OFFICE OF SCIENCE AND TECHNOLOGY POLICY

ACTION: Notice of Request for Information (RFI).

SUMMARY: The purpose of this Request for Information (RFI) is to solicit input from all interested parties regarding recommendations for the development of a National Plan for Civil Earth Observations ("National Plan"). The public input provided in response to this Notice will inform the Office of Science and Technology Policy (OSTP) as it works with Federal agencies and other stakeholders to develop this Plan.

DATES: Responses must be received by December 6, 2013 to be considered.

SUBMISSION: You may submit comments by any of the following methods.

- Downloadable form: To aid in information collection and analysis, OSTP encourages responses to be provided using this form. Please enter your responses in the fillable fields that follow the questions below.
- Email: OSTP encourages respondents to email the completed form, as an attachment, to earthobsplan@ostp.gov. Please include "National Plan for Civil Earth Observations" in the subject line of the message.
- Fax: (202) 456-6071.
- Mail: Office of Science and Technology Policy, 1650 Pennsylvania Avenue, NW, Washington, DC, 20504. Information submitted by postal mail should allow ample time for processing by security.

Response to this RFI is voluntary. Respondents need not reply to all questions listed. Each individual or institution is requested to only submit one response. Responses to this RFI, including the names of the authors and their institutional affiliations, if provided, may be posted on line. OSTP therefore requests that no business proprietary information, copyrighted information, or personally-identifiable information be submitted in response to this RFI. Given the public and governmental nature of the National Plan, OSTP deems it unnecessary to receive or to use business proprietary information in its development. Please note that the U.S. Government will not pay for response preparation, or for the use of any information contained in the response.

FOR FURTHER INFORMATION CONTACT:

Timothy Stryker, 202-419-3471, tstryker@ostp.eop.gov, OSTP.

SUPPLEMENTARY INFORMATION:

Background

The U.S. Government is the world's largest single provider of civil environmental and Earth-system data. These data are derived from Earth observations collected by numerous Federal agencies and partners in support of their missions and are critical to the protection of human life and property; economic growth; national and homeland security; and scientific research. Because they are provided through public funding, these data are made freely accessible to the greatest extent possible to all users to advance human knowledge, to enable industry to provide value-added services, and for general public use.

Federal investments in Earth observation activities ensure that decision makers, businesses, first responders, farmers, and a wide array of other stakeholders have the information they need about climate and weather; natural hazards; land-use change; ecosystem health; water; natural resources; and other characteristics of the Earth system. Taken together, Earth observations provide the indispensable foundation for meeting the Federal Government's long-term sustainability objectives and advancing the Nation's societal, environmental, and economic well-being.

As the Nation's capacity to observe Earth systems has grown, however, so has the complexity of sustaining and coordinating civil Earth observation research, operations, and related activities. In October 2010, Congress charged the Director of OSTP to address this challenge by producing and routinely updating a strategic plan for civil Earth observations (see *National Aeronautics and Space Administration Authorization Act of 2010, Public Law 111-267, Section 702*).

Responding to Congress, in April 2013, OSTP released a National Strategy for Civil Earth Observations ("the National Strategy").

In April 2013, OSTP also re-chartered the U.S. Group on Earth Observations (USGEO) Subcommittee of the National Science and Technology Council's Committee on Environment, Natural Resources, and Sustainability. USGEO will carry out the National Strategy and support the formulation of the National Plan.

As requested by Congress, the National Plan is being developed by USGEO to advise Federal agencies on the Strategy's implementation through their investments in and operation of civil Earth observation systems. The Plan will provide a routine process, on a three-year cycle, for assessing the Nation's Earth observation investments; improving data management activities; and enhancing related interagency and international coordination. Through this approach, the Plan will seek to facilitate stable, continuous, and coordinated Earth observation capabilities for the benefit of society.

Congress also requested that development of the National Plan include a process for collecting external independent advisory input. OSTP is seeking such public advisory input through this RFI. The public input provided in response to this Notice will inform OSTP and USGEO as they work with Federal agencies and other stakeholders to develop the Plan.

Definitions and Descriptions

The term "**Earth observation**" refers to data and information products from Earth-observing systems and surveys.

"**Observing systems**" refers to one or more sensing elements that directly or indirectly collect observations of the Earth, measure environmental parameters, or survey biological or other Earth resources (land surface, biosphere, solid Earth, atmosphere, and oceans).

"**Sensing elements**" may be deployed as individual sensors or in constellations or networks, and may include instrumentation or human elements.

"**Observing system platforms**" may be mobile or fixed and are space-based, airborne, terrestrial, freshwater, or marine-based. Observing systems increasingly consist of integrated platforms that support remotely sensed, *in-situ*, and human observations.

Assessing the Benefits of U.S. Civil Earth Observation Systems

To assist decision-makers at all levels of society, the U.S. Government intends to routinely assess its wide range of civil Earth observation systems according to the ability of those systems to provide relevant data and information about the following Societal Benefit Areas (SBAs):

1. Agriculture and Forestry
2. Biodiversity
3. Climate
4. Disasters
5. Ecosystems (Terrestrial and Freshwater)
6. Energy and Mineral Resources
7. Human Health
8. Ocean and Coastal Resources and Ecosystems
9. Space Weather
10. Transportation
11. Water Resources
12. Weather

The U.S. Government also intends to consider how current and future reference measurements (*e.g.*, bathymetry, geodesy, geolocation, topography) can enable improved observations and information delivery.

To address measurement needs in the SBAs, the U.S. Government operates a wide range of atmospheric, oceanic, and terrestrial observing systems. These systems are designed to provide: (a) sustained observations supporting the delivery of services, (b) sustained observations for research, or (c) experimental observations to address specific scientific questions, further technological innovation, or improve services.

Questions to Inform Development of the National Plan

Name (optional): Kenneth M. Miller

Position (optional): President

Institution (optional): National States Geographic Information Council (NSGIC)

Through this RFI, OSTP seeks responses to the following questions:

1. Are the 12 SBAs listed above sufficiently comprehensive?

No

   a. Should additional SBAs be considered?

Yes. Managing Critical Infrastructure, or the 'built' environment is an important societal benefit. It could fall under Mapping as a 'catch-all' societal benefit which is an essential component of all government operations. In addition, a critical element of Earth observations is geodetic control. It is a fundamental requirement for all other observations and therefore provides its own societal benefits.

   b. Should any SBA be eliminated?

No

2. Are there alternative methods for categorizing Earth observations that would help the U.S. Government routinely evaluate the sufficiency of Earth observation systems?

Another way to categorize Earth observations is Remote, Close-Range, and Direct. Remote observations would include satellite or aerial-based platforms. Close-range observations would include systems like terrestrial laser systems and tripod-mounted stereo camera systems. Direct observations would include systems like stream gauges and earthquake sensors.

3. What management, procurement, development, and operational approaches should the U.S. Government employ to adequately support sustained observations for services, sustained observations for research, and experimental observations? What is the best ratio of support among these three areas?

In 2005, the National States Geographic Information Council proposed a national program called Imagery for the Nation (IFTN) that would collect high-resolution (NAIP, 1-meter, leaf-on imagery) and very high-resolution imagery (new, 6" to 12", leaf-off imagery) for the entire nation on a routine basis. The Federal Geographic Data Committee (FGDC) spent a significant amount of time and money to study this proposal, clearly demonstrated a need for this imagery in Federal Civil agencies, and developed viable contracting and partnering approaches to implement the program with state and local

governments. They have not made any public announcement regarding their position on IFTN. Aerial and satellite imagery, in the form of digital orthoimagery, are the foundation of most public and private Geographic Information Systems (GIS). Based on survey results, NSGIC estimates that these essential products are being developed by as many as 1,300 government entities across the Nation. These individual contracting efforts lead to higher costs, varying quality, duplication of effort and a patchwork of products. Large area contracting methods and single national programs will keep the cost to taxpayers as low as possible and improve the availability of standardized, high-quality products. See more at: http://www.nsgic.org/imagery-for-the-nation

Recently, the U.S. Geological Survey (USGS) announced that they were discontinuing support for the National Geospatial-Intelligence Agency's (NGA) 133-Cities high-resolution imagery program. USGS formed partnerships with state, regional and local governments to expand the footprint of NGA's imagery collection. This leveraged Federal, state and local expenditures, reduced per square mile costs, and made additional data available. This was a disappointing management decision by USGS that is contrary to their role as the imagery theme lead identified in OMB Circular A-16. The requirements of OMB Circular A-16 should carry the weight of law and Federal agencies should be required to meet their obligations.

4. How should the U.S. Government ensure the continuity of key Earth observations, and for which data streams (*e.g.*, weather forecasting, land surface change analysis, sea level monitoring, climate-change research)?

The Federal government should invest in meaningful ROI and/or CBA studies that clearly demonstrate the value of these programs to all levels of government, business and the public. The purpose of these studies would be to factually justify program budgets in the context of all government expenditures.

5. Are there scientific and technological advances that the U.S. Government should consider integrating into its portfolio of systems that will make Earth observations more efficient, accurate, or economical? If so, please elaborate.

The Federal government should implement a liberal policy on the use of unmanned aerial systems for various types of imagery collection over small areas to support government business requirements (e.g. emergency operations such as wildfires, flooding, and other natural or manmade disasters.) In addition, government and business will have other more routine business uses for these platforms in the future due to their low cost data acquisition over small areas when compared to existing technologies.

6. How can the U.S. Government improve the spatial and temporal resolution, sample density, and geographic coverage of its Earth observation networks with cost-effective, innovative new approaches?

See our response to #5 above.

7. Are there management or organizational improvements that the U.S. Government should consider that will make Earth observation more efficient or economical?

Require that data sharing policies should be invoked on all Federal government grants to require data sharing in standardized and open data formats within 6 months of the acquisition of Earth observations.

8. Can advances in information and data management technologies enable coordinated observing and the integration of observations from multiple U.S. Government Earth observation platforms?

We already have this capability from a technical standpoint. Unfortunately, we have institutional and financial barriers, and a lack of political will to rectify the situation. Advances in technology may help remove these barriers in the future.

9. What policies and procedures should the U.S. Government consider to ensure that its Earth observation data and information products are fully discoverable, accessible, and useable?

Ensure that all data is properly documented using the FGDC's Content Standard for Digital Geospatial Metadata (CSDGM) and make it accessible through the Geospatial Platform using Open Source Solutions.

10. Are there policies or technological advances that the U.S. Government should consider to enhance access to Earth observation data while also reducing management redundancies across Federal agencies?

One Federal agency should be given the Authority, Responsibility, Resourcing, and Staffing through legislation that would allow them to effectively coordinate across the Federal enterprise.

11. What types of public-private partnerships should the U.S. Government consider to address current gaps in Earth observation data coverage and enhance the full and open exchange of Earth observation data for national and global applications?

Both Google and Microsoft have demonstrated that it is possible to produce high-resolution imagery for the nation in periods of less than three years. However, their imagery does not meet many of the business requirements for local, state and Federal agencies (e.g. leaf-off collection, sun angle, horizontal accuracies and building lean). Both companies have tried to market their post-production products and essentially failed to generate significant interest from potential government clients.

It is important that data from public/private partnerships remain in the public domain. The return on investment (ROI) is not there if the use and reuse of data is restricted by commercial licensing agreements. Delivery mechanisms of the commercial data (like Google or Bing imagery) are limited to their APIs and web sites, and does not allow the imagery to be downloaded and used in other systems. Commercial data released under a Creative Commons license would allow the data to be freely used as long as the source is given proper credit. This would have great value for public/private partnerships.

Commercial data acquisition is always collected based on market demand, which typically means that many areas with low market demand get lower resolution, less frequent updates, or no data at all, while

these same areas may be subject to intense government activity (e.g. flood zones, fracking exploration, hazardous waste sites, protected archeological sites, etc.)

It would be cost-effective for the Federal government to underwrite a portion of the up-front data collection costs for commercial acquisitions (e.g. Google and Microsoft) to ensure that the imagery collected would meet a wider variety of needs and remain in the public domain as appropriate. This could become an excellent public-private partnership model that could be further expanded to state and local government.

12. What types of interagency and international agreements can and should be pursued for these same purposes?

See the response to #3 above.