ADC – Data Way Forward:
Results of ADC discussions

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ADC Data Way Forward

- Ad-hoc discussion group formed by ADC Co-chairs
  - Reported to ADC meeting, September 2009
- Main emphasis:
  - Data available through GCI & broader GEOSS
  - Access & value-add in open system environment
  - Influence ADC Data Tasks including AIP-3
- Discussion group:
  - Ken McDonald, Jay Pearlman, Siri Jodha Singh Khalsa, Rob Koopman, Alessandro Annoni, and George Percivall (editor)

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Data Management Way Forward

*"The user cannot **find** the data;*
*If he can find it, cannot **access** it;*
If he can access it,
*he doesn't know **how good** they are;*
if he finds them good,
*he can not **merge** them with other data"*

The Users View of IT, NAS 1989

http://books.nap.edu/openbook.php?isbn=030903888X&page=25

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Data Way Forward Topics

- Global datasets
- Services for access to data and information
- Implications of data sharing principles
- Data quality
- Information architecture

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Several global datasets are underway – are more needed?

- Task DA-09-03 includes several categories of global datasets: Land Cover; Meteorological and Environmental; Geological; and DEM
- Most of these are geophysical. Also need health, population, sociological, species distribution
- Considering the base data categories identified in other activities (INSPIRE, FGDC, GCOS, others) should ADC identify and promote additional global datasets in DA-09-03?
- Link to GEO 2010 Baseline Initiative (Plenary doc 10)

Continue to increase Access Services

- GEOSS 10 Year Plan envisions “access to data and information through service interfaces”
  - Move from “Order and delivery of files” to “Access Services”
- Most global dataset tasksheets say nothing about making data available through services.
  - An exception is DA-09-03c - OneGeology
  - Opportunity is exemplified by existing operational service that provide 300,000 maps/day
- AIP-3 increase data access services and ensure services are correctly registered in the GEOSS CSR.
  - Discovery of ASTER GDEM via the GCI as a case study
  - WIS is registered but you need to go to WIS to find services

Consider implications of data sharing principles

- Continue to participate in review of DSTF Guidelines and Action Plan
  - Requirements on GEOSS interoperability arrangements
- Consider existing practices, e.g., Landsat and ASTER require user registration with the data center
- Topics to consider in multi-provider environment.
  - Authentication of user identity for data with restricted access,
  - Notification and acknowledgment of copyright restrictions, licenses
  - Mechanisms for assurance that data is uncorrupted.
  - Charges and fees, when appropriate.
- DA-09-02A Data Integration and analysis systems
  - Collecting information for data centers. (Review survey results)
- AIP-3
  - Consider methods for licenses and user registration
  - Technologies like single-sign-on could be investigated

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Quality Assurance is vitally important in a distributed information system.

- Task DA-09-01a - quality assurance of EO data.
- QA4EO approaches applied to end-user information systems
- Consider international standards for quality of geographic information, e.g., ISO TC211 standards
- Interoperability arrangements for the propagation of uncertainty
  - e.g., Uncertainty Markup Language (UnCertML).
- Validation of datasets with user feedback from larger audience to allow that information to get back to the data provider.

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Fusion is only possible with a harmonized information architecture.

- “GEOSS will enable new value-added products resulting from fusion of diverse Earth Observation and socio-economic data” (GEO 10 Year Plan RD)
- Harmonized information architectures allow sharing across different disciplines and systems
- DA-09-01b (data harmonization task) and AIP-3 can be a starting point for such information architecture.
- Multiple topics in an information architecture that must accommodate dataset lifecycle

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INSPIRE Data harmonisation components

(A) INSPIRE Principles	(B) Terminology	(C) Reference model
(D) Rules for application Schemas and feature catalogues	(E) Spatial and temporal aspects	(F) Multi-lingual text and cultural adaptibility
(G) Coordinate refe-rencing and units model	(H) Object referencing modelling	(I) Data translation model/guidelines
(J) Portrayal model	(K) Identifier Management	(L) Registers and registries
(M) Metadata	(N) Maintenance	(O) Quality
(P) Data Transfer	(Q) Consistency between data	(R) Multiple representations
(S) Data capturing	(T) Conformance	

coordinate reference systems (CRS); geospatial information types (features, coverages, observations and metadata), application schemas, product definition process, multilingualism and ontologies

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OGC Reference Model – Information

Semantics of information and information processing

- Spatial Referencing
- Maps and Features
- Geometry and Topology
- Geography Markup Language
- Sensor Web Enablement Information
- Policy and Rights Management
- Metadata
- Encodings

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ISO TC211 Geo Info Reference Model

- Conceptual modelling
- Application Schema
- Spatial Objects and Position
- Reference Systems
- Quality
- Metadata
- General Feature Model
- Services
- Profiles

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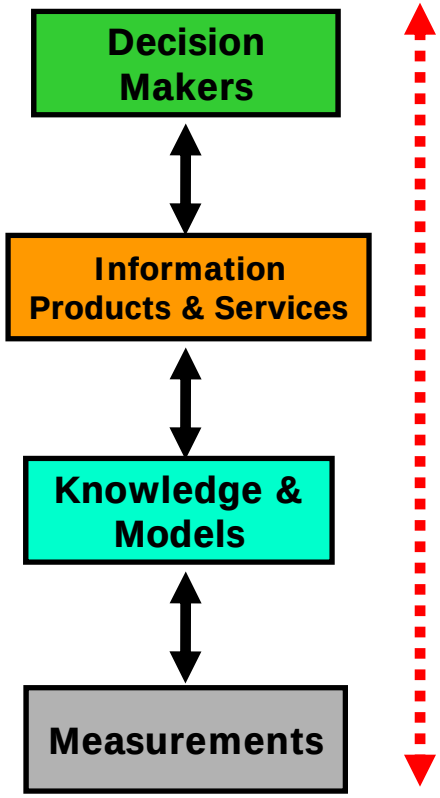
CEOS References

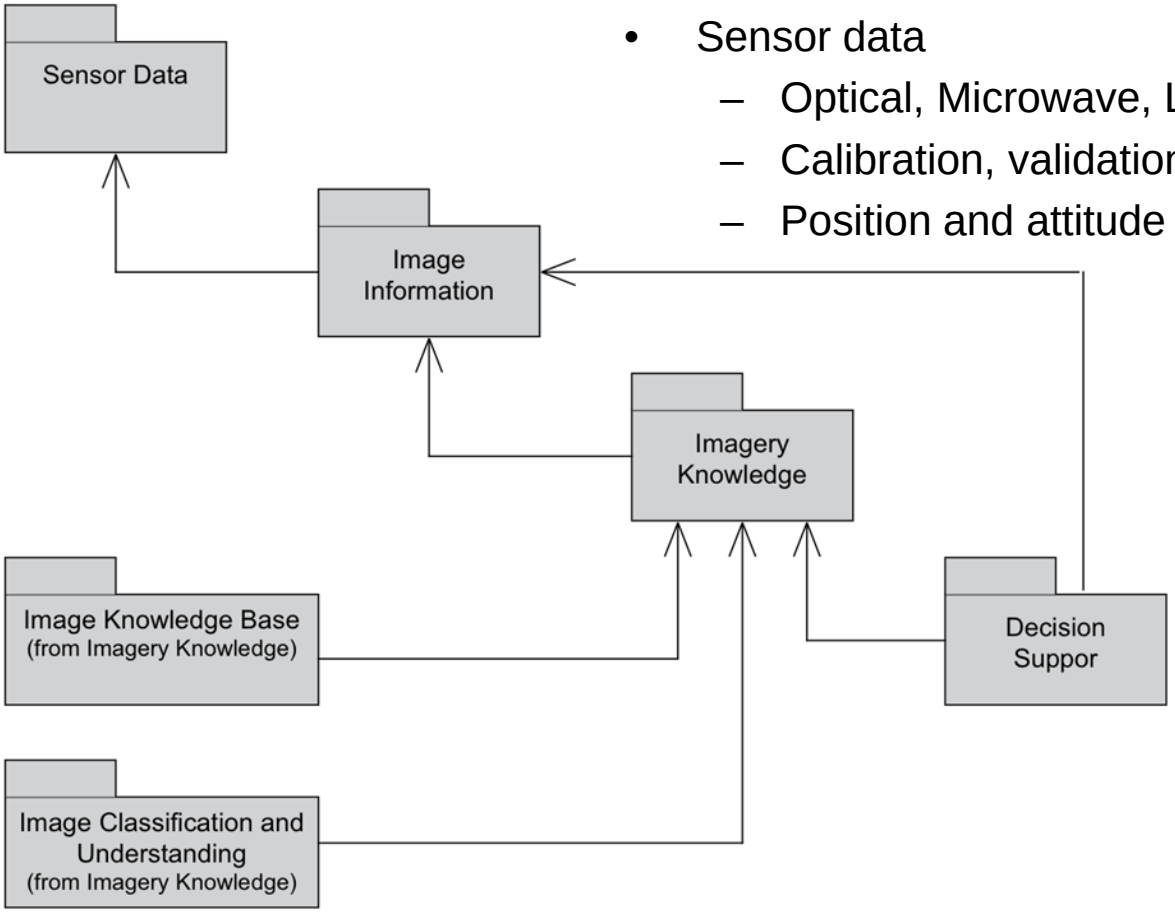
- QA4EO: series of documents
- CEOS Interoperability Handbook
- Systems Engineering Office database

CEOS SEO Approach for Implementation of GEOSS Space Segment



- SEO proposed taxonomy to capture thinking of GEO
- Traceability of requirements and assessment of gaps at every level
- Links key decisions in each GEO SBAs to their required informational products, science models, space missions, instruments and measurements.

ISO TC 211 Geographic Imagery Reference Model – information viewpoint



- Sensor data
  - Optical, Microwave, Lidar, Sonar sensors
  - Calibration, validation and metrology
  - Position and attitude determination

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WMO Space Programme: WMO/CEOS Database

1 - Instrument typology and geophysical parameters
  - Preliminary definitions
  - Instrument types
  - Geophysical parameters
2 - Collection of requirements structured by source and application
3 - Collection of requirements structured by geophysical parameter

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AIP-3 CFP Information Viewpoint - Draft

- Spatial Referencing
- Observations, Sensor Information
- Geophysical Parameters
- Maps, features, coverages, and observations
- Product Types: global and framework datasets
- Product Encoding Formats
- Predictive Models
- Registry Information Models and Metadata
- Alerts and Feeds
- Policy, Rights Management, Licenses

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