



Collaboration in the Earth Science Data System Working Groups (ESDSWG)

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Prepared for presentation to

The Council of Data Facilities Meeting

4:00 p.m. EDT, August 13, 2021

What is the ESDSWG?

- "The Earth Science Data System Working Groups (ESDSWG) is a NASA organization established under the auspices of NASA Headquarters in 2004."
- "The chartered role ... focuses on the exploration and development of recommendations derived from pertinent community insights of NASA's heterogeneous and distributed Earth science data systems."
- "working groups organized around key technology and information system issues"
- "Each working group functions independently"
- Members drawn from NASA community (DAACs, SIPs, projects, ...)

Source: <https://earthdata.nasa.gov/collaborate/esdswg>

Historical Perspective of ESDSWG

- 2004 - 2010: 4 inaugural groups and continuing activities
 - Metrics Planning and Reporting -> ESDIS Metrics System (EMS)
 - Standards Process -> ESDIS Standards Office (ESO)
 - Technology Infusion -> Earth Science Technology Office
 - Software Reuse -> NASA open source initiatives
- 2011+: Groups formed annually
 - Plans for new or continuing groups formed prior to annual ESDSWG Meetings
 - Proposed and revised by community members during annual ESDSWG Meetings
- Continuing pattern
 - Each group formed and populated based on interests of community members
 - Group activities developed and pursued based on interests of group members

Selected Current ESDSWG Activities

- **Community Development Best Practices**
 - Practices for community development of open source resources
- **Machine Learning Capacity Development**
 - Learning and applying techniques for machine learning
- **Data Interoperability for Machine Learning Data (DIML)**
 - Stewardship of machine learning training data
- **Collaboration Methods in Technology Infusion (CMITI)**
 - Practices for collaborative innovation
- **Data Product Development Guide for Data Producers (DPDG)**
 - Continuing to identify potential updates for the DPDG

Selected Examples of ESDSWG Collaboration with ESIP



- ESDSWG engagement with ESIP
 - Overlapping leadership on ESDSWG teams and ESIP teams
 - ESDSWG sessions and presentations at ESIP meetings and Cluster Events
- ESDSWG and ESIP teams collaborate
 - ESDSWG Technology Infusion and ESIP Data Stewardship and Preservation persistent identifiers study
 - ESDSWG PROV-ES and ESIP Data Stewardship and Preservation provenance study
- ESDSWG activities continued as ESIP Cluster activities
 - ESDSWG Citations and Identifiers activities continued in ESIP Citations Cluster
 - ESDSWG Data Quality activities continued in ESIP Information Quality Cluster

Selected ESDSWG Outcomes

- Guidance
 - Digital Object Identifier (DOI) Process: <https://earthdata.nasa.gov/collaborate/doi-process>
 - Reuse Readiness Levels (RRLs): https://earthdata.nasa.gov/files/RRLs_v1.0.pdf
 - Data Product Development Guide for Data Producers: <https://doi.org/10.5067/DOC/ESO/RFC-041VERSION1>
- Standards and Recommendations
 - Data formats: <https://earthdata.nasa.gov/esdis/eso/standards-and-references#data-formats>
 - Data quality: <https://earthdata.nasa.gov/esdis/eso/standards-and-references#data-quality>
 - Metadata: <https://earthdata.nasa.gov/esdis/eso/standards-and-references#metadata>
- Peer-Reviewed Publications
 - Behnke, et al. 2019. NASA's Earth Observing Data and Information System–Near-Term Challenges. *Data Science Journal*, 18(1). <http://doi.org/10.5334/dsj-2019-040>
 - Duerr, et al. 2011. On the utility of identification schemes for digital earth science data: an assessment and recommendations. *Earth Sci Inform* 4, 139. <https://doi.org/10.1007/s12145-011-0083-6>
 - Ramapriyan & Murphy. 2017. Collaborations and Partnerships in NASA's Earth Science Data Systems. *Data Science Journal*, 16, 51. <http://doi.org/10.5334/dsj-2017-051>

Insights from ESDSWG Collaboration

- Similarities to other 'volunteer' organizations
 - Engagement is based on time and interest of team members
 - Group leaders need to champion activities
- Group activities recognize and respond to community concerns
 - Innovative technology development and adoption to address common needs
- Group beginning and end dates focus efforts
 - New groups garner new leadership and teams
 - Accomplishments of former groups can initiate new groups
- Dynamics within autonomous teams
 - Innovative targets and approaches originate within teams and evolve to propel progress
- Efficiency attained through inter-organizational collaboration
 - Meeting common needs propels the data production and distribution community ecosystem

Thank you!

- This presentation reflects the opinions of the author and does not necessarily reflect the perspectives of NASA or Columbia University.