"? if yes, either extent.geographic Element.EX_Geographic BoundingBox or	N	Class	EX_Extent (Table A.12)
56.	Role name: resourceMaintenance	information about the frequency of resource updates, and the scope of those updates	OP	N	Association	MD_MaintenanceInformation (Table A.6)
57.	Role name: graphicOverview	graphic that illustrates the resource (should include a legend for the graphic)	OP	N	Association	MD_BrowseGraphic (Table A.14.2)

Row №	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
59.	descriptiveKeywords	category keywords, their type, and reference source	OP	N	Association	MD_Keywords (Table A.3.1)
61.	resourceConstraints	information about constraints which apply to the resource	OP	N	Association	MD_Constraints (Table A.4)
63.	**MD_DataIdentification**	**information required to identify a resource**	**Use obligation from referencing object**	**Use maximum occurrence from referencing object**	**Specified Clase (MD_Identification)**	**Lines 43,44,45,46,47,48,49,50,52,53, 56,57,59,61 and 64**
64.	defaultLocale	language and character set used within the resource	CO/ language used in resource?	1	Class	PT_Locale (Table A.15)

Table A.3.1 – Keyword Information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
68.	**MD_Keywords**	**keywords, their type and reference source** **NOTE When the resource described is a service, one instance of MD_Keyword should refer to the service taxonomy defined in ISO 19119.**	**Use obligation from referencing object**	**Use máximum occurrence from referencing object**	**Aggregated Class (MD_Identification)**	**Lines 69 and 71**
69.	keyword	commonly used word(s) or formalised word(s) or phrase(s) used to describe the subject	OB	N	CharacterString	Free text
71.	thesaurusName	name of the formally registered thesaurus or a similar authoritative source of keywords	OP	1	Class	CI_Citation (Table A.13)

Table A.3.2 – Representativa fraction information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
77.	MD_RepresentativeFraction	derived from ISO/TS 19103 Scale where MD_Representative Fraction.denominator = 1 / Scale. Measure , and Scale.targetUnits = Scale.sourceUnits	Use obligation from referencing object	Use maximum occurrence from referencing object	Class <<DataType>>	Line 78
78.	denominator	the number below the line in a vulgar fraction	OB	1	Integer	Integer > 0

Table A.3.3 – Resolution information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
79.	**MD_Resolution**	**level of detail expressed as a scale factor, a distance or an angle**	**Use obligation from referencing object**	**Use maximum Occurrence from referencing object**	**Class <<Union>>**	**Lines 80, 81 and 84**
80.	equivalentScale	level of detail expressed as the scale of a comparable hardcopy map or chart	CO/ distance, vertical, angularDistance, or levelOfDetail not documented?	1	Class	MD_RepresentativeFraction <<DataType>> (Table A.3.2)
81.	distance	horizontal ground sample distance	CO/ equivalentScale, vertical, angularDistance, or levelOfDetail not documented?	1	Class	Distance (A.2.3) See ISO 19103
84.	levelOfDetail	brief textual description of the spatial resolution of the resource	CO/ distance, equivalentScale or angularDistance, or levelOfDetail not documented?	1	CharacterString	Free text

Table A.4.– Constraint Information (includes legal and security)

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
98.	MD_Constraints	restrictions on the access and use of a resource or metadata	Use obligation from referencing object	Use maximum occurrence from referencing object	Aggregated Class (MD_Metadata y MD_Identification)	Lines 99,101, and 102
99.	useLimitation	limitation affecting the fitness for use of the resource or metadata EXAMPLE "Not to be used for navigation."	OP	N	CharacterString	Free text
101.	graphic	graphic /symbol indicating the constraint EXAMPLE	OP	N	Class	MD_BrowseGraphic (Table A.14.2)
102.	reference	citation for the limitation or constraint EXAMPLE Copyright statement, licence agreement, etc.	OP	N	Class	CI_Citation (Table A.13)
105.	MD_LegalConstraints	restrictions and legal prerequisites for accessing and using the resource or metadata	Use obligation from referencing object	N	Specified class (MD_Constraints)	Lines 99, 101, 102, 106 and 108
106.	accessConstraints	access constraints applied to assure the protection of privacy or intellectual property, and any special restrictions or limitations on obtaining the resource or metadata	CO / useConstraints or otherConstraints, or useLimitation or releasability not exist?	N	Class	MD_RestrictionCode <<CodeList>> (A.3.15)

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
107.	**MD_Constraints**	**constraints applied to assure the protection of privacy or intellectual property, and any special restrictions, or limitations or warnings on using the resource or metadata**	**CO/ accessConstraints or otherConstraints or useLimitation or releasability not exist?**	**N**	**Specified class (MD_Constraints)**	**MD_RestrictionCode <<CodeList>> (A.3.15)**
108.	otherConstraints	other restrictions and legal prerequisites for accessing and using the resource or metadata	CO/ accessConstraints or useConstraints or useLimitation or releasability not exist and accessConstraints or useConstraints = "other-Restrictions"?	N	Class	Free text
109.	**MD_SecurityConstraints**	**handling restrictions imposed on the resource or metadata for national security or similar security concerns**	**Use obligation from referencing object**	**Use máximum occurrence from referencing object**	**Specified class (MD_Constraints)**	**Lines 99, 101, 102 and 110**
110.	classification	name of the handling restrictions on the resource or metadata	OB	1	Class	MD_ClassificationCode <<CodeList>> Table (A.3.8)

Table A.5 – Lineage information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
118.	**LI_Lineage**	**information about the events or source data used in constructing the data specified by the scope, or lack of knowledge about lineage**	**Use obligation from referencing object**	**Use maximum Occurrence from referencing object**	**Aggregated Class (MD_Metadata)**	**Line 119**
119.	statement	general explanation of the data producer's knowledge about the lineage of a resource	OB	1	CharacterString	Free text

Table A.6– Maintenance Information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
140.	**MD_MaintenanceInformation**	**information about the scope and frequency of updating**	**Use obligation from referencing object**	**Use maximum Occurrence from referencing objec**	**Aggregated Class (MD_Metadata and MD_Identification)**	**Lines 141-142**
141.	maintenanceAndUpdateFrequency	frequency with which changes and additions are made to the resource after the initial resource is completed	OB	1	Class	MD_MaintenanceFrequencyCode <<CodeList>> Table (A.3.12)
142.	maintenanceDate	date information associated with maintenance of the resource	OP	N	Class	CI_Date VVTable (A.13.5)

Table A.7 – Spatial representation information (includes grid and vector representation)

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
147.	**MD_SpatialRepresentation**	**digital mechanism used to represent spatial information**	**Use obligation/ Condition from referencing object**	**Use maximum occurrence from referencing object**	**Aggregated Class (MD_Metadata)**	
148.	**MD_GridSpatialRepresentation**	**information about grid spatial objects in the resource**	**Use obligation/ condition from referencing object**	**Use maximum occurrence from referencing object**	**Specified class (MD_SpatialRepresentation)**	**Lines 149-152**
149.	numberOfDimensions	number of independent spatial-temporal axes	OB	1	Integer	Integer
150.	axisDimensionProperties	information about spatial-temporal axis properties	OB	N	Sequence (A.2.4)	MD_Dimension <<DataType>> Table ([A.7.1](#))
151.	cellGeometry	identification of grid data as point or cell	OB	1	Class	MD_CellGeometryCode <<CodeList>> Table (A.3.7)
152.	Transformation Parameter Availability	indication of whether or not parameters for transformation between image coordinates and geographic or map coordinates exist (are available)	OB	1	Boolean	0 = no 1 = yes
153.	**MD_Georectified**	**grid whose cells are regularly spaced in a geographic (i.e., lat / long) or map coordinate system defined in the Spatial Referencing System (SRS) so that any cell in the grid can be geolocated given its grid coordinate and the grid origin, cell spacing, and orientation**	**Use obligation/ Condition from referencing object**	**Use maximum occurrence from referencing object**	**Specified (MD_GridSpatialRepresentation)**	**Lines 149-152 and 154, 156 and 158**

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
154.	checkPointAvailability	indication of whether or not geographic position points are available to test the accuracy of the georeferenced grid data	OB	1	Boolean	0 = no 1 = yes
156.	cornerPoints	earth location in the coordinate system defined by the Spatial Reference System and the grid coordinate of the cells at opposite ends of grid coverage along two diagonals in the grid spatial dimensions NOTE 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.	OP	2-4	Sequence (A.2.8)	GM_Point <<Type>> (A.2.9)
158.	pointInPixel	point in a pixel corresponding to the Earth location of the pixel	OB	1	Class	MD_PixelOrientationCode <<Enumeration>> (A.3.13)
161.	**MD_Georeferenceable**	**grid with cells irregularly spaced in any given geographic/map projection coordinate system, whose individual cells can be geolocated using geolocation information supplied with the data but cannot be geolocated from the grid properties alone**	**Use obligation/ Condition from referencing object**	**Use máximum occurrence from referencing object**	**Specified class (MD_GridSpati alRepresentatio)**	**Lines 149-152, 162, 163 and 165**
162.	controlPointAvailability	indication of whether or not control point(s) exists	OB	1	Boolean	0 = no 1 = si

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
163.	orientationParameterAvailability	indication of whether or not orientation parameters are available	OB	1	Boolean	0 = no 1 = si
165.	georeferencedParameters	terms which support grid data georeferencing	OB	1	Class	Record (A.2.3)
167.	**MD_VectorSpatial Representation**	**information about the vector spatial objects in the resource**	**Use obligation/ condition from referencing object**	**Use maximum occurrence from referencing object**	**Specified class (MD_GridSpatialRepresentation)**	**Lines 168-169**
168.	topologyLevel	code which identifies the degree of complexity of the spatial relationships	OP	1	Class	MD_TopologyLevelCode <<CodeList>> Table (A.3.19)
169.	geometricObjects	Information about the geometric objects used in the resource	OP	N	Class	MD_GeometricObjects <<DataType>> Table (A.7.2)

Table A.7.1 Dimension Information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
170.	**MD_Dimension**	**Axis properties**	**Use obligation/ Condition from referencing object**	**Use maximum occurrence from referencing object**	**Class <<DataType>>**	**Lines 171-172**
171.	dimensionName	name of the axis	OB	1	Class	MD_DimensionNameT ypeCode <<CodeList>> (A.3.10)
172.	dimensionSize	number of elements along the axis	OB	1	Integer	Integer

Table A.7.2 Geometric object information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
176.	**MD_GeometricObjects**	**number of objects, listed by geometric object type, used in the resource**	**Use obligation/ condition from referencing object**	**Use maximum occurrence from referencing object**	**Class <<DataType>>**	**Line 177**
177.	geometricObjectType	name of point or vector objects used to locate zero-, one-, two-, or three-dimensional spatial locations in the resource spatial locations in the resource	OB	1	Class	MD_GeometricObject TypeCode <<CodeList>> (A.3.11)

Table A.8– Reference system information (includes identifier and type)

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
179.	**MD_ReferenceSystem**	**information about the reference system**	**Use obligation/condition from referencing object**	**Use maximum occurrence from referencing object**	**Aggregated Class (MD_Metadata)**	**Line 180**
180	referenceSystemIdentifier	identifier and codespace for reference system NOTE Refer to SC_CRS in ISO 19111 and ISO 19111-2 when coordinate reference system information is not given through reference system identifier. EXAMPLE EPSG: 4326	OP	1	Class	MD_Identifier (Table A.14.1)

Table A.9– Content information (includes Feature catalogue and Coverage descriptions)

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
182.	MD_ContentInformation	description of the content of a resource	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Aggregated Class (MD_Metadata) <<Abstracta>>	
183.	MD_FeatureCatalogueD escription	information identifying the feature catalogue or the conceptual schema	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Specified class (MD_ContentInform ation)	Line 188
188.	featureCatalogueCitation	complete bibliographic reference to one or more external feature catalogues	CO / Feature Catalogue not included with resource and MD_FeatureCatalogue not provided?	N	Class	CI_Citation (Table A.13)
191.	MD_CoverageDescription	details about the content of a resource	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Specified class (MD_ContentInform ation)	Line 192 and 194
192.	attributeDescription	description of the attribute described by the measurement value	OB	1	Class	RecordType (A.2.3)
195.	MD_ImageDescription	information about an image's suitability for use	Use obligation/condition from referencing object	Use maximum occurrence from referencing object	Specified class (MD_Coverage Description)	Lines 192 and 200
200.	cloudCoverPercentage	area covered by the resource obscured by clouds, expressed as a percentage of the spatial extent	OP	1	Real	0,0 – 100,0

Table A.10 – Distribution information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
237.	**MD_Distribution**	**information about the distributor of the resource and options for obtaining it**	**Use obligation/ Condition from referencing object**	**Use maximum Occurrence from referencing object**	**Aggregated Class (MD_Metadata)**	**Lines 239 and 241**
239.	Role name: distributionFormat	provides a description of the format of the data to be distributed	OP	N	Class	MD_Format Table (A.10.2)
241.	Role name: transferOptions	provides information about technical means and media by which a resource is obtained from the distributor	OP	N	Class	MD_DigitalTransferOptions TTable (A.10.1)

Table A.10.1 – Digital transfer options information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
242.	Opciones de Transferencia Digital	technical means and media by which a resource is obtained from the distributor	Use obligation/condition from referencing object (If this class is used at least one attribute must be provided)	Use maximum occurrence from referencing object	Aggregated Class (MD_Distribution y MD_Distributor)	Line 245
245.	onLine	information about online sources from which the resource can be obtained	OP	N	Class	CI_OnlineResource Table (A.13.6)

Table A.10.2 – Format information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
254.	MD_Format	description of the computer language construct that specifies the representation of data objects in a record, file, message, storage device or transmission channel	Use obligation/condition from referencing object	Use maximum Occurrence from referencing object	Aggregated Class (MD_Distribution, MD_Identification y MD_Distributor)	Line 255
255.	ormatSpecificationCitation	citation/URL of the specification for the format	OB	1	Class	CI_Citation (Table A.13)

Table A.11 – Service metadata information — Service Identification information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
300.	**SV_ServiceIdentification**	**identification of capabilities which a service provider makes available to a service user through a set of interfaces that define a behavior** **NOTE See ISO 19119 for further information.**	**Use obligation from referencing object**	**Use maximum occurrence from referencing object**	**Specified class (MD_Identification)**	**Lines 43,44,45,46,47,48,49,50,52, 53,56,57,59,61, 301, 302, 304, 305, 308, 309 and 310**
301.	serviceType	a service type name EXAMPLE 'discovery', 'view', 'download', 'transformation', or 'invoke'	OB	1	Class	GenericName (A.2.7)
302.	serviceTypeVersion	the version of the service, supports searching based on the version of serviceType EXAMPLE We might only be interested in OGC Catalogue V1.1 services. If version is maintained as a separate attribute, users can easily search for all services of a type regardless of the version.	OP	N	CharacterString	No specified domain
305.	coupledResource	further description of the data coupling in the case of tightly coupled services	CO/ coupled resource exists?	N	Class	SV_CoupledResource Table (A.11.2)

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
308.	serviceStandard	standard to which the service adheres	OP	N	Class	CI_Citation (Table A.13)
309.	Role name: ContainsOPerations	provides information about the operations that comprise the service	OP	N	Association	SV_OperationMetadata (Table A.11.1)
310.	Role name: operatesOn	provides information on the resources that the service operates on	OP	N	Association	MD_DataIdentification (Table A.3)

Table A.11.1– Operation information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
312.	**SV_OperationMetadata**	**describes the signature of one and only one method provided by the service**	**Use obligation from referencing object**	**Use máximum occurrence from referencing object**	**Aggregated Class (MD_ServiceIdentification)**	**Lines 313,314 and 317**
313.	operationName	a unique identifier for this interface	OB	1	CharacterString	No specified domain
314.	distributedComputingPlatform	distributed computing platforms on which the operation has been implemented	OB	N	Class	DCPlist <<CodeList>> (Table A.3.5)
317.	connectPoint	handle for accessing the service interface	OB	N	Class	CI_OnlineResource (Table A.13.6)

Table A.11.2 –Coupled resource information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
330.	**SV_CoupledResource**	**links a given operationName (mandatory attribute of SV_OperationMetadata) with a resource identified by an "identifier"**	**Use obligation from referencing object**	**Use máximum occurrence from referencing object**	**Aggregated Class (SV_ServiceIdentification)**	**Lines 332-334**
332.	resourceReference	reference to the resource on which the service operates NOTE For one resource either resource or resourceReference should be used (not both for the same resource).	OP	N	Class	CI_Citation (Table A.13)
333.	Role name: resource	the tightly coupled resource NOTE 1 This attribute should be implemented by reference. NOTE 2 For one resource either resource or resourceReference should be used (not both for the same resource).	OP	N	Class	MD_DataIdentification (Table A.3)
334.	Role name: operation	the service operation NOTE This attribute should be implemented by reference.	OP	1	Class	SV_OperationMetadata (Table A.11.1)

Table A.12 – Extent information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
335.	**EX_Extent**	**extent of the resource**	**Use obligation/condition from referencing object**	**Use maximum occurrence from referencing object**	**<<DataType>> Class**	**Lines 336, 337 and 338**
336.	description	extent of the referring object	CO/geographicElement and temporalElement not documented?	1	CharacterString	Free text
337.	Role name: geographicElement	provides spatial component of the extent of the referring object	CO/ description and temporalElement not documented?	N	Association	EX_GeographicExtent <<Abstracta>> (Table A.12.1)
338.	Role name: temporalElement	provides temporal component of the extent of the referring object	CO/ description and geographicElement not documented?	N	Association	EX_TemporalExtent (Table A.12.2)

Latin American Metadata Profile version 2– **LAMPv2**

Table A.12.1– Geographic extent information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
340.	**EX_GeographicExtent**	**spatial area of the resource**	**Use obligation/ condition from referencing object**	**Use maximum occurrence from referencing object**	**Aggregated Class (EX_Extent)**	**Line 344**
344.	**EX_GeographicBoundingBox**	**geographic position of the resource** **NOTE This is only an approximate reference so specifying the coordinate reference system is unnecessary and need only be provided with a precision of up to two decimal places.**	**Use obligation/ condition from referencing object**	**Use maximum occurrence from referencing object**	**Specified class (EX_GeographicExtent)**	**Lines 345- 348**
345.	westBoundLongitude	western-most coordinate of the limit of the resource extent, expressed in longitude in decimal degrees (positive east)	OB	1	Decimal	-180,0 <= West Bounding Longitude Value <= 180,0
346.	eastBoundLongitude	eastern-most coordinate of the limit of the resource extent, expressed in longitude in decimal degrees (positive east)	OB	1	Decimal	-180,0 <= East Bounding Longitude Value <= 180,0
347.	southBoundLatitude	southern-most coordinate of the limit of the resource extent, expressed in latitude in decimal degrees (positive north)	OB	1	Decimal	-90,0 <= South Bounding Latitude Value <= 90,0; South Bounding Latitude Value <= North bounding Latitude Value
348.	northBoundLatitude	northern-most coordinate of the limit of the resource extent expressed in latitude in decimal degrees (positive north)	OB	1	Decimal	-90,0 <= North Bounding Latitude Value <= 90,0; North Bounding Latitude Value >= South Bounding Latitude Value

Table A.12.2–Temporal extent information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
351.	**EX_TemporalExtent**	**time period covered by the content of the resource**	**Use obligation/ condition from referencing object**	**Use máximum occurrence from referencing object**	**Aggregated Class (EX_Extent)**	**Line 352**
352.	extent	period for the content of the resource	OB	1	Class	TM_Primitive Table (A.2.5)

Table A.13 – Citation and responsible party information — Citation information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
361.	**CI_Citation**	**standardized resource reference**	**Use obligation/ condition from referencing object**	**Use maximum occurrence from referencing object**	**Class**	**Lines 362-375**
362.	title	name by which the cited resource is known	OB	1	CharacterString	Free text
364.	date	reference date for the cited resource	OP	N	Class	CI_Date (Table A.13.5)
365.	edition	version of the cited resource	OP	1	CharacterString	Free text
367.	identifier	value uniquely identifying an object within a named space	OP	N	Class	MD_Identifier (Table A.14.1)
372.	ISBN	international Standard Book Number	OP	1	CharacterString	No specified domain
373.	ISSN	international Standard Serial Number	OP	1	CharacterString	No specified domain
374.	onlineResource	online reference to the cited resource	OP	N	Class	CI_OnlineResoure (Table A.13.6)
375.	graphic	citation graphic or logo for the cited resource	OP	N	Class	MD_BrowseGraphic (Table A.14.2)

Table A.13.1 –Responsible party information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
376.	**CI_Responsibility**	**Information about the party and their role**	**Use obligation/ condition from referencing object**	**Use maximum occurrence from referencing object**	**Class**	**Lines 377 and 379**
377.	role	function performed by the responsible party	OB	1	Class	CI_RoleCode <<CodeList>> (Table A.3.4)
379.	Role name: party	information about the party	OB	N	Association	CI_Party <<Abstracta>> (Table A.13.2)

Table A.13.2 –Party information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
380.	**CI_Party**	**information about the individual and/or organisation of the party**	**Use obligation/ condition from referencing object**	**Use maximum occurrence from referencing object**	**Class <<Abstracta>>**	**Lines 381-382**
381.	name	name of the party (individual or organization)	OB	1	CharacterString	Free text
382.	contactInfo	contact information for the party	OP	N	Class	CI_Contact (Table A.13.4)
383.	**CI_Individual**	**information about the party if the party is an individual**	**Use obligation/ condition from referencing object**	**Use maximum occurrence from referencing object**	**Specific class (CI_Party)**	**Lines 381-382 and 384**
384.	positionName	position of the individual in an organization	OB	1	CharacterString	Free text

Table A.13.3 – Address information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
388.	**CI_Address**	**location of the responsible individual or organisation**	**Use obligation/ condition from referen- cing object**	**Use maximum occurrence from referencing object**	**Class**	**Lines 389-394**
389.	deliveryPoint	address line for the location EXAMPLE Street number and name, Suite number, etc.	OB	N	CharacterString	Free text
390.	city	city of the location	OB	1	CharacterString	Free text
391.	administrativeArea	state, province of the location	OB	1	CharacterString	Free text
392.	postalCode	ZIP or other postal code	OP	1	CharacterString	No specified domain
393.	country	country of the address	OP	1	CharacterString	No specified domain
394.	electronicMailAddress	address of the electronic mailbox of the responsible organisation or individual	OB	N	CharacterString	No specified domain

A.13.4 Contact information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
395.	**CI_Contact**	**information required to enable contact with the responsible person and/or organisation**	**Use obligation/ condition from referencing object**	**Use maximum occurrence from referencing object**	**Class**	**Lines 396-398**
396.	phone	telephone numbers at which the organization or individual may be contacted	OB	N	Class	CI_Telephone (Table_A.13.7)
397.	address	physical and email address at which the organisation or individual may be contacted	OP	N	Class	CI_Address (Table A.13.3)
398.	onlineResource	on-line information that can be used to contact the individual or organisation	OP	N	Class	CI_OnlineResource (Table A.13.6)

Table A.13.5 –Date information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
402.	**CI_Date**	**reference date and event used to describe it**	**Use obligation/ condition from referencing object**	**Use maximum occurrence from referencing object**	**Class <<DataType>>**	**Lines 403-404**
403.	date	reference date for the cited resource	OB	1	Class	DateTime (A.2.6) ISO 8601 AAAA/MM/DD
404.	dateType	event used for reference date	OB	1	CodeList	CI_DateTypeCode <<CodeList>> (A.3.2)

Table A.13.6 – Online resource information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
405.	**CI_OnlineResource**	**information about on-line sources from which the resource, specification, or community profile name and extended metadata elements can be**	**Use obligation/ condition from referencing object**	**Use maximum occurrence from referencing object**	**Class <<DataType>>**	**Lines 406-411**
406.	linkage	location (address) for on-line access using a Uniform Resource Locator/ Uniform Resource Identifier address or similar addressing scheme such as http://www.statkart.no/isotc211	OB	1	CharacterString	Text restricted to URL (see IETF RFC 3986)
407.	protocol	connection protocol to be used EXAMPLE ftp, http get KVP, http POST, etc.	OP	1	CharacterString	No specifie domain
409.	name	name of the online resource	OP	1	CharacterString	Free text
410.	description	detailed text description of what the online resource is/does	OP	1	CharacterString	Free text
411.	function	code for function performed by the online resource	OP	1	Codelist	CI_OnLineFunctionCode <<CodeList>> (A.3.3)

Table A.13.7– Telephone information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
417.	**CI_Telephone**	**telephone numbers for contacting the responsible individual or organisation**	**Use obligation/ condition from referencing object**	**Use maximum occurrence from referencing object**	**Class <<DataType>>**	**Line 418**
418.	nuber	telephone number by which individuals can contact responsible organisation or individual	OB	1	CharacterString	No specified domain

Table A.14 – Commonly used class information — Scope information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
420.	**<<DataType>>MD_Sco pe**	**the target resource and physical extent for which information is reported**	**Use obligation/ condition from referencing object**	**Use maximum occurrence from referencing object**	**Class**	**Lines 421**
421.	level	target resource covered	OB	1	Class	MD_ScopeCode <<CodeList>> Table (A.3.16)

Table A.14.1 –Identifier information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
431.	**<<DataType>> MD_Identifier**	**value uniquely identifying an object within a namespace**	**Use obligation/ condition from referencing object**	**Use maximum occurrence from referencing object**	**Class**	**Lines 432-434**
432.	authority	the person or party responsible for maintenance of that namespace	OP	1	Class	CI_Citation (Table A.13)
433.	code	alphanumeric value identifying an instance in the namespace NOTE Avoid characters that are not legal in URLs. EXAMPLE EPSG::4326	OB	1	CharacterString	No specified domain
434	codespace	identifier or namespace in which the code is valid	OP	1	CharacterString	No specified domain

Table A.14.2 – Browse graphic information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
437.	**MD_BrowseGraphic**	**graphic that provides an illustration of a resource** **NOTE Should include a legend for the graphic, if applicable.** **EXAMPLE A dataset, an organisation logo, security constraint or citation graphic.**	**Use obligation from referencing object**	**Use maximum occurrence from referencing object**	**Aggregated Class (MD_Identific ation)**	**Lines 438 and 442**
438.	fileName	name of the file that contains a graphic that provides an illustration of the resource	OB	1	CharacterString	No specified domain
442.	linkage	link to browse graphic	OP	N	Class	CI_OnlineResource ([Table A.13.6])

Table A.15 – Locale information

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
447..	PT_Locale	description of a locale	Use obligation from referencing object	Use maximum occurrence from referencing object	Class	Lines 448-450
448.	language	esignation of the locale language	OP	1	Class	LanguageCode <<Codelist>> (A.3.6) See ISO 639-2, 3-alphabetic digits code)
449.	country	designation of the specific country of the locale language	OP	1	Class	CountryCode <<Codelist>> (A.3.21)
450.	characterEncoding	designation of the character set to be used to encode the textual value of the locale	OB	1	Class	MD_CharacterSetCode <<CodeList>> (A.3.9) – use IANA register http://www.iana.org/assignments

A.2. External classes referenced

A.2.1 Introduction

There are several classes referenced by this profile, that are documented by other, external standards. These externally referenced entities are explained in A.2.2 to A.2.9

A.2.2 Data quality

With the objective of documenting the quality of data, specifically the reports on quality that institutions create for their products, classes and elements extracted from the standard ISO 19157:2013 - Geographic information -- Data quality are presented here. The description of quality in this metadata profile is optional and in the case of the intention to document it, the possibility is available for providing a textual report for one or more of the quality elements described in the table (Lines 11 to 31).

Table A.2.2.1– Data quality (Extracted from ISO 19157).

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
1	DQ_DataQuality	graphic that provides an illustration Quality information for the data specified by a data quality scope	Use obligation from referencing object	Use maximum occurrence from referencing object	Aggregated class (MD_Metadata)	Lines 2-4 (ISO 19157:2013)
2	Scope	The specific data to which the data quality informa-tion applies	OB	1	Class	MD_Scope <<Data-Type>> (ISO 19157:2013)
3	Role name: report		OB	N	Association	DQ_Element Abstract class Table (A.2.2.2) (ISO 19157:2013)

Table A.2.2.2– Data quality element

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
5.	DQ_Element	Aspect of quantitative quality information	Use obligation from referencing object	Use maximum occurrence from referencing object	Aggregated Class (DQ_DataQuality) (Abstract class)	Line 6 and 9 (ISO 19157:2013)
9.	Role name: result	Value (or set of values) obtained from applying a data quality measure or the outcome of evaluating the obtained value (or set of values) against a specified acceptable conformance quality level	OB	N	Association	DQ_Result Abstract class Table (2.2.3) (ISO 19157:2013)
11.	DQ_Completness	Presence and absence of features, their attributes and their relationships	OB	Use maximum occurrence from referencing object	Specified Class (DQ_Element) (Abstract Class)	Line 9
12.	DQ_Completness Commission	Excess data present in the data set, as described by the scope	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified class (DQ_Completness)	Line 9
13.	DQ_Completness Omission	Existing data absent from the data set, as described by the scope	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified class (DQ_Completness)	Line 9
14.	DQ_LogicalConsistency	Degree of adherence to logical rules of data structure, attribution and relationships (data structure can be conceptual, logical or physical)	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified class (DQ_Element) (Abstract Class)	Line 9

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
15.	DQ_ConceptualConsistency	Adherence of values to the value domains	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified class (DQ_LogicalConsistency)	Line 9
16.	DQ_FormatConsistency	Adherence of values to the value domains	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified class (DQ_LogicalConsistency)	Line 9
17.	DQ_FormatConsistecy	Degree to which data are stored in accordance with the physical structure of the data set, as described by the scope	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified class (DQ_LogicalConsistency)	Line 9
18.	DQ_TopologicalConsistency	Correctness of the explicitly encoded topological characteristics of the data set as described by the scope	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified class (DQ_LogicalConsistency)	Line 9
19.	DQ_PositionalAccuracy	Accuracy of the position of features	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified class (DQ_Element) (Abstract Class)	Line 9
20.	DQ_AbsoluteExternal PositionalAccuracy	Closeness of reported coordinate values to values accepted as or being true	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified class (DQ_PositionalAccuracy)	Line 9
21.	DQ_RelativeInternal PositionalAccuracy	Closeness of the relative positions of features in the scope to their respective relative positions accepted as or being true	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified class (DQ_PositionalAccuracy)	Line 9

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
22.	DQ_GriddedDataPositionalAccuracy	Closeness of gridded data position values to values accepted as or being true	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified class (DQ_PositionalAccuracy)	Line 9
23.	DQ_TemporalAccuracy	Accuracy of the temporal attributes and temporal relationships of features	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified class (DQ_Element) (Abstract Class)	Line 9
24.	DQ_AccuracyOfATimeMeasurement	Correctness of the temporal references of an item (reporting of error in time measurement)	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified class (DQ_TemporalAccuracy)	Line 9
25.	DQ_TemporalConsistency	Correctness of ordered events or sequences, if reported	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified class (DQ_TemporalAccuracy)	Line 9
26.	DQ_TemporalValidity	Validity of data specified by the scope with respect to time	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified class (DQ_TemporalAccuracy)	Line 9
27.	DQ_ThematicAccuracy	Accuracy of quantitative attributes and the correctness of non-quantitative attributes and of the classifications of features and their relationships	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified class (DQ_Element) (Abstract Class)	Line 9
28.	DQ_ThematicClassific ationCorrectness	Comparison of the classes assigned to features or their attributes to a universe of discourse	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified class (DQ_ThematicAccuracy)	Line 9

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
29.	DQ_NonQuantitative AttributeAccuracy	Correctness of non-quantitative attributes	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified class (DQ_ThematicAccuracy)	Line 9
30.	DQ_QuantitativeAttributeAccuracy	Accuracy of quantitative attributes	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified class (DQ_ThematicAccuracy)	Line 9
31.	DQ_UsabilityElement	Degree of adherence of a data set to a specific set of requirements	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified class (DQ_Element) (Abstract Class)	Line 9

Table A.2.2.3– Data quality result

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
56.	**DQ_Result**	**Generalization of more specific result classes**	**Use obligation from referencing object**	**Use maximum occurrence from referencing object**	**Aggregated Class (DQ_Element) (Abstract Class**	**Line 58 Include at least one result of the type «DQ_DescriptiveResult».**
58.	dateTime	date when the result was generated	OP	1	Class	DateTime (see ISO/TS 19103:2005)
59.	**DQ_ConformanceResult**	**Information about the outcome of evaluating the obtained value (or set of values) against a specified acceptable conformance**	**Use obligation from referencing object**	**Use maximum occurrence from referencing object**	**Specified class (DQ_Result) (Abstract Class**	**Lines 58, 60 and 62**
60.	specification	Citation of data product specification or user Requirement against which data are being evaluated	OB	1	Class	CI_Citation (Table A.13)
62.	pass	Indication of the conformance result where 0 = fail and 1 = pass	OB	1	Boolean	1=yes 0=no
63.	**DQ_QuantitativeResult**	**The values or information about the value(s) (or set of values) obtained from applying a data quality measure**	**Use obligation from referencing object**	**Use maximum occurrence from referencing object**	**Specified class (DQ_Result) (Abstract Class)**	**Lines 58, 64 and 65**
64.	value	Quantitative value or values, content determined by the evaluation procedure used, accordingly with the value type and valueStructure defined for the measure	OB	1	Class	Record (ISO 19103:2005)

Row Nº	Name/role name	Definition	Obligation/ Condition	Maximum occurrence	Data type	Domain
65	valueUnit	Value unit for reporting a data quality result	OP	1	Class	Unit of Measure (ISO 19103:2005,)
67.	**DQ_DescriptiveResult**	**Data quality descriptive result**	**Use obligation from referencing object**	**Use maximum occurrence from referencing object**	**Specified class (DQ_Result) (Abstract Class)**	**Lines 58 and 68**
68.	statement	Textual expression of the descriptive result	OB	1	Characterstring	Free text

A.2.3 Distance, angle, measure, number, record, recordType, scale and UomLength information

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

Angle: Amount of rotation needed to bring one line or plane into coincidence with another, generally measured in radians or degrees.

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

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

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

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

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

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

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

A.2.4 Set and Sequence Information:

Set: finite collection of objects, where each object appears in the collection only once. A set shall not contain any duplicated instances. The order of the elements of the set is not specified. This class is documented in full in ISO/TS 19103.

Sequence: A sequence refers to a collection of sequential ordering between its elements. Sequences can be repeated and may be used as a list or an array. This class is documented in full in ISO/TS 19103.

A.2.5 PeriodDuration and temporal primitive information

TM_PeriodDuration: duration of a period as specified in ISO 8601. This class is fully documented in ISO 19108.

TM_Duration: duration of time as specified in ISO 8601. This class is fully documented in ISO 19108.

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

A.2.6 Date and DateTime Information

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

NOTE 1 The precision of the date can be defined by showing a combination of century plus year plus month plus day; e.g.: YY (century), YYYY (year), YYYY-MM (year-month), YYYY-MM-DD or YYYYMMDD (year, month and day).

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

NOTE 2 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.

NOTE 3 DateTime inherits both from Date and Time, which means that:
- a DateTime property can be instantiated either as a Date or as a DateTime;
- A Time property can be instantiated either as a Time or as a DateTime.

A.2.7 Name type information:

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

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

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

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

A.2.8 Sequence Information

Sequence: A sequence refers to a collection of sequential ordering between its elements. Sequences can be repeated, and may be used as a list or an array. This class is documented in full in the Technical Specification ISO/TS 19103.

A.2.9 Point information

GM_Point: 0-dimensional geometric primitive, representing a position, but not having extent. This class is fully documented in the ISO 19107 standard.

A.3 CodeLists and enumerations

A.3.1 Introduction

The stereotype classes <<CodeList>> and <<Enumeration>>, as used in this profile, do not contain any "other" values as <<Enumeration>>s are closed (not extendable) and <<CodeList>>s are extendable. The code is a language neutral identifier.

A.3.2 CI_DateTypeCode <<CodeList>>

Row N°	Name	Code	Definition
	CI_DateTypeCode		**identification of when a given event occurred**
1.	creation	creation	date identifies when the resource was brought into existence
2.	Publication	publication	date identifies when the resource was issued
3.	revision	revision	date identifies when the resource was examined or reexamined and improved or amended
4.	Expiry	expiry	date identifies when resource expires
5.	lastUpdate	lastUpdate	date identifies when resource was last updated
6.	lastRevision	lastRevision	date identifies when resource was last reviewed
7.	nextUpdate	nextUpdate	date identifies when resource will be next updated
8.	unavailable	unavailable	date identifies when resource became not available or obtainable
9.	inForce	inForce	date identifies when resource became in force
10.	adopted	adopted	date identifies when resource was adopted
11.	deprecated	deprecated	date identifies when resource was deprecated
12.	superseded	superseded	date identifies when resource was superseded or replaced by another resource
13.	validityBegins	validityBegins	time at which the data are considered to become valid. NOTE There could be quite a delay between creation and validity begins

Row N°	Name	Code	Definition
14.	validityExpires	validityExpires	time at which the data are no longer considered to be valid
15.	released	released	the date that the resource shall be released for public access
16.	distribution	distribution	date identifies when an instance of the resource was distributed

A.3.3 CI_OnLineFunctionCode <<CodeList>>

Row N°	Name	Code	Definition
	CI_OnLineFunctionCode		**function performed by the resource**
1.	download	download	online instructions for transferring data from one storage device or system to another
2.	Information	Information	información en línea acerca del recurso online information about the resource
3.	offlineAccess	offlineAccess	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
6.	completeMetadata	completeMetadata	complete metadata provided
7.	browseGraphic	browseGraphic	browse graphic provided
8.	upload	upload	online resource upload capability provided
9.	emailService	emailService	online email service provided
10.	browsing	browsing	online browsing provided
11.	fileAccess	fileAccess	online file access provided

[3] The spanish term "archivo" is used in Chile, Mexico and Ecuador instead of "fichero" for 'file'.
Source: ISO TC/211 Multilingual Glossary of Terms.

A.3.4 CI_RoleCode <<CodeList>>

Row N°	Name	Code	Definition
	CI_RoleCode		**function performed by the responsible party**
1.	resourceProvider	resourceProvider	party that supplies the resource
2.	custodian	custodian	party that accepts accountability and responsibility for the resource and ensures appropriate care and maintenance of the resource
3.	owner	owner	party that owns the resource
4.	user	user	party who uses the resource
5.	search	search	party who distributes the resource
6.	originator	originator	party who created the resource
7.	pointOfContact	pointOfContact	party who can be contacted for acquiring knowledge about or acquisition of the resource
8.	principalInvestigator	principalInvestigator	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
10.	publisher	publisher	party who published the resource
11.	author	author	party who authored the resource
12.	funder	funder	party providing monetary support for the resource
13.	coautor	coautor	party who jointly authors the resource

Latin American Metadata Profile version 2— **LAMPv2**

Row N°	Name	Code	Definition
14.	collaborator	collaborator	party who assists with the generation of the resource other than the principal investigator
15.	editor	editor	party who reviewed or modified the resource to improve the content
16.	mediator	mediator	a class of entity that mediates access to the resource and for whom the resource is intended or useful
17.	rightsHolder	rightsHolder	party owning or managing rights over the resource
18.	contributor	contributor	party contributing to the resource
19.	funder	funder	party providing monetary support for the resource
20.	stakeholder	stakeholder	party who has an interest in the resource or the use of the resource

A.3.5 DCPList <<CodeList>>

Row N°	Name	Code	Definition
	DCPList		**class of information to which the referencing entity applies**
1.	XML	XML	Extensible Markup Language
2.	CORBA	CORBA	Common Object Request Broker Architecture
3.	JAVA	JAVA	Object-oriented programming language
4.	COM	COM	Component Object Model
5.	SQL	SQL	Structured Query Language
6.	SOAP	SOAP	Simple Object Access Protocol
7.	Z39.50	Z39.50	ISO Z39.50
8.	HTTP	HTTP	HyperText Transfer Protocol
9.	FTP	FTP	File Transfer Protocol
10.	WebServices	WebServices	Web service

A.3.6 LanguageCode <<CodeList>>

Use ISO 639-2. ISO 639-2 is the alpha-3 code in *Codes for the representation of names of languages.*

A.3.7 MD_CellGeometryCode <<CodeList>>

Row N°	Name	Code	Definition
	MD_CellGeometryCode		**code indicating the geometry represented by the grid cell value**
1.	point	point	each cell represents a point
2.	area	area	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

A.3.8 MD_ClassificationCode <<CodeList>>

Row N°	Name	Code	Definition
	MD_ClassificationCode		**name of the handling restrictions on the resource**
1.	unclassified	unclassified	available for general disclosure
2.	restricted	restricted	not for general disclosure
3.	confidential	confidential	available for someone who can be entrusted with information
4.	secret	secret	kept or meant to be kept private, unknown, or hidden from all but a select group of people
5.	topSecret	topSecret	of the highest secrecy
6.	sensitiveButUnclassified	SBU	although unclassified, requires strict controls over its distribution
7.	forOfficialUseOnly	forOfficialUseOnly	unclassified information that is to be used only for official purposes determined by the designating body
8.	protected	protected	compromise of the information could cause damage
9.	limitedDistribution	limitedDistribution	disimination limited by designating body

A.3.9 MD_CharacterSetCode <<CodeList>>

Use IANA Character Set register: http://www.iana.org/assignments/character-sets. These are the official names for character sets that may be used in the Internet and may be referred to in Internet documentation. These names are expressed in ANSI_X3.4-1968 which is commonly called US-ASCII or simply ASCII.

A.3.10 MD_DimensionNameTypeCode <<CodeList>>

Row N°	Name	Code	Definition
	MD_DimensionNameTypeCode		**name of the dimension**
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

A.3.11 MD_GeometricObjectTypeCode <<CodeList>>

Row N°	Name	Code	Definition
	MD_GeometricObjectTypeCode		**name of point or vector objects used to locate zero-, one-,two-, or three-dimensional spatial locations in the dataset**
1.	complex	complex	set of geometric primitives such that their boundaries can be represented as a union of other primitives
2.	composite	composite	connected set of curves, solids or surfaces
3.	curve	curve	bounded, 1-dimensional geometric primitive, representing the continuous image of a line
4.	point	point	zero-dimensional geometric primitive, representing a position but not having an extent
5.	solid	solid	bounded, connected 3-dimensional geometric primitive, representing the continuous image of a region of space
6.	surface	surface	bounded, connected 2-dimensional geometric primitive, representing the continuous image of a region of a plane

A.3.12 MD_MaintenanceFrecuencyCode

Row N°	Name	Code	Definition
	MD_Maintenance FrecuencyCode		**frequency with which modifications and deletionsare made to the data after it is first produced**
1.	continual	continual	resource is repeatedly and frequently updated
2.	daily	daily	resource is updated each day
3.	weekly	weekly	resource is updated on a weekly basis
4.	fortnightly	fortnightly	resource is updated every two weeks
5.	monthly	monthly	resource is updated each month
6.	quarterly	quarterly	resource is updated every three months
7.	biannually	biannually	resource is updated twice each year
8.	annually	annually	resource is updated every year
9.	asNeeded	asNeeded	resource is updated as deemed necessary
10.	irregular	irregular	resource is updated in intervals that are uneven in duration
11.	notPlanned	notPlanned	there are no plans to update the data
12.	unknown	unknown	frequency of maintenance for the data is not known
13.	periodic	periodic	resource is updated at regular intervals
14.	semimonthly	semimonthly	resource updated twice monthly
15.	biennially	biennially	resource is updated every 2 years

A.3.13 MD_PixelOrientationCode <<Enumeration>>

Row N°	Name	Code	Definition
	MD_PixelOrientation-Code		**point in a pixel corresponding to the Earth location of the pixel**
1.	centre	centre	point halfway between the lower left and the upper right of the pixel
2.	lowerLeft	lowerLeft	the corner in the pixel closest to the origin of the SRS; if two are at the same distance from the origin, the one with the smallest x-value
3.	lowerRight	lowerRight	next corner counterclockwise from the lower left
4.	upperRight	upperRight	next corner counterclockwise from the lower right
5.	upperLeft	upperLeft	next corner counterclockwise from the upper right

A.3.14 MD_ProgressCode <<CodeList>>

Row N°	Name	Code	Definition
	MD_ProgressCode		**status of the resource**
1.	completed	completed	has been completed
2.	historicalArchive	historicalArchive	stored in an offline storage facility
3.	obsolete	obsolete	no longer relevant
4.	onGoing	onGoing	continually being updated
5.	planned	planned	fixed date has been established upon or by which the resource will be created or updated
6.	required	required	needs to be generated or updated
7.	underDevelopment	underDevelopment	currently in the process of being created
8.	final	final	progress concluded and no changes will be accepted
9.	pending	pending	committed to, but not yet addressed
10.	retired	retired	item is no longer recommended for use. It has not been superseded by another item
11.	superseded	superseded	replaced by new
12.	tentative	tentative	provisional changes likely before resource becomes final or complete
13.	valid	valid	acceptable under specific conditions
14.	accepted	accepted	agreed to by sponsor
15.	notAccepted	notAccepted	rejected by sponsor
16.	withdrawn	withdrawn	removed from consideration
17.	proposed	proposed	suggested that development needs to be undertaken
18.	deprecated	deprecated	resource superseded and will become obsolete, use only for historical purposes

A.3.15 MD_RestrictionCode <<CodeList>>

Row N°	Name	Code	Definition
	MD_RestrictionCode		**Limitation(s) placed upon the access or use of the data**
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 specifiedperiod 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	patentPending	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.	licence	licence	formal permission to do something
6.	intellectualPropertyRights	intellectualPropertyRights	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.	otherRestrictions	otherRestrictions	limitation not listed
9.	unrestricted	unrestricted	no constraints exist
10.	licenceUnrestricted	licenceUnrestricted	formal permission not required to use the resource
11.	licenceEndUser	licenceEndUser	formal permission required for a person or an entity to use the resource and that may differ from the person that orders or purchases it

Row N°	Name	Code	Definition
12.	licenceDistributor	licenceDistributor	formal permission required for a person or an entity to commercialize or distribute the resource
13.	private	private	protects rights of individual or organisations from observation, intrusion, or attention of others
14.	statutory	statutory	prescribed by law
15.	confidential	confidential	not available to the public NOTE Contains information that could be prejudicial to a commercial, industrial, or national interest.
16.	sensitiveButUnclassified	SBU	although unclassified, requires strict controls over its distribution
17.	in-confidence	in-confidence	with trust

A.3.16 MD_ScopeCode <<CodeList>>

Row N°	Name	Code	Definition
	MD_ScopeCode		**class of information to which the referencing entity applies**
1.	attribute	attribute	information applies to the attribute value
2.	attributeType	attributeType	information applies to the characteristic of a feature
3.	collectionHardware	collectionHardware	information applies to the collection hardware class
4.	collectionSession	collectionSession	information applies to the collection session
5.	dataset	dataset	information applies to the dataset
6.	nonGeographicDataset	nonGeographicDataset	information applies to non-geographic data
7.	dimensionGroup	dimensionGroup	information applies to a dimension group
8.	feature	feature	information applies to a feature
9.	featureType	featureType	information applies to a feature type
10.	propertyType	propertyType	information applies to a property type
11.	fieldSession	fieldSession	information applies to a field session
12.	software	software	information applies to a computer program or routine
13.	service	service	information applies to a capability which a service provider entity makes available to a service user entity through a set of interfaces that define a behaviour, such as a use case

Row N°	Name	Code	Definition
14.	model	model	information applies to a copy or imitation of an existing or hypothetical object
15.	metadata	metadata	information applies to metadata
16.	initiative	initiative	information applies to an initiative
17.	sample	sample	information applies to a sample
18.	document	document	information applies to a document
19.	repository	repository	information applies to a repository
20.	product	product	metadata describing an ISO 19131 data product specification
21.	collection	collection	information applies to an unstructured set
22.	coverage	coverage	information applies to a coverage
23.	application	application	information resource hosted on a specific set of hardware and accessible over a network

A.3.17 MD_SpatialRepresentationTypeCode <<CodeList>>

Row N°	Name	Code	Definition
	MD_SpatialRepresentation TypeCode		Method used to represent geographic information in the resource
1.	vector	vector	vector data are used to represent geographic data
2.	grid	grid	grid data are used to represent geographic data
3.	textTable	textTable	textual or tabular data are used to represent geographic data
4.	tin	tin	triangulated irregular network
5.	stereoModel	stereoModel	three-dimensional view formed by the intersecting homologous rays of an overlapping pair of images
6.	video	video	scene from a video recording

A.3.18 MD_TopicCategoryCode << Enumeration>>

Row N°	Name	Code	Definition
	MD_TopicCategoryCode		**High-level geographic data thematic classification to assist in the grouping and search of available geographic data sets** **NOTE 1 Can be used to group keywords as well. Listed examples are not exhaustive.** **NOTE 2 It is understood there are overlaps between general categories and the user is encouraged to select the one most appropriate.**
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 EXAMPLES Wildlife, vegetation, biological sciences, ecology, wilderness, sealife, wetlands, habitat.
3.	boundaries	boundaries	legal land descriptions, maritime boundaries EXAMPLES Political and administrative boundaries, territorial seas, EEZ, port security zones.
4.	climatologyMeteorology Atmosphere	climatologyMeteorology Atmosphere	processes and phenomena of the atmosphere EXAMPLES Cloud cover, weather, climate, atmospheric conditions, climate change, precipitation.
5.	economy	economy	economic activities, conditions and employment EXAMPLES Production, labour, revenue, commerce, industry, tourism and ecotourism, forestry, fisheries, commercial or subsistence hunting, exploration and exploitation of resources such as minerals, oil and gas.
6.	product	product	height above or below a vertical datum EXAMPLES Altitude, bathymetry, digital elevation models, slope, derived products.

Row N°	Name	Code	Definition
7.	environment	environment	environmental resources, protection and conservation EXAMPLES Environmental pollution, waste storage and treatment, environmental impact assessment, monitoring environmental risk, nature reserves, landscape.
8.	geoscientificInformation	geoscientificInformation	information pertaining to earth sciences EXAMPLES Geophysical features and processes, geology, minerals, sciences dealing with the composition, structure and origin of the earth's rocks, risks of earthquakes,volcanic activity, landslides, gravity information, soils, permafrost, hydrogeology, erosion.
9.	health	health	health, health services, human ecology, and safety EXAMPLES Disease and illness, factors affecting health, hygiene, substance abuse, mental and physical health, health services.
10.	imageryBaseMaps EarthCover	imageryBaseMaps EarthCover	base maps EXAMPLES Land cover, topographic maps, imagery, unclassified images, annotations.
11.	stereoModel	stereoModel	three-dimensional view formed by the intersecting homologous rays of an overlapping pair of images
12.	inlandWaters	inlandWaters	inland water features, drainage systems and their characteristics EXAMPLES Rivers and glaciers, salt lakes, water utilization plans, dams, currents, floods, water quality, hydrologic information.
13.	location	location	positional information and services EXAMPLES Addresses, geodetic networks, control points, postal zones and services, place names.

Row N°	Name	Code	Definition
14.	oceans	oceans	features and characteristics of salt water bodies (excluding inland waters) EXAMPLES Tides, tsunamis, coastal information, reefs.
15.	planningCadastre	planningCadastre	information used for appropriate actions for future use of the land EXAMPLES Land use maps, zoning maps, cadastral surveys, land ownership.
16.	society	society	characteristics of society and cultures EXAMPLES Settlements, anthropology, archaeology, education, traditional beliefs, manners and customs, demographic data, recreational areas and activities, social impact assessments, crime and justice, census information.
17.	structure	structure	man-made construction EXAMPLES Buildings, museums, churches, factories, housing, monuments, shops, towers.
18.	transportation	transportation	means and aids for conveying persons and/or goods EXAMPLES Roads, airports/airstrips, shipping routes, tunnels, nautical charts, vehicle or vessel location, aeronautical charts, railways
19.	economy	economy	economic activities, conditions and employment EXAMPLES Production, labour, revenue, commerce, industry, tourism and ecotourism, forestry, fisheries, commercial or subsistence hunting, exploration and exploitation of resources such as minerals, oil and gas.
20.	extraTerrestrial	extraTerrestrial	region more than 100 km above the surface of the Earth
21.	disaster	disaster	information related to disasters EXAMPLES Site of the disaster, evacuation zone, disaster-prevention facility, disaster relief activities.

A.3.19 MD_TopologyLevelCode <<CodeList>>

Row N°	Name	Code	Definition
	MD_TopologyLevelCode		degree of complexity of the spatial relationships
1.	geometryOnly	geometryOnly	geometry objects without any additional structure which describes topology
2.	topology1D	topology1D	1-dimensional topological complex – commonly called "chain-node" topology
3.	planarGraph	planarGraph	1-dimensional topological complex that is planar NOTE 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	fullPlanarGraph	2-dimensional topological complex that is planar NOTE A 2-dimensional topological complex is commonly called "full topology" in a cartographic 2D environment.
5.	surfaceGraph	surfaceGraph	1-dimensional topological complex that is isomorphic to a subset of a surface NOTE 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	fullSurfaceGraph	2-dimensional topological complex that is isomorphic to a subset of a surface
7.	topology3D	topology3D	3-dimensional topological complex NOTE A topological complex is a collection of topological primitives that are closed under the boundary operations.

Row N°	Name	Code	Definition
8.	fullTopology3D	fullTopology3D	complete coverage of a 3D Euclidean coordinate space
9.	abstract	abstract	topological complex without any specified geometric realisation

A.3.20 SV_CouplingType <<CodeList>>

Row N°	Name	Code	Definition
1.	**SV_CouplingType**		**class of information to which the referencing**
2.	Loose	loose	service instance is loosely coupled with a data instance, EXAMPLE: A WCTS service and the data it transforms are loosely coupled.
3.	Mixed	mixed	service instance is mixed coupled with a data instance, i.e. MD_DataIdentification describes the associated data instance and additionally the service instance might work with other external data instances
4.	Tight	tight	service instance is tightly coupled with a data instance, i.e. MD_DataIdentification class MUST be described EXAMPLE: A WMS service and the data it publishes are strongly coupled.

A.3.21 CountryCode<<CodeList>>

Use ISO 3166-1 or equivalent.
https://www.iso.org/obp/ui/#search

Annex B
(standardizing rules)

Conformance with LAMPv2

B.1 Abstract test suite

The metadata shall meet all and each of the requirements specified in this abstract test suite.

B.2 Metadata test suite

B.2.1 Test case identifier: Completeness test

a) Test Purpose: to determine conformance by the inclusion of all metadata packages, metadata classes, and metadata elements that are specified with an obligation of "mandatory" (Obligation/Condition = «OB») or mandatory under the conditions specified (Obligation/Condition = «CO»).

NOTE 1 Many elements designated as mandatory are contained within optional classes. These elements become mandatory only when their containing class is used.

b) Test Method: a comparison between this part of LAMPv2 and a subject metadata set to be tested shall be performed to determine if all metadata defined as mandatory in Annex A are present. A comparison test shall also be performed to determine if all metadata elements defined as conditional in Annex A are present if the conditions set out in this part of LAMPv2 apply.

c) Reference: Annex A.

d) Test Type: Basic.

NOTE 2 The test cases in B.2.2 to B.2.5 apply at all levels of obligation – mandatory, conditional, and optional.

B.2.2 Test case identifier: Maximum occurrence test

a) Test Purpose: to ensure each metadata element occurs no more than the number of times specified in Annex A.

b) Test Method: examine a subject metadata set for the number of occurrences of each metadata package, metadata class, and metadata element provided. The number of occurrences for each shall be compared with its "Maximum Occurrences" attribute specified in Annex A.

c) Reference: Annex A.

d) Test Type: Basic.

B.2.3 Test case identifier: Data type test

a) Test Purpose: to determine if each metadata element within a subject metadata set uses the data type specified in Annex A.

b) Test Method: the value of each provided metadata element is tested to ensure its data type adheres to the data type specified.

c) Reference: Annex A.

d) Test Type: Basic.

B.2.4 Test case identifier: Domain test

a) Test Purpose: to determine if each provided metadata element within a subject metadata set falls within the domain specified in Annex A.

b) Test Method: the values of each metadata element are tested to ensure they fall within the specified domain.

c) Reference: Annex A.

d) Test Type: Basic.

B.2.5 Test case identifier: Schema test

a) Test Purpose: to determine if a subject metadata set follows the schema specified in Annex A.

b) Test Method: test each metadata element and ensure it is contained within the specified metadata class.

c) Reference: Annex A.

d) Test Type: Basic.

B.2.6 Test case identifier: Exclusiveness test

a) Test Purpose: to determine if a set of metadata are limited to including only and exclusively the metadata elements specified in Annex A.

b) Test Method: analyze eacmetadata element and check to be sure that it is included in Annex A.

c) dReference: Annex A.

d) Test Type: Basic.

Annex C
(Informative)

Implementation examples for data and services

C.1 Metadata examples

Three examples of applications for LAMPv2 are provided; one for vector resources that are not services, another for raster data and finally one for web services:

For the example of data that are not services, the «Global Map» is documented; this is published by the *International Steering Committee for Global Mapping*. Specifically, the vector data of this publication is documented.

In the example for raster data, the *Shuttle Radar Topography Mission (SRTM GL1) Global 30m.* is documented.

For web services, the Integrated North Andean Map (MIAN) viewing service is documented; this is published by the Pan American Institue for Geography and History (PAIGH) and the GeoSUR program.

C.1.1 Example 1 – Global Map

Category	Element	Name	Example
Resource identification information	MD_Metadata.identificationInfo > MD_DataIdentification.citation> CI.Citation.title	Title	Global Map
	MD_Metadata.identificationInfo > MD_DataIdentification.citation > CI_Citation.date > CI_Date.date	Date	2009-07-22
	MD_Metadata.identificationInfo > MD_DataIdentification.citation > CI_Citation.date > CI_Date. dateType	Date type	creation
	MD_Metadata.identificationInfo>MD_ DataIdentification.citation > CI_Citation.identifier>MD_Identifier.code	Code	GMv1
abstract	MD_Metadata.identificationInfo > MD_DataIdentification.abstract	Abstract	The Global Map is a vector dataset of the whole world at 1:1,000,000. scale. The data is presented on the basis of information provided by national agencies and other international organizations. Through this metadata record, the vector information of the Global Map is documented. The Global Map is made up of the themes of: boundaries, hydrography, transport infrastructure and populated centers.
Purpose	MD_Metadata.identificationInfo > MD_DataIdentification. purpose	Purpose	The Global Map has as its main purpose providing easy and open acess to world geographic information at 1:1,000,000 scale. The use of this data will make it easier to apply agreements and conventions at world level for the protection of the environment. It will support the monitoring of the main enironmental phenomena and encourage economic growth in the context of sustainable development.

Category	Element	Name	Example
Resource contact information	MD_ Metadata.identificationInfo > MD_DataIdentification.pointOfContact > CI_Responsibility.Role name:party > CI_Party.name	name	Secretariat of the International Steering Committee for Global Mapping
	MD_ Metadata.identificationInfo > MD_DataIdentification.pointOfContact > CI_Responsibility.role	role	Contact point
	MD_ Metadata.identificationInfo > MD_DataIdentification.pointOfContact > CI_Responsibility.Role name:party > CI_Party.contactInfo > CI_Contact.phone > CI_Telephone.number	Telephone	81 29 864 6910
	MD_ Metadata.identificationInfo > MD_DataIdentification.pointOfContact > CI_Responsibility.Role name:party > CI_Party.contactInfo > CI_Contact.address > CI_Address.deliveryPoint	Address	Geographical Survey Institute, Kitasato 1
	MD_ Metadata.identificationInfo > MD_DataIdentification.pointOfContact > CI_Responsibility.Role name:party > CI_Party.contactInfo > CI_Contact.address > CI_Address.city	City	Tsukuba
	MD_ Metadata.identificationInfo > MD_DataIdentification.pointOfContact > CI_Responsibility.Role name:party > CI_Party.contactInfo > CI_Contact.address > CI_Address.administrativeArea	Administrative areaa	Ibaraki
	MD_ Metadata.identificationInfo > MD_DataIdentification.pointOfContact > CI_Responsibility.Role name:party > CI_Party.contactInfo > CI_Contact.address > CI_Address.postalCode	Postal code	305-0811
	MD_ Metadata.identificationInfo > MD_DataIdentification.pointOfContact > CI_Responsibility.Role name:party > CI_Party.contactInfo > CI_Contact.address > CI_Address.country	Country	Japan

Category	Element	Name	Example
Resource contact information	MD_ Metadata.identificationInfo > MD_DataIdentification.pointOfContact > CI_Responsibility.Role name:party > CI_Party.contactInfo > CI_Contact.address > CI_Address.electronicMailAddress	Electronic mail address	sec@iscgm.org
	MD_ Metadata.identificationInfo > MD_DataIdentification.pointOfContact > CI_Responsibility.Role name:party > CI_Party.contactInfo > CI_Contact.onlineResource > CI_OnlineResource.linkage	On-line resource	https://globalmaps.github.io/
	MD_ Metadata.identificationInfo > MD_DataIdentification.pointOfContact > CI_Responsibility.Role name:party > CI_Party.contactInfo > CI_Contact.onlineResource > CI_OnlineResource.function	Function	download
Credits	MD_Metadata.identificationInfo > MD_DataIdentification. credit	Credit	Geospatial Information Authority of Japan
Reference System Information	MD_Metadata.referenceSystemInfo. MD_ReferenceSystem > MD_Identifier.code	Code	EPSG:4916
	MD_Metadata.referenceSystemInfo. MD_ReferenceSystem.title	Title	itrf94
Geographic extent information	MD_Metadata.identificationInfo> MD_Identification .extent > EX_Extent.description	description	World
	MD_ Metadata.identificationInfo > MD_DataIdentification. extent > EX_Extent.geographicElement > EX_GeographicExtent > EX_GeographicBoundingBox. westBoundLongitude	West bound longitude	-180

Category	Element	Name	Example
Geographic extent information	MD_ Metadata.identificationInfo > MD_DataIdentification. extent > EX_Extent.geographicElement > EX_GeographicExtent > EX_GeographicBoundingBox. eastBoundLongitude	East bound longitude	180
	MD_ Metadata.identificationInfo > MD_DataIdentification. extent > EX_Extent.geographicElement > EX_GeographicExtent > EX_GeographicBoundingBox. southBoundLatitude	South bound latitude	-90
	MD_ Metadata.identificationInfo > MD_DataIdentification. extent > EX_Extent.geographicElement > EX_GeographicExtent > EX_GeographicBoundingBox. northBoundLatitude	North bound latitude	90
Resource language	MD_ Metadata.identificationInfo > MD_Identification> MD_DataIdentification.defaultLocale > PT_Locale.language	Language	eng
	MD_ Metadata.identificationInfo > MD_Identification> MD_DataIdentification.defaultLocale > PT_Locale.country	Country	US
	MD_ Metadata.identificationInfo > MD_DataIdentification.defaultLocale > PT_Locale.characterEncoding	Character encoding	utf8
Maintenance information	MD_Metadata.identificationInfo> MD_Identification.resourceMaintenance> MD_MaintenanceInformation. maintenanceAndUpdateFrequency> MD_MaintenanceFrequencyCode	Frequency of maintenance and update	Periodically

Latin American Metadata Profile version 2– **LAMPv2**

Category	Element	Name	Example
Category of the resource topic	MD_ Metadata.identificationInfo > MD_DataIdentification.topic-Category > MD_TopicCategoryCode	Category of the resource topic	Coverage of the earth with maps and images
Spatial representation type	MD_Metadata.identificationInfo > MD_Identification. spatialRepresentationTypeCode	Spatial representation type	vector
Resource scope	MD_Metadata.metadataScope> MD_MetadataScope. resourceScope	Resource scope	dataset
Spatial resolution or scale	MD_Metadata.identificationInfo > MD_Identification.spatialResolution> MD_Resolution.equivalentScale > MD_RepresentativeFraction. denominator	denominator	1,000,000
Geographic Object Catalogue	MD_Metadata.contentInfo> MD_ContentInformation> MD_FeatureCatalogueDescription. featureCatalogueCitation> CI_Citation.title	Title	Global Map Data Dictionary
	MD_Metadata.contentInfo> MD_ContentInformation> MD_FeatureCatalogueDescription. featureCatalogueCitation> CI_Citation.onlineResource> CI_OnlineResouce.linkage	Linkage	https://github.com/globalmaps/ specifications/blob/master/gmspec-2.pdf
	MD_Metadata.contentInfo> MD_ContentInformation> MD_FeatureCatalogueDescription. featureCatalogueCitation> CI_Citation.date> CI_Date.date	Date	2009-10-25
	MD_Metadata.contentInfo> MD_ContentInformation> MD_FeatureCatalogueDescription. featureCatalogueCitation> CI_Citation.date> CI_Date.dateType	Date type	creation

Category	Element	Name	Example
Temporal extent or date of validity for the resource	MD_Metadata.identificationInfo > MD_Identification.extent > EX_ Extent > EX_TemporalExtent.extent> TimePeriod.beginPosition and TimePeriod.endPosition	Extent	2009 2014
Resource lineage	MD_Metadata>resourceLineage> LI_Lineage.statement	Lineage	The data of the Global Map has been developed with the the cooperation of the National Geospatial Information Authorities (NGIA) of the respective countries and regions. In 1994, the first product specifications were developed by the Geographical Survey Institute of Japan (GSI). On the basis of these specifications, requirements were established for the information that the various participating countries were to provide. The necessary information layers, their attributes, the accuracy of the information, and the reference system, among other features were defined. In developing the Global Map, it was necesary for the Geographical Survey Institute of Japan (GSI) to design a data model with its corresponding thematic categories and relations. This included, as the main themnes in the vectar part, boundaries, hydrography, transport infrastructure, and population centers. When the information for boundaries between countries did not match, the option was taken of including both boundaries. In all cases, the origin of the data was reported. Concerning the publication of the information, the way to facilitate interoperability was taken into account, so the option of publishing in GML format was chosen. This is in accordance with the ISO 19136:2007 standard "Geographic information -- Geography Markup Language (GML).

Category	Element	Name	Example
Distribution information	MD_Metadata.distributionInfo> MD_Distribution.transferOptions> MD_DigitalTransferOptions.onLine> CI_OnlineResource.linkage	Linkage	https://github.com/globalmaps/ projectmanagement/blob/master/ REPOS.md
	MD_Metadata.distributionInfo> MD_Distribution.transferOptions> MD_DigitalTransferOptions.onLine> CI_OnlineResource.name	Name	Regional version of the Global Map
	MD_Metadata.distributionInfo> MD_Distribution.transferOptions> MD_DigitalTransferOptions.onLine> CI_OnlineResource.description	Description	The information can be obtained by direct download from the internet.
Format information	MD_Metadata.distributionInfo> MD_DistributiondistributionFormat> MD_Format.formatSpecificationCitation> CI_Citation.title	Title	GML
Vector spatial representation	MD_Metadata.spatialRepresentationInfo> MD_SpatialRepresentation> MD_VectorSpatialRepresentation. topologyLevel	Topology level	1D topology
	MD_Metadata.spatialRepresentationInfo> MD_SpatialRepresentation> MD_VectorSpatialRepresentation. geometricObjects > MD_GeometricObjects.geometricObjectType	Geometric object type	compound
Key words	MD_Metadata.identificationInfo > MD_DataIdentification> descriptiveKeywords> MD_Keywords.keyword	Key words	hydrography, transport, boundaries, vegetation
Restrictions	MD_Metadata.identificationInfo > MD_DataIdentification> MD_LegalConstraints. useConstraints	Use constraints	Commercial use is not permitted

Category	Element	Name	Example
Contact point for the metadata	MD_Metadata.contact > CI_Responsibility.role	Role	publisher
	MD_Metadata.contact > CI_Responsibility. Role name:party> CI_Party.name	Name	Secretariat of the International Steering Committee for Global Mapping
	MD_Metadata.contact > CI_Responsibility. Role name:party> CI_Party.contactInfo> CI_Contact.phone> CI_Telephone.number	Telephone	81 29 864 6910
	MD_Metadata.contact > CI_Responsibility. Role name:party> CI_Party.contactInfo> CI_Contact.address > CI_Address.deliveryPoint	Address	Geographical Survey Institute, Kitasato 1
	MD_Metadata.contact > CI_Responsibility. Role name:party> CI_Party.contactInfo> CI_Contact.address > CI_Address.city	City	Tsukuba
	MD_Metadata.contact > CI_Responsibility. Role name:party> CI_Party.contactInfo> CI_Contact.address > CI_Address. administrativeArea	Administrativa area	Ibaraki
	MD_Metadata.contact > CI_Responsibility. Role name:party> CI_Party.contactInfo> CI_Contact.address > CI_Address.postalCode	Postal code	305-0811
	MD_Metadata.contact > CI_Responsibility. Role name:party> CI_Party.contactInfo> CI_Contact.address > CI_Address.country	Country	Japan

Category	Element	Name	Example
Contact point for the metadata	MD_Metadata.contact > CI_Responsibility. Role name:party> CI_Party.contactInfo> CI_Contact.address > CI_Address.electronicMailAddress	Electronic mail address	sec@iscgm.org
Metadata information	MD_Metadata.dateInfo > CI_Date.date	Date	2016-09-01
	MD_Metadata.dateInfo > CI_Date.dataType	Date type	Creation
	MD_Metadata.defaultLocale> PT_locale.language	Language	Spa
	MD_Metadata.defaultLocale > PT_Locale. Country	Country	CL
	MD_ Metadata.identificationInfo > MD_DataIdentification.defaultLocale > PT_Locale.characterEncoding	Character encoding	utf8
	MD_Metadata.metadataStandard> CI_Citation.title	Metadata standard	ISO 19115-1:2014 Geographic information -- Metadata -- Part 1: Fundamentals
	MD_Metadata.metadataProfile> CI_Citation.title	Metadata profile	LAMPv2

C.1.2 Example 2 – Shuttle Radar Topography Mission (SRTM GL1) Global 30m

Category	Element	Name	Example
Resource identification information	MD_Metadata.identificationInfo > MD_DataIdentification.citation> CI.Citation.title	Title	Shuttle Radar Topography Mission (SRTM GL1) Global 30m
	MD_Metadata.identificationInfo > MD_DataIdentification.citation > CI_Citation.date > CI_Date.date	Date	2015-08-26
	MD_Metadata.identificationInfo > MD_DataIdentification.citation > CI_Citation.date > C I_Date. dateType	Date type	publication
	MD_Metadata.identificationInfo> MD_DataIdentification.citation > CI_Citation.identifier> MD_Identifier.code	Code	SRTM GL1
abstract	MD_Metadata.identificationInfo > MD_DataIdentification.abstract	abstract	The Shuttle Radar Topography Mission (SRTM) is the most complete elevation database of the earth, covering about 80 % of the total surface of our planet. This is a resouce structured in the raster model, available at geographic coordinates, with the altitude referenced to the geoide. Each pixel represents 1 arc-second in the field (approximately 30 meters). The SRTM mision is a cooperation Project between the "National Aeronautics and Space Administration" (NASA), the "National Geospatial-Intelligence Agency of the United States" (NGA), the Defence Department of the United States,and the spatial agencies of Germany (Deutsches Zentrum für Luft - und Raumfahrt, DLR) and Italy (Agenzia Spaziale Italiana, ASI).

C.1.2 Example 2 – Shuttle Radar Topography Mission (SRTM GL1) Global 30m

Category	Element	Name	Example
Purpose	MD_Metadata.identificationInfo > MD_DataIdentification. purpose	Purpose	Its purpose is to obtain a digital elevation model of the land area of the globe between 56 °S and 60 °N.
Resource contact information	MD_ Metadata.identificationInfo > MD_DataIdentification.pointOfContact > CI_Responsibility.Role name:party> CI_Party.name	name	National Aeronautics and Space Administration
	MD_ Metadata.identificationInfo > MD_DataIdentification.pointOfContact > CI_Responsibility.role	role	author
	MD_ Metadata.identificationInfo > MD_DataIdentification.pointOfContact > CI_Responsibility.Role name:party > CI_Party.contactInfo > CI_Contact.phone > CI_Telephone.number	Telephone	(202) 358-0001
	MD_ Metadata.identificationInfo > MD_DataIdentification.pointOfContact > CI_Responsibility.Role name:party > CI_Party.contactInfo > CI_Contact.address > CI_Address.deliveryPoint	address	300 E. Street SW, Suite 5R30
	MD_ Metadata.identificationInfo > MD_DataIdentification.pointOfContact > CI_Responsibility.Role name:party > CI_Party.contactInfo > CI_Contact.address > CI_Address.city	City	Washington
	MD_ Metadata.identificationInfo > MD_DataIdentification.pointOfContact > CI_Responsibility.Role name:party > CI_Party.contactInfo > CI_Contact.address > CI_Address.administrativeArea	Administrative area	Washington, DC

Category	Element	Name	Example
Resource contact information	MD_ Metadata.identificationInfo > MD_DataIdentification.pointOfContact > CI_Responsibility.Role name:party > CI_Party.contactInfo > CI_Contact.address > CI_Address.postalCode	Post code	20546
	MD_ Metadata.identificationInfo > MD_DataIdentification.pointOfContact > CI_Responsibility.Role name:party > CI_Party.contactInfo > CI_Contact.address > CI_Address.country	country	United States
	MD_ Metadata.identificationInfo > MD_DataIdentification.pointOfContact > CI_Responsibility.Role name:party > CI_Party.contactInfo > CI_Contact.address > CI_Address.electronicMailAddress	Electronic mail address	Robert.E.Crippen@jpl.nasa.gov
	MD_ Metadata.identificationInfo > MD_DataIdentification.pointOfContact > CI_Responsibility.Role name:party > CI_Party.contactInfo > CI_Contact.onlineResource > CI_OnlineResource.linkage	On line resource	https://www2.jpl.nasa.gov/srtm/index.html
	MD_ Metadata.identificationInfo > MD_DataIdentification.pointOfContact > CI_Responsibility.Role name:party > CI_Party.contactInfo > CI_Contact.onlineResource > CI_OnlineResource.function	function	information
Credits	MD_Metadata.identificationInfo > MD_DataIdentification. credit	Credit	NASA Shuttle Radar Topography Mission Global

Category	Element	Name	Example
Reference System Information	MD_Metadata.referenceSystemInfo. MD_ReferenceSystem > MD_Identifier.code	code	4326
	MD_Metadata.referenceSystemInfo. MD_ReferenceSystem.title	title	WGS 84 / Geographic coordinates
Geographic extent information	MD_Metadata.identificationInfo> MD_Identification .extent > EX_Extent.description	description	World
	MD_ Metadata.identificationInfo > MD_DataIdentification. extent > EX_Extent.geographicElement > EX_GeographicExtent > EX_GeographicBoundingBox. westBoundLongitude	Longitude of western extent	-180
	MD_ Metadata.identificationInfo > MD_DataIdentification. extent > EX_Extent.geographicElement > EX_GeographicExtent > EX_GeographicBoundingBox. eastBoundLongitude	Longitude of eastern extent	180
	MD_ Metadata.identificationInfo > MD_DataIdentification. extent > EX_Extent.geographicElement > EX_GeographicExtent > EX_GeographicBoundingBox. southBoundLatitude	Latitude of southern extent	-56
	MD_ Metadata.identificationInfo > MD_DataIdentification. extent > EX_Extent.geographicElement > EX_GeographicExtent > EX_GeographicBoundingBox. northBoundLatitude	Latitude of northern extent	60
Category of the resource topic	MD_ Metadata.identificationInfo > MD_DataIdentification.topic-Category > MD_TopicCategoryCode	Thematic category of the resource	Coverage of the earth with maps and images

Category	Element	Name	Example
Spatial representation type	MD_Metadata.identificationInfo > MD_IdentificationspatialRepresentation TypeCode	Spatial representation type	grid
Resource scope	MD_Metadata.metadataScope> MD_MetadataScope.resourceScope	Resource scope	model
Spatial resolution or scale	MD_Metadata.identificationInfo > MD_Identification.spatialResolution> MD_Resolution.distance	distance	30 meters
	MD_Metadata.identificationInfo > MD_Identification.spatialResolution> MD_Resolution.levelOfDetail	Level of detail	It has a resolution of 1 arc-second, and a mean vertical altitude error of 6.2 meters
Previous image	MD_Metadata.identificationInfo > MD_DataIdentification.citation > CI_Citation.graphic > MD_BrowseGraphic.fileName	File name	SRTM1N46W122V_pair_410x286px_0.jpg
	MD_Metadata.identificationInfo > MD_DataIdentification.citation > CI_Citation.graphic > MD_BrowseGraphic.linkage > CI_OnlineResource.linkage	link	https://lta.cr.usgs.gov/sites/default/files/ SRTM1N46W122V_pair_410x286px_0.jpg
Resource Lineage	MD_Metadata>resourceLineage> LI_Lineage.statement	lineage	The SRTM data were obtained through a specially modified radar system that was flown on board the space shuttle Endeavour during an 11 day mission in February of the year 2000.

The SRTM used interferometry to capture the topographic data (NASA, 2005). The interferometry captures two images of the same site from different viewing positions (NASA, 2005). When the two images are compared, a slight difference between their values can be seen, and on the basis of this difference, the topography of the land surface can be calculated (NASA, 2005). |

Category	Element	Name	Example
			The SRTM data were obtained through a SRTM is an international Project led by the National Geospatial Intelligence Agency (NGA) and the National Aeronautics and Space Agency (NASA). Source: NASA, 2005, Shuttle Radar Topography Mission: Instruments. http://www2.jpl.nasa.gov/srtm/instr.htm
Distribution information	MD_Metadata.distributionInfo> MD_Distribution.transferOptions> MD_DigitalTransferOptions.onLine> CI_OnlineResource.linkage	Link	https://earthexplorer.usgs.gov
	MD_Metadata.distributionInfo> MD_Distribution.transferOptions> MD_DigitalTransferOptions.onLine> CI_OnlineResource.name	Name	EarthExplorer
	MD_Metadata.distributionInfo> MD_Distribution.transferOptions> MD_DigitalTransferOptions.onLine> CI_OnlineResource.description	description	The information can be obtained by direct download from the internet.
Format specification	MD_Metadata.distributionInfo> MD_Distribution.distributionFormat> MD_Format.formatSpecificationCitation> CI_Citation.title	Title	GeoTIFF
Gridded spatial representation	MD_Metadata.contentInfo> MD_ContentInformation> MD_CoverageDescription. attributeDescription	description	The SRTM elevation data provide a global coverage, which has the EGM96 (Earth Gravitational Model 1996) as its vertical datum.
	MD_Metadata.spatialRepresentationInfo> MD_SpatialRepresentation > MD_GridSpatialRepresentation. numberOfDimensions	Number of dimensions	3

Category	Element	Name	Example
Gridded spatial representation	MD_Metadata.spatialRepresentationInfo> MD_SpatialRepresentation> MD_GridSpatialRepresentation.axisDimensionProperties> MD_Dimension.dimensionName	Dimension name	vertical
	MD_Metadata.spatialRepresentationInfo> MD_SpatialRepresentation> MD_GridSpatialRepresentation.axisDimensionProperties> MD_Dimension. dimensionSize	Dimension size	None available
	MD_Metadata.spatialRepresentationInfo> MD_SpatialRepresentation> > MD_GridSpatialRepresentation. cellGeometry	Cell geometry	Area
	MD_Metadata.spatialRepresentationInfo> MD_SpatialRepresentation> MD_GridSpatialRepresentation. transformationParameter Availability	Availability of transformation parameters	No
	MD_Metadata.spatialRepresentationInfo> MD_SpatialRepresentation> MD_GridSpatialRepresentation > MD_Georectified.checkPointAvailability	Availability of geo-rectified check points	Yes
	MD_Metadata.spatialRepresentationInfo> MD_SpatialRepresentation> MD_GridSpatialRepresentation > MD_Georectified.pointInPixel	Point in pixel	Center
	MD_Metadata.spatialRepresentationInfo> MD_SpatialRepresentation> > MD_GridSpatialRepresentation > MD_Georeferenceable.controlPointAvailability	Availability of control points	Yes
	MD_Metadata.spatialRepresentationInfo> MD_SpatialRepresentation> > MD_GridSpatialRepresentation > MD_Georeferenceable. orientationParameterAvailability	Availability of orientation parameters	Yes
Gridded spatial representation	MD_Metadata.spatialRepresentationInfo> MD_SpatialRepresentation> > MD_GridSpatialRepresentation > MD_Georeferenceable. georeferencedParameters	Georeferenced parameters	Decimal geographic coordinates

Category	Element	Name	Example
Key words	MD_Metadata.identificationInfo > MD_DataIdentification> descriptiveKeywords> MD_Keywords.keyword	Key words	SRTM, elevation, radar, interferometry
Constraints	MD_Metadata.identificationInfo > MD_DataIdentification> MD_Constraints.reference > CI_Citation.title	title	Data Use and Citation
	MD_Metadata.identificationInfo > MD_DataIdentification> MD_Constraints.useLimitations	Use limitation	Not recommended for use when an error less than that declared in its quality report is required. For example, it should not be used when an error in altitude of less than 9 meters in North America and 6.2 meters in South America is required
	MD_Metadata.identificationInfo > MD_DataIdentification> MD_LegalConstraints. accessConstraints	Access constraints	No restrictions
	MD_Metadata.identificationInfo > MD_DataIdentification> MD_LegalConstraints. useConstraints	Use constraints	No restrictions
	MD_Metadata.identificationInfo > MD_DataIdentification> MD_LegalConstraints. otherConstraints	Other constraints	Any use involving commerce, businesses or product names is only for descriptive purposes and does not imply any recognition by the government of the U.S.A. It should be stated that the data are distributed by the *Land Processes Distributed Active Archive Center (LP DAAC), of the United States Geological Survey (USGS) / Earth Resources Observation and Science Center (EROS)*, located at Sioux Falls, http://lpdaac.usgs.gov
	MD_Metadata.identificationInfo > MD_DataIdentification> MD_SecurityConstraints.Classification	Classification	Unclassified

Category	Element	Name	Example
Metadata contact point	MD_Metadata.contact > CI_Responsibility.role	Role	Publisher
	MD_Metadata.contact > CI_Responsibility. Role name:party> CI_Party.name	name	*Land Processes Distributed Active Archive Center of the USGS/EROS*
	MD_Metadata.contact > CI_Responsibility. Role name:party> CI_Party.contactInfo> CI_Contact.phone> CI_Telephone.number	Telephone	605-594-6116
	MD_Metadata.contact > CI_Responsibility. Role name:party> CI_Party.contactInfo> CI_Contact.address > CI_Address.deliveryPoint	Address	Mundt Federal Building, 252nd Street
	MD_Metadata.contact > CI_Responsibility. Role name:party> CI_Party.contactInfo> CI_Contact.address > CI_Address.city	City	*Sioux Falls*
	MD_Metadata.contact > CI_Responsibility. Role name:party> CI_Party.contactInfo> CI_Contact.address > CI_Address.administrativeArea	Administrative area	South Dakota
	MD_Metadata.contact > CI_Responsibility. Role name:party> CI_Party.contactInfo> CI_Contact.address > CI_Address.postalCode	Postal code	57198
	MD_Metadata.contact > CI_Responsibility. Role name:party> CI_Party.contactInfo> CI_Contact.address > CI_Address.country	Country	United States

Latin American Metadata Profile version 2— **LAMPv2**

Category	Element	Name	Example
	MD_Metadata.contact > CI_Responsibility. Role name:party> CI_Party.contactInfo> CI_Contact.address > CI_Address.electronicMailAddress	Electronic mail address	lpdaac@eos.nasa.gov
Metadata information	MD_Metadata.dateInfo > CI_Date.date	Date	2017-05-01
	MD_Metadata.dateInfo > CI_Date.dataType	Date type	Creación
	MD_Metadata.defaultLocale> PT_locale.language	Language	Spa
	MD_Metadata.defaultLocale > PT_Locale. Country	Country	CL
	MD_ Metadata.identificationInfo > MD_DataIdentification.defaultLocale > PT_Locale.characterEncoding	Character encoding	utf8
	MD_Metadata.metadataStandard> CI_Citation.title	Metadata standard	ISO 19115-1:2014 Geographic information -- Metadata -- Part 1: Fundamentals
	MD_Metadata.metadataProfile> CI_Citation.title	Metadata profile	LAMPv2

C.1.3 Example3 – Viewing service for the Integrated North Andean Map (MIAN)

Category	Element	Name	Example
Information for identifying the service	MD_Metadata.identificationInfo > SV_ServiceIdentification.citation> CI.Citation.title	Title	Integrated North Andean Map (MIAN) viewing service
	MD_Metadata.identificationInfo > SV_ServiceIdentification.citation > CI_Citation.date > C I_Date. date	Date	*2016-07-29*
	MD_Metadata.identificationInfo > SV_ServiceIdentification.citation > CI_Citation.date > C I_Date. dateType	Date type	Publication
	MD_Metadata.identificationInfo> SV_ServiceIdentification.citation > CI_Citation.identifier> MD_Identifier.code	Code	WMS MIAN2016
Resumen	MD_Metadata.identificationInfo > SV_ServiceIdentification.abstract	abstract	The Integrated North Andean Map (MIAN) is a set of geographic data that is official, digital, in vector format, standardized, seamless and fundamental (or for reference) at a resolution of 1:250,000 and that covers the countries of Bolivia, Colombia, Ecuador, Panama and Peru. It coves six themes (Administrative boundaries, Hydrography, settlements, Transport networks, Terrain morphology and Miscellaneous); these in turn contain 15 geographic objects. Its full description is included in the «MIAN geographic feature catalogue». It should be noted that the outlines of of the geographic feature «Country» are to give approximate guidance for reference, and hgave no official validity, nor value as evidence, in accordance with Chapter I, article 1 of the Organic Statute of the PAIGH.

Category	Element	Name	Example
Purpose	MD_Metadata.identificationInfo > SV_ ServiceIdentification. purpose	Purpose	The purpose of the MIAN is to provide a fundamental cartography for all kinds of users and all types of applications. It covers the spatial area defined by the five countries mentioned, but it is intended firstly to complement the Integrated Map of Central America and, secondly, to constitute an integratedMap of South America (MIAS), once Brazil and the rest of the countries of the sub-continent join.
Service contact information	MD_ Metadata.identificationInfo > SV_ServiceIdentification.pointOfContact> CI_Responsibility.role	Role	Publisher
	MD_ Metadata.identificationInfo > SV_ServiceIdentification.pointOfContact> CI_Responsibility.Role name:party> CI_Party.name	Name	GeoSUR
	MD_ Metadata.identificationInfo > SV_ServiceIdentification.pointOfContact> CI_Responsibility.Role name:party> CI_Party.contactInfo > CI_Contact.phone > CI_Telephone.number	Telephone	+58(212)2096578
	MD_ Metadata.identificationInfo > SV_ServiceIdentification.pointOfContact> CI_Responsibility.Role name:party > CI_Party.contactInfo > CI_Contact.address > CI_Address.deliveryPoint	Address	Av. Luis Roche, Torre CAF, Piso 11, Altamira. Caracas, Venezuela
	MD_ Metadata.identificationInfo > SV_ServiceIdentification.pointOfContact> CI_Responsibility.Role name:party > CI_Party.contactInfo > CI_Contact.address > CI_Address.city	Administrative area	Caracas

Category	Element	Name	Example
Service contact information	MD_ Metadata.identificationInfo > SV_ServiceIdentification.pointOfContact> CI_Responsibility.Role name:party > CI_Party.contactInfo > CI_Contact.address > CI_Address.administrativeArea	Postal code	Capital, Caracas
	MD_ Metadata.identificationInfo > SV_ServiceIdentification.pointOfContact> CI_Responsibility.Role name:party > CI_Party.contactInfo > CI_Contact.address > CI_Address.country	Country	Venezuela
	MD_ Metadata.identificationInfo > SV_ServiceIdentification.pointOfContact> CI_Responsibility.Role name:party > CI_Party.contactInfo > CI_Contact.address > CI_Address.electronicMailAddress	Electronic mail address	geosur@caf.com
	MD_ Metadata.identificationInfo > SV_ServiceIdentification.pointOfContact> CI_Responsibility.Role name:party> CI_Party.contactInfo > CI_Contact.onlineResource > CI_OnlineResource.linkage	On line resource	http://www.geosur.info/
	MD_ Metadata.identificationInfo > SV_ServiceIdentification.pointOfContact> CI_Responsibility.Role name:party> CI_Party.contactInfo > CI_Contact.onlineResource > CI_OnlineResource.function	Function	Viewing
Credits	MD_Metadata.identificationInfo > SV_ServiceIdentification. credit	Credit	GeoSUR
Reference system **information**	MD_Metadata.referenceSystemInfo. MD_ReferenceSystem > MD_Identifier.code	Code	EPSG:4326
	MD_Metadata.referenceSystemInfo. MD_ReferenceSystem	title	WGS84 latitud, longitud

Category	Element	Name	Example
Geographic extent **information**	MD_ Metadata.identificationInfo > SV_ServiceIdentification. extent > EX_Extent.description	Description	Bolivia, Colombia, Ecuador, Panama and Peru
	MD_ Metadata.identificationInfo > SV_ServiceIdentification. extent > EX_Extent.geographicElement > EX_GeographicExtent > EX_GeographicBoundingBox.westBoundLongitude	Longitude of western extent	-91,983333
	MD_ Metadata.identificationInfo > SV_ServiceIdentification. extent > EX_Extent.geographicElement > EX_GeographicExtent > EX_GeographicBoundingBox.eastBoundLongitude	Longitude of eastern extent	-57,316667
	MD_ Metadata.identificationInfo > SV_ServiceIdentification. extent > EX_Extent.geographicElement > EX_GeographicExtent > EX_GeographicBoundingBox.southBoundLatitude	Latitude of southern extent	-23
	MD_ Metadata.identificationInfo > SV_ServiceIdentification. extent > EX_Extent.geographicElement > EX_GeographicExtent > EX_GeographicBoundingBox.northBoundLatitude	Latitude of northern extent	14,866667
Transfer options	MD_Metadata.distributionInfo> MD_Distribution.transferOptions> MD_DigitalTransferOptions.online> CI_OnlineResource.linkage	linkage	http://www.geosur.info/arcgis/ services /GeoSUR/GeoSUR_MIAN/ MapServer/ WMSServer?request= GetCapabilities&service=WMS
Key words	MD_Metadata.identificationInfo > SV_ServiceIdentification> descriptiveKeywords > MD_Keywords.keyword	Key words	America, transport, toponyms, cartography

Category	Element	Name	Example
Thesaurus	MD_Metadata.identificationInfo > SV_ServiceIdentification> descriptiveKeywords > MD_Keywords.thesaurusName > CI_Citation.title	Title	GEMET Thesaurus
	MD_Metadata.identificationInfo > SV_ServiceIdentification> descriptiveKeywords > MD_Keywords.thesaurusName > CI_Citation.OnlineResource > CI_OnlineResource.linkage	**Linkage**	**http://www.eionet.europa.eu/gemet**
Constraints	MD_Metadata.identificationInfo > SV_ServiceIdentification> MD_Constraints.graphic > MD_BrowseGraphic.file.Name	Graphic object	
	MD_Metadata.identificationInfo > SV_ServiceIdentification> MD_Constraints.graphic > MD_BrowseGraphic.linkage > CI_OnlineResource.linkage	linkage	http://i.creativecommons.org/l/ by/4.0/88x31.png
	MD_Metadata.identificationInfo > SV_ServiceIdentification> MD_ Constraints.reference > CI_Citation.title	title	Creative Commons recognition version 4.0
	MD_Metadata.identificationInfo > SV_ServiceIdentification> MD_ Constraints.useLimitations	Use constraints	WMS web service. The transfer or dowload of vector geographic objects is not possible.
	MD_Metadata.identificationInfo > SV_ServiceIdentification > MD_LegalConstraints. accessConstraints	Access constraints	Unrestricted
	MD_Metadata.identificationInfo > SV_ServiceIdentification > MD_Legal Constraints. useConstraints	Use constraints	All kinds of use are allowed; the only condition is that the authorship and intellectual property be recognised.
	MD_Metadata.identificationInfo > SV_ServiceIdentification > MD_Legal Constraints. otherConstraints	Other constraints	The conditions of use are the following: CC BY 4.0 CAF, PAIGH, GeoSUR Program, IGM Bolivia, IGAC Colombia, IGM Ecuador, IGNTG Panama, IGN Peru

Category	Element	Name	Example
	MD_Metadata.identificationInfo > SV_ServiceIdentification > MD_SecurityConstraints. Classification	Classification	Unclassified
Service version	MD_Metadata.identificationInfo> SV_ServiceIdentification. serviceTypeVersion	Service version	1.3.0
Service type	MD_Metadata.identificationInfo> SV_ServiceIdentification.serviceType	Service type	Viewing
Operation information	MD_Metadata.identificationInfo> SV_ServiceIdentification > SV_OperationMetadata>operationName	Operation name	GetCapabilities
	MD_Metadata.identificationInfo> SV_ServiceIdentification > SV_CoupledResource.operation> SV_OperationMetadata> distributedComputingPlatform	protocol, standard or informatics language	WebServices
	MD_Metadata> SV_ServiceIdentification. ResourceReference. CI_Citation.OnlineResource. CI_OnlineResource.linkage	Linkage	http://www.geosur.info/arcgis/ services/GeoSUR/GeoSUR_MIAN/ MapServer/WMSServer?request= GetCapabilities&service=WMS
	MD_Metadata.identificationInfo> SV_ServiceIdentification > SV_OperationMetadata> operationName	Operation name	GetMap
	MD_Metadata.identificationInfo> SV_ServiceIdentification > SV_CoupledResource.operation> SV_OperationMetadata> distributedComputingPlatform	protocol, standard or informatics language	WebServices
	MD_Metadata> SV_ServiceIdentification. ResourceReference. CI_Citation.OnlineResource. CI_OnlineResource.linkage	Linkage	http://www.geosur.info/arcgis/ services/GeoSUR/GeoSUR_MIAN/ MapServer/WMSServer?request= GetCapabilities&service=WMS

Category	Element	Name	Example
Operation information	MD_Metadata.identificationInfo> SV_ServiceIdentification > SV_OperationMetadata> operationName	Operation name	GetFeatureInfo
	MD_Metadata.identificationInfo> SV_ServiceIdentification > SV_CoupledResource.operation> SV_OperationMetadata> distributedComputingPlatform	protocol, standard or informatics language	WebServices
	MD_Metadata> SV_ServiceIdentification. ResourceReference. CI_Citation.OnlineResource. CI_OnlineResource.linkage	Linkage	http://www.geosur.info/arcgis/ services/GeoSUR/GeoSUR_MIAN/ MapServer/WMSServer?request= GetCapabilities&service=WMS
Resource coupling type	MD_Metadata.identificationInfo> SV_ServiceIdentification.couplingType	Coupling type	Strong
Metadata contact point	MD_Metadata.contact > CI_Responsibility.role	role	Publisher
	MD_Metadata.contact > CI_Responsibility. Role name:party> CI_Party.name	name	GeoSUR
	MD_Metadata.contact > CI_Responsibility > CI_Party > CI_Individual.positionName	Position name	Geographic Information Analyst
	MD_Metadata.contact > CI_Responsibility. Role name:party> CI_Party.contactInfo> CI_Contact.phone> CI_Telephone.number	Telephone	+58 (212) 2096578
	MD_Metadata.contact > CI_Responsibility. Role name:party> CI_Party.contactInfo> CI_Contact.address > CI_Address.deliveryPoint	Address	Av. Luis Roche, Torre CAF, Piso 11, Altamira. Caracas, Venezuela

Category	Element	Name	Example
Metadata contact point	MD_Metadata.contact > CI_Responsibility. Role name:party> CI_Party.contactInfo> CI_Contact.address > CI_Address.city	City	Caracas
	MD_Metadata.contact > CI_Responsibility. Role name:party> CI_Party.contactInfo> CI_Contact.address > CI_Address.administrativeArea	Administrative area	Capital, Caracas
	MD_Metadata.contact > CI_Responsibility. Role name:party> CI_Party.contactInfo> CI_Contact.address > CI_Address.postalCode	Postal code	None available
	MD_Metadata.contact > CI_Responsibility. Role name:party> CI_Party.contactInfo> CI_Contact.address > CI_Address.country	Country	Venezuela
	MD_Metadata.contact > CI_Responsibility. Role name:party> CI_Party.contactInfo> CI_Contact.address > CI_Address.electronicMailAddress	Electronic mail address	geosur@caf.com
Information about metadata	MD_Metadata.dateInfo > CI_Date.date	Date	2016-09-01
	MD_Metadata.dateInfo > CI_Date.dataType	Date type	Creation
	MD_Metadata.defaultLocale> PT_locale.language	la nguage	Spa
	MD_Metadata . defaultLocale > PT_Locale. Country	Country	CL
	MD_ Metadata.identificationInfo > SV_ServiceIdentification.defaultLocale > PT_Locale.characterEncoding	Character encoding	utf8

Category	Element	Name	Example
Information about metadata	MD_Metadata.metadataStandard> CI_Citation.title	Metadata standard	ISO 19115-1:2014 Geographic information -- Metadata -- Part 1: Fundamentals
	MD_Metadata.metadataProfile> CI_Citation.title	Metadata profile	LAMPv2

Latin American Metadata Profile version 2– **LAMPv2**

Annex D

(informative)

Recommendations for cataloguing

D.1 LAMPv2 Recommendacions

For the purpose of applying good practice in cataloguing, it is considered appropriate to make the recommendations for the metadata elements that are detailed as follows.

D.1.1 Metadata elements for data

1) For the values of «Date type for the resource reference», apply, preferably, one of the following:

Nº	Code	Value	Definition
1	Creation	Creation	The date identifies when the resource was created
5	lastUpdate	Last update	The date identifies when the resource was last updated

2) For the use values of CI_OnlineResource>function, apply, preferably, one or more of the following:

Nº	Code	Value	Definition
1	download	download	Download data
2	information	information	Gain Access to the specifications

3) It is recommended that a BoundingBox be defined, being a better representation of the reasl extent of the resource.

4) It is recommended that the names of the Administrative Divisions covered be included in both the abstract and in the keywords. For example: Bolivia, Colombia, Ecuador, Panama and Peru.

5) In the same way, it is recommended that key words describing the theme with a variety of synonyms be included, in order to facilitate searches (hydrography, rivers, water, hydrology, a hydrographic network, hydrous resources, etc.)

D.1.2 Metadata elements for services

1) The element TopicCategory is to be completed only if the service, from which the metadata record is created, has coupled data.

Annex E

(informative)

Schemas for Unified Modeling Language - UML

E.1 UML schema for LAMPv2

As follows, UML schema are presented; these set out in diagrams the metadata packets or sections of LAMPv2.

LAMPv2 is fully specified in the diagrams that are shown in this Annex and the Data Dictionary in Annex A. In the case of any discrepancy between these two annexes appearing, the content of the Data Dictionary should take priority.
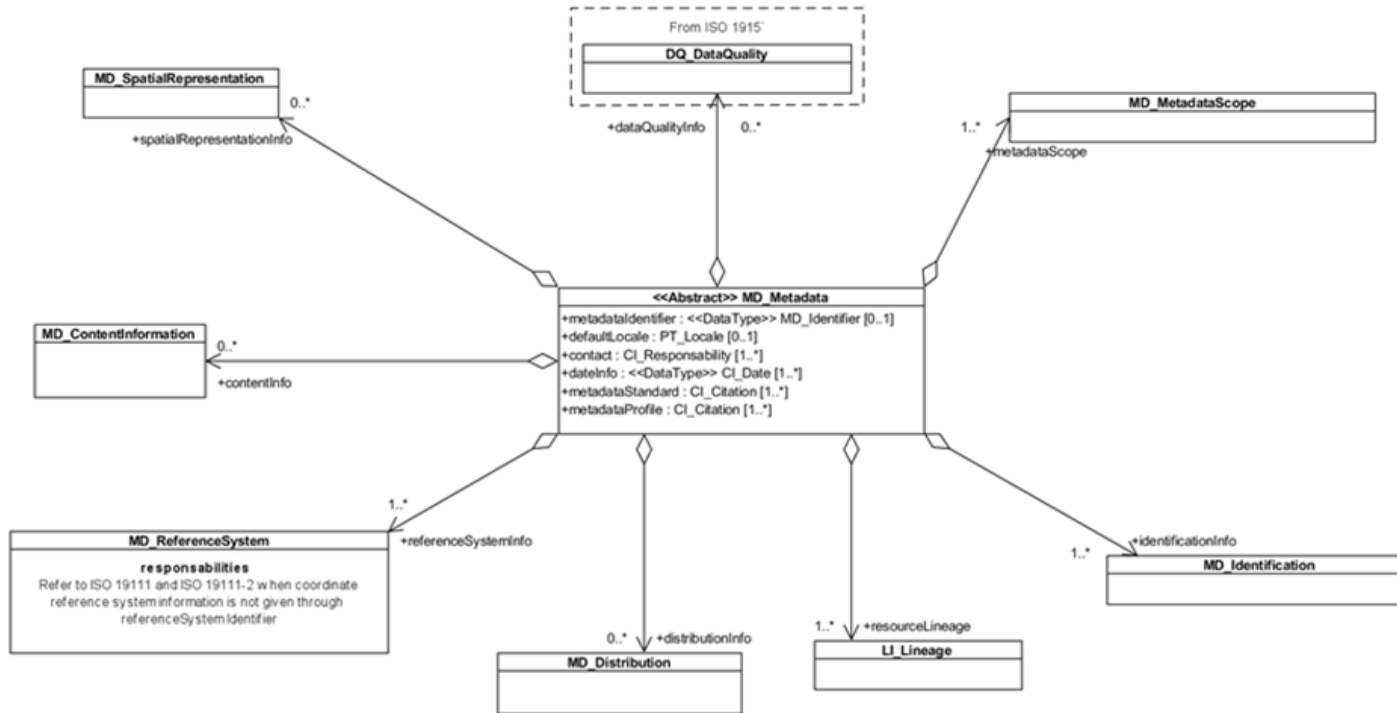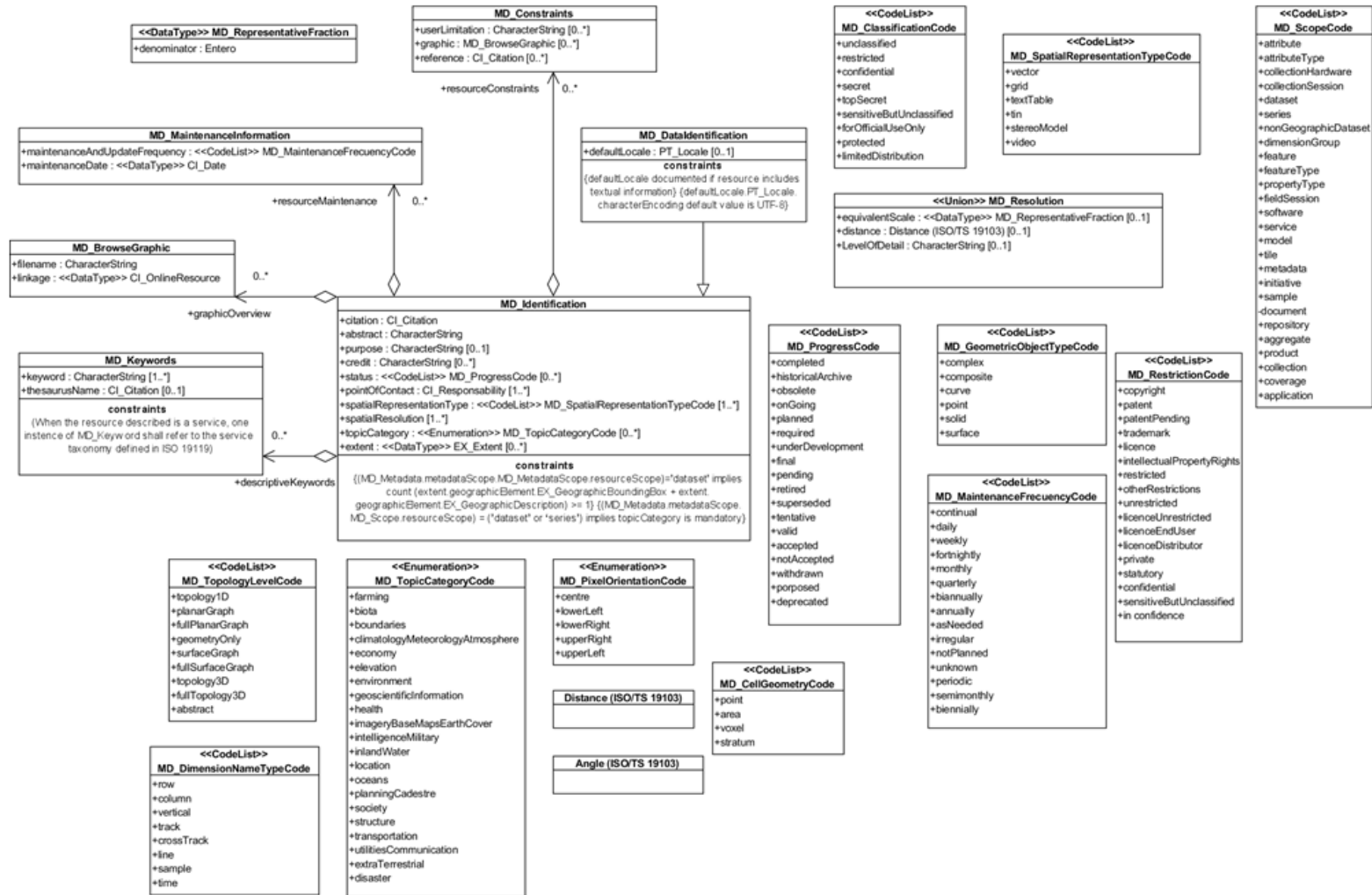
E.2 Diagram of LAMPv2 metadata packets
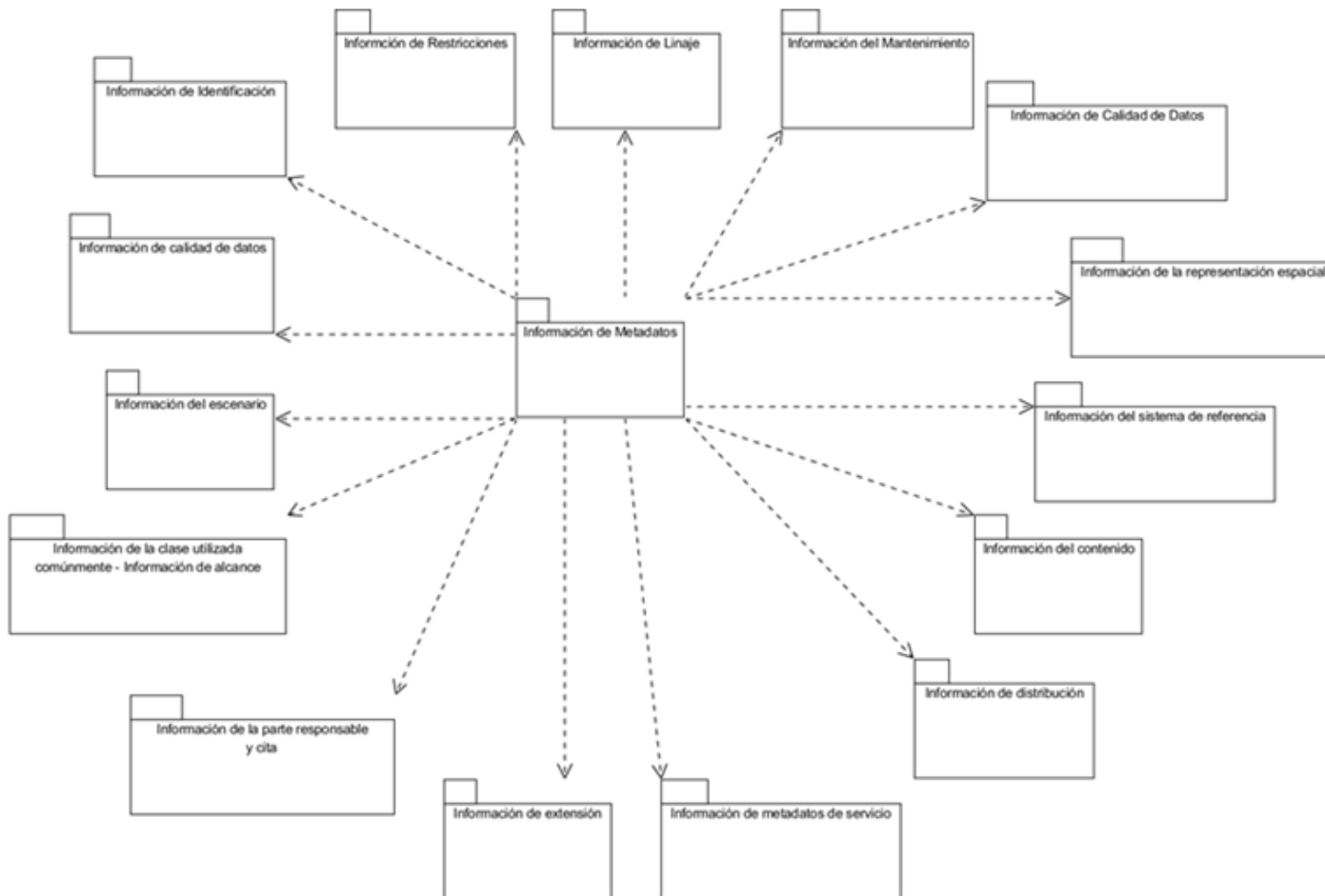
E.3 Metadata application information
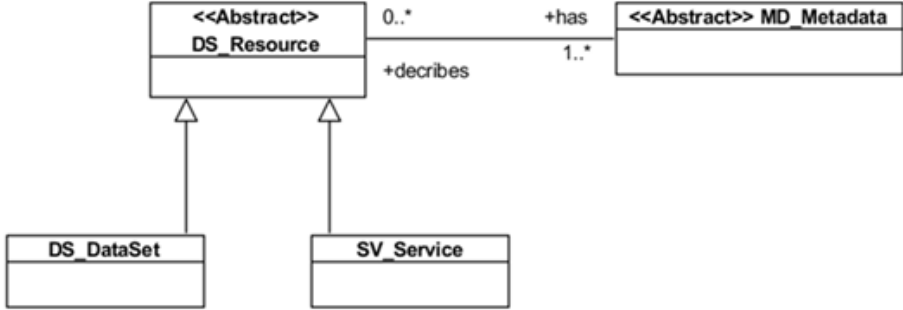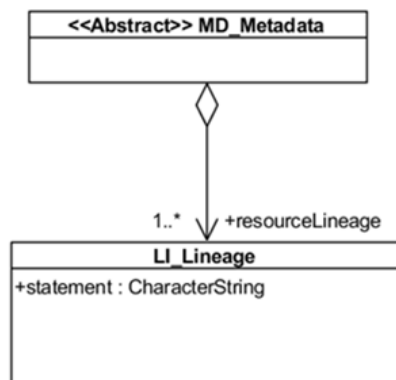
E.4 Metadata information
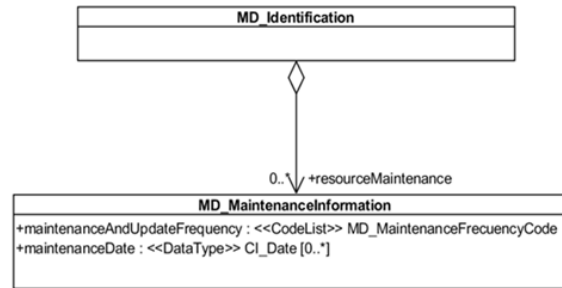
E.5 Identification information
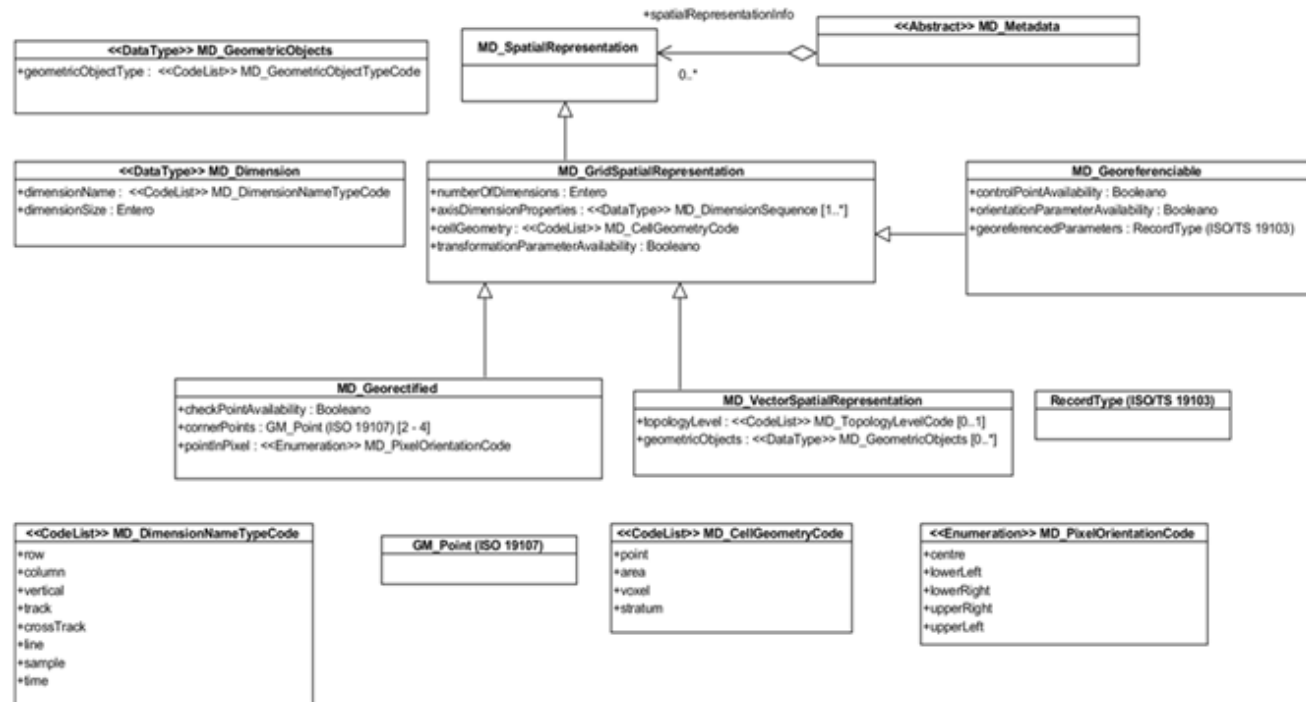
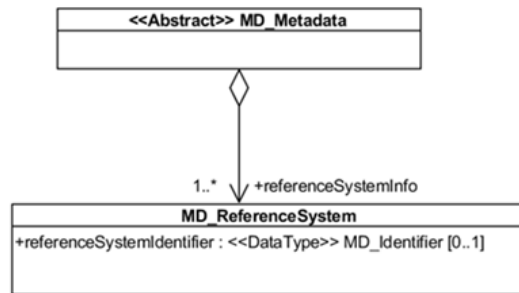## E.6 Constraints information
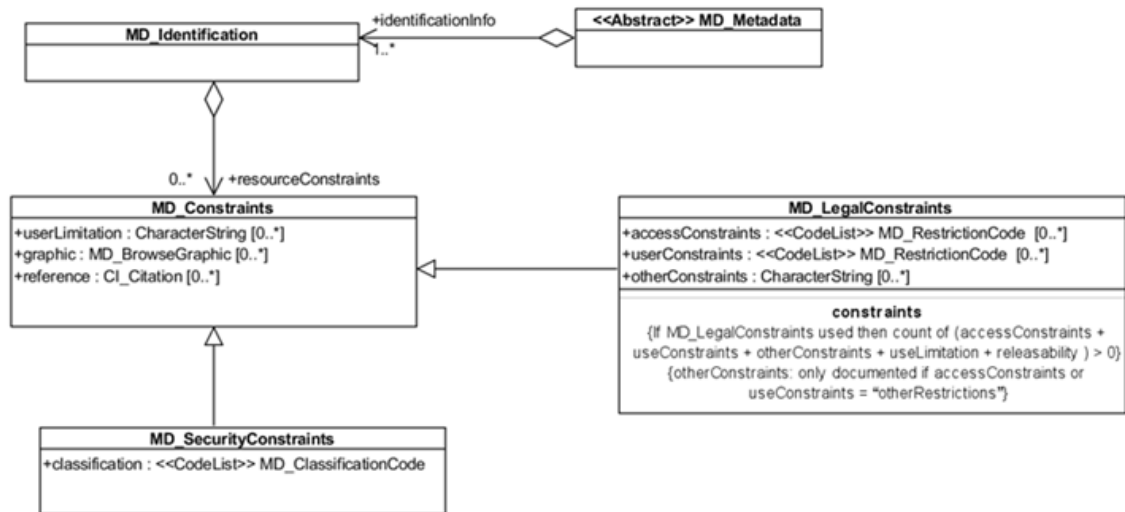
E.7 Lineage information

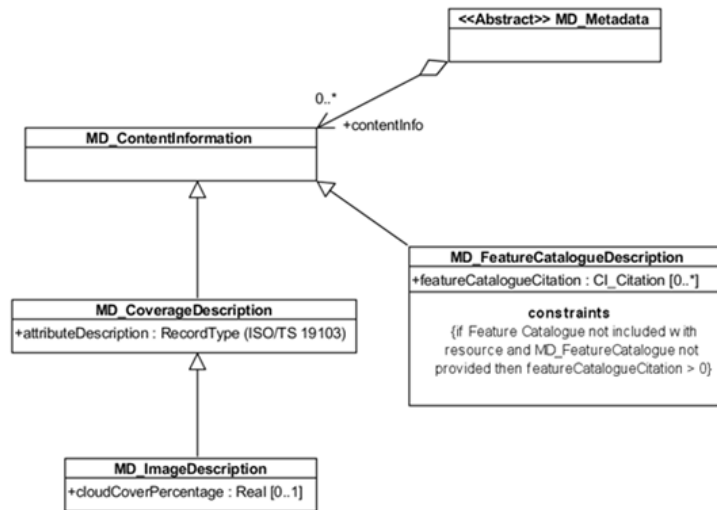## E.8 Maintenance information
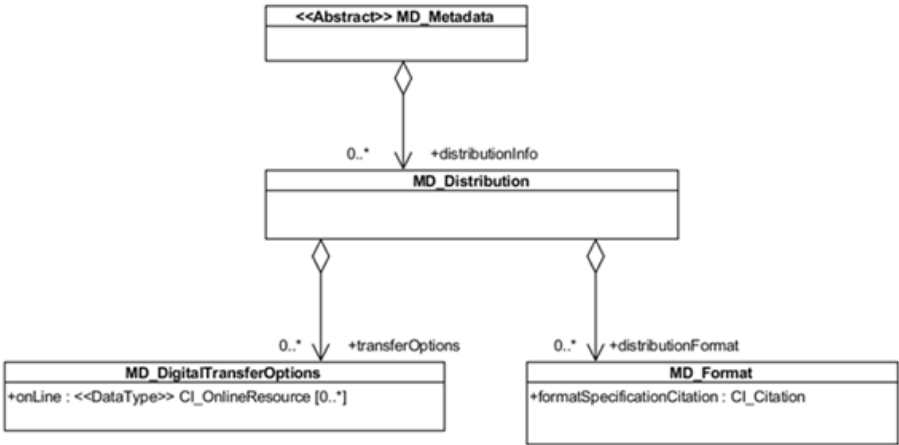

E.9 Spatial representation information

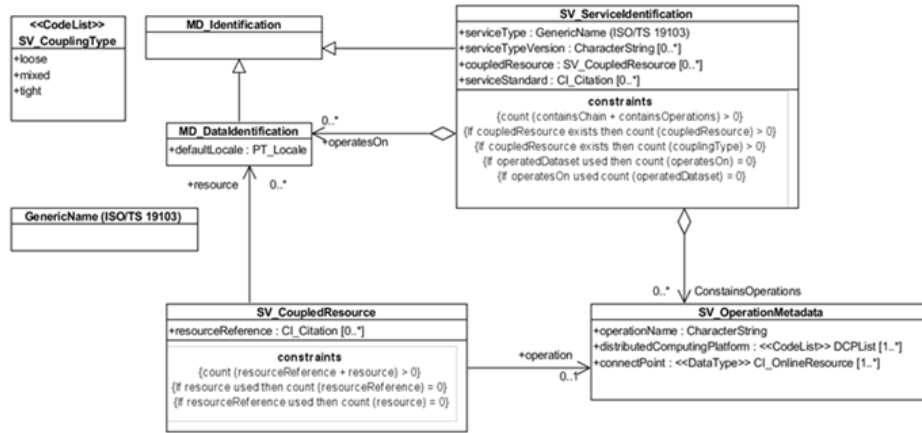## E.10 Reference system information

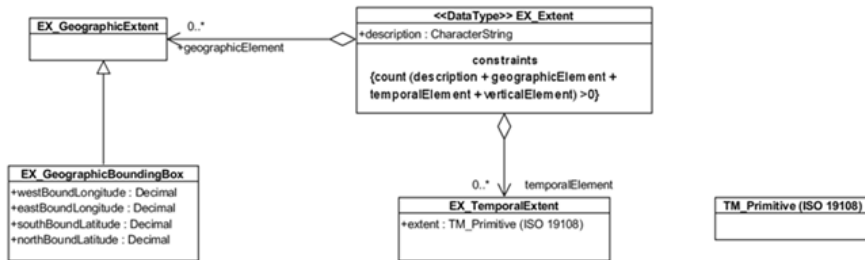## E.11 Content information

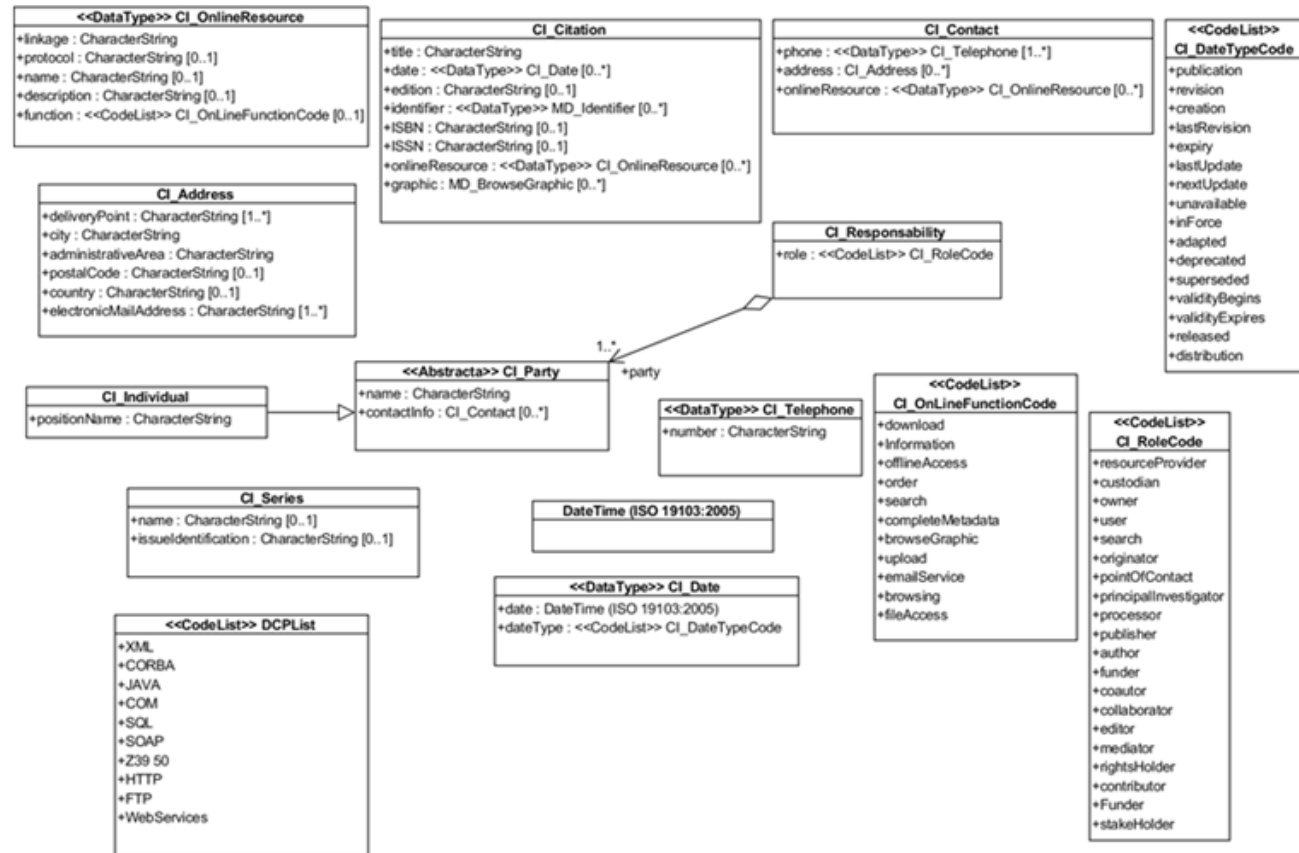**E.12 Distribution information**

E.13 Metadata service information

E.14 Extent information

E.15 Citation and responsible party information

<<DataType>> CI_OnlineResource
+linkage : CharacterString
+protocol : CharacterString [0..1]
+name : CharacterString [0..1]
+description : CharacterString [0..1]
+function : <<CodeList>> CI_OnLineFunctionCode [0..1]

CI_Citation
+title : CharacterString
+date : <<DataType>> CI_Date [0..*]
+edition : CharacterString [0..1]
+identifier : <<DataType>> MD_Identifier [0..*]
+ISBN : CharacterString [0..1]
+ISSN : CharacterString [0..1]
+onlineResource : <<DataType>> CI_OnlineResource [0..*]
+graphic : MD_BrowseGraphic [0..*]

CI_Contact
+phone : <<DataType>> CI_Telephone [1..*]
+address : CI_Address [0..*]
+onlineResource : <<DataType>> CI_OnlineResource [0..*]

<<CodeList>> CI_DateTypeCode
+publication
+revision
+creation
+lastRevision
+expiry
+lastUpdate
+nextUpdate
+unavailable
+inForce
+adapted
+deprecated
+superseded
+validityBegins
+validityExpires
+released
+distribution

CI_Address
+deliveryPoint : CharacterString [1..*]
+city : CharacterString
+administrativeArea : CharacterString
+postalCode : CharacterString [0..1]
+country : CharacterString [0..1]
+electronicMailAddress : CharacterString [1..*]

CI_Responsability
+role : <<CodeList>> CI_RoleCode

1..*
+party

CI_Individual
+positionName : CharacterString

<<Abstracta>> CI_Party
+name : CharacterString
+contactInfo : CI_Contact [0..*]

<<DataType>> CI_Telephone
+number : CharacterString

<<CodeList>> CI_OnLineFunctionCode
+download
+Information
+offlineAccess
+order
+search
+completeMetadata
+browseGraphic
+upload
+emailService
+browsing
+fileAccess

<<CodeList>> CI_RoleCode
+resourceProvider
+custodian
+owner
+user
+search
+originator
+pointOfContact
+principalInvestigator
+processor
+publisher
+author
+funder
+coautor
+collaborator
+editor
+mediator
+rightsHolder
+contributor
+Funder
+stakeHolder

CI_Series
+name : CharacterString [0..1]
+issueIdentification : CharacterString [0..1]

DateTime (ISO 19103:2005)

<<DataType>> CI_Date
+date : DateTime (ISO 19103:2005)
+dateType : <<CodeList>> CI_DateTypeCode

<<CodeList>> DCPList
+XML
+CORBA
+JAVA
+COM
+SQL
+SOAP
+Z39 50
+HTTP
+FTP
+WebServices

E.16 Commonly used class information (scope)

E.17 Locale information

E.18 Data quality information