

OGC Plan for White Papers on NSF Earth Cube

NSF is developing "Earth Cube" - Towards a National Data Infrastructure for Earth System Science¹. To contribute ideas to Earth Cube concept, OGC members are developing a coordinated set of white papers.

NSF seeks transformative concepts and approaches to create a sustained, integrated data management infrastructure spanning the Geosciences. Earth Cube comes from a new partnership between GEO and OCI.

In keeping with OGC's mission to serve as a global forum for the collaboration of developers and users of spatial data products and services, this plan defines a coordinated set of white papers relevant to Earth Cube:

1. Governance
2. Science Scenarios
3. Cyber-architecture for Science
4. Data Interactive Publications
5. Semantics
6. Processing, Models and Simulation
7. Sensor Webs
8. Curation and Archiving

Each White Paper is described in more detail on the next page.

Anticipate that the white papers are ~5 pages.

Much of the content will build on existing papers and OGC reports.

Each of technical papers (3-8) to reference the Science Scenarios WP (2).

Each paper has: 1) Editor (an OGC Member), 2) contributors and 3) an OGC staffer.

If you are interested in leading or contributing to a white paper, please contact George Percivall (gpercivall@opengeospatial.org)

Schedule for developing White Papers:

- Plan for WPs drafted and circulated – August 3
- Authors identified; Initial outlines – August 15
- Papers ready – September 15
- NSF Charrette – October 30 (TBC)

¹ <http://www.nsf.gov/geo/earthcube/index.jsp>

Topic	Scope	Authors	Potential references
Governance	Tools, processes & mentoring to enable & manage cross-discipline, cross-sector, cross-jurisdiction, long-term, adaptive collaboration. Processes include patterns for describing complex systems, forming and managing working groups, developing compliance guidelines, and advancing the design lifecycle of relevant standards and best practices. Must make effective consideration of social, legal, and other institutional issues, including trust, uncertainty, authentication/authorization for discovery and access. Consideration of GEOSS approaches.	Editor: TBD Bob Chen, CIESIN Bob Downs, CIESIN David Arctur, OGC (Additional contributors)	<ul style="list-style-type: none"> • OGC Interoperability Program P&P • RM-ODP • Bernhard Minster, ICSU chr of Scientific Committee for the WDS •
Science Scenarios	Motivational vignettes describing research that shows the need for spanning the Geosciences, e.g., addressing Grand Challenge Questions in major branches of geosciences. The scenarios need to have good coverage of the current and future problems faced by researchers, and their support systems, working to address these challenges.	Editor: TBD Bob Chen, CIESIN S.J.S. Khalsa, NSIDC David Arctur, OGC (Additional contributors)	<ul style="list-style-type: none"> •
Cyber-Architecture for Science	Achieving the Grand Challenges in geoscience research requires innovation and paradigm shifts. Information technology must advance to meet the emerging approaches to science, e.g., Four Paradigms of science epistemology; Data-intensive systems; Multi-disciplinary collaborations to address complexity. A cyber-architecture identifies the repeatable patterns, resuable components, and open standards that provide starting point for innovative developments.	Editor: TBD Fred Limp, CAST Jack Cothren, CAST Jay Pearlman, IEEE George Percivall, OGC (Additional contributors)	<ul style="list-style-type: none"> • NSF ACCI, TF on Software Sci and Eng • NSF ACCI, TF on Data and Visualization • The Fourth Paradigm • OGC Reference Model • OGC Water CD ER • GEOSS
Data Interactive Publications	https://sites.google.com/site/datainteractivepublications/home/white-paper-on-data-interactive-publications	Editor: Ben Domenico, UNIDATA S.J.S. Khalsa, NSIDC George Percivall, OGC (Additional contributors)	<ul style="list-style-type: none"> •
Semantics	Proposed solution to advance existing semantic work by building an Integrated Semantic Architecture for Geosciences.	Editor: TBD R. Hooper ,CUAHSI Luis Bermudez, OGC (Additional contributors)	<ul style="list-style-type: none"> •

Topic	Scope	Authors	Potential references
Processing, Models and Simulation	<p>Access to algorithms hosted on distributed servers. Cloud, Grid, HPC</p> <p>Access to predictive models and simulations.</p> <p>Provenance of processing chains and models.</p>	<p>TBD Editor George Percivall, OGC (Additional contributors)</p>	<ul style="list-style-type: none"> • OGC Web Processing Service • IEEE Computer, Nov 2008. • (Fred – 1998 CERL-funded paper)
Sensor Webs	<p>Proposed solution to advance existing NSF funded capabilities to build an Integrated Sensor Web System, supporting researches familiar with the sensor data and allowing others to discover and use sensor data beyond their original research intent.</p>	<p>Editor: TBD Luis Bermudez, OGC (Additional contributors)</p>	<ul style="list-style-type: none"> • OGC SWE architecture and stds. • CENS (Liang) • Microsoft (SEAMONSTER)
Curation and Archiving	<p>As systems, procedures, and media technologies grow and adapt to changing environments and business requirements, it can become difficult or impossible to recreate a given historical state of some or all parts of the system. Choices of appropriate data formats, provenance, and system maintenance procedures can lead to some level of data and software preservation. Scope of proposal is for approaches to addressing these issues for specified types of data. Consideration of draft ISO Standard on Trusted Digital Repositories, ISO 16363.</p>	<p>Editor: TBD Fred Limp, CAST Jack Cothren, CAST Bob Downs, CIESIN S.J.S. Khalsa, NSIDC Sayeed Choudhury, JHU David Arctur, OGC (Additional contributors)</p>	<ul style="list-style-type: none"> • UK Digital Curation Centre (DCC) • Digital Research and Curation Center, Johns Hopkins Univ • UK Archaeology Data Service (ADS)