Call for Participation in AIP-4

GEOSS Architecture Implementation Pilot (AIP)

Due Date for CFP Responses: 6 May 2011

Issue Date of CFP: 12 April 2011 – with clarifications

GEOSS Architecture Implementation Pilot, Phase 4
Call for Participation

Introduction

AIP-4 will increase the accessibility of GEOSS datasets identified as supporting Critical Earth Observation Priorities by the GEO User Interface Committee (UIC) and increase the use of the data through promoting availability of new data services, clients, and applications building on accomplishments of prior AIP phases. AIP is GEO Task AR-09-01b conducted under the purview of the GEO Architecture and Data Committee (ADC)

AIP-4 will focus on enabling key global EO data sources with standard service interfaces and generalized clients, supporting brokered search, and supporting community publisher and user requirements through integration with the GEOSS Common Infrastructure (GCI). The AIP-4 schedule will be shorter in order to support the GEO Plenary in November 2011. AIP-4 will contain less pioneering developments than previous AIP phases. The CFP for AIP-4 is abbreviated relying on the previously defined baseline. CFP responses are requested to be brief.

This CFP contains the following sections.

- Activity #1: Access to Priority EO Data Sources
- Activity #2: Clients and Mediated Access Enablers
- Responding to the AIP-4 CFP
- Components Baseline
- Development Schedule
- References

Responding to the CFP by 6 May 2011 will support the most efficient, coordinated development of GEOSS based upon a shared understanding of resources participating in AIP-4.

Activity #1: Access to Priority EO Data Sources

AIP will support the GEO-ADC goal of increasing accessibility of Priority EO Observations as identified by the GEO User Interface Committee [UIC 2011] [1], starting with the nominated GEOSS "Data Collection of Open Resources for Everyone" - GEOSS Data-CORE [DSTF 2010]. To support this goal, AIP -4 aim to:

1) Increase on-line access to "Priority EO Data Sources" including observations and derived information
2) Ensure that those data sources are discoverable through the GCI
3) Demonstrate general and special client availability to facilitate use of these resources.

AIP-4 will support these aims by performing the following sub-activities:

[1] References are listed at the end of this document

1a. Support Development of Thesaurus for EO Observation Parameters

Table 13 in [UIC 2010] identifies "Highest Ranked Observation Parameters" across all SBAs. This table and other parts of the report list Parameters that in practice have multiple definitions. AIP-4 will support the GEO Ontologies and Taxonomy Task (AR-09-01d) in developing a Thesaurus of parameters for EO Observations. The Thesaurus will be used in AIP-4 activities, e.g., to describe datasets that are to be put online, and to configure/structure the provided access services.

1b. Develop Status List of "Priority EO Data Sources"

AIP-4 will create a list of "Priority EO Data Sources." This list will be used to coordinate AIP-4 activities of getting datasets online. The AIP-4 list will build on existing lists developed by the DSTF and the GEO Secretariat of Data-CORE datasets fully and openly exchangeable without restriction. The list will link to terms in Observation Thesaurus (1a. above). The list will link to GCI for metadata on datasets as they are registered. The list will be maintained as a collaborative resource visible online. AIP will contribute to the dialogue with data providers to identify remaining barriers preventing access to Data-CORE, and to communicate them to the GEO Members and Participating Organisations.

1c. Getting EO Data Online

AIP-4 will work with GEO members to increase on-line access to the "Priority EO Data Sources" (1b above). On-line access will be of several types as listed in Table 1. AIP-4 will focus on the top two types: "Web Services" and "Browse & Download". Web Service deployment, registration and access are described in AIP-2 video "Publishing a web service in GEOSS" [AIP 2009] and AIP Use Cases #1 "Register Resources" and # 2 "Deploy Resources" in [AIP 2011].

Table 1 - Types of access to observations

Type	Description
Web service	Access with HTTP request including processing on server side to produce result to meet user or programmatic requests. Service may be hosted by long-term archive or by an Access Broker. Transmission of EO data begins synchronously in response to user or programmatic requests.
Browse & download	Web page listing available products that can be selected for download as a file, e.g. via ftp or http, without user options other than file selection. Transmission of EO data begins synchronously in response to user request.
Order and download	Order interface allows for selection of product and order options. Response to order request is an identifier for product to be download. Delivery of EO observation need not begin synchronously.
Order and media delivery	Order interface allows for selection of product and order options. Response to order request is delivery of physical media. Delivery of EO observation need not begin synchronously with user request. (See [AIP 2008] for a definition)

AIP-4 will seek to provide tutorials, server toolkits, expert guidance, and access brokers to aid data providers in providing synchronous on-line access to their data. Tutorials needed to get data online in AIP-4 will be developed in coordination with the Standards and Interoperability Forum (SIF), which manages an outline of tutorial topics and provides tutorial templates. Data Access

procedures as recommended by the DSTF and GCI CT will be followed in AIP-4. An emphasis will be placed on planning for multi-year persistence of the online data access, as well as for quality of service.

Organizations responding this CFP, are encouraged to consider the **INSPIRE Annex II and III schemas** as well as the European Commission **Call for participants for data specifications testing**, due to their relationships with, or value for, the GEOSS Critical Earth Observations Priorities.

Requested Responses to this CFP Activity

For AIP-4 Activity #1, the CFP seeks responses that include the following contributions:

- Access to Priority EO Data Sources as either Long Term Archive or Data Broker
- Data access assistance: tutorials, server toolkits, expert guidance
- Services to test access service implementations potentially deployed by others

Activity #2: Clients and Mediated Access Enablers

AIP-4 will support the GEO-ADC goal of increasing ad-hoc web service integration and chaining (workflows, mashups) to demonstrate integrated access for general use. Simplification and streamlining of data discovery and access will engage more providers and end-users. AIP-4 will contribute to this goal through refinement of previously established capabilities in prior phases of AIP implementation of SBA scenarios using Application Clients, Community Portals, and Mediation tier components (See Figure 1). The functionality for this activity is defined in AIP Use Case #7, "Exploit Data Visual and Analytically" [AIP 2011-1]. AIP-4 will conduct Activity 2 by performing the following sub-activities:

2a. Coordination with GCI

The GCI provides access to GEOSS information in the most general fashion and is the starting point for broadest entry to GEOSS. AIP-4 will coordinate with the GCI Providers directly and through GEO Task AR-09-01a to plan for access to the EO Priority Data Sources in Activity 1. This coordination will identify how the existing components of the GCI will provide access and exploit data. It is anticipated that the GEOSS Web Portal will meet many of these functions but that additional enabler components will be needed. Coordination with GCI will include design of tools and methods to connect to enabler components.

2b. Coordination of Enabler Components

GEOSS users will discover and initially evaluate datasets using the current components of the GCI. For further analysis and exploitation of the data, GEOSS users will need additional "enabler components" – Application Clients, Community Portals, and Mediation tier components (See Figure 1). AIP-4 will coordinate and document the design for how enabler components augment GCI functionality for GEOSS datasets. AIP-4 will demonstrate how the enabler components support SBA requirements (see activity 2c). Potential components may come from GENESI-DR, EuroGEOSS, FedEO and previous AIP phases. This activity will consider results from previous AIP phases that supported SBAs and CoPs as listed in Table 2.

In addition, downloadable desktop clients are requested to be identified and provided to facilitate interaction with specific data or service types (i.e. GeoTIFF, netCDF, GML). The offer to download these software enablers would be integrated into the GEO Web Portal on presentation of the EO resource for access/download. These are intended to be general-purpose solutions that are format-specific rather than community or domain-specific.

Table 2 – Coordination with SBAs and CoPs.

AIP	SBA Tasks	CoP
Disaster Management	• DI-09-02: Multi-Risk Management • DI-06-09: Use of Satellites for Risk Management	
CC&Bio	• BI-07-01: BON	Biodiversity
Health: Disease	• HE-09-01: Info Systems for Health • HE-09-02: Monitoring and Prediction for Health	Health and Environment
Air Quality	• HE-09-02a: Aerosol Impacts on Health and Environment • HE-09-02b: AQ Observations, Forecasting & Public Info • DA-09-02d: Atmospheric Model Evaluation Network	Air Quality
Energy	• EN-07-02: Energy Environmental Impact	Energy
Water - Drought	• WA-06-02: Droughts, Floods & Water Management • WA-06-07: Water Resource Management	Water Cycle

2c. Integration and Usability Testing of Enabler Components

AIP-4 will support testing of enabler components in two phases: Integration Testing and Usability Testing. Component developers will perform integration testing including access of the EO Priority Data Sources of Activity 1 and other online data. One aim of Integration testing is to produce a script for testing that can be performed without developer assistance. AIP-4 will inform future Usability Testing efforts conducted by the UIC by providing access to Components and updates to test scripts.

Requested Responses to this CFP Activity

For AIP-4 Activity #2, the CFP seeks responses that include the following contributions:

- Components that enable exploitation of Priority EO Data Sources
- Component providers to work with CoPs on defining data exploitation requirements
- CoP participants interested to work with component providers
- Support of integration testing and informing usability testing
- Attendance and demonstration at GEO Plenary
- Outreach documentation: for providers and for CoP integrators.

Responding to the AIP-4 CFP

Responses are anticipated to be on the order of 5 pages or less.
Responses should follow the following outline:

- Overview
- Proposed Contributions for each Priority
  1. Access to Priority EO Data Sources
  2. Clients and Mediated Access Enablers
- Paragraph describing the Responding Organization

A template for responding to this CFP is available at
http://earthobservations.org/geoss_call_aip.shtml

Components Baseline

The GEOSS Architecture Tasks have defined an approach to defining the elements of the GEOSS Service Oriented Architecture:

- **Components** allow for coordinated management of the system. Components are combination of hardware, software and networks. Components are built, deployed and persist. Components are registered in GEOSS Components and Service Registry (CSR).
- **Services** are how components interact. The doorway to a service is an interface. Services and interfaces are defined using GEOSS Interoperability Arrangements – either Special Arrangements or preferably International Standards. Interoperability Arrangements are listed in the GEOSS Standards and Interoperability Registry (SIR).
- **Use Cases** are descriptions of what can be achieved using the Services, e.g., Discovery, Access, Workflow, etc. See AIP Use Case Engineering Report [AIP 2011-1]
- **Scenarios** to meet GEOSS User Needs are accomplished with Use Cases. The AIP Engineering Reports provide scenarios for several SBAs [AIP 2011-2].

The GEOSS Common Infrastructure Components (Figure 1) are the main Operational Components. Development Components are outside of the GCI in Figure 1. For definitions of the developmental components see [AIP 2010-2], [AIP 2011-2], and GEOSS BPW [BPW 2011]

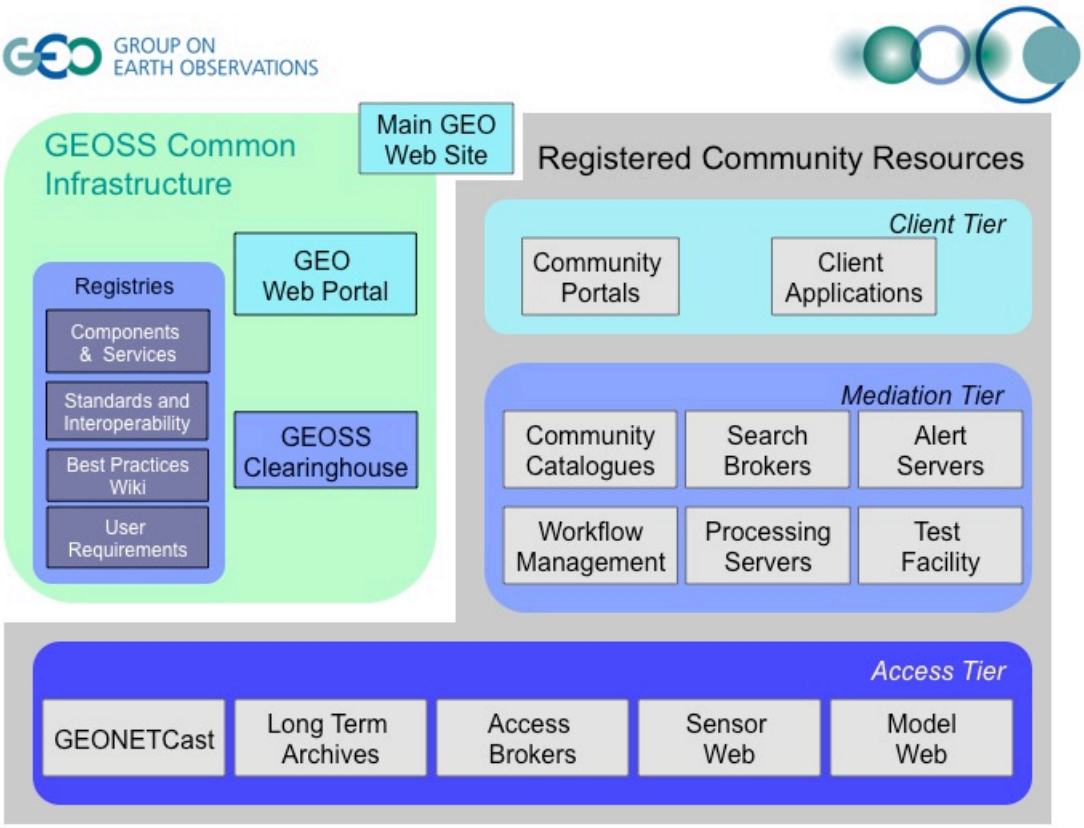
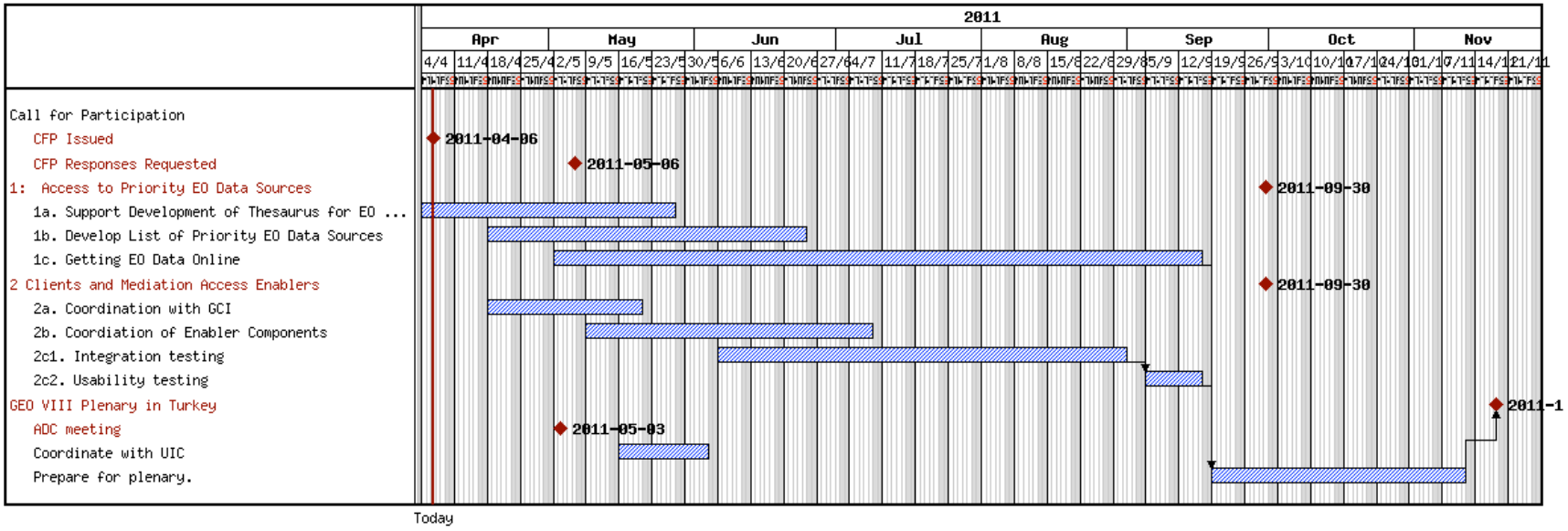


Figure 1 – GEOSS Engineering Components

Development Schedule

AIP develops and pilots new process and infrastructure components for the GCI and the broader GEOSS architecture through an evolutionary development process consisting of a set of phases. Each phase addresses a set of SBA and geoinformatic topics. The result of an AIP development phase is a milestone that allows GEO to examine (1) the elements of the architecture that have advanced to sufficient maturity to be considered part of the mature system baseline, and (2) the elements of the architecture that need to be enhanced or added to better meet the goals of GEO. For a full description of the AIP Evolutionary Development Process see [AIP 2010-1].

The initial schedule for AIP-4 development is show below.



References

[AIP 2008] AIP-2 Call for Participation, Annex B – Architecture, Section 4.4 "GEOSS Functions via Media" http://www.ogcnetwork.net/AIPphase2CFP

[AIP 2009-1] "Using the GEOSS Common Infrastructure: Deploy, Test, Register and Monitor a Data Access Service," AIP-2 Demonstration Videos. http://www.ogcnetwork.net/pub/ogcnetwork/GEOSS/AIP2/index.html?movie=3

[AIP 2009-2] AIP-2 Summary Report, Section 3.6.3 "Data Broker" http://www.ogcnetwork.net/pub/ogcnetwork/GEOSS/AIP3/pages/AIP-2_ER.html

[AIP 2010-1] AIP-3 CFP Annex A "AIP Development Process" http://www.earthobservations.org/documents/cfp/20100129_cfp_aip3_development_process.pdf

[AIP 2010-2] AIP-3 CFP Annex B "GEOSS AIP Architecture" http://www.earthobservations.org/documents/cfp/20100129_cfp_aip3_architecture.pdf

[AIP 2011-1] AIP-3 Use Case Engineering Report http://www.ogcnetwork.net/pub/ogcnetwork/GEOSS/AIP3/pages/AIP-3_ER.html#engusecase

[AIP 2011-2] AIP-3 Engineering Reports, http://www.ogcnetwork.net/AIP3ERs

[BPW 2011] GEOSS BPW, http://wiki.ieee-earth.org/Best_Practices/GEOSS_Transverse_Areas/Data_and_Architecture/GEOSS_Architecture

[DSTF 2010] GEOSS Data Sharing Action Plan, November 2010 http://www.earthobservations.org/documents/geo_vii/07_GEOSS%20Data%20Sharing%20Action%20Plan%20Rev2.pdf

[UIC 2011] GEO Task US-09-01a report to the UIC on Cross-SBA Analysis of Critical Earth Observations Priorities. http://sbageotask.larc.nasa.gov/Cross-SBA_Report_GEO_US0901a.pdf