

NSF EarthCube

EDM Conference Lightning Talk

Chris MacDermaid

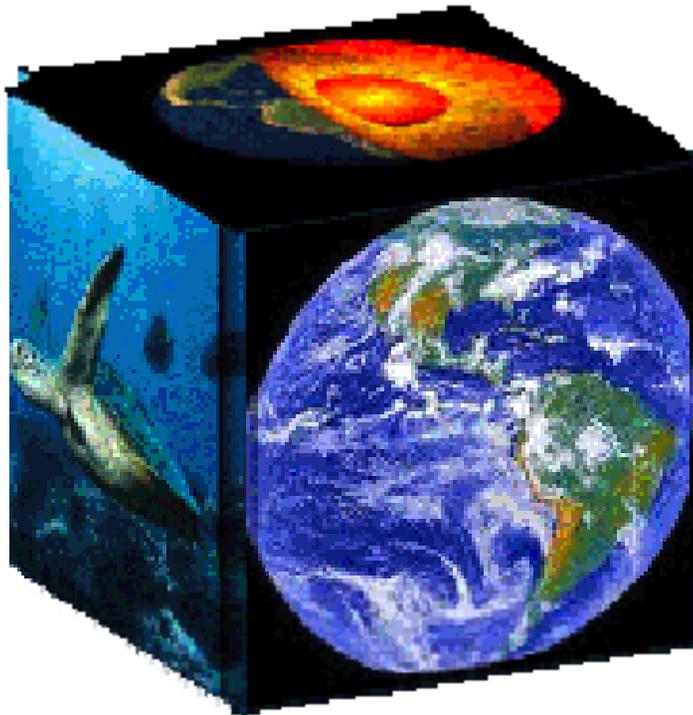
Colorado State University Cooperative Institute for
Research in the Atmosphere (CIRA)

NOAA/OAR/ESRL/GSD

May 15, 2012

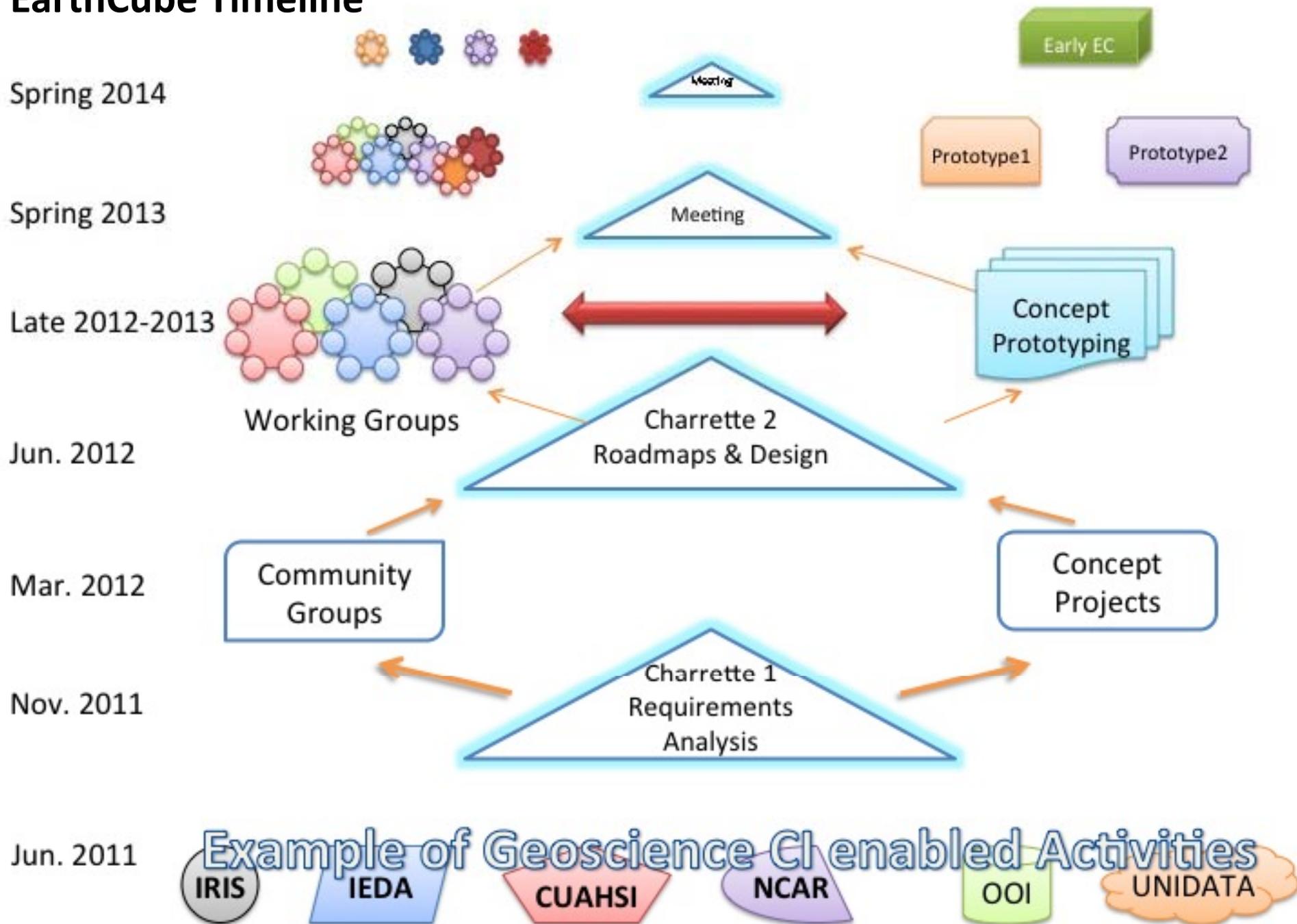


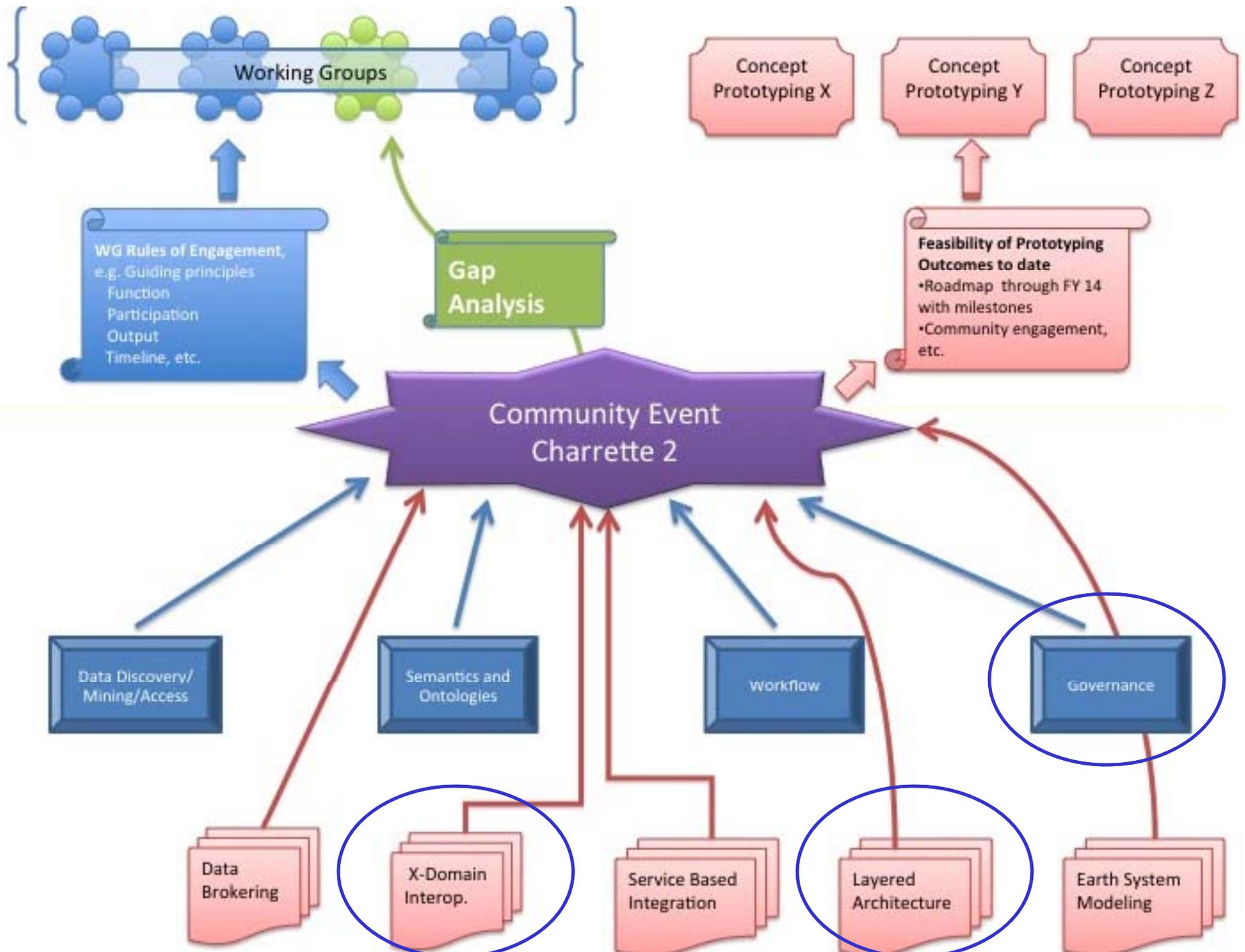
What is EarthCube?



- NSF activity to create a data and knowledge management system for the 21st Century
- Goal is to transform the conduct of research by supporting the development of a community-guided cyberinfrastructure
- Funded by NSF Directorate of Geosciences and the Office of Cyberinfrastructure

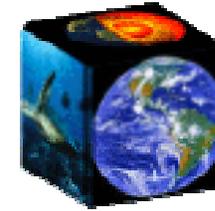
EarthCube Timeline







EarthCube Roadmap



Interop Concept Award



Brokering Concept Award



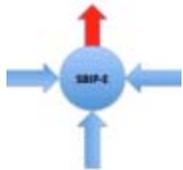
Data Discovery, Mining, Integration



Interop Concept Award



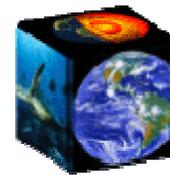
Layered Architecture Concept Award



Web Services Concept Award



Web Services Concept Award



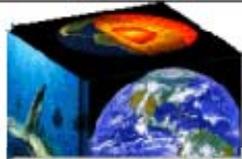
Earth System Model Concept Award



Governance

NSF 10-point Roadmap Guidance

1. Purpose
2. Communication
3. Challenges
4. Requirements
5. Status
6. Solutions
7. Process
8. Timeline
9. Management
10. Risks



EarthCube

main my page members groups blogs funded activities capabilities nov '11 meeting june '12 meeting
white papers expressions of interest background reading photos events

LATEST ACTIVITY

Top News - Everything



Ilya Zaslavsky posted an event
Cross-domain Interop
Conference Call, May 15 at
Virtual
May 15, 2012 from 3pm to
5pm

7 minutes ago
0 Comments 0 Likes



Steven F. Browdy added a
page to the group Brokering
Concept Award



Brokering Hack-a-Thon 1
Hack-a-Thon 1 This
Hack-a-Thon will feature the
EuroGEOSS Broker. It has
been deployed in many
infrastructures, most notably
the GEOSS Common
Infrastructure. Introduction
Webinars for the EuroGEOSS
Broker 1. Thursday, May 10
at 15:00 UTC. See...

5 hours ago



Jay Pearlman added a
discussion to the group
Brokering Concept Award

WELCOME TO EARTHCUBE

The goal of EarthCube is to transform the conduct of research by supporting the development of community-guided cyberinfrastructure to integrate data and information for knowledge management across the Geosciences. This website has been set up to foster community collaboration, and will provide updated information, resource documents, and discussion forums so that community groups, consortia, researchers, and educators can share ideas, introduce concepts, and find and develop collaborative efforts.

Great places to start are the [What Is EarthCube Document](#), the [Website Basics](#) page, or check out the [currently funded projects list](#). You can join any of these groups and be part of the discussion.

Registration for the [June 12-14 EarthCube Charrette](#) is now open, click here to register.

Follow us on Twitter -- #earthcube

IMPORTANT - WE NEED YOUR INPUT!

Help shape EarthCube by telling us how easy (or hard) it is to find, get, and use data, models, and computational/visualization tools for the geosciences. Share your views on how to best move EarthCube forward. Click here: <http://sgiz.mobi/s3/EarthCube-Stakeholder-Consent-EC> * Results will be posted on <http://earthcube.ning.com> in early June and presented at the June 12-14 EarthCube Charrette in Arlington, VA.

*This link takes you to a survey to capture your view on how to best advance data-enabled geoscience. Your participation is voluntary. Your identity will be kept separate from your responses and be kept strictly confidential. Only aggregate findings will be reported. As for all surveys of this kind, it starts with a voluntary consent form. Please share your views by visiting the link above and telling us what you think.

GROUPS

EVENTS

Layered Architecture webex meeting

May 16, 2012 from 2pm to 3pm - WebEx
0 Comments 0 Likes

Earth System Model Concept Group
WebEx meeting

May 15, 2012 from 2pm to 3pm - WebEx
0 Comments 0 Likes

Cross-domain Interop Conference
Call, May 15

May 15, 2012 from 3pm to 5pm - Virtual
0 Comments 0 Likes

EarthCube Workflows Community
Workshop

May 10, 2012 all day - NCAR
0 Comments 0 Likes

WebEx #3

May 17, 2012 from 2pm to 3pm - virtual
0 Comments 1 Like

Add an Event

View All

VIDEOS



EarthCube Governance

<http://earthcube.ning.com/>



Layered Architecture
Concept Award

- A Layered Architecture will be used to explore interoperability mechanisms between the multiple protocols used by geoscience community technologies
- A testbed will demonstrate feasibility of this approach by integrating selected technologies for use within test cases

<http://earthcube.ning.com/group/layered-architecture-concept-award>



Collaborative Proposal



Collaborative Proposal: Interoperability Testbed – Assessing a Layered Architecture for Integration of Existing Capabilities

Proposal topic: “Identification and development of a new capability that leverages existing technologies and practices and that can be directly connected to the EarthCube vision”

Description:

- Multiple communities are developing cyber-infrastructure that supports Geoscience initiatives



Collaborative Proposal Cont.



Description Continued:

- Major Earth Systems Science problems typically integrate over informatics and methods across the communities
- The development of separate, disciplinary cyberinfrastructure can be either a barrier or major resources that need to be leveraged to achieve this integration
- This proposal addresses critical milestones for integrating the separate infrastructure silos to enable collaborative research



Collaborative Proposal Cont.

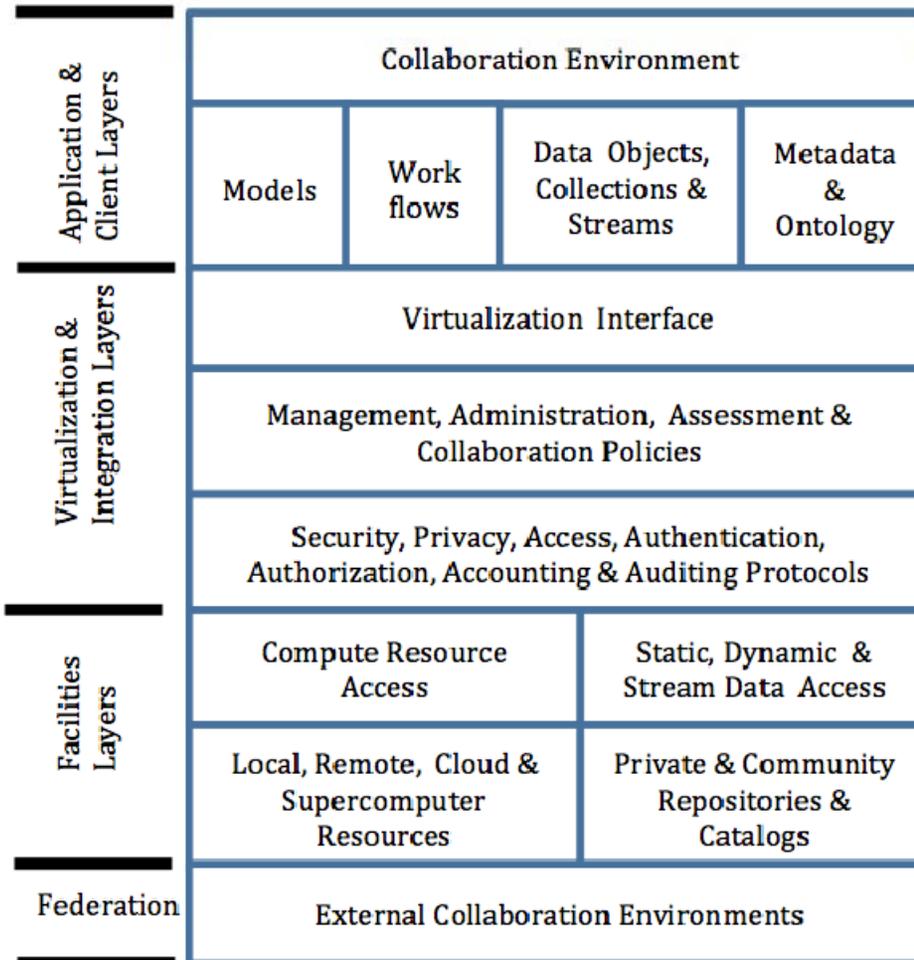


Figure 1. Layered Architecture



Collaborative Proposal Cont.



An EarthCube interoperability testbed will:

- Identify the existing infrastructure components
- The types of interaction mechanisms currently being used
- The mechanisms that need to be implemented to improve interoperability



Collaborative Proposal Cont.



The group members represent multiple technologies that span the layers of the architecture:

Architecture Layer	Technologies
Collaboration environment	UNC-CH integrated Rule Oriented Data System (iRODS)
Models	UC Boulder Community Surface Dynamics Modeling System, UNC RHESSys [25]
Data grids	GMU geospatial data grid, iRODS, DataONE OneDrive [26]
Workflows	iRODS, NCSA Cyberintegrator [27], UCSD Kepler [28], GMU BPELPower [29]
Policies	iRODS, NCSA Cyberintegrator
Web Services	OGC Sensor Web Enablement standard (SWE) [30], WHOI observation assessment (SWE) [31], NCSA Semantic Geostreaming toolkit (SWE, W3C) [32], GMU Geospatial client [33], Colorado State University NextGen Network Enabled Weather [34]
Web analysis services	GMU GeOnAS [35], DataONE Oner [36]
Web visualization services	GRASS, NOAA Environmental Information Service [37]
Network and security protocols	iRODS (Grid Security Infrastructure, Kerberos, Shibboleth, Reliable Blast UDP, parallel TCP/IP)
Repositories	NOAA CLASS, NASA Echo, GEOSS ClearingHouse
Catalog	GMU GI-Cat, CUAHSI
Federation	iRODS, CLASS



Governance

More than 60 organizations and institutions are working through an EarthCube-inspired Governance Forum to create a framework document or “roadmap” that:

- Addresses issues affecting organization, governance, and sustainability of geoscience cyberinfrastructure
- Identifies processes to achieve community-based participation

<http://earthcube.ning.com/group/governance>



Governance Working Group Cont.



- Identifies the needs and characteristics of the overarching community
- Recommends a strategy for further organizational or implementation activities
- A 10-member Governance Steering Committee



Expression of Interest 1022



Building a Software Engineering and Informatics Community of Practice and a Software Foundation for the Advancement of EarthCube

- The first steps toward forming this community were taken at the first Charrette
- Propose establishing a more formal collaborative software engineering and informatics Community of Practice

<http://earthcube.ning.com/page/eoi>



Software Engineering Governance Road-map Focus Group



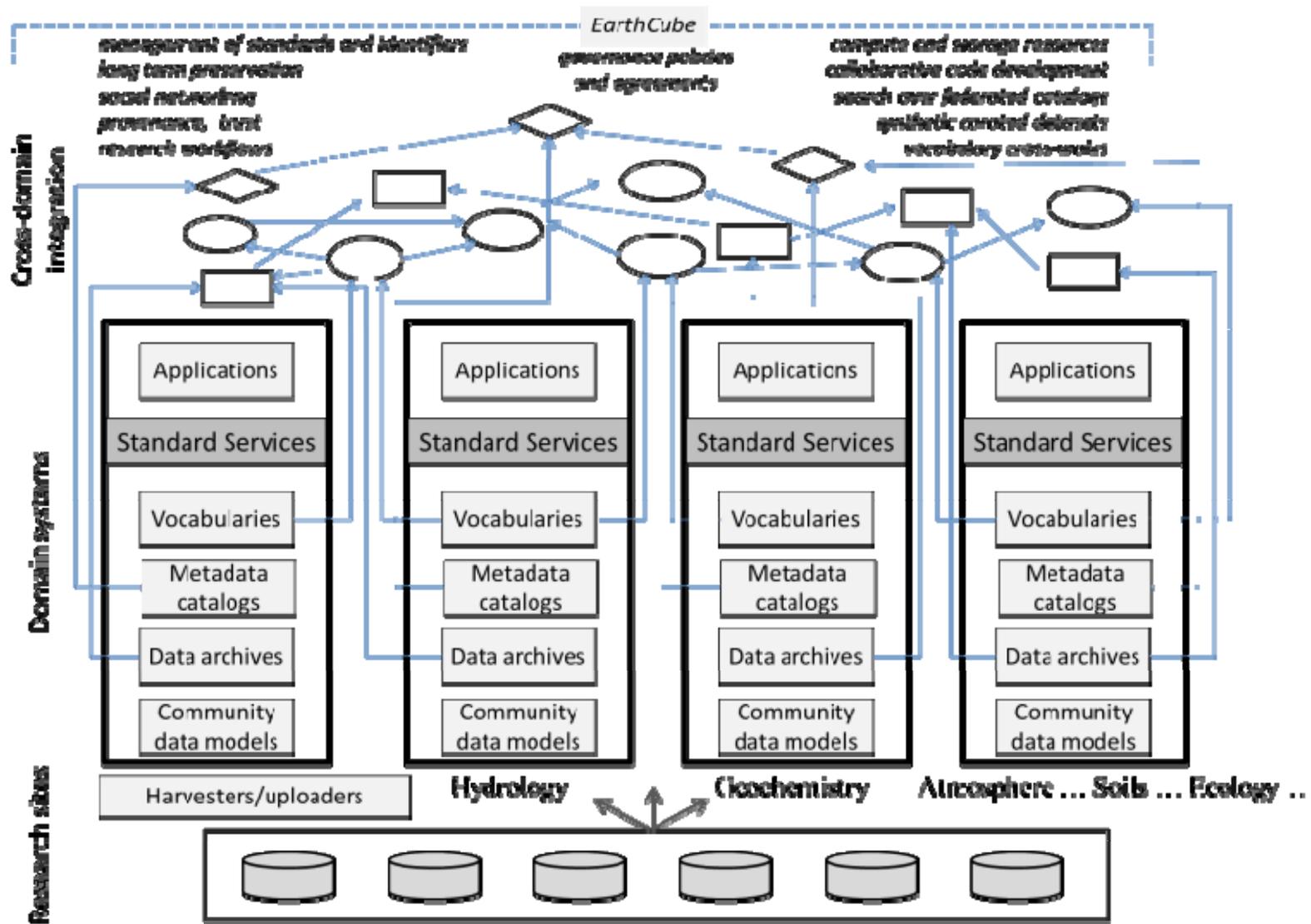
-
- Propose the formation of a software engineering governance road-map focus group
 - Produce a one page road map for directing the development of software governance for the EarthCube
 - Road-map will include two main governance areas for study:
 - Formation of a software engineering and informatics Community of Practice (CoP)
 - Investigation of how to support sustainable software development for the EarthCube



Interop Concept Award

- This EAGER project will explore cross-domain interoperability needs within the geoscience
- Create an EarthCube road map to address the challenges of cross-domain interoperability
- Create a sustainable cross-domain interoperability test bed

<http://earthcube.ning.com/group/interop>



Vision of a reference architecture for EarthCube as an integrated information system that includes research observatories generating large volumes of observations, domain systems that publish the data according to community conventions about data models, vocabularies and protocols, and cross-domain knowledge layer that includes federated catalogs, normalized and curated datasets integrating data from domain systems and observatories, vocabulary cross-walks, as well as social networking, governance and compute infrastructure.





Ideas for NOAA Involvement



- Check out the EarthCube web site
 - <http://earthcube.ning.com/>
 - Provide feedback on the web site layout
- Follow EarthCube on Twitter -- #earthcube
- Join one of the EarthCube groups to be part of the discussion



Ideas for NOAA Involvement Cont.



- Check out the Events page on the EarthCube web site
 - Attend one of the Workshops
 - Attend the 2nd Charrette / Community Event in June
- Read the Expressions of Interest for each of the groups
 - <http://earthcube.ning.com/page/eoi>
- Read each of the group's draft road-maps and provide feedback