FEDERAL GEOGRAPHIC DATA COMMITTEE

2017
ISO Geospatial Metadata Summit Report

Bringing Community Together to Implement ISO Metadata

June 30, 2017

Federal Geographic Data Committee

ISO Geospatial Metadata Summit

May 23-24, 2017
USGS National Center
Reston, Virginia

Contents

Introduction

The Federal Geographic Data Committee (FGDC) hosted an ISO Geospatial Metadata Tools Session May 23, 2017 followed by a Metadata Summit on May 24, 2017 at the U.S. Geological Survey National Center in Reston, Virginia. The purpose of the Summit was to promote the use of ISO geospatial metadata standards and to improve geospatial data and services discovery and use for federal and non-federal National Spatial Data Infrastructure (NSDI) stakeholders and users. The Summit built upon the 2011 FGDC-sponsored Metadata Summit and the 2013 ISO Metadata Workshop and focused on:

- Identifying and addressing ISO metadata implementation issues
- Developing ISO metadata implementation plans
- Leveraging the Geospatial Platform to implement the standard and access services
- Engaging participation in ISO metadata policies, tools, and, outreach
- Sustaining implementation efforts.

The meeting included:

- Day One: ISO Metadata Tools Session
- Day Two: ISO Metadata Summit
  Plenary
  - ISO Implementation Progress to Date
  - Geospatial Platform and Data.gov Utility of Geospatial Data
  - Documentation of Services
  - Development of ISO Metadata profiles, Templates, Transition Policies and Tools
  - A Challenge to Move Forward with ISO Implementation via the FGDC Metadata Working Group and NSDI Stakeholder Community

  Breakout Discussions:
  - ISO Implementation Policy and Planning
  - ISO Tools and Applications
  - ISO Education and Outreach

The Summit was open to all NSDI Stakeholders. While there was strong focus on ISO metadata implementation and service documentation for federal data resources including National Geospatial Data Assets (NGDAs), participants represented a broad range of the geospatial community and included federal agencies, state government, Non-governmental Organizations (NGOs), universities, and the private sector. A complete list of organizations is provided as Appendix A.

Presentations (descriptions, PDF, and mp4) for both the Summit and the Tools sessions are available at: https://www.fgdc.gov/metadata/events/iso-metadata-summit-2017.

ISO Metadata Tools Session Description

The ISO Metadata Tools session provided participants with an overview and hands-on demonstration of available ISO Geospatial Metadata Tools to:

- Increase the awareness and use of ISO geospatial metadata standards and tools
- Enhance the quality and operational capabilities of geospatial metadata records

The *ISO Metadata Tools Agenda* is provided as Appendix B.

Six ISO metadata tools were presented. The tools included applications for ISO metadata creation and validation, assessment and extension, and publication.

- Geospatial Platform Object Editor and GeoPlatform profile (documentation of maps and layers)
  Geospatial analysts struggle to quickly find the right data to answer their analytical questions. The volume of published data continues to explode and requires metadata to be formatted in ways for machines can process it without additional human intervention. With new technology and applications developments geospatial metadata now has an enhanced role in enabling the discovery and direct access to the described data's online web services. This process begins by enhancing the content of the metadata records, improving discovery and access, and integrating available services. The ISO suite of, FGDC endorsed, metadata standards, provides a robust structure to enable this services-centric user experience. With geospatial services delivery as it primary goal, the Geospatial Platform released tools which will improve metadata consistency enhancement and ensure standards compliance.

- Esri Geoportal Server
  The Esri Geoportal Server metadata editor can be used both as part of a geoportal server instance, as a standalone web editor, or as an external editor for ArcGIS. The session will cover the editor's capabilities and extensibility to allow configuring specific metadata profiles, validation rules and transformers. During the session, users will have the ability to use a public instance to create/edit metadata.

- EPA Metadata Editor
  The EPA Metadata Editor (EME) 5.0 is the Environmental Protection Agency's newest geospatial metadata editor. EME 5.0 is a customization of ESRI's ArcCatalog. It has been customized to allow users to meet the requirements of EPA's Metadata Technical Specification, which follows both ISO 19115 and Project Open Data Standards. In addition, a number of features have been added to improve usability and to make it easy to produce high quality metadata records. This session will provide an in depth training of the features of the EME 5.0.

- NASA Metadata Management Tool
  NASA's Earth Science metadata catalog, the Common Metadata Repository or CMR, provides search and discovery access for over 34,000 dataset collections and over 360 million granule files. This session will demonstrate the basics of using the CMR's metadata management tool or MMT (https://github.com/nasa/mmt) to create compliant and useful metadata for CMR collections. This talk will also showcase recent developments within the CMR and its clients and upcoming plans for the system.

- NOAA Metadata Rubric
  There are many different ways to implement the ISO standards and very little content is required to create a technically valid metadata record. Therefore, in addition to ISO compliance, the Completeness Rubric provides an extra level of assessment to help metadata authors provide more thorough descriptions and follow best practices determined by the NOAA Metadata Working Group. There will be a high level overview of what the Rubric is assessing, followed by step-by-step guidance for running this assessment on individual ISO records for improving the score.

- Alaska Consortium ISO Metadata Toolkit
  The Alaska Data Integration working group (ADIwg) Metadata Toolkit is an open source suite of applications for authoring and editing metadata for both spatial and non-spatial projects and datasets. The main goal of the toolkit is to promote the creation and use of metadata by lowering the level of technical expertise required to produce archival quality metadata. mdJSON is the metadata format that ties the suite of tools together. Based on JavaScript Object Notation (JSON), mdJSON is capable of capturing 90% of ISO 19115-1 and 100% of FGDC CSDGM. The mdTranslator is a Ruby application that supports translation between multiple metadata formats. Currently the mdTranslator reads mdJSON and sbJSON (native format for USGS ScienceBase) and outputs metadata in multiple standards, including ISO 19115-2, 19110, HTML, mdJSON, and sbJSON (output of 19115-1 is planned).

Key features from each tool are highlighted in the table below.

Tool	Create/ Validate	Assess / Enhance	Publish	Features
Geospatial Platform Object Editor	✗	✗	✗	• Enhanced documentation to link resources and validate • Import and export ISO 19139 • ISO 19115-1/-3 & GeoPlatform profile planned for Aug 2017
Esri Geoportal Server	✗		✗	• Web based metadata editor • Supports multiple standards
EPA Metadata Editor (EME 5.0)	✗		✗	• ISO 19115-1/-3 compliant • Supports Project Open Data schema
NASA Metadata Management Tool	✗		✗	• Open source • Standards agnostic
NOAA Metadata Rubric		✗		• Online application available to assess metadata completeness • Adaptable to other resource types, e.g. services
Alaska Consortium ISO Metadata Toolkit	✗		✗	• Open source metadata editor • Transforms mdJSON to CSDGM, ISO 19115-1/-3/-2, 19110, HTML and USGS ScienceBase (sbJSON)

Key Features of Tools Presented at ISO Summit Tools Session

Participants expressed strong interest in:

- Technologies upon which the application was built (CSW, DCAT, open source, etc.)
- Standards and profiles supported, e.g. ISO 19115-1/-3, GeoPlatform profile documentation for maps and layers, CSDGM Biological profile
- Online (vs. Desktop) applications
- Developer-specific content and structures that may affect broader use and ability to customize
- Ability to apply/enhance applications for other geospatial resources, e.g. NOAA Rubric
- Transforms and the use of JSON

ISO Metadata Summit Description

The Summit included a morning plenary and an afternoon breakout group session.

Morning Plenary

The morning plenary provided a foundation for participants to gain an understanding of the current ISO metadata implementation environment. Presentations by several agencies and organizations focused on reviewing ISO implementation progress to date, the status of standards and applications, and organizational implementation efforts. The *ISO Metadata Summit Agenda* is provided as Appendix C.

- Building On Our Progress - Ken Shaffer, Federal Geographic Data Committee (FGDC)
  The geospatial community has made progress with ISO metadata implementation and built upon the actions generated via the 2011 Summit, 2013 Workshop, and the ISO Forum. Today's presentations will illustrate the creation of tools to support ISO implementation, formal efforts to plan for implementation, expanded use of ISO standards to document data and services, and the creation of community profiles. Continued effort is needed to fully embrace the operational capabilities that the ISO 19115/-1 standards provide.

- Leveraging The Geospatial Platform – Tod Dabolt, Department of Interior
  For decades we've preached metadata so users can understand what's in a particular dataset. While that is still important, we also know not many users have the time to read the fine print! In today's world we're overwhelmed with the variety of data we can discover in various catalogs, data repositories and on the open web. Skimming through all that metadata to find the "right" data to answer your mission driven question is often futile so we rely upon our human networks of data sources to find the golden nugget. We need to wake up and leverage the power of technology so we can let machines assist us in finding the "right" data. The GeoPlatform metadata profile and the new object editor are one attempt at helping technology work better for us so users can quickly find the golden nugget without having to do lots of sifting and guessing.

- ISO Standards Update Dave Danko, Esri
  ISO Metadata standards specify metadata for more than data catalogs and item discovery they cover a wide array of topics from comprehensive metadata for understanding geospatial data and services, to metadata about coordinate reference systems, non-coordinate reference systems, data quality, feature type and attribute catalogs, imagery parameters, and so on. This varied metadata is covered in a suite of standards developed and maintained by experts in the specific metadata topics. These interrelated standards are updated on a 3-5 year cycle. In the past ISO has used separate standards to define the metadata elements versus providing the encoding method (typically XML) for those elements. This part of the session will provide an overview of the various ISO metadata related standards and their status.

- Publishing ISO Metadata to Data.gov – John Jediny, Data.gov
  This talk will cover the tools, methods, and best practices for creating metadata records that support the full range of Data.gov and Geospatial Platform operational capabilities and improve the discovery and use of geospatial data resources. The document also serves as a foundation for companion metadata guidance developed for National Geospatial Data Assets (NGDA) and Project Open Data.

- Benefits of Documenting Geospatial Data and Services Lynda Liptrap, Census Bureau
  The Census Bureau began utilizing ISO metadata to document geospatial data and web map services in 2012. Since then, the process evolved and best practices emerged, followed by new requirements for National Geospatial Data Assets. This presentation will highlight the transition from the Content Standard for Digital Geospatial Metadata (CSDGM) to the implementation of ISO metadata. Topics will include the processes, the challenges, and the benefits of this implementation for both geospatial data files and web services.

- ISO 19115-1 Transition: Policy and Planning – Tyler Christensen, Anna Milan, Jaci Mize, National Oceanic and Atmospheric Administration (NOAA)
  The NOAA Data Documentation Procedural Directive states that we shall develop and implement a Transition Plan for supporting the revised ISO standards by January 2018. The NOAA National Centers for Environmental Information (NCEI) is leading this effort, but we are not working alone. The transition team comprises representatives from every line office in NOAA, who use a variety of metadata management tools. The team has regular peer-to-peer education sessions that facilitate understanding of the new standard, instigates useful conversations for leveraging new fields to establish and document common future best practices. Our goal is to develop a plan that is tangible, inclusive of technical options and can facilitate a coordinated transition to the updated standard across NOAA.

- North Carolina State and Local Government Metadata profile – Sara Wray, NC Department of Transportation and Jeff Brown, NC Center for Geographic Information and analysis
  The North Carolina State and Local Government Metadata Profile for Geospatial Data and Services was developed in response to the North Carolina Geographic Information Coordinating Council (NCGICC) request for a metadata implementation resource that would enhance the sharing of data across jurisdictions and enterprises and improve metadata creation and quality. The fiscal restrictions and high demand placed on State and Local government data shops require maximum efficiency and effectiveness with little time available to document data in a standardized and robust manner. The result is the creation of a state and local government geospatial metadata profile that: promotes International Standards Organization (ISO) geospatial metadata standards, remains applicable to the Content Standard for Digital Geospatial Metadata (CSDGM) legacy standard, operates across GIS applications, and is customized for key thematic communities such as municipal boundaries, parcels, and roads.

- Why, How and What of the EPA Metadata Editor 5.0
  The EPA Metadata Editor (EME) 5.0 is the Environmental Protection Agency's newest geospatial metadata editor. EME 5.0 is a customization of ESRI's ArcCatalog. It has been customized to allow users to meet the requirements of EPA's Metadata Technical Specification, which follows both ISO 19115 and Project Open Data Standards. In addition, a number of features have been added to improve usability and to make it easy to produce high quality metadata records. This session will discuss the development process for this new tool including why it was developed, challenges and successes as well as the tool's key features.

Afternoon Breakout Groups

During the breakout group sessions, participants were charged with identifying issues related to ISO metadata implementation and making suggestions for actions that could be taken to address the issues. The breakout group discussions were organized around the following topics:

1. ISO Policy and Planning: The group focused on the policies and planning efforts necessary to enable ISO metadata implementation. The following question was posed to the group:
   What policy and planning efforts and resources are needed to support organizations in moving forward with ISO metadata implementation?
   Facilitator: Travis Hardy, Ardent Management Consulting
   Note Taker: Ijada Madrigal – Booz, Allen, Hamilton

2. ISO Tools and Applications: This group focused on the tools and applications needed to effectively create, transform, validate, and publish ISO metadata. The following questions were posed to the group:
   What tools and applications are needed to support organizations in moving forward with ISO metadata implementation? How can the Geospatial Platform be leveraged?
   Facilitator: James Irvine, Ardent Management Consulting
   Note Taker: Philip Welsh, Booz, Allen, Hamilton

3. ISO Education and Communication: This group focused on issues related to outreach and training required to support the transition to ISO metadata including: guidance documents, instructional materials, promotional materials, tutorials, websites, and training events. The following question was posed to the group:
   What education and outreach efforts and resources are needed to support organizations in moving forward with ISO metadata implementation?
   Facilitator: Lynda Wayne, Ardent Management Consulting
   Note Taker: Lyle Hornbaker, Virginia Information Technology Agency (VITA)

Issues and Recommendations

The following issues and recommendations are organized by Breakout Group topic but represent a consolidation of comments: submitted in advance by FGDC Metadata Working Group (MWG) members; made during the Tools Session, Summit Plenary, and Breakout Group Discussions; and submitted with the Summit Evaluations (Appendix D) or as follow-up to the Summit.

The issues and recommendations will be vetted within the FGDC MWG and used by the FGDC Metadata Program to plan program activities, establish MWG action subcommittees, and generate topics for the ISO Forum. Some issues may be forwarded to FGDC governance bodies with recommendations for actions.

ISO Geospatial Metadata Policy and Planning

Issues	Comments and Recommendations
Strategy and timeline for transition to ISO metadata	• Identification of ISO benefits, e.g. service discovery, is not sufficient to promote ISO implementation. A formal directive with timeline is needed. • From the FGDC endorsement language of ISO 19115-1/-3: *The FGDC metadata program recognizes that different agencies are at varying levels of advancement in the use of metadata standards: for that reason, the FGDC will retain the FGDC Content Standard for Digital Geospatial Metadata (CSDGM) and ISO 19115:2003 as legacy standards after endorsement of ISO 19115-1:2014* • How to support ISO metadata development with non-feds? Recommendation: - Develop plan of action for transition to ISO 19115-1/-3 that considers CSDGM deprecation. Include broader community and focus on agency workflows.
Harmonize A–16, Open Data Policy, EO 12906, data management and reporting policies and practices	• Agencies have challenges meeting the various data publication and reporting requirements. Recommendation: - Streamlining of the requirements would support more effective, efficient, and robust reporting (*see related issue under Tools and Applications*)
Multiple FGDC endorsed metadata standards	• Community expressed difficulty in locating information in metadata records formatted using different standards • Tools, guidance documents, etc. are not clear as they try to support multiple standards Recommendation: - Build a master crosswalk for use by guidance resources (*see related issue under Tools and Applications*)
NGDA Lifecycle Maturity Assessment include ISO 19115-1/-3 use as a metric	• Promote agency use of ISO for the National Geospatial Data Assets (NGDAs) Recommendation: - Discuss within the A–16 NGDA community

ISO metadata implementation needs to initiate with decision makers	• Agency data steering committees and other authoritative bodies are often unaware of metadata issues and requirements Recommendation: - Promote the inclusion of metadata lead(s) in Agency data management and policy committees
Data.gov capability to publish ISO 19115-1/-3 metadata	• Data.gov is developing plans to implement ISO 19115-1/-3
ISO incorporation of CSDGM profiles, e.g. biological profile and North American profile best practices	• These profiles contain information of added value and should be preserved for existing records and future use Recommendation: - Maintenance authorities need to be designated to build and maintain ISO versions of the profiles

ISO Geospatial Metadata Tools and Applications

Issues	Comments and Recommendations
Build tools to create ISO 19115-1/-3 metadata via editing and/or transform	• The most limiting factor in ISO implementation is the lack of ISO and user support within existing tools Recommendations: - Build on proposed master crosswalk - Develop tools as a service - Leverage existing efforts, e.g. ADIwg Metadata Toolkit, Apache SIS Library
Guidance on using tools to document services	• Should be tool-specific Recommendations: - Incorporate Data.gov, GeoPlatform.gov, and NGDA guidance - Align NOAA service documentation guidance with above
ISO schema-based validation application with easy to understand error reporting	• Current tools do not provide user-friendly error messages nor prompts for completing the metadata • Support creation of complete and quality metadata Recommendations: - Develop online, generic, application for consistent validation - Leverage existing efforts, e.g. ADIwg Metadata Toolkit and NOAA Metadata Rubric, Apache SIS Library
Transform application for multiple standards that can be customized for agency/stakeholder use	• If standards and reporting requirements can't be aligned, develop transform application Recommendation: - Based on common crosswalk (see Policy and Planning) - Develop an online, generic transform app that would provide consistent transformed records - Leverage existing efforts such as ADIwg Metadata Toolkit
Consistency in metadata content	• Assignment of URI's • Use of controlled vocabularies Recommendation: - Develop interagency team to consider feasibility

ISO Geospatial Metadata Education and Outreach

Issues	Comments and Recommendations
ISO 19115-1/-3 'workbook' or online app to serve as both reference and guidance document	• The standard document is highly technical, e.g. UML diagrams, and costly Recommendation: - Develop online app that enables navigation of the standard and incorporates best practices - Build upon NOAA and/or NASA resources – streamline, reflect standard
Library of ISO metadata examples for different use cases including services and feature catalog	• Example records provide context for ISO elements Recommendation: - Identify strong examples and post to MWG website
ISO geospatial metadata list server to directly exchange updates, resources, questions, etc.	• Would provide means of continuing the dialog and enable interaction among community members. • The MWG email list is intended for working group correspondence vs. discussion threads Recommendation: - Create list server for all interested users
Training videos on specific topics similar to FGDC 2013 ISO Summit Workshop presentations	• Short, focused videos allow user to expand existing ISO knowledge effectively Recommendation: - Identify key topics of interest and Subject Matter Experts to develop online training modules - Include information about GeoPlatform Object Editor and other capabilities - Use FGDC YouTube channel or other means for sharing video resources
Promote benefits of ISO metadata to agency/stakeholder and provide resources to support implementation	• Agencies don't feel the need to change metadata standards Recommendation: - Update FGDC resources, e.g. Metadata Factsheet, What's Different with ISO presentation, Benefits of ISO presentation, etc. - Review, update, and promote benefits posted at: https://www.fgdc.gov/metadata/benefits-of-iso
Geospatial data developers lack knowledge of metadata standards, use, and creation	• Include metadata education in University curriculums Recommendation: - Continue the development of FGDC Metadata Curriculum and presentations and promote their use via the University Consortium for Geographic Information Science (UCGIS)

Conclusions

The Metadata Summit successfully brought together stakeholders from across the National Spatial Data Infrastructure community to reach a common understanding about the status of ISO metadata standards, tools, and implementation efforts and to identify specific challenges and potential recommendations for moving forward. It provided a valuable opportunity for data developers, software developers, and policy administrators to share perspectives and outline options for streamlining and optimizing the creation, publication, and use of geospatial metadata.

The following conclusions are based upon the recommendations, observations, and presentations made at the Summit.

- A user-based focus is necessary to engage data developers. Tools, policy, and outreach are most effective when they support existing workflows or require changes that directly benefit data development. Users should be informed and consulted at all stages of tool, policy, and outreach developments including:
    - Documentation of services, maps and layers
    - Metadata Publication
    - Guidance Documents

- Federal metadata requirements must be aligned or, at a minimum, expertly cross-walked, to eliminate workflow redundancy, improve content consistency, and facilitate the development of tools and applications that directly support the creation and publication of metadata. These requirements include:
    - Executive Order 12906
    - A–16 Supplemental Guidance for the National Geospatial Data Assets Portfolio
    - OMB Memorandum 13-13 Open Data Policy
    - Data.gov
    - Geospatial Platform
    - Additional government-wide directives, guidance, and policy as well as
    - Agency-specific data management and reporting policies and practices

- FGDC should facilitate a discussion with member agencies to determine next steps for the CSDGM and ISO 19115 standards and their potential deprecation as a means of focusing on ISO 19115-1/-3 implementation. While the FGDC endorsement language provides a mechanism to maintain these standards for legacy purposes, there is general consensus that federal agencies need a plan to move forward with ISO 19115-1/-3 metadata implementation.

- GeoPlatform, web mapping sites, and other geospatial data applications depend on the accurate and consistent documentation of services to provide users robust and efficient access and use of information. Agencies and other organizations publish new services daily. Education and outreach is needed to support Agencies in incorporating service documentation into their data development workflow.

- The implementation of ISO metadata will be greatly facilitated by the development of a community-vetted user resource. Since ISO standards are available by purchase only and are written using technical language and constructs such as UML diagrams, a resource that supports geospatial data developers would be valuable. The CSDGM Workbook was exceptionally well-received by the geospatial data community and a resource similar in content but utilizing newer, web technology is needed. This should be a coordinated effort that builds upon, rather than duplicates, individual agency efforts.

- The FGDC Metadata Working Group (MWG) is uniquely poised to follow-up on Summit issues and recommendations. This multi-organizational body of geospatial metadata experts represents those most familiar with hands-on geospatial data production and the incorporation of metadata into the workflow. They produce the metadata that fuels catalogs and applications and have the insights necessary to identify and implement best practices that support metadata utility at all levels.

Next Steps

The recommendations and conclusions compiled from the stakeholder community before, during, and following the ISO Metadata Summit will inform the focus areas and next steps of both the FGDC Metadata Program and the broader NSDI Stakeholder community.

The FGDC Metadata Program will utilize the information to guide and prioritize program activities such as ISO Forum topics and updates to the FGDC metadata website, ISO Model Workflow, and the Geospatial Metadata Fact Sheet. The MWG will review the outcomes and identify key actions for refinement and implementation via subcommittees. Priority by both the Metadata Program and the MWG will be based on foundational activities that support other activities, e.g. the development of a master metadata crosswalk, and activities that can be quickly implemented to support the community, e.g. the development of a metadata list server.

The NSDI Stakeholder community can utilize the information to guide organizational activities, identify and contribute toward available resources such as training videos and GitHub discussions, and build upon implementation efforts such as the NOAA ISO transition planning, the North Carolina state and local government metadata profile, and the Artic Data Integration Working Group (ADIwg) and EPA metadata toolkits. By building upon these efforts, stakeholders will be able to leverage existing resources and also improve consistency among metadata records, refine implementation methods, and continue development of a body of ISO metadata best practices.

Appendix A:
Summit Participation

The Metadata ISO Summit and ISO Tools Session were attended by 75 onsite and 43 webinar participants that represented an array of organizational affiliations.

US Federal Agencies

- Animal and Plant Health Inspection Services (APHIS)
- Bureau of Indian Affairs (BIA)
- Bureau of Land Management (BLM)
- Bureau of Ocean Energy Management (BOEM)
- Census Bureau
- Department of Agriculture (DOA-WDC and SLC)
- Department of Defense (DOD)
- Department of Homeland Security (DHS)
- Department of Interior – Office of Chief Information Officer (DOI-OCIO)
- Environmental Protection Agency (EPA)
- Farm Service Agency (FSA)
- Federal Geographic Data Committee – Office of the Secretariat (FGDC OS)
- Fish and Wildlife Service
- Forest Service
- General Services Administration
- Library of Congress
- National Aeronautics and Space Administration
- National Geospatial Intelligence Agency (NGA)
- National Oceanic and Atmospheric Administration (NOAA)
- National Science Foundation
- U.S. Geological Survey (USGS)
- U.S. Army Corps of Engineers (USACE)

Other Government Institutions

- Natural Resources Canada
- New Jersey
- Virginia
- North Carolina
- North Carolina Central University
- George Washington University

Non-profits and Non-governmental Organizations

- Arctic Landscape Conservation Cooperative (LCC)
- Noble Research Institute

Private Sector

- Ardent Management Consulting
- Booz Allen Hamilton
- Esri
- Image Matters
- Harris Corporation
- Innovate!
- Korea Land and Geospatial Informatix Corporation
- Mitre
- Woolpert

Appendix B:
Metadata Tools Session Agenda

Time	Topic	Presenter(s):
9:00	*Welcome*	Jennifer Carlino *FGDC*
Geospatial Platform		
9:15	*An overview of Geospatial Platform capabilities that enhance and utilize geospatial metadata* *Hands-on with the GeoPlatform Object Editor*	Tod Dabolt *DOI* John Davidson *Image Matters*
10:45	Break	
Esri Geoportal Server		
11:00	*Managing and publishing ISO geospatial metadata using the open source Geoportal Server* *Hands-on with Geoportal Server*	Marten Hogeweg *Esri*
Noon	Lunch	USGS Cafeteria on your own
EPA Metadata Editor (EME 5.0)		
1:00	*Creating ISO metadata and Project Open Data metadata in ArcGIS using EME metadata editor* *Hands-on with EME 5.0*	Ana Greene *EPA* Catherine Harness *EPA*
NASA Metadata Management Tool (MMT)		
2:00	*NASA Data Center metadata management using the open source MMT* *Hands-on with the NASA MMT*	Katie Baynes *NASA*
2:50	Break	
NOAA Metadata Rubric		
3:10	*Assessing the robustness of ISO metadata using the NOAA Metadata Rubric* *Hands-on with NOAA Metadata Rubric*	Anna Milan *NOAA* Tyler Christensen *NOAA*
Alaska Consortium ISO Metadata Toolkit		
4:00	*Alaska Data Integration Working Group: ISO Metadata Toolkit using mdTools* *Hands-on with ISO Metadata Toolkit*	Joshua Bradley *FWS* Dennis Walworth *USGS*
5:00	Adjourn	

Appendix C:
Metadata Summit Agenda

Morning Session: Dallas L. Peck Memorial Auditorium		
Time	Topic	Presenter(s):
8:30	*Welcome*	Jennifer Carlino *FGDC*
Building On Our Progress		
8:40	*Building on NSDI Stakeholder momentum toward ISO metadata implementation for data, services, and other geospatial resources*	Ken Shaffer *FGDC*
Leveraging The Geospatial Platform		
9:00	*Geospatial Platform capabilities that enhance and utilize geospatial metadata*	Tod Dabolt *DOI*
ISO Standards Update		
9:20	*ISO geospatial metadata standards and status*	Dave Danko *ESRI*
Publishing ISO Metadata to Data.gov		
9:40	*Publishing your metadata via Data.gov*	John Jediny *GSA*
10:00	Break	
Putting ISO To Work		
10:20	*Actions to implement, utilize, and promote ISO metadata standards:*	
	• *Benefits of Documenting Geospatial Data and Services Using ISO*	Lynda Liptrap *Census Bureau*
	• *ISO 19115-1 Transition: Policy and Planning*	Tyler Christensen, Anna Milan, Jaci Mize *NOAA*
	• *North Carolina State and Local Government Metadata profile*	Jeff Brown *North Carolina Center for Geographic Info and Analysis* Sarah Wray, *North Carolina Department of Transportation*
	• *Why, How and What of the EPA Metadata Editor 5.0*	Ana Greene *EPA*
Breakout Group Instructions		
11:45	*Afternoon Breakout Session Topics and Instructions*	Jennifer Carlino *FGDC*
Noon	Lunch	USGS Cafeteria on your own
Afternoon Breakout Session:		
Breakout Groups		
1:00	• *Tools and Applications* • *Education and Communication* • *Policy and Planning*	Led by Facilitators
2:45	Break	

Appendix C: Metadata Summit Agenda (cont'd):

Afternoon Session: Dallas L. Peck Memorial Auditorium		
Breakout Group Outcome Reports		
3:00	*Breakout groups report on priority issues and recommendations*	Breakout Group Representatives
Community Discussion		
3:45	• *Questions for Breakout Groups* • *Additional Issues*	All Participants
Closing Session		
4:15	*Maintaining momentum and next steps*	Jennifer Carlino *FGDC*
4:30	Adjourn	

Appendix D:
ISO Metadata Summit Evaluations

A workshop evaluation was distributed and the results incorporated into the report as Issues/Recommendations and Conclusions. The low response rate was informative in itself and future meetings will include sufficient time for participants to respond during the meeting and a well-marked evaluation collection box.

Overall respondents expressed that the meetings were of strong value and that they would like them to occur more frequently. Several respondents suggested an annual gathering. There were also requests to allow more time for Breakout Sessions and hands-on software demonstrations. Other key findings are below.

The Summit and Tools Session provided participants:

- *An opportunity to express and inform my questions and concern*
- *An overview of available tools for creating and managing ISO metadata*
- *Information about available resources (tools, documents, experts) of specific value to me*
- *An opportunity to engage in community activities*

The most useful components of the Summit and Tools Session were:

- *Hearing from and talking with a variety of organizations about their challenges, methods, and where they are in the process*
- *An overview of the tools*
- *Breakout sessions, hearing new ideas, working toward consensus, and influencing FGDC actions*
- *Documentation of services and collections*

The best improvement to the Summit and Tools Session would be:

- *More time for hands-on opportunities and discussions during presentations and breaks*
- *Provide advance resources:*
    - *participant homework so there is more even understanding*
    - *common metadata record for use in tool demonstrations*
    - *common issues that tools and presentations should address*
- *More focus on how tools will implement ISO 19115-1/-3*

Other comments, recommendations, or observations:

- *Would be helpful to hold the Summit annually, to share strategies and resources.*
- *Need a central workspace/wiki to share 'wisdom of crowds' – guidance documents, best practices, example records, etc.*
- *The workshop was well organized and very helpful*
- *The remote presentations went remarkably well*

ISO Metadata Summit Compiled Evaluation

13 responses

The Summit provided me:	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5	SCORE
Practical advice for moving forward with ISO implementation in my agency/organizations		1x2=2	3x3=9	6x4=24	3x5=15	50
Information about available resources (tools, documents, forums, experts) of specific value to me			2x3=6	6x4=24	5x5=25	55
An opportunity to express and inform my questions and concerns			1x3=3	7x4=28	5x5=25	56
New information about ISO standards and their utility		1x2=2	4x3=12	6x4=24	2x5=10	48
An opportunity to engage in community activities			1x3=3	8x4=32	4x5=20	55
New information about publishing and locating geospatial data and services		2x2=4	5x3=15	4x4=16	2x5=10	45
I am likely to attend another Summit if travel funds are available			1x3=3	8x4=24	4x5=20	47

The most useful components of the Summit were:

- Hearing from and talking with a variety of organizations about their challenges, methods, and where they are in the process
- Breakout session, hearing new ideas, working toward consensus, and influencing FGDC actions.
- Common threads/issues affecting implementation
- Understanding the status and processing of standards
- Clearer understanding of the relationship between FGDC, Data.gov, and GeoPlatform
- Summit presentations
- Support for onsite and remote participation

The best improvements to the Summit would be:

- Add third day with day-long breakout sessions to fully explore issues, learn from each other, and generate recommendations,
- Time for more interactive discussions during presentations and breaks
- Give homework, or presentations, in advance to ensure all are on the same level; don't assume everyone in the audience is on the same level
- Include examples of robust ISO 19115-1/-3 records for various themes in the handout folder or available to review
- When questions were asked, they needed to be explained, background given, for those that are new to the ISO metadata
- Make GeoPlatform profile available in advance to review
- Promote ISO by demonstrating what it can do that CSDGM can't
- More focused breakouts – hard to keep on track

Please provide comments, recommendations, or observations:

- Would be helpful to hold the Summit more often, (annually?), to share strategies and resources.
- Need a central workspace/wiki to share 'wisdom of crowds' – guidance documents, best practices, example records, etc.
- The workshop was well organized and very helpful
- Need participation from decision-makers. Maybe follow-up with breakout discussions and formulate consensus recommendations that can be passed up for adoption.
- A mandate to deprecate CSDGM and adopt ISO is needed to get Agencies to make the change
- NC provided a great example of state effort
- 'Authoritative' datasets that are not NGDAs, should still require metadata and lifecycle plans. These requirements tend to fall through the cracks of data architects and leadership
- Need better access to ISO standards – currently impedes education and use

ISO Metadata Tools Session Compiled Evaluation

20 responses

The Tools Session provided me:	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5	Score
An overview of available tools for creating and managing ISO metadata			2x3=6	10x4=40	8x5=40	86
Practical advice for selecting and utilizing ISO metadata tools and applications		2x2=4	9x3=27	7x4=28	2x5+10	69
New information about how tools can utilize ISO metadata			5x3=15	10x4=40	4x5=20	75
An opportunity to express and inform my questions and concerns			3x3=9	8x4=32	9x5=45	85
New information about publishing and locating geospatial data and services			3x3=9	12x4=48	5x5=25	82
I am likely to attend another Tools Session if travel funds are available			2x3=6	13x4=52	5x5=25	83

The most useful components of the Tools Session were:

- An overview of the tools
- Learning metadata Stakeholder faces, names, ISO activities, and approaches
- Documentation of services and collections
- Review of editors (vs. data management tools)
- Overview of existing standards presented in the beginning
- Learning about GitHub source code resources

The best improvements to the Tools Session would be:

- More hands-on opportunities
- Identify common-issues in advance that each tool presentation should address
- More focus on how tools will implement ISO 19115-1/-3, and provide same metadata record for each tool to use in their demonstration
- A pre-meeting 'homework' assignment with example dataset to explore the tools
- More information about transformation applications
- Time to discuss collaboration, reuse of tools
- A summary sheet of features for each tool.
- More information on applications agencies are required to support, e.g. Data.gov
- Include more editors, if able
- More talk about interagency cooperation and reduction in duplication of effort

Please provide comments, recommendations, or observations:

- The remote presentations went surprisingly well
- Heavy Federal government focus
- Work with software developers to integrate these tools and make available
    - I would need to combine 3 of the editors presented to support me data: 1) EPA editor in ArcCatalog for my vector data; 2) NASA MMT to capture collection, mission and raster metadata; and 3) Ge0spatial Platform to document services.
    - Many of us are limited in downloading tools and apps.