Digital maturity of federal and federally funded earth sciences – status and next steps [1]

Submitted by erinmr on Sun, 2014-12-07 17:31   Thursday, January 8, 2015 - 13:30 to 15:00
Thursday, January 8, 2015 - 15:30 to 17:00
Event: Winter Meeting 2015 [2]
Session Type: Breakout [3]
Expertise Level: Intermediate [4]
Abstract/Agenda:

Please note: This session will be a continuation of sessions 299 and 300 (Jan 7) and will be a working session that broadens the scope of subject matter, and explores publication opportunities – journal articles, white papers, etc. – on

matters specific to all 3 sessions.

Earth sciences organizations from around the world – including US government agencies, federally funded efforts and academic institutions – have achieved various levels of maturity in taking advantage of our digital age. Concepts of participatory web, software interoperability, technology transfer, scaling/re-use, big data and open science are no longer "new and emerging." They have emerged and – in some cases – are tied to government directives, including, for example:

- Office of Management and Budget (OMB) 2013 memo: Open Data Policy-Managing Information as an Asset;
  http://www.whitehouse.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf [5]
- Office of Science and Technology Policy (OSTP) 2013 memo: Increasing access to the results of Federally funded research;
  http://www.whitehouse.gov/sites/default/files/microsites/ostp/ostp_public_access_memo_2013.pdf [6]
- White House 2013 executive order: Making Open and Machine Readable the New Default for Government Information;
  http://www.whitehouse.gov/the-press-office/2013/05/09/executive-order-making-open-and-machine-readable-new-default-government- [7]
- Office of Management and Budget (OMB) 2012, Digital Government Strategy;
  http://www.whitehouse.gov/sites/default/files/omb/egov/digital-government/digital-government.html [8]
- White House 2009 memo: Transparency and Open Government;
  http://www.whitehouse.gov/the_press_office/Transparency_and_Open_Government [9] and
  http://www.whitehouse.gov/sites/default/files/omb/assets/memoranda_fy2009/m09-12.pdf [10]

An organization's efficiency, transparency and/or ability to innovate -- in the context of Earth sciences -- are directly tied with that organization's:

- Maturity in embracing data and software interoperability, scaling and-re-use;
- Scientific data infrastructure (discoverability, open data, curation, etc.);
- Ability to practice external technology transfer (e.g., code sharing, partnership building, decentralized research and development);
- Use of participatory web (crowdsourcing, dynamic multilateral communication with society, etc.), particularly in the context of secondary or applied science (e.g., decision support, environmental assessment, meta analyses, syntheses, reviews);
- Horizon scanning and futures analysis (e.g. getting ahead of the curve by exploring and leveraging emerging digital technologies and new business models, as opposed to retroactively).

Once considered a tool for getting Earth sciences work done, cyber technology (computers, internet, etc.) has become essential, prompting some Earth sciences organizations to question their institutional and organizational structures. Over the past thirty years, Earth and information science disciplines have merged across a multi-dimensional spectrum. Pre-digital organizational charts or

agency structures often maintain unhelpful, dichotomous perceptions between IT and Earth science disciplines and activities. This has led to inefficiencies and communication problems, reliance on external contractors to connect IT and Earth sciences (e.g., developing decision support applications), and an emergence of ad-hoc cyber-related working groups (e.g., GIS workgroups, R-user groups) within, and on top of, existing organization structures. In response to changing times, some organizations have created new offices and laboratories dedicated to topics associated with cyber innovation (e.g., USAID Global Development Lab and United Nations Global Pulse). The US National Science Foundation identified new Cyber Infrastructure challenges and opportunities almost a decade ago and are now funding many large-scale data, infrastructure and informatics activities (e.g., NEON Inc., EarthCube). Research Infrastructures globally can benefit greatly by sharing lessons learned and experiences to better guide progress toward interoperability.

Objectives:

- Continue working on objectives of ESIP sessions 299 and 300, with broader focus – that is, this session will expand on the topics of OSTP and open government directives (see above description), not limited to the topic of open geodata (http://commons.esipfed.org/node/7300 [11] and http://commons.esipfed.org/node/7299 [12]);
- Explore publication opportunities on the status and progress of the above topics; explore various journal article and publication approaches for disseminating information from this session and proceeding sessions 299 and 300; build authorship teams around several manuscripts and begin outlining and writing those manuscripts; topics may include, for example:
    - Socio-technical system of open science,
    - Altmetrics in open science,
    - Mechanisms of data and software publication,
    - Case studies of federal efforts and agencies, and their digital maturity,
    - Other topics identified in sessions 299 and 300;
- Build an informal community of practice at the ESIP Meeting and identify the driving passions that will be the glue to keep the community active and involved;
- Set a schedule for knowledge sharing events;
- Identify the best examples of Tiger Teams, communities of practice, public-private partnerships, changes to organizational charts, additions to existing organizational structures, etc., that have been successful on complex issues such as these;
- Move towards an agreement among organizations to work more closely together on priority issues;
- Develop a "landscape" of the major informatics players (e.g., ESIP, COOPEUS, RDA, ICSU-WDS, GEOSS, EarthCube, Eye on Earth Alliance, etc.), globally.

Approach:

Please note that much of the following may be addressed in sessions 299 and 300, and continued in this session.

- Assess where organizations stand in their evolution (maturity) to embrace modern digital technology, from an organizational and institutional perspective (including goals and timetables);
- Learn and share what other agencies have tried in their efforts to meet: 1) the above cyber-related government directives in the Earth science context – What would they have done differently? What strategies worked really well? What to avoid? – and 2) develop and apply innovative alternatives to business as usual;
- Determine future steps in how organizations might help each other move forward efficiently and in cooperation (to better address internal issues and to collaborate externally on game-changing approaches);
- Explore, vet and overcome existing and future challenges (rank the challenges and the probability of success that they will be overcome);
- Develop horizon issues on the cyber landscape (How can US government agencies get ahead

of the game over the next 10 years of digital evolutions?).

Topical Focus: When possible, session presenters and participants will be encouraged to use examples and case studies in the thematic area for ESIP's Winter meeting: "Earth Science and Data in Support of Food Resilience: Climate, Energy, Water Nexus."

Anticipated attendees: Approximately 30 to 50 Earth and information science practitioners and managers, from across academia, US government agencies and US government-funded efforts.

Session format: This half-day session will be geared toward writing, documenting and following up on sessions 299 and 300, with broader focus – that is, this session will expand on the topics of OSTP and open government directives (see above description), including, but going beyond the topic of open geodata. We will begin to draft several manuscripts, white papers, and/or journal articles. This session will begin with a plenary review of sessions 299 and 300; next, we will review the agenda and potential writing topics for this session. Depending on number of participants, we will split into small writing break-out groups for between 0.5 and 1.5 hours, followed by report out / facilitated discussions, and discussion of follow up plans for future publication development and submittal.

Organizers' roles: We will work with session organizers from sessions 299 and 300 to ensure continuity among the 3 sessions. We will introduce this session and facilitate break out groups, plenary discussions and writing efforts.

Disclaimer: The views expressed herein are those of the authors and do not necessarily reflect the views or policies of the organizations for which they work and/or represent.

Notes: Opening up the discussion to the community

- think about expanding the topics from geodata in the effort to create some white papers looking at these issues
- Trying to build and extend an informal community of practice on open data and open science practices
- developing this list/landscape of informatics players

  Lindsay - Earthcube trying to get a broad understadning about who is doing what - find the overlaps in effort and provide a framework to see what is being done - what is effective collating these efforts in one place
  Peter Fox - Picking out these key areas and getting started - Wiley Journal Eco informatics is accepting editorial submissions of this ilk
  Ziegler - interoperability- efficiency effectiveness of tools
  Gary Foley - rate of adoption is traditionally slow at the EPA and the scientist's budget goes down each year as operating expenses go up - cannot do everything used to be able to do.
  Digital maturity - data maturity model: CMMI developed using in the USGS taking measurements
  Sky mentions collaborative blogging opportunity
  Barriers to collaboration:

- Issues of clearance with government participants
- different agencies have different liberties
- is this inability to collaborate with other institutions unique to the EPA?
- interagency agreements and MOUs - the length of time it takes is barrier to collaboration

The discussion goes around the room so every one can introduce themselves and their thoughts on the topic
  Sky's ideas for writing - Earth science information landscape brain
  Discussion about elements of visualization to develop understanding of community landscape: roles, relationships, tools, etc.

  Decided to suspend second session due to scheduling of other sessions and activities

Session closes.

Session Leads:	**Name:** Rick Ziegler [13] **Organization(s):** EPA [14]
	Name: Gary Foley [15] **Organization(s):** EPA [14]
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