

| <b>Science and Technology Infusion</b>   |  |
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| <p><b>How can we make GEOSS work?</b></p> <ul style="list-style-type: none"> <li>• How can long-term funding for GEOSS modernization, operation, and maintenance be ensured?</li> <li>• How can we ensure robustness in the science and technology of observing systems?</li> <li>• How can modernization of the observing systems be managed?</li> </ul> <p><b>How do sectors respond to the GEOSS opportunity?</b></p> <ul style="list-style-type: none"> <li>• Should the university rewards system evolve to meet research and operations in GEOSS?</li> <li>• Is the only role of universities that of research and development and not operations?</li> <li>• What is the role of industry in the governance and operation of GEOSS?</li> <li>• What intellectual property rights will arise and how can they be managed?</li> </ul> |  |

*We are addressing GEOSS and the individual observing systems it coordinates*

1. Long-term funding depends on meeting user’s needs and educating both governments and the public how GEOSS is aimed at things they want done.
  - a. Academic involvement will help the obvious GEOSS products for governments provide the most reliable science and information
  - b. Scientific, economic and policy academic research will help identify and develop unanticipated products for other sophisticated users
  - c. Universities can provide “face time” to explain/develop GEOSS uses
  - d. Universities are a natural vehicle to translate GEOSS into public interest and an educational opportunity.
  
2. The GEOSS observing components, cyber-integration, and information production will not soon be routine. GEOSS will fail to meet its targeted societal needs unless it includes a modernization process that supports evolving and improving products. Whether termed research or engineering, support for evolution must be included in the GEOSS build-out. **EXPLICIT STRUCTURE FOR EVOLUTION**
  
3. A critical role for universities is education of those who will maintain and evolve the GEOSS as well as use and develop products based on it. Universities should not change their rewards system to move into operations but they should reward academics that develop and teach the kinds of inter-disciplinary science upon which full GEOSS use depends. **REWARDS FOR NON\_ACADEMIC PRODUCTS THAT AREN’T JSY BUTTONS & LIGHTS**

4. Universities may be best at innovation and industry may be best at efficiency and large-system integration. If GEOSS components are defined functionally, by objectives and performance metrics, universities and industry could compete to operate and modernize GEOSS components. Government would allocate resources on the basis of competition acting as the agent for all users.
5. Whatever the academic role inside GEOSS, we should maintain the opportunity for new ideas and observations to be pursued, tested in pilot-scale and possibly transitioned to operational status.
6. Industry and universities should be identified as GEOSS users. They should not be involved in governance. Data should be immediately and completely available. There should be no special access privileges or intellectual property rights to GEOSS data, even when academics are central to producing them. Industry should be free to use GEOSS data for profit but not to direct evolution of GEOSS for that profit. Products might belong to others.