

Sub-task Number: AR-09-01b

Sub-task Title: GEOSS Architecture Implementation Pilot

Overarching Task: GEOSS Common Infrastructure

Area: ARCHITECTURE

Relevant Committee: ADC

Related Targets: (to be included in 2009)

Sub-task Definition (as given in the 2009-2011 Work Plan):

Develop and pilot new process and infrastructure components for the GCI and the broader GEOSS architecture through continuation of existing efforts and new activities solicited through Architecture Implementation Pilot (AIP) calls for participation and other means. Facilitate continuation of the Interoperability Process Pilot Project (IP3) as a means of coordinating cross-disciplinary interoperability studies and pilots. Coordinate societal benefit area support by the IP3 Pilots. As appropriate, incorporate GEOSS contributed infrastructure components into pilot implementations of the GEOSS Architecture in coordination with Task AR-09-01a. Develop a capacity building registry infrastructure to include relevant information on existing Earth observation capacity building efforts and resources (the Capacity Building Committee will supply the content for this registry). Provide phased delivery of components to operations under sub-task AR-09-01a: with each phase consisting of: architecture refinement based on user interactions; component interoperability testing; and SBA-focused demonstrations.

Leads (GEO Member or PO, Entity carrying out the work, Contact: e-mail):

OGC, Point of Contact: George Percivall, gpercivall@opengeospatial.org

USA (FGDC), Ivan Deloatch, Doug Nebert, ddnebert@usgs.gov

USA (NOAA), Ken McDonald, kenneth.mcdonald@noaa.gov

The AIP-2 task maintains a web page containing extensive information about the task:

<http://www.ogcnetwork.net/AIpilot>

Motivation/Background

The GEOSS Architecture Implementation Pilot leads incorporation of contributed components consistent with the GEOSS Architecture using GEO Web Portals and Clearinghouse search facility to access services through GEOSS Interoperability Arrangements in support of the GEOSS Societal Benefit Areas. AIP, Phase 1 (AIP-1) demonstrated the feasibility of the service-oriented architecture to GEOSS. AIP-2 elaborates the GEOSS SOA architecture and provides persistent exemplar resources to augment the GCI IOC.

Outputs (e.g. products and services which result from the activities of the Task/sub-task; outlined in the form of deliverables with timelines)

Planned: Deliverables planned for completion in AIP-2 by mid-2009 include:

- 1) Documentation of AIP-2 Developments including: a) CoP Scenarios, b) Transverse Technology Use Cases, and c) AIP-2 Summary report. The documents will be considered for posting to the GEOSS Best Practice Registry.
- 2) Nomination of persistent exemplar resources to be transitioned to the operational task (AR-09-01a)

Produced (current status as of July 2009):

- 1) Demonstration of AIP-2 developments to several Communities of Practice Scenarios. Demonstrations will be recorded and made available via the WWW.
- 2) A Call for Participation (CFP) was published in June 2008 and remains open for the duration of AIP Phase 2. Thirty seven (37) responses to the CFP have been received.

Activities (operations or work processes through which resources are mobilized to produce specific outputs; outlined in the form of milestones including timelines)

Planned:

AIP-2 Activity Plan as of July 2009.

| Milestone | Completion date | Responsible Organization |
|---|-----------------|--|
| Scenarios and Use Cases complete | 16 January 2009 | AIP-2 Working Groups |
| Engineering Reports Identified | 16 January 2009 | AIP-2 Working Groups |
| Scenario storyboards developed | January 2009 | AIP-2 Community WGs |
| Service registration and Use Cast testing Complete | April 2009 | AIP-2 Participants contributing components |
| Scenario Testing complete; Screen captures complete | May 2009 | AIP-2 Participants |
| Operational baseline defined | May 2009 | AIP-2 Participants |
| Engineering Reports - Complete | July 2009 | Working Groups |
| AIP-2 results transition to operations | September 2009 | AIP-2 Participants |

Progress (Completed Activities as of December 2008): ...

- 1) AIP-2 Kickoff Workshop held in Boulder Colorado, USA, September 25 and 26, 2008. Eighty five (85) persons attended over the two days.
- 2) Interim Design Review for AIP-2 Development held on 2 December 2008 in Valencia Spain. AIP-2 Working Groups presented their status with a focus on Scenarios and Use Cases.
- 3) AIP-2 Development approach has been implemented as of December 2008. The Development is conducted in Working Groups. Milestones have been defined and scheduled. Communication mechanisms have been established and are open.
- 4) AIP-2 Demonstrations of several Societal Benefit Area scenarios and Transverse Technology areas were recorded on for May 4&5, 2009. The AIP-2 videos were initially presented to several GEO Committee meetings in May. The videos are now posted on-line:
<http://www.ogcnetwork.net/pub/ogcnetwork/GEOSS/AIP2/index.html>
- 5) AIP-2 Engineering Reports under development. Several are now complete with plans to complete the remainder in July:
<http://www.ogcnetwork.net/AIP2ERs>

Resources (indication of resources – e.g. financial, human – contributed by GEO Members or Participating Organizations to produce outputs)

The OGC serves as PoC for this task based upon sponsorship from multiple organizations including: USGS/FGDC, ESA, European Commission, ERDAS, and Northrop Grumman. The sponsorship provides resources in part of the OGC AIP IP Team.

Thirty seven (37) teams responded to the CFP representing in excess of eighty (80) organizations. These organizations will be performing the bulk of the AIP-2 activity and all of the sustainable persistence.

The Interoperability Process Pilot Project (IP3) is being conducted as a main element of the Biodiversity and Climate Change Working Group. Stefano Nativi leads the IP3 and is leading the WG.

Several organizations that responded to the CFP volunteered to lead the AIP-2 Working Groups:

- Disaster Response –Ellsworth LeDrew, Univ Waterloo;
- Stuart Frye, NASA;
- Didier Giacobbo, Spot Image
- Health SBA: Air Quality –Eugene Yu, GMU;
- David McCabe, EPA –Greg Yetman, CIESIN
- Frank Lindsay, NASA;
- Stefan Falke & Rudy Husar, Washington Univ. •Portals and application clients
- Biodiversity and Climate Change –Nadine Alameh, OGC/MobileAps;
- Stefano Nativi, CNR; –Herve' Caumont, OGC/ERDAS
- Gary Geller, NASA/JPL •Catalogues, Clearinghouse, Registries and Metadata
- Energy SBA –Doug Nebert, USGS;
- T. Ranchin & Lionel Menard, Mines Paris Tech; –Josh Lieberman OGC/Traverse;

- Kengo Aizawa, JAXA;
- Ted Haberman, NOAA
- Test Facility for service registration
- Mauro Semerano, ESA
- Access Services: products, sensors, models
- Herve' Caumont, OGC/ERDAS;
- Glenn Rutledge NOAA,
- Hans Peter Plag, UNR;
- Anwar Vahed, ICT4EO;
- Luis Bermudez SURA;

Editors of AIP-2 Engineering Reports (ERs)

- GEOSS AIP-2 Renewable Energy SBA Engineering Report
 - Point of Contact Editor: Lionel Menard, Mines ParisTech
 - Contributing Editors: Mines ParisTech and Team
- GEOSS AIP-2 Air Quality and Health SBA Engineering Report
 - Point of Contact Editor: Erin Robinson, Washington University - St. Louis
 - Contributing Editors: David McCabe, EPA; Rudy Husar, Washington University - St. Louis; Stefan Falke, Northrop Grumman;
- GEOSS AIP-2 Pika Biodiversity SBA Engineering Report
 - Point of Contact Editor: S. Nativi
 - Contributing Editors: S.J. Khalsa, M. Santoro, C. Ray, E. O'Tuama, G. Geller, D. Thomas.
- GEOSS AIP-2 Arctic Food Chain Biodiversity SBA Engineering Report
 - Point of Contact Editor: S. Nativi
 - Contributing Editors: S.J. Khalsa, M. Santoro, F. Huettmann, E. O'Tuama, G. Geller, D. Thomas.
- GEOSS AIP-2 Polar Ecosystems Biodiversity SBA Engineering Report
 - Point of Contact Editor: Doug Nebert, USGS
 - Contributing Editors: Yuqi Bai, GMU;
- GEOSS AIP-2 Disaster Management SBA Engineering Report
 - Point of Contact Editor: Didier Giacobbo, SpotImage
 - Contributing Editors: Stuart Frye, NASA; Hervé Caumont, ERDAS/OGC; Ron Lowther, Northrop Grumman
- GEOSS AIP-2 Unified Modeling Engineering Report
 - Point of Contact Editor: Larry McGovern, INCOSE and Northrop Grumman
 - Contributing Editors: INCOSE GEO Team
- GEOSS AIP-2 Use Cases Engineering Report
 - Point of Contact Editor: Nadine Alameh, Mobilaps and OGC
 - Contributing Editors: George Percivall, OGC; Josh Lieberman, Traverse/OGC; Hervé Caumont, ERDAS/OGC
- GEOSS AIP-2 End-to-End Discovery and Access Engineering Report
 - Point of Contact Editor: Josh Lieberman, OGC and Traverse, Inc.
 - Contributing Editors: Hervé Caumont, Nadine Alameh, Doug Nebert, Ted Habermann, Marten Hogeweg
- GEOSS AIP-2 Workflow and Processing Engineering Report
 - Point of Contact Editor: Greg Yetman, CIESIN;
 - Contributing Editors: Genong (Eugene) Yu, GMU;, Brian Falk, CIESIN;
- GEOSS AIP-2 Testing Services Engineering Report
 - Point of Contact Editor: Gianni Sotis, ESA
 - Contributing Editors: Michelle Anthony, USGS

Architecture and Data Component

1) Please briefly describe any task-related Earth observation resources (data set, system, website/portal) and any related Web Service interfaces that are contributed to GEOSS. State whether these items are or will be registered with the GEOSS Component and Service Registry for access via the GEO Web Portals, and whether any associated standards or other interoperability arrangements will be registered in the Standards and Interoperability Registry.

AIP-2 promoted the concept of Persistent Exemplars for increasing the operational level of GEOSS Components and Services. The criteria for a Persistent Exemplar has been stated as

1. Registered in Component and Service Registry (CSR) as “Continuously Operational”
2. Accessible through a GEOSS Interoperability Arrangement that is an international standard.
3. Level of Service: Available >99% of the time (~7 hours downtime/month); Adequate network bandwidth and hardware for performance

As of 2 July 2009, there were 155 services in the CSR that met criterion #1 and #2. We are currently developing approaches to assess criteria #3.

2) Please also describe what data and information your activity/system needs that you would request to be accessible through the GEOSS Common Infrastructure.

AIP works closely with the GCI through Task AR-09-01a and the GCI IOC TF.

Capacity Building Component

(capacity building is defined to include the development of capacity related to: (i) Infrastructure and technology transfer (Hardware, Software and other technology required to develop, access and use EO); (ii) Individuals (education and training of individuals to be aware of, access, use and develop EO) and (iii) Institutions – building policies, programs & organizational structures to enhance the value of EO data and products).

1) In accordance with the above definition does this Task have a capacity-building component? If so, please provide a short description of this component including a description of end users.

The Task includes the statement “Develop a capacity building registry infrastructure to include relevant information on existing Earth observation capacity building efforts and resources (the Capacity Building Committee will supply the content for this registry).”

2) Have any additional CB needs for this Task been identified? Please provide a short description.

Requirements for a CB registry were discussed with the CBC in September 2008. Currently the resources have not been identified to support the registry. The CB registry will be included in a future CFP.

User Engagement Component

(please briefly describe to what extent end users are engaged in this Task and influence the nature of the outputs produced)

The Scenarios developed in AIP-2 were identified through collaboration of the UIC and ADC.

The AIP-2 SBA Scenarios were reviewed with members of their respective communities of practice:

The AIP-2 demonstration videos are being displayed to various communities.

AIP-2 supported the GCI Usability Testing conducted in Stresa in May 2009.

Science and Technology (S&T) Component

1) Please briefly describe the elements of scientific research or technological development contained in this Task.

2) In relation to the S&T component(s) of this task, please describe gaps, priorities, continuity needs, barriers, scientific expertise and additional resource needs (this information will be used for developing a gaps and needs assessment in Task ST-09-01)

Members and POs' Contributions to Outputs and Activities above:

(Input is optional. This section gives the chance to Members and POs to provide more details (3-5 lines) on their individual activities, making a clear connection with the Outputs and Activities outlined above).

Italy

ISPRA: According to GEOSS AIP sub-task, that considers activities and processes through which resources are mobilized, open-source SDI technology (data & architecture sharing oriented for SW application re-use) is going to be developed and applied by the Italian Environmental Information System (SINA), taking into account European and global standards, such as Inspire and OGC.

Japan

AIST: Implementation of GEO Grid architecture following OGC and OGF standard for satellite and field sensor data utilization.

JAXA: Testing and evaluating the connection the JAXA catalogue node to the GEOSS clearinghouse.

USA

NOAA: Develop and pilot new process and infrastructure components for the GCI and the broader GEOSS architecture through continuation of existing efforts and new activities solicited through Architecture Implementation Pilot (AIP) calls for participation and other means.

EC

EuroGEOSS will build on IP3 platform to develop examples of interdisciplinary interoperability across three thematic areas (forestry, drought, biodiversity).

Participation (Table to be filled in 2009):

| Type | Member or PO | Representing | Contact Name | EmailAddress |
|-------------|--------------|----------------------------------|-------------------------|--------------------------------|
| Lead (PoC) | OGC | Open Geospatial Consortium (OGC) | George Percivall | gpercivall@opengeospatial.org |
| Lead | USA | FGDC | Doug Nebert | |
| Lead | USA | NOAA | Ken McDonald | kenneth.mcdonald@noaa.gov |
| Contributor | EC | EuroGEOSS | Stefano Nativi | nativi@imaa.cnr.it |
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