GEOSS Interoperability Workshops

Brought to you by the GEOSS Standards and Interoperability Forum (SIF)
Steve Browdy – SIF Chairperson

October 23, 2017
Past Workshops

• Virtual workshops held online
• Held for those interested in GEOSS/GCI, but specifically for data practitioners and data providers involved in, or interested in, the implementation of the GEOSS DMPs
• Slides of the presentations, as well as the recordings, are available at the SIF Workshop site
  • https://sites.google.com/site/geosssifworkshops/
Past Workshops

• 2016 GEOSS SIF Interoperability Workshop
  • 2016-OCT-20
  • Over 60 registrants
  • Focus on GEOSS DMPs
    • Metadata for Discovery
    • Traceability
    • Quality Control
  • Also presentations on:
    • Open Science
    • FAIR DMPs
    • Community Portal Interaction with GCI
    • Capacity Building
Past Workshops

- 2017 GEOSS SIF Interoperability Workshop
  - 2017-AUG-28
  - Over 70 registrants
  - Focus on GEOSS DMPs
    - Online Access
    - Encoding
    - Persistent and Resolvable Identifiers
  - Also presentations on:
    - NextGEOSS H2020 Project
    - Community Portal Interaction with GCI
    - Capacity Building
DMPs Considered

• DMP-1 *Metadata for Discovery*
• DMP-2 *Online Access*
• DMP-3 *Data Encoding*
• DMP-5 *Data Traceability*
• DMP-6 *Quality Control*
• DMP-10 *Persistent & Resolvable Identifiers*

• Some of the survey pictures provided by:
  • Siri Jodha Khalsa
  • Robert Downs
  • Marie-Francoise Voidrot
DMPs in Practice
DMP Implementation

Difficulty in Implementing

- 1. Metadata
- 2. Online
- 3. Encoding
- 4. Documentation
- 5. Traceability
- 6. QC
- 7. Preservation
- 8. Verification
- 9. Review
- 10. Identifiers

- No difficulties
- Moderately easy
- Moderately difficult
- Quite difficult
- Impossible
Impediments to Implementation
Data and all associated metadata will be discoverable through catalogues and search engines, and data access and use conditions, including licenses, will be clearly indicated.
DMP-1 Survey results

• Compliance with DMP-1

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• Difficulty in Implementing DMP-1

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• Challenges

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DMP-1 Interoperability Issues

• Access and Use Conditions (licenses & waivers)
  • Semantics involved
  • Impacts legal interoperability
  • Currently only GEOSS Data-CORE compatible licenses and waivers are considered
    • Work going on to expand this

• Catalogs and metadata must be maintained appropriately and validated to achieve reliable discovery over time
  • Costly and time consuming
DMP-2 Online Access

Data will be **accessible via online services**, including, at a minimum, **direct download** but preferably **user-customizable services for access, visualization and analysis**.
DMP-2 Survey results

• Compliance with DMP-2

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• Challenges

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DMP-2 Interoperability Issues

- Single Sign-On
  - Authentication
  - Authorization
  - GEOSS-wide federation
    - Trust issues
    - Variety of mechanisms
- In-place processing
  - Becoming more present (minimize data movement)
  - Takes burden off of network and local machines/servers
- Semantic concerns
  - Need better mediation/mapping between vocabularies
  - Maybe too many vocabularies
DMP-3 Data Encoding

Data should be structured using encodings that are widely accepted in the target user community and aligned with organizational needs and observing methods, with preference given to non-proprietary international standards.
DMP-3 Survey Results

- Technical: 43%
- Organizational: 34%
- Financial: 19%
- Legal: 4%
DMP-3 Interoperability Issues

- Semantic interoperability
  - Need better mediation between:
    - communities and disciplines
    - Ontologies, vocabularies, taxonomies, etc.
  - Affects analysis, visualization, and integration

- Legal interoperability
  - Need expanded set of licenses
  - Need encodings of the legal parameters
  - Is impacted by semantics
DMP-5 Data Traceability

Data will include provenance metadata indicating the origin and processing history of raw observations and derived products, to ensure full traceability of the product chain.
DMP-5 Survey Results

- Organizational: 44%
- Technical: 28%
- Financial: 21%
- Legal: 8%
DMP-5 Interoperability Issues

• Completeness
• Correctness
• Semantic compatibility
  • Translations between incompatible provenance elements
• Interpretability
  • Standardize values for provenance elements
Data will be quality-controlled and the results of quality control shall be indicated in metadata; data made available in advance of quality control will be flagged in metadata as unchecked.
DMP-6 Survey results

- **Compliance with DMP-6**

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- **Difficulty in Implementing DMP-6**

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- **Challenges**

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DMP-6 Interoperability Issues

- Appropriate definition of QC parameters
- Semantic mediation between communities and disciplines
- Impacted by:
  - Encoding
  - Metadata discovery
Data will be assigned appropriate, persistent, unique, and resolvable identifiers to enable documents to cite the data on which they are based and to enable data providers to receive acknowledgement for use of their data.
DMP-10 Survey Results

Practice and Difficulty

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Challenges

- Financial
- Legal
- Technical
- Organizational

Positions that Practice

- Data producer
- Data manager
- Data consumer
- Researcher
- Policy maker
DMP-10 Interoperability Issues

- Automation of DOI implementation
  - Manual process is too slow and not scalable
- Dynamic linkages across multiple resources is not established
- Institutionalizing the concept of citing data takes time
Future Considerations

• Research towards moving to a peer-to-peer federated data sharing infrastructure
  • Utilizes old and new technologies in evolutionary ways
  • Mitigates issues with centralization
  • Addresses security and privacy issues, if applicable
  • Simplifies governance model
  • Allows easier participation

• Standards remain key to interoperability success

• 5-10 years for mainstream adoption
Thank You

Communicate and Collaborate with GEO: