A three pronged attack for initially addressing GEOSS cal/val needs

Define or identify test scenarios (aka “sites”) for calibration and validation of EO observations and measurements

Establish best practices procedures incorporating internationally recognized standards

Populate and evolve the **GEO/CEOS** Cal/Val Portal

Task DA-06-02 Report

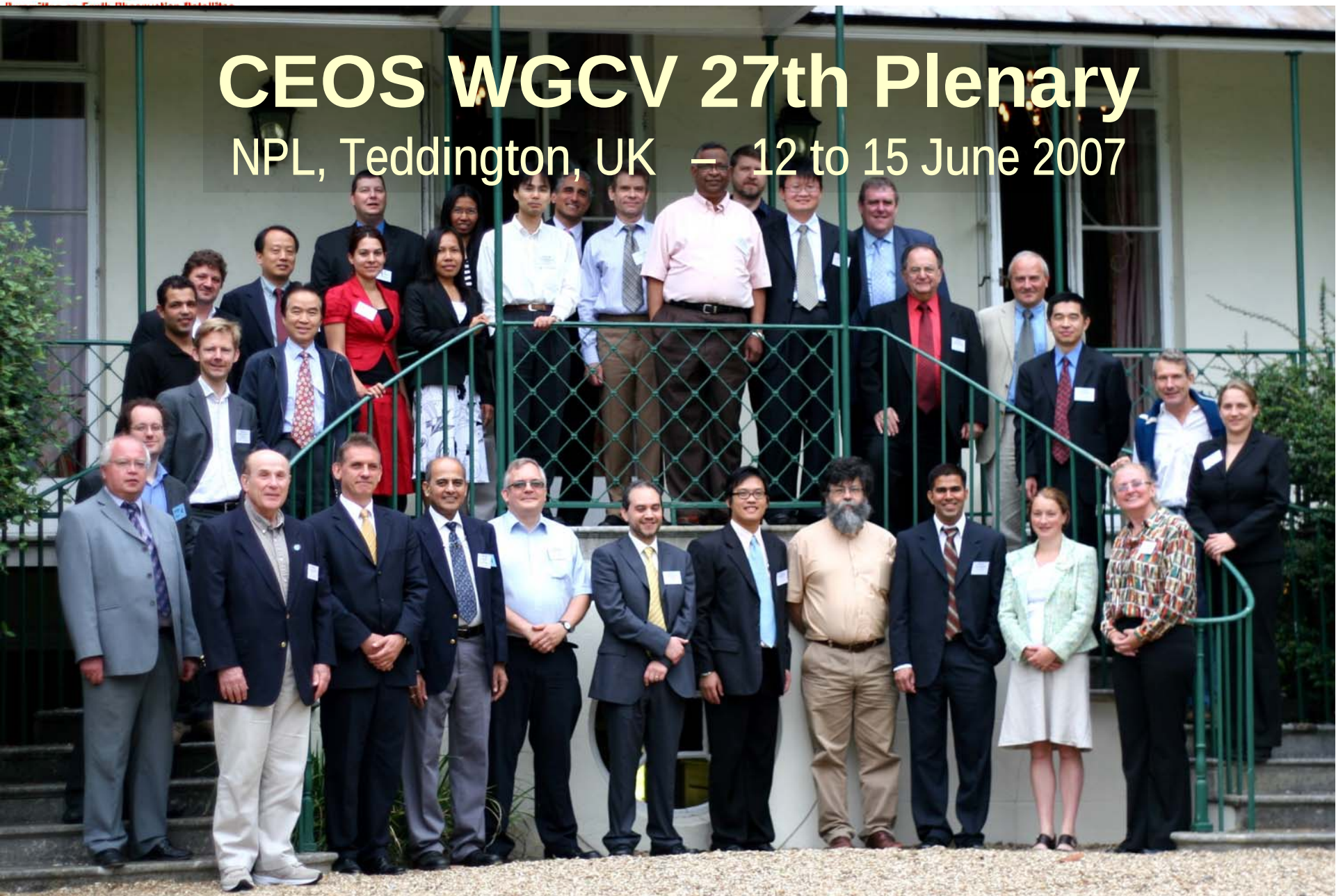
Stephen Ungar (WGCV/NASA), POC

1. What is the overall status of work on this Task?
2. What highlights are notable in the completed work for 2007 and planned work for 2008, including any deliverables that may be of interest for the upcoming Ministerial meeting?
3. Are there any issues that need attention from ADC or other GEO Committees?

GEO ADC Meeting,
Washington, USA, 12-13 September 2007

Recent and Upcoming Major DA-06-02 & CEOS/WGCV Events

- IVOS Subgroup London 11 June 2007
  - Infrared & Visible Optical Sensors WGCV Subgroup Meeting
- WGCV-27 London 12 -15 June 2007
- GSICS WGs Darmstadt 12 -14 June 2007
  - GSICS Research WG and Data WG meet at EUMETSAT
- IGARSS Barcelona 23 July 2007
  - DA-06-02/WGCV presentation at special GEOSS Session
- CalVal Workshop Geneva 2 - 4 October 2007
  - GEO/CEOS Workshop on Quality Assurance of Calibration & Validation Processes



CEOS WGCV 27th Plenary

NPL, Teddington, UK – 12 to 15 June 2007

Data Quality Guidelines for GEOSS Consideration-

The CEOS Working Group on Calibration & Validation (WGCV)

IGARSS-2007

Presented by Stephen Ungar (NASA)
on behalf of CEOS/WGCV

Changyong Cao (NOAA), Chair
Pascal LeCompte (ESA), Vice Chair
Petya Campbell (NASA), Secretariat
Mjchael Rast (GEO), Past IVOS Chair

GEO – CEOS Workshop on Quality Assurance of Calibration and Validation Processes

2 – 4 October 2007 Geneva, Switzerland

Marie-Claire Greening &
Pascal Lecomte

Scope of the Workshop

To identify and scope key elements needed to develop and implement a "data quality strategy" as required by GEO task DA-06-02

- Best practises in Cal / Val Processes.
- Harmonisation and Standardisation of Quality Control and Calibration / Validation Processes.
- The role of CEOS in the Certification of those processes.
- Implementation Strategy.

Agenda

Tuesday 2 October	Wednesday 3 October	Thursday 4 October
• Welcome • Introduction	Satellite and *in situ* cal/val data access	Harmonisation of quality information
Lunch		
Cal/val site characterisation & certification	Methodology and guidelines for cal/val	• Discussion and future • Wrap up

Afternoon Thursday 4 October

Chair: Steve Ungar (GEO task DA-06-02 lead)

- **Discussion and future**

  To include discussions on:

  – Requirements for the definition of best practises and / or CEOS certification for QC and Cal/val processes.

  – Implementation Strategy

- **Wrap up**

  – The way forward and milestones

  – The need for a further workshop?

Committee on Earth Observation Systems

The CEOS Working Group on Calibration and Validation

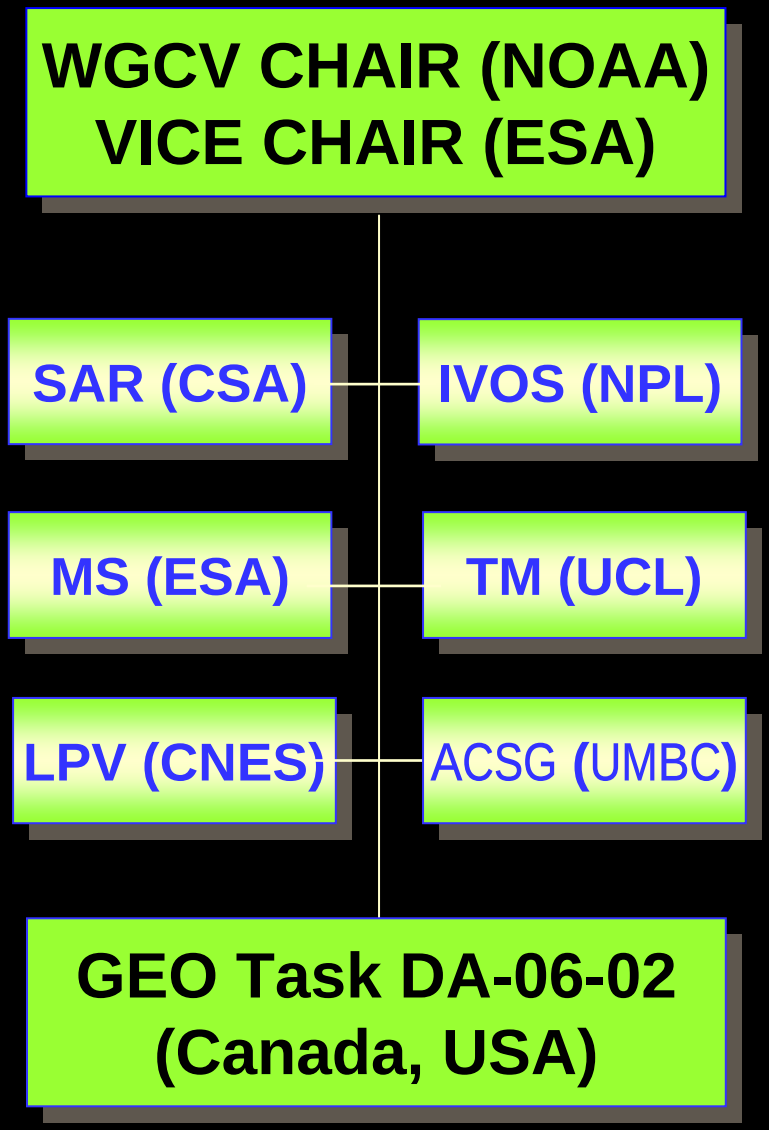
- The Working Group on Calibration and Validation (WGCV) was established in 1984. This resulted from the recognition by CEOS that calibration and validation activities should play a key role in all satellite Earth Observation missions to ensure the clear and quantitative understanding of the data they generate.

- **Calibration:** The process of quantitatively defining the system responses to known, controlled signal inputs.

- **Validation:** The process of assessing, by independent means, the quality of the data products derived from the system outputs.

Committee on Earth Observation Systems

CEOS WGCV Subgroups

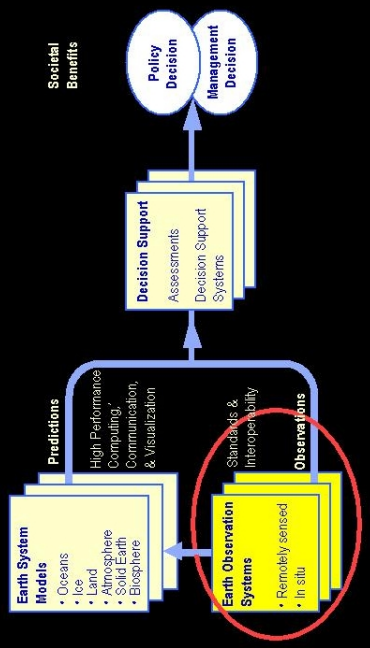


- Synthetic Aperture Radar (SAR)
  - Chair Dr. S. Srivastava, CSA
- Infrared Visible Optical Sensors (IVOS)
  - Chair Dr. N. Fox, NPL
- Microwave Sensors
  - Chair C. Buck, ESA
- Terrain Mapping (TM)
  - Chair Prof. J. Peter Muller, UCL
- Land Product Validation (LPV)
  - Chair Dr. F. Baret, CNES
- Atmospheric Composition (ACSG)
  - Chair Dr. B. Bojkov, UMBC/NASA

- Data Quality Assurance (DA-06-02)
  - POCs Dr. D. Goodenough, Dr. S. Ungar

GEOSS Information Architecture

Committee on Earth Observation Systems



Societal benefits

Decisions
policy
management

Recommendations

Decision support:
Assessments and Systems

Predictions

Earth System Models:
Atmosphere, Oceans, Ice, Land/Biosphere

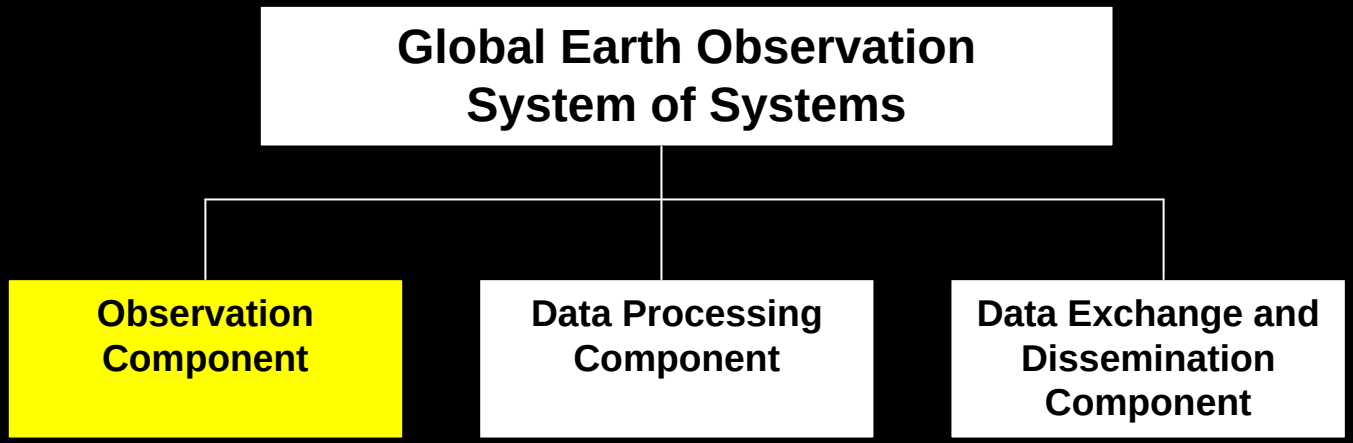
Data,
Standards and Interoperability

Earth Observation Systems

Remote Sensing observations *In situ* surveys and measurements

Cal/Val *strengthens the base* as shown in the following slides

Components of GEOSS Architecture

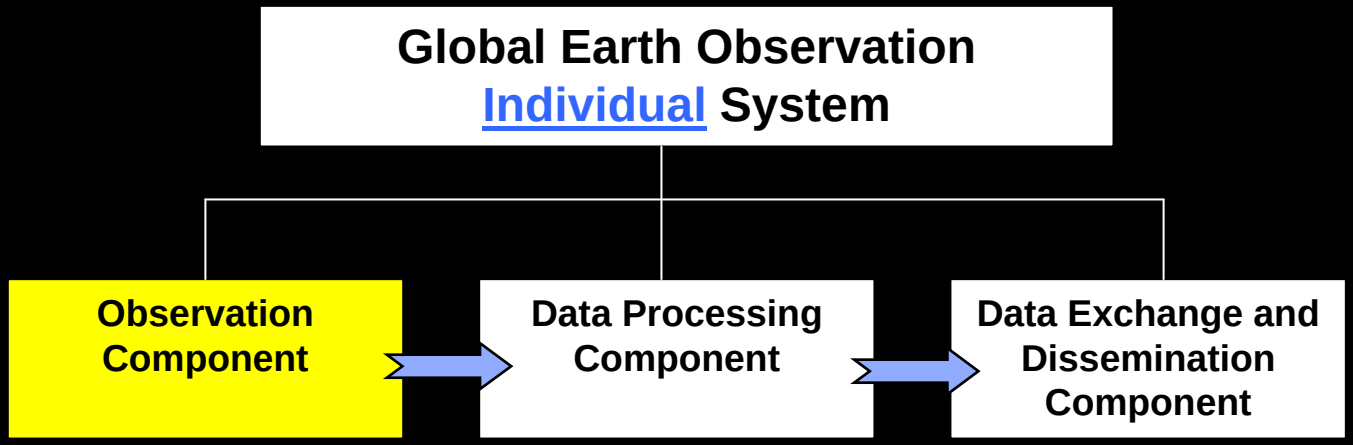


GEOSS architecture builds incrementally on existing systems to create a distributed system of systems, incorporating:

- an observation component
- a data processing and archiving component
- a data exchange and dissemination component

From: The Architecture of GEOSS (Global Earth Observation System of Systems); GEO4DOC 4.1 (2); 4.5.2004

Components of GEOSS Architecture



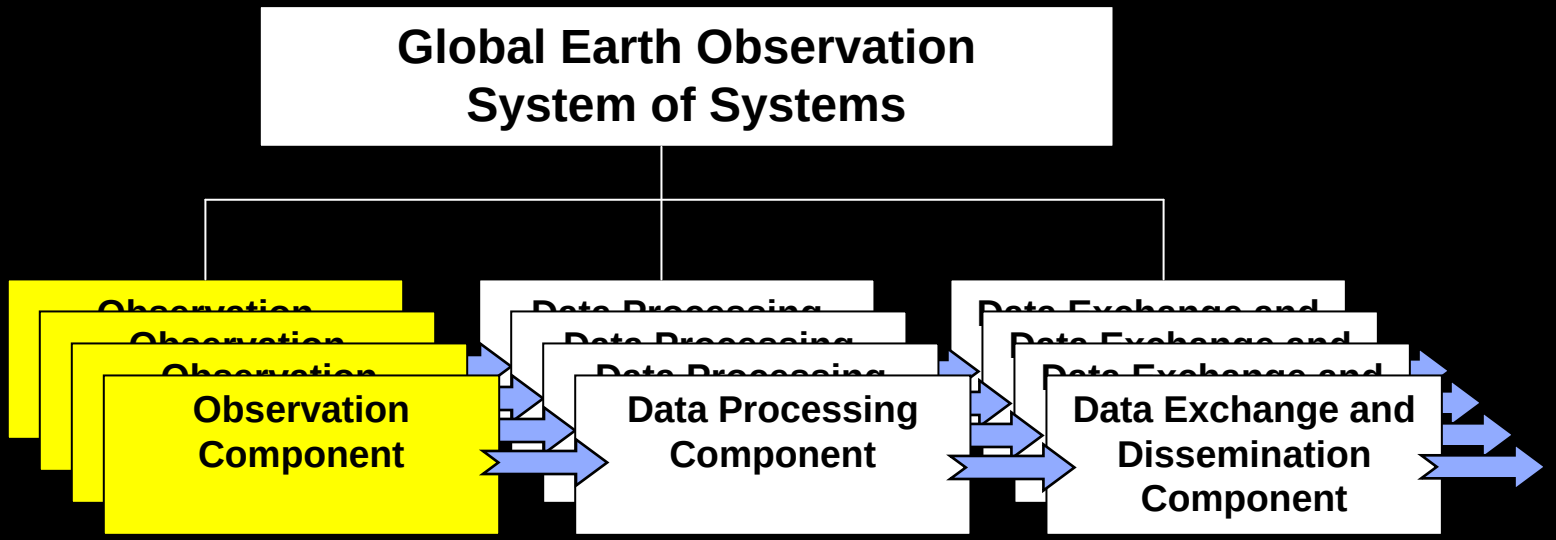
GEOSS architecture builds incrementally on existing systems to create a distributed system of systems. WGCV activities contribute to the following GEOSS components:

- Observation component
- Data processing and archiving component

To ensure:

- data and products interoperability, exchange and dissemination

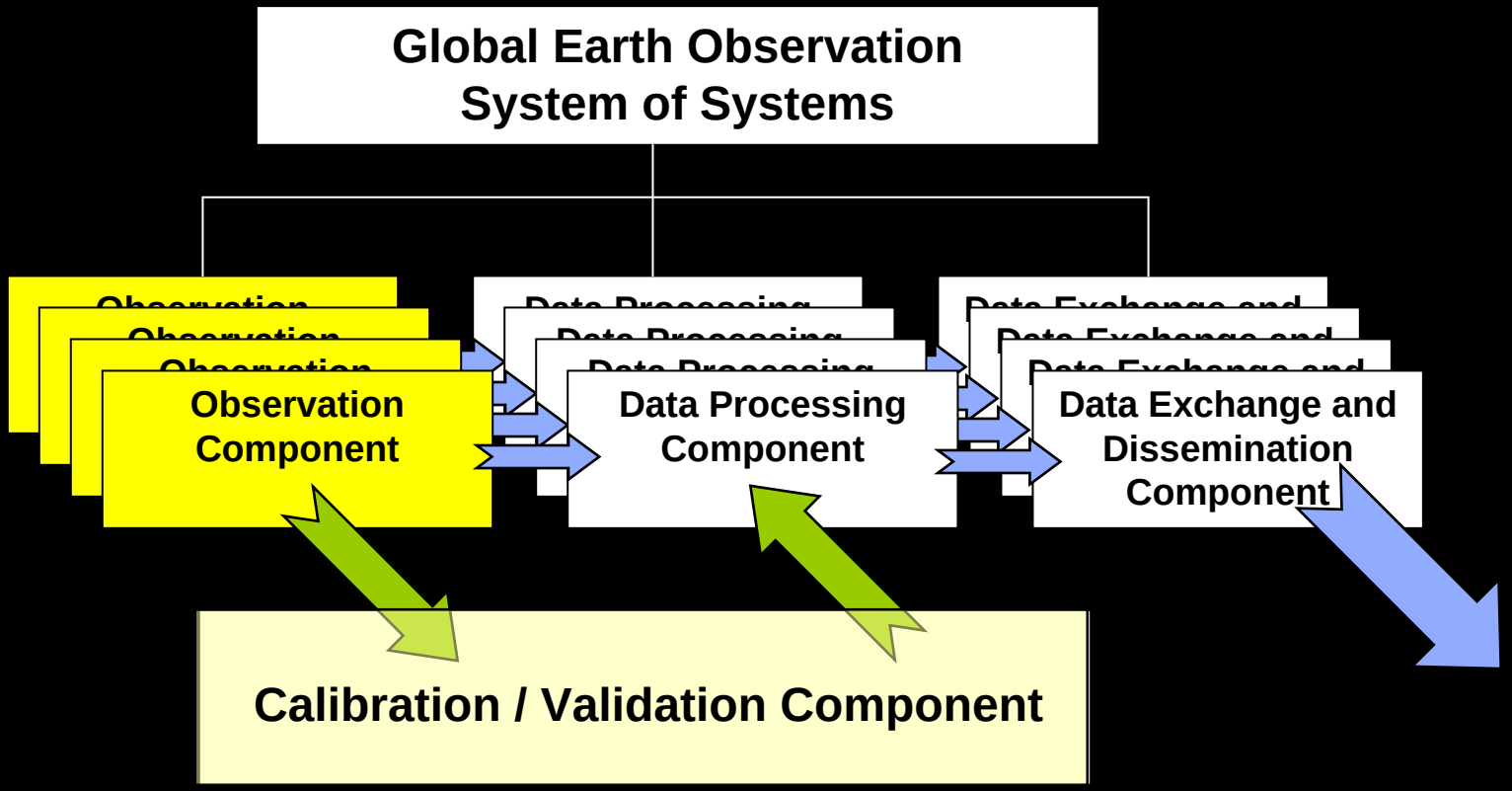
Inadequate Cal/Val in GEOSS Architecture



What's missing in this scenario?

A simplistic view of a System of Systems results in the need to deal with potentially disparate information forcing policy makers to "choose" their outcomes.

WGCV contribution to GEOSS Architecture



Role of WGCV in a true System of Systems where the operating space must cut across individual Systems
to provide integrated data for decision models

Establishing Calibration and Validation guidelines is a necessary ingredient in achieving Data Integrability

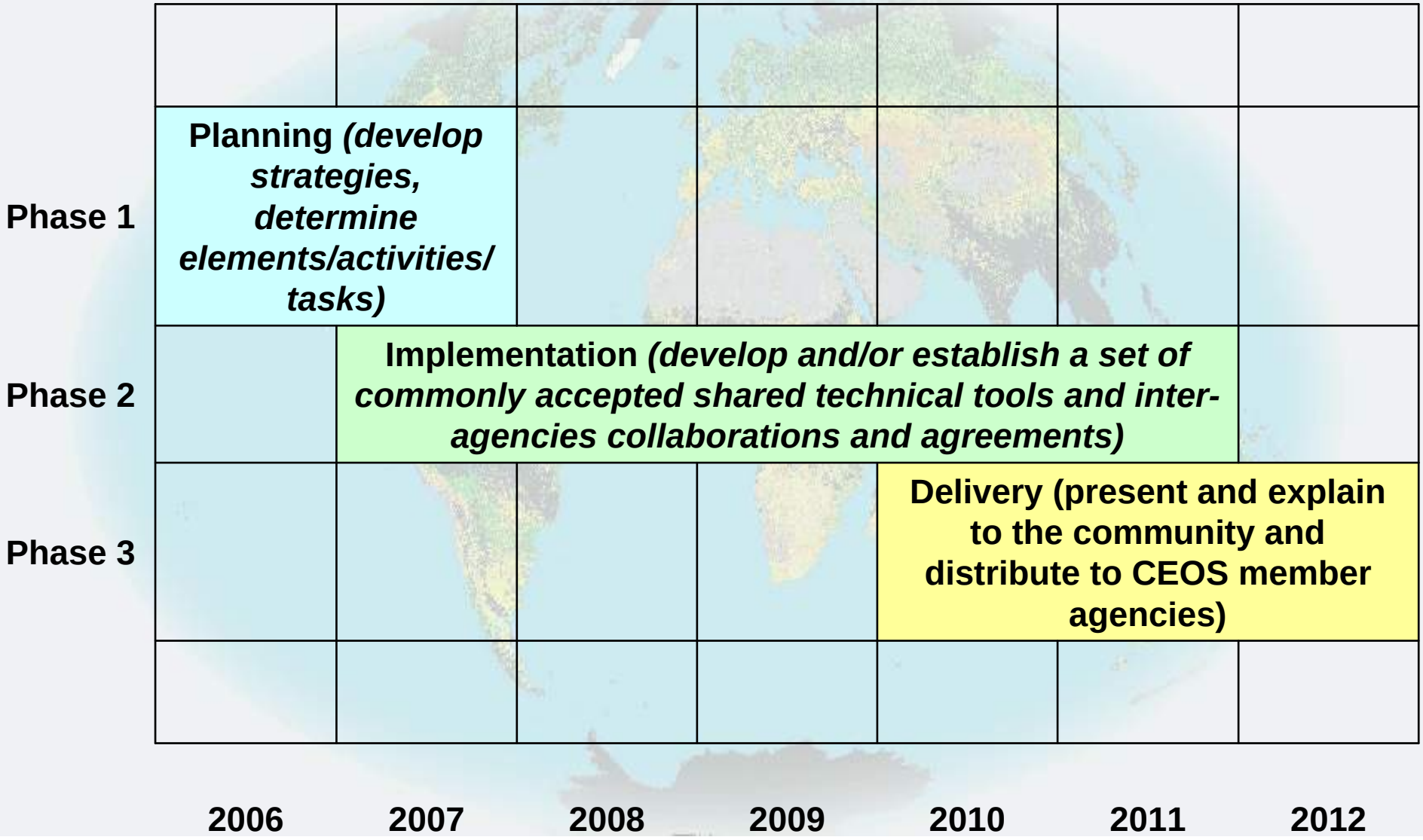
WGCV is establishing Calibration and Validation guidelines, to ensure integrability of GEOSS member satellite data sources, based on the current space agencies collaboration agreements, common formats and standards.

- **WGCV is soliciting all GEOSS partners to participate in the establishment of the following common practices:**
  - Document the methodologies used to derive and further process satellite measurements.
  - Create and maintain, in conjunction with WGISS, an internet-accessible information database containing, on an instrument or satellite basis, links to all instrument characteristics needed for insuring inter-operability.
  - Provide/publish Cal/Val reference methods in a readily accessible form.

These activities will ensure that the various data are integrable.

CEOS
Committee on Earth Observation Systems

Road Map for proposed activities addressing task GEO DA-06-02



Committee on Earth Observation Systems

Conclusion

You will find the latest evolution of the WGCV Data Quality Guidelines and links to the GEO – CEOS Calibration and Validation Workshop on the WGCV website at:

HTTP://WGCV.CEOS.ORG/

The established Cal/Val portal is the ESA response to the Working Group on Calibration and Validation (WGCV) Recommendation to the CEOS 18th Plenary Meeting, Beijing, November 2004, Doc No: 12.1.

The Cal/Val portal is a calibration and validation support system with the goals: to facilitate the calibration process and the intercalibration and increase the comparability of similar instrument's data. It requires well defined calibration and validation process where CalVal is controlled through common standards. The portal is currently being populated, and when ready for release it will include: description of methodologies, instrument characteristics, access to EO data (satellite and in situ), access to tools, CalVal results, user management, forum for discussions and help.