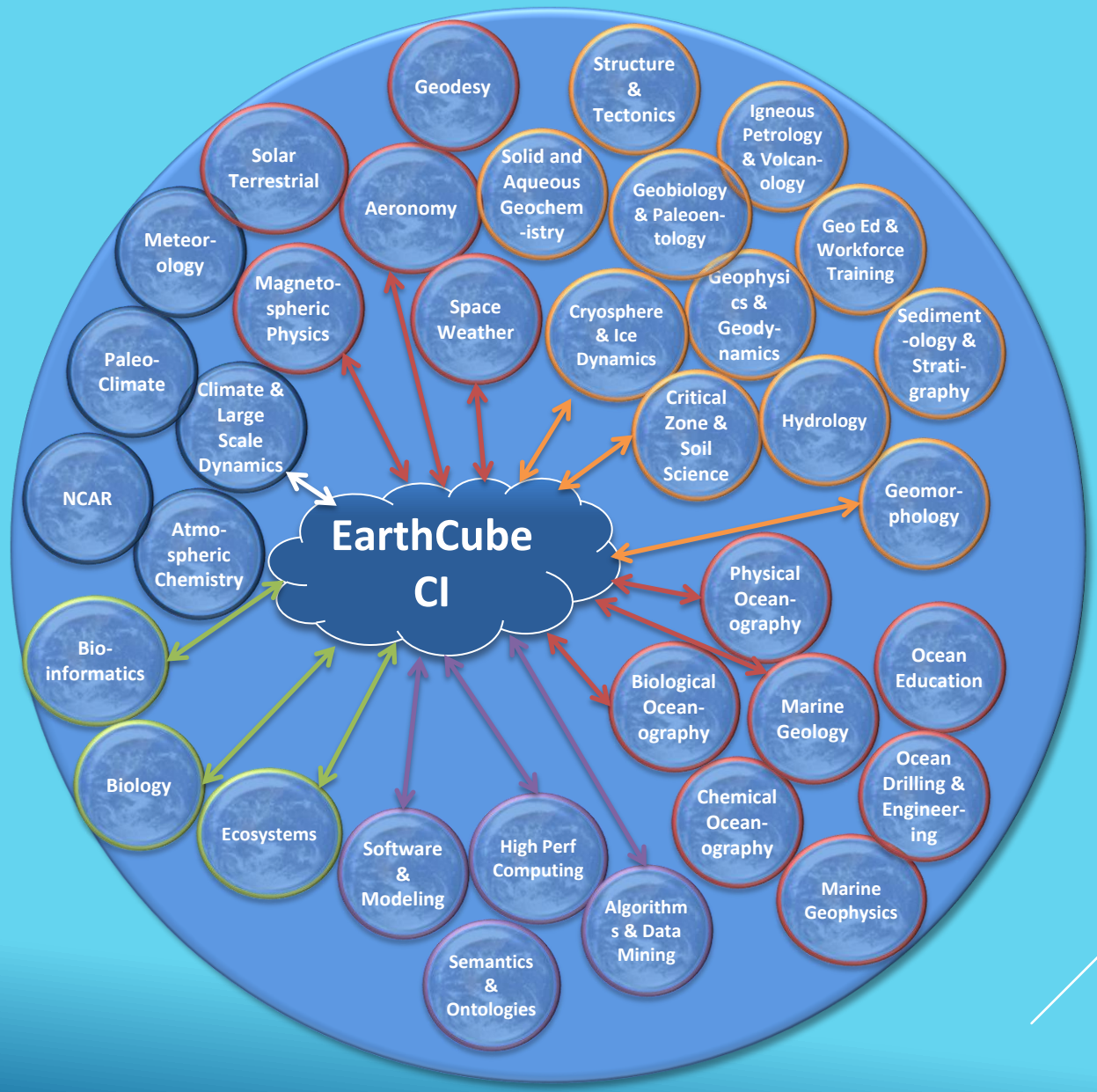
COMMUNITY DRIVEN CI FOR GEOSCIENCES: THE EARTHCUBE JOURNEY THUS FAR

NDS Consortium Planning Workshop

13 June 2014

Who is EarthCube?



Enables transformative geoscience by fostering a community committed to providing unprecedented discovery, access, and analysis of geoscience data.

Academic Geoscience Researchers in

- **Earth**
- **Oceans**
- **Atmosphere**
- **Polar**

The EarthCube Journey

2011

2012

2013

Present

Dear Colleague Letter & Charrettes

White Papers & Expressions of Interest *(Geo & CI)*

Roadmaps & Concept Designs *(technical roadmaps and small prototype designs)*

End-user Workshops & Stakeholder Alignment *(identifying community needs & wants)*

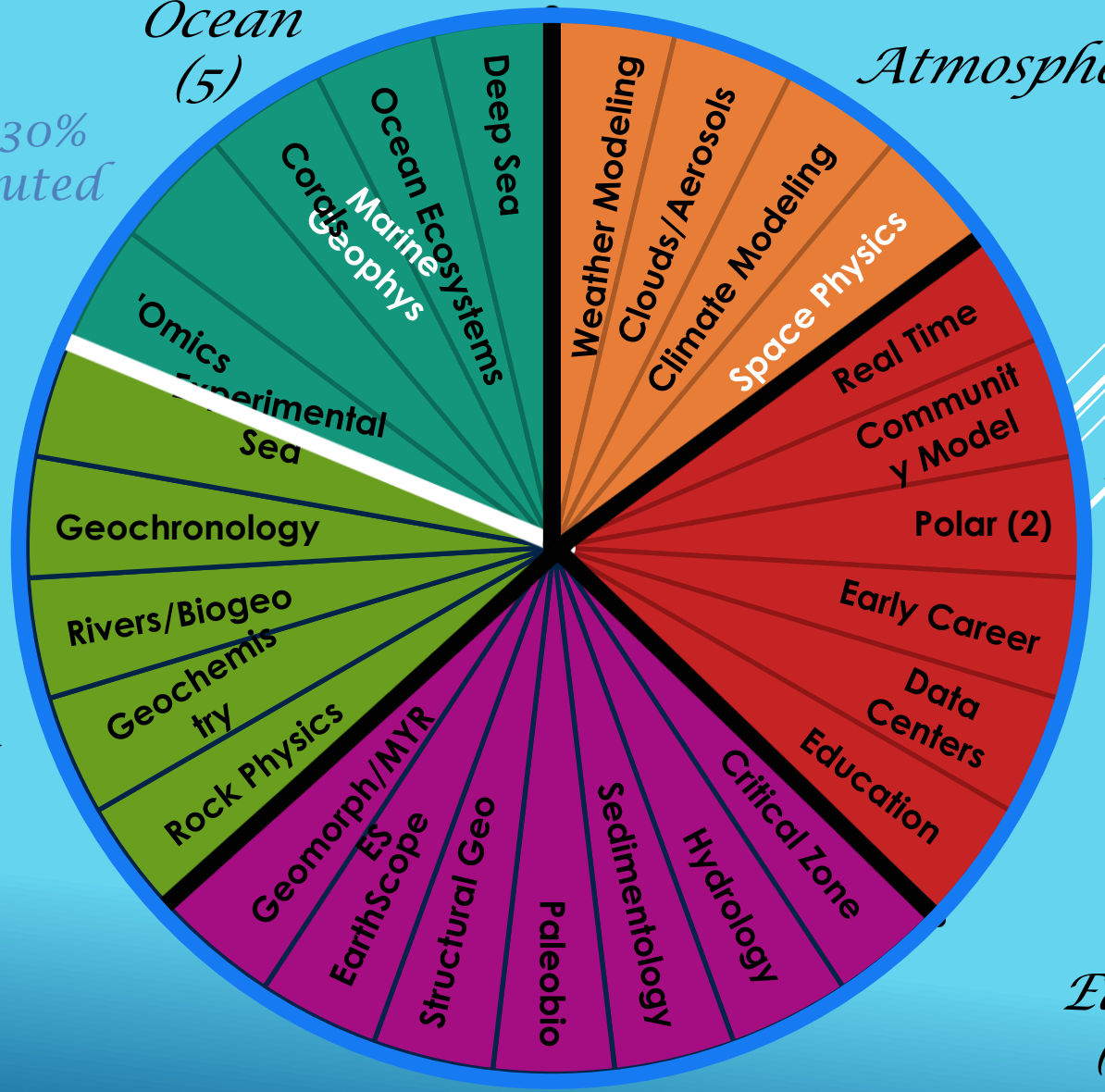
Building Blocks, RCNs, and Conceptual Design Awards *(current funded projects)*

Test Governance Award *(planning & demonstration phases)*

27 End-User Workshops: 2 pending

~2,000 participants, multiple agencies (NOAA, NASA, USGS, USDA, NRL, +)

Earth ~70%
Ocean ~60%
Atmosphere ~30%
Polar - distributed



Ocean (5)

Atmosphere (4)

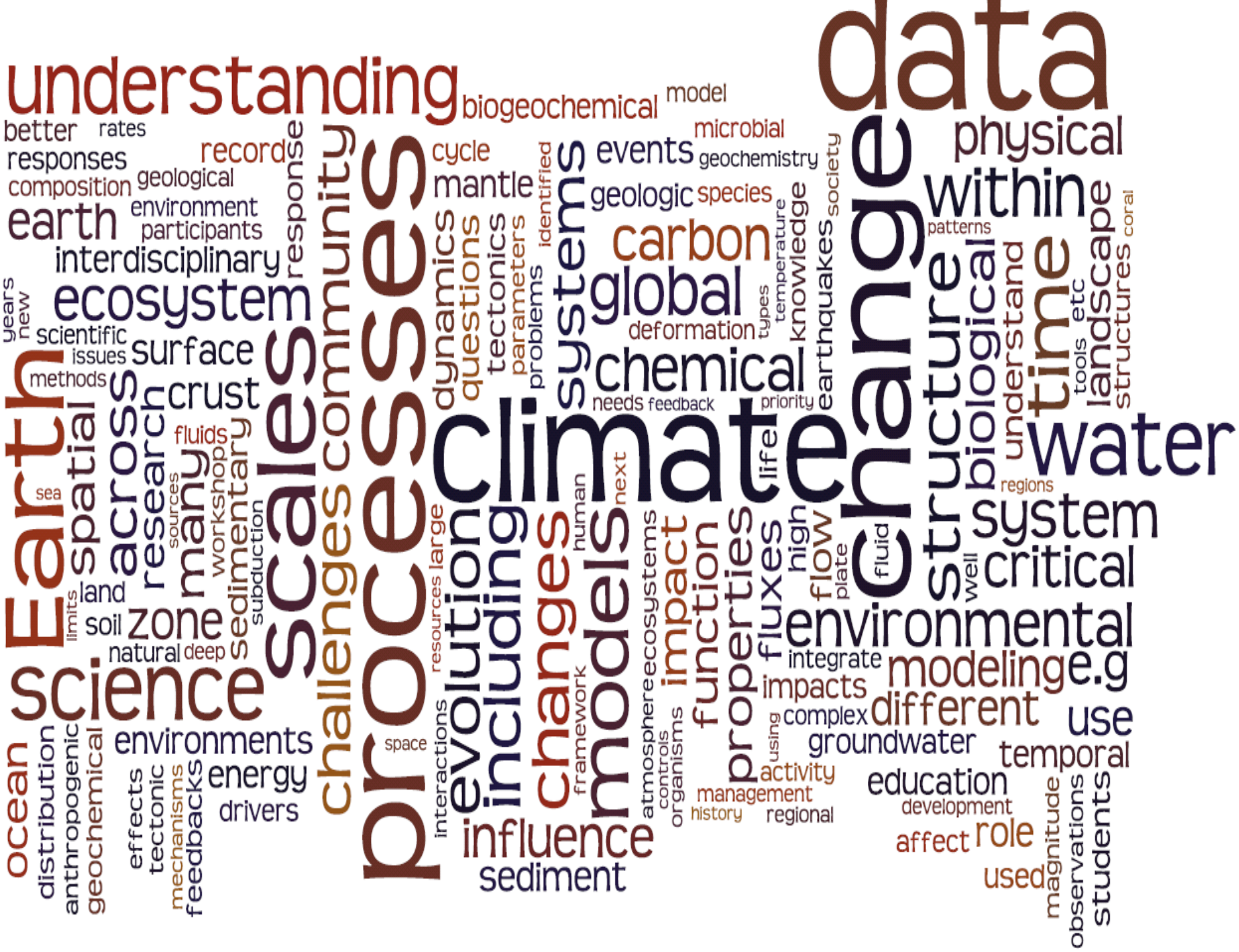
Atmosphere, Earth and Ocean (6)

Earth and Ocean(5)

Earth (7)

SCIENCE CHALLENGES

FROM END-USER WORKSHOPS



TECHNICAL CHALLENGES

DERIVED FROM THE END-USER WORKSHOPS

TECHNICAL CHALLENGES

DIGGING BEYOND "DATA"

The EarthCube Journey

2011

2012

2013

Present

Dear Colleague Letter & Charrettes

White Papers & Expressions of Interest *(Geo & CI)*

Roadmaps & Concept Designs *(technical roadmaps and small prototype designs)*

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TEST GOVERNANCE TIMELINE

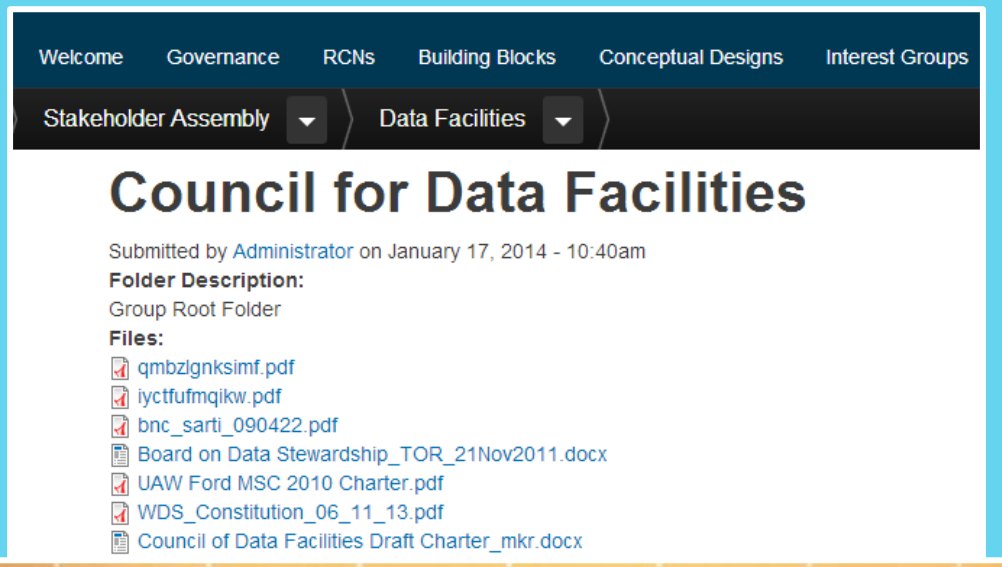
Organizational timeline – Year 1

ASSEMBLY STAKEHOLDER WORKSHOPS

- **Data Facilities**
  - January 15-17, 2014
  - Hilton Arlington, Arlington, VA
- **EarthCube Projects**
  - February 12-14, 2014
  - NEON Offices, Boulder, CO
- **IT/CS/IS/FOSS**
  - March 5-7, 2014
  - Millennium Harvest House, Boulder, CO
- **End-Users & Professional Societies**
  - March 18-20, 2014
  - AGU Conference Center, Washington DC

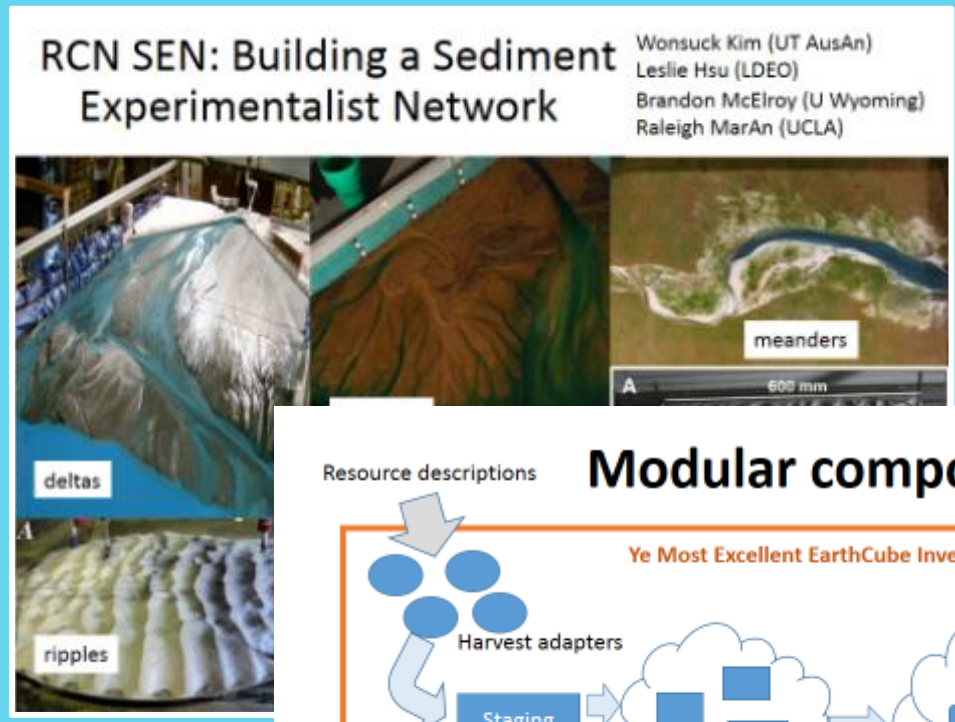
- Outcomes
  - Definition of Facilities in EC Context
  - Challenges for Facilities
  - Consensus Topics/Visions of Success
  - Council for Data Facilities
  - Rapid Prototyping WG; Data Citation and Management WG
- The Pivot

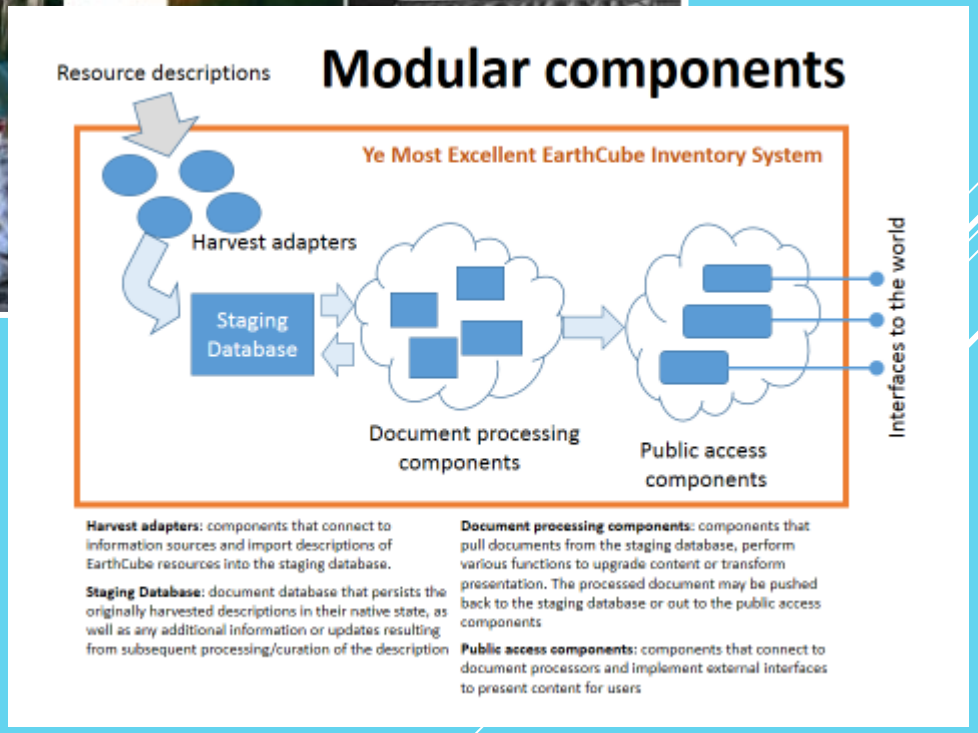
DATA FACILITIES



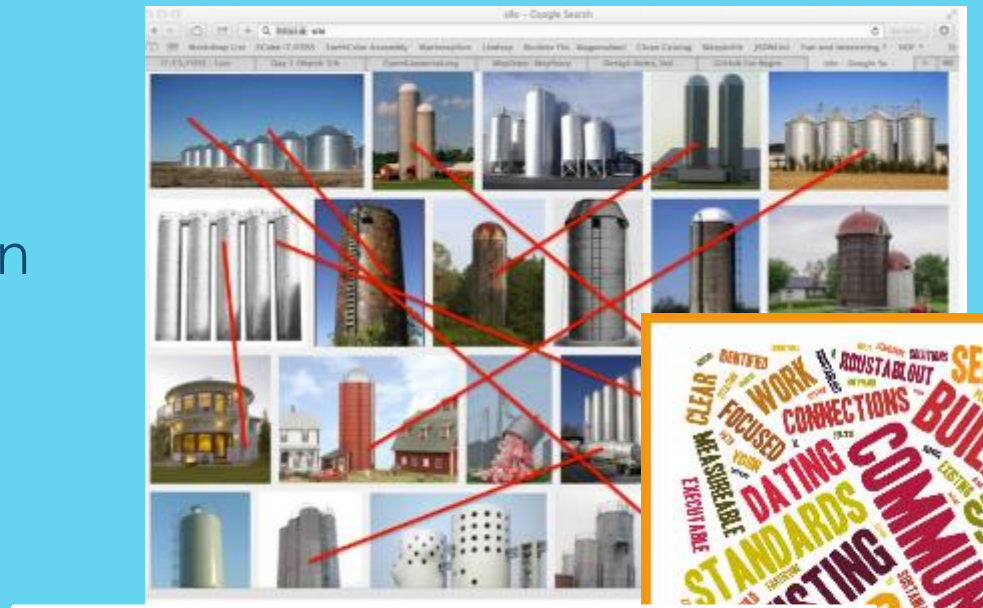
EARTHCUBE PORTFOLIO

- Intended Outcomes
  - Facilitate a Collaborative Environment for EC Funded Projects
- Actual Outcomes
  - Set of Guidelines for Collaboration
  - Proposals for Collaborative Events
    - Metadata Retreat
    - Technical Workshop





- Intended Outcomes
  - Learning how EC can build upon "Connectors" successes
- Actual Outcomes
  - 4 Working Groups
    - Metadata for Software & Software Citation
    - EarthCube GeoCloud Commons
    - EarthCube Business Viewpoint
    - Software Metrics
  - Suggested a Technical Advisory Council for EC



IT/FOSS

END-USER COMMUNITIES AND PROFESSIONAL SOCIETIES

- Intended Outcomes
  - Establishing a Shared Vision of Success for the Academic Geoscientists
- Actual Outcomes
  - 2 Suggested Advisory Groups
    - K-16 Education
    - Community Engagement Advisory Council
  - 5 Working Groups
    - Use-Case Wiki
    - Paleoenvironmental Database
    - "Summer of Cube"
    - Flood Information System of Systems
    - Academic Social Networks

ASSEMBLY SYNTHESIS WORKSHOP

- April 16-18, 2014
- Tucson, AZ

- Participants: Champions from the Assembly Workshops
- Purpose: Craft the EarthCube Demonstration Charter

SYNTHESIS WORKSHOP

MISSION:
Bootstrap a Governance model based on recommendations from the community

PARTICIPANT SUMMARY

THERE IS SOME OVERLAP IN PARTICIPATION NUMBERS

- Total Participants: 20
- Organizers/Staff: 6
- Facilitators: 1
- NSF Directorate:
  - EARTH: 4
  - POLAR CI: 2
  - ATMO: 3
  - OCEAN: 3
  - COMP: 4
  - INFO SCI: 1
  - GOV: 1
  - EDU: 1
- Fed Agencies:
  - NASA (connection to TAC)
  - NOAA (connection to TAC)
  - USGS (connection to CDF)
- Research Coordination Networks, Conceptual Designs, Building Blocks
  - RCN: 1 of 3
  - CD: 1 of 2 (w/ invite to 2 of 2)
  - BB: 4 of 9
- Connections to Suggested (and Chartered) Elements
  - Council of Data Facilities: 2 of 3
  - EC Portfolio Coordinating Committee: 3 of 4
  - Community Engagement AC: 2 of 5
  - Tech AC: 3 of 7

Day 1

Recap 1:
What we learned about what EarthCube can and needs to do.

Define Functions:
Short, medium and long-term

Define EarthCube Mission/Vision:
Clear, specific statements that explain and clarify.

Consensus on:
Primary functions of EarthCube Governance
Clear language defining what EarthCube is.

Day 2

Recap 2:
What governance structures were envisioned by the Community

Selecting Governance Structures & Incorporating Existing Recommendations

Developing New Governance Structures

Consensus on:
Major components of governance.
Specific design of the leadership structure.

Day 3

Finalizing Governance Structures

Exploring How to Vet the Governance Model

Consensus On:

An EarthCube Governance System that supports the commons including:

- It's primary functions
- It's primary structures and details about how those structures function
- How it integrates with existing efforts
- How to gather feedback

WHAT ARE THE CRITICAL FUNCTIONS OF EARTHCUBE GOVERNANCE?

Convergence on 20 Critical Functions in 3 broad categories, including the following examples:

- Leadership & Vision
  - Set, implement, and revisit as needed the strategic direction, plan, and Annual Meeting (monitor metrics and adjust course as needed)
  - Ensure consistency and transparency in policies, procedures, and decision-making
  - Coordination with and recommendations to the funding agency
- Guiding Technical Implementation
  - Ensure the explicit connection between scientific process and technical functions
  - Maintain alignment of funded projects to ensure end user requirements
  - Stewardship of a reference architecture
- Advocacy & Engagement
  - Dissemination & Communication: Create branding to easily trace EarthCube results and enable broad dissemination of EarthCube information
  - Engagement: Serve as the emissary between software developers, the science community, and infrastructure, as well as educators
  - Connections: Establishing partnerships to the organizations and initiatives and leverage existing resources

EarthCube Enterprise Governance DRAFT – 5.6.14

Steering Committee

Sets the strategic direction. The voting members are individuals elected by EarthCube Contributing Members as their representatives. The non-voting members help to establish a strong connection with the academic geosciences, funding agency, and the Office. The Steering Committee provides direction to the Office.

Standing Committees

Committees with open-membership and internally elected leadership, fulfilling key functions of EarthCube and supporting ad hoc working groups created by the members to innovate and respond to immediate needs.

- **Technology/ Architecture Committee**
- **Science Committee**
  - Technical Funding Team
  - Science Funding Team
- **Engagement & Advocacy Committee**
- **Council of Data Facilities**

Working Groups

Working Groups

Working Groups

Working Groups

Working Groups

Working Groups

Working Groups

Working Groups

Working Groups

Partnership Program

Supports proactive partnerships with related efforts, both through formal relationships and informal engagements (cyber, scientific, and education organizations).

Office

Support function of Enterprise Governance. Supports all activities of EarthCube Governance. Manages the Partnership Program.

Participants

Anyone can be a *EarthCube Participant*, accessing resources, participating in activities, and initiating special interest groups. Anyone who wants to participate in governance activities (voting, leadership roles, initiating Working Groups) must be a *Contributing Member*, signing up and agreeing to a set of expectations defined by the Steering Committee.

Special Interest Groups

Special Interest Groups

EarthCube Enterprise Governance DRAFT

Maintaining Coordination with USGS, NASA, NOAA, DOE & other Federal Agencies AND working with other initiatives to ensure complimentary activities (RDA, ESIP, etc.)

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Technology Advisory Council Functions and Scope

Engagement Council Function & Scope

Defined End-Goal & Timeline

Assembly Developed Working Groups?

Education Advisory Council Function & Scope

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Science Funding Team

Engagement & Advocacy Committee

Council
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Special Interest Groups

Special Interest Groups

Vetting Process for Governance Charter

April 21 | May 5 | June 9 | June 16 | June 24-26 | July ?

Preparation for Review (late April)	**Review/ Feedback** (early May to late May**)**	**Analysis of Feedback** (early June)	**Incorporation of the Feedback** (early to mid-June)	**Review/ Feedback** (late June)	**Decision Making** (July)
Wordsmith work group (email call for participation; Google Docs)	Test Gov: OMG & Secretariat	Operations Team (Synthesize feedback)	Editing Committee	**June All Hands Meeting** Demonstration Charter for implementation in Year 2 – changes **can be made** based on demonstration	Editing Committee
Finalizing the charter for review (Operations Team)	Test Gov: Advisory Board				Submission to NSF for Review
Construction of questions and set up of feedback collection system (drafted by Operations Team, reviewed by Synthesis Team)	Crowd Sourcing: Assembly Groups & End-User Workshops				
Create a Framing Document & FAQ to provide background (drafted by Operations Team, reviewed by Synthesis Team)	Crowd Sourcing: Broader Public				
Outreach to Chartered Groups with User Guides	Facebook & other Social Media				

ALL-HANDS MEETING
JUNE 24-26, 2014

TEST GOVERNANCE TIMELINE

Organizational timeline – Year 1

- Stakeholders (Assembly) – governance ideas, testing
- Integrate stakeholder concepts - crowdsource
- Synthesize and recommend to NSF
- Demo phase Governance charter

Governance timeline – Year 2

- Establish Organizational Demo
- Facilitate convergence on system design, data standards
- Evaluate results: basis for long term organization
- NSF solicitation?

EARTHCUBE DATA FACILITIES WORKSHOP

January 15-17, 2014 Arlington, VA.

Existing NSF GEO Investments in Data Facilities Serve as a Foundation

- There was a breakout group at the End User Workshop in Tucson on how to best engage and leverage existing NSF/GEO Data Facilities
- At the workshop on Data Facilities, initially, perhaps a third of the attendees felt that a formal assembly of the GEO Data Facilities should have a defined role in EarthCube
- Mohan, Kerstin, Don, and Joel led another breakout group, which developed consensus and proposed an EarthCube Council on Data Facilities (CDF)
- A second and third round of votes in the plenary converged also on consensus for the CDF

- Ultimately, the formation of the EarthCube CDF was well-received by Test Governance and NSF, and funds were allocated to support its development
- The initial steering committee (Kerstin, Mohan, Don, and Joel) proceeded to compose a Draft Charter for the CDF
- That Draft Charter has been put out for comment in advance of the EarthCube All-Hands Meeting June 24-26

Existing NSF GEO Investments in Data Facilities Serve as a Foundation

Council of Data Facilities - Charter v1.0

A Draft Charter for the CDF

A Draft Charter for the CDF

I. Preamble

This charter provides both structure and flexibility to enable an agile and effective Council of Data Facilities (CDF). We are motivated to form this Council in order to coordinate with the many elements of the EarthCube initiative and at a time when society's expectations of Data Facilities are increasing in scale and scope. This is a living document, which can be amended or adjusted by a majority of the active members of the Council.

II. Vision

Geoscience data facilities are enabling transformational science, innovative education, and informed public policy through increased coordination, collaboration, and innovation in the acquisition, curation, preservation, and dissemination of geoscience data, tools, models, and services. Existing and emerging geoscience data facilities – through the Council – are serving as an effective foundation for EarthCube.

III. Mission and Goals

The mission of the Council of Data Facilities is to serve in a coordinating and facilitating role that includes advancing the following goals:

- Providing a collective voice on behalf of the member data facilities to the NSF and other foundations and associations, as appropriate.
- Identifying, endorsing, and promoting standards and best or exemplary practices in the organization and operation of a data facility.
- Identifying and supporting the development and utilization of shared infrastructure services, including computing services, professional staff development and training services, and related activities.
- Fostering innovation through collaborative projects.
- Collaborating with standard-setting bodies with respect to standards for data sharing and interoperability, metadata, and related matters.

A Draft Charter for the CDF

V. MEMBERSHIP

There are four categories of membership in the Council of Data Facilities:

Category A: NSF-funded not-for-profit or academic data facilities

Data facilities and centers with a substantial portion of their funding and mission associated with the National Science Foundation.

Category B: Federally Funded Research and Development Centers (FFRDCs) and other federal, state, and local data facilities.

Data facilities and centers operated by NASA, NOAA, USGS, and other U.S. federal, state, and local agencies.

Category C: International, private, and other not-for-profit or academic data facilities..

Data facilities and centers with a substantial portion of their funding and mission associated with international agencies, private foundations, or other sources.

Category D: Associate members

Professional associations, publishers, commercial entities, foundations, and consortia in the geosciences, cyber sciences, informatics, and related domains; and individuals not affiliated with a data facility, but supportive of the Council.

A Draft Charter for the CDF

X. SIGNATURES

The following individuals represent the charter members of the Council of Data Facilities. Following the procedures outlined in this document, the members of the Council will change over time.*[Note: These were people in the room all of whom have been invited to review the draft document. Yet to be decided is the process for identifying charter members, which may not include all of these people and may include others.]*

Tim Ahern, IRIS
Sky Bristol, United States Geological Surveys
Doug Fils, Consortium for Ocean Leadership
Rick Hooper, CUAHSI/Water Data Center
Kerstin Lehnert, IEDA
Charles Mcelroy, Case Western Reserve
Don Middleton, National Center for Atmospheric Research/ACADIS/Chronopolis
Bernard Minster, Scripps/World Data System
Lindsay Powers, NEON
Mohan Ramamurthy, Unidata
Erin Robinson, Foundation for Earth Science
Alison Smith, Neotoma
Susan Winter, University of Maryland
Ilya Zaslavsky, San Diego Supercomputing Center
(And more since…)

A Draft Charter for the CDF

Parallels with NDS

- NDS needs to leverage existing CI and Data Centers, and mobilize with shared services. As does E^3.
- The EarthCube Draft Charter for CDF may be useful as an example for NDS.
- Defining a collaborative alliance could be valuable to all parties.