Best Practices Guide to Creating Metadata Files for the OCUL Geospatial and Health Data Informatics Cyberinfrastructure Project (Geospatial Portal)

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By
Metadata Standards Working Group

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Preface

The guidelines in this document have been prepared for the OCUL Geospatial and Health Informatics Cyberinfrastructure Project (Geospatial Portal) by the project's Metadata Standards Working Group.

Members of this group since its inception in June 2009 to August 2010 include Trudy Bodak, York University (Chair); Diane Boyd, University of Guelph; Erin Forward, University of Ottawa; Peter Genzinger, Wilfrid Laurier University; Suzette Giles, Ryerson University; Leanne Hindmarch, Scholars Portal; Jenny Marvin, University of Guelph; Richard Pinnell, University of Waterloo; and Wei Zhoa, Scholars Portal.

The document's primary concern is with geospatial data (i.e. that which references data to a location on the surface of the Earth), and which has a limited geographic extent (i.e. is restricted to a defined territory).

This document covers the basics of metadata and provides a set of detailed guidelines for creating metadata in compliance with the NAP: ISO 19115:2003 version 2009.

We would like to acknowledge the work on metadata elements by:
Grace Welch (Librarian, Retired, University of Ottawa)
Members of the Association of Canadian Map Libraries and Archives, Bibliographic Control Committee
Nancy Lemay (GIS and Geography Librarian, University of Ottawa)
Shari MacDonald (Metadata Administrator, Ontario Ministry of Natural Resources)
Comité d'utilisateurs de données géospatiales de l'Université Laval

Introduction

This document is a set of guidelines for the creation, maintenance and quality management of metadata for geospatial datasets. It provides a general introduction to the principles and concepts of metadata for data resources. Metadata creation requires the use of a standard (NAP: ISO 19115:2003 version 2009), an editor (e.g. GeoNetwork), and procedures for inputting, editing and updating.

From a user's perspective, metadata is required to provide information about an institution's data holdings and enable users to find, evaluate and use that data, thereby increasing its value.

Metadata from data providers may be at a general level, providing basic information about the datasets. The metadata files may be enhanced by addition of keywords and place names. In addition, distribution and copyright information may be adjusted to reflect institutional use restrictions.

Purpose of metadata files

Metadata are the fuel for data discovery. Metadata provide information about the data resource, to better understand it and make good use of it.

Data portals and other data discovery services enable users to find, evaluate and use data, thereby increasing its value.

Geospatial data are data containing a locational element relative to the Earth. Geospatial data contains spatial references which may take the form of coordinates, for example in latitude and longitude, or references to geographic names, for example street data.

There are a range of uses for metadata: for discovery, for evaluation and for use:

- **Discovery**: the user aims to find out what available resources are potentially able to satisfy a specified set of requirements. This is typically what a search engine can process, using basic search criteria to identify the available resources corresponding more or less to the user requirements and providing to the users basic metadata (name, content description, geographic area of applicability, etc.) about the candidate resources.
- **Evaluation**: the user needs to go deeper in the metadata (e.g. looking at the quality of the information) in order to ascertain whether a candidate resource fits for the intended purpose.
- **Use**: the user has selected a candidate resource, but needs to access it and to configure a system or software to process it.

Metadata standards

There are many metadata standards in existence. These have been produced at different times by different bodies for different purposes. The main ones that are relevant to geospatial datasets are:

1. **Dublin Core:** This was originally developed by librarians for cataloguing information resources. It uses free-text fields, which makes automatic searching difficult. Consequently, it not ideally suited for discovery purposes using electronic data services. It is severely limited in its ability to handle the geospatial aspects of data, and also in how it handles the geographic extent of non-geographic data, e.g. data that applies to one country or region rather than another.
2. **FGDC:** This was developed by the US Federal Geographic Data Committee for discovery services for geospatial data. It has been largely superseded by ISO 19115.
3. **ISO 19115:** This describes all aspects of geospatial metadata and provides a comprehensive set of metadata elements. It is designed for electronic metadata services, and the elements are designed to be searchable wherever possible. It is widely used as the basis for geospatial metadata services internationally and is now being adopted by most organizations. It is a very complex standard and for this reasons the NAP (North American Profile) has been created, which identifies the key data elements that should be a part of all data being produced in North America.

The Geospatial Portal will be following the NAP metadata profile that is described in detail in this guide: **Canadian General Standards Board. North American Profile of ISO 19115:2003 – Geographic Information – Metadata (NAP – Metadata). CAN/CGSB-171.100-2009. Gatineau, Quebec: Canadian General Standards Board, 2009.**

Best Practices Guide for metadata creation
The Best Practices Guide comprises a set of metadata elements and guidance on the information to be put in each field. These elements are taken from those in Clause 5 of NAP-Metadata which describes the metadata content and its structure:

Metadata elements
These elements were selected by the Geospatial Portal Metadata Standards Working Group (MSWG): Trudy Bodak (Chair), Diane Boyd, Erin Forward, Peter Genzinger, Suzette Giles, Leanne Hindmarch, Jenny Marvin, Richard Pinnell and Wei Zhoa.

Background on the Best Practices Guide

This Best Practice Guide provides a set of detailed guidelines for creating metadata to the NAP: ISO 19115:2003 version 2009.

The information below is based on section 4 of the NAP: **Using this profile**

Clause numbers are unique and persistent reference numbers assigned to each element or class described in the tables

Name/RoleName
Attribute names begin with a lowercase letter (e.g. fileIdentifier).

- Typically, an attribute is of basic type as documented in NAP Annex B, e.g. the metadata attribute fileIdentifier is of the type free text (or CharacterString).
- But in some cases, it refers to a metadata class, e.g. the metadata *contact* attribute refers to the CI_ResponsibleParty class.

Component names begin with a capital letter (e.g. Identification Information)

- They **always** refer to a metadata class, e.g. the metadata Identification Information component refers to the metadata classes identified as MD_DataIdentification and SV_ServiceIdentification.
- Consequently, an attribute of a given name (e.g. citation) may refer to a class of a same name (e.g. Citation) but capitalized differently.
- In the content clause, a component is usually introduced in a third level clause.

Multiplicity (Occurrence) indicates both whether a clause is mandatory or not, and the number of occurrences allowed.
M - Mandatory: obligation to provide the information. Maximum is 1 occurrence.
O - Optional: freedom [for the data provider] to provide or not provide the information. Maximum is 1 occurrence.
C - Conditional: obligation to provide the information subject to a predefined rule. Maximum is 1 occurrence.
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Type:

- When the clause identifies an item of metadata, this attribute designates one of the data types identified in normative Annex B; some common types are CharacterString, Date, Boolean, Integer, etc.
- When the clause identifies an item of metadata for which a coded domain is defined, the name of the NAP– Metadata code list is presented.
- When the clause identifies a metadata component, the name of the abstract class is presented, as well as the clause in which that class is implemented elements which make up these classes

[Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher. Clause 5.2.6, "The party responsible for the metadata content" is mandatory and repeatable and is expressed using 5.16 Responsible Party which thus becomes mandatory and repeatable. Clause 5.16 has no multiplicity of its own; it always picks up the multiplicity of the clause one level higher that points to 5.16

Topic Categories (5.3.1.11)

The MSWG recommends the use of International Organization for Standards Metadata Standard (ISO 19115) Topic Categories to organize geospatial datasets into broad data categories or topics. See CodeList napMD_TopicCategoryCode.

The Topic element provides a broad thematic classification for geographic data. It groups datasets under very general terms for the purpose of topical keyword searches.

There are 19 topic names available from which to choose. Select the topic or topics that best classify the dataset. Multiple selections for each dataset are permitted; e.g., business districts = *boundaries* and *economy;* toxic release inventory = *environment* and *health;* soil fertility = *geoscientificInformation* and *farming.*

For the ISO 19115 Category Descriptions, See Appendix A

Keywords (5.3.6)

Keywords are commonly used words or phrases that capture the essence of a dataset's content. Keywords should be robust in the sense that they can stand the test of time as useful descriptors and they must provide for efficient management, discovery and retrieval of geospatial datasets. Keywords may be controlled by means of standard lists such as thesauri, or these keywords may be uncontrolled. NAP uses a codelist napMD_KeywordTypeCode to categorize keywords by type: theme, place, stratum, temporal, and discipline. MSWG has developed a set of recommendations with respect to the choice of authoritative sources for providing appropriate and relevant theme keywords and place keywords.

5.3.6.1 Keywords – Theme

Theme keywords describe the thematic content or subject of a geospatial dataset. Examples of theme keywords are: photograph, bathymetry, medical centres, population, and surficial geology. Theme keywords that are applied to a particular dataset may include terms that are hierarchical

(e.g., broader and narrower), equivalent or alternative, and perhaps also associative in order to provide for the best possible results in terms of retrieval by an end-user. Theme keywords are mandatory and they are repeatable. At minimum there should be at least two or three keywords in a record. At the other extreme, because a metadata record may include keywords supplied by the data provider as well as controlled keywords added by OCUL for enrichment, MSWG does not prescribe an upper limit beyond what is reasonable.

MSWG does recommend, as suggested in the preceding paragraph, that one or more of the theme keywords in a record should be controlled; in other words, some of the keywords should be controlled vocabulary from an authoritative source such as a broadly accepted list of terms or a thesaurus. A thesaurus has the advantage over a simple list in that it provides structural relationships between authoritative terms. OCUL metadata editors should accept thematic descriptors that are in the metadata record created by the data provider; not having to delete or otherwise modify these descriptors reduces the amount of post-delivery effort. Controlled keywords from authoritative sources are added to records where the supplied descriptors are judged inadequate to some extent. If the data provider does not include at least one descriptor that matches one of the more appropriate keywords in the authorized thesaurus, then the OCUL metadata editors must add it.

The Keywords Task Group evaluated a number of well known and a few less well known thesauri as potential sources of thematic keywords for describing geospatial datasets. These thesauri are included in Appendix B. Based on this evaluation, MSWG recommends adopting the following two thesauri as our authoritative sources for thematic keywords.

- Government of Canada Core Subject Thesaurus (LAC), and
- LIO-MNR Thesaurus (Ontario Ministry of Natural Resources)

MSWG recommends that OCUL metadata editors consult both sources for candidate keywords for a particular dataset. If appropriate, keywords from both thesauri may be added to the record; this includes cases where these keywords are variants of each other (e.g., street and streets). It is important that our search software should facilitate keyword searches that take into account variant spellings of theme keywords; examples of these variants include: kilometres/kilometers and harbour/harbor. How this would be achieved, we leave to others to determine. Other search functionality that we believe is important is truncation. With truncation searching, one could search for and find records which share a common root keyword; for example, the search key road* would find road and roads. Similarly, when searching for records based on placename keywords, the search key On* would find On, Ont and Ontario although Ont* might be a wiser search strategy. Truncation searching would also be useful when doing full-text searches.

5.3.6.1 Keywords - Place

Place keywords describe the geographical location of a geospatial dataset. Examples of place keywords are: Canada, northern Ontario, Maritime provinces, Toronto, and Mimico. Place keywords are mandatory and they are repeatable. At minimum there should be at least one place keyword in a record. At the other extreme, because a metadata record may include keywords

supplied by the data provider as well as controlled keywords added by OCUL for enrichment, MSWG does not prescribe an upper limit beyond what is reasonable.

MSWG recommends that one or more of the place keywords in a metadata record should be controlled vocabulary. The controlled names should be ones that apply at a higher geographic level; for example, keywords that provide place information at the continental, country, major region, or provincial/state levels are controlled. For continental, national, or provincial level datasets, such broader place keywords should be entirely sufficient. A CanVec layer that provides seamless coverage for all of Canada would only require place keywords that include Canada and each of the Canadian provinces and territories. For county or municipal level datasets, a combination of controlled higher level place keyword (s) and uncontrolled free-text keywords should be sufficient for retrieval. Keywords for a Waterloo Region dataset might be: Ontario (controlled); and Waterloo (free-text). Keywords for a GTA dataset might be: Ontario (controlled); Greater Toronto Area and GTA (free-text). Better place-based results should be possible using the bounding coordinates in the record; using a map interface, end users need only draw out a polygon representing an area of interest.

OCUL metadata editors should accept placename descriptors that are in the metadata record created by the data provider; not having to delete or otherwise modify these descriptors reduces the amount of post-delivery effort.

The Keywords Task Group evaluated a number of well known and some less well known Canadian and foreign authoritative sources for place names. These resources are included in Appendix C. Based on this evaluation, MSWG recommends adopting the following two resources as our authoritative sources for place keywords.

- GeoConnections Discovery Portal's CEONET list of place names for Canadian datasets
- Global Change Master Directory's Location Keywords for non-Canadian datasets and for global and other higher level geographies (e.g., world datasets, North American datasets)

In our best practices tables below we have listed out the attributes and components (for example 5.2 Metadata Record Information page 17) but this could be replaced by the schematics from the NAP.

Metadata supplied when datasets are obtained from owners, suppliers or custodians etc.

POLICY decisions:
Metadata will be used as supplied as outlined below:

1. Fields designated in this document as Mandatory will have the appropriate information added if it is not supplied
2. Fields designated as Conditional will have the appropriate information added if it is not supplied and is needed to meet the Conditional requirement

3. Fields designated as Optional will not have information added. However if the information has been supplied it will not be deleted.

4. Changes to the metadata:
    a. Obvious errors such as spelling mistakes will be corrected
    b. Personal names, personal work phone numbers and personal work e-mail addresses will be removed or suppressed from display if the editor can do this.
    c. Keywords not in an authorized thesaurus will not be removed.

5. This document does not display tables for all the clauses that are available for use. Where tables have not been included there will be a note such as: "The following clauses have not been reviewed and therefore are not included in this document; but may be used:" or (subsequent tables not included here). If the metadata supplied to the project contains information in these fields it will not be removed

6. There are occasions in NAP where the metadata item class and/or metadata component class is Optional while one or more of the attributes under that class or subclass is Mandatory, e.g. under 5.7 Spatial Representation Information (which is Optional) there is 5.7.1 and 5.7.2 which are also Optional, while some attributes at the lower level of these classes are Mandatory.

    If the data being described is Grid data then we (the MSWG) want 5.7.1 to be used and the Mandatory attributes under 5.7.1 (and possibly 5.7.3 and 5.7.4) supplied. Some of the Mandatory attributes are ones the MSWG considers very important and they should be in the metadata for a dataset (when applicable).

    MSWG has discussed the problem of data providers that do not supply the Mandatory information in these cases. It is possible that we may have to consider flagging these at the metadata class level where they are labelled "Optional" so that vendors or suppliers who see the Best Practices Guide realize these attributes are required when applicable. They could be flagged as "Mandatory in SP when this metadata class is used"

7. Metadata supplied in both official languages. It is recommended that two separate metadata records be created, one in each language.

8. Capitalization of titles. After looking at a number of metadata examples it was noted that titles in English (for example LIO records) seemed to have all major words capitalized while French titles usually only had the first word and proper names capitalized. It is recommended that this difference in practice continue to be followed

ScholarsPortal will be acting as a distributor, maintainer and contact for datasets in the Geoportal. This relationship must be reflected in the content of the metadata in appropriate clauses e.g. 5.11 Distribution Information.

Individual metadata elements

5.2 Metadata Record Information

Metadata clause name	Metadata Record Information
Description	Information which describes the metadata and the components to describe the resource
Multiplicity (Occurrence)	n/a
Data type	*MD_Metadata*
Rules for how to fill in the entry	The following attributes and components are available: 5.2.1 *fileIdentifier*, (M) 5.2.2 *language*, (M) 5.2.3 *characterSet*, (M) 5.2.4 *parentIdentifier*, (C) 5.2.5 *hierarchyLevel*, (M,*) 5.2.6 *contact*, (M,*) 5.2.7 *dateStamp*, (M) 5.2.8 *metadataStandardName*, (M) 5.2.9 *metadataStandardVersion*, (O) (M in SP) 5.2.10 *dataSetURI*, (O) 5.2.11 *locale*, (C,*) 5.2.12 *MD_Identification* (M,*) 5.2.13 *MD_Constraints* (O,*) 5.2.14 *DQ_DataQuality* (O,*) 5.2.15 *MD_MaintenanceInformation* (O,*) 5.2.16 *MD_SpatialRepresentation* (O,*) 5.2.17 *MD_ReferenceSystem* (C,*) 5.2.18 *MD_ContentInformation* (O,*) 5.2.19 *MD_PortrayalCatalogueReference* (O,*) 5.2.20 *MD_Distribution* (O) 5.2.21 *MD_ApplicationSchemaInformation* (O,*)
Additional information	
Other comments	The following clauses have not been reviewed and therefore are not included in this document; but may be used: 5.2.10 *dataSetURI* (O) 5.2.15 *MD_MaintenanceInformation* (O,*) 5.2.18 *MD_ContentInformation* (O,*) 5.2.19 *MD_PortrayalCatalogueReference* (O,*) 5.2.21 *MD_ApplicationSchemaInformation* (O,*)

5.2.1 File Identifier (M)

Metadata clause name	fileIdentifier
Description	Unique phrase or string which uniquely identifies the metadata file
Multiplicity (Occurrence) – NAP	Mandatory
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Examples	4baf22ce-5427-440d-9a6d-9153192b7b4f
Additional information	NAP BP: Each metadata shall have a unique file identifier to distinguish it from other resources within the portal
Other comments	System supplied: The structure of the number has no meaning

5.2.2 Metadata language (M)

Metadata clause name	language
Description	Language of the metadata composed of an ISO 639-2/T three letter language code and an ISO3166-1 three letter country code
Multiplicity (Occurrence)	Mandatory
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Examples	eng; CAN
Additional information	NAP BP: This attribute constitutes the primary language of free text attributes. Language code is given in lower case. Country code is given in uppercase. Language codes: http://www.loc.gov/standards/iso639-2/php/English_list.php Country codes : http://userpage.chemie.fu-berlin.de/diverse/doc/ISO_3166.html When more than one language is given in the metadata then the attribute *locale* (5.2.11) is mandatory. See clause 6.2
Other comments	

5.2.3 Dataset character set (M)

Metadata clause name	characterSet
Description	Character coding standard in the metadata
Multiplicity (Occurrence)	Mandatory
Data type	Code List *napMD_CharacterSetCode*
Rules for how to fill in the entry	
Examples	utf8
Additional information	NAP BP: Restricted to "utf8"
Other comments	

5.2.4 Parent Identifier (C)

Metadata clause name	parentIdentifier
Description	Unique name of the file related to the higher hierarchy to the file
Multiplicity (Occurrence)	Conditional
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Examples	See NAP Annex E and NAP Annex E.5.3
Additional information	NAP BP: Documented when the hierarchy of a higher level exists If there is more than one parent see Aggregation information (5.3.1.19)
Other comments	Only “child” datasets will contain a parentIdentifier Only “dataset series” will have parent/child records Policy decision: For DMTI CanMapRouteLogistics, we will not do parent/child records

5.2.5 Hierarchy Level (M,)*

Metadata clause name	hierarchyLevel
Description	Dataset level to which the metadata applies.
Multiplicity (Occurrence)	Mandatory, Repeatable
Data type	Code List *napMD_ScopeCode*
Rules for how to fill in the entry	Select from CodeList Options include: *attribute* , *attributeType* , *collectionHardware* , *collectionSession* , *dataset* , *series* , *nonGeographicDataset* , *dimensionGroup* , *feature* , *featureType* , *propertyType* , *fieldSession* , *software* , *service* , *model* , *tile*
Examples	dataset
Additional information	NAP BP: If hierarchy is unknown, then default value is "dataset". The parent record of a resource will most commonly be a Series (5.21) sharing many of the characteristics of that record such as theme, source, date, etc. NAP BP: A *topicCategory* (5.3.1.11) code shall be provided when *heirarchyLevel* (5.2.5) is set to "dataset" Either *Geographic Bounding Box* (5.13.3) or *Geographic Description* (5.13.4) is required when *heirarchyLevel* (5.2.5) is set to "dataset"
Other comments	Policy - CanMap RouteLogistics can be considered an aggregate dataset consisting of two or more component datasets

5.2.6 Metadata Contact (M,)*
See 5.16. Responsible Party (M,*)

Metadata element name	contact
Description	The party responsible for the metadata content
Multiplicity (Occurrence)	Mandatory, Repeatable
Data type	*CI_ResponsibleParty*, (see 5.16)
Rules for how to fill in the entry	
Additional information	NAP BP: The organization directly responsible for the metadata maintenance is preferred. Contact information (5.16.4 contactInfo) shall be provided
Other comments	

5.2.6 Metadata Contact (M,*)
5.16 Responsible Party (M,*)
See 5.16.2 Organization name (C) (M in SP)
5.16.4 Contact Information (O)
5.16.5 Role (M)

Metadata element name	Responsible Party
Description	Identification of a responsible party for the resource and the party's role in the resource
Multiplicity (Occurrence)	[Mandatory, Repeatable][1]
Data type	*CI_ResponsibleParty,*
Rules for how to fill in the entry	The following attributes are available: 5.16.1 *individualName* (C) 5.16.2 *organisationName* , (C) (M in SP) 5.16.3 *positionName* , (C) 5.16.4 *contactInfo* , (O) 5.16.5 *role* (M)
Additional information	You can have multiple contacts – would add another organization such as ScholarsPortal as well as (say) DMTI We will keep original and add SP as another contact when a change is made.
Other comments	Information in these clauses is to be suppressed: 5.16.1 Individual Name 5.16.3 Position Name

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.6 Metadata Contact (M,)*
5.16 Responsible Party (M,)*
5.16.2 Organization name (C) (M in SP)

Metadata element name	organizationName
Description	Name of the responsible organization
Multiplicity (Occurrence) - NAP	Conditional
Multiplicity (Occurrence) - SP	Mandatory
Data type	free text (CharacterString)
Rules for how to fill in the entry	Organization directly responsible for metadata maintenance.
Examples	DMTI Spatial Inc.
Additional information	NAP BP: *organizationName* shall be provided if *individualName* (5.16.1) and/or *positionName* (5.16.3) are not provided. Organization name is preferred. Individual names should be avoided.
Other comments	Mandatory for SP because information in these clauses is to be suppressed: 5.16.1 Individual name or 5.16.3 Position name

5.2.6 Metadata Contact (M,*)
5.16 Responsible Party (M,*)
5.16.4 Contact Information (O)
See 5.17 Contact (O)

Metadata element name	contactInfo
Description	Information required enabling contact with the responsible person and/or organization
Multiplicity (Occurrence)	Optional
Data type	*CI_Contact* (see 5.17)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.6 Metadata Contact (M,*)
5.16 Responsible Party (M,*)
5.16.4 Contact Information (O)
5.17 Contact (O)
See 5.17.2 Address (O)
5.17.3 Online Resource (O)

Metadata element name	Contact
Description	Information which assists one to contact an individual or organization
Multiplicity (Occurrence) NAP	[Optional][1]
Multiplicity (Occurrence) SP	[Optional,*][2]
Data type	*CI_Contact*
Rules for how to fill in the entry	The following attributes are available 5.17.1 *phone* , (O) 5.17.2 *address* , (O) 5.17.3 *onlineResource* , (O) 5.17.4 *hoursOfService* , (O) 5.17.5 *contactInstructions* (O)
Additional information	NAP BP: One of phone, address or onlineResource shall be provided
Other comments	Information in these clauses is to be suppressed: 5.17.1 Phone (Telephone number) 5.18.1 Voice -Telephone 5.18.2 Facsimile - Telephone 5.17.4 Hours of service 5.17.5 Contact (Supplemental) instructions Users should be directed to a central listserv or help-line

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.
[2] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.6 Metadata Contact (M,*)
5.16 Responsible Party (M,*)
5.16.4 Contact Information (O)
5.17 Contact (O)
5.17.2 Address (O)
See 5.19 Address (O)

Metadata element name	address
Description	Physical and e-mail address to contact the organization or individual
Multiplicity (Occurrence)	Optional
Data type	*CI_Address* (see 5.19)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.6 Metadata Contact (M,*)
5.16 Responsible Party (M,*)
5.16.4 Contact Information (O)
5.17 Contact (O)
5.17.2 Address (O)
5.19 Address (O)
See 5.19.1 to 5.19.6 Address (O)

Metadata element name	Address
Description	Place and email addresses at which organizations or individual may be contacted
Multiplicity (Occurrence)	[Optional][1]
Data type	*CI_Address*
Rules for how to fill in the entry	The following attributes are available: 5.19.1 *deliveryPoint* , (O) 5.19.2 *city* , (O) 5.19.3 *administrativeArea* , (O) 5.19.4 *postalCode* , (O) 5.19.5 *country* , (O) 5.19.6 *electronicMailAddress* (O)
Examples	
Additional information	NAP BP: At least one of the attributes shall be provided
Other comments	Personal names, personal telephone numbers and personal email contact information are to be suppressed

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.6 Metadata Contact (M,*)
5.16 Responsible Party (M,*)
5.16.4 Contact Information (O)
5.17 Contact (O)
5.17.2 Address (O)
5.19 Address (O)
5.19.1 to 5.19.6 Address (O)

Metadata element name	Address
Description	Physical and e-mail address to contact the organization or individual
Multiplicity (Occurrence)	Optional
Data type	free text (CharacterString)
Rules for how to fill in the entry	Attributes are: 5.19.1 deliveryPoint. Address line for the location. See example below 5.19.2 city City of the address 5.19.3 administrativeArea. State or Province. See Canadian Addressing Guide at http://www.canadapost.ca/common/tools/pg/manual/PGaddress-e.asp 5.19.4 postalCode. Format for Canada <ANA> blank space <NAN> 5.19.5 country. Full country name must be entered. A code list is available at http://www.iso/en/prods-services/ISO3166ma/02iso-3166-code-lists/index.html 5.19.6 electronicMailAddress. Electronic mailbox of the responsible organization.
Examples	physical: 625; Cochrane Drive; Markham ON L3R 9R9 Canada
Additional information	
Other comments	N = numeric, A = alpha uppercase According to NAP-Metadata xml example on p212 everything (including Ontario) is spelt out Suggestion: Ignore NAP xml example until more record examples are available

5.2.6 Metadata Contact (M,*)
5.16 Responsible Party (M,*)
5.16.4 Contact Information (O)
5.17 Contact (O)
5.17.3 Online Resource (O)
See 5.20 Online Resource (O)

Metadata element name	onlineResource
Description	Information about Internet hosted resources
Multiplicity (Occurrence)	Optional
Data type	*CI_OnlineResource* (see 5.20)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.6 Metadata Contact (M,*)
5.16 Responsible Party (M,*)
5.16.4 Contact Information (O)
5.17 Contact (O)
5.17.3 Online Resource (O)
5.20 Online Resource (O)
See 5.20.1 Linkage (M)
5.20.2 Protocol (M)
5.20.4 Name (O)
5.20.5 Description (O)

Metadata element name	OnlineResource
Description	Information on the Internet available resource
Multiplicity (Occurrence)	[Optional][1]
Data type	*CI_OnlineResource*
Rules for how to fill in the entry	The following attributes are available: 5.20.1 *linkage* , (M) 5.20.2 *protocol* , (M) 5.20.3 *applicationProfile* , (O) 5.20.4 *name* , (O) 5.20.5 *description* , (O) 5.20.6 *function* (O)
Additional information	
Other comments	The following clauses have not been reviewed and therefore are not included in this document; but may be used: 5.20.3 Application profile 5.20.6 Function

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.6 Metadata Contact (M,*)
5.16 Responsible Party (M,*)
5.16.4 Contact Information (O)
5.17 Contact (O)
5.17.3 Online Resource (O)
5.20 Online Resource (O)
5.20.1 Linkage (M)

Metadata element name	linkage
Description	Internet location (address) for on-line access which uses a Uniform Resource Locator address or similar addressing scheme such as www.isotc211.org or ftp.isotc211.org
Multiplicity (Occurrence)	Mandatory
Data type	URL (see B.26)
Rules for how to fill in the entry	
Examples	www.fgdc.gov/nap/metadata
Additional information	
Other comments	B.26 p196 of the NAP says "A uniform resource locator, e.g www.fgdc.gov/nap/metadata "

5.2.6 Metadata Contact (M,*)
5.16 Responsible Party (M,*)
5.16.4 Contact Information (O)
5.17 Contact (O)
5.17.3 Online Resource (O)
5.20 Online Resource (O)
5.20.2 Protocol (M)

Metadata element name	protocol
Description	The connection protocol to be used such as http, ftp, etc.
Multiplicity (Occurrence)	Mandatory
Data type	Free text (CharacterString)
Rules for how to fill in the entry	
Examples	http
Additional information	NAP BP: The protocol should be taken from an official controlled list such as the Official Internet Protocol Standards published on the Web at http://www.rfc-editor.org/rfcxx00.html
Other comments	

5.2.6 Metadata Contact (M,*)
5.16 Responsible Party (M,*)
5.16.4 Contact Information (O)
5.17 Contact (O)
5.17.3 Online Resource (O)
5.20 Online Resource (O)
5.20.4 Name (O)

Metadata element name	name
Description	Name of the resource sought or the utility that provides it
Multiplicity (Occurrence) NAP	Optional
Multiplicity (Occurrence) SP	Strongly Recommended
Data type	Free text (CharacterString)
Rules for how to fill in the entry	
Examples	
Additional information	
Other comments	

5.2.6 Metadata Contact (M,*)
5.16 Responsible Party (M,*)
5.16.4 Contact Information (O)
5.17 Contact (O)
5.17.3 Online Resource (O)
5.20 Online Resource (O)
5.20.5 Description (O)

Metadata element name	description
Description	Description of the utility that provides the resource sought
Multiplicity (Occurrence) NAP	Optional
Multiplicity (Occurrence) SP	Strongly Recommended
Data type	Free text (CharacterString)
Rules for how to fill in the entry	
Examples	
Additional information	
Other comments	

5.2.6 Metadata Contact (M,)*
5.16 Responsible Party (M,)*
5.16.5 Role (M)

Metadata element name	role
Description	Function performed by the responsible party
Multiplicity (Occurrence)	Mandatory
Data type	CodeList *napCI_RoleCode*,
Rules for how to fill in the entry	Select from CodeList Options include: *resourceProvider* , *custodian* , *owner* , *user* , *distributor* , *originator* , *pointOfContact* , *principalInvestigator* , *processor* , *publisher* , *author* , *collaborator* , *editor* , *mediator* , *rightsHolder*
Examples	Resource provider
Additional information	
Other comments	

5.2.7 Date Stamp (M)
(See Annex B4)

Metadata element name	dateStamp
Description	Metadata creation date
Multiplicity (Occurrence)	Mandatory
Data type	Date (see B.4)
Rules for how to fill in the entry	NAP Annex B B.4 Date Date gives value for the representation of 1. year e.g. 2006 2. year and month e.g. 2006-10 3. year, month, and day e.g. 2006-10-01
Examples	2009-06-30
Additional information	NAP BP: Date of metadata creation or the last metadata update
Other comments	Field is filled in by default by some editors. E.g. 2009-06-26T10:52:51 This includes B5 DateTime 2009-07-03T11:10:24

5.2.8 Metadata standard name (M)

Metadata element name	metadataStandardName
Description	Name of the metadata standard/profile used
Multiplicity (Occurrence)	Mandatory
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Examples	North American Profile of ISO19115:2003 – Geographic information - Metadata
Additional information	NAP BP: Default value “North American Profile of ISO19115:2003 – Geographic information – Metadata”
Other comments	

5.2.9 Metadata standard version (O) (M in SP)

Metadata element name	metadataStandardVersion
Description	Version of the metadata standard/profile used
Multiplicity (Occurrence) NAP	Optional
Multiplicity (Occurrence) SP	Mandatory
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Examples	2009
Additional information	NAP BP: Default value NAP – Metadata version used
Other comments	

5.2.11 Locale (C,)*

See 6.2 (Cultural and linguistic adaptability) (C,*)

Metadata element name	locale
Description	Other languages used in metadata free text description
Multiplicity (Occurrence)	Conditional, Repeatable
Data type	PT_Locale (see 6.2)
Rules for how to fill in the entry	
Examples	
Additional information	NAP BP (p.19): Mandatory when more than one language is used in free text descriptions. The character encoding (6.2) shall be set to "utf8". Language and characterEncoding are mandatory
Other comments	NAP Section 6 is Cultural and Linguistic Adaptability 6.2 is Local and free text attributes

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
See 5.3.1 Data Identification (O,*) AND /OR
5.3.2 Service Identification (O,*)

Metadata element name	Identification Information
Description	Basic information about the dataset
Multiplicity (Occurrence)	Mandatory, Repeatable
Data type	*MD_DataIdentification* (see 5.3.1) And/or *SV_ServiceIdentification* (see 5.3.2)
Rules for how to fill in the entry	
Additional information	*MD_Identification* (5.3) is an abstract class: Identification Information can only be represented via *MD_DataIdentification* and/or *SV_ServiceIdentification*
Other comments	5.3.2 Service Identification is not being used at this time

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
See 5.3.1.1 to 5.3.1.19 Information which describes a dataset

Metadata element name	Data Identification
Description	Information which describes a dataset
Multiplicity (Occurrence)	Optional, Repeatable
Data type	*MD_DataIdentification*
Rules for how to fill in the entry	The following attributes and components are available: 5.3.1.1 *citation*, (M) 5.3.1.2 *abstract*, (M) 5.3.1.3 *purpose*, (O) 5.3.1.4 *credit*, (O,*) 5.3.1.5 *status*, (M,*) 5.3.1.6 *pointOfContact*, (O,*) 5.3.1.7 *spatialRepresentationType*, (O,*) 5.3.1.8 *spatialResolution*, (O,*) 5.3.1.9 *language*, (M) 5.3.1.10 *characterSet*, (O,*) 5.3.1.11 *topicCategory*, (C,*) 5.3.1.12 *environmentDescription*, (O) 5.3.1.13 *extent*, (C,*) 5.3.1.14 *supplementalInformation* (O) 5.3.1.15 *MD_MaintenanceInformation* (O,*) 5.3.1.16 *MD_BrowseGraphic* (O,*) 5.3.1.17 *MD_Keywords* (O,*) 5.3.1.18 *MD_Constraints* (O,*) 5.3.1.19 *MD_AggregateInformation* (O,*)
Additional information	
Other comments	The following clauses have not been reviewed and therefore are not included in this document; but may be used: 5.3.1.4 Credit 5.3.1.6 Point Of Contact

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
See 5.14 Citation (M)

Metadata element name	citation
Description	Citation for the dataset
Multiplicity (Occurrence)	Mandatory
Data type	*CI_Citation* (see 5.14)
Rules for how to fill in the entry	
Additional information	NAP BP: The attribute *citedResponsibleParty* (5.14.7) in *Citation* (5.14) shall be reported at least once. Contact information (5.16.4 *contactInfo*) for the cited responsible party shall also be provided (e.g. at least the distributor could be identified).
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
See 5.14.1 to 5.14.9 Citation

Metadata element name	Citation
Description	Information to reference the resource
Multiplicity (Occurrence)	[Mandatory][1]
Data type	*CI_Citation*
Rules for how to fill in the entry	The following attributes are available 5.14.1 *title*, (M) 5.14.2 *alternateTitle*, (O,*) 5.14.3 *date*, (M,*) 5.14.4 *edition*, (O) 5.14.5 *editionDate* (O) 5.14.6 *identifier*, (O,*) 5.14.7 *citedResponsibleParty*, (M,*) 5.14.8 *presentationForm*, (O,*) 5.14.9 *series*, (O) 5.14.10 *otherCitationDetails*, (O) 5.14.11 *collectiveTitle*, (O) 5.14.12 *ISBN*, (O) 5.14.13 *ISSN* (O)
Additional information	NAP BP (p.23): *Identifier* (5.14.6) shall be reported in the context of data identification *citedResponsibleParty* (5.14.7) shall be reported at least once Contact information (5.16.4 *contactInfo*) for the cited responsible party (5.14.7) shall also be provided (e.g. at least the distributor could be identified)
Other comments	The following clauses have not been reviewed and therefore are not included in this document; but may be used: 5.14.10 *otherCitationDetails*, (O) 5.14.11 *collectiveTitle*, (O) 5.14.12 *ISBN*, (O) 5.14.13 *ISSN* (O)

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.1 Title (M)

Metadata element name	title
Description	Name by which the cited resource is known
Multiplicity (Occurrence)	Mandatory
Data type	free text (CharacterString)
Rules for how to fill in the entry	Generally, use title supplied by vendor
Examples	Ontario Carpool Lots
Additional information	
Other comments	If supplying title, generally avoid initial articles (such as The and A), acronyms, abbreviations, name of organization and dates and versions unless needed to differentiate between records. Policy Decision: DMTI does not use the provincial name For DMTI CanMapRouteLogistics, use the following format: Ontario Land Use Ontario Carpool Lots

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.2 Alternate Title (O,*)

Metadata element name	alternateTitle
Description	Short name or other language name by which the cited information is known, e.g. “DCW” as an alternate title for “Digital Chart of the World”
Multiplicity (Occurrence) NAP	Optional, Repeatable
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Examples	SWOOP
Additional information	SWOOP is an alternate title for Southwestern Ontario Orthophotography Project data from LIO
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.3 Date (M,*)
See 5.15 (M,*)

Metadata element name	date
Description	Reference date for the cited resource
Multiplicity (Occurrence)	Mandatory, Repeatable
Data type	*CI_Date* (see 5.15)
Rules for how to fill in the entry	
Additional information	NAP BP: Whenever possible include both creation date and revision date.
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.3 Date (M,*)
5.15 Date (M,*)
See 5.15.1 Date (M)
5.15.2 Date type (M)

Metadata element name	Date
Description	The date in which the event or action occurred
Multiplicity (Occurrence)	[Mandatory, Repeatable][1]
Data type	*CI_Date* (see 5.15)
Rules for how to fill in the entry	The following attributes are available 5.15.1 *date*, (M) 5.15.2 *dateType* (M)
Additional information	
Other comments	

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.3 Date (M,*)
5.15 Date (M,*)
5.15.1 Date (M)

Metadata element name	date
Description	The date in which the event or action occurred
Multiplicity (Occurrence)	Mandatory
Data type	Date (see B.4)
Rules for how to fill in the entry	Minimum is four digit representation for year – YYYY
Examples	1999-02 2008-08-15
Additional information	NAP Annex B B.4 Date Date gives value for the representation of 1. year e.g. 2006 2. year and month e.g. 2006-10 3. year, month, and day e.g. 2006-10-01
Other comments	e.g. 1999-02-15 (Creation) 2008-08-15 (Publication) 2008-08-15 (Revision)

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.3 Date (M,*)
5.15 Date (M,*)
5.15.2 Date Type (M)

Metadata element name	dateType
Description	Identification of the event used for the temporal aspect in the resource.
Multiplicity (Occurrence)	Mandatory
Data type	CodeList *napCI_DateTypeCode*
Rules for how to fill in the entry	Select from CodeList Options include: *creation* , *publication* , *revision* , *notAvailable* , *inForce* , *adopted*, *deprecated* , *superseded*
Examples	Creation
Additional information	
Other comments	Need drop down menu in editor

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.4 Edition (O)

Metadata element name	edition
Description	Version of the cited resource
Multiplicity (Occurrence) NAP	Optional
Data type	free text (CharacterString)
Rules for how to fill in the entry	Use information as supplied by vendor
Examples	2008.3
Additional information	
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.5 Edition date (O)

Metadata element name	editionDate
Description	Date of the edition
Multiplicity (Occurrence) NAP	Optional
Multiplicity (Occurrence) SP	Strongly recommended
Data type	Date (see B.4)
Rules for how to fill in the entry	NAP Annex B B.4 Date Date gives value for the representation of 1. year e.g. 2006 2. year and month e.g. 2006-10 3. year, month, and day e.g. 2006-10-01
Examples	2006
Additional information	
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.6 Identifier (O,*)
See 5.22. Identifier (O,*)

Metadata element name	identifier
Description	A unique value that identifies an object in a given namespace
Multiplicity (Occurrence)	Optional, Repeatable
Data type	*MD_Identifier* (see 5.22)
Rules for how to fill in the entry	
Additional information	NAP BP: *Identifier* (5.14.6) shall be reported in the context of data identification (see 5.3.1.1)
Other comments	SP comment: Use 5.14.6 if every item in a series is to be described

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.6 Identifier (O,*)
5.22 Identifier (O,*)
See 5.22.1 Authority (O)
5.22.2 Code (M)

Metadata element name	Identifier
Description	Information about the unique identification of an object
Multiplicity (Occurrence)	[Optional, Repeatable][1]
Data type	*MD_Identifier*
Rules for how to fill in the entry	The following attributes are available 5.22.1 *authority* (O) 5.22.2 *code* (M)
Additional information	NAP BP: The namespace is stored in the attribute *authority* and the ID is stored in the attribute *code*. For example, the 1:50 000 map sheet of Sherbrooke in Canada is identified by the code "21E05" under the authority of the "National Topographic System"
Other comments	

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.6 Identifier (O,*)
5.22 Identifier (O,*)
5.22.1 Authority (O)
See 5.14 Citation (O)

Metadata element name	authority
Description	Recognized responsible party or organization for a reference
Multiplicity (Occurrence)	Optional
Data type	*CI_Citation*, (see 5.14)
Rules for how to fill in the entry	
Additional information	NAP BP: The attribute *citedResponsibleParty* (5.14.7) in *Citation* (5.14) shall be reported at least once Contact information (5.16.4 *contactInfo*) for the cited responsible party shall also be provided (e.g. at least the distributor could be identified).
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.6 Identifier (O,*)
5.22 Identifier (O,*)
5.22.1 Authority (O)
5.14 Citation (O) (subsequent tables not included here)
See 5.14.1 Title (M)
5.14.3 Date (M,*)
5.14.7 Responsible Party (M,*)

Metadata element name	citation
Description	Describes attributes that provide information about citation
Multiplicity (Occurrence)	[Optional][1]
Data type	*CI_Citation*, (see 5.14)
Rules for how to fill in the entry	5.14.1 *title* , (M) 5.14.3 *date* , (M,*) 5.14.7 *citedResponsibleParty* , (M,*)
Examples	Title of authority e.g.: National Topographic System
Additional information	
Other comments	

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.6 Identifier (O,*)
5.22 Identifier (O,*)
5.22.2 Code (M)

Metadata element name	code
Description	Alphanumeric value that identifies a resource
Multiplicity (Occurrence)	Mandatory
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Examples	21E/05
Additional information	
Other comments	NAP: e.g. National Topographic System 21E/05 This could be used to identify tiles of orthos and DEMs Mandatory if using 5.14.6 (*Identifier*)

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.7 Cited Responsible Party (M,*)
See 5.16 Responsible Party (M,*)

Metadata element name	citedResponsibleParty
Description	Identification of the contact for the resource
Multiplicity (Occurrence)	Mandatory, Repeatable
Data type	*CI_ResponsibleParty* (see 5.16)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.7 Responsible Party (M,*)
5.16. Responsible Party (M,*)
See 5.16.2 Organization name (C) (M in SP)
5.16.4 Contact Information (O)
5.16.5 Role (M)

Metadata element name	Responsible Party
Description	Identification of a responsible party for the resource and the party's role in the resource
Multiplicity (Occurrence)	[Mandatory, Repeatable][1]
Data type	*CI_ResponsibleParty*
Rules for how to fill in the entry	The following attributes are available 5.16.1 *individualName* (C) 5.16.2 *organisationName*, (C) (M in SP) 5.16.3 *positionName*, (C) 5.16.4 *contactInfo*, (O) 5.16.5 *role* (M)
Additional information	
Other comments	Information in these clauses is to be suppressed: 5.16.1 Individual Name 5.16.3 Position Name

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.7 Responsible Party (M,*)
5.16. Responsible Party (M,*)
5.16.2 Organization name (C) (M in SP)

Metadata element name	organizationName
Description	Name of the responsible organization
Multiplicity (Occurrence) NAP	Conditional
Multiplicity (Occurrence) SP	Mandatory
Data type	free text (CharacterString)
Rules for how to fill in the entry	Organization directly responsible for the production of the data Use full name of the organization
Examples	DMTI Spatial Inc.
Additional information	NAP BP: *organizationName* shall be provided if *individualName* (5.16.1) and/or *positionName* (5.16.3) are not provided. Organization name is preferred. Individual names should be avoided.
Other comments	Mandatory for SP because information in these clauses is to be suppressed: 5.16.1 Individual name or 5.16.3 Position name

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.7 Responsible Party (M,*)
5.16. Responsible Party (M,*)
5.16.4 Contact information (O)
See 5.17 Contact (O)

Metadata element name	contactInfo
Description	Information required enabling contact with the responsible person and/or organization
Multiplicity (Occurrence)	Optional
Data type	*CI_Contact* (see 5.17)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.7 Responsible Party (M,*)
5.16. Responsible Party (M,*)
5.16.4 Contact information (O)
5.17 Contact (O)
See 5.17.2 Address (O)

Metadata element name	Contact
Description	Information which assists one to contact an individual or organization
Multiplicity (Occurrence)	[Optional][1]
Data type	*CI_Contact*
Rules for how to fill in the entry	The following attributes are available 5.17.1 *phone* , (O) 5.17.2 *address* , (O) 5.17.3 *onlineResource* , (O) 5.17.4 *hoursOfService* , (O) 5.17.5 *contactInstructions* (O)
Additional information	NAP BP: One of phone, address or onlineResource shall be provided
Other comments	Information in these clauses is to be suppressed: 5.17.1 Phone (Telephone number) 5.18.1 Voice -Telephone 5.18.2 Facsimile - Telephone 5.17.4 Hours of service The following clauses have not been reviewed and therefore are not included in this document; but may be used: 5.17.3 Online resource 5.17.5 Contact (Supplemental) instructions

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.7 Responsible Party (M,*)
5.16. Responsible Party (M,*)
5.16.4 Contact information (O)
5.17 Contact (O)
5.17.2 Address (O)
See 5.19 Address (O)

Metadata element name	address
Description	Physical and e-mail address to contact the organization or individual
Multiplicity (Occurrence)	Optional
Data type	*CI_Address* (see 5.19)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.7 Responsible Party (M,*)
5.16. Responsible Party (M,*)
5.16.4 Contact information (O)
5.17 Contact (O)
5.17.2 Address (O)
5.19 Address (O)
See 5.19.1 to 5.19.6 (O)

Metadata element name	Address
Description	Place and email addresses at which organizations or individual may be contacted
Multiplicity (Occurrence)	[Optional][1]
Data type	*CI_Address*
Rules for how to fill in the entry	The following attributes are available: 5.19.1 *deliveryPoint* , (O) 5.19.2 *city* , (O) 5.19.3 *administrativeArea* , (O) 5.19.4 *postalCode* , (O) 5.19.5 *country* , (O) 5.19.6 *electronicMailAddress* (O,*)
Additional information	NAP BP: At least one of the attributes shall be used
Other comments	Personal names, personal telephone and personal email contact information are to be suppressed.

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.7 Responsible Party (M*)
5.16. Responsible Party (M,*)
5.16.4 Contact Information (O)
5.17 Contact (O)
5.17.2 Address (O)
5.19.1 to 5.19.6 Address O)

Metadata element name	address
Description	Physical and e-mail address to contact the organization or individual
Multiplicity (Occurrence)	Optional
Data type	free text (CharacterString)
Rules for how to fill in the entry	5.19.1 deliveryPoint. Address line for the location See example below 5.19.2 city. City of the address. 5.19.3 administrative area. State or Province. See Canadian Addressing Guide at http://www.canadapost.ca/common/tools/pg/manual/PGaddress-e.asp 5.19.4 postalCode. Format for Canada <ANA> blank space <NAN> 5.19.5 country. Full country name must be entered 5.19.6 electronicMailAddress. Electronic mailbox of the responsible organization.
Examples	physical: 625; Cochrane Drive; Markham ON L3R 9R9 Canada
Additional information	
Other comments	N = numeric, A = alpha uppercase According to NAP-Metadata xml example on p212 everything (including Ontario) is spelt out. Suggestion: Ignore NAP xml example until more record examples are available

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.7 Responsible Party (M,*)
5.16. Responsible Party (M,*)
5.16.5 Role (M)

Metadata element name	role
Description	Function performed by the responsible party
Multiplicity (Occurrence)	Mandatory
Data type	CodeList *napCI_RoleCode*
Rules for how to fill in the entry	Select from CodeList Options include: *resourceProvider* , *custodian* , *owner* , *user* , *distributor* , *originator* , *pointOfContact* , *principalInvestigator* , *processor* , *publisher* , *author* , *collaborator* , *editor* , *mediator* , *rightsHolder*
Example	Originator
Additional information	
Other comments	Author, publisher, and distributor may have to be added

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.8 Presentation Form (O,*)

Metadata element name	presentationForm
Description	The form in which the resource is available
Multiplicity (Occurrence) NAP	Optional, Repeatable
Multiplicity (Occurrence) SP	Strongly recommended
Data type	CodeList *napCI_PresentationFormCode*
Rules for how to fill in the entry	Select from CodeList Options include: *documentDigital* , *documentHardcopy* , *imageDigital* , *imageHardcopy* , *mapDigital* , *mapHardcopy* , *modelDigital* , *modelHardcopy* , *profileDigital* , *profileHardcopy* , *tableDigital* , *tableHardcopy* , *videoDigital* , *videoHardcopy* , *audioDigital* , *audioHardcopy* , *multimediaDigital* , *multimediaHardcopy* , *diagramDigital* , *diagramHardcopy*
Example	mapDigital
Additional information	
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.9 Series (O)
See 5.21 Series (O)

Metadata element name	series
Description	Information about the series or collection of which the resource is a part
Multiplicity (Occurrence)	Optional
Data type	*CI_Series* (see 5.21)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.9 Series (O)
5.21 Series (O)
See 5.21.1 Series Name (O) (M in SP)

Metadata element name	Series
Description	Information about a Series or dataset aggregation
Multiplicity (Occurrence)	[Optional][1]
Data type	*CI_Series*
Rules for how to fill in the entry	The following attributes are available: 5.21.1 *name* , (O) (M in SP) 5.21.2 *issueIdentification* ,(O) 5.21.3 *page* (O)
Additional information	NAP BP: For reference to a parent record use clause 5.2.4. For clarification on the use of hierarchy levels, refer to Appendix D. From napMD_ ScopeCode: A "series" is defined as a collection of datasets complying to the same product specification
Other comments	The following clauses have not been reviewed and therefore are not included in this document; but may be used: 5.21.2 Issue Identification 5.21.3 Page

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.1 Citation (M)
5.14 Citation (M)
5.14.9 Series (O)
5.21.1 Series Name (O) (M in SP)

Metadata element name	name
Description	Name of the publication series or aggregate dataset of which the referenced dataset is a part.
Multiplicity (Occurrence) NAP	Optional
Multiplicity (Occurrence) SP	Mandatory
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Examples	CanMap RouteLogistics
Additional information	
Other comments	See Annex E of NAP for what constitutes a series
	The following clauses have not been reviewed and therefore are not included in this document; but may be used: 5.14.10 Other Citation Details 5.14.11 Collective title 5.14.12 ISBN 5.14.13 ISSN

5.2.12 Identification Information (M,)*
5.3 Identification Information (M,)*
5.3.1 Data Identification (O,)*
5.3.1.2 Abstract (M)

Metadata element name	abstract
Description	Brief narrative summary of the dataset's contents.
Multiplicity (Occurrence)	Mandatory
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Examples	Landuse refers to the patterns of construction and activity that land is used for including the following landuse categories: commercial; government and institutional; open area; parks and recreational; residential; resource and industrial; or waterbody [DMTI RouteLogistics Land Use] Carpool Lots contain carpool lots for the province of Ontario including the name of lot and location. [DMTI RouteLogistics Carpool Lots]
Additional information	NAP BP: -should include information on general content, thematic features (e.g., geology, climatology; etc.), and features; -dataset application: GIS, CAD, image, database; -geographic coverage: county/city name; -time period of content: begin and end date; -and special data characteristics or limitations
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.3 Purpose (O)

Metadata element name	purpose
Description	Summary of the intentions for which the dataset was developed
Multiplicity (Occurrence)	Optional
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Example	To show location of wetlands
Additional information	Purpose includes objectives for creating the dataset and what the dataset is to support
Other comments	

5.2.12 Identification Information (M,)*
5.3 Identification Information (M,)*
5.3.1 Data Identification (O,)*
5.3.1.5 Status (M,)*

Metadata element name	status
Description	Development phase of the dataset
Multiplicity (Occurrence)	Mandatory, Repeatable
Data type	CodeList *napMD_ProgressCode*
Rules for how to fill in the entry	Select from CodeList Options include: *completed* , *historicalArchive* , *obsolete* , *onGoing* , *planned* , *required* , *underDevelopment* , *proposed*
Examples	onGoing
Additional information	NAP BP: Select status from napMD_ProgressCode
Other comments	The following clause has not been reviewed and therefore is not included in this document; but may be used: 5.3.1.6 Point Of Contact

5.2.12 Identification Information (M,)*
5.3 Identification Information (M,)*
5.3.1 Data Identification (O,)*
5.3.1.7 Spatial Representation Type (O,)*

Metadata element name	spatialRepresentationType
Description	Object(s) used to represent the geographic information.
Multiplicity (Occurrence)	Optional, Repeatable
Data type	CodeList *napMD_SpatialRepresentationTypeCode*
Rules for how to fill in the entry	Select from CodeList Options include: *vector* , *grid* , *textTable* , *tin* , *stereoModel* , *video*
Examples	vector grid
Additional information	
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.8 Spatial Resolution O,*)
See 5.3.3 Spatial resolution of the dataset (O,*)

Metadata element name	spatialResolution
Description	The level of detail in a dataset expressed as equivalent scale or ground distance.
Multiplicity (Occurrence)	Optional, Repeatable
Data type	*MD_Resolution* (see 5.3.3)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.8 Spatial Resolution (O,*)
5.3.3 Spatial resolution of the dataset (O,*)
See 5.3.3.1 Equivalent Scale (C) OR
5.3.3.2 Distance (C)

Metadata element name	Spatial Resolution
Description	The level of detail in a dataset expressed as equivalent scale or ground distance.
Multiplicity (Occurrence)	[Optional, Repeatable][1]
Data type	*MD_Resolution*
Rules for how to fill in the entry	The following attributes are available: 5.3.3.1 *equivalentScale* , (C) 5.3.3.2 *distance* (C) From INSPIRE: "Spatial resolution refers to the level of detail of the data set. It shall be expressed as a set of zero to many resolution distances (typically for gridded data and imagery-derived products) or *equivalent scales* (typically for maps or map-derived products). An *equivalent scale* is generally expressed as an integer value expressing the scale denominator (5.3.3.1). A *resolution distance* shall be expressed as a numerical value associated with a *unit of length* (5.3.3.2)"
Additional information	NAP BP: One and only one of the following must be entered: equivalentScale (5.3.3.1) or distance (5.3.3.2) as approropriate
Other comments	

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.8 Spatial Resolution (O,*)
5.3.3 Spatial resolution of the dataset (O,*)
5.3.3.1 Equivalent Scale (C)
See 5.3.4 Representative Fraction (C)

Metadata element name	equivalentScale
Description	Detail expressed as the numerical scale of a comparable hardcopy map or chart
Multiplicity (Occurrence)	Conditional
Data type	*MD_RepresentativeFraction,* (see 5.3.4)
Rules for how to fill in the entry	
Additional information	EquivalentScale is entered if and only if distance (5.3.3.2) is not provided
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.8 Spatial Resolution (O,*)
5.3.3 Spatial resolution of the dataset (O,*)
5.3.3.1 Equivalent Scale (C)
5.3.4 Representative Fraction (C)

Metadata element name	Representative Fraction
Description	The scale of a map or other cartographic object expressed as a fraction or ratio which relates unit distance on the map or other cartographic object to distance, measured in the same units on the ground
Multiplicity (Occurrence)	[Conditional][1]
Data type	*MD_RepresentativeFraction*,
Rules for how to fill in the entry	The following attributes are available: 5.3.4.1 denominator (M)
Additional information	EquivalentScale is entered if and only if distance (5.3.3.2) is not provided
Other comments	

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.8 Spatial Resolution (O,*)
5.3.3 Spatial resolution of the dataset (O,*)
5.3.3.1 Equivalent Scale (C)
5.3.4.1 Denominator (M)

Metadata element name	denominator
Description	The number below the line in a proper fraction that the numerator is equal to 1
Multiplicity (Occurrence)	Mandatory
Data type	Integer (see B.13)
Rules for how to fill in the entry	B.13 Integer: A signed number with no fractional part e.g. -12, 125, 12000963
Examples	10000
Additional information	Value is greater than 0
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.8 Spatial Resolution (O,*)
5.3.3 Spatial resolution of the dataset (O,*)
5.3.3.2 Distance (C)

Metadata element name	distance
Description	Ground sample distance.
Multiplicity (Occurrence)	Conditional
Data type	Distance (see B.7)
Rules for how to fill in the entry	B.7 Distance. A measure of length between two points. A distance is made up of a value and a unit of measure e.g. centimetre, metre, mile. From INSPIRE: Spatial resolution refers to the level of detail of the data set. It shall be expressed as a set of zero to many resolution distances (typically for gridded data and imagery-derived products) or *equivalent scales* (typically for maps or map-derived products). An *equivalent scale* is generally expressed as an integer value expressing the scale denominator (5.3.3.1). A *resolution distance* shall be expressed as a numerical value associated with a *unit of length* (5.3.3.2)
Examples	
Additional information	Distance is entered if and only if EquivalentScale (5.3.3.1) is not provided
Other comments	

5.2.12 Identification Information (M,)*
5.3 Identification Information (M,)*
5.3.1 Data Identification (O,)*
5.3.1.9 Dataset language (M,)*

Metadata element name	language
Description	Languages of the dataset using standard ISO three letter codes
Multiplicity (Occurrence)	Mandatory, Repeatable
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Examples	eng; CAN fra; CAN
Additional information	NAP BP: Language code is given in lower case. Country code is given in uppercase. Language codes: http://www.loc.gov/standards/iso639-2/php/English_list.php Country codes : http://userpage.chemie.fu-berlin.de/diverse/doc/ISO_3166.html This attribute constitutes the default language of the dataset
Other comments	

5.2.12 Identification Information (M,)*
5.3 Identification Information (M,)*
5.3.1 Data Identification (O,)*
5.3.1.10 Character set (O,)*

Metadata element name	characterSet
Description	Name of the character coding standard used in the dataset.
Multiplicity (Occurrence)	Optional, Repeatable
Data type	CodeList *napMD_CharacterSetCode*
Rules for how to fill in the entry	Select from CodeList Options include: utf8
Examples	utf8
Additional information	NAP BP: Default value: “utf8”
Other comments	

5.2.12 Identification Information (M,)*
5.3 Identification Information (M,)*
5.3.1 Data Identification (O,)*
5.3.1.11 Dataset topic category (C,)*

Metadata element name	topicCategory
Description	The main theme (s) of the dataset.
Multiplicity (Occurrence)	Conditional, Repeatable
Data type	CodeList *napMD_TopicCategoryCode*,
Rules for how to fill in the entry	Select from CodeList Options include: 19 categories More than one category may be selected *farming* , *biota* , *boundaries* , *climatologyMeterologyAtmosphere* , *economy* , *elevation* , *environment* , *geoscientificInformation* , *health* , *imageryBaseMapsEarthCover* , *intelligenceMilitary* , *inlandWater* , *location* , *oceans* , *planningCadastre* , *society* , *structure* , *transportation* , *utilitiesCommunication*
Examples	imagery Base Maps Earth Cover transportation
Additional information	NAP BP: Conditional element required when Hierarchy Level (5.2.5) type is set to dataset.
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.12 Environment Description (O)

Metadata element name	environment Description
Description	
Multiplicity (Occurrence)	Optional
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Examples	Microsoft Windows 2000 Version 5.2 (Build 3790) Service Pack 2; ESRI ArcCatalog 8.3.0.800
Additional information	NAP BP: Describes the dataset's processing environment. Includes information such as software, computer operating system, filename, and dataset size. No further details given
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.13 Extent (C,*)
See 5.13 Extent Information (C)

Metadata element name	extent
Description	Describes the spatial (horizontal and/or vertical) and the temporal coverage in the resource
Multiplicity (Occurrence)	Conditional, Repeatable
Data type	*EX_Extent* (see 5.13)
Rules for how to fill in the entry	
Additional information	NAP BP: Either Geographic Bounding Box (5.13.3) or Geographic Description (5.13.4) is required when hierarchyLevel (5.2.5) is set at “dataset”
Other comments	Probably much of the data acquired will have an HierarchyLevel (5.2.5) set at “dataset”

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.13 Extent (C,*)
5.13 Extent Information (C,*)
See 5.13.1 Description (C)
5.13.3 Geographic bounding box (C,*)

Metadata element name	Extent information
Description	Describes attributes and components that provide information about extent.
Multiplicity (Occurrence)	[Conditional, Repeatable][1]
Data type	*EX_Extent* (see 5.13)
Rules for how to fill in the entry	The following attributes and components are available: 5.13.1 *description*, (C) Geographic Element *geographicElement*, (C,*) 5.13.2 Bounding Polygon (C,*) *EX_BoundingPolygon* 5.13.3 Geographic Bounding Box(C,*) *EX_GeographicBoundingBox* 5.13.4 Geographic Description (C,*) *EX_GeographicDescription* 5.13.5 *temporalElement*, (C,*) 5.13.6 Spatial Temporal element (O,*) *EX_SpatialTemporalExtent* 5.13.7 *verticalElement* (C,*)
Additional information	NAP BP: At least one of *description, Geographic Element, Temporal Element,* or *Vertical Element* shall be reported.
Other comments	The following clauses have not been reviewed and therefore are not included in this document; but may be used: 5.13.2 Bounding Polygon 5.13.4 Geographic Description 5.13.5 Temporal Element 5.13.6 Spatial Temporal Element 5.13.7 Vertical Element

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.13 Extent (C,*)
5.13 Extent Information (C)
5.13.1 Description (C)

Metadata element name	description
Description	Text which describes the spatial and temporal extent of the dataset
Multiplicity (Occurrence)	Conditional
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Example	Ontario 1990
Additional information	NAP BP (p136): Description is mandatory when *Bounding Polygon* (5.13.2), *Geographic Bounding Box* (5.13.3), *Geographic Description* (5.13.4) *Temporal Element* (5.13.5), or *Vertical Element* (5.13.7) are not provided
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.13 Extent (C,*)
5.13 Extent Information (C)
5.13.3 Geographic bounding box (C,*)
See 5.13.3.2 West Bound Longitude (M)
5.13.3.3 East Bound Longitude (M)
5.13.3.4 South Bound Latitude (M)
5.13.3.5 North Bound Latitude (M)

Metadata element name	Geographic Bounding Box
Description	An element which describes inclusions or exclusions in a resource. It consists of approximation on the horizontal extent of the data represented by a rectangle-like shape
Multiplicity (Occurrence)	Conditional, Repeatable
Data type	*EX_GeographicBoundingBox*
Rules for how to fill in the entry	The following attributes are available: 5.13.3.1 *extentTypeCode* (O) 5.13.3.2 *westBoundLongitude* ,(M) 5.13.3.3 *eastBoundLongitude* , (M) 5.13.3.4 *southBoundLatitude* , (M) 5.13.3.5 *northBoundLatitude* (M)
Additional information	NAP BP: This is only an approximation and specifying the coordinate reference systems is not needed
Other comments	The following clause has not been reviewed and therefore is not included in this document; but may be used: 5.13.3.1 Extent Type Code

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.13 Extent (C,*)
5.13 Extent Information (C)
5.13.3. Geographic bounding box (C,*)
5.13.3.2 West Bound Longitude (M)
5.13.3.3 East Bound Longitude (M)
5.13.3.4 South Bound Latitude (M)
5.13.3.5 North Bound Latitude (M)

Metadata element name	westBoundLongitude eastBoundLongitude southBoundLatitude northBoundLatitude
Description	5.13.3.2 Western most coordinate 5.13.3.3 Eastern most coordinate 5.13.3.4 Southern most coordinate 5.13.3.5 Northern most coordinate
Multiplicity (Occurrence)	Mandatory
Data type	Decimal (see B.6)
Rules for how to fill in the entry	Minimum bounding rectangle within which data is available westBoundLongitude -82.813464 eastBoundLongitude -75.241668 southBoundLatitude 42.095330 northBoundLatitude 46.489356
Examples	51.295834
Additional information	NAP BP: Use decimal degrees
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.14 Supplemental Information (O)

Metadata element name	supplementalInformation
Description	Other descriptive information about the dataset "To describe or link to other relevant information such as index maps, provider-created guides (e.g. DMTI guides)" (MSWG)
Multiplicity (Occurrence)	Optional
Data type	free text (CharacterString)
Rules for how to fill in the entry	"Title of documentation with the text hyperlinked Include product manuals, readme.txt and any other related documents."
Examples	Product User Manual - CanMap Route Logistics Version 2008.3 Release [add hyperlink]
Additional information	Need to be able to hyperlink to documents
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.15 Resource Maintenance Information (O*)
See 5.6 Maintenance Information (O*)

Metadata element name	Resource Maintenance Information
Description	Describes the frequency, scope and responsible party for updating the dataset
Multiplicity (Occurrence)	Optional, Repeatable
Data type	*MD_MaintenanceInformation* (see 5.6)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.15 Resource Maintenance Information (O,*)
5.6 Maintenance Information (O,*)
See 5.6.1 Maintenance and Update Frequency (M)

Metadata element name	Maintenance Information
Description	Provides information about how the resources or metadata records are updated
Multiplicity (Occurrence)	[Optional, Repeatable][1]
Data type	*MD_MaintenanceInformation*
Rules for how to fill in the entry	The following attributes are available: 5.6.1 *maintenanceAndUpdateFrequency* (M) 5.6.2 *dateOfNextUpdate* , (O) 5.6.3 *userDefinedMaintenanceFrequency* (O) 5.6.4 *updateScope* , (O,*) 5.6.5 *updateScopeDescription* , (O,*) 5.6.6 *maintenanceNote* , (O,*) 5.6.7 *contact* (O,*)
Additional information	
Other comments	The following clauses have not been reviewed and therefore are not included in this document; but may be used: 5.6.2 Date of next Update 5.6.3 User defined maintenance frequency 5.6.4 Update Scope 5.6.5 Update Scope Description 5.6.6 Maintenance Note 5.6.7 Contact

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.15 Resource Maintenance Information (O*)
5.6 Maintenance Information (O*)
5.6.1 Maintenance and Update Frequency (M)

Metadata element name	maintenanceAndUpdateFrequency
Description	Frequency of changes and additions made to the resource after the initial completion.
Multiplicity (Occurrence)	Mandatory
Data type	CodeList *napMD_MaintenanceFrequencyCode*
Rules for how to fill in the entry	Select from CodeList Options include: *continual* , *daily* , *weekly fortnightly* , *monthly* , *quarterly* , *biannually* , *annually* , *asNeeded* , *irregular* , *notPlanned* , *unknown* , *semimonthly*
Examples	Quarterly
Additional information	
Other comments	DMTI does update quarterly but data is provided to OCUL annually

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.16 Graphic Overview (O*)
See 5.3.5 Browse Graphic (O*)

Metadata element name	Graphic Overview
Description	The name, description and file type of an illustration of the dataset
Multiplicity (Occurrence)	Optional, Repeatable
Data type	*MD_BrowseGraphic*, (see 5.3.5)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.16 Graphic Overview (O*)
5.3.5 Browse Graphic (O*)
See 5.3.5.1 File name M)
5.3.5.2 File Description (O)
5.3.5.3 File Type (O)

Metadata element name	Browse Graphic
Description	The name, description and file type of an illustration of the resource
Multiplicity (Occurrence)	[Optional, Repeatable][1]
Data type	*MD_BrowseGraphic*,
Rules for how to fill in the entry	The following attributes are available: 5.3.5.1 *fileName* , (M) 5.3.5.2 *fileDescription* , (O) 5.3.5.3 *fileType* (O)
Examples	
Additional information	
Other comments	

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.16 Graphic Overview (O*)
5.3.5 Browse Graphic (O*)
5.3.5.1 File name (M)

Metadata element name	fileName
Description	Name of the graphic file provided to illustrate the resource
Multiplicity (Occurrence)	Mandatory
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Examples	AGraphicFile.png
Additional information	NAP BP: The filename shall include path or URL to access the graphic file and the file type extension.
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.16 Graphic Overview (O,*)
5.3.5 Browse Graphic (O,*)
5.3.5.2 File Description (O)

Metadata element name	fileDescription
Description	Text description of the graphic file's content
Multiplicity (Occurrence)	Optional
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Examples	Thumbnail
Additional information	
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.16 Graphic Overview (O,*)
5.3.5 Browse Graphic (O,*)
5.3.5.3 File type (O)

Metadata element name	fileType
Description	description of the graphic file format
Multiplicity (Occurrence)	Optional
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Examples	jpeg
Additional information	NAP BP: fileType should be provided especially when the file type included as the extension of the file name is not well known. When the file type requires a non common viewer, also provide instructions on acquiring that viewer
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.17 Descriptive Keywords (O,*) (M,* in SP)
See 5.3.6 Keywords (O*) (M,*in SP)

Metadata element name	Descriptive Keywords
Description	Commonly used words or phrases which describe the dataset. Optionally, the keyword type and a citation for the authoritative or registered resource of the keywords are also provided
Multiplicity (Occurrence) NAP	Optional, Repeatable
Multiplicity (Occurrence) SP	Mandatory, Repeatable
Data type	*MD_Keywords* (see 5.3.6)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.17 Descriptive Keywords (O,*) (M,* in SP)
5.3.6 Keywords (O*) (M,*in SP)
See 5.3.6.1 Keyword (M,*)
5.3.6.2 Keyword Type (O) (M in SP)
5.3.6.3 Thesaurus Name (O) (C,* in SP)

Metadata element name	Keywords
Description	Commonly used words or phrases which describe the resource. Optionally the keyword type and a citation for the authoritative resource are also provided.
Multiplicity (Occurrence) NAP	[Optional, Repeatable]
Multiplicity (Occurrence) SP	[Mandatory, Repeatable][1]
Data type	*MD_Keywords*
Rules for how to fill in the entry	The following attributes are available: 5.3.6.1 *keyword* , (M*) 5.3.6.2 *type* , (O) (M in SP) 5.3.6.3 *thesaurusName* (O) (C* in SP)
Additional information	NAP BP: It is highly recommended that keywords from an authoritative source be used instead of using user defined keywords. Communities should make available on the Web specific thesauri of keywords developed for use with this profile
Other comments	

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.17 Descriptive Keywords (O,*) (M,* in SP)
5.3.6 Keywords (O*) (M,*in SP)
5.3.6.1 Keyword (M,*)

Metadata element name	keyword
Description	Commonly used words or phrases which describe the resource (subject, place and temporal).
Multiplicity (Occurrence)	Mandatory, repeatable
Data type	free text (CharacterString)
Rules for how to fill in the entry	Use of keywords from authoritative source is highly recommended.
Examples	Carpool lot Ontario
Additional information	
Other comments	Thesauri have been chosen for theme and place keywords with the option of free text for local place names. Keywords from LIO or LAC are preferred

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.17 Descriptive Keywords (O,*) (M,* in SP)
5.3.6 Keywords (O*) (M,*in SP)
5.3.6.2 Keyword type (O) (M in SP)

Metadata element name	type
Description	Term or type used to group keywords: discipline, place, stratum, temporal, or theme
Multiplicity (Occurrence) NAP	Optional
Multiplicity (Occurrence) SP	Mandatory
Data type	CodeList *napMD_KeywordTypeCode*
Rules for how to fill in the entry	Select from CodeList Options include: *discipline* , *place* , *stratum* , *temporal* , *theme* , *product* , *subTopicCategory*
Examples	Theme Place
Additional information	
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.17 Descriptive Keywords (O,*) (M,* in SP)
5.3.6 Keywords (O*) (M,* in SP)
5.3.6.3 Thesaurus Name (O) (C,* in SP)
See 5.14 Citation (O) (M in SP)

Metadata element name	thesaurusName
Description	The name of a registered authoritative keyword resource
Multiplicity (Occurrence) NAP	Optional
Multiplicity (Occurrence) SP	Conditional, Repeatable: if use keywords from LIO or LAC put in thesaurus name
Data type	*CI_Citation* (see 5.14)
Rules for how to fill in the entry	
Additional information	NAP BP: Strongly recommended to provide contact information (5.16.4 *contactInfo* [under 5.14.7]) Recommended to provide the language used in the thesaurus in the attribute *otherCitationDetails* (5.14.10) in *Citation* (5.14) e.g. language; fra; CAN
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.17 Descriptive Keywords (O,*) (M,* in SP)
5.3.6 Keywords (O*) (M,* in SP)
5.3.6.3 Thesaurus Name (O) (C,* in SP)
5.14 Citation (O) (M in SP)
See 5.14.1 Title (M)
5.14.3 Date (M,*)
5.14.4 Edition (O)
5.14.7 Responsible Party (M,*)

Metadata element name	Citation
Description	Information to reference the resource
Multiplicity (Occurrence)	Optional
Multiplicity (Occurrence) in SP	Mandatory: if use keywords from LIO or LAC put in thesaurus name
Data type	*CI_Citation*
Rules for how to fill in the entry	The following attributes are available: 5.14.1 *title*, (M) 5.14.2 *alternateTitle*, (O,*) 5.14.3 *date*, (M,*) 5.14.4 *edition*, (O) 5.14.5 *editionDate* (O) 5.14.6 *identifier*, (O,*) 5.14.7 *citedResponsibleParty*, (M,*) 5.14.8 *presentationForm*, (O,*) 5.14.9 *series*, (O) 5.14.10 *otherCitationDetails*, (O) 5.14.11 *collectiveTitle*, (O) 5.14.12 *ISBN*, (O) 5.14.13 *ISSN* (O)
Additional information	
Other comments	The following clauses have not been reviewed and therefore are not included in this document; but may be used: 5.14.2 *alternateTitle*, (O,*) 5.14.5 *editionDate* (O) 5.14.6 *identifier*, (O,*) 5.14.8 *presentationForm*, (O,*) 5.14.9 *series*, (O) 5.14.10 *otherCitationDetails*, (O) 5.14.11 *collectiveTitle*, (O) 5.14.12 *ISBN*, (O) 5.14.13 *ISSN* (O)

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.17 Descriptive Keywords (O,*) (M,* in SP)
5.3.6 Keywords (O*) (M,* in SP)
5.3.6.3 Thesaurus Name (O) (C,* in SP)
5.14 Citation (O) (M in SP)
5.14.1 Title (M)

Metadata element name	title
Description	Name by which the cited resource is known
Multiplicity (Occurrence)	Mandatory
Data type	free text (CharacterString)
Rules for how to fill in the entry	Generally, use title supplied by vender
Examples	Name of thesaurus
Additional information	
Other comments	If supplying title, generally avoid initial articles (such as The and A), acronyms, abbreviations, name of organization and dates and versions unless needed to differentiate between records.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.17 Descriptive Keywords (O,*) (M,* in SP)
5.3.6 Keywords (O*) (M,* in SP)
5.3.6.3 Thesaurus Name (O) (C,* in SP)
5.14 Citation (M)
5.14.3 Date (M,*)
See 5.15 Date (M,*)

Metadata element name	date
Description	Reference date for the cited resource
Multiplicity (Occurrence)	[Mandatory, Repeatable][1]
Data type	*CI_Date* (see 5.15)
Rules for how to fill in the entry	
Additional information	NAP BP: Whenever possible include both creation date and revision date.
Other comments	

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.17 Descriptive Keywords (O,*) (M,* in SP)
5.3.6 Keywords (O*) (M,* in SP)
5.3.6.3 Thesaurus Name (O) (C,* in SP)
5.14 Citation (M)
5.14.3 Date (M,*)
5.15 Date (M,*)
See 5.15.1 Date (M
5.15.2 Date type (M)

Metadata element name	Date
Description	The date in which the event or action occurred
Multiplicity (Occurrence)	[Mandatory, Repeatable][1]
Data type	*CI_Date* (see 5.15)
Rules for how to fill in the entry	The following attributes are available 5.15.1 *date*, (M) 5.15.2 *dateType* (M)
Additional information	
Other comments	

[1][Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.17 Descriptive Keywords (O,*) (M,* in SP)
5.3.6 Keywords (O*) (M,* in SP)
5.3.6.3 Thesaurus Name (O) (C,* in SP)
5.14 Citation (M)
5.14.3 Date (M,*)
5.15 Date (M,*)
5.15.1 Date (M)

Metadata element name	date
Description	The date in which the event or action occurred
Multiplicity (Occurrence)	Mandatory
Data type	Date (see B.4)
Rules for how to fill in the entry	Minimum is four digit representation for year – YYYY
Examples	2008
Additional information	NAP Annex B B.4 Date Date gives value for the representation of 1. year e.g. 2006 2. year and month e.g. 2006-10 3. year, month, and day e.g. 2006-10-01
Other comments	e.g. 1999-02-15 (Creation) 2008-08-15 (Publication) 2008-08-15 (Revision)

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.17 Descriptive Keywords (O,*) (M,* in SP)
5.3.6 Keywords (O*) (M,* in SP)
5.3.6.3 Thesaurus Name (O) (C,* in SP)
5.14 Citation (M)
5.14.3 Date (M,*)
5.15 Date (M,*)
5.15.2 Date type (M)

Metadata element name	dateType
Description	Identification of the event used for the temporal aspect in the resource.
Multiplicity (Occurrence)	Mandatory
Data type	CodeList *napCI_DateTypeCode*
Rules for how to fill in the entry	Select from CodeList Options include: *creation* , *publication* , *revision* , *notAvailable* , *inForce* , *adopted*, *deprecated* , *superseded*
Examples	Publication
Additional information	
Other comments	Need drop down menu in the editor

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.17 Descriptive Keywords (O,*) (M,* in SP)
5.3.6 Keywords (O*) (M,* in SP)
5.3.6.3 Thesaurus Name (O) (C,* in SP)
5.14 Citation (M)
5.14.4 Edition (O)

Metadata element name	edition
Description	Version of the cited resource
Multiplicity (Occurrence) NAP	Optional
Data type	free text (CharacterString)
Rules for how to fill in the entry	Use information as supplied by vendor
Examples	1st
Additional information	
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.17 Descriptive Keywords (O,*) (M,* in SP)
5.3.6 Keywords (O*) (M,* in SP)
5.3.6.3 Thesaurus Name (O) (C,* in SP)
5.14 Citation (M)
***5.14.7 Responsible Party* (M,*)**
See 5.16 Responsible Party (M,*)

Metadata element name	citedResponsibleParty
Description	Identification of the contact for the resource
Multiplicity (Occurrence)	Mandatory, Repeatable
Data type	*CI_ResponsibleParty* (see 5.16)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.17 Descriptive Keywords (O,*) (M,* in SP)
5.3.6 Keywords (O*) (M,* in SP)
5.3.6.3 Thesaurus Name (O) (C,* in SP)
5.14 Citation (M)
5.14.7 Responsible Party (M,*)
5.16 Responsible Party (M,*)
See 5.16.2 Organization name (C) (M in SP)
5.16.4 Contact Information O)
5.16.5 Role (M)

Metadata element name	Responsible Party
Description	Identification of a responsible party for the resource and the party's role in the resource
Multiplicity (Occurrence)	[Mandatory, Repeatable][1]
Data type	*CI_ResponsibleParty*
Rules for how to fill in the entry	The following attributes are available 5.16.1 *individualName* (C) 5.16.2 *organisationName*, (C) (M in SP) 5.16.3 *positionName*, (C) 5.16.4 *contactInfo*, (O) 5.16.5 *role* (M)
Additional information	
Other comments	Information in these clauses is to be suppressed 5.16.1 Individual Name 5.16.3 Position Name

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.17 Descriptive Keywords (O,*) (M,* in SP)
5.3.6 Keywords (O*) (M,* in SP)
5.3.6.3 Thesaurus Name (O) (C,* in SP)
5.14 Citation (M)
***5.14.7 Responsible Party* (M,*)**
5.16 Responsible Party (M,*)
5.16.2 Organization name (C) (M in SP)

Metadata element name	organizationName
Description	Name of the responsible organization
Multiplicity (Occurrence) NAP	Conditional
Multiplicity (Occurrence) SP	Mandatory
Data type	free text (CharacterString)
Rules for how to fill in the entry	Organization directly responsible for the production of the thesaurus Use full name of the organization
Examples	
Additional information	NAP BP: *organizationName* shall be provided if *individualName* (5.16.1) and/or *positionName* (5.16.3) are not provided. Organization name is preferred. Individual names should be avoided.
Other comments	Mandatory for SP because information in these clauses is to be suppressed: 5.16.1 Individual name or 5.16.3 Position name

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.17 Descriptive Keywords (O,*) (M,* in SP)
5.3.6 Keywords (O*) (M,* in SP)
5.3.6.3 Thesaurus Name (O) (C,* in SP)
5.14 Citation (M)
5.14.7 Responsible Party (M,*)
5.16 Responsible Party (M,*)
5.16.4 Contact Information (O)
See 5.17 Contact (O)

Metadata element name	contactInfo
Description	Information required enabling contact with the responsible person and/or organization
Multiplicity (Occurrence)	Optional
Data type	*CI_Contact* (see 5.17)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.17 Descriptive Keywords (O,*) (M,* in SP)
5.3.6 Keywords (O*) (M,* in SP)
5.3.6.3 Thesaurus Name (O) (C,* in SP)
5.14 Citation (M)
5.14.7 Responsible Party (M,*)
5.16 Responsible Party (M,*)
5.16.4 Contact Information (O)
5.17 Contact (O)
See 5.17.2 Address (O)

Metadata element name	Contact
Description	Information which assists one to contact an individual or organization
Multiplicity (Occurrence)	[Optional][1]
Data type	*CI_Contact*
Rules for how to fill in the entry	The following attributes are available 5.17.1 *phone* , (O) 5.17.2 *address* , (O) 5.17.3 *onlineResource* , (O) 5.17.4 *hoursOfService* , (O) 5.17.5 *contactInstructions* (O)
Additional information	NAP BP: One of phone, address or onlineResource shall be provided
Other comments	Information in these clauses is to be suppressed: 5.17.1 Phone (Telephone number) 5.18.1 Voice -Telephone 5.18.2 Facsimile - Telephone 5.17.4 Hours of service The following clauses have not been reviewed and therefore are not included in this document; but may be used: 5.17.3 Information about internet hosted resources 5.17.5 Contact (Supplemental) instructions

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.17 Descriptive Keywords (O,*) (M,* in SP)
5.3.6 Keywords (O*) (M,* in SP)
5.3.6.3 Thesaurus Name O) (C,* in SP)
5.14 Citation (M)
5.14.7 Responsible Party (M,*)
5.16 Responsible Party (M,*)
5.16.4 Contact Information O)
5.17 Contact (O)
5.17.2 Address (O)
See 5.19 Address (O)

Metadata element name	address
Description	Physical and e-mail address to contact the organization or individual
Multiplicity (Occurrence)	Optional
Data type	*CI_Address* (see 5.19)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.17 Descriptive Keywords (O,*) (M,* in SP)
5.3.6 Keywords (O*) (M,* in SP)
5.3.6.3 Thesaurus Name O) (C,* in SP)
5.14 Citation (M)
5.14.7 Responsible Party (M,*)
5.16 Responsible Party (M,*)
5.16.4 Contact Information (O)
5.17 Contact (O)
5.17.2 Address (O)
5.19 Address (O)
See 5.19.1 to 5.19.6 O)

Metadata element name	Address
Description	Place and email addresses at which organizations or individual may be contacted
Multiplicity (Occurrence)	[Optional][1]
Data type	*CI_Address*
Rules for how to fill in the entry	The following attributes are available: 5.19.1 *deliveryPoint* , (O) 5.19.2 *city* , (O) 5.19.3 *administrativeArea* , (O) 5.19.4 *postalCode* , (O) 5.19.5 *country* , (O) 5.19.6 *electronicMailAddress* (O,*)
Additional information	NAP BP: At least one of the attributes shall be used
Other comments	Personal names, personal telephone numbers and personal email contact information are to be suppressed

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.17 Descriptive Keywords (O,*) (M,* in SP)
5.3.6 Keywords (O*) (M,* in SP)
5.3.6.3 Thesaurus Name O) (C,* in SP)
5.14 Citation (M)
5.14.7 Responsible Party (M,*)
***5.16 Responsible Party* (M,*)**
5.16.4 Contact Information O)
5.17 Contact(O)
5.17.2 Address (O)
5.19 Address (O)
5.19.1 to 5.19.6 (O)

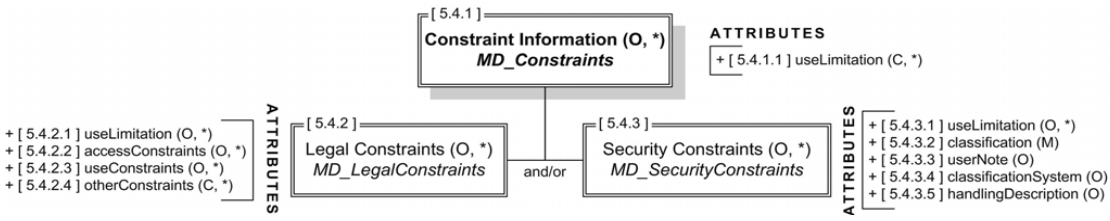
Metadata element name	address
Description	Physical and e-mail address to contact the organization or individual
Multiplicity (Occurrence)	Optional
Data type	free text (CharacterString)
Rules for how to fill in the entry	5.19.1 deliveryPoint. Address line for the location See example below 5.19.2 city. City of the address. 5.19.3 administrative area. State or Province. See Canadian Addressing Guide at http://www.canadapost.ca/common/tools/pg/manual/PGaddress-e.asp 5.19.4 postalCode. Format for Canada <ANA> blank space <NAN> 5.19.5 country. Full country name must be entered 5.19.6 electronicMailAddress. Electronic mailbox of the responsible organization.
Examples	physical: 625; Cochrane Drive; Markham ON L3R 9R9 Canada
Additional information	
Other comments	N = numeric, A = alpha uppercase According to NAP-Metadata xml example on p212 everything (including Ontario) is spelt out. Suggestion: Ignore NAP xml example until more record examples are available

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.17 Descriptive Keywords (O,*) (M,* in SP)
5.3.6 Keywords (O*) (M,* in SP)
5.3.6.3 Thesaurus Name O) (C,* in SP)
5.14 Citation (M)
5.14.7 Responsible Party (M,*)
5.16 Responsible Party (M,*)
5.16.5 Role (M)

Metadata element name	role
Description	Function performed by the responsible party
Multiplicity (Occurrence)	Mandatory
Data type	CodeList *napCI_RoleCode*
Rules for how to fill in the entry	Select from CodeList Options include: *resourceProvider* , *custodian* , *owner* , *user* , *distributor* , *originator* , *pointOfContact* , *principalInvestigator* , *processor* , *publisher* , *author* , *collaborator* , *editor* , *mediator* , *rightsHolder*
Example	Originator
Additional information	
Other comments	Author, publisher, and distributor may have to be added

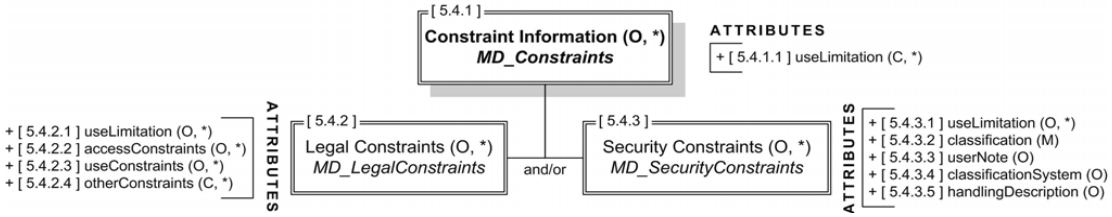
5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.18 Resource Constraints (O,*)
See 5.4 Constraint Information (O,*)

Metadata element name	Resource Constraints
Description	Limitations or constraints on the use of or access to the resource
Multiplicity (Occurrence)	Optional, Repeatable
Data type	*MD_Constraints* (5.4.1) and /or *MD_LegalConstraints* (5.4.2) and/or *MD_SecurityConstraints* (see 5.4.3)
Rules for how to fill in the entry	
Additional information	Highly recommended
Other comments	The following clause has not been reviewed and therefore is not included in this document; but may be used: 5.4.3 Security constraints



5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.18 Resource Constraints (O,*)
5.4 Constraint Information (O,*)
See 5.4.1 Constraints (O,*)
5.4.2 Legal constraints (O,*)

Metadata element name	Constraint Information
Description	Constraints are reported through metadata constraint information and/or legal constraints and/or security constraints
Multiplicity (Occurrence)	Optional, Repeatable
Data type	5.4.1 *MD_Constraints* (O,*) and /or 5.4.2 *MD_LegalConstraints* (O,*) and/or 5.4.3 *MD_SecurityConstraints* (O,*)
Rules for how to fill in the entry	Highly recommended
Additional information	
Other comments	The following clause has not been reviewed and therefore is not included in this document; but may be used: 5.4.3 Security constraints



5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.18 Resource Constraints (O,*)
5.4 Constraint Information (O,*)
5.4.1 Constraint Information (O,*)
See 5.4.1.1 Use Limitation (C,*)

Metadata element name	Constraint Information
Description	The limitations, restrictions, or statements on the resource fitness for use.
Multiplicity (Occurrence)	Optional, Repeatable
Data type	*MD_Constraints*
Rules for how to fill in the entry	The following attribute is available: 5.4.1.1 *useLimitation* (C,*)
Additional information	
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.18 Resource Constraints (O,*)
5.4 Constraint Information (O,*)
5.4.1 Constraint Information (O,*)
5.4.1.1 Use Limitation (C,*)

Metadata element name	useLimitation
Description	Statement on the fitness for use or limitations on the use of the resource or metadata
Multiplicity (Occurrence)	Conditional, Repeatable
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Examples	not to be used for navigation
Additional information	NAP BP: The attribute *useLimitation* is mandatory unless *Legal Constraints* (5.4.2) or *Security Constraints* (5.4.3) is provided
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.18 Resource Constraints (O,*)
5.4 Constraint Information (O,*)
5.4.2 Legal constraints (O,*)
See 5.4.2.2 Access Constraints (O,*)
5.4.2.3 Use Constraints (O,*)
5.4.2.4 Other Constraints (C,*)

Metadata element name	Legal Constraints
Description	Legal restrictions or prerequisites to using the resource or accessing the metadata
Multiplicity (Occurrence)	Optional, Repeatable
Data type	*MD_LegalConstraints*
Rules for how to fill in the entry	The following attributes are available: 5.4.2.1 *useLimitation* (O,*) 5.4.2.2 *accessConstraints* (O,*) 5.4.2.3 *useConstraints* (O,*) 5.4.2.4 *otherConstraints* (C,*)
Additional information	
Other comments	The following clause has not been reviewed and therefore is not included in this document; but may be used: 5.4.2.1 Use limitation

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.18 Resource Constraints (O,*)
5.4 Constraint Information (O*)
5.4.2 Legal constraints (O*)
5.4.2.2 Access Constraints (O,*)

Metadata element name	accessConstraints
Description	Limitations on access to the resource or metadata to protect privacy, intellectual property, or any special limitations
Multiplicity (Occurrence)	Optional, Repeatable
Data type	CodeList *napMD_RestrictionCode*
Rules for how to fill in the entry	Select from CodeList Options include: *copyright* , *patent* , *patentPending* , *trademark* , *license* , *intellectualPropertyRights* , *restricted* , *otherRestrictions* , *licenseUnrestricted* , *licenseEndUser* , *licenseDistributor* , *privacy* , *statutory* , *confidential* , *sensitivity*
Examples	license
Additional information	
Other comments	NOTE: In this context describes legal constraints on access

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.18 Resource Constraints (O,*)
5.4 Constraint Information (O*)
5.4.2 Legal constraints (O*)
5.4.2.3 Use Constraints (O,*)

Metadata element name	useConstraints
Description	Restrictions or limitations or warnings to protect privacy, intellectual property, or other special restrictions on the resource or the metadata.
Multiplicity (Occurrence)	Optional, Repeatable
Data type	CodeList *napMD_RestrictionCode*
Rules for how to fill in the entry	Select from CodeList Options include: *copyright* , *patent* , *patentPending* , *trademark* , *license* , *intellectualPropertyRights* , *restricted* , *otherRestrictions* , *licenseUnrestricted* , *licenseEndUser* , *licenseDistributor* , *privacy* , *statutory* , *confidential* , *sensitivity*
Examples	license
Additional information	
Other comments	NOTE: In this context describes legal constraints on use

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.18 Resource Constraints (O,*)
5.4 Constraint Information (O,*)
5.4.2 Legal constraints (O,*)
5.4.2.4 Other Constraints (C,*)

Metadata element name	otherConstraints
Description	Other restrictions or legal prerequisites for accessing the resource or metadata
Multiplicity (Occurrence)	Conditional, Repeatable
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Examples	"Data only to be used for the purposes for which they were collected."
Additional information	NAP BP: *otherConstraints* shall be provided if *accessConstraints* (5.4.2.2) or *useConstraints* (5.4.2.3) is set to "otherRestrictions."
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Information (O,*)
See 5.3.7 Aggregation Information (O,*)

Metadata element name	Aggregation Information
Description	Citation for the aggregate dataset or the name of the aggregate dataset, the type of aggregate dataset and optionally the activity which produced the dataset
Multiplicity (Occurrence)	Optional, Repeatable
Data type	*MD_AggregateInformation* (see 5.3.7)
Rules for how to fill in the entry	
Additional information	NAP BP: Either the attribute *aggregateDataSetName* (5.3.7.1) or *aggregateDataSetIdentifier* (5.3.7.2) shall be reported
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Information (O,*)
5.3.7 Aggregate Information (O,*)
See 5.3.7.1 Aggregate Dataset Name (C) OR
5.3.7.2 Aggregate Dataset Identifier (C)
5.3.7.3 Association Type (M)
5.3.7.4 Initiative Type (O)

Metadata element name	Aggregation Information
Description	Citation for or name of the aggregate dataset, the type of aggregate dataset, and optionally the activity which produced the dataset
Multiplicity (Occurrence)	Optional, Repeatable
Data type	*MD_AggregateInformation*
Rules for how to fill in the entry	The following attributes are available: 5.3.7.1 *aggregateDataSetName* (C) 5.3.7.2 *aggregateDataSetIdentifier* , (C) 5.3.7.3 *associationType* , (M) 5.3.7.4 *initiativeType* (O)
Additional information	NAP BP: Either the attribute *aggregateDataSetName* or *aggregateDataSetIdentifier* shall be reported
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Information (O*)
5.3.7 Aggregate Information (O,*)
5.3.7.1 Aggregate Dataset Name (C)
See 5.14 Citation (C)

Metadata element name	aggregateDataSetName
Description	Citation information for the aggregate resource or initiative
Multiplicity (Occurrence)	Conditional
Data type	*CI_Citation* (see 5.14)
Rules for how to fill in the entry	
Additional information	NAP BP: Strongly recommended to provide contact information (5.16.4 *contactInfo*) under cited responsible party (5.14.7 *citedResponsibleParty*) aggregateDataSetName (5.3.7.1) must be entered if aggregateDataSetIdentifier (5.3.7.2) is not provided
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Information (O,*)
5.3.7 Aggregate Information (O,*)
5.3.7.1 Aggregate Dataset Name (C)
5.14 Citation (C)
See 5.14.1 Title (M)
5.14.3 Date (M,*)
5.14.7 Responsible Party (M,*)

Metadata element name	Citation
Description	Information to reference the resource
Multiplicity (Occurrence)	[Conditional][1]
Data type	*CI_Citation*
Rules for how to fill in the entry	The following attributes are available 5.14.1 *title*, (M) 5.14.2 *alternateTitle*, (O,*) 5.14.3 *date*, (M,*) 5.14.4 *edition*, (O) 5.14.5 *editionDate* (O) 5.14.6 *identifier*, (O,*) 5.14.7 *citedResponsibleParty*, (M,*) 5.14.8 *presentationForm*, (O,*) 5.14.9 *series*, (O) 5.14.10 *otherCitationDetails*, (O) 5.14.11 *collectiveTitle*, (O) 5.14.12 *ISBN*, (O) 5.14.13 *ISSN* (O)
Additional information	NAP BP: *citedResponsibleParty* (5.14.7) shall be reported at least once Contact information (5.16.4 *contactInfo*) for the cited responsible party shall also be provided (e.g. at least the distributor could be identified)
Other comments	The following clauses have not been reviewed and therefore are not included in this document; but may be used: 5.14.2 *alternateTitle*, (O,*) 5.14.5 *editionDate* (O) 5.14.6 *identifier*, (O,*) 5.14.8 *presentationForm*, (O,*) 5.14.9 *series*, (O) 5.14.10 *otherCitationDetails*, (O) 5.14.11 *collectiveTitle*, (O) 5.14.12 *ISBN*, (O) 5.14.13 *ISSN* (O)

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Information (O,*)
5.3.7 Aggregate Information (O,*)
5.3.7.1 Aggregate Dataset Name C)
5.14 Citation (C)
5.14.1 Title (M)

Metadata element name	title
Description	Name by which the cited resource is known
Multiplicity (Occurrence)	Mandatory
Data type	free text (CharacterString)
Rules for how to fill in the entry	Generally, use title supplied by vender
Examples	Name of aggregate dataset
Additional information	
Other comments	If supplying title, generally avoid initial articles (such as The and A), acronyms, abbreviations, name of organization and dates and versions unless needed to differentiate between records.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Information (O,*)
5.3.7 Aggregate Information (O,*)
5.3.7.1 Aggregate Dataset Name (C)
5.14 Citation (C)
5.14.3 Date (M,*)
See 5.15 Date (M)

Metadata element name	date
Description	Reference date for the cited resource
Multiplicity (Occurrence)	Mandatory, Repeatable
Data type	*CI_Date* (see 5.15)
Rules for how to fill in the entry	
Additional information	NAP BP: Whenever possible include both creation date and revision date.
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Information (O,*)
5.3.7 Aggregate Information (O,*)
5.3.7.1 Aggregate Dataset Name (C)
5.14 Citation (C)
5.14.3 Date (M,*)
5.15 Date (M,*)
See 5.15.1 Date (M)
5.15.2 Date type (M)

Metadata element name	Date
Description	The date in which the event or action occurred
Multiplicity (Occurrence)	[Mandatory, Repeatable][1]
Data type	*CI_Date*
Rules for how to fill in the entry	The following attributes are available 5.15.1 *date* , (M) 5.15.2 *dateType* (M)
Additional information	
Other comments	

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Information (O,*)
5.3.7 Aggregate Information (O,*)
5.3.7.1 Aggregate Dataset Name (C)
5.14 Citation (C)
5.14.3 Date (M,*)
5.15 Date (M)
5.15.1 Date (M)

Metadata element name	date
Description	The date in which the event or action occurred
Multiplicity (Occurrence)	Mandatory
Data type	Date (see B.4)
Rules for how to fill in the entry	Minimum is four digit representation for year – YYYY
Examples	2008
Additional information	NAP Annex B B.4 Date Date gives value for the representation of 1. year e.g. 2006 2. year and month e.g. 2006-10 3. year, month, and day e.g. 2006-10-01
Other comments	e.g. 1999-02-15 (Creation) 2008-08-15 (Publication) 2008-08-15 (Revision)

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Information (O,*)
5.3.7 Aggregate Information (O,*)
5.3.7.1 Aggregate Dataset Name (C)
5.14 Citation (C)
5.14.3 Date (M,*)
5.15 Date (M)
5.15.2 Date type (M)

Metadata element name	dateType
Description	Identification of the event used for the temporal aspect in the resource.
Multiplicity (Occurrence)	Mandatory
Data type	CodeList *napCI_DateTypeCode*
Rules for how to fill in the entry	Select from CodeList Options include: *creation* , *publication* , *revision* , *notAvailable* , *inForce* , *adopted*, *deprecated* , *superseded*
Examples	Creation
Additional information	
Other comments	Need drop down menu in editor

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Information (O,*)
5.3.7 Aggregate Information (O,*)
5.3.7.1 Aggregate Dataset Name (C)
5.14 Citation (C)
5.14.7 Responsible Party (M,*)
See 5.16 Responsible Party (M,*)

Metadata element name	citedResponsibleParty
Description	Identification of the contact for the resource
Multiplicity (Occurrence)	Mandatory, Repeatable
Data type	*CI_ResponsibleParty* (see 5.16)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Informatiom (O,*)
5.3.7 Aggregate Information (O,*)
5.3.7.1 Aggregate Dataset Name (C)
5.14 Citation (C)
5.14.7 Responsible Party (M,*)
5.16 Responsible Party (M,*)
See 5.16.2 Organization name (C) (M in SP)
5.16.4 Contact Information (O)
5.16.5 Role (M)

Metadata element name	Responsible Party
Description	Identification of a responsible party for the resource and the party's role in the resource
Multiplicity (Occurrence)	[Mandatory, Repeatable][1]
Data type	*CI_ResponsibleParty*
Rules for how to fill in the entry	The following attributes are available 5.16.1 *individualName* (C) 5.16.2 *organisationName*, (C) 5.16.3 *positionName*, (C) 5.16.4 *contactInfo*, (O) 5.16.5 *role* (M)
Additional information	
Other comments	Information in these clauses is to be suppressed 5.16.1 Individual Name 5.16.3 Position Name

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Information (O,*)
5.3.7 Aggregate Information (O,*)
5.3.7.1 Aggregate Dataset Name (C)
5.14 Citation (C)
5.14.7 Responsible Party (M,*)
5.16 Responsible Party (M,*)
5.16.2 Organization name (C) (M in SP)

Metadata element name	organizationName
Description	Name of the responsible organization
Multiplicity (Occurrence) NAP	Conditional
Multiplicity (Occurrence) SP	Mandatory
Data type	free text (CharacterString)
Rules for how to fill in the entry	Organization directly responsible for the production of the thesaurus Use full name of the organization
Examples	
Additional information	NAP BP: *organizationName* shall be provided if *individualName* (5.16.1) and/or *positionName* (5.16.3) are not provided. Organization name is preferred. Individual names should be avoided.
Other comments	Mandatory for SP because information in these clauses is to be suppressed: 5.16.1 Individual name or 5.16.3 Position name

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Information O,*)
5.3.7 Aggregate Information (O,*)
5.3.7.1 Aggregate Dataset Name (C)
5.14 Citation (C)
5.14.7 Responsible Party (M,*)
5.16 Responsible Party (M,*)
5.16.4 Contact Information (O)
See 5.17 Contact (O)

Metadata element name	contactInfo
Description	Information required enabling contact with the responsible person and/or organization
Multiplicity (Occurrence)	Optional
Data type	*CI_Contact* (see 5.17)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Information (O,*)
5.3.7 Aggregate Information (O,*)
5.3.7.1 Aggregate Dataset Name (C)
5.14 Citation (C)
5.14.7 Responsible Party (M,*)
5.16 Responsible Party (M,*)
5.16.4 Contact Information (O)
5.17 Contact (O)
See 5.17.2 Address (O)

Metadata element name	Contact
Description	Information which assists one to contact an individual or organization
Multiplicity (Occurrence)	[Optional][1]
Data type	*CI_Contact*
Rules for how to fill in the entry	The following attributes are available 5.17.1 *phone* , (O) 5.17.2 *address* , (O) 5.17.3 *onlineResource* , (O) 5.17.4 *hoursOfService* , (O) 5.17.5 *contactInstructions* (O)
Additional information	NAP BP: One of phone, address or onlineResource shall be provided
Other comments	Information in these clauses is to be suppressed: 5.17.1 Phone (Telephone number) 5.18.1 Voice -Telephone 5.18.2 Facsimile - Telephone 5.17.4 Hours of service The following clauses have not been reviewed and therefore are not included in this document; but may be used: 5.17.3 Information about internet hosted resources 5.17.5 Contact (Supplemental) instructions

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Information (O,*)
5.3.7 Aggregate Information (O,*)
5.3.7.1 Aggregate Dataset Name (C)
5.14 Citation (C)
5.14.7 Responsible Party (M,*)
5.16 Responsible Party (M,*)
5.16.4 Contact Information (O)
5.17 Contact (O)
5.17.2 Address (O)
See 5.19 Address (O)

Metadata element name	address
Description	Physical and e-mail address to contact the organization or individual
Multiplicity (Occurrence)	Optional
Data type	*CI_Address* (see 5.19)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Information O,*)
5.3.7 Aggregate Information (O,*)
5.3.7.1 Aggregate Dataset Name (C)
5.14 Citation (C)
5.14.7 Responsible Party (M,*)
5.16 Responsible Party (M,*)
5.16.4 Contact Information (O)
5.17 Contact (O)
5.17.2 Address (O)
5.19 Address (O)
See 5.19.1 to 5.19.6 (O)

Metadata element name	Address
Description	Place and email addresses at which organizations or individual may be contacted
Multiplicity (Occurrence)	[Optional][1]
Data type	*CI_Address*
Rules for how to fill in the entry	The following attributes are available: 5.19.1 *deliveryPoint* , (O) 5.19.2 *city* , (O) 5.19.3 *administrativeArea* , (O) 5.19.4 *postalCode* , (O) 5.19.5 *country* , (O) 5.19.6 *electronicMailAddress* (O,*)
Additional information	NAP BP: At least one of the attributes shall be used
Other comments	Personal names, personal telephone numbers and email contact information are to be suppressed

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Information (O,*)
5.3.7 Aggregate Information (O,*)
5.3.7.1 Aggregate Dataset Name (C)
5.14 Citation (C)
5.14.7 Responsible Party (M,*)
5.16 Responsible Party(M,*)
5.16.4 Contact Information O)
5.17 Contact (O)
5.17.2 Address (O)
5.19 Address (O)
5.19.1 to 5.19.6 (O)

Metadata element name	address
Description	Physical and e-mail address to contact the organization or individual
Multiplicity (Occurrence)	Optional
Data type	free text (CharacterString)
Rules for how to fill in the entry	5.19.1 deliveryPoint. Address line for the location See example below 5.19.2 city. City of the address. 5.19.3 administrative area. State or Province. See Canadian Addressing Guide at http://www.canadapost.ca/common/tools/pg/manual/PGaddress-e.asp 5.19.4 postalCode. Format for Canada <ANA> blank space <NAN> 5.19.5 country. Full country name must be entered 5.19.6 electronicMailAddress. Electronic mailbox of the responsible organization.
Examples	physical: 625; Cochrane Drive; Markham ON L3R 9R9 Canada
Additional information	
Other comments	N = numeric, A = alpha uppercase According to NAP-Metadata xml example on p212 everything (including Ontario) is spelt out. Suggestion: Ignore NAP xml example until more record examples are available

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Information (O,*)
5.3.7 Aggregate Information (O,*)
5.3.7.1 Aggregate Dataset Name (C)
5.14 Citation (C)
5.14.7 Responsible Party (M,*)
5.16 Responsible Party (M,*)
5.16.5 Role (M)

Metadata element name	role
Description	Function performed by the responsible party
Multiplicity (Occurrence)	Mandatory
Data type	CodeList *napCI_RoleCode*
Rules for how to fill in the entry	Select from CodeList Options include: *resourceProvider* , *custodian* , *owner* , *user* , *distributor* , *originator* , *pointOfContact* , *principalInvestigator* , *processor* , *publisher* , *author* , *collaborator* , *editor* , *mediator* , *rightsHolder*
Example	Originator
Additional information	
Other comments	Author, publisher, and distributor may have to be added

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Information (O,*)
5.3.7 Aggregate Information (O,*)
5.3.7.2 Aggregate Dataset Identifier (C)
See 5.22 Identifier (C)

Metadata element name	aggregateDataSetIdentifier
Description	Identification of the aggregate dataset
Multiplicity (Occurrence)	Conditional aggregateDataSetIdentifier must be entered if aggregateDataSetName (5.3.7.1) is not provided
Data type	*MD_Identifier* (see 5.22)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Information (O,*)
5.3.7 Aggregate Information (O,*)
5.3.7.2 Aggregate Dataset Identifier (C)
5.22 Identifier (C)
See 5.22.1 Authority(O)
5.22.2 Code (M)

Metadata element name	Identifier
Description	Information about the unique identification of an object
Multiplicity (Occurrence)	Conditional aggregateDataSetIdentifier must be entered if aggregateDataSetName (5.3.7.1) is not provided
Data type	*MD_Identifier* (see 5.22)
Rules for how to fill in the entry	The following attributes are available 5.22.1 *authority* (O) 5.22.2 *code* (M)
Additional information	NAP BP: The namespace is stored in the attribute *authority* and the ID is stored in the attribute *code*.
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Information (O,*)
5.3.7 Aggregate Information (O,*)
5.3.7.2 Aggregate Dataset Identifier (C)
5.22 Identifier (C)
5.22.1 Authority (O)
See 5.14 Citation (O)

Metadata element name	authority
Description	Recognized responsible party or organization for a reference
Multiplicity (Occurrence)	Optional
Data type	*CI_Citation*, (see 5.14)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Information (O,*)
5.3.7 Aggregate Information (O,*)
5.3.7.2 Aggregate Dataset Identifier (C)
5.22 Identifier (C)
5.22.1 Authority (O)
5.14 Citation (O) (subsequent tables not included here)
See 5.14.1 Title (M)
5.14.3 Date (M,*)
5.14.7 Responsible Party (M,*)

Metadata element name	authority
Description	Recognized responsible party or organization for a reference
Multiplicity (Occurrence)	[Optional][1]
Data type	*CI_Citation*, (see 5.14)
Rules for how to fill in the entry	5.14.1 *title* , (M) 5.14.3 *date* , (M,*) 5.14.7 *citedResponsibleParty* , (M,*)
Examples	Title of authority e.g.: DMTI Spatial Inc.
Additional information	NAP BP: The attribute *citedResponsibleParty* (5.14.7) in *Citation* (5.14) shall be reported at least once Contact information (5.16.4 *contactInfo* [from 5.14.7]) for the cited responsible party shall also be provided (e.g. at least the distributor could be identified).
Other comments	

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Information (O,*)
5.3.7 Aggregate Information (O,*)
5.3.7.2 Aggregate Dataset Identifier (C)
5.22 Identifier (C)
5.22.2 Code (M)

Metadata element name	code
Description	Alphanumeric value that identifies a resource
Multiplicity (Occurrence)	Mandatory
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Examples	21E/05
Additional information	
Other comments	NAP: e.g. National Topographic System 21E/05 This could be used to identify tiles of orthos and DEMs Mandatory if using 5.3.7.2 *(aggregateDataSetIdentifier*)

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Information (O,*)
5.3.7 Aggregate Information (O,*)
5.3.7.3 Association Type (M)

Metadata element name	associationType
Description	Association type of the aggregate dataset
Multiplicity (Occurrence)	Mandatory
Data type	CodeList *napDS_AssociationTypeCode*,
Rules for how to fill in the entry	Select from CodeList Options include: *crossReference* , *largerWorkCitation* , *partOfSeamlessDatabase* , *source* , *stereoMate* , *isComposedOf*
Examples	Larger work citation
Additional information	NAP BP: Use of *isComposedOf* not encouraged
Other comments	

5.2.12 Identification Information (M,*)
5.3 Identification Information (M,*)
5.3.1 Data Identification (O,*)
5.3.1.19 Aggregation Information (O,*)
5.3.7 Aggregate Information (O,*)
5.3.7.4 Initiative Type (O)

Metadata element name	initiativeType
Description	Type of initiative for which the dataset was developed
Multiplicity (Occurrence)	Optional
Data type	CodeList *napDS_InitiativeTypeCode*
Rules for how to fill in the entry	Select from CodeList Options include: *campaign* , *collection* , *exercise* , *experiment* , *investigation* , *mission* , *sensor* , *operation* , *platform* , *process* , *program* , *project* , *study* , *task* , *trial*
Examples	collection
Additional information	
Other comments	

5.2.14 Data Quality Information (O,)*
See 5.5 Data Quality Information (O,)*

Metadata element name	Data Quality Information
Description	Data quality information for the resource
Multiplicity (Occurrence)	Optional, Repeatable
Data type	*DQ_DataQuality* (see 5.5)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.14 Data Quality Information (O,*)
5.5 Data Quality Information (O,*)
See 5.5.1 scope (M)
5.5.3 Lineage (C)

Metadata element name	Data Quality Information
Description	Describes attributes and components that provide information about data quality
Multiplicity (Occurrence)	Optional, Repeatable
Data type	*DQ_DataQuality*
Rules for how to fill in the entry	The following attributes and components are available 5.5.1 *scope* ,(M) 5.5.2 *report* , (C) 5.5.3 *lineage* (C)
Additional information	NAP BP: When attribute level (5.5.4.1) of scope (5.5.4) is set to "dataset", Report (5.5.2) OR Lineage (5.5.3) is mandatory
Other comments	The following clause has not been reviewed and therefore is not included in this document; but may be used: 5.5.2 Report

5.2.14 Data Quality Information (O,*)
5.5 Data Quality Information (O,*)
5.5.1 Scope (M)
See 5.5.4 Scope (M)

Metadata element name	scope
Description	The extent of characteristics for which data quality information is reported
Multiplicity (Occurrence)	Mandatory
Data type	*DQ_Scope* (see 5.5.4)
Rules for how to fill in the entry	
Additional information	When attribute level (5.5.4.1) of scope (5.5.4) is set to "dataset", Report (5.5.2) OR Lineage (5.5.3) is mandatory
Other comments	

5.2.14 Data Quality Information (O,*)
5.5 Data Quality Information (O,*)
5.5.1 Scope (M)
5.5.4 Scope (M)
See 5.5.4.1 Level (M)
5.5.4.3 Level description (C,*)

Metadata element name	Scope
Description	The extent of characteristics for which data quality information is reported
Multiplicity (Occurrence)	Mandatory
Data type	*DQ_Scope*
Rules for how to fill in the entry	The following attributes are available 5.5.4.1 *level* , (M) 5.5.4.2 *extent* , (O) 5.5.4.3 *levelDescription* (C,*)
Additional information	NAP BP: When level is not "dataset" or "series" then levelDescription must be entered
Other comments	The following clause has not been reviewed and therefore is not included in this document; but may be used: 5.5.4.2 extent

5.2.14 Data Quality Information (O,)*
5.5 Data Quality Information (O,)*
5.5.1 Scope (M)
5.5.4 Scope (M)
5.5.4.1 Level (M)

Metadata element name	level
Description	The data or application level for which data quality is described
Multiplicity (Occurrence)	Mandatory
Data type	CodeList *napMD_ScopeCode*
Rules for how to fill in the entry	Select from CodeList Options include: *attribute* , *attributeType* , *collectionHardware* , *collectionSession* , *dataset* , *series* , *nonGeographicDataset* , *dimensionGroup* , *feature* , *featureType* , *propertyType* , *fieldSession* , *software* , *service* , *model* , *tile*
Examples	Dataset Series
Additional information	NAP BP: When level is not “dataset” or “series” then levelDescription must be entered
Other comments	

5.2.14 Data Quality Information (O,*)
5.5 Data Quality Information (O,*)
5.5.1 Scope (M)
5.5.4 Scope (M)
5.5.4.3 Level Description (C,*)
See 5.5.19 Scope Description (C,*)

Metadata element name	levelDescription
Description	Description of the level of the dataset
Multiplicity (Occurrence)	Conditional, Repeatable
Data type	*MD_ScopeDescription* (see 5.5.19)
Rules for how to fill in the entry	
Additional information	NAP BP: When level is not “dataset” or “series” then levelDescription must be entered
Other comments	

5.2.14 Data Quality Information (O,*)
5.5 Data Quality Information (O,*)
5.5.1 Scope (M)
5.5.4 Scope (M)
5.5.4.3 Level Description (C,*)
5.5.19 Scope Description (C,*) (subsequent tables not included here)

Metadata element name	Scope Description
Description	Description of the class of information covered by the information
Multiplicity (Occurrence)	[Conditional, Repeatable][1]
Data type	*MD_ScopeDescription*
Rules for how to fill in the entry	The following attributes are available 5.5.19.1 *attributes* , (C) 5.5.19.2 *features* , (C) 5.5.19.3 *featureInstances* , (C) 5.5.19.4 *attributeInstances* , (C) 5.5.19.5 *dataset* , (C) 5.5.19.6 *other* (C)
Additional information	NAP BP: One and only one of the attributes must be entered
Other comments	

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.14 Data Quality Information (O,*)
5.5 Data Quality Information (O,*)
5.5.3 Lineage (C)
See 5.5.3.1 Statement (O) (C in SP)
5.5.3.2 Source (O,*) (C,* in SP)
5.5.3.3 Process Step (O,*) (C,* in SP)

Metadata element name	Lineage
Description	Information or lack of information on the events and source data used to construct the dataset within the specified scope.
Multiplicity (Occurrence)	Conditional
Data type	*LI_Lineage*
Rules for how to fill in the entry	The following attributes are available 5.5.3.1 *statement* , (O) (C in SP) 5.5.3.2 *source* , (O,*) (C,* in SP) 5.5.3.3 *processStep* (O,*) (C,* in SP)
Additional information	NAP BP: Lineage shall be provided when Report (5.5.2) is not provided At least one of the attributes of Lineage – statement, source or processStep shall be provided
Other comments	

5.2.14 Data Quality Information (O,*)
5.5 Data Quality Information (O,*)
5.5.3 Lineage (C)
5.5.3.1 Statement (O) (C in SP)

Metadata element name	statement
Description	General explanation of the data producer's knowledge of the dataset lineage.
Multiplicity (Occurrence) NAP	Optional
Multiplicity (Occurrence) SP	Conditional
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Examples	
Additional information	
Other comments	

5.2.14 Data Quality Information (O,*)
5.5 Data Quality Information (O,*)
5.5.3 Lineage (C)
5.5.3.2 Source (O,*) (C,* in SP)
See 5.5.22 Source (O,*)

Metadata element name	Source
Description	Information on the sources used in the development of the dataset
Multiplicity (Occurrence) NAP	Optional, Repeatable
Multiplicity (Occurrence) SP	Conditional, Repeatable
Data type	*LI_Source* (see 5.5.22)
Rules for how to fill in the entry	
Additional information	NAP BP: *source* (5.5.3.2) is provided when *statement* (5.5.3.1) or *processStep* (5.5.3.3) is not reported
Other comments	

5.2.14 Data Quality Information (O,*)
5.5 Data Quality Information (O,*)
5.5.3 Lineage (C)
5.5.3.2 Source (O,*) (C,* in SP)
5.5.22 Source (O,*)
See 5.5.22.1 Description (O)

Metadata element name	Source
Description	Information about the source data used in creating the date within the specified Scope
Multiplicity (Occurrence)	[Optional, Repeatable][1]
Data type	*LI_Source*
Rules for how to fill in the entry	The following attributes are available 5.5.22.1 *description*, (O) 5.5.22.2 *scaleDenominator*, (O) 5.5.22.3 *sourceReferenceSystem*, (O) 5.5.22.4 *sourceCitation*, (O) 5.5.22.5 *sourceExtent* (O)
Additional information	NAP BP: Either the attribute *description* or the pair of attributes - *sourceCitation* and *sourceExtent* – shall be provided
Other comments	Only using 5.5.22.1 Description

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.14 Data Quality Information (O*)
5.5 Data Quality Information (O,*)
5.5.3 Lineage (C)
5.5.3.2 Source (O,*) (C,* in SP)
5.5.22 Source (O,*)
5.5.22.1 Description (O)

Metadata element name	description
Description	Statement that describes the source data
Multiplicity (Occurrence)	Optional
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Examples	Landuse was initially created using NTDB sourcing and was realigned/reclassified using more up to date sourcing such as 2001 census, CanMap Streetfiles, EPOI and various other sources. [DMTI land use 2008.3] Carpool Lot data was manually placed based on documentation received from the Ministry of Transportation Ontario.
Additional information	NAP BP: The attribute *description* includes the source medium name code (CodeList napMD_MediumNameCode) followed by <;><blank space> and a free text description, e.g. "dvd; source satellite image."
Other comments	

5.2.14 Data Quality Information (O*)
5.5 Data Quality Information (O,*)
5.5.3 Lineage (C)
5.5.3.3 Process Step (O,*) (C,* in SP)
See 5.5.23 Process Step (O,*)

Metadata element name	Process Step
Description	The events in the development of the dataset
Multiplicity (Occurrence) NAP	Optional, Repeatable
Multiplicity (Occurrence) SP	Conditional, Repeatable
Data type	*LI_ProcessStep* (see 5.5.23)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.14 Data Quality Information (O*)
5.5 Data Quality Information (O,*)
5.5.3 Lineage (C)
5.5.3.3 Process Step (O,*) (C,* in SP)
5.5.23 Process Step (O,*)
See 5.5.23.1 Description (M)

Metadata element name	Process Step
Description	The events in the development of the dataset
Multiplicity (Occurrence)	[Optional, Repeatable][1]
Data type	*LI_ProcessStep*
Rules for how to fill in the entry	The following attributes are available 5.5.23.1 *description* , (M) 5.5.23.2 *rationale* , (O) 5.5.23.3 *dateTime* , (O) 5.5.23.4 *processor* (O,*) 5.5.23.5 *LI_Source* (O,*)
Additional information	
Other comments	The following clauses have not been reviewed and therefore are not included in this document; but may be used: 5.5.23.2 *rationale* , (O) 5.5.23.3 *dateTime* , (O) 5.5.23.4 *processor* (O,*) 5.5.23.5 *LI_Source* (O,*)

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.14 Data Quality Information (O*)
5.5 Data Quality Information (O,*)
5.5.3 Lineage (C)
5.5.3.3 Process Step (O,*) (C,* in SP)
5.5.23 Process Step (O,*)
5.5.23.1 Description (M)

Metadata element name	description
Description	Description of the processes performed on the data
Multiplicity (Occurrence)	Mandatory
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Examples	DEM used to produce 1 metre contours
Additional information	
Other comments	Only using 5.5.23.1 Description

5.2.16 Spatial Representation Information (O,*)
5.7 Spatial Representation Information (O,*)
See 5.7.1 Grid Spatial Representation (O,*) (C,* in SP)
5.7.2 Vector Spatial Representation (O,*) (C,* in SP)
5.7.3 Georectified Grid Information (O,*) (C,* in SP)
5.7.4 Georeferenceable Grid Information (O,*) (C* in SP)

Metadata element name	Spatial Representation Information
Description	Digital representation of vector and/or grid objects
Multiplicity (Occurrence)	Optional, Repeatable
Data type	5.7.1 *MD_GridSpatialRepresentation*,(O,*) (C* in SP) 5.7.2 *MD_VectorSpatialRepresentation* (O,*) (C* in SP) 5.7.3 *MD_Georectified*, (O,*) (C* in SP) 5.7.4 *MD_Georeferenceable*, (O,*) (C* in SP)
Rules for how to fill in the entry	One or more can be used
Additional information	*MD_SpatialRepresentation* (5.7) is an abstract class. Spatial Representation can only be represented via *MD_GridSpatialRepresentation*,and/or *MD_VectorSpatialRepresentation*, and/or *MD_Georectified*, and/or *MD_Georeferenceable*,
Other comments	

5.2.16 Spatial Representation Information (O,*)
5.7 Spatial Representation Information (O,*)
5.7.1 Grid Spatial Representation (O,*) (C,* in SP)
See 5.7.1.1 Number of Dimensions (M) (O in SP)
5.7.1.2 Axis dimension Properties (M)
5.7.1.3 Cell Geometry (M) (O in SP)
5.7.1.4 Transformation Parameter Availability (M) (O in SP)

Metadata element name	Grid Spatial Representation
Description	Information on the grid system used in the dataset
Multiplicity (Occurrence) NAP	Optional, Repeatable
Multiplicity (Occurrence) SP	Conditional, Repeatable
Data type	*MD_GridSpatialRepresentation*
Rules for how to fill in the entry	The following attributes are available 5.7.1.1 *numberOfDimensions* , (M) (O in SP) 5.7.1.2 *axisDimensionsProperties* , (M) 5.7.1.3 *cellGeometry* (M) (O in SP) 5.7.1.4 *transformationParameterAvailability* (M) (O in SP)
Additional information	NAP BP: Grid Spatial Representation is required if dataset objects are gridded
Other comments	

5.2.16 Spatial Representation Information (O,)*
5.7 Spatial Representation Information (O,)*
5.7.1 Grid Spatial Representation (O,) (C,* in SP)*
5.7.1.1 Number of Dimensions (M) (O in SP)

Metadata element name	numberOfDimensions
Description	The number of independent spatio-temporal axes
Multiplicity (Occurrence) NAP	Mandatory
Multiplicity (Occurrence) SP	Optional
Data type	Integer (see B.13)
Rules for how to fill in the entry	
Example	2
Additional information	Annex B Data Types B.13 Integer: A signed number with no fractional part, e.g. -12,125
Other comments	

5.2.16 Spatial Representation Information (O,*)
5.7 Spatial Representation Information (O,*)
5.7.1 Grid Spatial Representation (O,*) (C,* in SP)
5.7.1.2 Axis dimension Properties (M)
See 5.7.5 Dimension (M)

Metadata element name	AxisDimensionProperties
Description	Information on the dimension name, size, and resolution used.
Multiplicity (Occurrence)	Mandatory
Data type	Sequence<*MD_Dimension*> (see 5.7.5)
Rules for how to fill in the entry	
Additional information	
Other comments	5.7.1.2 (see 5.7.5) can be used to state the resolution used (pixel size)

5.2.16 Spatial Representation Information (O,*)
5.7 Spatial Representation Information (O,*)
5.7.1 Grid Spatial Representation (O,*) (C,* in SP)
5.7.1.2 Axis dimension Properties (M)
5.7.5 Dimension (M)
See 5.7.5.1 Dimension name (M) (O in SP)
5.7.5.2 Dimension size (M) (O in SP)
5.7.5.3 Resolution (O) (M in SP)

Metadata element name	Dimension
Description	Information on the dimension name, size, and resolution used.
Multiplicity (Occurrence)	[Mandatory][1]
Data type	*MD_Dimension*
Rules for how to fill in the entry	The following attributes are available 5.7.5.1 *dimensionName* , (M) (O in SP) 5.7.5.2 *dimensionSize* , (M) (O in SP) 5.7.5.3 *resolution* (O) (M in SP)
Additional information	
Other comments	5.7.1.2 (see 5.7.5.3) can be used to state the resolution used (pixel size)

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.16 Spatial Representation Information (O,*)
5.7 Spatial Representation Information (O,*)
5.7.1 Grid Spatial Representation (O,*) (C,* in SP)
5.7.1.2 Axis dimension Properties (M)
5.7.5 Dimension (M)
5.7.5.1 Dimension name (M) (O in SP)

Metadata element name	dimensionName
Description	Axis name
Multiplicity (Occurrence) NAP	Mandatory
Multiplicity (Occurrence) SP	Optional
Data type	CodeList *napMD_DimensionNameTypeCode*
Rules for how to fill in the entry	Select from CodeList Options include: *row* , *column* , *vertical* , *track* , *crossTrack* , *line* , *sample* , *time*
Example	line
Additional information	
Other comments	

5.2.16 Spatial Representation Information (O,*)
5.7 Spatial Representation Information (O,*)
5.7.1 Grid Spatial Representation (O,*) (C,* in SP)
5.7.1.2 Axis dimension Properties (M)
5.7.5 Dimension (M)
5.7.5.2 Dimension size (M) (O in SP)

Metadata element name	DimensionSize
Description	Number of elements along the axis
Multiplicity (Occurrence) NAP	Mandatory
Multiplicity (Occurrence) SP	Optional
Data type	Integer (see B.13)
Rules for how to fill in the entry	
Example	4
Additional information	
Other comments	Annex B Data Types B.13 Integer A signed number with no fractional part, e.g. -12,125

5.2.16 Spatial Representation Information (O,*)
5.7 Spatial Representation Information (O,*)
5.7.1 Grid Spatial Representation (O,*) (C,* in SP)
5.7.1.2 Axis dimension Properties (M)
5.7.5 Dimension (M)
5.7.5.3 Resolution (O) (M in SP)

Metadata element name	resolution
Description	Degree of detail in the grid dataset
Multiplicity (Occurrence) NAP	Optional
Multiplicity (Occurrence) SP	Mandatory
Data type	Measure (see B.14)
Rules for how to fill in the entry	
Example	10cm
Additional information	
Other comments	Annex B Data Types B.14 A value resulting from the process to evaluate an amount or a quantity expressed in a unit of measure. A measure is made of a value and a unit of measure. 5.7.1.2 (see 5.7.5.3) can be used to state the resolution used (pixel size)

5.2.16 Spatial Representation Information (O,)*
5.7 Spatial Representation Information (O,)*
5.7.1 Grid Spatial Representation (O,) (C,* in SP)*
5.7.1.3 Cell Geometry (M) (O in SP)

Metadata element name	cellGeometry
Description	Identification of grid data as point or cell
Multiplicity (Occurrence) NAP	Mandatory
Multiplicity (Occurrence) SP	Optional
Data type	CodeList *napMD_CellGeometryCode*
Rules for how to fill in the entry	Select from CodeList Options include: *point* , *area* , *voxel*
Additional information	
Other comments	

5.2.16 Spatial Representation Information (O,)*
5.7 Spatial Representation Information (O,)*
5.7.1 Grid Spatial Representation (O,) (C,* in SP)*
5.7.1.4 Transformation Parameter Availability (M) (O in SP)

Metadata element name	transformationParameterAvailability
Description	Indication of image coordinates and geographic or map coordinates availability
Multiplicity (Occurrence) NAP	Mandatory
Multiplicity (Occurrence) SP	Optional
Data type	Boolean (see B.2)
Rules for how to fill in the entry	
Additional information	NAP BP: "0" / "false" means no "1" / "true" means yes Annex B Data Types B.2 Boolean Truth value representing true or false
Other comments	

5.2.16 Spatial Representation Information (O,*)
5.7 Spatial Representation Information (O,*)
5.7.2 Vector Spatial Representation (O,*) (C,* in SP)
See 5.7.2.2 Geometric Objects (O,*)

Metadata element name	Vector Spatial Representation
Description	Information about the vector objects in the dataset
Multiplicity (Occurrence) NAP	Optional, Repeatable
Multiplicity (Occurrence) SP	Conditional, Repeatable
Data type	*MD_VectorSpatialRepresentation*
Rules for how to fill in the entry	The following attributes are available 5.7.2.1 *topologyLevel* , (O) 5.7.2.2 *geometricObjects* (O,*)
Example	
Additional information	SP: Vector Spatial Representation is required if dataset objects are in vector format
Other comments	The following clause has not been reviewed and therefore is not included in this document; but may be used: 5.7.2.1 Topology Level

5.2.16 Spatial Representation Information (O,*)
5.7 Spatial Representation Information (O,*)
5.7.2 Vector Spatial Representation (O,*) (C,* in SP)
5.7.2.2 Geometric Objects (O,*)
See 5.7.6.1 Type of Geometric Object (M)

Metadata element name	geometricObjects
Description	Identification of the objects used to represent features in the dataset
Multiplicity (Occurrence)	Optional, Repeatable
Data type	*MD_GeometricObjects* (see 5.7.6)
Rules for how to fill in the entry	The following attributes are available 5.7.6.1 *geometricObjectType* , (M) 5.7.6.2 *geometricObjectCount* (O)
Additional information	
Other comments	The following clause has not been reviewed and therefore is not included in this document; but may be used: 5.7.6.2 Geometric Object Count

5.2.16 Spatial Representation Information (O,)*
5.7 Spatial Representation Information (O,)*
5.7.2 Vector Spatial Representation (O,) (C,* in SP)*
5.7.2.2 Geometric Objects (O,)*
5.7.6.1 Type of Geometric Object (M)

Metadata element name	geometricObjectType
Description	Name of point or vector objects to locate zero, one, two or three dimensional locations on the dataset
Multiplicity (Occurrence)	Mandatory
Data type	CodeList *napMD_GeometricObjectTypeCode*
Rules for how to fill in the entry	Select from CodeList Options include: *complex* , *composite* , *curve* , *point* , *solid* , *surface*
Examples	composite
Additional information	Definition of composite: connected set of curves, solids or surfaces Definition of a curve: bounded, 1-dimensional geometric primitive, representing the continuous image of a line Definition of a surface: bounded, connected 2-dimensional geometric primitive, representing the continuous image of a region of a plane
Other comments	

5.2.16 Spatial Representation Information (O,*)
5.7 Spatial Representation Information (O,*)
5.7.3 Georectified Grid Information (O,*) (C,* in SP)
See 5.7.3.1- 5.7.3.11 (O,*) Georectified Grid Information (subsequent tables not included)

Metadata element name	Georectified Grid Information
Description	Information on the grid used to georectify the data
Multiplicity (Occurrence) NAP	Optional, Repeatable
Multiplicity (Occurrence) SP	Conditional, Repeatable
Data type	*MD_Georectified* and *MD_GridSpatialRepresentation*
Rules for how to fill in the entry	The following attributes are available 5.7.3.1 *numberOfDimensions* (M) 5.7.3.2 *axisDimensionsProperties* (M) 5.7.3.3 *cellGeometry* (M) 5.7.3.4 *transformationParameterAvailability* (M) 5.7.3.5 *checkPointAvailability*, (M) 5.7.3.6 *checkPointDescription*, (C) 5.7.3.7 *cornerPoints*, (M) 5.7.3.8 *centerPoint*, (O) 5.7.3.9 *pointInPixel* (M) 5.7.3.10 *transformationDimensionDescription* (O) 5.7.3.11 *transformationDimensionMapping* (O, 2)
Additional information	
Other comments	Many of these may not be used

5.2.16 Spatial Representation Information (O,*)
5.7 Spatial Representation Information (O,*)
5.7.4 Georeferenceable Grid Information (O,*) (C,* in SP)
See 5.7.4.1 – 5.7.4.9 (O,*) Georeferenceable Grid Information (subsequent tables not included)

Metadata element name	Georeferenceable Grid Information
Description	Information on georeferencing the dataset
Multiplicity (Occurrence)	Optional, Repeatable
Data type	*MD_Georeferenceable* and *MD_GridSpatialRepresentation*
Rules for how to fill in the entry	The following attributes are available 5.7.4.1 *numberOfDimensions* (M) 5.7.4.2 *axisDimensionsProperties* (M) 5.7.4.3 *cellGeometry* (M) 5.7.4.4 *transformationParameterAvailability* (M) 5.7.4.5 *controlPointAvailability*, (M) 5.7.4.6 *orientationParameterAvailability*, (M) 5.7.4.7 *orientationParameterDescription*, (O) 5.7.4.8 *georeferencedParameters*, (M) 5.7.4.9 *parameterCitation* (O,*)
Additional information	
Other comments	Many of these may not be used

5.2.17 Reference System Information (C,)*
See 5.8 Reference System Information (C,)*

Metadata element name	Reference System Information
Description	Description of the spatial and/or temporal reference systems used in the dataset
Multiplicity (Occurrence)	Conditional, Repeatable
Data type	*MD_ReferenceSystem* (see 5.8)
Rules for how to fill in the entry	
Additional information	NAP BP: Conditional if *spatialRepresentationType* (5.3.1.17) in *Data Identification* (5.3.1) is "vector", "grid", or "tin". Multiple instances of *Reference System Information* are authorized to describe the coordinate systems being used for coordinate representation (horizontal, vertical and/or temporal)
Other comments	

5.2.17 Reference System Information (C,)*

5.8 Reference System Information (C,)*

See 5.8.1 Reference System Identifier (M)

Metadata element name	Reference System Information
Description	Describes attributes that provide information about reference system information
Multiplicity (Occurrence)	Conditional, Repeatable
Data type	*MD_ReferenceSystem* (see 5.8.1)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.17 Reference System Information (C,*)
5.8 Reference System Information (C,*)
5.8.1 Reference System Identifier (M)
See 5.8.2 Reference system Identifier (M)

Metadata element name	referenceSystemIdentifier
Description	Identifier of the Reference system
Multiplicity (Occurrence)	Mandatory
Data type	*RS_Identifier* (see 5.8.2)
Rules for how to fill in the entry	CRS (coordinate reference system) should be taken from a register such as EPSG (www.epsg.org). A dataset that has both a horizontal and a vertical CRS shall use a compound reference system with the horizontal CRS documented first and the vertical CRS documented second.
Additional information	
Other comments	

5.2.17 Reference System Information (C,*)
5.8 Reference System Information (C,*)
5.8.1 Reference System Identifier (M)
5.8.2 Reference System Identifier (M)
See 5.8.2.1 Authority (O)
5.8.2.2 Code (M)
5.8.2.3 Code space (O
5.8.2.4 Version (O)

Metadata element name	referenceSystemIdentifier
Description	Identifier of the Reference system
Multiplicity (Occurrence)	Mandatory
Data type	*MetadataIdentifier* and *RS_Identifier*
Rules for how to fill in the entry	The following attributes are available 5.8.2.1 *authority* (O) 5.8.2.2 *code* (M) 5.8.2.3 *codeSpace* , (O) 5.8.2.4 *version* (O) CRS (coordinate reference system) should be taken from a register such as EPSG (www.epsg.org). A dataset that has both a horizontal and a vertical CRS shall use a compound reference system with the horizontal CRS documented first and the vertical CRS documented second.
Additional information	
Other comments	

5.2.17 Reference System Information (C,*)
5.8 Reference System Information (C,*)
5.8.1 Reference System Identifier (M)
5.8.2 Reference System Identifier (M)
5.8.2.1 Authority (O)
See 5.14.1-5.14.19 Citation (subsequent tables not included here)

Metadata element name	authority
Description	Party responsible for maintenance of the reference system code space e.g. “International Association of Oil and Gas Producers (OGP)”
Multiplicity (Occurrence)	Optional
Data type	*CI_Citation* (see 5.14)
Rules for how to fill in the entry	
Examples	International Association of Oil and Gas Producers (OGP)
Additional information	
Other comments	NAP /OMNR example does not use this

5.2.17 Reference System Information (C,*)
5.8 Reference System Information (C,*)
5.8.1 Reference System Identifier (M)
5.8.2 Reference System Identifier (M)
5.8.2.2 Code (M) (C in SP)

Metadata element name	code
Description	Alphanumeric value identifying the source reference system.
Multiplicity (Occurrence) NAP	Mandatory
Data type	free text (CharacterString)
Rules for how to fill in the entry	CRS (coordinate reference system) should be taken from a register such as EPSG (www.epsg.org). A dataset that has both a horizontal and a vertical CRS shall use a compound reference system with the horizontal CRS documented first and the vertical CRS documented second.
Examples	EPSG:4269
Additional information	EPSG:4269 is the registry number for NAD83
Other comments	EPSG maintains a Microsoft Access database registry which is a very comprehensive listing of worldwide coordinate reference systems A registry number can indicate both the datum and the projection used e.g. EPSG:26917 is for NAD83 UTM zone 17N

5.2.17 Reference System Information (C,*)
5.8 Reference System Information (C,*)
5.8.1 Reference System Identifier (M)
5.8.2 Reference System Identifier (M)
5.8.2.3 Code Space (O)

Metadata element name	codeSpace
Description	Identifier/ namespace of the system in which the code is valid
Multiplicity (Occurrence)	Optional
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Examples	www.epsg.org
Additional information	
Other comments	

5.2.17 Reference System Information (C,*)
5.8 Reference System Information (C,*)
5.8.1 Reference System Identifier (M)
5.8.2 Reference System Identifier (M)
5.8.2.4 Version (O)

Metadata element name	version
Description	The cited reference system version
Multiplicity (Occurrence)	Optional
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Examples	7.1
Additional information	
Other comments	

5.2.20 Distribution Information (O)
See 5.11 Distribution Information (O) (O,* in SP)

Metadata element name	Distribution Information
Description	Information about acquiring the dataset
Multiplicity (Occurrence)	Optional
Data type	*MD_Distribution* (see 5.11)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.20 Distribution Information (O)
5.11 Distribution Information (O) (O,* in SP)
See 5.11.1 Transfer Options (O,*)
5.11.2 Distributor (C,*)
5.11.3 Distribution Format (C,*)

Metadata element name	Distribution Information
Description	Information about the dataset distributor and options to obtain the dataset
Multiplicity (Occurrence) NAP	Optional
Multiplicity (Occurrence) SP	Optional, Repeatable
Data type	*MD_Distribution*
Rules for how to fill in the entry	The following attributes are available 5.11.1 *transferOptions* , (O,*) 5.11.2 *distributor* , (C,*) 5.11.3 *distributionFormat* (C,*)
Additional information	NAP BP: 5.11.2 Distributor (C,*) is mandatory if 5.11.3 Distribution Format (C,*) is not provided
Other comments	This clause 5.11 Distribution Information is repeatable and will contain information both about: The resource provider e.g. DMTI, LIO, City of Toronto etc. AND The distributor of the resource such as ScholarsPortal

5.2.20 Distribution Information (O)
5.11 Distribution Information (O) (O,* in SP)
5.11.1 Transfer Options (O,*)
See 5.11.1.2 Transfer Size O)
5.11.1.3 On-Line (O,*)

Metadata element name	Transfer Options
Description	The means and media by which the data/dataset is obtained from the distributor
Multiplicity (Occurrence)	Optional, Repeatable
Data type	*MD_DigitalTransferOptions*
Rules for how to fill in the entry	The following attributes are available 5.11.1.1 *unitsOfDistribution* , (O) 5.11.1.2 *transferSize* , (O) 5.11.1.3 *onLine* (O,*) 5.11.1.4 *offLine* (O)
Additional information	
Other comments	The following clauses have not been reviewed and therefore are not included in this document; but may be used: 5.11.1.1 *unitsOfDistribution* 5.11.1.4 *offLine*

5.2.20 Distribution Information (O)
5.11 Distribution Information (O) (O, in SP)*
5.11.1 Transfer Options (O,)*
5.11.1.2 Transfer Size (O)

Metadata element name	transferSize
Description	Estimated size of the transfer unit in the specified format, expressed in megabytes
Multiplicity (Occurrence)	Optional
Data type	Real (see B.16)
Rules for how to fill in the entry	
Examples	24.0
Additional information	Annex B Data Types B.16 A signed floating point number composed of a mantissa and optional component.
Other comments	

5.2.20 Distribution Information (O)
5.11 Distribution Information (O) (O,* in SP)
5.11.1 Transfer Options (O,*)
5.11.1.3 On-Line (O,*)
See 5.20 On-Line Resource

Metadata element name	onLine
Description	Information about the online sources where the data/dataset may be obtained
Multiplicity (Occurrence)	Optional, Repeatable
Data type	*CI_OnlineResource* (see 5.20)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.20 Distribution Information (O)
5.11 Distribution Information (O) (O,* in SP)
5.11.1 Transfer Options (O,*)
5.11.1.3 On-Line (O,*)
5.20 On-Line Resource (O*)
See 5.20.1 Linkage (M)
5.20.2 Protocol (M)
5.20.3 Application profile (O)
5.20.4 Name (O)
5.20.5 Description (O)
5.20.6 Function (O)

Metadata element name	Online Resource
Description	Information on the Internet available resource
Multiplicity (Occurrence)	[Optional, Repeatable][1]
Data type	*CI_OnlineResource*
Rules for how to fill in the entry	The following attributes are available 5.20.1 *linkage* , (M) 5.20.2 *protocol* , (M) 5.20.3 *applicationProfile* , (O) 5.20.4 *name* ,(O) 5.20.5 *description* , (O) 5.20.6 *function* (O)
Additional information	
Other comments	

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.20 Distribution Information (O)
5.11 Distribution Information (O) (O,* in SP)
5.11.1 Transfer Options (O,*)
5.11.1.3 On-Line (O,*)
5.20 On-Line Resource (O,*)
5.20.1 Linkage (M)

Metadata element name	linkage
Description	Internet location (address) for online access which uses a URL address or similar addressing scheme.
Multiplicity (Occurrence)	Mandatory
Data type	URL (see B.26)
Rules for how to fill in the entry	URL link to data storage location
Examples	ccsgis.cs.uoguelph.ca/metadata/DMTI_RouteLog_2007_3/ON/Topo/ONlur.EXE
Additional information	This is where the URL for the Geoportal would appear
Other comments	B.26 – Uniform Resource Locator

5.2.20 Distribution Information (O)
5.11 Distribution Information (O) (O,* in SP)
5.11.1 Transfer Options (O,*)
5.11.1.3 On-Line (O,*)
5.20 On-Line Resource (O,*)
5.20.2 Protocol (M)

Metadata element name	protocol
Description	Connection protocol: http, ftp, etc.
Multiplicity (Occurrence)	Mandatory
Data type	Free text (CharacterString)
Rules for how to fill in the entry	The protocol should be taken from an official controlled list such as http://www.rfc-editor.org/rfcxx00.html or Internet Assigned Numbers authority (IANA) at http://www.iana.org/numbers.html
Examples	http
Additional information	
Other comments	

5.2.20 Distribution Information (O)
5.11 Distribution Information (O) (O,* in SP)
5.11.1 Transfer Options (O,*)
5.11.1.3 On-Line (O,*)
5.20 On-Line Resource (O,*)
5.20.3 Application Profile (O)

Metadata element name	ApplicationProfile
Description	Name of an application profile that can be used with the online resource
Multiplicity (Occurrence)	Optional
Data type	Free text (CharacterString)
Rules for how to fill in the entry	
Examples	
Additional information	applicationProfile refers to the name of an application to access the resource as identified by linkage (5.20.1) and protocol (5.20.2)
Other comments	

5.2.20 Distribution Information (O)
5.11 Distribution Information (O) (O,* in SP)
5.11.1 Transfer Options (O,*)
5.11.1.3 On-Line (O,*)
5.20 On-Line Resource (O,*)
5.20.4 Name (O)

Metadata element name	name
Description	Name of the resource sought or the utility that provides it
Multiplicity (Occurrence)	Optional
Data type	Free text (CharacterString)
Rules for how to fill in the entry	
Examples	
Additional information	
Other comments	

5.2.20 Distribution Information (O)
5.11 Distribution Information (O) (O,* in SP)
5.11.1 Transfer Options (O,*)
5.11.1.3 On-Line (O,*)
5.20 On-Line Resource (O,*)
5.20.5 Description (O)

Metadata element name	description
Description	Description of the utility that provides the resource sought
Multiplicity (Occurrence)	Optional
Data type	Free text (CharacterString)
Rules for how to fill in the entry	
Examples	ScholarsPortal
Additional information	
Other comments	

5.2.20 Distribution Information (O)
5.11 Distribution Information (O) (O,* in SP)
5.11.1 Transfer Options (O,*)
5.11.1.3 On-Line (O,*)
5.20 On-Line Resource (O,*)
5.20.6 Function (O)

Metadata element name	function
Description	Code for function performed by the online resource
Multiplicity (Occurrence) NAP	Optional
Data type	CodeList *napCI_OnLineFunctionCode*
Rules for how to fill in the entry	Select from CodeList Use one from the following: *download* , *information* , *offlineAccess* , *order* , *search* , *upload* , *webService* , *emailService* , *browsing* , *fileAccess* , *webMapService*
Examples	Download
Additional information	
Other comments	

5.2.20 Distribution Information (O)
5.11 Distribution Information (O) (O,* in SP)
5.11.2 Distributor (C,*)
See 5.11.2.1 Distributor contact (M)

Metadata element name	Distributor
Description	Information about the data distributor
Multiplicity (Occurrence)	Conditional, Repeatable
Data type	*MD_Distributor*
Rules for how to fill in the entry	The following attributes are available 5.11.2.1 *distributorContact* , (M) 5.11.2.2 *distributionOrderProcess* (O,*)
Additional information	
Other comments	Mandatory if Distribution format (5.11.3) is not provided The following clause has not been reviewed and therefore is not included in this document; but may be used: 5.11.2.2 Distribution Order Process

5.2.20 Distribution Information (O)
5.11 Distribution Information (O) (O,* in SP)
5.11.2 Distributor (C,*)
5.11.2.1 Distributor contact (M)
See 5.16 Responsible Party (M,*)

Metadata element name	distributorContact
Description	Information on party responsible for dataset distribution
Multiplicity (Occurrence)	Mandatory
Data type	*CI_ResponsibleParty* (see 5.16)
Rules for how to fill in the entry	
Additional information	NAP BP: Contact information (5.16.4 contactInfo) shall be provided
Other comments	

5.2.20 Distribution Information (O)
5.11 Distribution Information (O) (O,* in SP)
5.11.2 Distributor (C,*)
5.11.2.1 Distributor contact (M)
5.16 Responsible Party (M,*)
See 5.16.2 Organization name (C) (M in SP)
5.16.4 Contact Information (O)
5.16.5 Role (M)

Metadata element name	ResponsibleParty
Description	Identification of a responsible party for the resource and the party's role in the resource
Multiplicity (Occurrence)	[Mandatory][1]
Data type	*CI_ResponsibleParty*
Rules for how to fill in the entry	The following attributes are available 5.16.1 *individualName*, (C) 5.16.2 *organisationName*, (C) (M in SP) 5.16.3 *positionName*, (C) 5.16.4 *contactInfo*, (O) 5.16.5 *role* (M)
Additional information	
Other comments	Information in these clauses is to be suppressed 5.16.1 Individual name or 5.16.3 Position name

[1] [Multiplicity] e.g. [Mandatory,*] indicates that the multiplicity for that clause has been inherited from the clause one level higher.

5.2.20 Distribution Information (O)
5.11 Distribution Information (O) (O,* in SP)
5.11.2 Distributor (C,*)
5.11.2.1 Distributor contact (M)
5.16 Responsible party (M,*)
5.16.2 Organization name (C) (M in SP)

Metadata element name	organizationName
Description	Name of the responsible organization
Multiplicity (Occurrence) NAP	Conditional
Multiplicity (Occurrence) SP	Mandatory
Data type	free text (CharacterString)
Rules for how to fill in the entry	Use full name of the organization
Examples	OCUL Scholars Portal
Additional information	NAP BP: *organizationName* shall be provided if *individualName* (5.16.1) and/or *positionName* (5.16.3) are not provided. Organization name is preferred. Individual names should be avoided.
Other comments	Mandatory for SP because information in these clauses is to be suppressed: 5.16.1 Individual name or 5.16.3 Position name

5.2.20 Distribution Information (O)
5.11 Distribution Information (O) (O,* in SP)
5.11.2 Distributor (C,*)
5.11.2.1 Distributor contact (M)
5.16 Responsible party (M,*)
5.16.4 Contact information (O)
See 5.17 Contact (O)

Metadata element name	contactInfo
Description	Information required enabling contact with the responsible person and/or organization
Multiplicity (Occurrence)	Optional
Data type	*CI_Contact* (see 5.17)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.20 Distribution Information (O)
5.11 Distribution Information (O) (O,* in SP)
5.11.2 Distributor (C,*)
5.11.2.1 Distributor contact (M)
5.16 Responsible party (M,*)
5.16.4 Contact information (O)
5.17 Contact (O)
See 5.17.2 Address (O)

Metadata element name	contactInfo
Description	Information required enabling contact with the responsible person and/or organization
Multiplicity (Occurrence)	Optional
Data type	*CI_Contact*
Rules for how to fill in the entry	The following attributes are available 5.17.1 *phone* , (O) 5.17.2 *address* , (O) 5.17.3 *onlineResource* , (O) 5.17.4 *hoursOfService* , (O) 5.17.5 *contactInstructions* (O)
Additional information	NAP BP: One of phone, address or onlineResource shall be provided
Other comments	Information in these clauses is to be suppressed: 5.17.1 Phone (Telephone number) 5.18.1 Voice -Telephone 5.18.2 Facsimile - Telephone 5.17.4 Hours of service The following clauses have not been reviewed and therefore are not included in this document; but may be used: 5.17.3 Online resource 5.17.5 Contact (Supplemental) instructions

5.2.20 Distribution Information (O)
5.11 Distribution Information (O) (O,* in SP)
5.11.2 Distributor (C,*)
5.11.2.1 Distributor contact (M)
5.16 Responsible party (M,*)
5.16.4 Contact information (O)
5.17 Contact (O)
5.17.2 Address (O)
See 5.19 Address (O)

Metadata element name	address
Description	Physical and e-mail address to contact the organization or individual
Multiplicity (Occurrence)	Optional
Data type	*CI_Address* (see 5.19)
Rules for how to fill in the entry	
Additional information	
Other comments	

5.2.20 Distribution Information (O)
5.11 Distribution Information (O) (O,* in SP)
5.11.2 Distributor (C,*)
5.11.2.1 Distributor contact (M)
5.16 Responsible party (M,*)
5.16.4 Contact information (O)
5.17 Contact (O)
5.17.2 Address (O)
5.19 Address (O)
See 5.19.1 to 5.19.6 (O)

Metadata element name	address
Description	Physical and e-mail address to contact the organization or individual
Multiplicity (Occurrence)	Optional
Data type	*CI_Address*
Rules for how to fill in the entry	The following attributes are available: 5.19.1 *deliveryPoint* , (O) 5.19.2 *city* , (O) 5.19.3 *administrativeArea* , (O) 5.19.4 *postalCode* , (O) 5.19.5 *country* , (O) 5.19.6 *electronicMailAddress* (O)
Additional information	NAP BP: At least one of the attributes shall be provided
Other comments	Personal names, personal telephone numbers and email contact information is to be suppressed

5.2.20 Distribution Information (O)
5.11 Distribution Information (O) (O,* in SP)
5.11.2 Distributor (C,*)
5.11.2.1 Distributor contact (M)
5.16 Responsible party (M,*)
5.16.4 Contact information (O)
5.17 Address (O)
5.17.2 Address (O)
5.19.1 to 5.19.6 Address (O)

Metadata element name	address
Description	Physical and e-mail address to contact the organization or individual
Multiplicity (Occurrence)	Optional
Data type	free text (CharacterString)
Rules for how to fill in the entry	Attributes are: 5.19.1 deliveryPoint. Address line for the location. See example below 5.19.2 city City of the address 5.19.3 administrativeArea. State or Province. See Canadian Addressing Guide at http://www.canadapost.ca/common/tools/pg/manual/PGaddress-e.asp 5.19.4 postalCode. Format for Canada <ANA> blank space <NAN> 5.19.5 country. Full country name must be entered. A code list is available at http://www.iso/en/prods-services/ISO3166ma/02iso-3166-code-lists/index.html 5.19.6 electronicMailAddress. Electronic mailbox of the responsible organization.
Examples	Scholars Portal University of Toronto St. George Street Toronto Ontario Xxx xxx Canada
Additional information	
Other comments	N = numeric, A = alpha uppercase According to NAP-Metadata xml example on p212 everything (including Ontario) is spelt out Suggestion: Ignore NAP xml example until more record examples are available

5.2.20 Distribution Information (O)
5.11 Distribution Information (O) (O,* in SP)
5.11.2 Distributor (C,*)
5.11.2.1 Distributor contact (M)
5.16 Responsible party (M,*)
5.16.5 Responsible Party role (M)

Metadata element name	role
Description	Function performed by the responsible party
Multiplicity (Occurrence)	Mandatory
Data type	CodeList *napCI_RoleCode*
Rules for how to fill in the entry	Select from CodeList Options include: *resourceProvider* , *custodian* , *owner* , *user* , *distributor* , *originator* , *pointOfContact* , *principalInvestigator* , *processor* , *publisher* , *author* , *collaborator* , *editor* , *mediator* , *rightsHolder*
Examples	Distributor
Additional information	
Other comments	

5.2.20 Distribution Information (O)
5.11 Distributor Information (O) (O,* in SP)
5.11.3 Distribution Format (C,*)
See 5.11.3.1 Name (of data transfer format) (M)
5.11.3.2 Version (of data transfer format) (M)
5.11.3.5 File Decompression Technique (O)

Metadata element name	Distribution Format
Description	Description of distribution format.
Multiplicity (Occurrence)	Conditional, Repeatable
Data type	*MD_Format*
Rules for how to fill in the entry	The following attributes are available 5.11.3.1 *name* , (M) 5.11.3.2 *version* , (M) 5.11.3.3 *amendmentNumber* , (O) 5.11.3.4 *specification* , (O) 5.11.3.5 *fileDecompressionTechnique* (O)
Additional information	
Other comments	Mandatory if Distributor (5.11.2) is not provided The following clauses have not been reviewed and therefore are not included in this document; but may be used: 5.11.3.3 Amendment number 5.11.3.4 Specification

5.2.20 Distribution Information (O)
5.11 Distributor (O) (O, in SP)*
5.11.3 Distribution Format (C,)*
5.11.3.1 Name (of data transfer format) (M)

Metadata element name	name
Description	Name of the data transfer format
Multiplicity (Occurrence)	Mandatory
Data type	Free text (CharacterString)
Rules for how to fill in the entry	
Examples	ZIP
Additional information	
Other comments	The example would be zip if the download is in zipped format etc.

5.2.20 Distribution Information (O)
5.11 Distributor (O) (O,* in SP)
5.11.3 Distribution Format (C,*)
5.11.3.2 Version (of data transfer format) (M)

Metadata element name	version
Description	Version of the data transfer format
Multiplicity (Occurrence)	Mandatory
Data type	free text (CharacterString)
Rules for how to fill in the entry	
Examples	1.0
Additional information	
Other comments	

5.2.20 Distribution Information (O)
5.11 Distributor (O) (O,* in SP)
5.11.3 Distribution Format (C,*)
5.11.3.3 File Decompression Technique (O)

Metadata element name	fileDecompressionTechnique
Description	Description of recommended processes to apply to the compressed resource
Multiplicity (Occurrence)	Optional
Data type	freetext CharacterString
Rules for how to fill in the entry	
Examples	unzip
Additional information	
Other comments	

Appendix A

ISO 19115 Category Descriptions

- **biota = Biota:** naturally occurring flora and fauna. For example, resources describing wildlife, biological sciences, ecology, wilderness, sea life, wetlands, and habitats.
- **boundaries = Boundaries:** legal land descriptions.
- **climatologyMeteorologyAtmosphere = Climatology/Meteorology/Atmosphere**: atmospheric processes and phenomena. For example, resources describing cloud cover, weather, atmospheric conditions, climate change, and precipitation.
- **economy = Economy:**economic activities or employment. For example, resources describing labour, revenue, commerce, industry, tourism and ecotourism, forestry, fisheries, commercial or subsistence hunting, and exploration and exploitation of resources such as minerals, oil, and gas.
- **elevation = Elevation:** height above or below sea level. For example, resources describing altitude, bathymetry, digital elevation models, slope, and products derived from this information.
- **environment = Environment:** environmental resources, protection, and conservation. For example, resources describing pollution, waste storage and treatment, environmental impact assessment, environmental risk, and nature reserves.
- **farming = Farming:** rearing of animals or cultivation of plants. For example, resources describing irrigation, aquaculture, herding, and pests and diseases affecting crops and livestock.
- **geoscientificinformation = Geoscientific Information:**earth sciences. For example, resources describing geophysical features and processes, minerals, the composition, structure and origin of the earth's rocks, earthquakes, volcanic activity, landslides, gravity information, soils, permafrost, hydrogeology, and erosion.
- **health = Health:** health services, human ecology, and safety. For example, resources describing human disease and illness, factors affecting health, hygiene, mental and physical health, substance abuse, and health services.
- **imageryBaseMapsEarthCover = Imagery/Base Maps/Earth Cover:**base maps. For example, resources describing land cover, topographic maps, and classified and unclassified images.
- **intelligenceMilitary = Intelligence/Military:** military bases, structures, and activities. For example, resources describing barracks, training grounds, military transportation, and information collection.
- **inlandWaters = Inland Waters:**inland water features, drainage systems, and their characteristics. For example, resources describing rivers and glaciers, salt lakes, water use plans, dams, currents, floods, water quality, and hydrographic charts.
- **location = Location:** positional information and services. For example, resources describing addresses, geodetic networks, postal zones and services, control points, and place names.
- **oceans = Oceans:** features and characteristics of salt water bodies excluding inland waters. For example, resources describing tides, tidal waves, coastal information, and reefs.
- **planningCadastre = Planning Cadastre**: land use. For example, resources describing zoning maps, cadastral surveys, and land ownership.

- **society = Society:** characteristics of societies and cultures. For example, resources describing natural settlements, anthropology, archaeology, education, traditional beliefs, manners and customs, demographic data, crime and justice, recreational areas and activities, social impact assessments, and census information.
- **structure = Structure:** man-made construction. For example, resources describing buildings, museums, churches, factories, housing, monuments, and towers.
- **transportation = Transportation:**means and aids for conveying people and goods. For example, resources describing roads, airports and airstrips, shipping routes, tunnels, nautical charts, vehicle or vessel location, aeronautical charts, and railways.
- **utilitiesCommunications = Utilities/Communications:** energy, water and waste systems, and communications infrastructure and services. For example, resources describing hydroelectricity, geothermal, solar, and nuclear sources of energy, water purification and distribution, sewage collection and disposal, electricity and gas distribution, data communication, telecommunication, radio, and communication networks

Appendix B

Thesauri evaluated:

- Global Change Master Directory Science keywords (NASA)
- UNESCO Thesaurus
- AGROVOC Multilingual Agricultural Thesaurus (UN FAO)
- Humanities and Social Science Electronic Thesaurus or HASSET (UK Data Archives)
- Government of Canada Core Subject Thesaurus (LAC)
- LIO Keyword List (Ontario Ministry of Natural Resources)
- General Multilingual Environmental Thesaurus or GEMET (European Environment Information and Observation Network)

While the Keywords Task Group was unable to find and recommend just one of these thesauri as a comprehensive source of theme keywords for describing multi disciplinary datasets, the Group did have better results using a combination of two thesauri. The Task Group recommends the following two thesauri:

- Government of Canada Core Subject Thesaurus (LAC), and
- LIO Keyword List (Ontario Ministry of Natural Resources)

The LAC resource was selected because it is of Canadian origin, is bilingual, and is supported and maintained by a Government of Canada institution that is authoritative and respected by library and archival communities. The developers of this resource claim that: "All fields of knowledge are represented in the thesaurus, to varying degrees. Because of the great variety of subjects covered by the thesaurus, its terminology is rather general. By design, it does not include specialized terminology used in specific and limited disciplines." The keyword strength of this resource tends towards those topics of interest to the federal government: e.g., economy, culture, education, health, and justice/law.

The LIO keyword list is of Canadian origin and is supported and maintained by a leading land-based ministry within the Government of Ontario. Although this is simply a list of keywords, LIO is currently preparing to incorporate these keywords into the departmental thesaurus maintained by MNR's Library. LIO is also planning to fund the conversion of this thesaurus, with its built-in keyword relationships, into both official languages. The List gave excellent results as a source of relevant keywords when applied against a set of test geospatial datasets. The keyword strength of this resource is the environment with a high degree of specialized terminology in this field.

The Keywords Task Group considers that these two resources should, in combination, provide a rich source of Canadian-sourced general and subject-specific keywords that will adequately describe the kinds of datasets that will most likely be accessible through the OCUL Geospatial

Portal. There are no known intellectual property issues associated with the Portal's use of these two resources since permission has been given to integrate them into our delivery system.

For those occasions when the recommended thesauri prove to be inadequate or when supplemental enrichment is felt necessary, the Group recommends the creation and maintenance of a locally maintained keyword list with built-in relationships (i.e., a thesaurus). This is the approach taken by GeoConnections Discovery Portal and by Go-Geo!, a cooperative effort between EDINA National Data Centre, University of Edinburgh, and the UK Data Archive, University of Essex. Geospatial Portal project management must ensure that the list is kept reasonably short, that new keywords are evaluated and vetted before they are accepted, and that new keywords are properly incorporated into a schema of keyword relationships. There must also be a mechanism in place to ensure that keywords assigned to new or revised datasets acquired by the Geospatial Portal are reviewed and evaluated. Theme keywords that are not included in LIO, LAC or the local list should be examined case by case and not routinely rejected.

Appendix C

Place name keywords

The Group began by examining place name gazetteers, some of which include millions of place names for locations around the world; for example, the Alexandria Digital Library Project provides access to 5.9 million names. Some of these comprehensive resources include only Canadian names (e.g., the Geographical Names of Canada), only US names (Geographic Names Information System, and others are worldwide in scope. All of these gazetteers include place names for political and administrative features as well as physical features.

The Group looked at other sources of place names. GeoConnections Discovery Portal offers data providers with several options for their choice of place name keywords. They may select from the CEONET list of Canadian names at the national, regional and provincial levels (e.g., Canada, Atlantic Provinces, Saskatchewan, Toronto Region) and/or they may choose from the Global Change Master Directory's list of location keywords at the global, continental, regional, country, and province/state (Canada and US only) levels; examples at the regional level include Western Asia, Middle East, and Amazonia. These GCMD location keywords are, of course, also available for use by GCMD data providers. The LIO Data Directory uses political place names provided by the Ontario Ministry of Municipal Affairs.

Lastly the Group examined ESRI Canada's Geography Network http://www.geographynetwork.ca/ and Go-Geo! (UK academic Spatial Data Infrastructure) http://www.gogeo.ac.uk/cgi-bin/index.cgi. Upon further investigation it was determined that the Geography Network does not control place name vocabulary. Data providers are free to use place names of their own choosing. Go-Geo! Resource Discovery Tool directs data providers to select keywords from the embedded UNESCO Thesaurus. However this thesaurus is a source of theme keywords only. Although there are no place name keywords in Go-Geo! metadata records it is still possible to do place name, post code and grid coordinate searches. Place names derived from the geoXwalk Gazetteer Project http://hds.essex.ac.uk/geo-X-walk/ are used to retrieve metadata records, but this project is a source of place names for Britain and Ireland only.

Resources Examined: Gazetteers

- Geographical Names of Canada Data Base (Natural Resources Canada): http://geonames.nrcan.gc.ca/index_e.php
- GeoNames (GeoNames.org): http://www.geonames.org
- GEONet Names Server (US National Geospatial Intelligence Agency): http://earth-info.nga.mil/gns/html/index.html
- Geographic Names Information System (US Board on Geographic Names): http://geonames.usgs.gov/pls/gnispublic/f?p=116:1:2437354550198076
- Getty Thesaurus of Geographic Names Online (J Paul Getty Trust): http://www.getty.edu/research/conducting_research/vocabularies/tgn

- Alexandria Digital Library Gazetteer Development (UC Santa Barbara): http://www.alexandria.ucsb.edu/gazetteer/

Resources Examined: Other Sources of Place Names

- GeoConnections Discovery Portal (Canadian Geospatial Data Infrastructure): http://geodiscover.cgdi.ca/gdp/search?action=searchForm&entryType=productCollection&formType=basic

- Global Change Master Directory (US NASA): http://gcmd.nasa.gov/ and http://gcmd.gsfc.nasa.gov/Resources/valids/archives/GCMD_Location_Keywords.pdf

- LIO Data Directory (Ontario Ministry of Natural Resources): http://lioapp.lrc.gov.on.ca/edwin/edwin.asp

The Keywords Task Group advises that some of the place name keywords in a metadata record should be controlled vocabulary but that other keywords may be freely assigned. The controlled names should be those that apply at a higher geographic level; for example, keywords that provide locational information at the continental, country major region, or provincial/state levels. For national level datasets or provincial level datasets, such higher level keywords may be all that are needed. A CanVec layer that provides seamless coverage for all of Canada would only require place name keywords for Canada and each of the Canadian provinces and territories. For county or municipal level datasets, it might suffice to use only natural language place name keywords. Thus, a zoning boundaries vector layer for eastern part of Toronto might be described variously as Toronto, Toronto East, or eastern Toronto; but a search using the key "Toronto" would find all of these targets.

More precise retrieval based on location can be achieved by using the spatial extents information in the record, thus enabling graphic/map-based retrieval. An alternative to searches based on place name keywords and to searches based on graphic means is free-text searching for place names in the full record. This latter is probably the best approach for retrieving datasets that relate to physical features such as river watersheds, drumlin fields, or wetlands; for these ill-defined features the assignment of authoritative place name keywords might be more difficult and less useful.

The Group recommends the following two resources for place names when controlled vocabulary is useful:

- GeoConnections Discovery Portal's CEONET list of place names for Canadian datasets

- Global Change Master Directory's Location Keywords for non-Canadian datasets and for global and other higher level geographies (e.g., world datasets, North American datasets)

Other place name keywords can be assigned without control and at the discretion of the metadata creator or data producer. This is the approach taken by the GeoConnections Discovery Portal; such keywords appear in the metadata record under the category of "Place Keyword Thesaurus: none."

Both of these two place name resources are embedded within the GeoConnections Discovery Portal. The CEONET list was developed by the Canadian Geospatial Data Infrastructure as a source of standardized place name keywords for Canadian datasets. The GCMD list was developed by NASA as a source of standardized place name keywords for datasets for all parts of the world. These two lists are short, easy to use, and readily available. Neither is bilingual but that problem is easily resolved since little effort would be needed to translate them into French language, if necessary.

The Task Group has agreed that the use of more complex gazetteer services is unnecessary and not particularly useful. Some of these services are not freely available: for example, there are charges associated with the use of the Geographical Names of Canada Data Base and the Getty Thesaurus. Complicating issues at this level might involve place name changes including new names, merged names, discontinued names, and so on; one would therefore need to be concerned about gazetteer updates.

Appendix D

Definition of metadata class

The word "class" comes from UML terminology and generally is equivalent to the term "entity" as defined by NAP.

Information from NAP regarding the use of the word "class":

Definitions:
3.2 Application profile: identification of clauses, classes, subsets, options, and **parameters** from base standards that are necessary for accomplishing a particular function

3.5 Class: description of a set of objects that share the same **attributes**, **operations**, **methods**, relationships, and semantics

3.21 Metaclass: a **class** whose instances are **classes**

From Section 4.1:
To distinguish among the levels of clauses presented in the tables, rows containing third level clauses are shaded in light grey whereas of fourth level clauses are not shaded. This help to distinguish between attributes and classes, which serve as datatypes for attributes or components.

The **Clause Number** is a unique and persistent reference number assigned to each element or class described in the tables.

Name/RoleName

• **Attribute names** begin with a lowercase letter (e.g. fileIdentifier). Typically, an attribute is of basic type as documented in annex B, e.g. the metadata attribute fileIdentifier is of the type free text (or CharacterString). But in some cases, it refers to a metadata class, e.g. the metadata *contact* attribute refers to the CI_ResponsibleParty class.

• **Component names** begin with a capital letter (e.g. Identification Information) and always refer to a metadata class, e.g. the metadata Identification Information component refers to the metadata classes identified as MD_DataIdentification and SV_ServiceIdentification. Consequently, an attribute of a given name (e.g. citation) may refer to a class of a same name (e.g. Citation) but capitalized differently. In the content clause, a component is usually introduced in a third level clause.

For more information please see the North American Profile of ISO 19115:2003:

Information from ISO 19115 regarding the word "class":

4.6 Metadata element: discrete unit of metadata
NOTE 1 Metadata elements are unique within a metadata entity.
NOTE 2 Equivalent to an attribute in UML terminology.

4.7 Metadata entity: set of metadata elements describing the same aspect of data
NOTE 1 May contain one or more metadata entities.
NOTE 2 Equivalent to a class in UML terminology.

5.6 UML model data dictionary relationships
Table 1 illustrates the relationship between the terminology of the UML models and the data dictionary.

Table 1 - Relationship between UML model and data dictionary

UML Model	Data Dictionary
Package	**Section**
Generalized Class	**Entity**
Specified Class	**Entity**
Class	**Entity**
Attribute	**Element**
Association	**Element**

6 Requirements

6.1 Metadata for geographic data requirement
This International Standard identifies the metadata required to describe digital geographic data. Metadata is applicable to independent datasets, aggregations of datasets, individual geographic features, and the various classes of objects that compose a feature. Metadata shall be provided for geographic datasets and may, optionally, be provided for aggregations of datasets, features, and attributes ***of*** features. Metadata is composed of one or more Metadata Sections (UML Packages) containing one or more Metadata Entities (UML classes).

More information can be found in sections 5 and 6 of the ISO 19115:2003 geographic information – metadata standard documentation

Glossary of UML term from Wikipedia
(http://en.wikipedia.org/wiki/Glossary_of_Unified_Modeling_Language_terms **)**

Class - the primary declarative construct of Object-Oriented Programming; a cohesive unit of Attributes and Operations; a compile-time template for an Object

Component - A component represents a software module (source code, binary code, executable, DLL, etc.) with a well-defined interface. The interface of a component is represented by one or several interface elements that the component provides. Components are used to show compiler and run-time dependencies, as well as interface and calling dependencies among software modules. They also show which components implement a specific class.

Attribute - a significant piece of data owned by a Class, often containing values describing each instance of the class. Besides the attribute name and a slot for the attribute value, an attribute may have specified Visibility, Type, Multiplicity, Default value, and Property-string.

For additional information see also:

Canadian General Standards Board. North American Profile of ISO 19115:2003 – Geographic Information – Metadata (NAP – Metadata). CAN/CGSB-171.100-2009. Gatineau, Quebec: Canadian General Standards Board, 2009.

Preparing for International Metadata - csdgm-to-nap-transition-guidance . <http://spotdocs.scholarsportal.info/download/attachments/54001708/csdgm-to-nap-transition-guidance.pdf?version=1&modificationDate=1275918486000>

References

Canadian Geospatial Data Infrastructure. (n.d.). *GeoConnections discovery portal.* Retrieved September 29, 2009, from http://geodiscover.cgdi.ca/gdp/

CGIAR-CSI consortium for spatial information. (2004). Retrieved September 29, 2009, from http://csi.cgiar.org/metadata/Metadata_Thesauruses.asp

ESRI Inc. (n.d.). *Geography network Canada.* Retrieved September 29, 2009, from http://www.geographynetwork.ca/

European Environment Information and Observation Network. (2009). *General multilingual environmental thesaurus (GEMET).* Retrieved September 29, 2009, from http://www.eionet.europa.eu/gemet/about?langcode=en

FAO GeoNetwork. (n.d.). Retrieved September 29, 2009, from http://www.fao.org/geonetwork/srv/en/main.home

GeoNames. (n.d.). Retrieved September 29, 2009, from http://www.geonames.org/

GeoNetwork - the portal to spatial data and information. (n.d.). Retrieved September 29, 2009, from http://geonetwork.scholarsportal.info:8080/geonetwork/srv/en/main.home

GeoNOVA portal. (2009). Retrieved September 29, 2009, from http://www.gov.ns.ca/geonova/home/default.asp

Gigateway. (n.d.). Retrieved September 29, 2009, from http://www.gigateway.org.uk/

Go-geo! - homepage. (2007). Retrieved September 29, 2009, from http://www.gogeo.ac.uk/cgi-bin/index.cgi

Go-geo! The geo-data portal project. (2003). Retrieved September 29, 2009, from http://go-geo.data-archive.ac.uk/

Green, A., MacDonald, S. & Rice, R. (2009). *Policy-making for research data in repositories: A guide version 1.2.* Retrieved September 29, 2009, from http://www.disc-uk.org/docs/guide.pdf

INSPIRE. (n.d.). Retrieved September 29, 2009, from http://inspire.jrc.ec.europa.eu/index.cfm

International Organization for Standardization. (2003). *ISO19115:2003 geographic information - metadata*. Switzerland: ISO.

J Paul Getty Trust. (2009). *Getty thesaurus of geographic names online.* Retrieved September 29, 2009, from http://www.getty.edu/research/conducting_research/vocabularies/tgn

Land Information Ontario. (2009). Retrieved September 29, 2009, from http://www.mnr.gov.on.ca/en/Business/LIO/

Library and Archives Canada. (2009). *Government of Canada core subject thesaurus.* Retrieved September 29, 2009, from http://en.thesaurus.gc.ca/these/thes_e.html

NAP - Metadata Working Group. (2008). *North American profile of ISO19115:2003 metadata register.* Retrieved September 29, 2009, from http://www.geoconnections.org/developersCorner/napmetadata/register/index.html

NASA. (2009). *Earth science data and services directory: Global change master directory.* Retrieved September 29, 2009, from http://gcmd.nasa.gov/

Natural Resources Canada. (2007). *Geographical names of Canada.* Retrieved September 29, 2009, from http://geonames.nrcan.gc.ca/index_e.php

Province of Nova Scotia. (2009). *Service Nova Scotia - geographic information Nova Scotia - standards manual - geographic information.* Retrieved September 29, 2009, from http://www.gov.ns.ca/snsmr/land/standards/post/manual/

Taxonomy of human services. (2008). Retrieved September 29, 2009, from http://www.211taxonomy.org/

UK Data Archives. (2006). *Humanities and social science electronic thesaurus (HASSET).* Retrieved September 29, 2009, from http://www.data-archive.ac.uk/search/hassetSearch.asp

United Nations. (n.d.). *UNESCO thesaurus.* Retrieved September 29, 2009, from http://databases.unesco.org/thesaurus/

United Nations FAO. (2009). *AGROVOC multilingual agriculture thesaurus.* Retrieved September 29, 2009, from http://www4.fao.org/agrovoc/default.htm

University of California: Santa Barbara. (2004). *Alexandria digital library gazetteer development.* Retrieved September 29, 2009, from http://www.alexandria.ucsb.edu/gazetteer/

US Board on Geographic Names. (2009). *Geographic names information system.* Retrieved September 29, 2009, from http://geonames.usgs.gov/pls/gnispublic/f?p=116:1:2437354550198076

US National Geospatial Intelligence Agency. (2009). *GEOnet names server.* Retrieved September 29, 2009, from http://earth-info.nga.mil/gns/html/index.html