Acting on the S&T Roadmap

Actively engaging and incorporating science and technology participants in the development of GEOSS

Activity 1a: Work Plan Review

A revolving scientific review of each Work Plan, starting with the current work plan for 2009-2011 will be conducted. The outcome of this review will be an assessment report of the Work Plan against the outstanding questions and challenges in each of the GEO Societal Benefit Areas (SBA). This assessment may recommend changes to objectives and scope of existing Tasks or propose new Tasks to respond to any identified deficits or overlaps. The recommendations may also identify opportunities for cooperation between Tasks, suggest inclusion of specific activities from outside GEOSS, or motivate the definition of new ones. The scope of the Work Plan Review also includes reviewing the completeness of the nine SBAs. To be effective, the Work Plan review will need to involve scientists and institutions of significant standing in the community and retain sufficient independence from the authors of the Work Plan. A team of experts should coordinate this review. Experts who were involved in compiling the Theme Reports of the Intergrated Global Observing Strategy-Partnership (IGOS-P) may be an asset to such a team. The first assessment report should be completed in time for the GEO Ministerial Summit in 2010. The STC will advise on the review effort and seek ways to support the work with dedicated funding from science foundations of member countries.

Initiate Review Process for GEO Work Plan 2009-11 ▪ Identify Responsible team of experts ▪ Convene panel to identify main challenges/open questions within the SBAs that should be addressed by the S&T component of GEOSS ▪ Review Work Plan and provide recommendation report	ST-09-01	Starts mid-2009; Assessment report for Work Plan 2009-11 by Ministerial 2010
Seek ways to raise dedicated funding from science foundations of member countries for review work	ST-09-01	Starts immediately
Initiate Review Processes for future GEO Work Plan(s)	STC	Starts 2011

Activity 1b: Implement task review indicators in the Monitoring and Evaluation (M&E) Framework

Activities in individual GEO Tasks and Sub-Tasks must be reviewed against applicable scientific and technical standards. In science this is commonly done through peer review of publications, which in many cases are already produced by the Task's contributors. GEOSS component systems or services contributed by institutions operating them have typically undergone a review procedure. Transparent indicators of the review that Task outputs have undergone will help to build trust in GEOSS while building on activities already conducted at the Task and component level. Additionally, user-feedback based indicators are valuable instruments to help users gauge the quality and applicability of individual services or data sets and finding the most applicable one for their need. The STC will work with the GEO Secretariat to integrate into the Task Sheets an element that allows an easy assessment of the level of peer review or other review procedures that various task activities have been subjected to. The GEO Secretariat will be asked to include a high-level status indicator for each task in their work plan progress reports. Community-based simple ratings and indicators, similar to those available on commercial vendor sites for customer rating of, for

example, products, sellers, or hotels, should be included in the GEO Portal(s) as an efficient way of helping users evaluating the quality and applicability of registered GEOSS Components and Services.

Propose review-level indicator element for Task Sheets ▪ Request Task-Leads to suggest appropriate review-indicators for their Task and review those	ST-09-02	10/2010;
Monitor review-level indicators in the context of the overall M&E Framework, approach Task leads in case of low of review activities, alert STC in case of problem	GEOSEC	Starts 2011; continuous
Implement a Component User Feedback Mechanism using ratings and indicators into the GEO Portal(s)	ADC with UIC/STC	Following stabilization of GEOSS Common Infrastructure, prospectively 2011;

ADC: GEO Architecture and Data Committee; UIC: GEO User Interface Committee

<u>Activity 1c:</u> Assess the requirement for continuity and long-term monitoring

Earth System Sciences often require long-term monitoring by Earth observation systems. The continued availability of essential data from GEOSS components is fundamentally important for the scientific relevance of GEOSS. This activity therefore aims at establishing

- a process that alerts to immanent discontinuations of systems or datasets, and
- a framework to help find appropriate responses.

By this activity, GEO will play a role in evaluating the relevance of specific observation infrastructure or systems in a broad context and ensuring the continued availability of essential data.

Scientific systems, in particular, are frequently not developed with long-term funding perspectives. Many scientific GEOSS components are therefore likely to be discontinued at some time, unless they are taken up in operational programs. In order to offer support to those scientific systems and services that warrant continuation for GEOSS, GEO needs a way to evaluate the broader relevance of components and ways and means to support those essential components.

Develop a continuity indicator for all registered GEOSS components ▪ Set up data base of epochs of scheduled discontinuations of systems/data set provisions ▪ Develop automated test of availability of Components at GCI-level ▪ Propose appropriate reporting and options for reactions	ADC with UIC/STC	End of 2011;
Propose process to evaluate the relevance/criticality of components for GEO	UIC with STC	End of 2011
Set up framework for coordinating activities towards ensuring continued operations of essential components	Task ST-09-01	By 2015

<u>Activity 1d:</u> Ensuring state-of-the-art technology in the GEOSS Common Infrastructure (GCI) and Observation Infrastructures

The technology used for building the GCI must be assessed and upgraded regularly to remain an attractive and accepted by the user communities. Also, the observation infrastructures – the systems of GEOSS – must continue to be improved and developed.

Review the technology supporting the GCI	ADC	2010, repeated regularly
Review the continued quality and relevance of individual component systems of GEOSS	M&E	End of 2010

<u>Activity 1e:</u> Responding to S&T needs and priorities

In order to address identified deficits and gaps efficiently, an attractive platform must be established for broadly agreeing on priorities. GEO should set up a process for coordinating scientific priorities in Earth observation and report them in a way that stimulates appropriate responses from GEO Members and Participating Organizations.

Propose a process for communicating scientific priorities in Earth Observation in a way that effects appropriate responses from GEO Members and Participating Organizations	Task ST-09-01	Q1/2011

2. Creating incentives and promoting GEO in the S&T communities

<u>Activity 2a:</u> Getting GEO/GEOSS better acknowledged

Recognition and renown are important currencies in the scientific community. In order to increase the attractiveness of GEO and GEOSS for scientists, their contributions must be acknowledged visibly when others use it to their benefit. The STC will work to propose a GEOSS citation standard by the end of 2009 and continue to promote its use in the science community.

Propose a GEOSS citation standard	ST-09-02	Q3/2010
Continue to promote the use of the citation standard in S&T community	ST-09-02	Starts 2010; continued

<u>Activity 2b:</u> Establishing a “GEO label”

Activities supporting an assessment of the scientific relevance, quality, acceptance and societal needs for activities in support of GEOSS can be developed further to establish the GEO-indicators as citable reference in other contexts, e.g. supporting funding proposals.

Propose a draft “GEO label” concept	ST-09-02	Q4/2010
Discuss potential of developing the “GEO label” as an attractive incentive for involvement of the S&T communities and initiate the relevant activities	STC	2011

<u>Activity 2c:</u> Interface with S&T communities

Sustained effort is needed to explain and demonstrate the connection of science to GEOSS in different topic areas. As a means to build awareness of GEO and GEOSS in different S&T communities, specific sessions should be convened at major scientific conferences to highlight the relationship by examples. These conferences could include academic as well as relevant private industry meetings.

Coordinate the organization of specific GEOSS sessions at relevant scientific conferences ▪ Compile and maintain a list of relevant conferences ▪ Actively engage individuals to prepare GEOSS-related sessions	ST-09-02	Starts 2009; continued

<u>Activity 2d:</u> Showing GEOSS at work

The effort to broaden the involvement of the S&T communities can be supported by a set of compelling examples showing how GEOSS serves the S&T communities in their work. These examples should be derived from the GEO Tasks in the Work Plan and be documented and publicized on the GEO webpage, the GEO portals, in reports and at conferences (Activity 2c). This activity strongly feeds into the preparations for the Ministerial in 2010.

Compile set of examples from the GEO Tasks and ensure that these are documented effectively	ST-09-02	End of 2009

<u>Activity 2e:</u> Enhancing registration of scientific data sets.

An important indicator for potential contributors from the science communities in assessing the relevance of GEOSS for their work is the availability of core data sets, which are often produced by science organizations. This could initially focus on broadly applicable basic data sets, e.g. global digital elevation models (DEM), bathymetry maps, coarse land-cover maps (including inland water bodies). Once feedback is available from the user community or the review activities, these should increasingly drive the priorities. To the extent possible it must be ensured that such data sets are included in the GEOSS registries. Accomplishing this will dramatically increase the acceptance of GEOSS as a resource for accessing scientific data in the S&T communities.

Compile a list of data sets and where they exist.	ST-09-02	Mid-2010
Actively approach their owners to solicit their registration with GEOSS.	ST-09-02	2010

<u>Activity 2f:</u> Identify key commercial partners.

Many commercial companies are using publically available capabilities, knowledge and observations. These companies could benefit from improved observational means, products and services and might therefore be interested in funding certain S&T development in this context. Moreover, such companies may produce datasets relevant to GEOSS users, and should be encouraged to make them available when possible.

Compile a list of key companies with substantial commercial interests or datasets of broad scientific value and make it available to the GEO community	ST-09-01	Q4/2010

Pursue opportunities of making company resources available for developing the GEOSS S&T content	ST-09-01	2011

<u>Activity 2g:</u> Catalyze research and developing funding.

The lack of dedicated funding to support specific S&T activities in support of GEOSS is one of the most important obstacles to engaging the S&T communities in its implementation. This problem can be addressed by establishing explicit linkages between research and development programmes funded by GEO Members and Participating Organizations and GEOSS. In appropriate funding programs, these links may take the form of requiring explanations of how projects to be funded will interface with GEOSS and ensuring that demonstrating significant relevance for GEOSS is viewed as an asset of these proposals, requiring registration of Earth observing systems developed in these projects, or stipulating that data and products must adhere to the GEOSS Data Sharing Principles. Important science organizations in this respect include the American Association for the Advancement of Science (AAAS), the European Space Agency (ESA), the United States National Aeronautics and space Administration (NASA), national research funding organizations and science programmes.

Identify relevant organizations and points of contact	ST-09-01	Q4/2010