FGDC & ISO:
What is the Current Status and Considerations when Moving Forward?

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Salem, OR

Topics

- Current Federal geospatial standards
- Transition to ISO North American Profile
- Status
- Considerations

Current Federal Geospatial Standards

- Federal Geographic Data Committee (FGDC) Content Standard for Digital Geospatial Metadata (version 2)
- Profiles:
  - Biological Data Profile
  - Remote Sensing Profile
  - Shoreline Data Profile

Origin of the FGDC Standard

Executive Order 12906:

- Signed in 1994 by then U.S. President Clinton
- Defines the responsibilities of the Federal Geographic Data Committee (FGDC)
- Outlines three major uses of metadata:
  - (1) to maintain an organization's *internal investment* in geospatial data
  - (2) to provide information to data *clearinghouses* and catalogs
  - (3) to provide information needed to process and interpret data *transferred* from another organization.
- Requires creation of metadata for data sets from 1995 forward

The Federal Geographic Data Committee

The FGDC is a 19 member interagency committee working to implement the six basic building blocks of the National Spatial Data Infrastructure (NSDI): metadata, clearinghouse, standards, framework, geospatial data, and partnerships.

Responsibilities:

- development of the NSDI
- establishment of the National Geospatial Data Clearinghouse
- cooperative efforts with state, local, and tribal governments, and the private sector
- implementation of digital geospatial data framework
- development of standards

FGDC Structure:

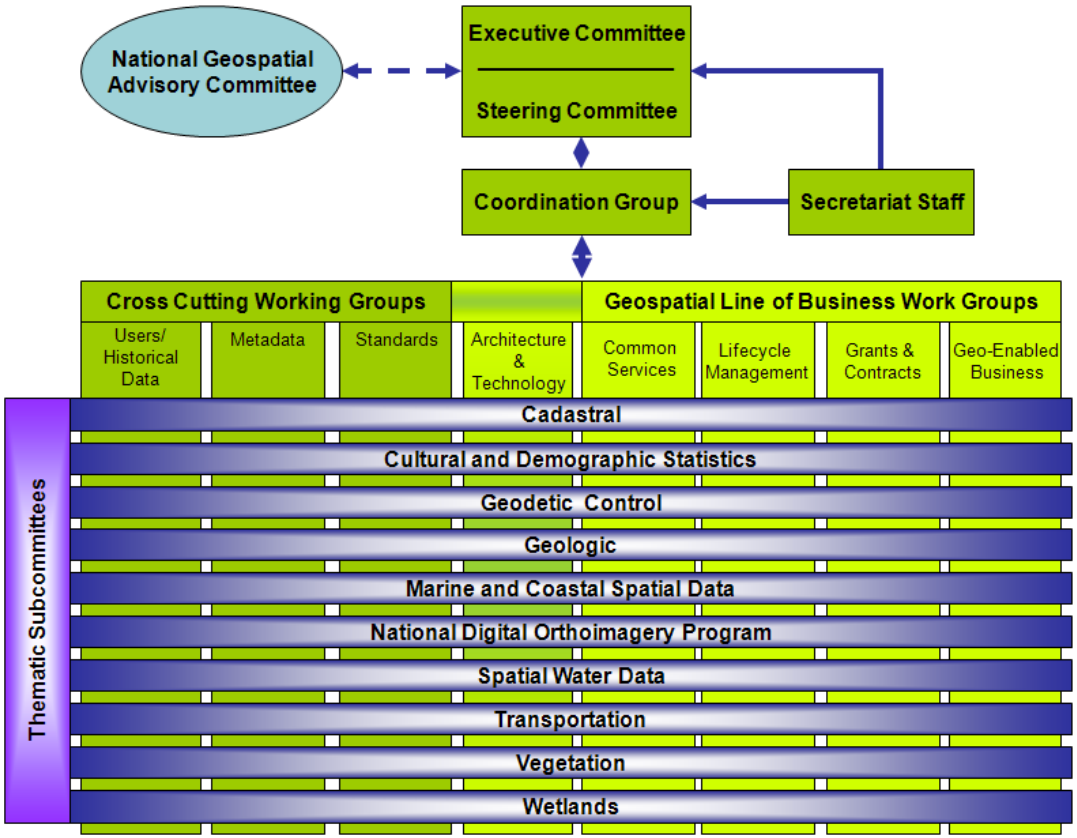

Figure: Overview of the structure of the various components of the FGDC

fgdc
FederalGeographicDataCommittee

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The Federal Geographic Data Committee

The Federal Geographic Data Committee (FGDC) is an interagency committee that promotes the coordinated development, use, sharing, and dissemination of geospatial data on a national basis. This nationwide data publishing effort is known as the National Spatial Data Infrastructure (NSDI). The NSDI is a physical, organizational, and virtual network designed to enable the development and sharing of this nation's digital geographic information resources. FGDC activities are administered through the FGDC Secretariat, hosted by the National Geospatial Programs Office (NGPO) of the U.S. Geological Survey. The NGPO oversees other geospatial programs of national importance including The National Map and the Geospatial One-Stop activity.

The Office of Management and Budget (OMB) established the FGDC in 1990 and rechartered the committee in its August 2002 revision of Circular A-16, "Coordination of Geographic Information and Related Spatial Data Activities." The FGDC is a 19 member interagency committee composed of representatives from the Executive Office of the President, and Cabinet level and independent Federal agencies. The Secretary of the Department of the Interior chairs the FGDC, with the Deputy Director for Management, Office of Management and Budget (OMB) as Vice-Chair. Numerous stakeholder organizations participate in FGDC activities representing the interests of state and local government, industry, and professional organizations.

- What's new at the FGDC?
- Organization of the FGDC

News

- NRC study report: Successful Response Starts with a Map — February 13, 2007
- FGDC 2006 Winter Newletter now available — February 07, 2007
- Extension of 2007 NSDI CAP-Category 4 — February 05, 2007
- 2006 FGDC Annual Report Draft Review, Comments & Graphics due Feb 16, 2007 — February 02, 2007
- Metadata: North American Profile Committee Review

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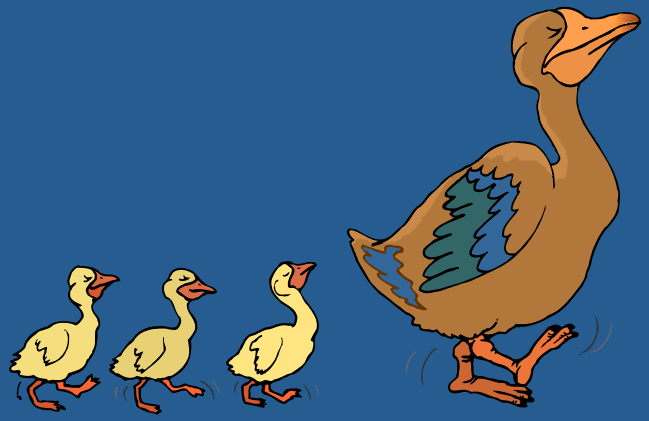
www.fgdc.gov

ISO and FGDC: The Transition



International Organization for Standardization (ISO) Metadata Standard

- The international community, through the International Organization for Standardization (ISO) designed a standard for geospatial metadata.

- Essentially, two standards were developed:

  - ISO 19115: has been approved – it is an abstract standard that specifies general content for the metadata, but does not specify the format

  - ISO 19139: XML implementation schema specifying the metadata record format.

International Organization for Standardization (ISO)

The ISO allows profiles to be developed for groups sharing a common interest. The FGDC has teamed with Canada to produce the North American Profile (NAP).

The NAP will replace the current Version 2 FGDC Standard, and essentially become Version 3

ISO 19115 Core Metadata Elements

Mandatory Elements:	Conditional Elements:
Dataset title	Dataset responsible party
Dataset reference date	Geographic location by coordinates
Dataset language	Dataset character set
Dataset topic category	Spatial resolution
Abstract	Distribution format
Metadata point of contact	Spatial representation type
Metadata date stamp	Reference system
	Lineage statement
	On-line Resource
	Metadata file identifier
	Metadata standard name
	Metadata standard version
	Metadata language
	Metadata character set

http://www.fgdc.gov/metadata/geospatial-metadata-standards

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NAP Editing Committee

Canada

- Natural Resources Canada
- Ontario Ministry of Natural Resources
- Canadian Geospatial Standards Board- Committee on Geomatics (CGSB-CoG)

USA

- Federal Geographic Data Committee
  - FGDC Metadata Working Group
- International Committee for Information Technology Standards- Geographic Information Systems(INCITS-L1)

North American Profile - ISO 19115

- Goal:
  - Meet the geospatial metadata implementation needs of the US/Canada through the development of a Profile guidance document

- Objectives:
  - Comprehensive profile
  - Identical content: US and Canadian Profile.
  - Release by ANSI same date and time as Canadian Standards Board

North American Profile: Approach

- No new attributes
- Increase attribute obligations (mandatory, optional, etc)
- Modify some codelist content
- Create new codelists for some free text fields
- Recommend structure with in text fields (e.g. address)
- Modify/simplify diagrams
- Adding best practices to guide implementation

ISO 19115

- ISO 19115 enables describing:
  - Geospatial data sets
  - Maps
  - Non-geospatial resources (example: tabular data)
  - Services: portals, web mapping

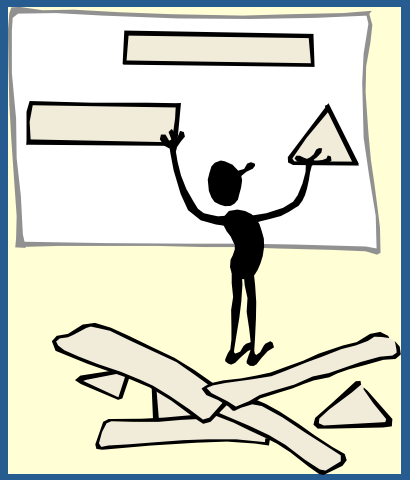
What are the differences between the FGDC CSDGM and the NAP?

Organization and Terminology

- FGDC
  - Sections
  - Elements
  - Compound Elements
  - Domains
- ISO / NAP
  - Classes
  - Subclasses
  - Attributes
  - Domains

Obligation Terminology: FGDC to ISO

- FGDC:
  - Mandatory
  - Mandatory-if-applicable
  - Optional
- ISO/NAP:
  - Mandatory
  - Conditional
  - Optional



Major Classes

- Metadata Entity Set Information
- Data Identification Information
- Service Identification Information-new
- Constraints
- Data Quality Information - new
- Maintenance Information – new
- Spatial Representation Information
- Reference System Information
- Content Information
- Portrayal Catalogue Information- *new*
- Distribution Information
- Application Schema Information - *new*

ISO Metadata: Core Elements

Dataset title	Spatial representation type
Dataset reference date	Reference system
Dataset responsible party	Lineage statement
Geographic location	On-line resource
Dataset language	Metadata file identifier
Dataset character set	Metadata standard name
Dataset topic category	Metadata standard version
Spatial resolution	*Metadata language*
Abstract	*Metadata character set*
Distribution format	Metadata point of contact
Additional extent info (vertical / temporal)	Metadata date stamp

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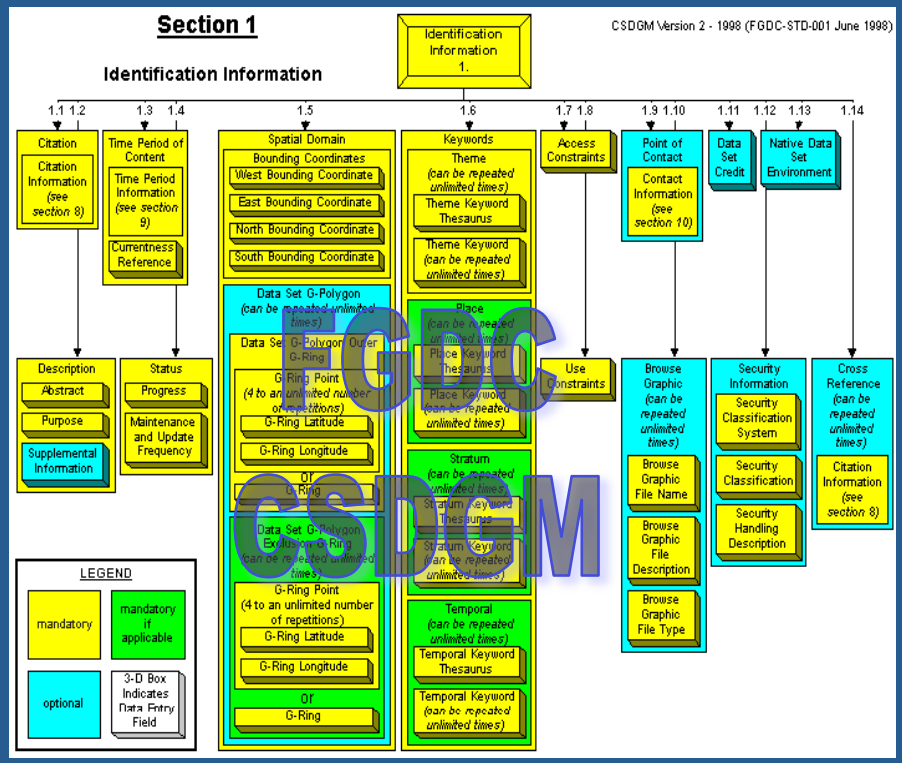
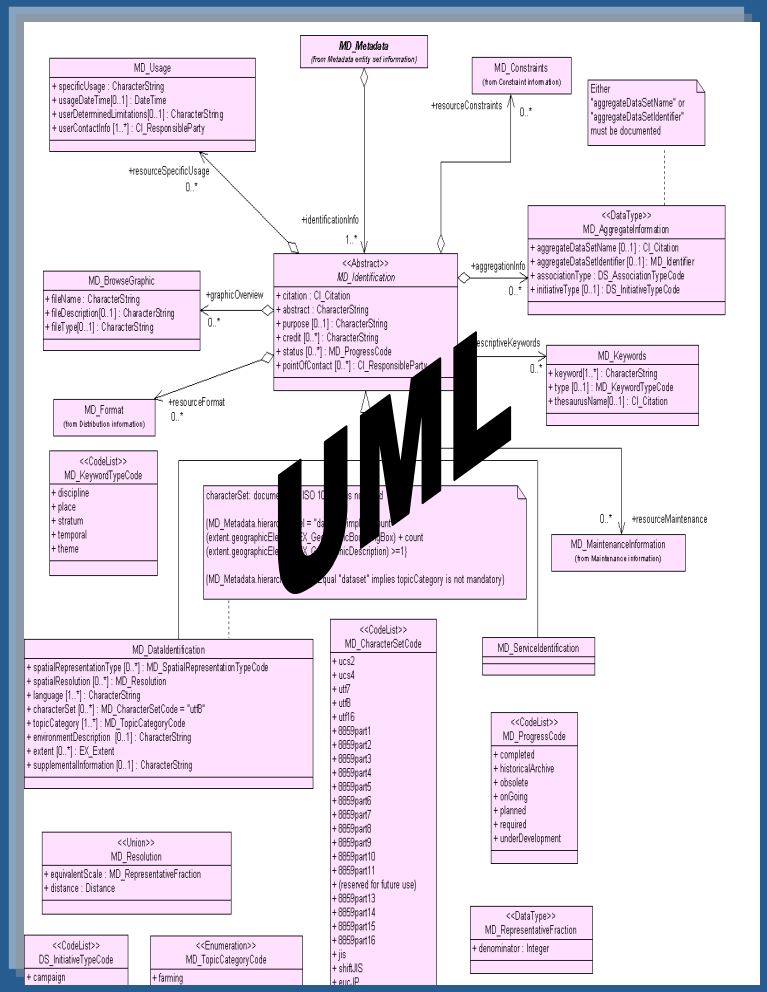
Formats





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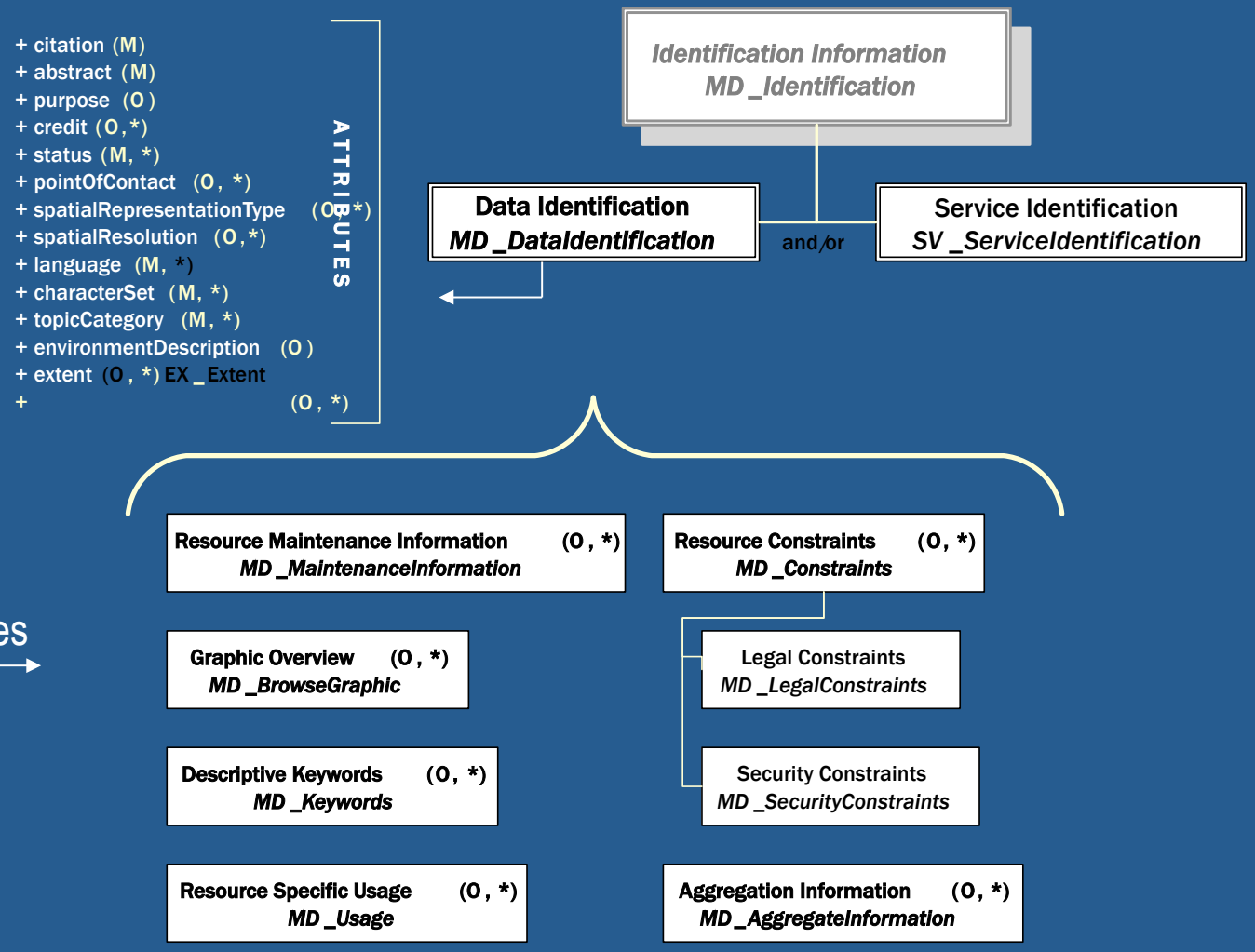
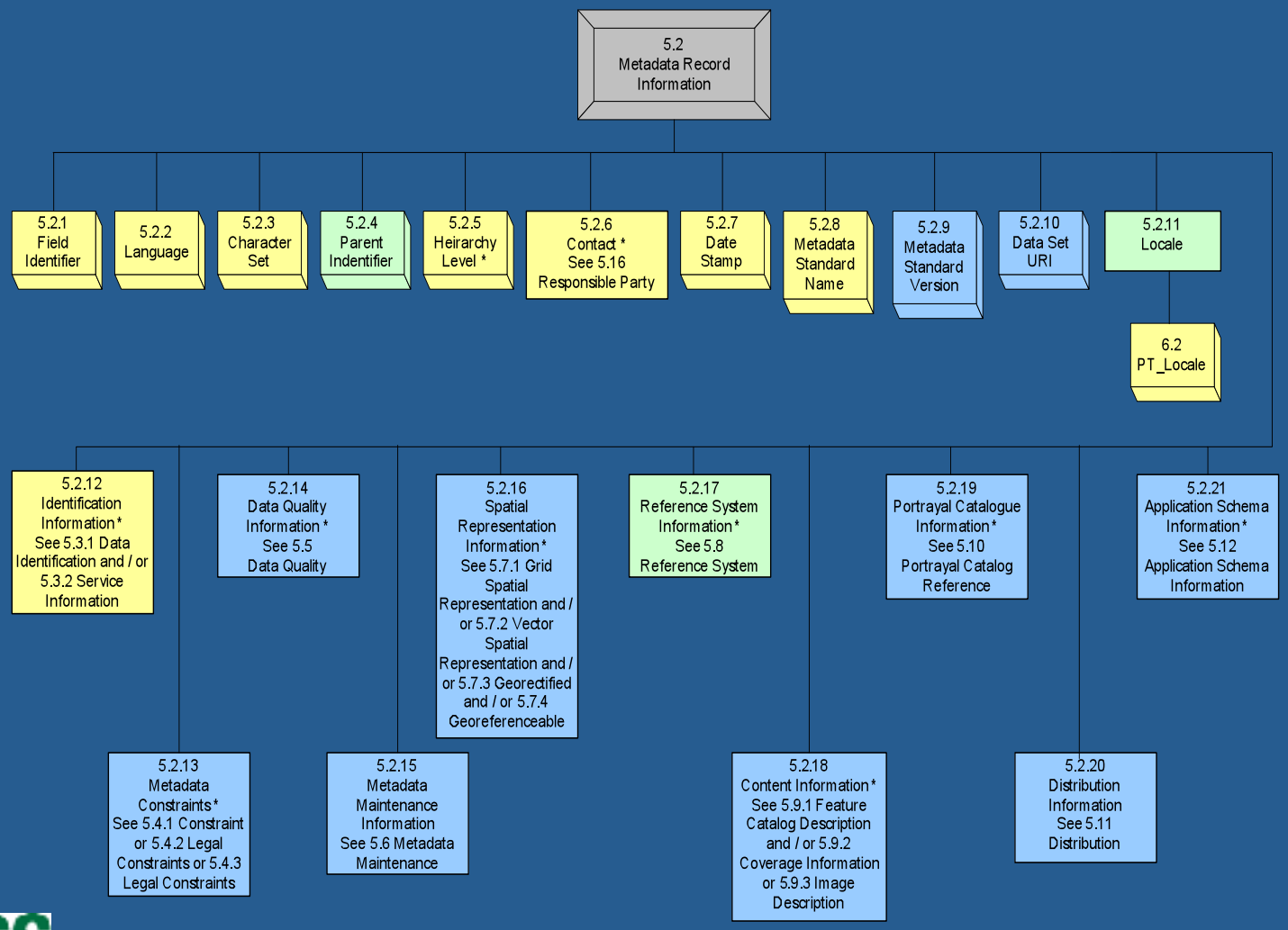
NAP Diagrams - current model



Sub-Classes →

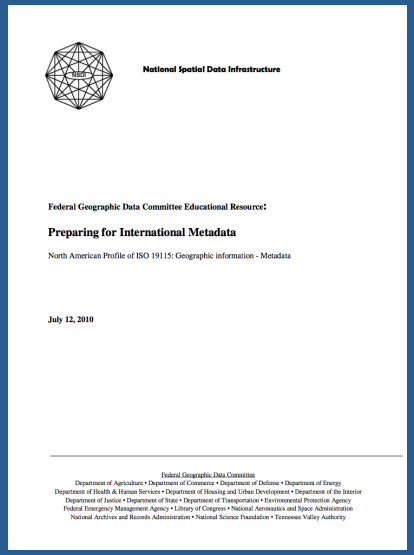
Graphic Representation



Status

- The *North American Profile (NAP) of ISO 19115: Geographic Information - Metadata*
  - formally adopted by the American National Standards Institute (ANSI) in June of 2009
- However, work continues on the NAP to:
  - integrate the geospatial database documentation specified by a related standard, *ISO 19110: Geographic Information: Feature Catalogue*
- Once complete, the Federal Geographic Data Committee (FGDC) will:
  - process the NAP as a Federal standard
  - promote implementation to the geospatial community

Transition Considerations


National Spatial Data Infrastructure

Federal Geographic Data Committee Educational Resource:

Preparing for International Metadata

North American Profile of ISO 19115: Geographic information - Metadata

July 12, 2010

Federal Geographic Data Committee
Department of Agriculture • Department of Commerce • Department of Defense • Department of Energy
Department of Health & Human Services • Department of Housing and Urban Development • Department of the Interior
Department of Justice • Department of State • Department of Transportation • Environmental Protection Agency
Federal Emergency Management Agency • Library of Congress • National Aeronautics and Space Administration
National Archives and Records Administration • National Science Foundation • Tennessee Valley Authority

- Monitor FGDC website: www.fgdc.gov
- Until FGDC recognition /adoption of NAP:
  - Continue use of FGDC CSDGM (Version 2)
  - Post metadata to clearinghouses (most use xml format)
- Consult FGDC document "Preparing for International Metadata: North American Profile of ISO 19115 Geographic Information - Metadata
  - http://www.fgdc.gov/metadata/geospatial-metadata-standards#nap

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Considerations, con't

- Metadata Creation Tools:
  - FGDC has evaluated 11 editors based on:
    - Metadata Development
    - Operating Environment
    - Metadata Management

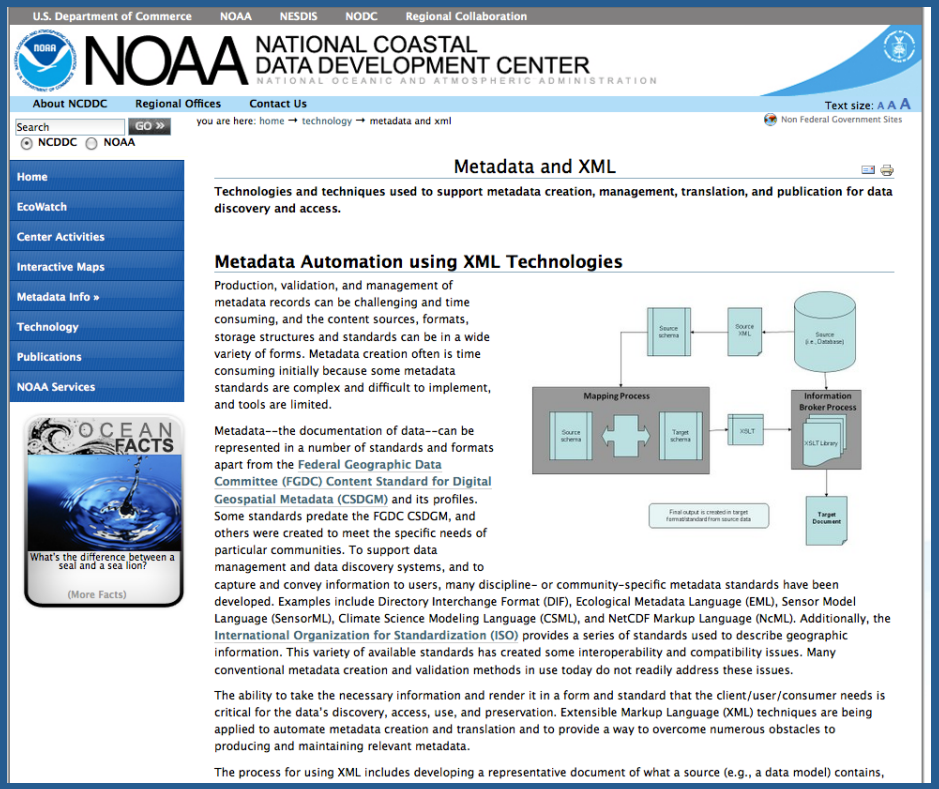
Note: Further evaluation will take place when support for the NAP is reflected in these tools

METADATA DEVELOPMENT											
	CATMDEdit v.4.5	ESRI ArcCatalog v9.2	ESRI Geoportal Extension v9.3.1 sp1	GeoNetwork v2.4.1	IME v4.1	INSPIRE Metadata Editor v1.06	M3CAT v1.6	MetaD v3.0.5	MetaGenie v2.0	Preludio v2.1	TerraCatalog v2.2
Support Features	The following support features are provided:										
Drop-down Lists	■	■	■	■	■	■	■	■	■	■	■
Direct Access to Metadata Element Definitions	■		■	■	■	■	■	■	■	■	■
Thesauri	■		■	■		■	■	■			
Spell Check											
Interactive Content Guidance	■		■	■	■	■	■	■	■	■	
Operating Instruction Manual	■	■	■	■	■	■	■	■	■	■	■
Auto-capture Properties from Data Set	■	■	■	■							
Other Support Features	■		■	■	■	■	■	■		■	
Edit Operations	The following edit operations can be performed:										
Create 'library' of Contacts, Sources, or Other Content	■	■					■	■		■	■
Multiple Edit Languages	■		■	■	■	■	■	■		■	■
Save Incomplete Record	■	■	■	■		■	■		■	■	■
Batch Edits	■	■		■			■	■		■	
Auto-populate Some Content	■	■	■	■	■		■			■	■
Embed Attachments		■		■						■	
Other Edit Operations	■		■	■	■		■			■	
Validation Operations	The following validation operations can be performed:										
Compliance Check	■	■	■	■	■	■	■	■	■	■	■
Batch Validate				■				■		■	■
Validate Incomplete Record	■	■	■	■	■	■	■	■	■	■	
Other Validation Features	■		■	■	■	■	■				■
Customization	The user can add and/or create:										
Custom Elements	■	■	■	■	■	■	■		■		
Custom Domains/Picklists	■	■	■	■	■	■	■			■	
Custom Thesaurus	■		■	■			■	■			
Custom Templates	■	■	■	■	■	■	■			■	■
Custom Interface	■	■	■	■	■		■			■	■
Other Customizations	■		■			■	■			■	

http://www.fgdc.gov/metadata/iso-metadata-editor-review

Considerations, con't

- NOAA has been working on "transforms" based on XML for metadata conversion from FGDC CSDGM to ISO 19115



U.S. Department of Commerce | NOAA | NESDIS | NODC | Regional Collaboration

NOAA NATIONAL COASTAL DATA DEVELOPMENT CENTER
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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OCEAN FACTS
What's the difference between a seal and a sea lion?
(More Facts)

Metadata and XML

Technologies and techniques used to support metadata creation, management, translation, and publication for data discovery and access.

Metadata Automation using XML Technologies

Production, validation, and management of metadata records can be challenging and time consuming, and the content sources, formats, storage structures and standards can be in a wide variety of forms. Metadata creation often is time consuming initially because some metadata standards are complex and difficult to implement, and tools are limited.

Metadata--the documentation of data--can be represented in a number of standards and formats apart from the Federal Geographic Data Committee (FGDC) Content Standard for Digital Geospatial Metadata (CSDGM) and its profiles. Some standards predate the FGDC CSDGM, and others were created to meet the specific needs of particular communities. To support data management and data discovery systems, and to capture and convey information to users, many discipline- or community-specific metadata standards have been developed. Examples include Directory Interchange Format (DIF), Ecological Metadata Language (EML), Sensor Model Language (SensorML), Climate Science Modeling Language (CSML), and NetCDF Markup Language (NcML). Additionally, the International Organization for Standardization (ISO) provides a series of standards used to describe geographic information. This variety of available standards has created some interoperability and compatibility issues. Many conventional metadata creation and validation methods in use today do not readily address these issues.

The ability to take the necessary information and render it in a form and standard that the client/user/consumer needs is critical for the data's discovery, access, use, and preservation. Extensible Markup Language (XML) techniques are being applied to automate metadata creation and translation and to provide a way to overcome numerous obstacles to producing and maintaining relevant metadata.

The process for using XML includes developing a representative document of what a source (e.g., a data model) contains,

http://www.ncddc.noaa.gov/technology/metadataandxml/view

Thank you!

Questions?

Comments?

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