



# **The GEO Science and Technology Roadmap**

## **Status**



## Items for discussion

### at the 17<sup>th</sup> Meeting of the Science and Technology Committee

- ▶ **Decide how STC should approach the scientific review of Work Plan 2012-2015.** (Activity 1a(3))  
Potential outcome: Solicit leading role of group of funding agencies. Determine lead to approach them among STC Members.
- ▶ **Discuss how to pursue user feedback option in GEO Portal** (Activity 1b (3))  
Potential outcome: Raise this item at the Joint Committee Meeting aiming at a concrete respond-by date for ADC.
- ▶ **Confirm if process for communicating scientific priorities in EO is worked on** (Activity 1e)  
Potential outcome: Name lead individual from STC to pursue and report on regularly.
- ▶ **Discuss new draft Citation standard presented by ST-09-02** (Activity 2a (1))  
Potential outcome: Final recommendations to ST-09-02 and decision on what to request from Plenary 2012 on the issue.
- ▶ **Review status of GEO Label and determine next steps** (Activity 2b (1))  
Potential outcome: Status established, next steps agreed on.
- ▶ **Review status of list of key datasets** (Activity 2e (1))  
Potential outcome: Status established, determine if STC should act to aid making these available (Activity 2e(2)).
- ▶ **Review progress towards resourcing organization engagement and discuss what STC should do to support this.** (Activity 2g (1))  
Potential outcome: Status established, next steps agreed on.



Activity	Action	Short description	Needs attention?	Status
1a - Revolving scientific review of each Work Plan	1	Review Process	No	<b>incomplete</b>
	2	Raise funding	No	<b>not started</b>
	3	Review WP 2012-15	Yes	<b>not started</b>
1b - Implement review indicators in the GEO Work Plan reporting	1	Implement review indicators in task sheets	No	<b>delayed</b>
	2	Track review indicators	No	<b>not started</b>
	3	Implement user feedback option in portals	Yes	<b>pending</b>
1c - Assess the requirement for continuity and long-term monitoring	1	Develop continuity indicators	Yes	<b>pending</b>
	2	Propose process to evaluate criticality	Yes	<b>pending</b>
	3	Framework to coordinate responses	Yes	<b>pending</b>
1d - Ensuring state-of-the-art technology in the GEOSS Common Infrastructure (GCI) and Observation Infrastructures	1	Review GCI technology	No	<b>progressing</b>
	2	Review technology and relevance of Component systems	No	<b>delayed</b>
1e - Responding to S&T needs and priorities	1	process to communicate S&T priorities to effect responses	Yes	<b>delayed</b>
2a - Getting GEO/GEOSS better acknowledged	1	Propose a GEOSS citation standard	Yes	<b>progressing</b>
	2	Promote citation standard	No	<b>pending</b>
2b – Establishing a “GEO label”	1	Propose GEO Label	Yes	<b>delayed</b>
	2	Discuss it in STC	No	<b>pending</b>
2c - Building awareness of GEO and GEOSS	1	Sessions at conferences	No	<b>progressing</b>
2d – Showing GEOSS at work	1	Document case examples	No	<b>completed?</b>
2e - Enhancing registration of scientific data sets	1	List key data sets	Yes	<b>unclear</b>
	2	Pursue their registration	No	<b>not started</b>
2f - Identify key commercial partners	1	List key companies	No	<b>unclear</b>
	2	Pursue opportunities	No	<b>delayed</b>
2g - Catalyze research and developing funding	1	Identify programmes	Yes	<b>unclear</b>
	2	Convene forum/network	No	<b>not started</b>





**Activity**            **1a**    **Revolving scientific review of each Work Plan**, starting with the work plan for 2009-2011 on grounds of scientific and technological soundness and completeness against the outstanding questions and challenges in each of the SBAs.

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**Specific Action**            **2**    Seek ways to raise dedicated funding from science foundations of member countries for review work

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**Implemented through**            ST-09-01: ESA has provided funds for GEO and Science Report, which encompassed review work for Work Plan 2009-2011.  
No funding source identified for further work.

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**Timing**                            Q4/2011, when the new work plan will be accepted, is the time to start any review that would then inform future evolutions

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**Reference (e.g. Task Sheet)**

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**Status: not started**                            Not started

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**Comment**                            (JH, 09/2010) Further resources must be found for next Work Plan.

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**Presently needs STC attention?**                            **No**



**Activity**            **1a**    **Revolving scientific review of each Work Plan**, starting with the current work plan for 2009-2011 on grounds of scientific and technological soundness and completeness against the outstanding questions and challenges in each of the SBAs

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**Specific Action**            **3**    Initiate Review Processes for future GEO Work Plan(s)

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**Implemented through**            STC

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**Timing**                                Starts 2011

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**Reference (e.g. Task Sheet)**

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**Status:**  
not started

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**Comment**

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**Presently needs STC attention?**

**Yes:**  
– Decide how this review should be done for WP 2012-2015





**Activity**            **1b**    **Implement review indicators in the GEO Work Plan reporting** to ensure that activities in individual GEO Tasks and Sub-Tasks meet the applicable scientific and technological standards

**Specific Action**            **2**    Monitor review-level indicators in the context of the overall Work Plan reporting, approach Task leads in case of low level of review activities, alert STC in case of problem

**Implemented through**            Not yet addressed

**Timing**                            cannot start before review indicators have been set up (previous action);  
Indicative schedule: to commence 2011

**Reference (e.g. Task Sheet)**

**Status: not started**

**Comment**                            (JH, Nov 2009) Should be done by GEOSEC and/or relevant function of a future Work Plan management

**Presently needs STC attention?**            **No**





**Activity**            **1b**    **Implement review indicators in the GEO Work Plan reporting** to ensure that activities in individual GEO Tasks and Sub-Tasks meet the applicable scientific and technological standards

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**Specific Action**            **3**    Implement a Component User Feedback Mechanism using ratings and indicators into the GEO Portal(s)

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<b>Implemented through</b>	Decided at Joint Committee Meeting in Pretoria (May 2010): UIC to define the mechanism ADC to implement
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<b>Timing</b>	Following stabilization of GEOSS Common Infrastructure (GCI)
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**Reference (e.g. Task Sheet)**

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<b>Status: pending stabilization of GCI</b>	Proposed to Joint Committee Meeting (Melbourne, 09/2009) and viewed generally positive; written proposal sent to UIC/ADC in Oct. 2009; agreed at Joint Committee Meeting (Pretoria, 05/2010);
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<b>Comment</b>	(JH, March 2011) GCI still appears to have other priorities and does not seem to be ready to come up with “nice-to-have” proposals like this one.
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<b>Presently needs STC attention?</b>	<b>Yes:</b> – <b>Proposed to be raised again in Joint Committee Session. Request ADC to clarify when GCI could be ready for such an approach.</b>
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17th STC Meeting

GEO STC S&T Roadmap Status Report



**Activity**                      **1c**    **Assess the requirement for continuity and long-term monitoring** by Earth observation systems of essential data from GEOSS components

<b>Specific Action</b>	<b>1</b> Develop a continuity indicator for all registered GEOSS components <ul style="list-style-type: none"> <li>-    Set up data base of epochs of scheduled discontinuations of systems and data set provisions</li> <li>-    Develop automated test of availability of Components at GCI-level</li> <li>-    Propose appropriate reporting and options for reactions</li> </ul>
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<b>Implemented through</b>	ADC leads implementation; ST-09-01 support this through reviewing continuity needs of Tasks”; ST-09-02 has an activity that looks at research observation infrastructure (limited life time) that should be continued in sustained operation. This is partly overlapping with this activity.
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<b>Timing</b>	No timing agreed; indicatively 2011
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<b>Reference (e.g. Task Sheet)</b>	Concept paper sent to ADC and UIC in Q3/2010
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<b>Status: Pending stabilization of GCI</b>	Joint Committee Meeting (Pretoria, 2010) agreed on implementation;
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**Comment**

<b>Presently needs STC attention?</b>	<b>Yes:</b> <ul style="list-style-type: none"> <li>-    <b>Proposed to be raised again in Joint Committee Session. Request ADC to clarify when GCI could be ready for such an approach.</b></li> </ul>
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**Activity**                    **1c**    **Assess the requirement for continuity and long-term monitoring** by Earth observation systems of essential data from GEOSS components

**Specific Action**                    **3**    Set up framework for coordinating activities towards ensuring continued operations of essential components

**Implemented through**                    Task ST-09-01 can contribute;

**Timing**                                    by 2015

**Reference (e.g. Task Sheet)**                    Task ST-09-01 Output:  
 3. Report on S&T gaps, priorities, and continuity needs to support GEO (2010 Summit);  
 4. Establishment of effective forum/network of funding agencies, (early 2010);  
 5. Response to S&T gaps, priorities and continuity needs by this forum, including describing Best Practices in responding to these (e.g. by a workshop report)

**Status: pending decision on implementation**

**Comment**                                    (JH) ST-09-01 has a different focus. It addresses S&T resourcing bodies and compiles S&T gaps and needs. Continued operation of systems may be included at times, but generally will need other avenues that are not currently addressed. AR-09-03 appears more appropriate to lead **Proposed Action (JH, Mar 2011):** GEO currently can't even define priorities. This must be developed in the larger context, likely only after 2015.

**Presently needs STC attention?**                    **Yes:**  
 - **Take action to prepare a position statement towards the GEO post-2015 discussion**



**Activity**            **1d**    **Ensuring state-of-the-art technology in the GEOSS Common Infrastructure (GCI) and Observation Infrastructures.**

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**Specific Action**            **1**    Review the technology supporting the GCI

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**Implemented through**            Activity 1b;  
regarding evaluation of the GCI, activities of UIC (usability testing) and ADC

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**Timing**                            2010 suggested

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**Reference (e.g. Task Sheet)**

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**Status: progressing**            UIC usability testing of GCI (05/2009, 09/2009, 05/2010); GCI-Task Force recommendations for GCI Development (09/2009)

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**Comment**                            (JH, Sept 2011) Lots of deficits of the GCI are well-known. GCI itself appears under transformation, e.g. sprint-to-plenary (2011). Only after this development has been somewhat stabilized STC should revisit this.

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**Presently needs STC attention?**            **No**



<b>Activity</b>	<b>1d</b>	<b>Ensuring state-of-the-art technology in the GEOSS Common Infrastructure (GCI) and Observation Infrastructures.</b>
<b>Specific Action</b>	<b>2</b>	Review the continued quality and relevance of individual component systems of GEOSS
<b>Implemented through</b>	Activities 1b (quality and relevance) and 1c (relevance)	
<b>Timing</b>	End of 2010	
<b>Reference (e.g. Task Sheet)</b>	Task ST-09-01 Output: 3. Report on S&T gaps, priorities, and continuity needs to support GEO (2010 Summit);	
<b>Status: delayed</b>		
<b>Comment</b>	(JH, Nov 2009) I view this as fully dependent on the implementation of activities 1b and 1c.	
<b>Presently needs STC attention?</b>	<b>No</b>	





<b>Activity</b>	<b>1e Responding to S&amp;T needs and priorities</b> in Earth observation for GEOSS
<b>Specific Action</b>	<b>1</b> Propose a process for communicating scientific priorities in Earth Observation in a way that effects appropriate responses from GEO Members and Participating Organizations
<b>Implemented through</b>	Task ST-09-01
<b>Timing</b>	Q1/2011
<b>Reference (e.g. Task Sheet)</b>	Task Sheet of ST-09-01
<b>Status:</b> <b>delayed</b>	Task ST-09-01 Kick-Off meeting (July 2009); Discussions with EGIDA project will be initiated at their kick-off (09/2010) to determine a process for involving them. Reviews are being done on the Health, Energy, and Carbon survey responses.
<b>Comment</b>	
<b>Presently needs STC attention?</b>	<b>Yes:</b> Decide if this is addressed fully by ST-09-01/EGIDA; define lead-person to make this happen.





**Activity**            **2a**    **Getting GEO/GEOSS better acknowledged** in the scientific community

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**Specific Action**            **2**    Continue to promote the use of the citation standard in S&T community

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**Implemented through**            Task ST-09-02

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**Timing**                            Following completion of previous action (Activity 2-1)

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**Reference (e.g. Task Sheet)**            Task Sheet of ST-09-02

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**Status: pending conclusion of Activity 2-1**

**Comment**

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**Presently needs STC attention?**

**No**



**Activity**                      **2b**    **Establishing a “GEO label”** to recognise the scientific relevance, quality, acceptance and societal needs for activities in support of GEOSS

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**Specific Action**                      **1**    Propose a draft “GEO label” concept

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**Implemented through**                      STC action;  
Task ST-09-02

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**Timing**                                      Q4/2010

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**Reference (e.g. Task Sheet)**                      Task Sheet of ST-09-02

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**Status: delayed**                                      STC Co-Chairs circulated a concept paper following the Joint Committee Meeting in Pretoria (2010)  
ST-09-02 presented draft paper to STC-15 (Sep 2010).  
Further steps unclear

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**Comment**

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**Presently needs STC attention?**                      **Yes:**  
– **STC-17 (Sep 2011) to establish status and define next steps.**



**Activity**                    **2b**    **Establishing a “GEO label”** to recognise the scientific relevance, quality, acceptance and societal needs for activities in support of GEOSS

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**Specific Action**                    **2**    Discuss potential of developing the “GEO label” as an attractive incentive for involvement of the S&T communities and initiate the relevant activities

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**Implemented through**                    STC

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**Timing**                                      Following concept proposal by Task ST-09-02

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**Reference (e.g. Task Sheet)**

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**Status: pending**

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**Comment**                                      STC has been more directly involved in this development than originally foreseen. This sub-action is very much related to 2b(1)

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**Presently needs STC attention?**                    **No**



**Activity**                    **2c**    **Building awareness of GEO and GEOSS** in the different S&T communities, within the scope of the GEOSS development.

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**Specific Action**                    **1**    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

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**Implemented through**                    Task ST-09-02

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**Timing**    Continued activity

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**Reference (e.g. Task Sheet)**                    Task Sheet of ST-09-02

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**Status: progressing**                    Ongoing: AGU fall meeting 2009, 2010, 2011; Session proposed for EGU 2010, COSPAR 2010, European workshop (3 have been done involving S&T Community); ISRSE, 2011

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**Comment**    (JH, Sep 2010) Hans-Peter Plag has been questioning if the approach is useful and requests discussing this based on experience so far.

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**Presently needs STC attention?**                    **No**



**Activity**            **2d**    **Showing GEOSS at work** with a set of compelling examples showing how GEOSS serves the S&T communities in their work.

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**Specific Action**            **1**    Compile set of examples from the GEO Tasks and ensure that these are documented effectively

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**Implemented through**            Task ST-09-02

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**Timing**                            Revised to end of 2010

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**Reference (e.g. Task Sheet)**            Task Sheet of ST-09-02

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**Status: completed?**                            Compilation presented at GEO-VII, see [http://www.geo-tasks.org/geoss\\_portfolio/](http://www.geo-tasks.org/geoss_portfolio/)

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**Comment**                                    (JH, Mar 2011) Is this a continuing activity of ST-09-02 or is this considered finished?

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**Presently needs STC attention?**            **No**



**Activity**                    **2e**    **Enhancing registration of scientific data sets** as an important indicator for potential contributors from the science communities in assessing the relevance of GEOSS for their work.

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**Specific Action**                    **1**    Compile a list of data sets and where they exist.

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**Implemented through**                    Task ST-09-02

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**Timing**                                    Mid-2010 suggested

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**Reference (e.g. Task Sheet)**                    Task Sheet of ST-09-02

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**Status:**  
unclear

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**Comment**                                    (GO, Nov 2009) Istanbul workshop has identified a EO resources generated by science community (including GMES) and proactively started to encourage registration in the GEO registry (report soon available + brochure)

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**Presently needs STC attention?**                    **Yes:**  
– Establish status at STC-17





**Activity**                    **2e**    **Enhancing registration of scientific data sets** as an important indicator for potential contributors from the science communities in assessing the relevance of GEOSS for their work.

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**Specific Action**                    **2**    Actively approach their owners to solicit their registration with GEOSS.

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**Implemented through**                    Task ST-09-02

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**Timing**                                    2010 suggested

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**Reference (e.g. Task Sheet)**                    Task Sheet of ST-09-02

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**Status:**  
not started

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**Comment**

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**Presently needs STC attention?**

No



**Activity**                      **2f**    **Identify key commercial partners**, which could contribute to GEOSS and also benefit from improved observational means, products and services and might therefore support certain S&T development.

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**Specific Action**                      **1**    Compile a list of key companies with substantial commercial interests or datasets of broad scientific value and make it available to the GEO community

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**Implemented through**                      Task ST-09-01

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**Timing**                                      Revised to Q3/2011

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**Reference (e.g. Task Sheet)**                      Task Sheet of ST-09-01

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**Status: unclear**                                      STC recommended Task should not wait for a “general policy” on involvement of commercial partners but approach pragmatically.  
The ExCom discussion has resulted in an action to the US to generate a first draft of a set of guidelines for the relationship of the private sector to GEO. The US has put together a preliminary draft which is still internally being reviewed; once the draft is complete, it will go to other countries that volunteered to help at the last ExCom, and whatever comes out of that will go to the ExCom in November 2010 for action.

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**Comment**                                      Status unclear

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**Presently needs STC attention?**                      **No**



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**Activity**                    **2f**    **Identify key commercial partners**, which could contribute to GEOSS and also benefit from improved observational means, products and services and might therefore support certain S&T development.

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**Specific Action**            **2**    Pursue opportunities of making company resources available for developing the GEOSS S&T content

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**Implemented through**            ST-09-01

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**Timing**                                2011 suggested

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**Reference (e.g. Task Sheet)**

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**Status: delayed**                    See comment in 2f-1. ST-09-01 is planning to open discussion on a cooperative approach with the GEO Secretariat.

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**Comment**

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**Presently needs STC attention?**            **No**



**Activity**                    **2g**    **Catalyze research and developing funding** to help engaging the S&T communities in the implementation of the GEOSS

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**Specific Action**                    **1**    Identify key relevant programs, funding agencies and other resource mechanisms supporting key S&T programmes (e.g. IGFA-International Group of Funding Agencies for Global Change Research, ERA-Nets) and establish effective network with them

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**Implemented through**                    Task ST-09-01

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**Timing**    Q4/2010

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**Reference (e.g. Task Sheet)**                    Task Sheet of ST-09-01

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<b>Status: unclear</b>	A first preliminary list was established. Existing contact list was collected from CBC. A meeting with IGFA opened a discussion on the scientific challenges at stake. The FP7-EGIDA project has approached the Belmont Group, OECD and others.
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**Comment**

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<b>Presently needs STC attention?</b>	<b>Yes:</b> - clarify if this is actually happening - decide if STC should support this
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**Activity**                    **2g**    **Catalyze research and developing funding** to help engaging the S&T communities in the implementation of the GEOSS

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**Specific Action**                    **2**    Bring together an effective forum/network that can discuss regularly GEO S&T issues and programming and publish forum notes that document the outcome of the forum

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**Implemented through**                    Task ST-09-01

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**Timing**    Q1/2011

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**Reference (e.g. Task Sheet)**                    Task Sheet of ST-09-01

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**Status: not started**                    Will be initiated after version 1 output of activities 1a, 2f and 2g.

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**Comment**

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**Presently needs STC attention?**                    **No**