



GOVERNMENT OF SAMOA

**SAMOA SECOND INFRASTRUCTURE AND ASSET
MANAGEMENT PROJECT (SIAM II)**

COMPONENT 5.01: LAND ADMINISTRATION AND SURVEY

**PROPOSED GEOSPATIAL METADATA
STANDARD**

PART 1

PROFILE DEFINITIONS

TECHNICAL ASSISTANCE REPORT NO. 23

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**MINISTRY OF NATURAL RESOURCES, ENVIRONMENT &
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Profile Definition

Geospatial Metadata Profile

Table of Contents

1.	Approach to Developing Geospatial Metadata Profile	4
2.	Use of Profile Definition	5
3.	Approval as a Standard	7
4.	Metadata Profile Table Definition	8
5.	UML Class Diagrams	16
	Metadata Entity Set Information.....	16
	Identification Information	17
	Distribution Information	18
	Reference System Information	19
	Extent Information	20
	Data Quality Information	21
	Constraint Information.....	22
	Citation and Responsible Party Information	23
6.	Conformance.....	24
7.	XML Schema for Metadata Profile	26
8.	XML Implementation	27
9.	Codelists	29
	B.5 CodeLists and enumerations.....	29
10.	Glossary	42
11.	Change History	43

1. Approach to Developing Geospatial Metadata Profile

The approach taken to develop this profile:

- Include all mandatory elements from ISO19115 and additional elements deemed necessary to support data discovery and fitness for purpose
- Create XML schemas based on ISO19139 implementation specification¹ to encode the profile

¹ <http://www.isotc211.org/protodoc/211n1535/> dated 2003-11-25 also referred to as the DGIWG ISO 19139 Metadata XML Dataset Implementation. XML schema used in this profile were obtained from ISO TC211 working group 2 September 2005 and are the schema were due to be published for an ISO TC211 ballot.

2. Use of Profile Definition

Overview

The purpose of this document is to define a geospatial metadata standard applicable for the gathering, describing and storing of geospatial metadata information by Samoan agencies. It will facilitate inter-operability and encourage organizations to take a whole of government approach by making it easier to find, use and share geospatial information.

The standard and guidelines will be reviewed based on comments and feedback from user community.

Relationship to other Parts of the Profile Description

This document is the first component of an overall description of this metadata profile. It defines the metadata profile; the second component is a guide and reference source for the creation and maintenance of metadata conforming this profile. The **Part 2 Guide** provides individual metadata element descriptions, an XML schema definition of the Profile, XSLT stylesheets to aid presentation of XML metadata instances

Audience

This profile is a technical document. It is aimed at an audience of geospatial data managers and software developers. Some knowledge of the Unified Modelling Language (UML) is necessary when reading and interpreting this profile.

What is required

This profile and its associated XML schemas and style sheets have been customized to work with the SPREP Metadata Catalogue to record, encode and publish geospatial metadata online.

Metadata Profile Table Definition

Standards used in developing the profile

The metadata elements in the profile are derived from the International Standard ISO 19115 Geographic information - Metadata. The method of presenting the profile is in terms with ISO 19106 Geographic information – Profiles.

References

- “*Technical Paper No. 73 Environmental Metadata Framework*”, MFE, Sept '02
<http://www.environment.govt.nz/info/tech-reports/tr-73-info-management.pdf>
- “*ANZLIC Metadata Guidelines Version 2*”, ANZLIC, Feb '01
(<http://www.anzlic.org.au/asdi/metaelem.htm>)
- “*International Standard ISO 19115 Geographic information – Metadata*”, ISO/TC 211, May '03
- “*Working Draft 19139 Geographic information – Metadata Implementation Specification*”, ISO/TC 211, Nov '03
- “*Text for IS 19106 Geographic information – Profiles*”, ISO/TC 211, Sept '03
- “*Proposed Draft Standard/Technical Specification 19103 Geographic information – Geographic conceptual language*”, ISO/TC211, Sept '03

Structure of Profile Definition

The Profile Definition has 8 sections:

1. **Approval as a Standard** that defines the mandate for this metadata profile.
2. A series of **Table Definitions** of all 37 metadata elements with explanations and, where appropriate illustrative examples of values for each metadata element. The tables also state the Obligation Status (Mandatory or Conditional) and where this coincides with the Obligation Status in ISO 19115 this is also mentioned. The rows of the tables are indented differing amounts to emulate the UML based structure that ISO 19115 and these Metadata Profiles are based on. Where there is any ambiguity on the place of an element within the Metadata Profile structure, the UML Class Diagrams (also included in this Profile Description) should be consulted.

These tables provide an overview definition of the Metadata Profile.

3. **UML Class Diagrams** being the definitive definition of this Metadata Profile. This Metadata Profile is a profile of ISO 19115 and hence is a subset of the full ISO 19115 metadata definition.

These diagrams are the authoritative definition of the Metadata Profile and will be useful in defining the relationship between different metadata elements.

4. A Process to test for **Conformance** with this metadata profile
5. URL identifiers for the **XML Schema** used to validate metadata descriptions created in term of this Metadata
6. **Code Lists** definitions for those elements with enumerated (controlled) values

3. Approval as a Standard

Approved as a Ministry Geospatial Standard on 28 February 2006.

Chief Executive Officer,

Ministry of Natural Resources, Environment & Meteorology

4. Metadata Profile Table Definition

This set of tables provides an alternative definition of the Metadata Profile to the UML Class diagrams to be found in the following section. In any case of ambiguity between this table definition and the UML Class diagrams, the UML Class diagrams should be treated as the more authoritative source.

Interpretation of Table

- The table groups metadata elements that describe similar metadata characteristics in modules. This profile uses 5 modules being:

1. Metadata Identification Module;
2. Resource Identification Module;
3. Spatial and Extents Module;
4. Data Quality Module;
5. Data Characteristics Module.

The explanation of these modules are found in section 3 of the **Part 2 Profile Guide**

- Each element is identified by its ISO 19115 long and short name and element number (in brackets).
- The level of indentation provides an indication of the context of the metadata element and the structure defining it.
- Metadata element values are only required for those elements at the lowest level of a branch of structure and hence higher level elements not requiring a value are shaded to indicate that no value is required.
- The description includes either the definition of the element and/or a value.
- The obligation status is either the same as ISO 19115 or “stronger” (i.e. optional or conditional become mandatory). In this context an obligation status of “conditional” means mandatory if the condition applies, optional otherwise.
- The table definition does identify where multiple values are permissible. Multiple values are indicated in the Max Occ (Maximum Occurrence) column. This column defines whether an element is singular (1) or can be repeated as necessary (n). Some elements have the code (fro) which means the multiple value permissibility is taken from the referencing object. This information is sourced from ISO19115. Please cross-reference this with the UML Class diagrams.

Metadata Profile Table Definition

Name	Description	Obligation Status	Max Occ
Metadata Identification Module	This module defines metadata about a resource or resources		
fileIdentifier (2) <i>mdFileID</i>	Value is a metadata file name following naming convention defined by organisation Eg: mnremMD0001	Mandatory ISO 19115 Core Element	1
language (3) – refer ISO 639-2 <i>mdLang</i>	Default value= “eng”	Mandatory Default Value	1
characterSet (4) – refer CodeList B.5.10 <i>mdChar</i>	Default value = “utf8”	Mandatory Default Value	1
contact (8) <i>mdContact</i>	<i>Party responsible for the metadata</i>	ISO 19115 Mandatory	N
CI_RespParty (374) <i>RespParty</i>			(fro)
pointOfContact (29) <i>idPoC</i>		Mandatory	N
contactInfo (387) <i>Contact</i>		Mandatory	(fro)
CI_Contactaddress (389) <i>cntAddress</i>		Mandatory	1
electronicMailAddress (386) <i>eMailAdd</i>	Eg: value= “metadata@mnre.gov.ws “	Mandatory	N
role (379) – ref Codelist B.5.5 <i>role</i>	Eg: value = “custodian“	ISO 19115 Mandatory	1
dateStamp (9) refer B.4.2 ISO 8601 <i>mdDateSt</i>	The date the metadata was last updated. Eg: value = ‘2003-05-02”	ISO 19115 Mandatory	1
metadataStandardName (10) <i>mdStanName</i>	Default value = “ISO 19115 Geographic Information – Metadata, Samoa Government Geospatial Metadata Standard”	ISO 19115 Core Element Default Value	1
metadataStandardVersion (11) <i>mdStanVer</i>	Default value = “1.0”	Mandatory Default Value	1

Metadata Profile Table Definition

Name	Description	Obligation Status	Max Occ
Resource Identification Module	Basic information required to uniquely identify a resource or resources		
MD_Distribution (17/270) <i>disInfo</i>	Distribution details to be added by distributing organisation		(fro)
distributor (272) <i>distributor</i>	Party responsible for distribution of the resource		N
distributorFormat (282) <i>distorFormat</i>		ISO 19115 Mandatory	N
name (285) <i>formatName</i>	Eg: value = "Arc Shape Files"	ISO 19115 Mandatory	1
version (286) <i>formatVer</i>	Eg: value = "8.1"	ISO 19115 Mandatory	1
MD_Identification (15/23) <i>dataDInfo</i>		ISO 19115 Mandatory	n
citation (24) <i>idCitation</i>		ISO 19115 Mandatory	1
.title (360) <i>resTitle</i>	Eg: value = "Digital Cadastral Database (DCDB)"	ISO 19115 Mandatory	1
date (362/394) <i>resRefDate</i>	Reference date for the data resource	ISO 19115 Mandatory	n
date (394) <i>refDate</i>	Eg: value = "1998-03-30"	ISO 19115 Mandatory	1
dateType (395) – ref Codelist B.5.2 <i>refDateType</i>	Eg: value = "creation"	ISO 19115 Mandatory Default value	1
edition (363) <i>resEd</i>	Eg: value = "1.5"	Conditional - If it is a new dataset and versioning is used in conjunction with this data resource	1
identifier (365) <i>citId</i>	Eg: value = "SRC2365"	Conditional – If it is a new dataset and there is a known identifier for the resource	n
presentationForm (368) – ref Codelist B.5.4 <i>presForm</i>	Eg: value = "mapDigital"	Mandatory	n
abstract (25) <i>idAbs</i>	<i>Brief narrative summary of the content of the data resource. Should include the identification of key feature types making up the data resource and a description of any critical characteristics of the feature types of the dataset generally</i>	ISO 19115 Mandatory	1

Metadata Profile Table Definition

Name		Description	Obligation Status	Max Occ
Resource Identification Module		Basic information required to uniquely identify a resource or resources		
	purpose (26) <i>idPurp</i>	<i>Summary of the intention for which the data resource was developed. Should include reference to any statutory purpose or function it supports or if it is specifically created by statute</i>	Mandatory	1
	pointOfContact (29/374) <i>idPoC</i>	Contact details for the Party responsible for the Resource	ISO 19115 Core Element	(fro)
	organisationName (376) <i>rpOrgName</i>	Eg: value = "Ministry of Natural Resources, Environment & Meteorology"	Mandatory	1
	contactInfo (387) Contact		Mandatory	(fro)
	phone (388) cntPhone		Conditional – If it is a new dataset	1
	voice(408) <i>voiceNum</i>	<i>Note phone number in format</i> <i>685 nn nnn</i>	Conditional – If it is a new dataset	n
	facsimile(409) <i>faxNum</i>	<i>Note phone number in format</i> <i>685 nn nnn</i>	Conditional – If it is a new dataset	n
	address (389) cntAddress		Mandatory	1
	deliveryPoint(381) <i>delPoint</i>	<i>Note 1st line of mail address in format</i> <i>Private Mail Bag</i>	Conditional – If it is a new dataset	1
	city(382) <i>city</i>	Eg: value = "Apia"	Conditional – If it is a new dataset	1
	country(385) <i>country</i>	Eg: value = "Samoa"	Conditional – If it is a new dataset Default value	1
	electronicMailAddress(386) <i>eMailAdd</i>	Eg: value= "metadata@mnre.gov.ws"	Mandatory	N
	role (379) – ref Codelist B.5.5 <i>role</i>	Eg: value = "Custodian"	ISO 19115 Mandatory Default Value	1
	DescriptiveKeywords (33) descKeys	Where keywords have been identified by subject matter experts utilising ANZLIC, FONZ or SONZ keywords	Mandatory	N
	ANZLIC Search Words		Optional	
	keyword (53) - ref CodeList ANZLIC_SearchWord <i>keyword</i>	<i>Note commonly used or formalised words from the ANZLIC Searchwords</i> Eg: "LAND Cadastre"	ISO 19115 Mandatory	n

Metadata Profile Table Definition

Name		Description	Obligation Status	Max Occ
Resource Identification Module		Basic information required to uniquely identify a resource or resources		
	type (54) - refer CodeList B.5.17 <i>keyTyp</i>	Eg: value = " theme"	Mandatory	1
	thesaurusName (55) <i>thesaName</i>		Mandatory	1
	citation (24) <i>idCitation</i>		ISO 19115 Mandatory	1
	.title (360) - ref CodeList NZ_RecognisedThesaurus <i>resTitle</i>	Eg. value = "SPREP compilation of ANZLIC Search Words"	ISO 19115 Mandatory	1
	date (362/394) <i>resRefDate</i>	Reference date for the thesaurus	ISO 19115 Mandatory	n
	date (394) <i>refDate</i>	Eg: value = "2001-02"	ISO 19115 Mandatory	1
	dateType (395) – ref Codelist B.5.2 <i>refDateType</i>	Eg: value ="publication"	ISO 19115 Mandatory Default value	1
	MD_DataIdentification (36) <i>DataIdent</i>	Details specific to a data resource		(fro)
	spatialRepresentationType (37) refer CodeList B.5.26 <i>spatRpType</i>	Eg: value = "vector"	Mandatory ISO 19115 Core Element	N
	spatialResolution (38) <i>dataScale</i>	Described as either a scale (representative fraction) or as a distance at ground scale.	Mandatory ISO 19115 Core Element	N
	equivalentScale (60) <i>equScale</i>	<i>Level of detail expressed as the scale of the comparable hard-copy map or chart</i>	Conditional when distance is not populated	1
	.distance (61) <i>scaleDist</i>	<i>Ground sample distance</i> Eg: 1 metre	Conditional when equivalent Scale is not populated	1
	language (39) <i>dataLang</i>	Default value="eng"	ISO 19115 Mandatory Default Value	N
	characterSet (40) – refer CodeList B.5.10 <i>dataChar</i>	Default value="utf8"	Default Value	N
	topicCategory (41) – refer CodeList B.5.27 <i>tpCat</i>	Default value="environment"	ISO 19115 Mandatory	N

Metadata Profile Table Definition

Name	Description	Obligation Status	Max Occ
Spatial and Extents Module	Description of the spatial, temporal and extent elements for a resource		
MD_ReferenceSystem (13/186) <i>refSysInfo</i>	Identifies the spatial referencing system applying to the Resource	Mandatory ISO 19115 Core Element	N
.referenceSystemIdentifier (187) <i>refSysID</i>		ISO 19115 Mandatory	1
code (207) (from CodeList wsRefSysCodelist) <i>identCode</i>	Eg: value = "SIG"	ISO 19115 Mandatory	1
codeSpace (208.1) <i>identCodeSpace</i>	Name of namespace or name or identifier of the person or organization responsible for namespace. Eg: value = "http://www.mnre.gov.ws/metadata/wsCodelist/wsRefSysCodelist/"	Mandatory	1
MD_Identification (15/23) <i>DataIDInfo</i>	Details applicable to both a data or service resource	ISO 19115 Mandatory	N
MD_DataIdentification (36) <i>DataIdent</i>	Details specific to a data resource	ISO 19115 Mandatory	(fro)
extent (45) <i>dataExt</i>	Details defining the geographical, temporal and vertical extent of the resource		N
geographicElement (336)	Details defining the geographical extent	Mandatory	N
extentTypeCode (340) – refer Codelist B.3.1.1 <i>exTypeCode</i>	Value = "1" for inclusion (Value = "0" for exclusion)	Mandatory Default Value	1
geographicIdentifier (349) <i>geoID</i>	Eg: value = "Samoa"	ISO 19115 Mandatory	1
.temporalElement (337) <i>tempEle</i>		Mandatory	N
extent (351) – refer B.4.6 <i>exTemp</i>	Defines <i>the date or period that best reflects the on-the-ground currency of this particular data resource</i> Eg: value = "2001-10/2002-02"	ISO 19115 Mandatory	1

Metadata Profile Table Definition

Name	Description	Obligation Status	Max Occ
Data Quality Module	Provides an overall assessment of resource quality		
dataQualityInfo (18) <i>dqInfo</i>	Details describing the quality of the resource	Mandatory	N
Scope (79) <i>dqScope</i>	Defines the scope of the quality information supplied	ISO 19115 Mandatory	1
level (139) – refer CodeList B.5.25 <i>scpLvl</i>	Default: value = "dataset" (Alternative "data series")	ISO 19115 Mandatory Default Value	1
lineage (81) <i>dataLineage</i>	Describes how the resource was created	Mandatory	1
statement (83) <i>statement</i>	<i>A general description of how dataset was generated or derived.</i>	Mandatory ISO 19115 Core	1

Name	Description	Obligation Status	Max Occ
Data Characteristics Module	Contains basic information about the resource or resources		
MD_Identification (15/23) <i>dataDInfo</i>		ISO 19115 Mandatory	N
resourceFormat (32/284) <i>dsFormat</i>	A description of the format of the resource	Conditional – If data is a resource	N
name (285) <i>formatName</i>	Eg: value = "MapInfo"	ISO 19115 Mandatory	1
version (286) <i>formaVert</i>	Eg: value = "6.5"	ISO 19115 Mandatory	1
MD_Usage (34/62) <i>idSpecUse</i>	Brief description of ways resource is currently used	Conditional – If use of resource is known	N
userDeterminedLimitations (65) <i>usrDetLim</i>	<i>Applications determined by user for which the resource is not suitable</i>	Conditional – If there are any user determined limitations	1
MD_Constraints (35/67) <i>resConst</i>	Identifies any use limitations, access constraints or use constraints (such as copyright or IP) that apply to the resource		N
useLimitation (68) <i>useLimit</i>	<i>Note any limitation affecting the fitness for use of the data resource</i>	<i>If any issues or constraints have been identified and adequately documented for the dataset</i>	N
MD_LegalConstraints (69) <i>LegConsts</i>	Identifies (legal) access constraints or use constraints (such as copyright or IP) that apply to the resource		

Metadata Profile Table Definition

	accessConstraints (70) - refer CodeList B.5.24 <i>accessConsts</i>	Access constraints applied to ensure the protection of privacy or intellectual property Eg: copyright	Conditional if Government Copyright or other access constraints apply	N
	otherConstraints (72) <i>othConsts</i>	Default value="Government Copyright, Samoa, 2005"	Conditional if Crown Copyright applies Default Value	N

5. UML Class Diagrams

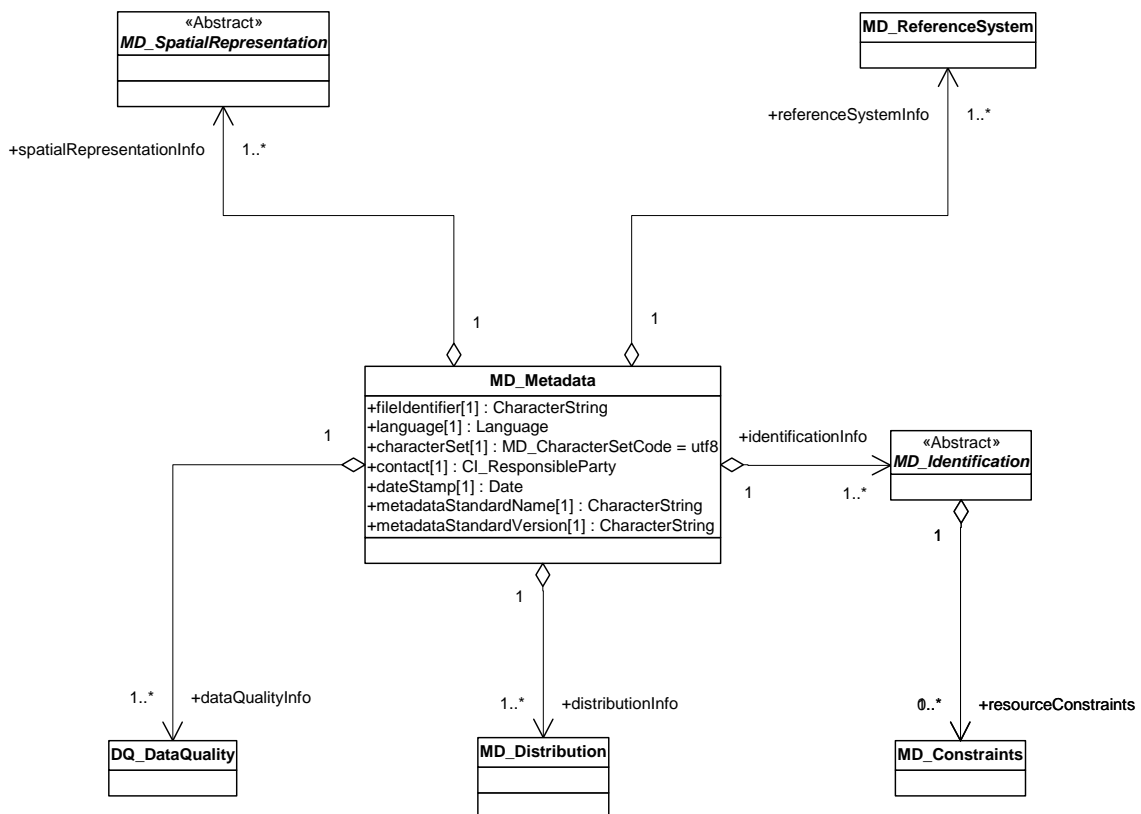
Metadata for describing geographic data is defined using an abstract object model in the unified modelling language (UML). The diagrams following subclasses provide “views” which are portions of the total abstract model for metadata. Each diagram defines a metadata section (UML package) of related entities, elements, data types and code lists. Related entities which are defined in another diagram are shown with elements suppressed and the defining package specified under the entity name in parenthesis. Throughout the following models, entities have mandatory and/or optional elements and associations. In some cases, optional entities may have mandatory elements: those elements become mandatory only if the optional element is used.

The following section requires the reader to have reasonable knowledge and understanding of UML class diagrams. These diagrams define the linkages and data structures and allow applications to be built to process metadata.

These diagrams follow the same structure and layout as used in ISO 19115 and differs in so far as only showing the metadata elements of interest to this metadata profile being the Samoa Geospatial Metadata Profile.

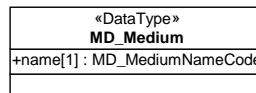
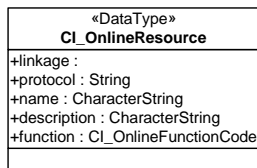
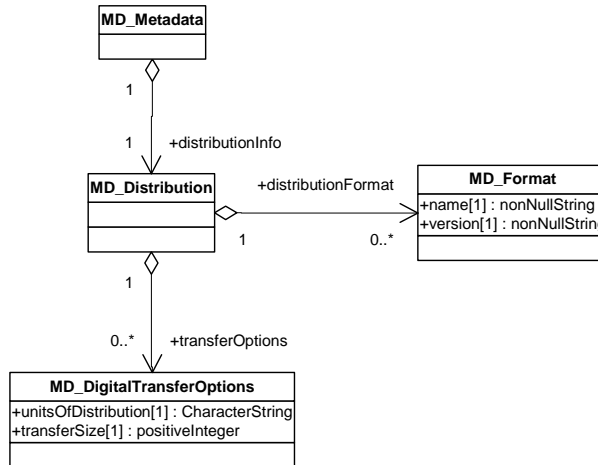
Metadata Entity Set Information

The UML model for metadata entity set information defines the class MD_Metadata and shows containment relationships with other metadata classes which, in aggregate, define metadata for geospatial information.



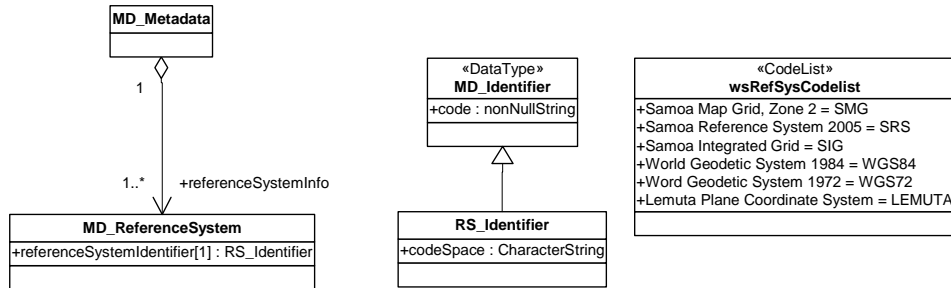
Distribution Information

The UML model for distribution information defines metadata required for accessing a resource.



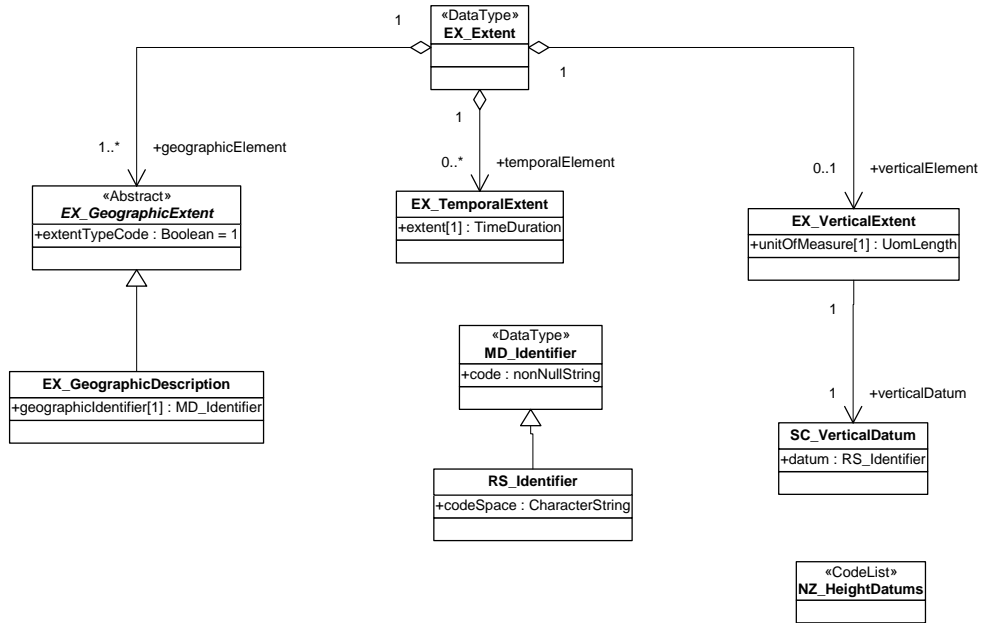
Reference System Information

The UML model for reference system information defines metadata required to describe the spatial reference system used.



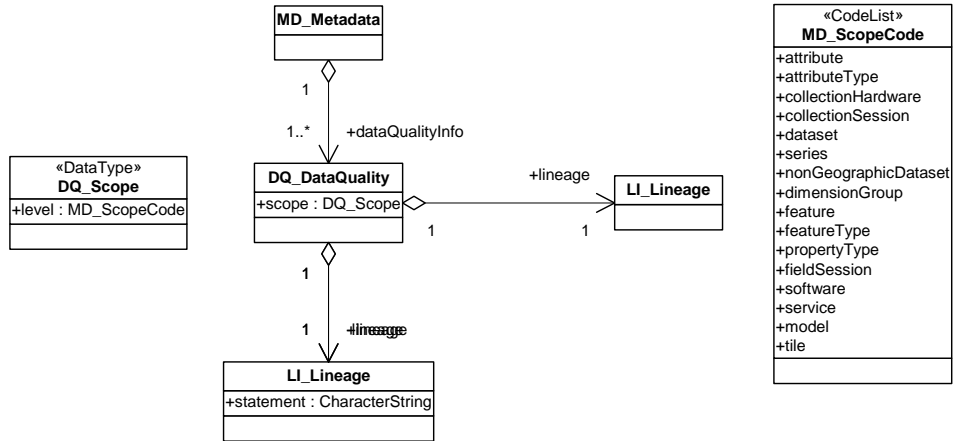
Extent Information

The UML model for extent information defines metadata describing the spatial and temporal extent covered by a resource.



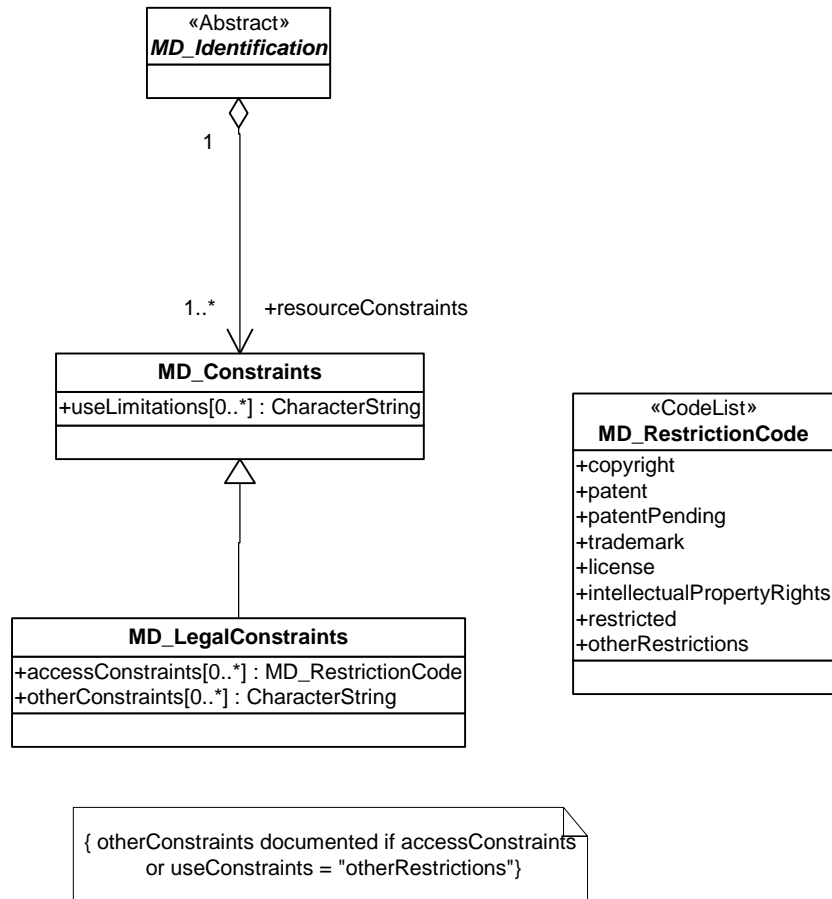
Data Quality Information

The UML model for data quality information defines the metadata required to give a general assessment of the quality of a resource.



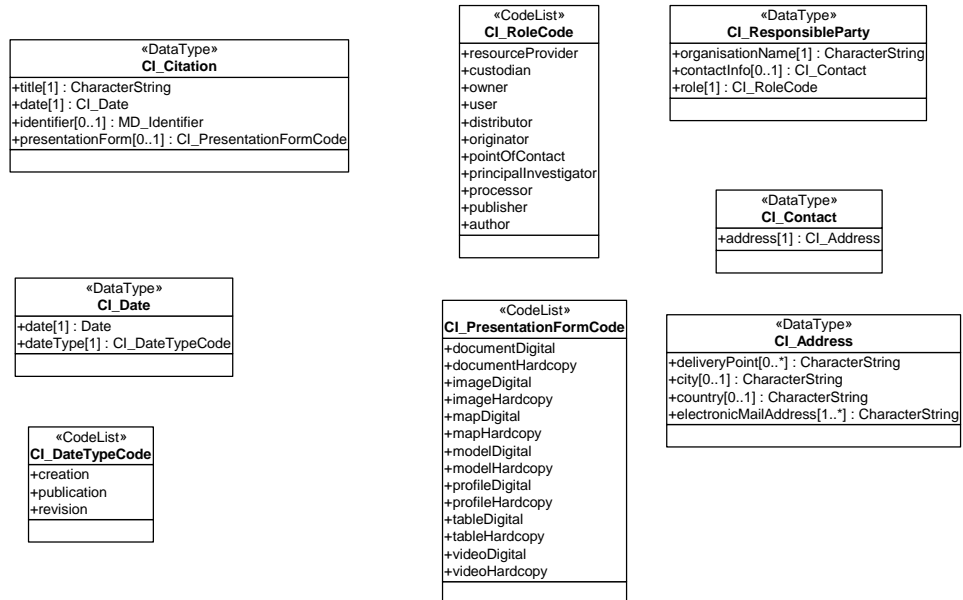
Constraint Information

The UML model for constraint information defines the metadata required for managing rights to information including restrictions on access and use.



Citation and Responsible Party Information

The UML model for citation and responsible party information defines metadata describing authoritative reference information, including responsible party and information.



6. Conformance

The content of any geographic data resource metadata conforming to this standard is as defined in the UML Class Diagrams of this document;

The form of encoding for any geographic data resource metadata must comply with ISO 19118 and specifically the form of encoding specified by ISO 19139 (Geographic Information – Metadata Implementation Specification). As ISO 19139 currently (October 2005) has the status of “working draft”, the ISO/TC211 report N1535 will be the specification to be followed. This standard will be revised accordingly as new versions of the ISO/TC211 metadata implementation specification are released.

Conformance to this standard requires that:

1. the geographic metadata instance (XML) document can be validated without error against the XML schemas specified in this profile definition document.²

In this respect a geographic metadata description XML instance can conform to this standard in that it conforms to the Samoa profile and **may** include conditional or optional ISO 19115 metadata elements additional to those included in the Samoa profile.

2. values of all elements within the geographic metadata instance (XML) document associated with a codelist are valid values as enumerated in the specified codelist.
3. all conditions pertaining to conditional elements within the geographic metadata instance (XML) document as described by way of “anchor notes” in the UML Class diagrams of this profile definition document are met.

Tables summarizing the anchor notes and annotations and their affected elements are shown below:

Conformance Checking

Affected Class	Conformance Rule
MD_DataIdentification	if MD_Metadata.hierarchyLevel equals "dataset" (005), then (count extent.geographicElement.EX_GeographicBoundingBox) + count (extent.geographicElement.EX_GeographicDescription) >= 1)
MD_AggregateInformation	Either "aggregateDataSetName" or "aggregateDataSetIdentifier" must be documented
MD_Band	"units" is mandatory if "maxValue" or "minValue" are provided
MD_LegalConstraints	otherConstraints: documented if accessConstraints or useConstraints = "otherRestrictions" (008)
MD_Medium	"densityUnits" is mandatory if "density" is provided
MD_ExtendedElementInformation	"shortName" is mandatory if dataType not equal 'codelistElement' (004)
MD_ExtendedElementInformation	"domainCode" is mandatory if dataType = 'codelistElement' (004)

² refer to Section 10 for a more detailed description of this XML validation step.

Affected Class	Conformance Rule
MD_ExtendedElementInformation	"obligation", "maximumOccurrence" and "domainValue" are mandatory if dataType is not 'codelist' (002), 'enumeration' (003) or 'codelistElement' (004)
MD_ExtendedElementInformation	"condition" is mandatory if obligation = 'conditional' (003)
MD_ReferenceSystem	"referenceSystemIdentifier" is mandatory if MD_CRS.projection, MD_CRS.ellipsoid and MD_CRS.datum are not documented
MD_EllipsoidParameters	"denominatorOfFlatteningRatio" is mandatory if not a spheroid
MD_Georectified	"checkPointDescription" is mandatory if "checkPointAvailability" = 1 (yes)
EX_Extent	self.description->size() + self.geographicElement->size() + self.temporalElement->size() + self.verticalElement->size() > 0
MD_ImageDescription	Self.cloudCoverPercentage <=100.0
DirectPosition::coordinate[1..*]	The coordinates must be listed in a sequential order
MD_Georectified	The cornerPoints must be listed in sequential order
MD_GridSpatialRepresentation	The axisDimensionProperties must be listed in sequential order

The geographic metadata must be accessible to agencies and individuals external to the agency responsible for the data resource in an on-line repository for geographic data resource metadata.

7. XML Schema for Metadata Profile

XML Schemas express shared vocabularies and allow machines to validate rules made by people. They provide a means for defining the structure, content and semantics of XML documents

Metadata conforming to this standard can be served in a variety of formats, including a format based on the Extensible Markup Language (XML) developed by the World Wide Web Consortium (W3C). By developing and/or providing access to geospatial metadata in this XML format, metadata developers and end users alike have at their disposal the wide range of commercial and open-source XML tools currently available.

The following XML-Schema documents are to be used to validate XML-formatted metadata. XML-Schema provides robust checking in the form of data-typing and element restrictions that might go otherwise unchecked as valid text in mp or in XML parsers that use a DTD for validation. Not that every possibility is checked in this approach but it does support a more complete validation of a metadata record than previously available in the XML environment.

The following URL identify the location of XML schema used to validate metadata descriptions. Behind this schema is a series of other XML schema.

Conformance Checking

<http://www.mnre.gov.ws/metadata/gmd/gmd.xsd>

8. XML Implementation

The series of XML schema developed for the ISO Technical Specification 19139 provide the means of validating conformance with this metadata profile³.

The XML schemas associated with this metadata profile were based on a set of XML schema provided by the working group of ISO TC211 on 2 September 2005. These XML schema were about to be published for an ISO TC211 ballot on the Proposed Technical Specification 19139. Any changes to 19139 could potentially impact on this profile but the development of 19139 is very advanced and has involved considerable international consultation over more than two years. Similarly, this Samoa Metadata Profile is a very simple profile and any changes are likely to occur in the more complicated metadata elements that are not included in this profile.

To utilize these schema, a metadata instance document must refer to the top level schema, gmd.xsd. This top level schema is accessible on-line at the following URL:

<http://www.mnre.gov.ws/metadata/gmd/gmd.xsd>

If on-line use is not feasible, a zip file containing all the xml files for both series of schemas (including example instance documents) should be downloaded from :

<http://www.mnre.gov.ws/metadata>

The path and directory definitions and names are critical as the relationships between the different series of files must be correctly emulated for successful operation. Although, the zip file contains these definitions, the following list also describes the directory structure expected by the various series of XML schema files:

- /gco
- /gmd (which includes the “referenced” schema gmd.xsd)
- /gml/base
- /gml/xlink
- /gmx
- /gsr
- /gss
- /gts

XML Instance Documents

In addition to these schema, an example instance document can be viewed at the following url:

³ The four step conformance testing process is described in Section 6. XML validation is one of these conformance testing steps.

<http://www.mnre.gov.ws/metadata/examples/samoaDCDB.xml>

These examples describe the Digital Cadastral Database dataset of surveyed property boundaries and associated details. It is provided on an informative basis to illustrate the level of metadata detail required by this profile.

XML Validation

Minimal conformance with this metadata profile requires that a geographic metadata instance (XML) document can be validated without error against the XML schema provided.

There are many “off-the-shelf” software solutions that can validate XML instance documents against schema (as well as validating XML schema). Software products available that have this functionality include:

1. XMLspy (Altova) <http://www.altova.com>
2. Eclipse (IBM)⁴ <http://update.xmlmodeling.com/updates/index.html>
3. Microsoft Visual Studio - .NET Version

However, because these validation tools sometimes give differing results for the same XML instance document, it is recommended that the instance document should be validated on two different tools.

⁴ The Eclipse platform includes a version of the Xerces (Sun) XML validator -<http://jakarta.apache.org>

9. Codelists

B.5⁵ CodeLists and enumerations

The following codelist descriptions are an extract from ISO 19115.

Two Samoa specific codelists have been included in this Metadata Profile in the same table format so as to standardize references to Samoan spatial referencing systems including height datum.

These tables define the valid enumerated values, a 3 digit number that can be used as a code for the enumerated value and a definition for each enumerated value.

B.5.1 Introduction

The stereotype classes <<CodeList>> and <<Enumeration>> can be found below. These two stereotype classes do not contain "obligation / condition", "maximum occurrence", "data type" and "domain" attributes. These two stereotype classes also do not contain any "other" values as <<Enumeration>>s are closed (not extendable) and <<CodeList>>s are extendable.

B.5.2 CI_DateTypeCode <<CodeList>>

	Name	Domain code	Definition
1.	CI_DateTypeCode	DateTypCd	identification of when a given event occurred
2.	creation	001	date identifies when the resource was brought into existence
3.	publication	002	date identifies when the resource was issued
4.	revision	003	date identifies when the resource was examined or re examined and improved or amended

B.5.3 CI_OnLineFunctionCode <<CodeList>>

	Name	Domain code	Definition
1.	CI_OnLineFunctionCode	OnFunctCd	function performed by the resource
2.	download	001	online instructions for transferring data from one storage device or system to another
3.	information	002	online information about the resource
4.	offlineAccess	003	online instructions for requesting the resource from the provider
5.	order	004	online order process for obtaining the resource
6.	search	005	online search interface for seeking out information about the resource

B.5.4 CI_PresentationFormCode <<CodeList>>

	Name	Domain code	Definition
1.	CI_PresentationFormCode	PresFormCd	mode in which the data is represented

⁵ "B.5" refers to the Section Numbering used in ISO 19115, the authoritative listing of these codelists.

2.	documentDigital	001	digital representation of a primarily textual item (can contain illustrations also)
3.	documentHardcopy	002	representation of a primarily textual item (can contain illustrations also) on paper, photographic material, or other media
4.	imageDigital	003	likeness of natural or man-made features, objects, and activities acquired through the sensing of visual or any other segment of the electromagnetic spectrum by sensors, such as thermal infrared, and high resolution radar and stored in digital format
5.	imageHardcopy	004	likeness of natural or man-made features, objects, and activities acquired through the sensing of visual or any other segment of the electromagnetic spectrum by sensors, such as thermal infrared, and high resolution radar and reproduced on paper, photographic material, or other media for use directly by the human user
6.	mapDigital	005	map represented in raster or vector form
7.	mapHardcopy	006	map printed on paper, photographic material, or other media for use directly by the human user
8.	modelDigital	007	multi-dimensional digital representation of a feature, process, etc.
9.	modelHardcopy	008	3-dimensional, physical model
10.	profileDigital	009	vertical cross-section in digital form
11.	profileHardcopy	010	vertical cross-section printed on paper, etc.
12.	tableDigital	011	digital representation of facts or figures systematically displayed, especially in columns
13.	tableHardcopy	012	representation of facts or figures systematically displayed, especially in columns, printed on paper, photographic material, or other media
14.	videoDigital	013	digital video recording
15.	videoHardcopy	014	video recording on film

B.5.5 CI_RoleCode <<CodeList>>

	Name	Domain code	Definition
1.	CI_RoleCode RoleCd		function performed by the responsible party
2.	resourceProvider	001	party that supplies the resource
3.	custodian	002	party that accepts accountability and responsibility for the data and ensures appropriate care and maintenance of the resource
4.	owner	003	party that owns the resource
5.	user	004	party who uses the resource
6.	distributor	005	party who distributes the resource
7.	originator	006	party who created the resource
8.	pointOfContact	007	party who can be contacted for acquiring knowledge about or acquisition of the resource
9.	principalInvestigator	008	key party responsible for gathering information and conducting research
10.	processor	009	party who has processed the data in a manner such that the resource has been modified
11.	publisher	010	party who published the resource
12.	author	011	party who authored the resource
13.	data steward	012	party who is responsible for the resource (NZ Extension to ISO 19115, B.5.5)

B.5.6 DQ_EvaluationMethodTypeCode<<CodeList>>

	Name	Domain code	Definition
1.	DQ_EvaluationMethodTypeCode	EvalMethTypeCd	type of method for evaluating an identified data quality measure
2.	directInternal	001	method of evaluating the quality of a dataset based on inspection of items within the dataset, where all data required is internal to the dataset being evaluated
3.	directExternal	002	method of evaluating the quality of a dataset based on inspection of items within the dataset, where reference data external to the dataset being evaluated is required
4.	indirect	003	method of evaluating the quality of a dataset based on external knowledge

B.5.7 DS_AssociationTypeCode <<Codelist>>

	Name	Domain code	Definition
1.	DS_AssociationTypeCode	AscTypeCd	justification for the correlation of two datasets
2.	crossReference	001	reference from one dataset to another
3.	largerWorkCitation	002	reference to a master dataset of which this one is a part
4.	partOfSeamlessDatabase	003	part of same structured set of data held in a computer
5.	source	004	mapping and charting information from which the dataset content originates
6.	stereoMate	005	part of a set of imagery that when used together, provides three-dimensional images

B.5.8 DS_InitiativeTypeCode <<CodeList>>

	Name	Domain code	Definition
1.	DS_InitiativeTypeCode	InitTypCd	type of aggregation activity in which datasets are related
2.	campaign	001	series of organized planned actions
3.	collection	002	accumulation of datasets assembled for a specific purpose
4.	exercise	003	specific performance of a function or group of functions
5.	experiment	004	process designed to find if something is effective or valid
6.	investigation	005	search or systematic inquiry
7.	mission	006	specific operation of a data collection system
8.	sensor	007	device or piece of equipment which detects or records
9.	operation	008	action that is part of a series of actions
10.	platform	009	vehicle or other support base that holds a sensor
11.	process	010	method of doing something involving a number of steps
12.	program	011	specific planned activity
13.	project	012	organized undertaking, research, or development
14.	study	013	examination or investigation
15.	task	014	piece of work
16.	trial	015	process of testing to discover or demonstrate something

B.5.9 MD_CellGeometryCode <<CodeList>>

	Name	Domain code	Definition
1.	MD_CellGeometryCode	CellGeoCd	code indicating whether grid data is point or area
2.	point	001	each cell represents a point
3.	area	002	each cell represents an area

B.5.10 MD_CharacterSetCode <<CodeList>>

	Name	Domain code	Definition
1.	MD_CharacterSetCode	CharSetCd	name of the character coding standard used for the resource
2.	ucs2	001	16-bit fixed size Universal Character Set, based on ISO/IEC 10646
3.	ucs4	002	32-bit fixed size Universal Character Set, based on ISO/IEC 10646
4.	utf7	003	7-bit variable size UCS Transfer Format, based on ISO/IEC 10646
5.	utf8	004	8-bit variable size UCS Transfer Format, based on ISO/IEC 10646
6.	utf16	005	16-bit variable size UCS Transfer Format, based on ISO/IEC 10646
7.	8859part1	006	latin-1, west European code set
8.	8859part2	007	latin-2, central European code set
9.	8859part3	008	latin-3, south European code set
10.	8859part4	009	latin-4, north European code set
11.	8859part5	010	cyrillic code set
12.	8859part6	011	arabic code set
13.	8859part7	012	greek code set
14.	8859part8	013	hebrew code set
15.	8859part9	014	latin-5 code set
16.	8859part10	015	latin-6 code set
17.	8859part11	016	latin/thai code set
19.	8859part13	018	latin 7 code set
20.	8859part14	019	latin-8 code set
21.	8859part15	020	latin-9 code set
22.	8859part16	021	latin-10 code set
23.	jis	022	japanese code set used for electronic transmission
24.	shiftJIS	023	japanese code set used on MS-DOS based machines
25.	eucJP	024	japanese code set used on UNIX based machines
26.	usAscii	025	united states ASCII code set (ISO 646 US)
27.	ebcdic	026	ibm mainframe code set
28.	eucKR	026	korean code set
29.	big5	027	taiwanese code set
30.	GB2312	028	simplified Chinese code set

B.5.11 MD_ClassificationCode <<CodeList>>

	Name	Domain code	Definition
1.	MD_ClassificationCode	ClassscationCd	name of the handling restrictions on the dataset
2.	unclassified	001	available for general disclosure
3.	restricted	002	not for general disclosure
4.	confidential	003	available for someone who can be entrusted with information
5.	secret	004	kept or meant to be kept private, unknown, or hidden from all but a select group of people
6.	topSecret	005	of the highest secrecy

B.5.12 MD_CoverageContentTypeCode <<CodeList>>

	Name	Domain code	Definition
1.	MD_CoverageContentTypeCode	ContentTypeCd	specific type of information represented in the cell
2.	image	001	meaningful numerical representation of a physical parameter that is not the actual value of the physical parameter
3.	thematicClassification	002	code value with no quantitative meaning, used to represent a physical quantity
4.	physicalMeasurement	003	value in physical units of the quantity being measured

B.5.13 MD_DatatypeCode <<CodeList>>

	Name	Domain code	Definition
1.	MD_DatatypeCode	DatatypeCd	datatype of element or entity
2.	class	001	descriptor of a set of objects that share the same attributes, operations, methods, relationships, and behavior
3.	codelist	002	flexible enumeration useful for expressing a long list of values, can be extended
4.	enumeration	003	data type whose instances form a list of named literal values, not extendable
5.	codelistElement	004	permissible value for a codelist or enumeration
6.	abstractClass	005	class that cannot be directly instantiated
7.	aggregateClass	006	class that is composed of classes it is connected to by an aggregate relationship
8.	specifiedClass	007	subclass that may be substituted for its superclass
9.	datatypeClass	008	class with few or no operations whose primary purpose is to hold the abstract state of another class for transmittal, storage, encoding or persistent storage
10.	interfaceClass	009	named set of operations that characterize the behavior of an element
11.	unionClass	010	class describing a selection of one of the specified types
12.	metaClass	011	class whose instances are classes
13.	typeClass	012	class used for specification of a domain of instances (objects), together with the operations applicable to the objects. A type may have attributes and associations
14.	characterString	013	free text field
15.	integer	014	numerical field
16.	association	015	semantic relationship between two classes that involves

	Name	Domain code	Definition
1.	MD_DatatypeCode	DatatypeCd	datatype of element or entity
			connections among their instances

B.5.14 MD_DimensionNameTypeCode <<CodeList>>

	Name	Domain code	Definition
1.	MD_DimensionNameTypeCode	DimNameTypCd	name of the dimension
2.	row	001	ordinate (y) axis
3.	column	002	abscissa (x) axis
4.	vertical	003	vertical (z) axis
5.	track	004	along the direction of motion of the scan point
6.	crossTrack	005	perpendicular to the direction of motion of the scan point
7.	line	006	scan line of a sensor
8.	sample	007	element along a scan line
9.	time	008	duration

B.5.15 MD_GeometricObjectTypeCode <<CodeList>>

	Name	Domain code	Definition
1.	MD_GeometricObjectTypeCode	GeoObjTypCd	name of point and vector spatial objects used to locate zero-, one-, and two dimensional spatial locations in the dataset
2.	complex	001	set of geometric primitives such that their boundaries can be represented as a union of other primitives
3.	composite	002	connected set of curves, solids or surfaces
4.	curve	003	bounded, 1-dimensional geometric primitive, representing the continuous image of a line
5.	point	004	zero-dimensional geometric primitive, representing a position but not having an extent
6.	solid	005	bounded, connected 3-dimensional geometric primitive, representing the continuous image of a region of space
7.	surface	006	bounded, connected 2-dimensional geometric, representing the continuous image of a region of a plane

B.5.16 MD_ImagingConditionCode <<CodeList>>

	Name	Domain code	Definition
1.	MD_ImagingConditionCode	ImgCondCd	code which indicates conditions which may affect the image
2.	blurredImage	001	portion of the image is blurred
3.	cloud	002	portion of the image is partially obscured by cloud cover
4.	degradingObliquity	003	acute angle between the plane of the ecliptic (the plane of the Earth's orbit) and the plane of the celestial equator
5.	fog	004	portion of the image is partially obscured by fog
6.	heavySmokeOrDust	005	portion of the image is partially obscured by heavy smoke or dust
7.	night	006	image was taken at night

8.	rain	007	image was taken during rainfall
9.	semiDarkness	008	image was taken during semi-dark conditions—twilight conditions
10.	shadow	009	portion of the image is obscured by shadow
11.	snow	010	portion of the image is obscured by snow
12.	terrainMasking	011	the absence of collection data of a given point or area caused by the relative location of topographic features which obstruct the collection path between the collector(s) and the subject(s) of interest

B.5.17 MD_KeywordTypeCode <<CodeList>>

	Name	Domain code	Definition
1.	MD_KeywordTypeCode	KeyTypCd	methods used to group similar keywords
2.	discipline	001	keyword identifies a branch of instruction or specialized learning
3.	place	002	keyword identifies a location
4.	stratum	003	keyword identifies the layer(s) of any deposited substance
5.	temporal	004	keyword identifies a time period related to the dataset
6.	theme	005	keyword identifies a particular subject or topic

B.5.18 MD_MaintenanceFrequencyCode <<CodeList>>

	Name	Domain code	Definition
1.	MD_MaintenanceFrequencyCode	MaintFreqCd	frequency with which modifications and deletions are made to the data after it is first produced
2.	continual	001	data is repeatedly and frequently updated
3.	daily	002	data is updated each day
4.	weekly	003	data is updated on a weekly basis
5.	fortnightly	004	data is updated every two weeks
6.	monthly	005	data is updated each month
7.	quarterly	006	data is updated every three months
8.	biannually	007	data is updated twice each year
9.	annually	008	data is updated every year
10.	asNeeded	009	data is updated as deemed necessary
11.	irregular	008	data is updated in intervals that are uneven in duration
12.	notPlanned	009	there are no plans to update the data
13.	unknown	998	frequency of maintenance for the data is not known

B.5.19 MD_MediumFormatCode <<CodeList>>

	Name	Domain code	Definition
1.	MD_MediumFormatCode	MedFormCd	method used to write to the medium
2.	cpio	001	CoPy In / Out (UNIX file format and command)
3.	tar	002	Tap ARchive
4.	highSierra	003	high sierra file system
5.	iso9660	004	information processing – volume and file structure of CD-ROM
6.	iso9660RockRidge	005	rock ridge interchange protocol (UNIX)
7.	iso9660AppleHFS	006	hierarchical file system (Macintosh)

B.5.20 MD_MediumNameCode <<CodeList>>

	Name	Domain code	Definition
1.	MD_MediumNameCode	MedNameCd	name of the medium
2.	cdRom	001	read-only optical disk
3.	dvd	002	digital versatile disk
4.	dvdRom	003	digital versatile disk, read only
5.	3halfInchFloppy	004	3,5 inch magnetic disk
6.	5quarterInchFloppy	005	5,25 inch magnetic disk
7.	7trackTape	006	7 track magnetic tape
8.	9trackTape	007	9 track magnetic tape
9.	3480Cartridge	008	3480 cartridge tape drive
10.	3490Cartridge	009	3490 cartridge tape drive
11.	3580Cartridge	010	3580 cartridge tape drive
12.	4mmCartridgeTape	011	4 millimetre magnetic tape
13.	8mmCartridgeTape	012	8 millimetre magnetic tape
14.	1quarterInchCartridgeTape	013	0,25 inch magnetic tape
15.	digitalLinearTape	014	half inch cartridge streaming tape drive
16.	onLine	015	direct computer linkage
17.	satellite	016	linkage through a satellite communication system
18.	telephoneLink	017	communication through a telephone network
19.	hardcopy	018	pamphlet or leaflet giving descriptive information

B.5.21 MD_ObligationCode <<enumeration>>

	Name	Domain code	Definition
1.	MD_ObligationCode	ObCd	obligation of the element or entity
2.	mandatory	001	element is always required
3.	optional	002	element is not required
4.	conditional	003	element is required when specific a specific condition is met

B.5.22 MD_PixelOrientationCode <<Enumeration>>

	Name	Domain code	Definition
1.	MD_PixelOrientationCode	PixOrientCd	point in a pixel corresponding to the Earth location of the pixel
2.	center	001	point halfway between the lower left and the upper right of the pixel
3.	lowerLeft	002	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
4.	lowerRight	003	next corner counterclockwise from the lower left
5.	upperRight	004	next corner counterclockwise from the lower right
6.	upperLeft	005	next corner counterclockwise from the upper right

B.5.23 MD_ProgressCode <<CodeList>>

	Name	Domain code	Definition
1.	MD_ProgressCode	ProgCd	status of the dataset or progress of a review
2.	completed	001	production of the data has been completed
3.	historicalArchive	002	data has been stored in an offline storage facility
4.	obsolete	003	data is no longer relevant
5.	onGoing	004	data is continually being updated
6.	planned	005	fixed date has been established upon or by which the data will be created or updated
7.	required	006	data needs to be generated or updated
8.	underDevelopment	007	data is currently in the process of being created

B.5.24 MD_RestrictionCode <<CodeList>>

	Name	Domain code	Definition
1.	MD_RestrictionCode	RestrictCd	limitation(s) placed upon the access or use of the data
2.	copyright	001	exclusive right to the publication, production, or sale of the rights to a literary, dramatic, musical, or artistic work, or to the use of a commercial print or label, granted by law for a specified period of time to an author, composer, artist, distributor
3.	patent	002	government has granted exclusive right to make, sell, use or license an invention or discovery
4.	patentPending	003	produced or sold information awaiting a patent
5.	trademark	004	a name, symbol, or other device identifying a product, officially registered and legally restricted to the use of the owner or manufacturer
6.	license	005	formal permission to do something
7.	intellectualPropertyRights	006	rights to financial benefit from and control of distribution of non-tangible property that is a result of creativity
8.	restricted	007	withheld from general circulation or disclosure
9.	otherRestrictions	008	limitation not listed

B.5.25 MD_ScopeCode <<CodeList>>

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

B.5.26 MD_SpatialRepresentationTypeCode <<CodeList>>

	Name	Domain code	Definition
1.	MD_SpatialRepresentationTypeCode	SpatRepTypCd	method used to represent geographic information in the dataset
2.	vector	001	vector data is used to represent geographic data
3.	grid	002	grid data is used to represent geographic data
4.	textTable	003	textual or tabular data is used to represent geographic data
5.	tin	004	triangulated irregular network
6.	stereoModel	005	three-dimensional view formed by the intersecting homologous rays of an overlapping pair of images
7.	video	006	scene from a video recording

B.5.27 MD_TopicCategoryCode <<CodeList>>

	Name	Domain code	Definition
1.	MD_TopicCategoryCode	TopicCatCd	high-level geographic data thematic classification to assist in the grouping and search of available geographic data sets. Can be used to group keywords as well. Listed examples are not exhaustive. NOTE It is understood there are overlaps between general categories and the user is encouraged to select the one most appropriate.
2.	farming	001	rearing of animals and/or cultivation of plants Examples: agriculture, irrigation, aquaculture, plantations, herding, pests and diseases affecting crops and livestock
3.	biota	002	flora and/or fauna in natural environment Examples: wildlife, vegetation, biological sciences, ecology, wilderness, sealife, wetlands, habitat
4.	boundaries	003	legal land descriptions Examples: political and administrative boundaries
5.	climatologyMeteorologyAtmosphere	004	processes and phenomena of the atmosphere Examples: cloud cover, weather, climate, atmospheric conditions, climate change, precipitation
6.	economy	005	economic activities, conditions and employment Examples: production, labour, revenue, commerce, industry, tourism and ecotourism, forestry, fisheries, commercial or subsistence hunting, exploration and exploitation of resources such as minerals, oil and gas
7.	elevation	006	height above or below sea level Examples: altitude, bathymetry, digital elevation models, slope, derived products
8.	environment	007	environmental resources, protection and conservation Examples: environmental pollution, waste storage and treatment, environmental impact assessment, monitoring environmental risk, nature reserves, landscape
9.	geoscientificInformation	008	information pertaining to earth sciences Examples: geophysical features and processes, geology, minerals, sciences dealing with the composition, structure and origin of the earth's rocks, risks of earthquakes, volcanic activity, landslides, gravity information, soils, permafrost, hydrogeology, erosion
10.	health	009	health, health services, human ecology, and safety Examples: disease and illness, factors affecting health, hygiene, substance abuse, mental and physical health, health services
11.	imageryBaseMapsEarthCover	010	base maps Examples: land cover, topographic maps, imagery, unclassified images, annotations
12.	intelligenceMilitary	11	military bases, structures, activities Examples: barracks, training grounds, military transportation, information collection
13.	inlandWaters	12	inland water features, drainage systems and their characteristics Examples: rivers and glaciers, salt lakes, water utilization plans, dams, currents, floods, water quality, hydrographic charts
14.	location	13	positional information and services Examples: addresses, geodetic networks, control points, postal zones and services, place names
15.	oceans	14	features and characteristics of salt water bodies (excluding inland waters) Examples: tides, tidal waves, coastal information, reefs

	Name	Domain code	Definition
1.	MD_TopicCategoryCode	TopicCatCd	high-level geographic data thematic classification to assist in the grouping and search of available geographic data sets. Can be used to group keywords as well. Listed examples are not exhaustive. NOTE It is understood there are overlaps between general categories and the user is encouraged to select the one most appropriate.
16.	planningCadastre	015	information used for appropriate actions for future use of the land Examples: land use maps, zoning maps, cadastral surveys, land ownership
17.	society	16	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
18.	structure	17	man-made construction Examples: buildings, museums, churches, factories, housing, monuments, shops, towers
19.	transportation	18	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
20.	utilitiesCommunication	19	energy, water and waste systems and communications infrastructure and services Examples: hydroelectricity, geothermal, solar and nuclear sources of energy, water purification and distribution, sewage collection and disposal, electricity and gas distribution, data communication, telecommunication, radio, communication networks

B.5.28 MD_TopologyLevelCode <<CodeList>>

	Name	Domain code	Definition
1.	MD_TopologyLevelCode	TopoLevCd	degree of complexity of the spatial relationships
2.	geometryOnly	001	geometry objects without any additional structure which describes topology
3.	topology1D	002	1-dimensional topological complex
4.	planarGraph	003	1-dimensional topological complex which is planar
5.	fullPlanarGraph	004	2-dimensional topological complex which is planar
6.	surfaceGraph	005	1-dimensional topological complex which is isomorphic to a subset of a surface
7.	fullSurfaceGraph	006	2-dimensional topological complex which is isomorphic to a subset of a surface
8.	topology3D	007	3-dimensional topological complex
9.	fullTopology3D	008	complete coverage of a 3D coordinate space
10.	abstract	009	topological complex without any specified geometric realization

ws_RefSys<<CodeList>>

	Name	Domain code	Definition
1.	WS_RefSys	RefSysdCd	Reference Systems used in Samoa.
2.	SMG	001	Samoa Map Grid

3.	SRS2005	002	Samoa Reference System 2005 ,unprojected geographical coordinates
4.	SIG	003	Samoa Integrated Grid (UTM coordinates based on WGS72 datum)
5.	WGS84	004	World Geodetic System 1984, unprojected geographical coordinates
6.	WGS72	005	World Geodetic System 1972, unprojected geographical coordinates
7.	Lemuta	006	Lemuta Plane Coordinate System
8.	MSL	007	Mean Sea Level (Orthometric Heights)
9.	MSL_GPS	008	Mean Seal Level (Spheroidal Heights ??)

Other codelists that are not possible to present in table form because of their length are available in the public domain (although, in the future, all codelists may be published in the form of XML instance documents):

ANZLIC Search Words

<http://www.mnre.gov.ws/metadata/wsCodelist/anzlicSearchWords.xml>

10. Glossary

Adapted From <http://www.e-government.govt.nz/docs/nzglsv2/chapter24.html> accessed 25 May 03

AGLS	The Australian Government Locator Service
ANZLIC	Australia New Zealand Land Information Council
ANZLIC SDI SC	ANZLIC Spatial Data Infrastructure Steering Committee
ASDD	Australian Spatial Data Directory
ASDI	Australia Spatial Data Infrastructure
CANRI	(New South Wales) Community Access to Natural Resource Infrastructure
DCDB	Digital Cadastral Database
DGIWG	(US) Digital Geographic Information Working Group
e-GIF	(New Zealand) e-Government Interoperability Framework
EGU	(New Zealand) e-Government Unit
EMF	(New Zealand) Environmental Metadata Framework
FGDC	Federal Geographic Data Committee
FONZ	The "Functions of New Zealand" thesaurus.
GIS	Geographic Information System
HTML	HyperText Markup Language
ISO	International Standards Organisation
MFE	Ministry for the Environment
NSDI / SDI	(National) Spatial Data Infrastructure
NZGLS	New Zealand Government Locator Service standard
NZGO	New Zealand Government Online
OCGI	Officials Committee for Geospatial Information
SONZ	The "Subjects of New Zealand" thesaurus
TC211	Technical Committee 211 (Of ISO)
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
WALIS	Western Australia Land Information System
XML	eXtensible Mark-up Language
Z39.50	An ISO standard (ISO23950) for common access to repositories for metadata

11. Change History

This section will record substantive changes to the profile. This will allow future users to see the rules for encoding that existed at the time the metadata was created. Each release will continue to be available from the Samoa Map Server website <http://www.mnre.gov.ws/metadata> (yet to be confirmed).