



# Earth Science Informatics Technical Committee

**Chairs:**

*Rahul Ramachandran, NASA/MSFC*

*Peng Yue, Wuhan University*

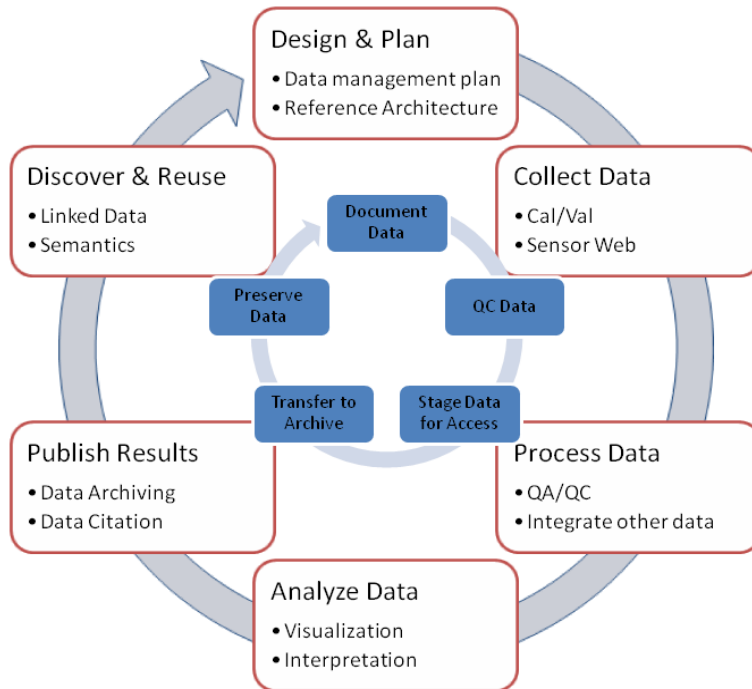
**Standards Group:**


*Siri Jodha S. Khalsa, University of Colorado*

## GRSS AdCom Meeting

Quebec City, July, 2014

## Earth Science Informatics - Scope



- The scope of the original DAD TC was essentially limited to to the data lifecycle
- Knowledge generation lifecycle
  - Depicts the sequence of processes involved in knowledge generation
  - Useful in identifying where data and information can be enhanced or even lost
  - Evolving – Data, Technology, Policy, End User
- Standards play important roles at each stage 



## Earth Science Informatics Topics

- **Data and information policies, stewardship, preservation, provenance and quality**
- **Knowledge representation (ontologies, vocabularies, semantic web)**
- **Cyberinfrastructures**
- **Data discovery and access**
- **Tools supporting spatial and temporal**
- **Emerging information technologies (Big Data)**



## IGARSS 2014 Invited Sessions

- **Advancing Science through Management of the Geospatial Data Lifecycle**
- *Highlighting the role standards play at each stage in the sequence of processes by which knowledge is generated from geoscience observations, simulations and analysis*
  - Joint ESI TC and OGC session
  - Session Type: Oral
  - Time: Tuesday, July 15, 13:30 - 15:10
  - Location: 2104-AB
  - Session Chairs: Siri Jodha Khalsa, University of Colorado and Rahul Ramachandran, NASA Marshall Space Flight Center



## IGARSS 2014 Invited Sessions

- **Implications of Big Data to Remote Sensing**
- *Explore the emerging “big data” technologies for processing and analysis of remote sensing data sets*
  - **Session Type: Oral**
  - **Time: Tuesday, July 15, 15:40 - 17:20**
  - **Location: 2104-AB**
  - **Session Chairs: Rahul Ramachandran, NASA Marshall Space Flight Center and Peng Yue, Wuhan University**
  - *Research Data Alliance Big Data Analytics Working Group Activities*



## Publications

- **GRSM Article**

- “Earth Science Informatics Comes of Age” - Siri Jodha S. Khalsa, Senior Member, IEEE, Rahul Ramachandran, Member, IEEE
- The article discusses the rationale for changing the focus of this TC from Data Archiving and Distribution to Earth Science Informatics, and the role of standards

- **Special Issue:**

- Liping Di, Peng Yue, Hampapuram K. Ramapriyan, Roger L. King, Guest Editors, IEEE Transactions on Geoscience and Remote Sensing, Vol. 51, No. 11, November 2013.

- **ESI Member contributions to IEEE EarthZine magazine**

- Kuo, K.-S., Clune, T., & Ramachandran, R. (2014). Earth Science Data Analysis in the Era of Big Data. *IEEE Earthzine*.
- Ramachandran, Rahul, Kwo-Sen Kuo, Manil Maskey, and Christopher Lynnes. (Submitted) 2014. “Collaborative Workbench for Researchers - Work Smarter, Not Harder.” *IEEE Earthzine*.



## Member Contributions: Miscellaneous

- **Conference contributions**

- 2013 International Conference on Agro-Geoinformatics (Agro-Geoinformatics 2013), 12-16 August 2013, Fairfax, VA, USA (IEEE publication)
- Upcoming 2014 International Conference on Agro-Geoinformatics (Agro-Geoinformatics 2014), 11-14 August 2014, Beijing, China

- **Open source tool activities:**

- ESI TC is promoting the development of open source tools for geospatial data analysis.
  - » GeoJModelBuilder (<http://sourceforge.net/projects/geopw/>), an open source geoprocessing modelling tool, contributes to the 2013 Europa Challenge (<http://eurochallenge.como.polimi.it/>).
  - » GeoQoS (<http://sourceforge.net/projects/geoqos/>), a tool for QoS-aware geoprocessing, contributes to the 2014 Europa Challenge (<http://eurochallenge.como.polimi.it/>). 



## Open Geospatial Consortium Membership

- **GRSS is now an official member of the OGC**
- **Khalsa attended the OGC Technical Committee meetings at the WMO headquarters**
- **Current OGC activities of interest to GRSS include**
  - Transactional web processing and web coverage services enabling control of workflows and dataset updates via the web
  - A met/oceo application profile of WCS that enables operations like curtain and corridor subsetting of 3D and 4D arrays
  - Data quality: attaching user feedback to a data products, extending UncertML to allow for non-numeric measures of uncertainty, data quality in crowdsourcing systems, and improvements to cityGML relating to quality.
- ***Seeking volunteers for various Working Groups***





## Other Standards-Related Activities

- **GRSS liaison (Khalsa) is tracking select ISO/TC211 standards projects**
  - Content and encoding rules for imagery and gridded data
  - XML schema implementation of metadata and quality standards
  - Calibration and validation of remote sensing imagery sensors – Part 2: Lidar
  - Co-Chair of ISIS TC contributed to Part 1 of the above and invited lead author to IGARSS session on cal/val
- **Cooperative European-US (COOPEUS) on standards for eScience**
  - Khalsa supported a “*Hands-on Workshop for registering and accessing COOPEUS Research Infrastructures through the GEOSS Common Infrastructure (GCI)*”



# ESI TC Meeting Highlights

- **New Initiatives**

- Workshop on Data Science
- Collaborating and participating in OGC ‘Plugfest’ on testing interoperability of systems (client/servers)

- **Future Sessions**

- Semantic Web, Big Data, Internet of Things (Sensor Web), Standards in Action, Disaster, Data Publication and Citation

- **Special Issue**

- Big Data