



Modernization Roadmap for the Geospatial Platform

Version 4.0
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US Department of the Interior



Federal Geographic Data Committee

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1. Foreword

We are pleased to share version 4 of the Modernization Roadmap for the Geospatial Platform (Roadmap). This final version of the Roadmap follows a stakeholder engagement process intended to share the vision for the Platform and gather feedback from the geospatial community regarding concepts discussed in the Roadmap. Feedback on the Roadmap to date has been positive, while at the same time identifying some challenging issues and questions that will be addressed as implementation occurs.

Developing the Roadmap has been an evolving process that began in February 2010 with the release of the President's 2011 Budget, which provided initial direction to develop the Geospatial Platform. An earlier draft Roadmap (version 3), was approved by the Office of Management and Budget (OMB) on November 10, 2010. That document, prepared by member agencies of the Federal Geographic Data Committee (FGDC), received broad Federal review and upon OMB approval set the stage for a more robust stakeholder engagement process.

The geospatial community at large has been engaged in providing feedback on the Roadmap over the past several months through a variety of mechanisms that include:

- Review and feedback from the National Geospatial Advisory Committee (NGAC), a Federal Advisory Committee that provides advice to the Federal government on geospatial matters;
- Presentations and discussions at geospatial conferences and related professional meetings; and
- Development of an IdeaScale Web-based forum for gathering input and feedback through the Geospatial Platform Web page (<http://www.geoplatform.gov>).

These outreach mechanisms resulted in valuable feedback that can be broadly categorized into questions and comments related to the following areas:

- Policy and management;
- Governance;
- Lessons to be learned from other model programs, and;
- Clarification of concepts.

The Geospatial Platform team has listened to the insights, ideas, and concerns expressed by geospatial stakeholders and offer the following summary of the approach for addressing each these areas of feedback as the Geospatial Platform moves into implementation throughout 2011 and beyond. This final Roadmap document does not fully address all of the issues identified through the stakeholder engagement process. Some of the issues raised through the outreach process will be addressed through the implementation process for the Platform.

Policy and Management

As the Geospatial Platform begins to take shape there are uncertainties about issues that may include authorities to operate the Platform, the selection of a Managing Partner and its roles and responsibilities, and the funding model. These and other critical issues identified during this initial period are difficult to address adequately in a planning document like the Roadmap. Throughout 2011, the Geospatial Platform leaders will develop specific position papers and strategies to address concept of operations, a business plan, and other relevant guidance documents to steer Platform implementation.

Governance

Comments on the Roadmap identified questions about the approach for governing the Geospatial Platform. We envision a governance process that includes representation from both Federal and non-Federal stakeholders. The Geospatial Platform leadership and the NGAC Intergovernmental Subcommittee are working to develop an inclusive governance model while the identification, roles, and responsibilities of the Managing Partner are being developed by executive leadership of the FGDC.

Lessons to be learned from other model programs

A number of existing programs have been suggested as successful models that can offer insights to assist the implementation of the Platform. These programs often share common elements that are important for sustainable participation of partners and stakeholders. Organizational models and programs identified through the stakeholder engagement efforts are currently being evaluated to document best practices and lessons learned, and will be considered for applicability for the Geospatial Platform.

Clarification

Version 4 of the Roadmap attempts to incorporate ideas and feedback that result in a more clear presentation and description of the ideas contained in the Roadmap. As implementation of the Geospatial Platform occurs, components (or “pillars”) that appear independent in the Roadmap will become more closely interrelated, providing a dynamic environment that will continue to grow and change as information is gathered, the offering is developed, and lessons are learned.

Next Steps

Version 4 of the Roadmap provides a framework document that describes the concepts and goals of the Geospatial Platform. This final version concludes the upfront planning process for the Platform and paves the way for implementation activities.

Over the past several months, the Federal geospatial community has made a number of advances that positively affect implementation of the Geospatial Platform. While some of these issues are not fully addressed in the Roadmap, they will be integrated into future implementation plans for the Platform. Three examples include:

- As the FGDC Geospatial cloud computing test-bed initiative progresses, the lines between common services and shared infrastructure become softer as Infrastructure as a Service (IaaS) becomes a reality.
- OMB’s release in November 2010 of the OMB Circular A-16 Supplemental Guidance (A-16 Supplemental Guidance) provides a method for implementing a geospatial portfolio management process for Federal geospatial data investments.
- The Administration has enhanced Data.gov as a public capability for citizens, business, and governmental agencies to gain access to government data. Geospatial data comprise the majority of the data in Data.gov, and based on public feedback of the importance of place-based data and visualization, Data.gov and Geospatial One-Stop (GOS) are being integrated.

In addition, the time boxes found in version 3 of the Roadmap have been removed from version 4. While the time boxes provided an initial course of specific actions, the next versions of tasks and deliverables for the Platform will be documented in implementation plans.

In the future, the concepts and approach put forth in the Roadmap will be further clarified and refined by supplemental documents that may include, but are not limited to; implementation plans, business plans, technical documents, project plans, and best practice examples.

In closing, the Platform team thanks all who shared ideas and comments, as well as those who put in countless hours to develop, communicate, and support the Geospatial Platform. The input from the geospatial community has been invaluable in developing the Platform approach; and we look forward to continued dialogue and ongoing involvement of our stakeholders as the Geospatial Platform moves into its next phase of development.

2. Preamble

The Need for Geospatial Capabilities

The challenges this Nation faces are multifaceted and complicated; they require diverse information, innovative analysis, and collaboration to solve. These challenges also have one other common characteristic – they occur in places.

Consider some of the most devastating events in recent United States history: the terrorist attacks on September 11, 2001, Hurricane Katrina, the mortgage crisis, and the Deepwater Horizon oil spill in the Gulf of Mexico. Internationally, consider the earthquake in Haiti. Responses to such events require national and international coordination, information sharing and analysis, and deployment of operational capabilities, all of which rely on knowledge of place.

Some complex questions raised by such events are evident in last year's Gulf oil spill:

- How can we best see, understand, track, and monitor the existing, pending, and future impacts of this event?
- Where do we mobilize and apply resources to provide the greatest good, prevent the greatest harm, and protect the life, health, and welfare of citizens?
- How do we synthesize vast information assets of the Federal, State, regional, local, and Tribal governments, the private sector, academia, and citizens to provide the on-the-ground situational awareness required to make wise decisions?
- How do we determine where proactive steps can be taken to prevent or minimize future impact such as identifying Gulf Coastal communities where aid will be required?

In addition to responding to emergencies, many of the day-to-day activities of government and citizens rely on information linked to places and communities. Geospatial capabilities and analyses help government decision makers target agency investments, measure progress towards program goals and measure performance across regions or communities. In addition, displaying results through interactive maps helps communicate complex ideas clearly. For citizens, geospatial capabilities and analyses help answer questions and solve problems related to commuting to work, choosing where to live and raise families, protecting our natural resources, planning vacation destinations, and juggling busy schedules, because all require knowledge about place.

Using place as an information management framework allows decision makers to leverage government databases, visualization techniques, and geospatial analysis tools to rapidly recognize patterns in large amounts of data and

make better-informed decisions. This “place-based” framework is consistent with Administration Priorities for place-based budgeting¹ and society’s increasing demand for and reliance on geo-enabled products and services.

The Case for the Geospatial Platform

Geospatial assets are already an integral part of many government and private day-to-day operations. While the business needs of stakeholders vary, there are many instances where different operations require the use of similar assets. Because geospatial information often involves a significant investment of resources (i.e., human, financial, etc.), many governments already coordinate their efforts to produce cost-savings, improve quality of services, and increase efficiency, although more could be done.

Coordinating the development and delivery of the Nation’s geospatial assets is a complicated task, but the geospatial community has come together to create an initiative that does just that. The Geospatial Platform is the culmination of these efforts. The partner agencies of the FGDC are developing the foundational plans for the Geospatial Platform to leverage the geospatial expertise, and existing geospatial data, services, applications, and infrastructure to enhance the Nation’s management of—and access to—all things geospatial. It will promote sharing across the geospatial community and provide opportunities to view and conduct business in new and innovative ways.

Under the basic premise “build it once, use it many times,” benefits already realized through coordination will be enhanced and expanded when implemented on a larger scale through the Geospatial Platform. The Platform will provide the means to enhance and expand these capabilities by offering an operational focal point for delivering access to trusted geospatial data, services, applications, and infrastructure.

The Platform will promote interoperable, effective and efficient problem solving tools spanning across organizations, thereby reducing the cost associated with developing independent geospatial capabilities while providing effective and timely information to decision makers.

¹OMB Memo 09-28 is available at http://www.whitehouse.gov/omb/assets/memoranda_fy2009/m09-28.pdf

3. Executive Summary

The Purpose of the Geospatial Platform

The Geospatial Platform (Platform), an initiative based in the Fiscal Year (FY) 2011 Presidential Budget, with the goal of “ultimately increasing access to geospatial data,”² is designed to become a component of the National Spatial Data Infrastructure (NSDI).

The Platform will offer access to trusted geospatial data, services, applications, and infrastructure assets. By delivering access to geospatial assets that are “built once and used many times,” the Platform will increase information sharing across various levels of government and the private sector, allowing for the reuse and adaptation of geospatial assets. This multi-purposing and availability of assets can lead to cost-savings, wider use of geospatial capabilities, and higher quality assets.

The Geospatial Platform will fundamentally improve access to and management of geospatial assets through a focus on five key components, or Pillars:

- Common Data, Services and Applications.
- Shared Infrastructure.
- Segment Architecture.
- Governance.
- Portfolio Management.

The Geospatial Platform will build upon the successes of ongoing interagency geospatial initiatives by identifying and allying with programs that have resulted in (1) successful sharing of assets, (2) efficiencies in developing collaborative programs, and/or (3) development of a standard national dataset through intergovernmental coordination. The Platform will complement current Administration initiatives for openness and transparency of government information and data, such as Data.gov, that have led to new thoughts and innovative approaches for delivering Federal information technology (IT).

The Business Model

The Platform will utilize a Business Model that outlines the business institution, identifies potential customers, and begins to consider a financial approach for managing the Platform and its assets.

The Business Model places emphasis on managing a Partner Network of providers. Customers may include Federal agencies and their partners in State, local, regional and Tribal governments, non-profit organizations, academic institutions, industry, and citizens. The Business Model approach represents a fundamental shift from managing

² President’s Budget, Fiscal Year 2011, “Analytical Perspectives, Special Topics, Information Technology” (p. 325)
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geospatial assets on a volunteer or “other duties as assigned” basis to creating sustainable support for a Managing Partner.

Implementation and Performance Goals

In the coming months, the Managing Partner will engage in a number of foundational activities as part of the Geospatial Platform’s phased implementation. The path forward includes ongoing collaboration with stakeholders and leveraging select, existing geospatial efforts in all levels of government and the private sector.

To assess how well the Platform meets its goals and creates value for customers, the Roadmap outlines preliminary performance targets.

The contents of the Roadmap v4 describe the vision for the Geospatial Platform and its offering of data, services, applications, and infrastructure. Concepts and approaches put forth in the Roadmap will be further clarified and refined by supplemental documents that may include, but are not limited to, implementation plans, business plans, technical documents, project plans, and best practice examples.

4. Introduction

“In 2010 and 2011, Federal data managers for geospatial data will move to a portfolio management approach, creating a Geospatial Platform to support GeoOneStop, place-based initiatives, and other potential future programs.

This transformation will be facilitated by improving the governance framework to address the requirements of State, local and tribal agencies, Administration policy, and agency mission objectives.

Investments will be prioritized based on business needs.

The Geospatial Platform will explore opportunities for increased collaboration with Data.gov, with an emphasis on reuse of architectural standards and technology, ultimately increasing access to geospatial data.”

FY 2011 President’s Budget³

The Geospatial Platform will contribute to finding solutions to information management challenges of the Nation by organizing and sharing geospatial assets needed to solve the problems of the 21st century. In today’s world, problems are multifaceted and complex, and require diverse information and collaboration to solve. One common feature of issues and events is that they occur in places and often impact surrounding neighborhoods, cities, regions, or global communities. Geospatial tools and the maps they display, widely popularized through Google Maps, Microsoft Bing, and personal global positioning systems (GPSs), can serve as the basis for understanding complex issues and relationships among multiple sources of information. Geospatial tools do much more than place locations on a map. These tools, working in concert with quality geospatial and tabular data of all kinds, provide an unparalleled ability to synthesize information, visualize patterns, and clearly communicate complex ideas. Geospatial tools greatly enhance data sharing, decision making, and functional collaboration across organizational and programmatic information silos. Information visually portrayed or communicated through maps promotes understanding and facilitate collaboration among decision makers, their partners, and the public. These unique features make geospatial assets among the most important strategic information assets for the Nation.

³ President’s Budget, Fiscal Year 2011, "Analytical Perspectives, Special Topics, Information Technology" (p. 325) (www.whitehouse.gov/omb/budget/fy2011/assets/topics.pdf)

Governments at all levels and private sector businesses use geospatial technology to meet a wide range of programmatic, decision making, and business needs. Federal agencies and their State, regional, local and Tribal partners spend hundreds of millions of dollars on geospatial assets. Many governments garner the most value from their investments by finding ways to reuse or repurpose geospatial assets and reduce redundancy through coordination with partners. Two examples of existing cross-government geospatial cooperation include:

- The Department of Homeland Security, the National Geospatial-Intelligence Agency, the US Geological Survey (USGS), and the Federal Emergency Management Agency leverage their collective buying power to purchase commercial imagery that enable them to protect the Homeland and the Nation's precious natural resources at a reduced cost.
- To efficiently create an accurate National Hydrography Dataset (NHD), USGS, the Environmental Protection Agency, the US Forest Service, and the Bureau of Land Management coordinate efforts to avoid duplicative data collection. These agencies also foster a State stewardship program to facilitate the inclusion of detailed data collected by State governments into the NHD. This coordination supports higher quality data and reduces costs.

Examples of Government Geospatial Coordination

- The National Map
- Mortgage foreclosure tracking
- The Multi-Resolution Land Cover Consortium
- The Geospatial Line of Business
- Homeland Infrastructure Foundation-Level Data Working Group
- Imagery for the Nation
- Digital Coast

The Geospatial Platform will encourage coordination and strategically manage existing geospatial assets as a portfolio to maximize their value and increase their potential to solve problems and support everyday business needs in a manner that increases accountability and transparency.

As directed in the President's FY 2011 Budget language, the Geospatial Platform will advance geospatial asset management and access to geospatial data, services, and applications by:

- Establishing a portfolio management approach for geospatial assets that promotes sound management practices and prioritizes cross-government investments based on business needs and return-on-investment (ROI) to improve the overall quality of geospatial assets.
- Creating a functional, standards-based approach to deliver geospatial assets that become the foundation on which mission critical components are built once, then shared to support place-based and other initiatives.
- Expanding the geospatial governance framework to address the requirements of State, regional, local and Tribal agencies, Administration policies and Federal agency mission objectives.
- Building off the successes of Data.gov and Geodata.gov to promote reuse of architectural standards and technology.

4.1 Purpose of this Document

The purpose of this document is to serve as a roadmap for development of the Geospatial Platform. This document:

- Introduces the Geospatial Platform.
- Establishes a vision for the Geospatial Platform.
- Describes the key elements of the Geospatial Platform.
- Presents an initial vision for a Business Model (Section 5), which describes the business institution, potential customers, and a financial approach.

4.2 Vision of the Geospatial Platform

The vision for a fully implemented Geospatial Platform is that customers have access to geospatial assets including data, services, applications, and infrastructure that meet their business needs.

For government customers, it is envisioned that the Geospatial Platform offering will support reuse and multi-purposing of existing assets, economies of scale, and implementation of standards to meet mission goals and implement business processes. Governments at all levels will be able to better manage resources for efficiency and improve and validate assets through repeated use, stakeholder collaboration, and customer feedback. The Platform will serve as a vehicle to leverage the geospatial expertise and assets within individual organizations to meet the needs of customers resulting in improved efficiency and programmatic outcomes, increased savings, and enhanced geospatial capacity and utilization. Through efficient management of geospatial assets, the government will serve its citizenry with the capability to access, visualize, and analyze information and performance measures needed for a transparent government.

4.3 Purpose of the Geospatial Platform

The purpose of the Geospatial Platform is to:

- Provide the technology and organizational framework necessary to support missions and Administration priorities (e.g., Data.gov and Place-Based Policy initiatives) with timely and accurate geospatial data and spatial analytical capabilities.
- Promote sustainable governance and collaboration by promoting sharing of geospatial assets and engaging and supporting communication across stakeholders.
- Enhance interoperability.
- Ensure accountability and transparency of geospatial and related investments through portfolio management.
- Attain cost-savings and economies of scale through collaborative acquisition, development, and management of geospatial assets.
- Support and implement standards and processes that establish data quality and information assurance as criteria for assets included in the Geospatial Platform portfolio.

4.4 Definition of the Geospatial Platform

The Geospatial Platform will offer access to a suite of geospatial assets including data, services, applications, and infrastructure that will be known as the geospatial Platform offering within this document. The Geospatial Platform will support an operational environment, www.GeoPlatform.gov, where customers can discover, access, and use shared data, services, applications, and when appropriate, infrastructure assets.

The Geospatial Platform is underpinned by:

- A segment architecture, aligned with the Federal Enterprise Architecture (FEA⁴), that emphasizes reuse of open and interoperable standards and technology, and supports increased access to geospatial assets. The Geospatial Platform will aim for a service-oriented architecture based upon common, secure, and scalable open-standards based technologies and may include cloud computing.
- Collaborative investment and portfolio management processes that enable partners and customers to leverage resources and share the costs of shared geospatial services.
- Policies and governance structures to ensure sound management practices and effective partnerships that address the requirements of Federal, State, regional, local, and Tribal organizations, Administration policy, and agency missions.

⁴ For more information about Federal Enterprise Architecture visit www.whitehouse.gov/omb/e-gov/fea/

- A Managing Partner that services as a government focal point responsible and accountable for coordination and provision of data and services provided by the Geospatial Platform.

Geospatial Platform assets will be managed as a portfolio driving toward a scenario where the following characteristics are present:

- High quality and timely geospatial data, services, and applications are easy to discover and obtain.
- Customer needs are identified, planned, budgeted, and met in a geospatial context.
- Long-term costs of geospatial asset development, delivery, and access are reduced, duplicative efforts are minimized, and new business markets are developed.
- Effective commercial off-the-shelf systems and contractual business support operations are acquired more efficiently to replace legacy geospatial applications.
- Partners leverage non-geospatial assets with the goal of integrated information sharing.
- Collaborative management of geospatial assets occurs across all levels of government.
- Adaptable, proactive, and inclusive interactions are promoted among all stakeholders.

4.5 A Culture of Transformation: Changing the Game

Over the past decade, stakeholders in the geospatial community have witnessed the mixed success of numerous Federal initiatives designed to help improve, coordinate development, and manage geospatial assets. An important question now being asked is “What is different about the Geospatial Platform?” The following transformations differentiate the Platform from past efforts and will help fulfill the vision of the Geospatial Platform.

Toward Shared Leadership

A key strategy will be the ongoing outreach, consultation, and shared decision making with external stakeholders to develop a shared vision and shape and implement the Geospatial Platform. The Roadmap identifies a variety of roles for stakeholders in the Geospatial Platform initiative.

The Managing Partner is committed to a collaborative governance approach. Stakeholders will be engaged continuously through in-person meetings, teleconferences, and social media (i.e., “Government 2.0” tools) to support the building of relationships, sharing of assets, as well as development and implementation of the Platform.

The Geospatial Platform will educate other communities about the power of geospatial tools and engage other, new communities of interest. Therefore, the Managing Partner is also committed to including Chief Information Officers (CIOs), Chief Financial Officers, government leadership, and elected officials in Geospatial Platform planning and implementation.

Toward a Business Perspective and Common Management Practices

Governments at all levels have an opportunity, through the Geospatial Platform, to manage the operations and delivery of geospatial assets using business-like practices. A business approach described in a Business Model (Section 5) will lead to:

- A focal point for accountability and management of geospatial assets (Managing Partner).
- Identification of customer requirements and a clear definition of the Geospatial Platform offering.
- A plan to finance the operations of the Geospatial Platform.

Closely aligned with the development of the Business Model will be implementation of consistent management processes across the Geospatial Platform. These processes will include:

- **Portfolio Management** of geospatial assets where investment priorities are set based on customer business requirements.
- **Project Management** where each Platform implementation phase is managed as a project, utilizing industry accepted project management processes and techniques.
- **Partner and Customer Relationship Management** where partners will be treated as business partners with clearly defined and agreed upon expectations, requirements, and benefits. Customers will have the opportunity to express their needs and shape the offering. Both partners and customers will be encouraged to evaluate and offer feedback on the scope and performance of the Geospatial Platform.

Toward Sufficient and Stable Resources

The Geospatial Platform strategy includes moving away from managing and coordinating development of geospatial assets on a volunteer, ad-hoc, or “other duties as assigned basis”. The Managing Partner will aim toward financial sustainability by identifying dedicated staff, funding, and revenue streams, and focusing on developing an offering that maximizes user benefit, cost-avoidance, and ROI. The Business Model begins the process of identifying the costs and funding/revenue streams associated with the Geospatial Platform.

Toward Open Government, Transparency and Accountability

Geospatial technologies provide an effective means to increase transparency and accountability not only by visually presenting information, but also by improving the ability to engage citizens, evaluate alternatives, and understand complex interactions. Implementation of the Geospatial Platform readily supports key Administration Open Government initiatives that emphasize government-to-citizen communication, accountability, and transparency including Data.gov, Apps.gov, Recovery.gov, and Place-Based Policy initiatives. Geospatial tools can be integrated into an electronic-government (E-Gov) environment, providing citizens with around-the-clock access to information about governmental activities, and facilitating opportunities to provide feedback and two-way communication. The Geospatial Platform will also deliver online services to provide access to information via interactive maps that allow direct access to useful government data. These interactive maps can aggregate information from disparate sources, facilitating rapid analysis for users. Maps, visual displays, and geo-enabled⁵ dashboards can play valuable roles in monitoring, evaluating, tracking, reporting, and supporting decision making.

Toward Addressing Administration Priorities

Under the umbrella of Federal IT directives, the President’s FY 2011 Budget⁶ identifies a number of IT funding priorities, including the Geospatial Platform. Many goals of the Geospatial Platform are complementary to the goals of IT priorities: to reduce fragmentation, to streamline operations, transform customer service, and maximize the ROI from IT. The Geospatial Platform will contribute to attaining these goals by aligning with several Administration IT priorities in the following ways:

- The Platform will be linked to **Data.gov** and **Geodata.gov** to provide a source for shareable, reusable, and trusted geospatial data.
- Establishing a portfolio management approach for geospatial data, services, applications, and infrastructure as called for in the FY 2011 Budget provides a means of effectively selecting and tracking investments in geospatial assets as suggested in “**Managing the Federal IT Portfolio.**”

⁵ To geo-enable is to apply geospatial capabilities to a business process in order to establish the authoritative spatial location of business data, and enable contextual spatial analysis.

⁶ <http://www.whitehouse.gov/omb/budget/fy2011/assets/topics.pdf>

- The new **FEA** will follow an improved model of development that will, “**...redesign IT** in key business areas from the ground up, based on central Federal platforms... [and will] provide an **interoperable, secure, and cost-effective** Federal IT **enterprise.**”
- **Cloud computing**, web-based data, services, and applications, and infrastructure made available through the Geospatial Platform will support efforts to **consolidate Federal data centers** or help reduce the need for new data centers.
- The Platform can help eliminate fragmented purchasing of IT and **leverage the Federal Government’s buying power** through Enterprise License Agreements (ELAs), Service Level Agreements, and other vehicles that promote sharing of and access to reusable geospatial assets.
- The Geospatial Platform will be focused on **customer service** and finding solutions to large and small problems that affect the Nation. **Transparency, accountability, and interoperability** are keys to effective decision-making, clear communication, and timely response.
- **Broadband Access for Americans** will be incorporated into the Platform.
- Information sharing networks must be **secure** and **protect privacy**. Some of the recommendations laid out in the Shared Infrastructure Pillar (Appendix B) reflect these ideas, specifically relating to the “Identity, Credential and Access Management (ICAM) Roadmap and Implementation Guidance.”

Toward Matters and Places of National Importance

In August 2009, the White House instructed the heads of Federal agencies to begin developing effective Place-Based Policy initiatives for the FY 2011 Budget. The Administration has identified the use of place-based planning as a priority in its efforts to guide economic development, preserve natural resources, minimize government duplication or contradictory policies, and use geospatial technology for the benefit of the Nation. A focus on metropolitan areas, ecosystems, or regions can create synergies across government programs that allow agencies to share information and coordinate in ways not previously thought possible.

Emerging national issues, such as climate change, health care, or childhood obesity can also be understood and managed using place-based approaches. As geospatial solutions are developed to address key issues, the Geospatial Platform can be used to share and leverage technical approaches, solutions, and lessons learned.

Place-based Policies

“Place-based policies leverage investments by focusing resources in targeted places and drawing on the compounding effect of well-coordinated action. Effective place-based policies can influence how rural and metropolitan areas develop, how well they function as places to live, work, operate a business, preserve heritage, and more. Such policies can also streamline otherwise redundant and disconnected programs ”

- From Office of Management and Budget (OMB) Memorandum 09-28

While much of our society and infrastructure is supported by available geospatial assets, other issues and places, ranging from rural and coastal communities to natural hazards and homeland security, need more attention. The Geospatial Platform will serve as the focal point to tap the potential of issues, places and users.

4.6 Challenges and Keys to Success

The time is ripe for a successful Geospatial Platform:

- The President’s FY 2011 Budget identifies the development of a Geospatial Platform as a priority IT initiative for Federal agencies. This recognition engages the Office of Management and Budget to develop a plan (the Roadmap) under the auspices of the Department of the Interior (DOI).
- Technology and standards exist to develop and deliver the vision of the Geospatial Platform. Infrastructure, including the Internet and cloud computing, has matured to support the sharing of geospatial assets across multiple organizations. There is a wealth of robust geospatial assets being developed across all levels of

government and the private sector. Industry IT and open and interoperable geospatial standards are available to allow sharing and reuse of assets.

- Past geospatial coordination efforts, including NGAC and the National States Geospatial Information Council (NSGIC) efforts, GOS, the Geospatial Line of Business (Geo LoB), and the Digital Coast have developed a clear path that enables us to move forward. The Platform is the logical next step in the evolution from dispersed governmental, private, and academic geospatial assets into a cohesive NSDI.

Spurred by this evolution and innovation and an ever-growing acknowledgement of the value of geospatial information, the Platform represents a valuable contribution as a component of the NSDI. Still, the Geospatial Platform will face challenges similar to those experienced by other initiatives.

Challenges

The success of the Geospatial Platform will depend on strong and dedicated leadership that can overcome a number of challenges associated with the development of the enterprise. Likely challenges and potential mitigation strategies are described below.

Identifying Requirements

There are many different, and sometimes conflicting, requirements among customers. One challenge will be clearly identifying and documenting various business requirements so that the Geospatial Platform offering meets those requirements. The Managing Partner will put forth maximum effort to connect with stakeholders and potential customers to identify requirements, and to ensure that their requirements are met through the Platform offering. Using automated tools, the Managing Partner will conduct initial and ongoing market surveys and needs assessments to understand what offerings are most desired by customers. The Managing Partner will remain nimble to assess and meet changing or evolving customer requirements over time.

The Managing Partner is committed to gathering and staying current on existing and evolving requirements of non-Federal governments, while appreciating the constraints resulting from differences in fiscal years and budget processes.

Evolution of Technology

As technology advances, customer requirements will quickly expand and change. The Managing Partner will quickly react to changing requirements and adapt to, utilize, and offer new tools.

Identifying Solutions

The Managing Partner may find it challenging to identify assets or solutions that meet customer needs. The Managing Partner will conduct a capabilities assessment of potential partners to understand potential assets to meet customer requirements and will work to engage and incentivize partners to share assets through GeoPlatform.gov. Once an offering is available through the Geospatial Platform, the Managing Partner will work to ensure that partners continue to manage their data, services, and applications, innovate, and remain actively engaged with the Geospatial Platform to continue meeting customer requirements.

Licensing and Sharing Constraints

Licensing and sharing constraints may exist in some government and private organizations, creating difficulties to leverage and share geospatial assets. The Managing Partner is committed to working through these challenges to promote sharing and efficiency.

Leadership

Leadership should not only come from within the Managing Partner, but also from agency political leadership in order to provide the full scope and level of support Platform activities. Some agencies may be reluctant to adopt new policies, procedures and funding plans. In order for the Platform to achieve tangible results, leadership must receive stakeholder buy-in by demonstrating benefits (e.g., ROI, optimization of resources, etc.) and providing incentives for participation (e.g., marketing, hosting, etc.). Finally, at all times, the Platform leadership must focus on the measurable results of ongoing activities to maintain user and stakeholder trust in the effort.

Financial Sustainability

Another crucial component for determining Geospatial Platform success is the long-term financial strategy. Unless the Managing Partner determines a sustainable long-term financial approach, the Geospatial Platform offering may not be able to meet stakeholder expectations. If the incentives and/or offering are not compelling, stakeholders may not be willing to invest in the Geospatial Platform activities and the Geospatial Platform may prove to be unviable in the long-term.

Keys to Success

The Geospatial Platform is a highly ambitious yet achievable initiative. Realization of the vision is largely within the capacity of the geospatial community. In order to achieve the vision of the Geospatial Platform, the community must:

- Act as one to develop, articulate, and commit to a shared vision.
- Set aside past differences and work together toward common goals.
- Develop a business plan that includes strategies and incentives for sharing and partnerships.
- Establish a governance approach that provides for meaningful input and consultation with all stakeholders.
- Initiate outreach and communications using both traditional and new media to include and educate stakeholders.

This initiative will also require upfront and ongoing support of the Administration including:

- Designating and empowering the Managing Partner.
- Providing political leadership to support the FGDC enterprise.
- Providing resources:
 - For hosting content as a primary incentive for participation by partners.
 - Long-term financial support through appropriations starting in FY 2012 for infrastructure, new offerings, and Platform management.
- Creating a supportive policy environment that encourages agency participation (e.g., finalization and enforcement of A-16 Supplemental Guidance, geospatial segment architecture, grants and contracts language).
- Developing and maintaining structures for accountability. Developing a strong organizational relationship between the Geospatial Platform and other priority IT initiatives including Data.gov.

5. Pillars of the Geospatial Platform

In June 2010, the Geospatial Platform was envisioned (via the Roadmap) as five inter-related components (Pillars) are depicted in a conceptual model shown in Figure 1. The organization of the Platform can be logically grouped into two discrete categories:

Offering – The suite of assets delivered through the Geospatial Platform that comprises the Geospatial Platform Portfolio:

- Data, Services, and Applications.
- Infrastructure.

Supporting Processes – The business controls necessary to ensure the Geospatial Platform offering is delivered:

- Segment Architecture.
- Governance.
- Portfolio Management.

Appendices A-E provide details of each Pillar as envisioned in June 2010. The March 2011 working definitions of the Platform components are provided below.

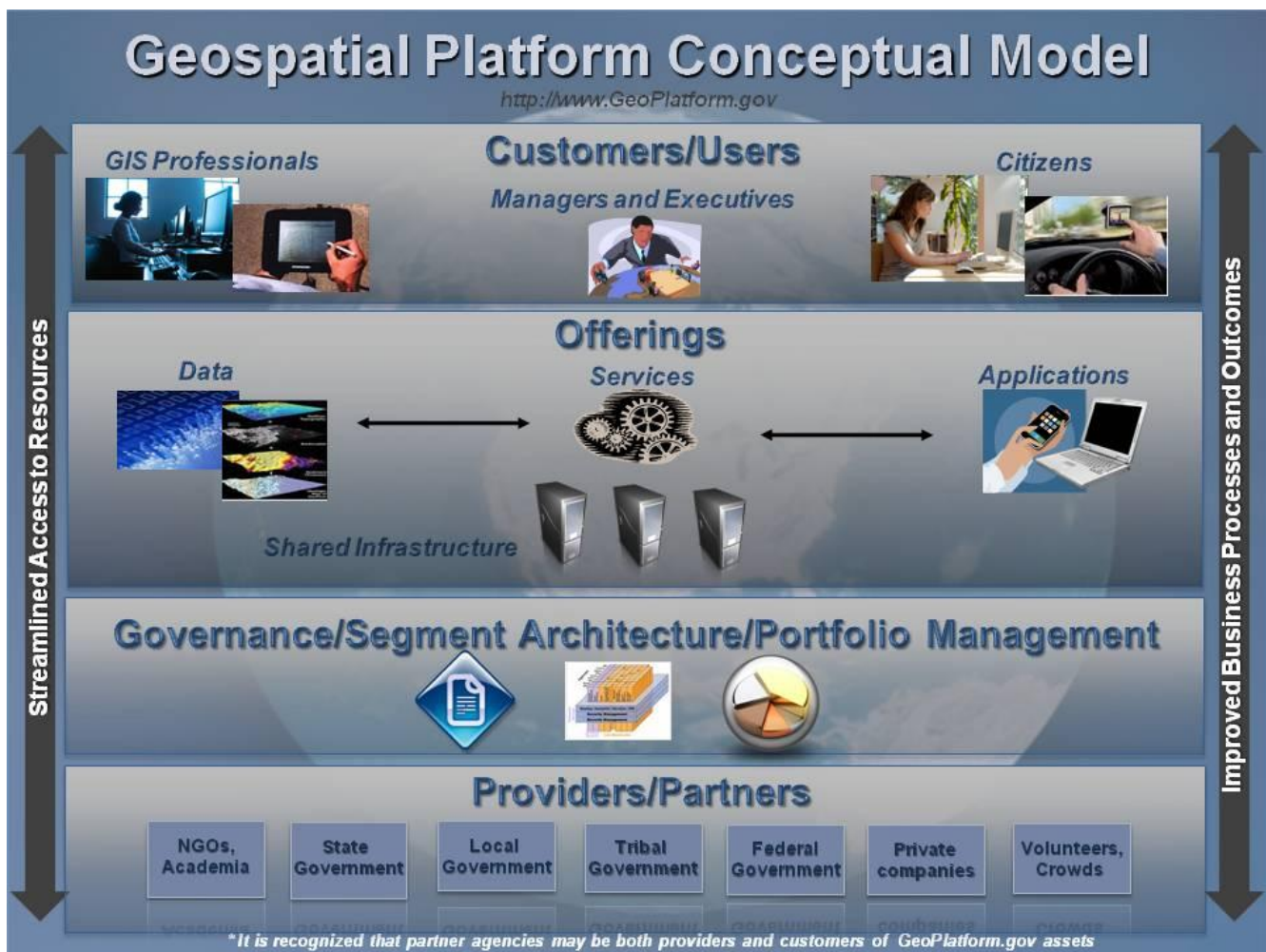


Figure 1. Geospatial Platform Conceptual Model

5.1 Pillars Defined

Offering

The Geospatial Platform offering is defined as the suite of geospatial assets delivered to customers through GeoPlatform.gov, including geospatial data, services, applications, and infrastructure. When viewed together, this suite of assets can be viewed and managed as a set of inter-related portfolios.

Data: includes individual datasets, integrated data (such as base maps), or other products derived from multiple datasets. These assets will provide foundational geospatial data that can be trusted, used reliably, and shared across organizations. Data can be provided by governments at all levels or non-governmental organizations.

The Geospatial Platform web based services will help customers discover desired geospatial data, through an interface with Data.gov or other similar data portals/registries.

While all data will be discoverable, the Geospatial Platform will promote only data that meet the Platform portfolio inclusion criteria (to be developed). Data that are included in the portfolio will be “tagged” as trusted Platform assets. The Platform portfolio data, and all Platform assets, will be managed using life cycle management practices.

Services: provide a consistent result to all users (e.g., geocoding, metadata editor). The Geospatial Platform will offer access to services that can be used by multiple agencies as stand-alone capabilities or as building blocks to develop applications. Services offered to customers will include technical geospatial services as well as support services (e.g., acquisition, requirements development).

Applications: consist of a set of tools or capabilities that enable a user to select how they utilize the tools and capabilities to perform geospatial visualization or analysis to achieve their results. Applications may leverage one to many different services to conduct analysis and return a result to the user. The Geospatial Platform will offer access to applications that can be downloaded, customized, and used to meet customer business needs.

Infrastructure: includes both physical and logical components of IT that can be leveraged by multiple customers. The physical shared infrastructure includes (but is not limited to):

- Data centers and data repositories, including the cloud.
- Networks, including Internet and intranets.
- Host platforms for data, services, and applications, including portals and services.

The logical shared infrastructure includes (but is not limited to):

- Network routing services.
- Access control and security.

Supporting Processes

Segment Architecture: provides a process-driven approach to designing and deploying large computing components in the context of a broader enterprise, which results in a design that can be readily deployed in an actionable solution architecture by partners that collaborate on geospatial data and services.

Governance: Processes by which parties with a stake in the Geospatial Platform are afforded an opportunity to shape its structure, functions and capabilities. The ultimate vision is to be a national system with shared governance.

Portfolio Management: establishes a set of processes by which the Geospatial Platform will manage geospatial assets contained within the offering. The Geospatial Platform will strategically manage existing geospatial assets as a portfolio to maximize their value and increase their potential to solve problems and support everyday business needs in a manner that increases accountability and transparency.

For Federal agency partners, portfolio management pertains to the management of investments in geospatial data, services, applications, and infrastructure⁷ assets. This includes setting priorities and selecting assets, and then allocating resources to asset development/acquisition, management, and evaluation to maximize enterprise value and obtain the best possible strategic impact of each investment.

For non-Federal partners, portfolio management is more limited to such areas as defining criteria for inclusion of assets on the Platform, brokering partnership agreements, and customer relationship management.

⁷Detailed information on data portfolio management can be found in the OMB Circular A-16 Supplemental Guidance www.fgdc.gov

6. Business Model

As described in Section 4, the Geospatial Platform will offer access to geospatial assets through GeoPlatform.gov. The Platform will function according to a Business Model in order to maximize value to customers and minimize expenses to ensure that customer requirements are met cost-effectively.

The Geospatial Platform Business Model includes the following components:

- Business Institution – the organizational elements and processes that support the Geospatial Platform.
- Customers – the consumers of the Geospatial Platform offerings.
- Financial Approach – the anticipated costs of and potential approaches for financing implementation and ongoing management of the Platform.

The business components of Geospatial Platform are portrayed in Figure 2.

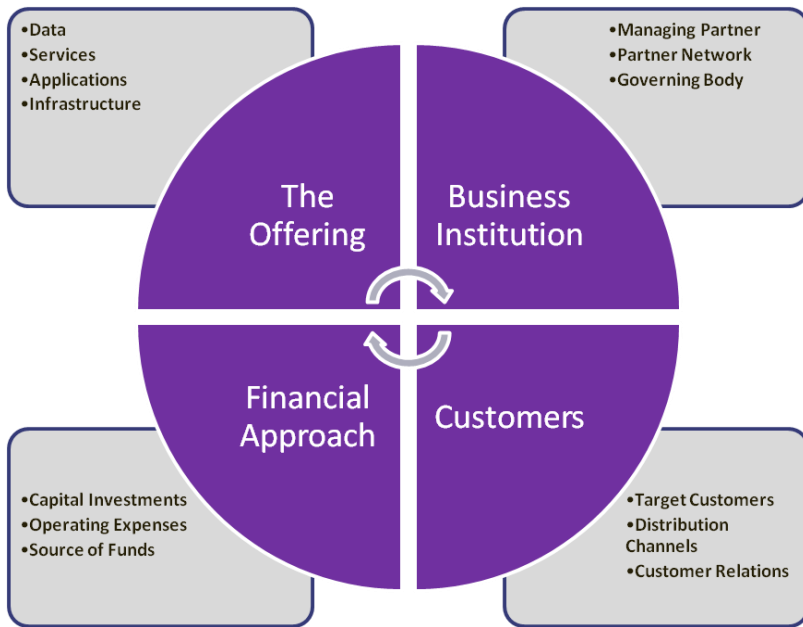


Figure 2. Geospatial Platform Business Componentes

6.1 The Business Institution

The Geospatial Platform Business Institution will contain related elements that include:

- **Managing Partner** that will coordinate the Platform’s activities and develop, deploy, operate, and manage the offering.
- **Partner Network** that will be comprised of providers of data, services, applications, and infrastructure and coordinated by the Managing Partner.
- **Governing Organization** that will be comprised of partners, customers, and other stakeholders from all levels of government and non-governmental organizations to ensure that stakeholder voices are heard and that customer requirements are met.

The Business Institution for the Geospatial Platform can be viewed in Figure 3 as a network of providers (partners) and business processes that are brokered and managed through the Managing Partner.

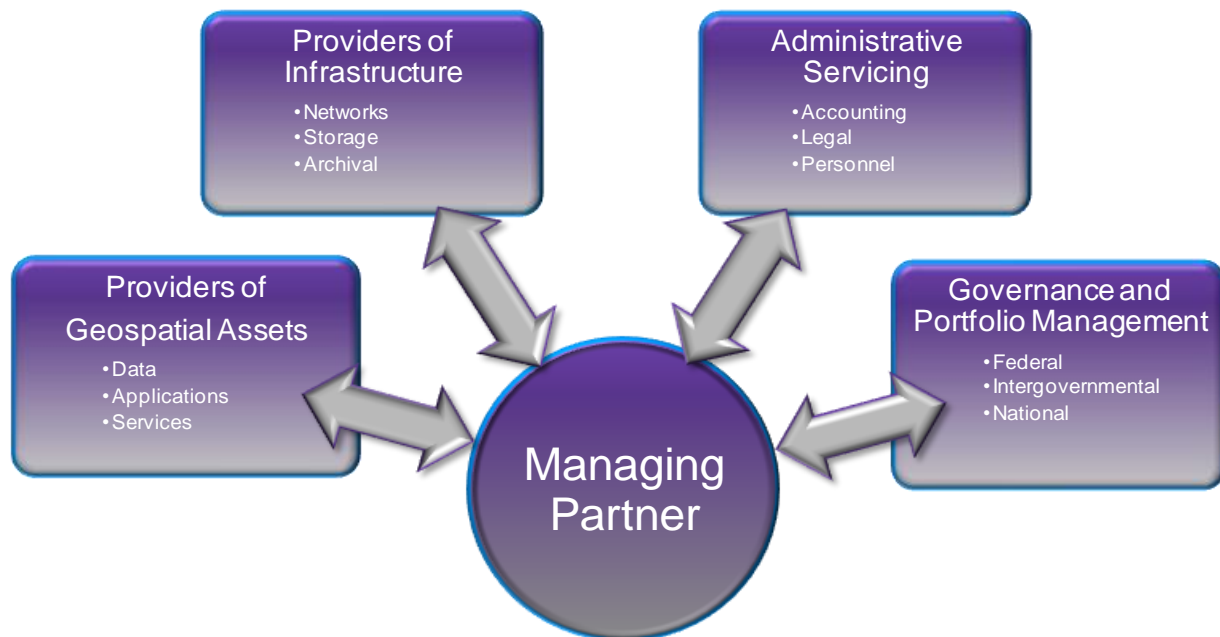


Figure 3. The Geospatial Platform Business Institution

Managing Partner

The Managing Partner will coordinate the Platform’s activities and develop, deploy, operate, and manage the offering. The Managing Partner needs full-time resources to carry out its functions. Important functions of Managing Partner will include, but are not limited to, establishing and managing relationships with partners; facilitating requirements analyses and developing the offering; managing the portfolio; customer relationship management; and outreach and marketing efforts.

The Managing Partner will serve as the broker and manager of the Partner Network and the primary interface with customers.

Until a Managing Partner is selected, the role will be met in the following way:

- DOI will serve as the interim Managing Partner.

- The Chair of the FGDC (or designee) will serve as interim Executive Sponsor of the Geospatial Platform.
- An interim Project Manager will be donated by one of the Federal agencies.
- The FGDC Secretariat and Federal member agencies will provide interim staff support to the Geospatial Platform.

A process for selection and oversight of the longer-term Managing Partner will be developed in consultation with OMB and the FGDC Chair and Steering Committee. Initial criteria for a successful Managing Partner should include:

- Ability to negotiate and manage formal partner relationships (e.g., contractual agreements, service level agreements, etc.).
- Capability to conduct geospatial requirements analyses.
- Credibility with the geospatial stakeholder community.
- Portfolio management capabilities.
- Customer relationship management capabilities.

Partner Network

Partners provide content (i.e., geospatial assets including data, services, applications, and infrastructure) to the Geospatial Platform. They may be governmental or non-governmental organizations.

Initially the Managing Partner will focus on identifying customer requirements and identifying organizations with assets available to meet those requirements. The Managing Partner will reach out to these organizations to encourage them to become a member of the Partner Network and share their assets through the Geospatial Platform.

The Managing Partner understands that some organizations have geospatial assets that can be quickly shared with few added resources to the partner, while other desirable assets will require more resources. Explicit and achievable incentives will be defined to help encourage partnerships that might include, but are not limited to hosting capacity, technical support, and exposure of partner services to the broader community, or reimbursement for services.

For instance, State organizations might find that database-hosting services offered by the Platform are a valuable incentive to provide services. In essence, States may be willing to manage and share key geospatial data sets if the Platform provides hosting services in return. Also, for some private sector organizations exposure of their value added applications might serve as an incentive to offer services to the Platform.

When assets are shared with the Geospatial Platform, they will become part of the Geospatial Platform portfolio and benefit from the Geospatial Platform portfolio management processes and marketing.

Once providers become partners, they will be required to meet “rules of engagement” included in negotiated contractual, license, or service level agreements, to continue their partner status. These “rules of engagement” and business processes will be clearly defined and monitored for compliance and performance reporting.

Governing Organization

The Managing Partner is committed to managing Platform operations through a collaborative approach that includes all stakeholders.

The Geospatial Platform will develop a shared governance model that involves non-Federal entities. The President’s Budget direction notes that the Platform will be “facilitated by improving the governance framework to address the requirements of State, regional, local, and Tribal agencies, Administration policy, and agency mission objectives.”

As a first step, the FGDC supported the establishment of an NGAC Intergovernmental Subcommittee to provide ongoing advice and feedback to the Managing Partner. The NGAC Intergovernmental Subcommittee includes representatives from a broad cross-section of the geospatial community, including members from governmental, private sector, non-profit, and academic organizations.

The Managing Partner will develop a process for long-term stakeholder engagement and shared governance of the Geospatial Platform in collaboration with stakeholders and in consultation with OMB.

6.2 The Customers

The customer drives business requirements and Platform offerings. Key customer segments may include:

- Federal Government.
- State, regional, local, and Tribal governments.
- Private sector.
- Academia.
- Non-profits.
- Citizens.

Customers can also be categorized as:

- Geographic Information Systems (GIS) professionals.
- Executives.
- Managers.
- Scientists.
- The general public.

During early implementation, the Geospatial Platform will focus on government customers.

The Managing Partner will act as the primary interface between the Geospatial Platform and its customers. The Managing Partner will conduct a market survey /needs assessment to better understand the target market and identify customer groups. These interactions will also help the Managing Partner to develop the processes of ongoing customer interactions and feedback.

The anticipated major categories of customer interactions are depicted in Figure 4.

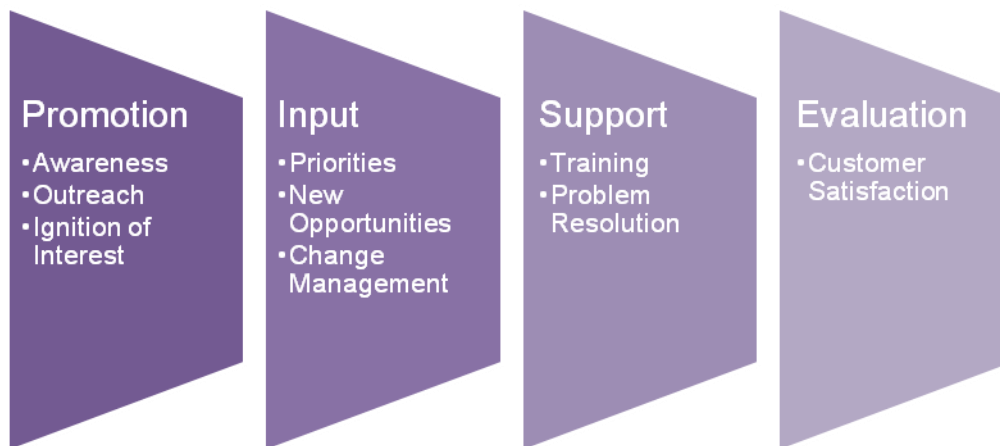


Figure 4. Major Categories of Customer Interactions

6.3 The Financial Approach

The financial approach for the Geospatial Platform considers both the costs to develop and manage the offering and the sources of funds and other resources that will be used to cover the costs.

Costs/Expenses

Start-Up Costs

In the first stages of the Geospatial Platform development, capital investments will be necessary to ensure smooth implementation. Capital investments will include infrastructure, processing capabilities, and asset migration. The Geospatial Platform will utilize the resources of similar initiatives, such as cloud computing, data center consolidation led by the Federal CIO Council, and Electronic Capital Planning and Investment Control System.

The Geospatial Platform will leverage existing assets. Sharing the tools and technology developed by other agencies or partners not only reduces costs, but also speeds implementation of the Platform and builds upon already established best practices. Over time, however, these investments will reduce the government-wide cost of geospatial technology by decreasing redundancy, increasing efficiency, and improving the tools and data available for executing agencies' core business processes.

Business Institution Costs

The Business Institution is the component of the Platform that creates expenses; these include both direct costs and overhead costs. Platform expenses, grouped by the core elements of the Business Institution, include:

Managing Partner

- Salary and benefits for Program Manager.
- Staff and/or contractual services for:
 - Customer relations and support.
 - Partner relations.
 - Geospatial technical oversight and management.

- Administrative and financial management.
- Marketing (e.g., promotion, pricing, product development, and research).
- Outreach and communications.
- Government accountability (e.g., budgeting, performance management, reporting).
- Office hardware and software to support Program Manager and staff.

Partner Network

- Provisioning of technology infrastructure for hosting.
- Acquisition of content (data, services, and applications) from partners/providers.
- Technical support and training for partners.

Governing Organization

- Staff and/or contractual services for stakeholder input and portfolio management.
 - Meetings.
 - Communications.
 - Portfolio management process development and application.

Geospatial Platform Source of Funds and Other Resources

The Geospatial Platform is considering using four major methods to cover the costs of operations. These include:

“Common Good” Funding.

- Direct appropriations and/or reinvestment of cost-savings.
- Across the board assessments (e.g., Geo LoB, GOS).
- Reimbursable agreements under the general authority of the Economy Act.

Incentive-based Partnerships.

- Intergovernmental partnerships that involve a government entity providing no-cost data, services, applications, or infrastructure to the Platform in return for receiving commensurate benefits.
- Intergovernmental partnerships that involve government entities sharing the cost of data, services, applications, or infrastructure in return for receiving commensurate benefits.

No-Cost Contributions from Partners.

- Partners providing content as a part of filling mission requirements to create public domain geospatial formation (e.g., National Wetlands Inventory, *The National Map*).
- In-kind contributions from partners who are willing to cover the full cost of a dataset, application or service because the marginal costs beyond meeting their mission obligations is minimal (e.g., Palanterra).
- Donations of data, services, applications, or infrastructure from government agencies or their partners.

Income from Customers of Services.

- Metered services (e.g., geocoding costs charged per transaction).
- Subscription fees.

In summary, the Geospatial Platform Business Model places new emphasis on managing a Partner Network of providers to deliver valuable and trusted geospatial assets that meet the needs and requirements of key customers.

7. Implementation and Performance Goals

The Geospatial Platform is building upon multiple ongoing and related efforts, including Geo LoB activities, *The National Map*, development of the segment architecture, collaboration with Administration activities (e.g., Data.gov, Apps.gov, etc.), and development of related programmatic initiatives (e.g., development of a business plan and budget request for the Imagery for the Nation initiative). This section describes the strategic path forward for development and implementation of the Geospatial Platform and preliminary thinking on performance measures. The Platform implementation approach will be informed by several key principles:

7.1 Long-term Vision

This document provides a conceptual vision, to be refined based upon collaboration and consultation with Geospatial Platform stakeholders. The vision of the Geospatial Platform is consistent with the Geospatial Segment Architecture, builds upon the portfolio management practices outlined in the A-16 Supplemental Guidance and aligns with the Administration's goals for ensuring transparency, democratizing public-sector data, and driving innovation.

7.2 Phased Implementation

The Geospatial Platform will be developed in a phased approach, with a bias toward action that will provide immediate improvements and useful products and components for customers. This incremental development approach will provide a steady stream of valuable offerings for customers. Development of the Platform will be informed by ongoing and frequent interactions with stakeholders, and will work to incorporate new requirements, feedback, and recommendations at each phase.

7.3 Collaboration with Stakeholders

The Geospatial Platform effort will involve substantial outreach and consultation with external stakeholders to reach a shared vision and develop a collaborative governance approach. The Geospatial Platform aims to provide valuable assets for use by all customers. Over the coming months, the Managing Partner will engage with stakeholders and potential partners through a variety of means, including the following:

- Consultation with the NGAC.
- Social media approaches.
- Capabilities assessments.
- Targeted sessions with key stakeholder groups.
- Dialogue and discussion at industry and professional meetings and conferences.

7.4 Project Management

The Geospatial Platform will be managed using best practices of project management, including a “time box” approach to phased implementation. Time boxing is a project management technique often used in planning projects and in rapid Geospatial Platform Modernization Roadmap v4 Final - March 2011

application development software development processes, where an implementation schedule is divided into a number of separate time periods (i.e., time boxes), with each period having its own deliverables and deadlines. The initial implementation of the Geospatial Platform focuses on incremental implementation of existing components and capabilities using dedicated teams organized around the time box goals.

7.5 Measuring Performance

Performance measures are an integral part of understanding how the Platform meets customer needs, identifies successes and gaps, and provides insight into ROI. In addition, performance measures extend transparency and enhance accountability among both internal and external stakeholders. The Managing Partner is committed to finding the right blend of performance measures that will provide a practical, yet holistic look at the Platform and its offerings. Performance measures link overarching goals of the Platform to the day-to-day operations and resources (human, intellectual, financial, and organizational), and answer key questions about performance, outputs, and outcomes including:

- Are the right people involved and are those with responsibilities meeting those responsibilities?
- Are stakeholder needs clearly defined and efficiently addressed?
- Are investments showing returns and value? Are resources measured and maximized? Are there opportunities for partnerships or collaboration?
- Are the right assets (i.e., data, services, applications, infrastructure) available and of high quality? Are the appropriate selection criteria in place? Are there opportunities for collaboration or consolidation?
- Does the infrastructure function as intended? Is access available when needed and to the right people?
- Are priorities selected efficiently? Are priorities organized and addressed appropriately?
- Are best practices and lessons learned captured?
- Have reporting mechanisms (e.g., dashboards, maturity models, etc.) and timetables been established?

Financial Performance and Investments

Financial performance metrics provide indicators highlighting the health of the Platform and can show ROI for assets within the Platform Portfolio (i.e., data, services, applications, infrastructure) as well as investments made in human capital that allow the Platform to address stakeholder needs.

- Cost avoidance in dollars from ELAs.
- ROI calculations for data investment.
- Cost-benefit analyses for services.
- Investment collaboration reviews for data, services, applications, and infrastructure or to set Platform-wide investment priorities.
- Opportunity cost analysis of partnerships.

Operational Performance Metrics

Operational performance metrics highlight the day-to-day operations and maintenance goals of the Platform and provide information on what data, services, or applications are available on the Platform as well as when, and what people are seeking/using within the Platform. Some examples of operational performance metrics might include:

- Number of partnerships established or partnership opportunities identified.
- Quantity of data, services, and applications available through the Platform.
- Number of downloads/site visits.
- Percentage of users who are repeat customers.
- Number of Federal, State, regional, local, or Tribal users.
- Average server or request response time.

- Percentage of time the Platform is online and available to users.

Customer Service Performance Metrics

Similar to operational performance metrics, customer service performance metrics highlight day-to-day Platform usage; however, unlike operational metrics above, these metrics focus on who is using the Platform and whether the Platform is meeting stakeholder business needs. Examples of customer service performance metrics might include:

- Number of customers.
- Number of downloads/website hits by user group (e.g., Federal, State, regional, local or Tribal government, private sector, academic, or citizen users).
- Ease-of-use or customer satisfaction survey scores.
- Number of listening/feedback sessions or number of comments received.

Governance and Compliance Metrics

Governance and compliance metrics relate to the degree to which Platform assets meet requirements and standards issued by authoritative bodies (e.g., International Organization of Standardization (ISO) Standards, FGDC metadata standards) or the degree to which stakeholders meet agreed upon roles and responsibilities (e.g., Platform stakeholder rules of engagement, leadership responsibilities, etc.). Some examples of governance and compliance metrics include:

- Percentage of data that are ISO/FGDC Standards compliant.
- Percentage of data with FGDC metadata compliance.
- Percentage of Federal data that are A-16 Supplemental Guidance compliant.
- Performance of each stakeholder in implementing roles and responsibilities.
- Participation by agency or participation by State.
- Percentage compliance with rules of engagement.

Portfolio Management Metrics

The Geospatial Platform portfolio will be measured and reported based on the following:

- Data maturity based on maturity model scores.
- IT dashboards.
- Investment review criteria and investment review scores.
- Implementation of roles and responsibilities specific to portfolio management (e.g., roles and responsibilities in the A-16 Supplemental Guidance for data portfolio management).

Platform Implementation Metrics

Geospatial Platform implementation will occur in a phased approach based on Platform priorities, funding, and partners' ability to implement standards, requirements, roles and responsibilities, and funding model. In order to track implementation progress, Platform implementation metrics will evaluate:

- Cost (baseline and variance).
- Schedule (baseline and variance).
- Scope (baseline and variance).

Performance against targets for metrics will be specific to each phase of implementation.

Appendix A. Common Data, Services and Applications, June 2010

A.1. Definition

Common data, services and applications are recognized as official or trusted resources with a Federal lead agency steward (for data, “Dataset Manager” per A-16 Supplemental Guidance). The Federal lead agency verifies and vouches for the quality and reliability of the resources, which may include commercial resources. (Examples include TIGER data, a geocoding service, and commercial GIS software.) Common assets are managed as part of the Geospatial Platform portfolio and therefore must meet portfolio inclusion criteria (for data, see A-16 Supplemental Guidance).

Common Geospatial Data, Services and Applications are:

- Used by two or more entities to meet one or more geospatial business requirements (i.e., provide a common solution).
- Registered and discoverable through the Geospatial Platform portfolio.
- Provided in a standardized form, format, or process.

It is important to note that the term “common” as defined herein does not define the distinctions between authoritative, official, trusted, validated, or best available information. This will be taken into account through the metadata, data/services/applications registry and user interface components of the Geospatial Platform and be determined by an evaluation of the source, content, quality and intended use.

Common Data, Services and Applications:

A single solution, utilized by two or more agencies/partners, to meet:

1. A common requirement between agencies, or
2. Meet different requirements across agencies

One solution – multiple uses

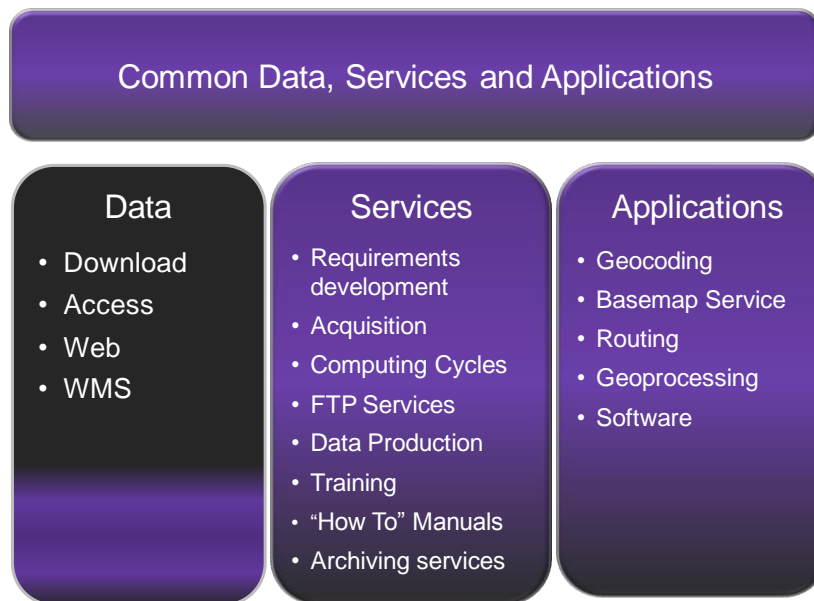


Figure A.1. Common Data, Services and Applications Offerings

Common Data

The common data component of the Geospatial Platform portfolio includes any geospatial data selected by the Managing Partner because they meet inclusion criteria outlined in the A-16 Supplemental Guidance and one used by two or more Federal agencies and partners to meeting their business requirements. Common data for the Geospatial Platform will provide the foundation for meeting a broad spectrum of customer business requirements and are often created or acquired in response to a need.

Geospatial data are developed and managed to meet specific format, content and structural requirements that are based on the intended use. As new requirements are identified by the national geospatial community, or new data identified that meet defined requirements, the format, content, structure and even the number of datasets required may change. For example, a roads dataset may be used to perform vehicle routing by one agency and the same dataset used as a base map by another agency. In either case, there is a single dataset utilized by multiple agencies

Common data include access to either original source data or data, which have been integrated to meet requirements for consistency. The Census TIGER/Line files are an example of a single formatted dataset that is used across multiple agencies to render demographic information. There are many types of access methods to geospatial data including online web services, data download and all other data access methods.

Common Services

The common services component of the Geospatial Platform portfolio includes all other types of geospatial services that provide a consistent capability to users (i.e., tools and services that support the execution and management of geospatial business processes and offline services). While peripheral to the analysis capabilities that form the core execution of the Geospatial Platform's function, these common services are key underlying and complimentary efforts that must be included as part of the overall Geospatial Platform portfolio.

Examples of the types of support services include requirements development and tracking tools, system computing cycles and file transfer protocol (FTP) services. Examples of offline administrative services include acquisition services (such as the Geospatial SmartBUY for geospatial software established through the Geo LoB), data production services

and training. It is also envisioned that a hosting service will be one of the Geospatial Platform services offered for those agencies without the required capacity to host or that have security concerns about hosting all of the data that are required by other agencies, stakeholders and partners.

Common Applications

The common applications component of the Geospatial Platform portfolio includes any computer-based set of tools or capabilities that enables a user to perform geospatial visualization or analysis, including software, online applications and geo-processing required by two or more agencies/partners/customers.

This category of applications includes a broad spectrum of analytical support generated to facilitate the government's delivery of services to citizens. Applications may leverage data services to conduct analysis or computations and return a result to the user or they may provide the user interface between and with other services. The utilization of open standards will allow these various components to communicate and interoperate effectively.

A base map visualization service from rendered and cached geospatial data, a routing tool, a geocoding service and geographic information system (GIS) software are all examples of common applications. A potentially high-impact common application for the Geospatial Platform is a consistent, standards-based metadata editor. As all Federal agencies must comply with the FGDC metadata standard and create metadata for every geospatial dataset, it makes sense to develop one common metadata editor and deploy it across agencies. Agencies can avoid duplicative software development by using a common application that allows for easy compliance. If desired, agencies can implement a customized style for the metadata editor tailored to their individual needs.

Data.gov is an example of a successful common application through which Federal geospatial data are made available to the public. Data.gov was established recognizing that data are assets of the Federal Government and its citizens and provides public information for the public good. Efforts are underway to add additional geospatial functionality to the Data.gov infrastructure enabling users to view their selected data in a map.

A.2. Objective/Purpose

The objective of Common Data, Services and Applications is to ensure that data, services and applications are discoverable, accessible, usable and obtainable by all. The Geospatial Platform will expose and leverage existing resources, providing a means to identify and eliminate redundancies among agencies, and at the same time enabling a geospatial market by opening up these common services and requirements.

Common data, services and applications are achieved when:

- Standards are adopted and implemented by providers of data, services and applications.
- Publication of the data, services and applications follow a common protocol for registry, publishing and discovery.
- The full spectrum of data are published with fully compliant metadata removing any debate about the most authoritative/appropriate dataset.
- Common applications are developed using core requirements of multiple agencies upon which user interface and branding can be modified if necessary to better meet customer requirements.

A.3. Approach/Strategies

The Geospatial Platform will meet business needs of its customers, support transparency and access to information, and empower the Nation's citizens through access to a range of geospatial data, services and applications. Federal Geospatial Platform Modernization Roadmap v4 Final - March 2011

leadership must assist in lowering the barrier to publish data, services and applications by ensuring a common method and approach is adhered to by the community. The Geospatial Platform will implement an open government approach to standards based services publication and will adopt and enforce the use of open and interoperable standards to simplify discovery, access and dissemination of data, services and applications. The Geospatial Platform will then be populated with common data, services and applications. As the Geospatial Platform matures, a number of guidance documents and how-to manuals will be produced to encourage participation by all members of the national geospatial community in the effort.

To achieve the Geospatial Platform objectives, the processes and frameworks will be developed to:

- Endorse and enforce standards.
- Identify/inventory/catalog available geospatial data, services and applications.
- Identify common business requirements they meet or are utilized to support.
- Identify new or evolving common business requirements that can be supported by geospatial assets.
- Identify the functions, the services and applications performed.
- Identify those data, services and applications that are utilized by multiple agencies to meet common business needs.
- Establish the mechanisms to govern, operate, evaluate and service the common components.

A.4. Priorities

The Geospatial Platform priorities with respect to common data, services and applications include:

- Discovery of geospatial data, services and applications.
- Initial inventory and selection of geospatial data, services and applications (also see Portfolio Management objectives and priorities).
- Endorsement and enforcement of standards.
- Identify priorities for new common data, services and applications.

Discovery of geospatial data, services and applications

A fundamental goal of the Geospatial Platform is to enable providers and customers to contribute, access and leverage data, services and applications, and provide a clear method for discovering valuable resources. Common and discoverable data, services and applications are often the starting point for identifying data, services and applications that have broader value to multiple partners and may be included in the Geospatial Platform portfolio and delivered as common resources. One Geospatial Platform service will include evaluating the data, services and applications, and the requirements they are designed to fulfill.

While not all data, services and applications will be included in the Geospatial Platform portfolio, all Federal investments in geospatial data, services and applications should be discoverable and inventoried as part of the national strategy. The Geospatial Platform will encourage all Federal agencies and partners to share and leverage their geospatial assets

Federal Executive branch agencies should publish metadata for all geospatial datasets and applications to Data.gov, the authoritative repository for Executive branch data. Another system service will be developed for non-Executive Federal and non-Federal data and applications as part of the Geospatial Platform. These systems will work together to ensure that all geospatial data and applications are discoverable to customers.

An initial asset inventory and selection of geospatial data, services and applications for the Geospatial Platform portfolio, will need to occur in order for the Managing Partner to know what geospatial data and applications exist and how they support the business requirements of the Federal Government and its partners. The registry developed using Data.gov and its counterpart (for non-Executive Federal and non-Federal data and applications) will serve as the initial government wide inventory of geospatial data, services and applications. This initial inventory activity will be conducted to create a baseline Geospatial Platform portfolio, which will be routinely maintained on at least an annual basis.

From this initial inventory, geospatial data, services and applications will be selected for inclusion in the Geospatial Platform portfolio. Processes for data selection are outlined in the A-16 Supplemental Guidance, whereas similar processes for selecting services and applications will need to be developed (see Portfolio Management priorities).

Initial inventory and selection of geospatial data, services and applications

To select assets for the Geospatial Platform portfolio, the Managing Partner must know what geospatial data and applications exist and how they support the business requirements of the Federal Government and its partners. The registry developed using Data.gov and its counterpart (for non-Executive Federal and non-Federal data and applications) will serve as the initial government wide inventory of geospatial data, services and applications. This initial inventory activity will be conducted to create a national geospatial inventory, which will be routinely maintained on at least an annual basis.

From this initial inventory, geospatial data, services and applications will be selected for inclusion in the Geospatial Platform portfolio. Processes for data selection are outlined in the A-16 Supplemental Guidance, whereas similar processes for selecting services and applications will need to be developed (see Portfolio Management priorities).

Endorsement and enforcement of standards (also see Segment Architecture)

An open government approach to standards based services publication will fuel the demand for more geospatial data and robust application development as more and more location-based services are developed. Through the FGDC, the Geospatial Platform will adopt and enforce open and interoperable standards to leverage the work already accomplished by national and international standards organizations. Standards will simplify discovery, access and dissemination of data, services and applications through the Geospatial Platform. Shared standards that shall be formally evaluated for adoption by the Federal Government include, but are not limited to:

- Geospatial data publication standards as described by the Open Geospatial Consortium (OGC), the International Organization of Standardization (ISO), the International Committee for Information Technology Standards (INCITS) L1 committee that deals specifically with geospatial standards, and the FGDC including but not limited to the Web Services (features, map, processing, coverage, etc.), Location Services, Metadata, Registries, Data Quality and other applicable standards specifically dealing with geospatial data; and
- All published data, services and applications shall include an open Application Programmers Interface (Open API). At a minimum the API shall allow searchability by the domain of geospatial search properties (e.g., contains, contained within, near, intersects etc).

Identify priorities for new common data, services and applications

Initially, the Geospatial Platform will leverage *The National Map* requirements study and the Geo LoB surveys to provide priority recommendations for new common data, services and applications. Geospatial Platform priorities are further supported by specific studies conducted by the National Research Council (NRC), selected Federal agencies and the National States Geographic Information Council (NSGIC). The results of these studies and surveys are outlined in Table A.1 below.

The Geo LoB surveyed agencies to identify geospatial services and applications required to meet business needs. The Geospatial Platform will leverage that survey and aim to provide the identified priority applications. The highest priority identified by 42% of agencies was a metadata editor that is FGDC compliant, web enabled, flexible and customizable. Also highly desired were a map tracker (33%) and an interactive mapping service (30%).

Table A.1. Potential opportunities for common data, services and applications

| Geospatial Data | Citation Reference | Immediate | Mid Term |
|---|---------------------------|------------------|-----------------|
| Imagery | TNM, NGAC, LLR | TNM-Imagery | IFTN |
| Elevation/LiDAR | TNM, CSWG, NGAC, LLR | TNM-NED | NEEP |
| Public Streets and Roads | TNM, | TIGER | |
| Surface Water | TNM, | TNM-NHD | |
| Civil Boundaries | TNM, | | |
| Parcels | TNM, NGAC, LLR | | |
| Land Cover | TNM, | | NLI |
| Geographic Names | TNM, | TNM-GNIS | |
| Public Land Survey System | TNM, | | |
| Vertical and Horizontal Control | TNM, | | |
| Federal and Native American Land Boundaries | TNM, | | |
| Address Points | TNM, CSWG | | |
| National Wetlands Dataset | | | USFWS |
| Geospatial Platform Services | | | |
| Cloud Computing | CSWG | | |
| GPS receivers | CSWG | | |
| Geocoding Service | CSWG, TNM | | X |
| Instruction/Guidance/How-to manual | | How-to manual | |
| Common Data Access URL | | | X |
| Remotely Sensed Land Cover Change | | | X |
| Strategy for Service Discovery | | | X |
| Geospatial Applications | | | |
| Land Cover Change | CSWG, | | |
| Map Viewer/Visualization | CSWG, TNM | Palanterra™ | |
| Meta Data Editor | CSWG | | |
| Map Viewer for Mobile Platform | TNM | | X |
| Coastal Communities | | | X |
| Tightening Mortgage Practices | | | X |
| Cities in Transition | | | X |

(TNM) *The National Map Customer Requirements: Findings from Interviews and Surveys, OFR 2009-1222, U.S. Department of the Interior, U.S. Geological Survey, December, 2009*

(CSWG) *Common Services Work Group Survey of Federal Agency Geospatial Requirements, Summary of Results, February, 2010*

(NGAC) *National Geospatial Advisory Committee, Summary of key decisions/ recommendations, November, 2009*

(LLR) *National Geospatial Advisory Committee Messaging Committee Lessons Learned and Recommendations*

Appendix B. Shared Infrastructure, June 2010

B.1. Definition

The Geospatial Platform shared infrastructure refers to joint development, operations, maintenance and/or other uses of the same IT components and investments by multiple Federal departments and agencies. Shared Infrastructure supports the hardware, networks and Platforms that common data, services and applications operate from, including portals.

A shared infrastructure for IT includes both physical and logical components that can be leveraged by multiple Federal agencies. The physical shared infrastructure includes (but is not limited to):

- Data centers and data repositories.
- Networks, including Internet and intranets.
- Host Platforms for applications, including portals and services.

Logical shared infrastructure includes (but is not limited to):

- Network routing services.
- Access control and security.

The foundation for defining a shared infrastructure is the Federal Geospatial Segment Architecture (FGSA), which is based on the Federal Segment Architecture Methodology (FSAM). The FGSA describes the overall governing architecture for Federal geospatial investments, including business, technology, data, services and performance reference models. The Geospatial Platform shared infrastructure identifies those components of the FGSA that can be leveraged, reused and shared by the geospatial missions of agencies and partners.

B.2. Objective/Purpose

The objective of a shared infrastructure for the Geospatial Platform is to reduce costs while improving efficiency for geospatial information sharing. A shared infrastructure allows multiple agencies and partners to leverage common investments. In addition to reducing costs, a shared infrastructure can simplify access control requirements while improving overall security by reducing the number of physical components needed to perform operations. Other benefits of shared infrastructure include enhancement of collaboration and services. The future state of shared infrastructure would support federated databases, which allow partners to contribute their data to larger, shared repositories where many users are able to combine and leverage them. These federated databases, for example, would create a “quilt” of parcel data for the Nation by combining content from State and local partners. Key drivers for this

activity are identified in the Fiscal Year 2011 Budget of the United States Government, Analytical Perspectives, Section 19, Information Technology (page 321). These drivers include:

- Modernizing Federal and national IT infrastructure to be efficient and effective.
 - Centralize provisioning of IT services for non-military agencies.
 - Implement cloud computing.
 - Consolidate data centers.
- Transparency and Participation in Governance.
 - Data.gov.
 - Broadband access for Americans.
- Security and Privacy.
 - Securing government systems.
 - Identity management.
 - Protecting privacy.

In addition, the Geospatial Platform will support the President's Information Sharing Environment (ISE). The goal of the ISE is to assure that all authorized users can access all required data and information at any time from any authorized device.

B.3. Approach/Strategies

The Geospatial Platform will leverage common services, guidelines and strategies developed under the auspices of the Federal Chief Information Officers (CIO) Council and OMB. These include the Federal Identify Credentialing and Access Management (FICAM) Roadmap, the Sensitive But Unclassified/Controlled But Unclassified Information (SBU/CUI) Interoperability Initiative Segment Architecture and activities to consolidate data centers across the government enterprise. Whenever possible, the Geospatial Platform will rely on shared Federal IT infrastructure to assure it is a part of the Federal mainstream IT.

Geospatial data developed by the government have broad use across a wide, interdisciplinary range of missions and needs. To be effective the Geospatial Platform needs to recognize different needs and capabilities between customer segments, in particular, how data, services and applications are to be used. For many customers, simple view only capabilities may be required, in other cases, download of very large datasets and access to high level computing power may be required. The Geospatial Platform shared infrastructure will address key customer segments.

B.4. Priorities

The shared infrastructure of the Geospatial Platform will develop a shared infrastructure that:

- Is robust and reliable to host and deliver common data, services and applications.
- Provides geographic information system (GIS) capability for agencies that need geospatial tools but do not have access to them.
- Provides role-based access; for example, implementing FICAM guidance for access control, including the PIV-I standards for non-Federal users, is a key priority to assure data security and support the SBU/CUI information sharing environment.
- Maximizes the value of cloud computing. The Cloud Computing Model is a major component of the Federal Government's effort to achieve efficient and effective IT. The FGDC is currently working with the Federal CIO Council to develop guidance for the implementation of cloud computing.
- Supports GIS capability for offices that have integrated tools in a collaborative inter-agency mission.

- Supports the direction of the broader government IT community, including but not limited to Data.gov, USA Spending.gov, Broadband for Americans, identity management, data center consolidation and National Information Exchange Model (NIEM).

The Geospatial Platform will develop an understanding of “as-is” geospatial infrastructure and user needs to help define “to-be” infrastructure.

Appendix C. Segment Architecture, June 2010

C.1. Definition

Segment Architecture, as promoted through the Federal Segment Architecture Methodology (FSAM) is a process-driven approach to designing and deploying large government computing components in the context of a broader agency or government enterprise architecture. The Geospatial Platform requires such a methodology to design an “actionable” solution architecture that can be readily deployed by agencies that collaborate on geospatial data, services and applications. The draft Geospatial Segment Architecture Guidance⁸ document uses the FSAM to explore the as-is and to-be Federal environment and identifies opportunities for the Geospatial Platform. The draft Geospatial Segment Architecture Guidance will serve as the key resource for guiding the Geospatial Platform segment architecture.

The Geospatial Platform will coordinate the architectural ‘blueprint’ for a common geospatial data environment defined by business requirements. The architecture documents common business requirements that drive the identification of service and data resources of the Geospatial Platform to support mission needs of many agencies and stakeholders. The resulting solution architecture should be implemented by agencies using common, secure, interoperable and scalable open-standards based technologies.

The description and documentation of the Geospatial Platform’s Segment Architecture is intended for three different audiences, Executives, Architects and Stakeholders. The Roadmap provides Federal executives and decision makers with a common understanding of the Geospatial Platform architecture goals and principles and outlines initial activities to begin to transition to the target environment. Future documents are envisioned to leverage and apply the resources of the Federal Enterprise Architecture (FEA). The Geospatial Profile and the draft Geospatial Segment Architecture Guidance document the needs of agency architects and stakeholder agencies, respectively, in response to Geospatial Platform requirements.

C.2. Objective/Purpose

The Geospatial Platform requires a segment architecture activity to identify solution engineering requirements from Geospatial Platform requirements into a consolidated, interoperable and open standards-based technical architecture, based upon the Foundational Principles listed below. The target technical architecture will be adopted and deployed by providers for the discovery and exchange of standards-based geospatial data, services and applications.

⁸ The draft Geospatial Segment Architecture Guidance is available at: <http://www.fgdc.gov/geospatial-lob>
Geospatial Platform Modernization Roadmap v4 Final - March 2011

C.3. Approach/Strategies

Foundational Principles that form the basis for an efficient and cost-effective Geospatial Platform architecture include:

- Agreement on a common architectural style (i.e., a service-oriented architecture).
- Support for open standards for data content, format, protocol and service accessibility.
- Commitment to a design process that can be readily deployed by agencies as a solution architecture, while allowing partners to choose their own development methodology.
- Transparency of design, deployment and operation.

The Geospatial Platform segment architecture common engineering solution approach will:

- Facilitate the design, development and deployment of an effective and efficient Geospatial Platform segment architecture.
- Document common business process, service component, technology (standards), and data and performance requirements.
- Enable the execution of a practical and operational community geospatial segment architecture based on common principles as solution architectures within broader agency architectures.

The target Geospatial Platform architecture will be established as a services-oriented architecture (SOA) based on fundamentals of business focus and alignment using common, secure, interoperable and scalable open-standards based technologies. It will be designed to provide common geospatial capabilities for data, services, applications and infrastructure in support of stakeholder missions, business needs and citizen access. Using the Geospatial Segment Architecture Guidance document, the Geospatial Platform architecture will address each of the five reference models of the Federal Enterprise Architecture – Business, Data, Technical, Service Component and Performance – through application of the FSAM. When applied, these common engineering solutions provide efficiencies and economies within the respective agencies as well as contribute to the federated Geospatial Platform.

Segment Architecture activities shall support relevant current Federal priorities including accountability and transparency, Data.gov and the ISE, in the context of FEA guidance and methodologies.

Figure C.1 provides a logical view of the anticipated Geospatial Platform architecture development process. Geospatial Platform requirements are processed and integrated following the methodology presented in the Geospatial Segment Architecture Guidance. This process will help develop documented consensus on the common business processes, data and service requirements relevant to supporting the full Geospatial Platform.

An architectural blueprint can then be developed that formalizes the agreements on standardized data, services, applications and process definition that can be translated into tangible service offerings (solution architectures). The proposed architecture exists within a broader multi-tier context. The Platform focus is on the Platform tier, which is underpinned by standardized infrastructure tier capabilities (network, storage, security, provisioning) and is accessed by clients in the application tier. It is anticipated that the Geospatial Platform may define suites of standardized operations (shown by the purple horizontal line) that bundle specific requirements for infrastructure, data, process and services into service patterns that support shared business processes and can be deployed or procured in multiple locations, as needed. Examples of this may include geocoding services, catalog/registry services, visualization and data access services.

One of the core principles of a coordinated geospatial architecture, formalized in the FEA and FSAM, is the identification and adoption of relevant technical geospatial standards within the community. Specifying common standards for adoption within the Platform context include these benefits:

- Identified standards are developed by voluntary consensus standards organizations with a commitment to maintenance and review;
- Standards organization membership and requirements reflect the interests of the government in geospatial interoperability;
- Adoption of standards by industry and government increases the availability of deployed, compatible, software solutions; and
- Adoption of common standards facilitates immediate geospatial data exchange between agencies and between the government and its stakeholders.

Standards are defined in the FEA Geospatial Profile and Architecture Guidance Document annexes to specify documentation of data content and structure, metadata, format, and web service protocols for maximum interoperability within the Platform environment.

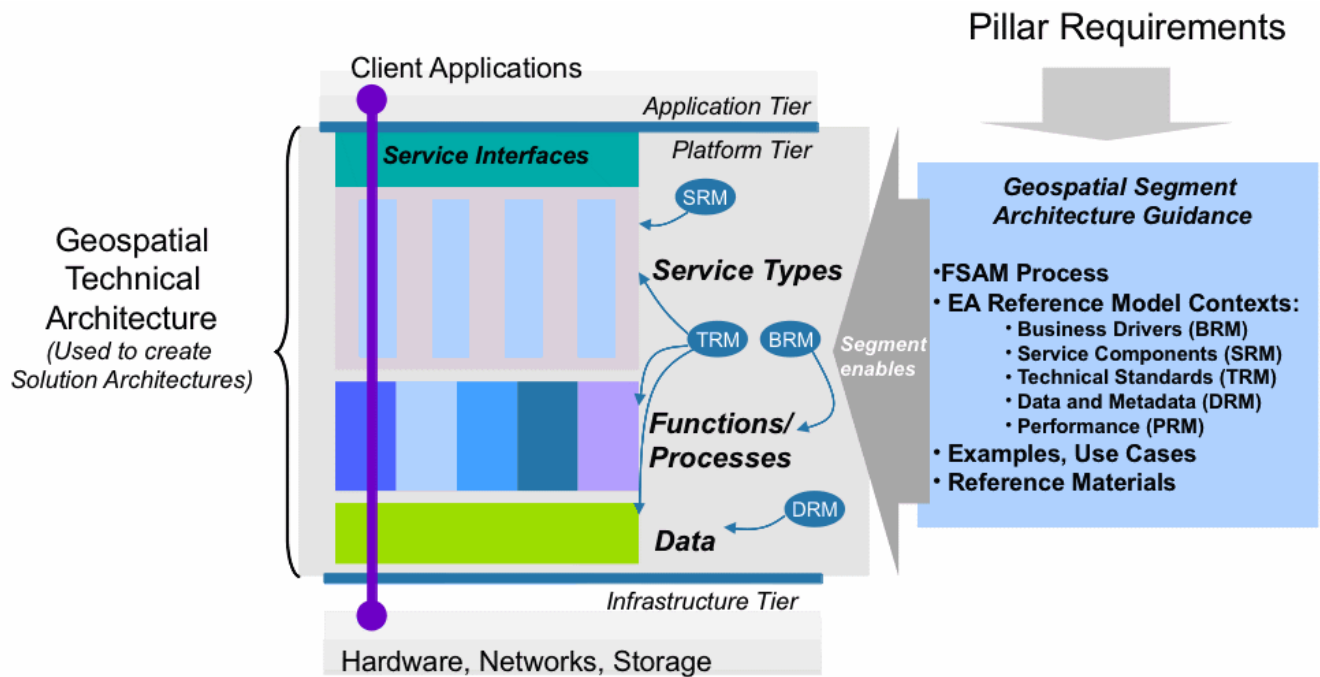


Figure C.1. Geospatial Platform conceptual architecture and role of FEA

C.4. Priorities

The Geospatial Segment Architecture Guidance provides a context, or rubric, through which all Geospatial Platform requirements can be coordinated, resulting in a notional architecture that can be readily deployed by agencies. Potential activities/opportunities that are central to the shared architecture include:

- Formal endorsement and approval of the Geospatial Segment Architecture Guidance.
- Requirements-based identification of common, high priority geospatial business activities and processes (i.e., data, services and applications) for inclusion and/or development of the Geospatial Platform Initial Operating Capability.
- Review and update the as-is technical architecture defined by the Geospatial Segment Architecture Guidance and develop a common to-be federated infrastructure based on a SOA approach.

- Review and update the necessary geospatial open standards from the Geospatial Segment Architecture Guidance reference annexes that are required to deploy the Geospatial Platform.
- Assure that the technical architecture design supports deployment of geospatial data, services and applications using a cloud computing model as a major part of the strategy to achieve efficient and effective geospatial IT.
- Develop consensus and publish formal data content models for national geospatial data assets, including preparation of a data dictionary, data types and standard metadata to promote data acquisition, publication, conversion and use.
- Determine how the quality of data, service, or application, as defined by the customer, can be represented and used within the technical architecture.
- Document requirements for Data.gov to support registration, discovery, evaluation and visualization of geospatial data in the context of operational needs of the Geospatial Platform.
- Address requirements of Geospatial Platform data, services and applications with respect to Federated Identity, Credential and Access Management (FICAM).
- Accommodate architectural support for common applications compatible with the multi-agency Common Code Base Initiative - i.e., migrate Palanterra-based geospatial client/service functionality to a services-based approach to foster efficiency and reuse.
- Drive and anticipate geospatial capabilities in Data.gov to include geospatial and temporal search, index and cataloguing capabilities currently in Geodata.gov but required for the common USASearch.gov environment.
- Drive and anticipate augmentation of Data.gov capabilities to support standards-based service and applications documentation and discovery coupled with registered and approved geospatial data resources.
- Support development of an IT Dashboard (e.g., <http://it.usaspending.gov>) for alignment and reporting of cost/schedule/performance as part of the Geospatial Platform program management oversight and transparency to the geospatial community.
- Support quantification of stakeholder business demand for Geospatial Platform data, services and applications through monitoring the use of Geospatial Platform-affiliated data, services and applications.

Appendix D. Governance, June 2010

D.1. Definition

The governance structure for the Geospatial Platform is the process by which Geospatial Platform stakeholders, including customers, are afforded an opportunity to shape its structure, functions and capabilities. This governance structure includes people, policies and operational processes.

D.2. Objective/Purpose

The goal of creating a defined governance structure is to provide a standardized means to increase value to the national geospatial community, the programs across all levels of government and ultimately the American citizens who are customers. The governance structure will involve a phased implementation approach, which will parallel phased implementation of the Geospatial Platform itself, designed to eventually engage all stakeholders and fulfill the overarching vision of the Platform. Over time, the number and variety of stakeholders involved in governance will grow as new phases are pursued. Each phase will address a specific capability with a unique set of challenges and may have Business Models that vary across phases. Over time, the phases will lead to a modular approach to fully building out the overall vision for the Geospatial Platform, which will have the broadest practical governance structure.

There are two primary objectives in creating the Platform governance structure. The first objective is to outline the requirements to successfully implement the governance of the Geospatial Platform in a coherent and sustainable way. After the requirements for successful governance are identified, the primary objective will shift to operationalizing the approach by engaging Federal, State, regional, local and Tribal government stakeholders. To satisfy these objectives, a clearly defined governance approach and roles for implementation must be developed so that stakeholder groups understand the governance structure and their roles and responsibilities within the structure at each phase of its development.

The governance structure includes drivers that are crucial to developing the Geospatial Platform:

- Improving the framework to address the requirements of Federal, State, regional, local and Tribal agencies.
- Prioritizing investments based on the most widely shared and most significant business needs of government.
- Enhancing interagency cooperation.
- Enhancing intergovernmental cooperation.
- Saving taxpayers money through more effective leveraging of intergovernmental activity.
- Increasing transparency and accountability.
- Creating an integrated place-based framework for addressing public policy challenges.
- Acknowledging and aligning varying roles, capabilities and interests of parties with a stake in the Geospatial Platform.

- Building and maintaining credibility, trust and relevance amongst non-Federal stakeholders.

D.3. Approach/Strategies

Scope of Governance: Platform implementation and sustainment

The first objective of the governance structure will be to outline the necessary governance requirements to successfully implement the Geospatial Platform. To that end, it will be important to identify and define components where governance applies. The governance structure will ensure that aspects of Geospatial Platform work requiring governance activities are clearly defined and that the proper governance structures are in place to ensure success.

One aspect of effective governance will be to define the “rules of engagement” for the Geospatial Platform. As all participants and stakeholders may be both partners and customers, ensuring compliance is critical to Platform success.

Topics requiring compliance assurance may include:

- Data Content Standards.
- Metadata Standard.
- OMB Circular A-16 and A-16 Supplemental Guidance (Federal agencies only).
- Expectations with respect to data sharing/reciprocity.
- Expectations with respect to donating expertise within the community to achieve common goals.
- Standards for cyber security/access protocols/credentialing of Platform users to protect legitimate users.
- Managing relations with other NSDIs.
- Division of labor with respect to managing operations and maintenance of the Geospatial Platform.

While disclosure of non-compliance may often be sufficient to induce the desired behavior, the governance structure will need to define the consequences of non-compliance and the means for ensuring commitments. As such, it will be necessary to develop mechanisms to ensure that partners adhere to the agreed upon standards and “rules of engagement” included in negotiated contractual, license or service-level agreements.

To maximize effectiveness, the Geospatial Platform will leverage current interagency and intergovernmental initiatives such as Data.gov, the Geodata.gov portal and Geo LoB products and processes. Identifying and evaluating best practices and lessons learned from these initiatives will help to inform and strengthen governance of the Geospatial Platform.

After the initial governance requirements for implementing the Geospatial Platform are outlined, the primary focus will be to create a governance framework to effectively define and engage all members of the stakeholder community. This framework will help to foster more effective intergovernmental geospatial priority setting. The communities of interest to consider include:

- Federal agencies.
- State agencies.
- Regional government organizations.
- Local agencies.
- Tribal governments.
- Academia/Non-profit organizations.
- Private sector organizations.

As with other components of the governance structure, this process will unfold through a phased approach. The ultimate vision is to be a national capability with shared governance. Suggested ways to engage non-Federal entities include:

- Establish an interim Intergovernmental Subcommittee with diverse participation/representation until a full intergovernmental governance approach is developed.
- For each phase, identify means to engage specific non-Federal communities of interest with a clear stake in the phase in question. For instance, the first phase is likely to involve the current Gulf of Mexico oil spill, so the Geospatial Platform could work to engage coastal states in the Gulf of Mexico, academics, etc.
- Create appropriate means to gather customer requirements for each phase that will include targeted non-Federal participation. This could potentially be coordinated through the National Geospatial Advisory Committee (NGAC).

Outcomes include:

- Better public policy decisions.
- Faster public policy decisions.
- Better integrated public policy decisions.
- More efficient use of government funds.

Implementation of Governance: Implementation strategy

A phased governance approach will be developed and implemented to build toward the Geospatial Platform's overarching vision. Each phase will contribute to reaching the overarching vision like independently created modules that nonetheless fit together because each was conceived with the broader vision in mind. Each phase may address a different problem with a unique set of challenges so that different Business Models could be developed and deployed to address the problem. Eventually, enough different problems will be identified and means to address those problems will be developed to lead toward a unified intergovernmental governance solution to manage the realized overarching vision. Generally, each phase should be progressively more ambitious so that lessons learned from previous phases can inform the risk management approaches in the next phase. The end goal is to incrementally develop a Platform capability that adds value in a wide variety of circumstances. Generally, each phase would:

- Define an offering that produces or delivers something to solve a specified business problem.
- Define the business institution that actually produces and manages the offering.
- Define the customers of the offering.
- Provide for internal management of the business institution to comply with applicable Federal IT, acquisition, performance, human resources and financial policies and reporting.
- Comply with the intent of the President's 2011 Budget language.

Outcomes include:

- Overarching vision for the creation of the Geospatial Platform.
- Phased approach to reach the vision for the Geospatial Platform.

Governance Approach: Governance strategy principles

Because the Geospatial Platform describes new processes for interactions within the community, a clearly defined a strategy for these interactions is an important component of success. This section discusses concepts that are important to follow in creating the Geospatial Platform governance structure, including specific roles and responsibilities.

First, the Geospatial Platform will operate under the federated approach. While this approach necessarily respects agency-specific statutory authorities, it nonetheless sets expectations that agencies will exercise their discretion within

statutory parameters consistent with the rules of engagement for the Platform, so as to increase the overall efficiency and effectiveness of the Federal Government. It also allows for joint funding to meet operational needs. An example of this approach is the Alaska Elevation data effort, which is a joint effort of the Department of the Interior (U.S. Geological Survey and Bureau of Land Management), Department of Defense (U.S. Northern Command and National Geospatial-Intelligence Agency), U.S. Department of Agriculture, National Oceanic and Atmospheric Administration and the State of Alaska.

Second, the Geospatial Platform, initially, will capitalize on existing geospatial institutions and clearly define the future roles of existing governance bodies. The primary focus areas of Geospatial Platform governance will be to address geospatial policy, operation and coordination with Federal and non-Federal stakeholders. To those ends, the FGDC Steering Committee will serve as the primary policy body. The FGDC Executive Committee will serve as the senior management operational and coordination authority for that policy body. The Intergovernmental Body (Section 5) will serve as the primary external advisory body to establish a mechanism for non-Federal intergovernmental coordination.

Third, the governance strategy must be “workable” and allow for performance-based evaluation (Section 5.6) of geospatial production against formal requirements. The Geospatial Platform will identify the criteria for performance-based evaluation. Having performance-based evaluation criteria compared to an established baseline allows for more informed identification of needs and performance for all managers within the community.

Outcomes include:

- Clear understanding of how each agency relates to the governance structure of the Geospatial Platform.
- Explicit expectations of each agency with respect to compliance with Platform rules of engagement.
- Federal, State, regional, local, and Tribal governments are identified and satisfied to the extent possible.
- Degree of compliance with intent of the President’s 2011 Budget language to address the requirements of State, local, and Tribal governments.

Governance Roles: Entities

A key component of the Geospatial Platform governance structure will be clearly defined roles and responsibilities for stakeholder groups. The Geospatial Platform represents a new business institution, which will require the dedication of full-time support staff, as well as other forms of contribution. This section identifies geospatial communities that will facilitate the updated Geospatial Platform governance structure approaches and strategies.

FGDC Steering Committee/Executive Committee

The FGDC Steering Committee will serve as the primary policy body. The FGDC Executive Committee will serve as the senior management operational and coordination authority for that policy body.

FGDC Coordination Group

The FGDC Coordination Group will help shape the requirements for the Geospatial Platform based on agency-specific needs and priorities and will assess technical feasibility of proposed offerings. The FGDC Coordination Group will be the primary operational representatives to ensure their agencies are fulfilling their roles.

Geospatial Platform Managing Partner

Because the Geospatial Platform represents a new business institution, new capabilities will be required to support the new institution. A new body, the Geospatial Platform Managing Partner, will implement direction, recommend and/or assign resources and create and track performance metrics for upward reporting for the Platform. The focus of the Geospatial Platform Managing Partner needs to be aligned with the mission and vision of the Geospatial Platform as

described in the Roadmap and be answerable to the FGDC Steering Committee, its Executive Committee and ultimately OMB.

Intergovernmental Subcommittee

The to-be state of the Geospatial Platform is a national effort with participation from State, regional, local, Tribal and non-government stakeholders. Therefore, the Geospatial Platform will quickly establish an intergovernmental subcommittee with representation from all stakeholder groups. This is an interim solution, and will be replaced by an appropriate end-state entity as a framework for regular and ongoing coordination with these external partners and stakeholders is developed.

Outcomes include:

- Clear policy or charters for each entity involved in governance of the Platform.
- No ambiguity or misunderstanding of the roles and responsibilities for each stakeholder community.

D.4. Priorities

The first priority of the governance structure will be to establish the requirements to implement the Geospatial Platform. After the requirements for successful governance are outlined, the primary objective will shift to working to fully engage Federal, State, regional, local and Tribal agencies and with private and non-profit stakeholders as appropriate. The priorities for the governance structure are:

- **Platform implementation and sustainment**

The initial priority will be to establish the requirements necessary to implement the Geospatial Platform. In order to do this, the overall vision for the Platform needs to be developed. Once the overall vision for the Platform is developed, the phases that will build into that vision need to be developed. This will also entail defining in advance how the different phases will eventually integrate with one another before they are built.

After the development of the initial vision for the Geospatial Platform and implementation plan, the focus will shift to other necessary governance infrastructure for implementation such as identifying “touch-points” with other Platform Pillars, defining the rules of engagement, identifying means for leveraging intergovernmental initiatives and defining a funding model for the Platform.

- **Federal and non-Federal involvement in the Platform**

Once relevant parties have defined initial requirements to implement the Geospatial Platform, the second priority will be to organize Federal partners (through the FGDC Steering Committee and Executive Committee) and non-Federal partners (which the FGDC Steering Committee would facilitate through NGAC, National States Geographic Information Council (NSGIC), National Association of Counties (NACO), etc.).

After organizing stakeholders, exploring options for an intergovernmental needs assessment will be the next priority. To carry out the needs assessment, the governance structure must establish common terms and definitions and enforce consistent adherence to those terms. Only with such intergovernmental consistency will a survey of the intergovernmental geospatial community be useful. A qualitative assessment in FY 2011 using focus groups or doing an analysis of the data available through the 50 States Initiative will provide some initial information. After the definitions of a more robust set of terms are established, a quantitative survey would be conducted in FY 2012 and regularly maintained thereafter. In order to define the Federal agency needs, it may be necessary to modify OMB Circular A-11 so that it is for the first time possible to track Federal geospatial financial obligations through the object class structure in Federal agency financial systems.

Outcomes include:

- Organization of Federal partners.
- Engagement of non-Federal partners.
- Integration of Geospatial Platform priorities into FY 2012 budget cycle.
- Improved understanding of intergovernmental needs.

Appendix E. Portfolio Management, June 2010

E.1. Definition

Definition

Geospatial Platform portfolio management is defined as the set of processes used to prioritize and select assets, and allocate resources of the Geospatial Platform. This process also supports management and performance evaluation of geospatial assets to which resources are applied to help ensure the appropriate combination of assets are available to best accomplish organizational goals and objectives of customers. The Geospatial Platform portfolio management process supports investment decisions for four categories of geospatial assets: data, services, applications and infrastructure.

Scope

The Geospatial Platform portfolio consists of geospatial assets that are deemed “significant/critical/necessary” for meeting crosscutting (i.e., common mission needs) of the Federal Government or its State, Tribal and local partners and stakeholders. Assets are selected (or rejected) for inclusion in the Geospatial Platform portfolio through a portfolio management process that includes the application of selection criteria to assess how the assets meet common requirements and business needs across customers, and how well the assets support the strategic goals and objectives of the Geospatial Platform.

E.2. Objective/Purpose

The overarching objective for the Geospatial Platform portfolio management process is to maximize enterprise value by investing in the right assets at the right time and thus obtain the best possible strategic impact of each investment.

Geospatial Platform portfolio management will support senior level decision making by:

- Guiding the priority setting, selection, and balancing of portfolio assets to ensure that the overall investments align with the strategic goals and highest organizational priorities of the enterprise and partners.
- Allowing timely assessments of asset selection, prioritization, and performance, as well as the identification of any portfolio-level issues and/or risks that might impact performance.
- Enabling transparent, timely and consistent communications to decision makers and the public on the progress for completing the Platform, any changes to the Platform, and impacts of these on the Geospatial Platform portfolio.

Specific objectives for the portfolio management process are:

- **Objective 1:** Adopt a portfolio management framework that enables the Managing Partner to select assets that will best support projected Geospatial Platform needs, capabilities, and projected outcomes and disinvest in assets that do not support the desired outcomes for the Geospatial Platform.
- **Objective 2:** Identify the most important crosscutting strategic endeavors and outcomes for the Geospatial Platform.
- **Objective 3:** Identify and adopt a series of best practices and tools for each step of the portfolio management process.
- **Objective 4:** Discover and adopt appropriate measures to control, monitor, and evaluate performance of existing and/or planned assets within the Geospatial Platform portfolio.
- **Objective 5:** Determine the most appropriate maturity, investment and readiness models to use as part of the Geospatial Platform portfolio management process.
- **Objective 6:** Acquire/adapt a portfolio management system for enterprise level management and as a common service available to individual assets for tracking.
- **Objective 7:** Apply a portfolio management process framework so an initial Geospatial Platform portfolio is chosen and subsequently controlled and monitored for performance.
- **Objective 8:** Evolve the content of the Geospatial Platform portfolio over time as available asset maturity increases and adjusts to strategic goals and events necessitating change.

Portfolio Management Drivers

Drivers for developing the Geospatial Platform portfolio management process include:

- Improving management of Geospatial Platform capabilities and assets to meet the business needs of the customers, including using resources more efficiently in an era of decreasing budgets across all levels of government.
- Providing access to critical geospatial data, services and applications currently inaccessible or difficult to obtain.
- Responding more promptly and accurately to inquiries made to Federal agencies on the scope, cost and completion progress for completing the NSDI.
- Incorporating portfolio and performance management approaches to leverage resources and better support outcomes for mission-based goals, transparency and accountability.
- Ensuring compliance with the transparency, open government and effective and efficient information sharing initiatives.

E.3. Approach/Strategies

Establishing a portfolio management process gives the Geospatial Platform a clear structure for transforming current business priorities into a portfolio of assets needed to support mission execution. The Geospatial Platform portfolio management process will adhere to best practices and will utilize management tools that can be adapted to reflect the organizational governance of the Geospatial Platform. In addition, the portfolio management process will include a geospatial investment review process through which the FGDC Steering Committee considers existing and planned assets while assessing future initiatives and changing business drivers.

All portfolio asset investments will follow a lifecycle management approach (for data, view the A-16 Supplemental Guidance; for services, applications and infrastructure, the OMB Circulars A-11 and A-130). Geospatial asset selection criteria are critical for effectively and efficiently identifying the components of the Geospatial Platform

portfolio and should be reflected in a lifecycle management framework from the inception of the Geospatial Platform.

In addition, best practices and associated decision tools will be established and adopted for each step of the portfolio management process and the lifecycle management approach. Geospatial Platform asset capability, maturity, readiness and performance measures will also be developed, reflecting the desired outcomes of OMB, Platform partners and customers and the FGDC Steering Committee.

To the greatest extent possible, Geospatial Platform portfolio management will utilize existing portfolio and lifecycle management frameworks, maturity models, best practices and tools, as well as dashboard and balanced scorecard approaches. Used in tandem with standard management approaches, these tools and analysis processes can help evaluate and manage the health of the Geospatial Platform portfolio assets. Examples of existing standards for project, program and portfolio management as well as best practices, tools, standard operating procedures and IT investment dashboards that may be adopted and/or adapted for use in the portfolio management include:

- Requirements within Exhibit 300/Capital Planning and Investment Control (CPIC) for Select, Monitor and Evaluate.
- OMB Circulars A-16, A-11, A-130.
- Processes outlined within the A-16 Supplemental Guidance.
- The Performance Institute Standard for Portfolio Management (ANSI/PMI 08-003-2008).
- Information Technology Infrastructure Library (ITIL).
- The U.S. Government Accountability Office (GAO) IT investment management maturity model.

E.4. Priorities

The portfolio management priorities include:

- Formal endorsement and approval of the A-16 Supplemental Guidance.
- Initial inventory and selection of geospatial data, services and applications (See Common Data, Services and Applications priorities).
- Acceptance, adoption and implementation of A-16 Supplemental Guidance lifecycle management process and reporting for National Geospatial Data Assets (NGDA).
- Complete proposals for services, applications and infrastructure portfolio management processes and gain FGDC Steering Committee concurrence (see Common Data, Services and Applications priorities).
- Improve the alignment of the FGDC cross-agency investments to Administration priorities and Federal agency high value mission objectives.
- Research and consider the American National Standards Institute (ANSI) Standard for Portfolio Management as the Geospatial Platform framework for portfolio management governance.
- Support Administration priorities for openness, transparency and participatory government.
- Complete readiness assessment of various components so that the Geospatial Platform optimizes investments.

Appendix F. Federal Geographic Data Committee Structure and Roles

F.1. Federal Geographic Data Committee (FGDC) and Work Group Structure

The Federal Geographic Data Committee (FGDC) is an organized structure of Federal geospatial professionals and constituents that provide executive, managerial, and advisory direction and oversight for geospatial decisions and initiatives across the Federal Government. In accordance with OMB Circular A-16, the FGDC is chaired by the Secretary of the Department of the Interior with the Deputy Director for Management, OMB as Vice-Chair. The FGDC's structure is represented in Figure F.1.

The acronym *FGDC* is often used interchangeably to refer to the Steering Committee; the Office of the Secretariat (OS); or the committee structure as a whole, causing confusion. The Federal Geographic Data Committee is the Steering Committee, which is made up of senior Federal agency officials, and directs, approves, and oversees the activities of all the supporting groups, subcommittees, and work groups. The FGDC OS is an office hosted in the U.S. Geological Survey that provides staff support for myriad FGDC activities and initiatives, and fulfills a number of key supporting roles.

Steering Committee

The FGDC is governed by a **Steering Committee**, which is the policy-level interagency group whose central focus is to provide executive leadership for the coordination of Federal geospatial activities between, among, and within agencies by establishing policy and providing guidance and direction to the member agencies. The Steering Committee is responsible for overseeing OMB Circular A-16 related activities and the implementation of the National Spatial Data Infrastructure (NSDI). The FGDC Chair and Vice-Chair lead this committee, which is made up of Senior Agency Officials for Geospatial Information (SAOGIs) and has representatives from Federal organizations, including the Executive Office of the President and Cabinet-level and independent Federal agencies.

Executive Committee

The FGDC **Executive Committee** is a subset of the Steering Committee and provides advice and guidance to the FGDC Chair and the Vice Chair on major Federal geospatial priorities and initiatives. The FGDC Chair and Vice-Chair lead this committee, which has representation from OMB and the seven Federal agencies with the largest investments in geospatial technologies.

Coordination Group

The FGDC **Coordination Group** provides advice on the day-to-day business of the FGDC to facilitate interagency coordination and implementation of the NSDI at the operational level. The Coordination Group oversees and

provides the functional leadership for the FGDC subcommittees and working groups, as well as the Geospatial Line of Business (Geo LoB) Work Groups. The Coordination Group is Co-Chaired by the Executive Director of the FGDC Office of the Secretariat (FGDC OS), and an elected Federal member of the Coordination Group. Non-Federal collaborating partners participate in most of the Coordination Group meetings and work on subcommittees and work(ing) groups.

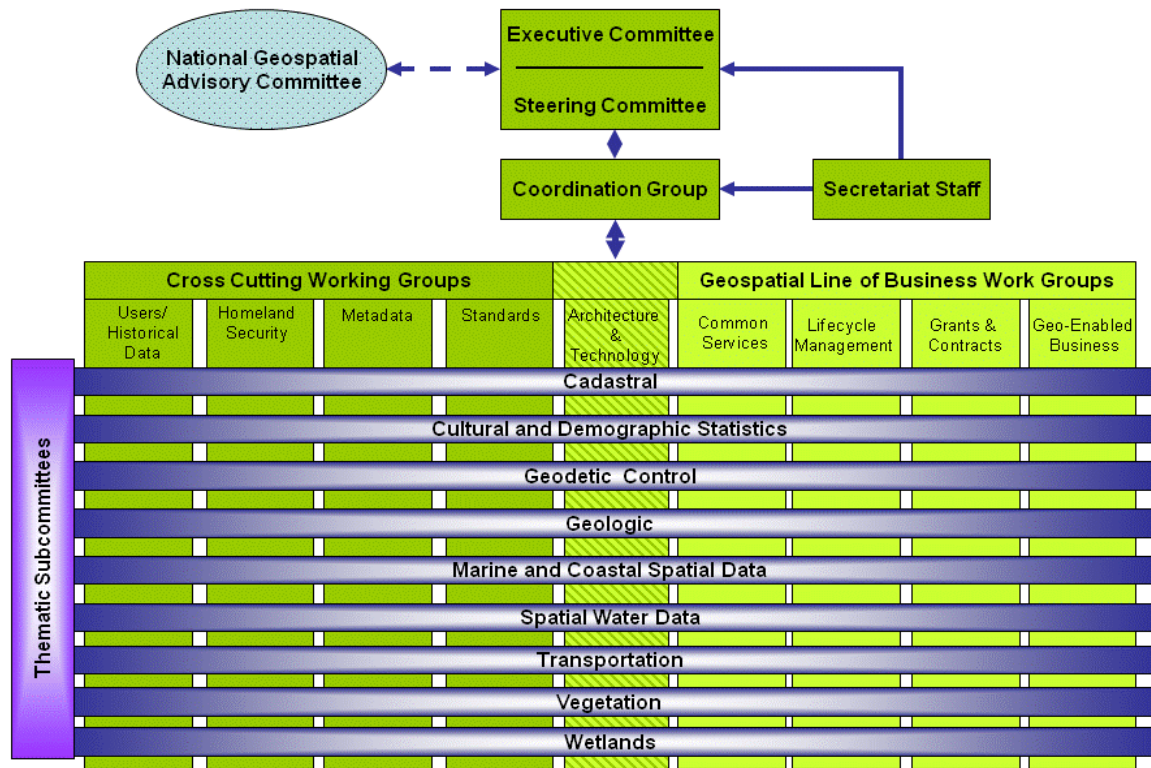


Figure F.1. FGDC Structure

FGDC Subcommittees, Working Groups, and Geospatial Line of Business Work Groups

The FGDC structure includes agency-led working groups and subcommittees and Geo LoB Work Groups.

FGDC Thematic Subcommittees - OMB Circular A-16 (2002) identifies 34 data themes of national significance and assigns responsibility for each of the data themes to one or more Federal agencies. FGDC thematic subcommittees are established for nine of the data themes to address data theme issues. Federal agencies have responsibility for, and lead, the thematic subcommittees.

FGDC Working Groups - FGDC working groups crosscut the subcommittees and focus on issues common to, or supporting the NSDI data themes, such as standards and common services.

Geospatial Line of Business Work Groups - The Geo LoB Work Groups were developed to support this electronic government (E-Gov) initiative. The FGDC has been assigned responsibility for these work groups by the OMB.

The Geo LoB Work Groups focus on cross-agency geospatial issues related to geospatial policy, business requirements, and business management processes.

National Geospatial Advisory Committee

The National Geospatial Advisory Committee (NGAC) was established under the Federal Advisory Committee Act (FACA) and is sponsored by the U.S. Department of the Interior. The NGAC is an advisory body that provides advice and recommendations on Federal geospatial policy and management issues and is a forum to convey views representative of partners in the geospatial community. NGAC membership includes representatives from 28 Government and nongovernmental organizations. The committee holds public forums to discuss geospatial activities and solicits input from State, Tribal, regional, and local governments, academic institutions, and the private sector.

FGDC Office of the Secretariat (FGDC OS)

The FGDC OS is an office located within the U.S. Geological Survey in the Department of the Interior. The FGDC OS staff provides support for all components of the FGDC structure. The FGDC OS is not a policy making body but rather supports the efforts of the Steering Committee, Executive Committee, and Coordination Group. The FGDC OS staff has numerous roles and performs numerous tasks in support of the FGDC. The FGDC OS:

- Acts as Managing Partner for the Geo LoB, E-government initiative, on behalf of DOI.
- Is the Designated Federal Official for the NGAC FACA committee.
- Provides staff support for the FGDC Chair, Vice-Chair, and their designees.
- Initiates, participates, and or leads FGDC committees, subcommittees and working groups.
- Drafts policies and procedures for consideration and approval by the Coordination Group, the Executive Committee, and the Steering Committee.
- Provides support to the NGAC and its subcommittees.
- Provides project management support for FGDC initiatives.
- Administers the FGDC standards program.
- Administers the NSDI Cooperative Agreements Program (CAP).
- Administers the FGDC International Spatial Data Infrastructure program.
- Manages the NSDI training and outreach program.
- Maintains the FGDC website and membership lists.
- Manages all administrative requirements associated with scheduling and conducting meetings.
- Undertakes staff analysis, technical development, and other activities on behalf of the Coordination Group.

Collaborating Partners

The FGDC solicits the involvement of public interest groups who participate within the committee structure to ensure that their needs are included in the developing NSDI. These collaborating partners include State, Tribal, and local governments; academic institutions; and a broad array of private sector geographic, statistical, demographic, and other business information providers and users. The NSDI strives to build upon local data wherever possible. Collaborating partnerships are open to public, private, and nonprofit organizations whose missions are complementary to the mission of the FGDC.