FEDERAL METADATA COORDINATORS' WEBINAR:

ISO GEOSPATIAL METADATA IMPLEMENTATION FORUM

Introduction to the Forum

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Why Implement ISO Metadata?

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Wednesday
January 8, 2014

INTRODUCTION TO THE FORUM

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BACKGROUND

- Forum concept initiated during FGDC Metadata Summit breakout groups
  - Build upon knowledge & experiences
  - Share use cases
- Reinforced during the ISO Implementation Webinar discussion & follow up survey
  - Interest in establishing community of practice to learn from others
  - Engage in presentation & discussion

Metadata Summit
October 2011

ISO Implementation
Webinar April 2013

PURPOSE

Offer a webinar information series for the presentation & discussion of ISO geospatial metadata standards implementation efforts through shared experiences, strategies, topics, & resources.

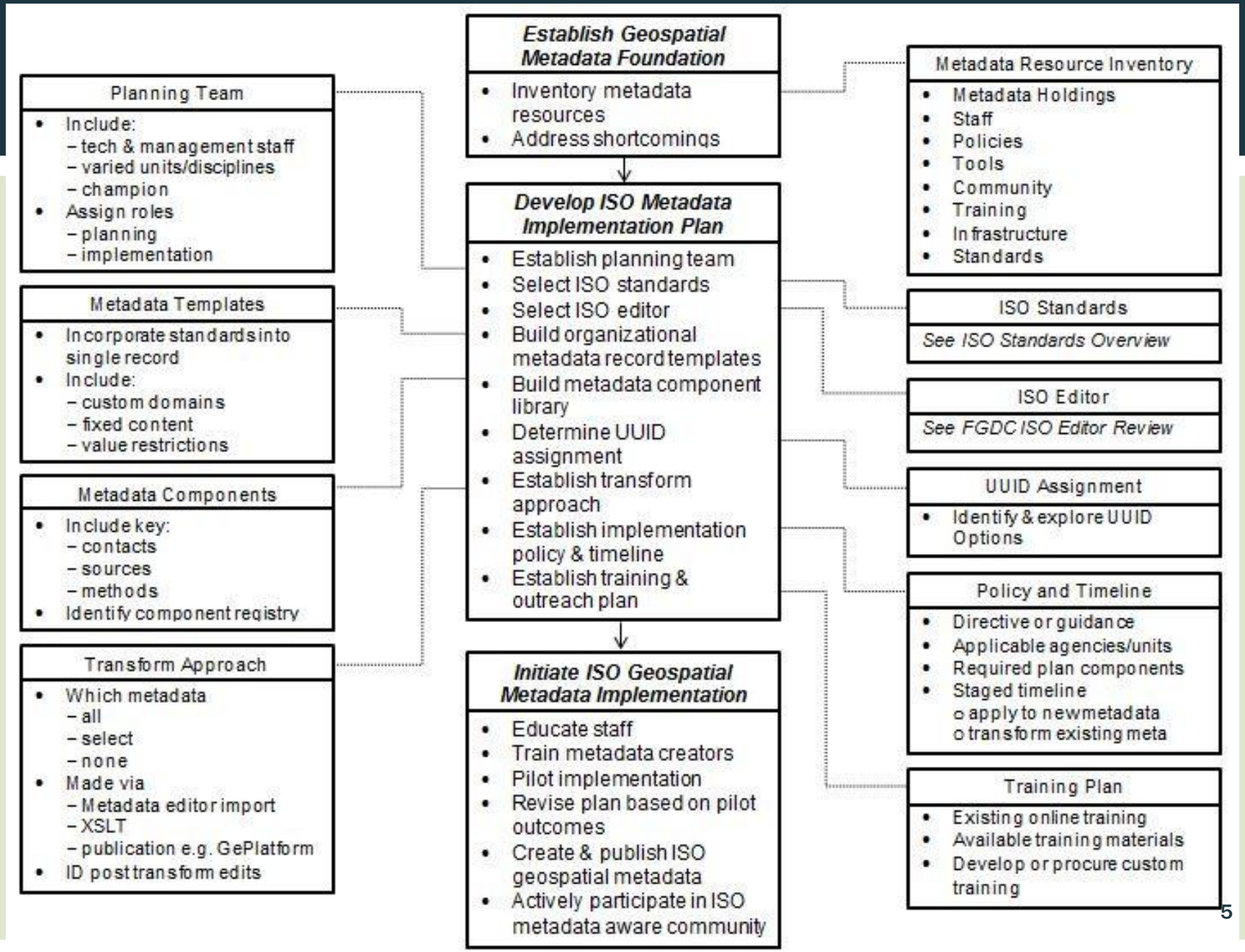
Audience: FGDC Metadata Working Group & other interested participants

Presenters: Community participants willing to share their expertise in common interest areas

Anticipated Outcome: Each session documented & available at the FGDC Metadata website; stimulate ideas and promote use

http://www.fgdc.gov/metadata/events/iso-geospatial-metadata-implementation-forum/index_html

ISO Metadata Implementation Model Workflow



WHICH ISO STANDARDS?

- ISO 119115: Geospatial Metadata
- ISO 19115-2: Imagery & Gridded Data Extension
- ISO 19115-1: Metadata: Part 1 – Fundamentals (pending revision to 19115)
- ISO 19119: Geospatial Services
- ISO 19110: Feature Catalog
- ISO 19139: Geographic Information – XML Schema
- ISO 19157: Data Quality
- ISO 19115 North American Profile (NAP) best practices
- & others

2014 SCHEDULE

Time: 3:00-4:30 PM ET with 60 minutes presentation & 30 minutes discussion

Date (Wednesdays)	Title
January 8	Why Implement ISO Metadata?
February 12	Why We Implemented ISO metadata
March 12	Metadata Working Group Meeting
April 9	ISO Metadata Implementation Tools - Federal
May 14	ISO Metadata Implementation Tools - Commercial
June 11	Metadata Working Group Meeting
July 9	ISO Metadata Implementation Workflow Model
August 13	ISO Metadata Implementation Workflow Experience
September 10	Metadata Working Group Meeting
October 8	To Be Announced
November 12	To Be Announced
December 10	Metadata Working Group Meeting

- *Community Profile Development*
- *Transforming CSDGM to ISO*
- *Other?*

MORE INFORMATION

If you are interested in presenting or have other topic suggestions, please send ideas to Lynda Wayne (Lynda@GeoMaxim.com) or Jennifer Carlino (jcarlino@usgs.gov)

Presentation Materials & Information will be available at:

http://www.fgdc.gov/metadata/events/iso-geospatial-metadata-implementation-forum/index_html

LOGISTICS

- Use Lecture Mode during presentations
- Please use the chat box for questions
  - Will answer as many questions as possible
  - Distribute summary of questions/answers afterwards
- Forum will be recorded
- Participate in as many Forum sessions as you like
- Presentations, Questions/Answers, and Recordings will be posted at:

  http://www.fgdc.gov/metadata/events/iso-geospatial-metadata-implementation-forum/index_html

WHY IMPLEMENT ISO METADATA STANDARDS?

Lynda Wayne
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content contributions from Kathy Martinolich, NOAA CDDC

TERMS OF USE

- **Metadata**
  - digital geospatial metadata
- **Data Resource**
  - dataset, service, application, model, attribute, tile, or other geospatial entity being described
- comparatives ('**more**', '**fewer**', '**new**', etc.)
  - differences between ISO Metadata and the FGDC-authored Content Standard for Digital Geospatial Metadata (CSDGM)
- **External Content**
  - information that is documented elsewhere and is referenced within the metadata record by use of a citation, identifier or link/href
- **External Standard**
  - standard other then the base metadata standard (19115/-1) that provides additional elements

REASONS FOR IMPLEMENTING ISO METADATA

1. Specified in many policies & initiatives related to data management & access
2. Supports effective documentation of range of geospatial resources
3. Enables custom implementation of a modular suite of standards

1. SPECIFIED IN GEOSPATIAL POLICIES & INITIATIVES

Emerging as the basis for many current policy guidelines, requirements & applications, particularly for Federal Agencies

- Native metadata format data.gov, US GeoScience Information Network (USGIN), & other data catalogs
- Topic Categories utilized as standard search themes in NSGIC GISInventory & other data inventories
- Referenced as geospatial extension to Project Open Data Common Core Metadata

1. SPECIFIED IN GEOSPATIAL POLICIES & INITIATIVES

CIRCULAR NO. A-119 Revised

- Federal agencies are directed to:

  use voluntary consensus standards in lieu of government-unique standards except where inconsistent with law or otherwise impractical

  - reduce government costs to develop standards and burden of complying with government specific regulations
  - Incentivize the development of national, vs. federal, standards
  - Promote private enterprise growth and efficient, economic competition
  - Increase reliance on private sector to supply goods and services
- As such, the FGDC has adopted more than 60 ISO/ANSI standards related to geographic information

http://www.fgdc.gov/standards/fgdc-endorsed-external-standards/

2. EFFECTIVE DOCUMENTATION

- More Standardized & Flexible Content
- New Content
- Expanded Values

2. EFFECTIVE DOCUMENTATION: STANDARDIZED CONTENT

- Fewer Mandatory Elements
  - Enforces standardized content across resource types
- More Optional Elements
  - Provides more flexibility in applying the standard

<u>Mandatory for Datasets</u>

- Title
- Date
- Geographic Location
- Language
- Topic Category
- Abstract
- Metadata Contact
- Metadata Date

2. EFFECTIVE DOCUMENTATION: STANDARDIZED CONTENT

- Code Lists (27+)
  - Fixed Domains
  - Extendable

code #'s eliminated in 19115-1

Example: Keyword Types

C.15 MD_KeywordTypeCode - methods used to group similar keywords

Name	Domain code	Definition
discipline	001	keyword identifies a branch of instruction or specialized learning
place	002	keyword identifies a location
stratum	003	keyword identifies the layer(s) of any deposited substance
temporal	004	keyword identifies a time period related to the dataset
theme	005	keyword identifies a particular subject or topic

2. EFFECTIVE DOCUMENTATION: STANDARDIZED CONTENT

- Code Lists (cont'd)
  - May apply to multiple elements

Example: Scope Code

Can apply to:

- Metadata
- Data Quality
- Maintenance Information

MD_ScopeCode

- attribute
- attributeType
- collectionHardware
- collectionSession
- dataset
- series
- nonGeogDataset
- dimensionsGroup
- feature
- featureType
- propertyType
- fieldSession
- software
- service
- model
- tile

19115-1:

+ *metadata*
+ *initiative*
+ *sample*
+ *document*
+ *repository*
+ *aggregate*
+ *product*
+ *collection*
+ *coverage*
+ *application*

2. EFFECTIVE DOCUMENTATION: STANDARDIZED CONTENT

- Sample Code Lists
  - Date Type (publication, creation, revision, last update, etc.)
  - Online Function (download, info, search, complete metadata, etc.)
  - Responsible Party Role (distributor, originator, point of contact, etc.)
  - Date Series Association Type (cross-reference, larger work, etc.)
  - Coverage Content Type (image, thematic, measurement)
  - Data Type (class, enumeration, integer, character string, etc.)
  - Geometric Object Type (point, solid, surface, etc.)
  - Imaging Condition (cloud, night, shadow, etc.)
  - Maintenance Frequency
  - Progress
  - Restrictions (copyright, patent, license, etc.)
  - Spatial Representation Type (vector, grid, text, tin, stereo, model)

2. EFFECTIVE DOCUMENTATION: STANDARDIZED CONTENT

- New Code Lists in ISO 19115-1
  - Telephone Type (voice, fax, sms)
  - DCPList (xml, html, soap, java, sql, etc.)
  - Reference System Type (local xy, lat/lon, bearing, etc.)
  - Topology Level (geometry, chain-node, 1D planar graph, 2D surface graph, 3D coordinate space)
  - Coupling Type - Services (loose, mixed, tight)
  - Parameter Direction - Services (input, output, both)

2. EFFECTIVE DOCUMENTATION: NEW CONTENT

Topic Category

- Only new mandatory element (datasets)
- 19 high-level subject headings
  - 21 categories proposed in 19115-1
    - extraTerrestrial
    - disaster
- Select all that apply
- Facilitates search & discovery
- Used by many geospatial resource catalogs
- Incorporate into CSDGM Theme Keywords to facilitate conversion
  - For guidance see 'Preparing for International Metadata' http://www.fgdc.gov/metadata/documents

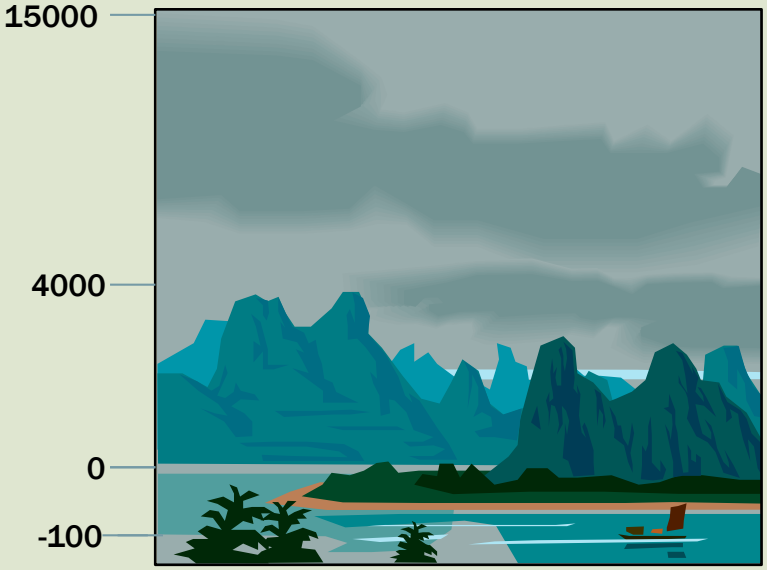
2. EFFECTIVE DOCUMENTATION: NEW CONTENT

- International Scope
  - Data Set Language & Character Set
  - Metadata Language & Character Set
- Service Metadata (web maps, catalogs, etc.)
  - Service Type
  - Access Properties
  - Operated Data Set & Operations
- Online Resources
  - Name & Description
  - Connection Protocol
  - Applications Used by the Resource
  - Function (code list)

download, information, order, search, metadata, email, browse, access, etc.

2. EFFECTIVE DOCUMENTATION: NEW CONTENT

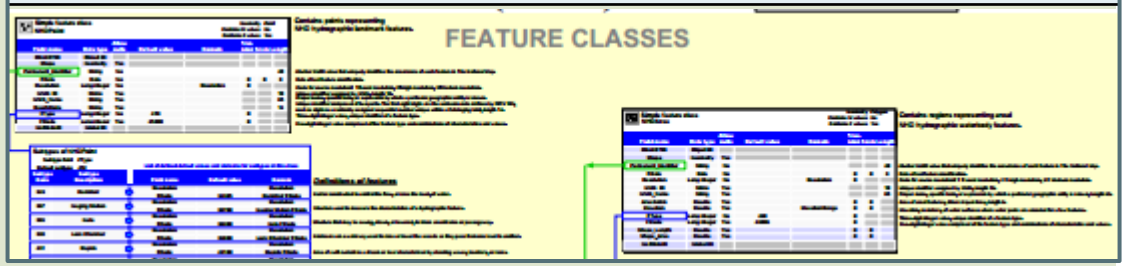
- Vertical Extent
  - Minimum & Maximum Values
- Maintenance Information
  - User Defined Update Frequency
  - Scope & Description of the Update
  - Maintenance Contact
- Usage
  - Description
  - Date/Time
  - User Determined Limitations
  - User Contact
- Portrayal Catalog (symbology)
  - Citation



2. EFFECTIVE DOCUMENTATION: NEW CONTENT

- Application Schemas (data & process models)
  - Citation

National Hydrography Dataset (NHD) Model v2.1

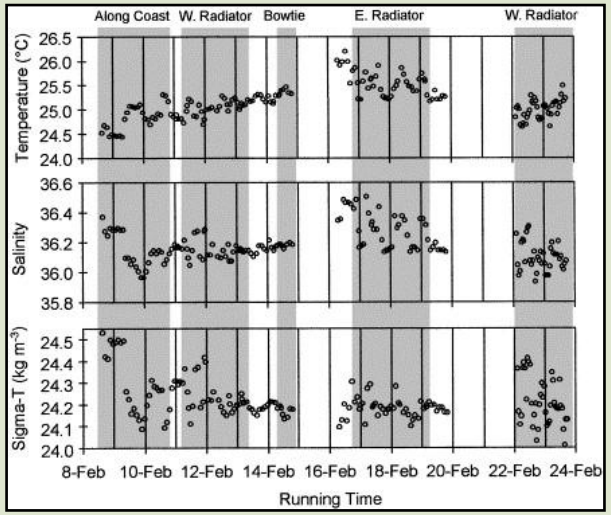


- Data Quality*
  - Scope
  - Temporal Accuracy
  - Various QA/QC report parameters & descriptors
  - Lineage:
    - Process Step Rationale
    - Source Reference System & Extent

**Data Quality elements, except for Lineage, externally referenced in 19115-1 to 19157*

2. EFFECTIVE DOCUMENTATION: EXPANDED VALUES

- Multiple Responsible Parties
  - Better reflects cooperative data development efforts
  - Can clearly define contribution of each
- Responsible Party Role (code list)
  - Better reflects data partnerships among resource: *custodian, distributor, author, sponsor, point of contact, etc.*
- Multiple Range of Dates
  - Better reflects multi-staged data collection efforts such as surveys, cruises, change detections periods, orthophoto, etc.



2. EFFECTIVE DOCUMENTATION: EXPANDED VALUES

- Expanded Use of Citations
  - Document once, reference many
    - Less duplication of effort
    - Greater consistency of content – single edit space
  - Elements include:
    - Title, Date, Responsible Party, Presentation Form, Identifier, etc.
  - Can be applied to:
    - Keyword Thesauri
    - Spatial Representation
    - QA/QC Procedures & Conformance Specifications
    - Reference System
    - Feature Catalogs
    - Portrayal Catalogs (symbols sets)
    - Applications Schemas (data models & standardized analyses)
    - Identifier Authorities (coding systems, unique identifiers, etc)

2. EFFECTIVE DOCUMENTATION: EXPANDED VALUES

- Identifiers
  - Unique short reference (UUID, DOI, etc.) for an associated resource
  - Should be referenced in Citation
  - Can be applied to:
    - Aggregated Data Sets
    - DQ – Measure Type
    - Geographic Location
    - Standardized Process Step
    - Platforms
    - Instruments

2. EFFECTIVE DOCUMENTATION: EXPANDED VALUES

- **Identifiers (cont'd)**

  NOAA Example: ***A Hypercube of Deep Sea Drilling Project (DSDP) Marine Geological and Geophysical Data***

```
referenceSystemInfo: (MD_ReferenceSystem)
    referenceSystemIdentifier: (RS_Identifier)
        authority: (CI_Citation)
            title: European Petroleum Survey Group (EPSG) Geodetic Parameter Registry
            date: (CI_Date)
                date: 2008-11-12
                dateType: (CI_DateTypeCode)
            citedResponsibleParty: (CI_ResponsibleParty)
                organisationName: European Petroleum Survey Group
                contactInfo: (CI_Contact)
                    onlineResource: (CI_OnlineResource)
                        linkage: http://www.epsg-registry.org/
                        name: European Petroleum Survey Group Geodetic Parameter Dataset
                        description: Registry that accesses the EPSG Geodetic Parameter Dataset,
                                     which is a structured dataset of Coordinate Reference Systems
                                     and Coordinate Transformations.
                        function: (CI_OnLineFunctionCode) search
                role: publisher
        code: urn:ogc:def:crs:EPSG:4326
        version: 6.18.3
```

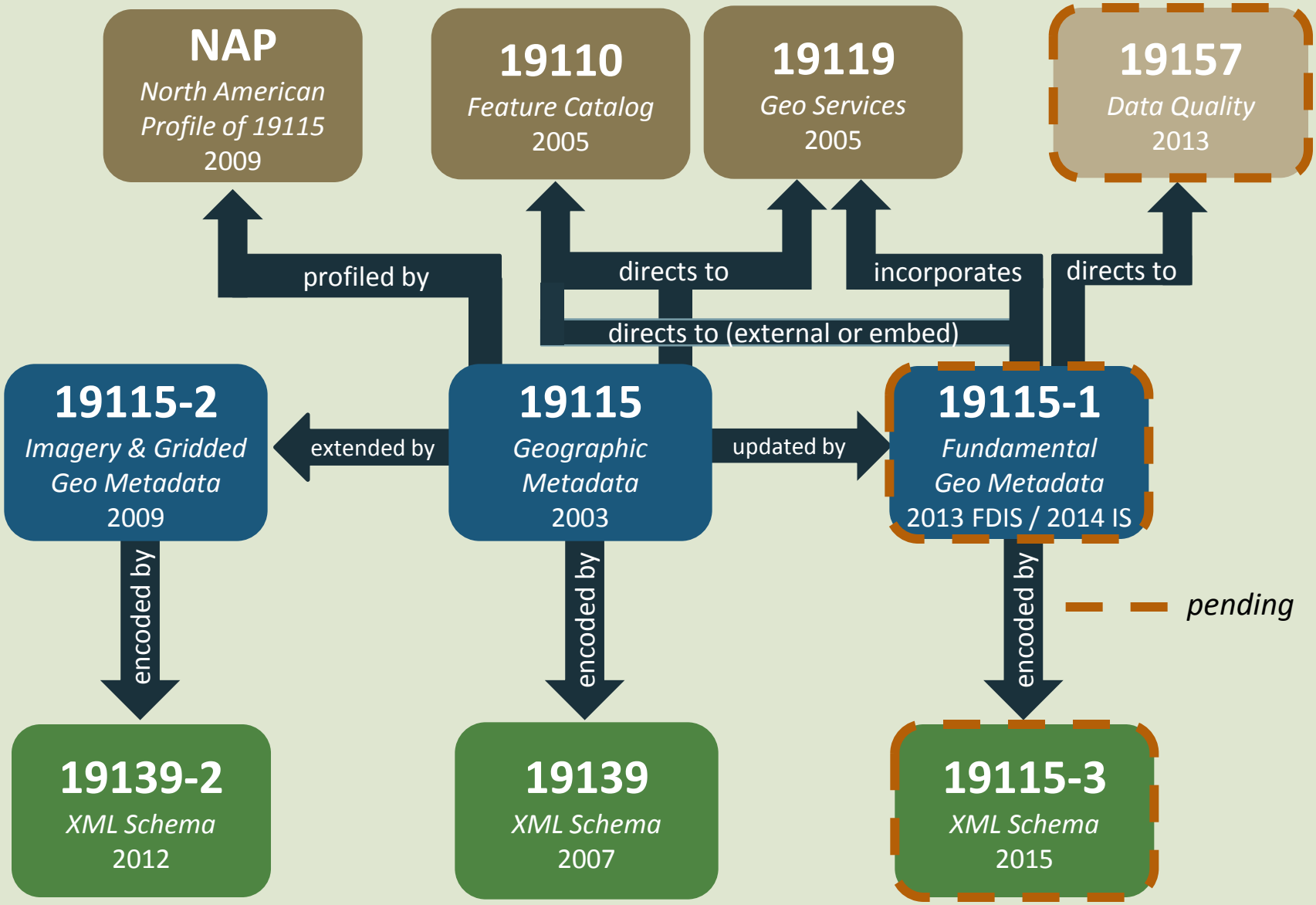
3. MODULAR SUITE OF STANDARDS

- Use only those standards that apply to your data &/or organization
- Document once & reuse Feature Catalogs, Data Quality practices, linked Services, etc.
- Distribute metadata creation among specialists (Systems Manager, QA/QC staff, Database Manager, Field Scientist, etc.)

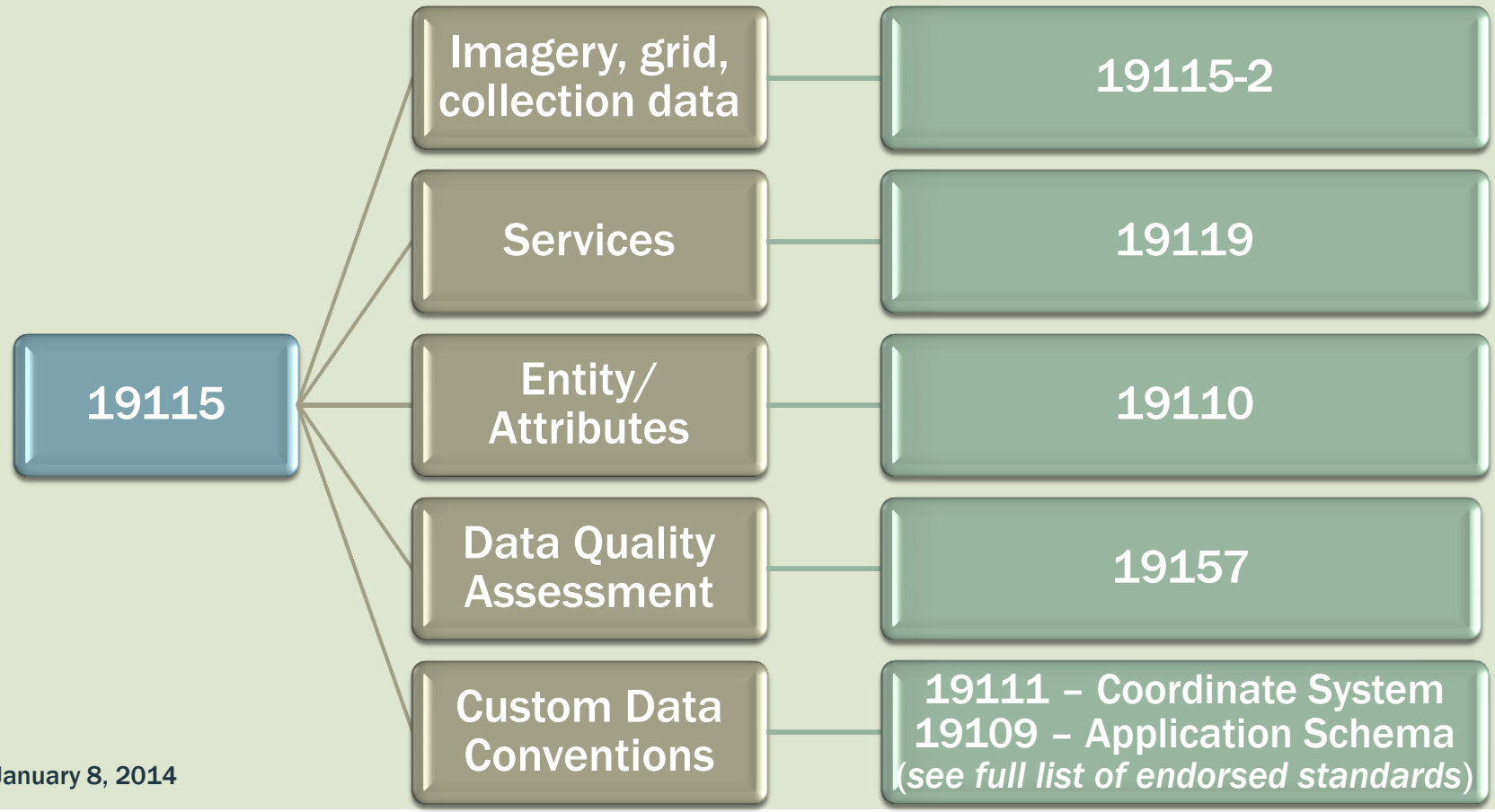
3. MODULAR SUITE OF STANDARDS

- ISO 19115:2003 Geographic information - Metadata (corrigendum 1)
- ISO 19115–2: Geographic information - Metadata Part 2: Extensions for imagery & gridded data
- North American Profile (NAP) of ISO 19115
- ISO 19110: Geographic information – Methodology for Feature Cataloging
- ISO 19139: Geographic information – Metadata – XML schema implementation
- ISO 19119: Geographic information - Services - Amend 1
- ISO 19157: Geographic information – Data Quality

3. MODULAR SUITE OF STANDARDS



3. MODULAR SUITE OF STANDARDS: WHICH SHOULD I USE?



SUMMARY

The ISO Metadata Suite of Standards:

- current to technological applications & capabilities
- small set of standardized mandatory elements
- large set of potential elements
- adaptable to organizational needs
- efficient use of external references, e.g. metadata roll-up
- actively implemented by all sectors

DISCUSSION

What expectations or experiences do you have with respect to ISO metadata to:

- address policies and initiatives
- support robust, effective documentation of geospatial resources
- adapt to organizational & thematic needs?

DISCUSSION: PARTICIPANT INPUT

- Where can I access notes and information from previous FGDC metadata outreach activities?

  2011 Metadata Summit:

  - http://www.fgdc.gov/metadata/events/metadata-summit/index_html

  2013 Fed Metadata Coordinator ISO Metadata Webinar

  - http://www.fgdc.gov/metadata/events/ISO_Implementation_Webinar/index_html

- With ISO 19115-1, will the Data Quality information (19157) be a separate file?

  The ISO 19115-3 XML schema under development for ISO 19115-1 provides for the inclusion of Data Quality Information (ISO 19157) within the metadata record.

DISCUSSION: PARTICIPANT INPUT

- Will ISO 19115-3 specify XML formatting for both ISO 19115-1 and ISO 19115-2 (Remote Sensing & Gridded Data Extension)?
  No. The proposal to incorporate ISO 19115-2 was not approved.

- How can we see/access the standards?
  - The UML diagrams are free at: http://www.isotc211.org/hmmg/HTML/
  - The standard publications are available for purchase at: http://webstore.ansi.org/
    NOTE: INCITS versions of standards are generally less expensive (~$60). Easiest method: search for standard #. e.g. '19110' then use find function to see if 'INCITS' vers is available
  - The NOAA ISO Workbooks are available from: http://www.ncddc.noaa.gov/metadata-standards/

DISCUSSION: PARTICIPANT INPUT

- Creating metadata has always been a challenge. ISO metadata is more complicated. How do you simplify the process for staff?
  - Improved availability to effective ISO Metadata editors and other tools will go a long way in addressing the complexity. Watch the FGDC website and MWG email list for information about an updated ISO Metadata Editor Review
  - It is helpful to identify and assign an organizational metadata master/guru who can stay current with the standards, tools and training resources and be a resource to the staff.
  - Templates can be developed to customize the standard to your organization and trim the elements and values to relevant content. Templates can be broken into components that may be distributed among staff/functions, e.g. database manager documents feature catalogs, network manager documents services, research staff document identification information, field staff lineage, etc.

DISCUSSION: PARTICIPANT INPUT

- Does ESRI ArcGIS support Feature Catalog documentation?
  - We are not the software experts but please attend the May 14 Forum 'Commercial Metadata Implementation Tools'. ESRI has committed to participate in the session.
  - Please see the ESRI OGC & ISO/TC211 Standards Implementation Whitepaper: http://www.esri.com/library/whitepapers/pdfs/supported-ogc-iso-standards.pdf

DISCUSSION: PARTICIPANT INPUT

- Should we use 19115 or 19115-1? It seems most tool development, such as data.gov, is focusing on 19115 & 19115-2
  - Given the 5 year review cycle of ISO standards some measure of flexibility will be needed. The key is to remain current with the community and shared resources for moving forward together
  - You will be in good company with ISO 19115/-2. The tools are becoming stable and there is a growing community of support. Transforms are already under development to convert ISO 19115/-2 to 19115-1
  - Given the Final Draft status of ISO 19115-1 and forthcoming changes that may better support your data, organizations are strongly encouraged to explore the standard and poise themselves for implementation
  - Efforts such as data.gov are aware of the impending ISO 19115-1 update and will present their approach at the April 9 Forum 'Community Metadata Implementation Tools'

DISCUSSION: PARTICIPANT INPUT

- Why aren't you promoting the use of North American Profile (NAP)?
  - The NAP increases some domains and conditionality and provides best practices for populating most elements. It was developed prior to significant ISO 19115 implementation experience.
  - The best practices have been embraced by the US metadata community but most US implementers apply them using the source standard, ISO 19115/-2. The resources and community are not focused on NAP.
  - As such, there are no plans at this time by INCITS to update the NAP standard. However, INCITS is considering republishing the NAP as a guidance document. If embraced and codified by the community, the republished document can be submitted as a fully vetted profile.
  - NOAA comparison of ISO 19115 to NAP ftp://ftp.ncddc.noaa.gov/pub/Metadata/Online_ISO_Training/Intro_to_ISO/handouts/Comparison_between_NAP_and_ISO.pdf

DISCUSSION: ONLINE RESOURCE SUMMARY

- FGDC 2011 Metadata Summit
  http://www.fgdc.gov/metadata/events/metadata-summit/index_html
- FGDC 2013 ISO Webinar
  http://www.fgdc.gov/metadata/events/ISO_Implementation_Webinar/index_html
- ISO UML Diagrams
  http://www.isotc211.org/hmmg/HTML/
- ANSI Webstore
  http://webstore.ansi.org/ (search for cheaper INCITS versions)
- The NOAA ISO Workbooks
  http://www.ncddc.noaa.gov/metadata-standards/

DISCUSSION: ONLINE RESOURCE SUMMARY

- NOAA ISO Metadata Webinar Training Series http://www.ncddc.noaa.gov/metadata-standards/metadata-training/course-three/
- NOAA comparison of ISO 19115 to NAP ftp://ftp.ncddc.noaa.gov/pub/Metadata/Online_ISO_Training/Intro_to_ISO/handouts/Comparison_between_NAP_and_ISO.pdf
- NOAA XML Templates ftp://ftp.ncddc.noaa.gov/pub/Metadata/Online_ISO_Training/Intro_to_ISO/templates/
- Support fo ISO metadata standards in ArcGIS Desktop http://resources.arcgis.com/en/help/main/10.2/index.html#//003t0000000039000000
- ESRI OGC & ISO/TC211 Standards Implementation Whitepaper: http://www.esri.com/library/whitepapers/pdfs/supported-ogc-iso-standards.pdf

NEXT SESSION

February 12, 2014 - 3:00-4:30 PM (E)

Why We Implemented ISO Metadata

Implementers discuss their reasons for implementing the new standard and the benefits/challenges of their experience

If you are an experienced ISO implementer interested in presenting in this session please contact:

jcarlino@usgs.gov

or

Lynda@GeoMaxim.com