GROUP ON EARTH OBSERVATIONS

GEO-IV

28-29 November 2007

Report from User Interface Committee

Document 9

This document is submitted to GEO-IV for acceptance.

Report from User Interface Committee

1   CO-CHAIRS, MEMBER COUNTRIES AND PARTICIPATING ORGANIZATIONS

1.1   Co-Chairs: Canada, Italy, IEEE, United States

1.2   Member Countries: Argentina, Australia, Canada, CEOS, China, Croatia, European Commission, Finland, France, Germany, India, I.R. of Iran, Ireland, Italy, Japan, Republic of Korea, Malaysia, Mexico, Netherlands, Norway, Portugal, Russian Federation, South Africa, Spain, Sweden, Thailand, Ukraine, United States, United Kingdom

1.3   Participating Organizations: AARSE, ECMWF, EEA, ESA, EUMETSAT, FDSN, GOOS, GTOS, IAG, IEEE, IGACO, IGOS-P, ISPRS, POGO, UNEP, UNESCO, UNITAR (UNOSAT), UNOOSA, WCRP, WMO

2   USER INTERFACE COMMITTEE'S (UIC) MAIN OBJECTIVES, APPROACH AND FUNCTIONS, AS APPROVED BY GEO PLENARY IN DECEMBER 2005

2.1   Objectives:

To engage users in the nine Societal benefit areas in the development, implementation and use of a sustainable GEOSS that provides the data and information required by user groups at national, regional and global scales.

To address cross-cutting issues; to promote and facilitate the communities of practice, ensuring added value to existing activities.

2.2   Approach and Functions:

Make recommendations to GEO Plenary to improve delivery of user needs from a "user-centric" perspective;

Work with communities of practice and willing organizations to identify existing inventories of major user requirements, status and gaps to be filled;

Recommend mechanism to identify, document and prioritize requirements for current and future EO and review and update them periodically;

Coordinate GEO Work Plan Tasks assigned to UIC;

Conduct User Engagement Tasks.

2.3   The Issues Raised in the UIC Report to the GEO Plenary in 2006

▪   The UIC is dealing with a "key issue" of GEO, namely providing "user requirements" by engaging a broad spectrum of users from providers of observational data to the decision-makers who use observational products and impact societal benefits. This issue is cross cutting in nature and a big challenge.

▪   It has facilitated discussion on the GEO Work Plan among different countries and organizations, from a user perspective and bringing in the different experiences of the Committee membership.

▪   The creation of several communities of practice was facilitated; it is a practical experiment worth promoting and should be successful in identifying comprehensive sets of user requirements, as well as demonstrating the link between the system of systems and societal benefits.

▪   This is not enough however. A step by step approach to identify requirements is needed, accompanied by longer term operational objectives to provide the observational products tailored to user needs based on documented benefits.

▪   Much more needs to be done to improve the effectiveness of our work.

▪   There is a need to refocus our activities based on the 2007-2009 Work Plan and the deliberations of the Plenary.

▪   More countries and international organizations are needed on the UIC (or at least regularly corresponding with the UIC) all with pro-active contributions.

The UIC has made considerable progress on these issues in its three meetings since the 2006 Plenary as the following report will show.

3   MAIN 2007 ACTIVITIES AND MEETINGS

Encourage the establishment of Communities of Practice and provide periodic oversight of their progress.

Provide review, discussion among members and oversight of the progress for the 2006 and 2007 Work Plan Tasks assigned to the UIC.

Launch a GEO effort to document user requirements for each SBA, linked to user types and user applications and maintain these in a set of registries that are compatible with the GEO architecture.

Provide support in the preparation for the Ministerial Summit in 2007.

4   REPORT ON MEETINGS SINCE THE LAST PLENARY

4.1   4th User Interface Committee Meeting - 30 November 2006, Bonn Germany, following the GEO III meeting.

Results of GEO Plenary discussion regarding UIC issues

- The first year of GEO activities the focus was mostly on Architecture and Data issues and the second year needs to concentrate more on user requirements, thus emphasizing the important role to be played by the UIC in implementing the GEO 2007-2009 Work Plan.

- Discussions had begun between the Secretariat and IGOS-P, following the indication from IGOS-P that it wished to explore a new and enhanced role within GEO. It was hoped that IGOS-P could play a major role in the UIC.

Reports from UIC Members

- The Architecture and Data Committee (ADC) summarized the series of seminars conducted on "The User and the GEOSS Architecture" (e.g. in Health, Disasters, Energy) and illustrated the "user-cases" pilot program started by ADC. He invited feedback from UIC participants.

- It was reported that a 6th Framework project called "GMES Network of Users-GNU" will begin in January, with the participation of several European users from the Environment communities (e.g. European environmental protection agencies and other environmental institutions). The project aims to establish a process to facilitate the structuring of the GMES demand side, fostering a systematic dialogue between the stakeholders communities, including users, decision makers and data providers.

- The Co-chair of the Energy Community of Practice reported on their progress and on a survey they were carrying out leading to the preparation of a user requirements document by June 2007

- The Secretariat would write to all Point of Contacts of the tasks assigned to the UIC, to request their views on obtaining user needs for their respective tasks.

- A number of UIC members reiterated the need to collect published user needs and to implement a database to store this information, suggesting that GEO Secretariat could identify an appropriate contractor for such task.

- India highlighted the importance of collecting tangible user requirements at the fundamental level of the implementation of specific tasks and programs ("on the ground"), and stressed the need for the user-focused integration of in situ, airborne and space-based measurements at appropriate temporal and spatial resolutions.

- Russia emphasized that it was important to know the profiles of various users in order to fully understand their requirements.

- It was reported that the Water Cycle community of practice proposal is progressing.

- The development of a new Biodiversity community of practice is being led by Diversitas and NASA.

- A report on the Geohazards Community of Practice meeting was made, noting the Theme Report that is being prepared for June 2007 within task DI-06-07.

- There was a comprehensive presentation on the ESA work on the GEO portal. Feedback was sought from all members of the UIC.

Refocusing of UIC activities regarding the 2007-2009 Work Plan

From a focused round table discussion, two main proposals emerged.

- Lawrence Friedl suggested that 3-4 UIC members for each SBA could explore the best ways to obtain user requirements for each individual SBA. Also, the idea of starting from a few 'fast-track' SBA's, such as Water, Disasters and Health. This idea was well received and many of the UIC members present indicated in writing their willingness to participate in the teams to start obtaining user requirements in specific areas.

- Hans-Peter Plag volunteered to design a generic tool to capture user requirements across all SBAs. He estimated that he would be able to give intermediate results by the next UIC meeting and have the tool available in 3 months time.

- It was agreed that these two processes should be carried out in parallel initially and that they could be formally harmonized as experience was gained.

Expanding participation in the UIC

- South Africa reported on the preparation of a strategic plan for GEO, concentrating on increasing African participation in GEO, which would be sent to the Secretariat when completed in approximately 1 month.

- Dr. Jörg Reichling of the Geo Business Commission of the Bundesanstalt für Geowissenschaften und Rohstoffe (BGR), Germany outlined a proposal for increased industry involvement in GEO (e.g. the insurance companies), possibly by forming a specific Community of Practice or through enhanced participation in existing ones.

4.2   5th User Interface Committee Meeting – 2-3 April 2007, Geneva, Switzerland

Reports from UIC Members

Reports of progress were made by the following Communities of Practice (CPs):

Air and Health CP Presentations

  US EPA Air Quality and Health

  ESA PROMOTE

  EU GEOMON

  EU GEMS Project

  NASA Atmospheric and Air Quality Applications

Biodiversity

Business Commission Proposal

Climate

Coastal Zone

Energy

Forests

IGOS Geohazards

Water Cycle

GCOS Climate

The ADC made a presentation of GEO Portal task AR-07, with a focus for collaboration of the UIC.

- The entry into the portal can be through identification with a region of the globe, a user type list, a user application list, a Community of Practices list, etc.

- The UIC needs to help ADC with these lists.

- Communities of Practice can take advantage of the portal by facilitating exchange of information.

- Allows users to create their own components using MyGEO

Reports from the Secretariat

The UIC requested and received a briefing from Secretariat experts on each of the SBAs focusing on activities that involve the engagement of users and lessons learned from any of these activities that are already underway.

From the nine excellent presentations, the UIC members learned about progress under the GEO Work Plan projects and from expert workshops which included:

- *Identification of reports that provide information on selected user requirements*

- *Names of experts and results from various SBA expert meetings.*

- *Opportunities for future UIC engagement in projects and workshops.*

The Secretariat also provided an update on the IGOS-P / GEO ongoing discussions and how the IGOS-P programs and reports could help with the user requirement gathering process.

The Secretariat Director also reported on the preparation for the Ministerial Summit with an emphasis on the potential "early achievements" to be highlighted at the Summit. The following achievements were presented, including information on the level of user engagement that has occurred to date or will be occurring:

- Global Fire Early Warning System / Disasters:

- Meningitis Early Warning System in Africa (incl. Sand & Dust Storm warning

- Solar Data for Developing Countries

- The Beijing Olympics

- TIGGE

- Biodiversity Observation Network

- GEO Web Portal

- GEONETCast

- Interoperability of Information Systems contributing to GEOSS

- Virtual Constellations

- Global Topography from SRTM

- CBERS Data for Africa

Refocusing of UIC activities regarding the 2007-2009 Work Plan

At the previous UIC meeting, the members agreed to give a priority to completion of GEO Task US-06-01, in accordance with the guidance from the Plenary.

In the context of this priority, a presentation was made on future planning for the UIC

- Acknowledgement that the GEO process must be user-driven process

- A proposal to identify areas where users are not being engaged and UIC focus on them, keeping in mind Cape Town, focus on two or three areas, becomes part of our presentation in Cape Town.

- A risk that if we are not more proactive, users will engage outside of UIC process.

- A question as to whether this is a gap that we need to address.

- A need to establish a GEO process for identifying critical Earth observation priorities common to many GEOSS societal benefit areas, involving scientific and technical experts, taking account of socio-economic factors, and building on the results of existing systems' requirements development processes.

Since it was agreed at the last meeting that two processes for US-06-01 should be carried out in parallel initially, the results from these two efforts were presented:

- A nine-step process for gathering user requirements with examples from the SBA areas, Ecosystems and Biodiversity, Energy, Water, Weather and Climate.

- A database development process to provide a place to capture the user requirements and related information on users and their application, consistent with the GEO architecture.

After considerable discussion, the UIC agreed on the following

- Work with Secretariat to get a contractor to work with the members to follow the nine-step process for each SBA.

- Role of UIC: 1) user engagement not just user requirements, 2) UIC facilitates convergence and crosscutting.

- Review of Secretariat in respect to user engagement. Where are the key 3 or 4 areas where UIC needs to engage

- Draw from the Communities of Practice, selected GEO Work Plan tasks and the IGOS-P programs to support the user requirements gathering process.

- Recommended a joint meeting with the Architecture and Data Committee.

Expanding participation in the UIC

The Committee noted the lack of participation of developing nations at this meeting. Canada offered that they might approach CIDA about funding developing nation participation.

4.3   6th User Interface Committee Meeting – 1-3 August 2007, Washington, DC, USA

This UIC meeting was organized to bring together the UIC Members with several of the Members of the Architecture and Data Committee.

Reports from UIC Members

The Member from South Africa made a presentation to the UIC on the plans for the Plenary and Summit at the end of November.

The US gave a presentation on measuring outcomes in GEO projects. The US volunteered to develop this approach at the 2006 Plenary.

ISPRS gave a presentation on an air and health poster which is depicting an approach to integration of several of the GEO activities in order to address the Health SBA. Feedback on the approach was sought from the Members.

There were participants in the meeting from five IGOS-P programs. They were very active in the discussions and made significant contributions throughout the meeting.

There were also participants representing two of the CEOS virtual constellation projects. Their participation was also very significant to the outcomes of the meeting.

The UIC broke into three parallel sessions to hear the reports from UIC Members – one on Air and Health, another on Water, and a third on Land and Biodiversity. The ADC made two presentations in plenary to raise questions about the interface between the UIC and the ADC for the three breakout session to consider.

The Land/Biodiversity Breakout Session

The following presentations were made in this session

- Biodiversity Community of Practice Update
- Forest Community of Practice Update
- SIGEO—Smithsonian Institute Global Earth Observatories Project
- Terrestrial Observations for Climate Update
- Presentation from the Capacity Building Committee
- Geohazards Community of Practice Update
- Virtual Satellite Constellation for Disaster Management
- Global Environmental Alert Service
- CONAE and Relationships to Local and External Users
- Geodetic Reference Frame
- Infrastructure and Applications Development in SA
- Global Land Cover/Land Cover-Change Data Management
- Cryosphere Observing System Update
- IGOL IGOS-P

Task US-06-01 involves defining the information collecting process while UNSPU will define the infrastructure. The design is based on "swarm theory", the concept that if there are very few, very simple requirements, they will be followed. The Mesoamerican Regional Visualization and Monitoring System (SERVIR) will likely be a project for UIC to pursue.

The Water Breakout Session

The following presentations were made in this session

- *Great Lakes Observing System Update*
- *U.S. IOOS and GOOS Regional Alliances*
- *Coastal Zone Community of Practice (CZCP) Update*
- *Water, Coastal Zone, and Remote Sensing Meeting/Workgroup*
- *Water and Energy Nexus Community of Practice*
- *Water Cycle Community of Practice Update*
- *Energy Community of Practice Update*

The group created a water working group with multiple team groups that will fit the IGOS-P themes and Community of Practice groups. The group members would like to nominate a certain number of projects and develop them through GEO teams for capacity-building. Dr. Ellsworth LeDrew added that it would be beneficial to have a person in the GEO Secretariat who can be identified with each of the components of IGOS.

The Air and Health Breakout Session

The following presentations were made in this session

- Canada's Air Quality Health Index Program
- Air and Health Community of Practice Update
- USGEO Activities on Air Quality and Health
- Air Quality Monitoring and Human Health Early Achievement
- European Activities on Atmospheric Science and Air Quality
- CEOS Virtual Constellation—Atmospheric Composition
- Air Quality Monitoring and Smoke
- Other Related Air Quality and Health Projects from past UIC meetings

The group agreed to pursue an advisory group and an analyst method. One example from the presentations in this session relevant to the requirements-gathering process is the effort to bring various satellite observing systems into constellations. The CEOS effort to produce a virtual constellation for atmospheric composition (ACC) has three short-term projects that provide opportunities for UIC to be engaged. It was also recommended that the Health SBA should have three Advisory Groups: Air and Health, Waterborne Disease, and Vector-borne Disease.

Reports from the Secretariat

The Secretariat last updated all GEO tasks at the end of April and is now revising the Work Plan. It was noted that some tasks do not have much reported activity and, if this continues, they may be dropped, or at least this will be proposed to the Executive Committee.

The GEO Secretariat explained there would be a continuation of the active roles of the Theme Teams in the Communities of Practice (CP). There is an agreement that IGOS-P-14 Co-chairs will monitor the transition, and there will be a document available for IGOS-P-14 for the meeting in Cape Town on November 27, 2007.

The IGOS-P team leads who were present gave an update of the status of their teams' transition plans, which as of July 31 were to be submitted to the GEO Secretariat and IGOS partners.

Refocusing of UIC activities regarding the 2007-2009 Work Plan

Progress on the User Requirements gathering process

Every Societal Benefit Area (SBA) has some earth observation priorities. If the User Interface Committee (UIC) can identify them for each SBA, and compare to see which are common, then GEO can identify where the gaps are and determine who can fill them.

From the two parallel efforts, the presentation on the User Requirements Gathering Process included:

- A timeline of US-06-01 activities from November 2006 through early 2008.

- How an "Advisory Group" and an "Analyst" will work together to develop the priorities within each SBA. The analyst will be the primary coordinator and organizer of the activity to meet the schedules, and will interact with and utilize the Advisory Group for each SBA.

- UIC's Refined Process in nine steps.

- Explanation that the process "harvests" observation needs expressed in existing documents.

Then the GEOSS User Needs and System Performance Utility (UNSPU) presentation covered four major topics:

- Motivation: 10-Year-Implementation Plan Directions.

- Functional Specifications, explaining that these specifications include the necessary database components, linkages, and analysis functions.

- Architecture.

- Filling the database, noting that GEO's approach to filling could be provider-based, science-based or user-based.

Discussion on the parallel process

- There were a number of people in the group who could start a list of documents for the United States, North America and Europe, but that information still is needed for Southeast Asia, the Middle East, India, South America, and parts of Africa. UIC needs to be geographically broad, and have developing countries and their reports represented. UIC should work with CEOS to identify one or two specific data sets for people to review and indicate how they might use the data.

- How can the UIC take advantage of the many GEO workshops, e.g. the GEO Symposium in Seville on 10-11 September 2007, which might provide an opportunity for some initial interaction on international capacity building?

- There was agreement that the two parts of the parallel process were needed and must merge at the end.

- Six ongoing GEO/IGOS-P projects agreed to be the initial activities to begin the user requirements gathering process and filling in the data bases.

Presentations to the UIC by the ADC on the Architecture of GEOSS

The architecture implementation objectives are to:

- Create an interoperability structure
- Implement registries for components and standards
- Establish a Web portal
- Develop a clearinghouse for data and information
- Provide for prototype operations

The UIC was introduced to the GEOSS Registries: Components, Services, and Standards. As the UIC develops its databases, namely the registries for user types, user applications and user requirements, the UIC and ADC need to develop the interface between all these registries.

The UIC also learned about the Architecture Implementation Pilot. The pilot has multiple goals, including evaluating, enhancing, and documenting an operational architecture for GEOSS using open standards. Four implementation working groups are involved in the pilot: Architecture, Clearinghouse, FedEO Pilot, and GEO Web Portal. There are six scenario working groups, with each defining the contents of its own scenario. The general charter is to relate the interoperability infrastructure to the SBA and demonstrate GEOSS value-added by using new interoperability arrangements. One example, climate change, focused on getting the Intergovernmental Panel on Climate Change (IPCC) available climate data sets and applying them to regional decision-making. The UIC was invited to participate in these activities.

UIC Plan of Action

The UIC, working with ADC, will be pursuing the user requirements gathering process (see the figure at the end of the report) starting on the following six applications/projects:

- An atmospheric chemistry project, centered on the CEOS virtual constellation for atmospheric chemistry, and bringing in users and capacity building through CBC.
- The Water/Coastal project that would build upon the IGOS-P work in the coastal area, and engage additional users.
- SERVIR, with special consideration of how to engage users as SERVIR moves to other regions of the world, such as South America and Africa.
- The biodiversity early achievement project.
- The new IGOS-P project called IGOL (land).
- The IGOS-P sponsored Water Cycle.

Additional projects will be actively sought from UIC members who were not at this meeting.

The UIC greatly appreciated the participation of the ADC members in the meeting and plan to continue this partnership between the two committees.

Expanding participation in the UIC

The UIC is holding a 1-day meeting in Cape Town before the Plenary and the Ministerial Summit (26-27 November). This will be an opportunity to engage additional UIC Members, who were unable to attend the last two UIC meetings, in the user requirements gathering process.

5   OUTSTANDING ISSUES

The UIC needs a new Co-chair from Europe and would welcome a Co-chair from one of the Developing Countries and from other regions.

Can Member Countries identify Points of Contact from organizations in their respective Countries for the Committee to approach to increase membership in the UIC and/or the Communities of Practice? Points of Contact in developing countries would especially be appreciated.

6   RECOMMENDATIONS TO THE GEO-III PLENARY MEETING (TO BE REVISED)

Recognize the significant progress that the UIC has made in the last year.

Thank the ADC for its active engagement of the UIC.

Continue to support the UIC efforts in the user requirements gathering process.

Support the new UIC efforts to develop and populate the databases on user types, user applications and user requirements in each of the SBA areas.

User Requirements in Support of System Design