Building the Business Case for the
Geospatial Platform
The Value Proposition

November 1, 2011

The Geospatial Platform

Federal Geographic Data Committee

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Introduction

Government, industry, and individual citizens increasingly rely on information linked to location for planning, investment, and management activities. The ability to display information through interactive maps helps to communicate complex ideas more clearly and supports informed decision making. Because geospatial information involves a significant investment of resources, many government agencies are coordinating their efforts to reduce costs, improve the quality of services, and increase efficiency.

The geospatial community is jointly developing the Geospatial Platform to promote improved coordination and more effective use of geospatial information. The Geospatial Platform will promote sharing across multiple levels of government and with partners in the private sector to provide better access to geospatial data, services, applications, and infrastructure. The partner agencies of the Federal Geographic Data Committee (FGDC) are implementing Version 1 of the Geospatial Platform, which will provide an initial demonstration of these capabilities. The Geospatial Platform will align with complementary efforts such as Data.gov and the Federal cloud computing initiative.

Under the basic premise, "build it once, use it many times," the Geospatial Platform will leverage current interagency coordination efforts and utilize best practices, new technologies, and open standards to provide more accessible data and services while realizing efficiencies through shared infrastructure and economies of scale. The Geospatial Platform will provide a focal point for access to trusted geospatial data, services, applications, and infrastructure. Most importantly, it will provide effective and timely information to decision makers.

> **The Importance of Location to Support Decision Making**
>
> **The Geospatial Platform will enable decision makers to:**
>
> - Put issues and events in context of location, the surrounding environment, and the people affected.
> - Understand complex issues and integrate multiple data elements through one map or view.
> - Recognize trends and relationships that might otherwise be missed.
> - Communicate clearly and effectively – a picture is worth 1,000 words.
> - Integrate disparate types of data (spreadsheets, financial data, monitoring results, etc.) from multiple organizations into quickly and easily understood formats.

This document conveys the **value proposition** for the Geospatial Platform. It describes the need for the Geospatial Platform, provides use cases demonstrating how the Geospatial Platform will support mission needs, and describes the benefits of the Geospatial Platform. The FGDC completed the *Modernization Roadmap for the Geospatial Platform* earlier this year, which serves as a blueprint for the design and development of the Geospatial Platform. These documents provide the foundation for the Geospatial Platform Version 1 website (being released 1st quarter of fiscal year 2012), and the more comprehensive **business plan** that will be developed over the next several months. Updates on progress will be posted at www.geoplatform.gov.

Geospatial Platform Value Proposition

The Challenge: The Right Information at the Right Time

Federal agencies and their partners collect and manage large amounts of geospatial data – but these data are often not easily found or accessible in useful forms. Sometimes the same data are collected, purchased, or hosted multiple times because the services and capabilities to discover, access, and use existing information are not readily available. In short, the best government data are not always organized and managed efficiently to facilitate effective decision making. The Geospatial Platform is being designed to provide the services and capabilities to solve these issues.

What is the Geospatial Platform?

The Geospatial Platform will be an **Internet-based capability providing shared and trusted geospatial data, services, and applications** for use **by government agencies and partners** to meet their mission needs and by the public.

What is the Purpose of the Geospatial Platform?

The Geospatial Platform will function as the service and delivery mechanism for the Federal portfolio of geospatial data, services, and applications, and as the integration point for the discovery, access, and joint use of Federal and non-Federal geospatial data and services.

What Will the Geospatial Platform Offer?

The Geospatial Platform will offer access to trusted geospatial data, services, and applications maintained in the Federal Geospatial Portfolio to support government agencies in meeting their mission objectives, and provide efficiencies and cost savings through shared infrastructure and enterprise solutions. The Geospatial Platform will provide:

> **A National Effort**
>
> **Data of the highest value, reliability, and accuracy are found at the agencies where they are created and managed, whether a Federal, State, Tribal, regional, local, or non-governmental organization. Providing timely and efficient discovery, access, and use of this data is the core mission of the Geospatial Platform.**

- A "one-stop shop" to deliver trusted, nationally consistent data and services.
- Tools for the centralized discovery, access, and use of data and services managed and maintained in multiple agencies, locations, and levels of government. Tools that enable data to be displayed in a visual context - a fundamental way in which humans process information.
- Problem-solving applications that are built once and reused many times across multiple Federal agencies and other organizations.

- Services based upon common, secure, and scalable open-standards, ensuring interoperability between components.
- A shared cloud computing infrastructure to cost-effectively host data and applications, and handle increased service demands quickly without additional hardware investments.
- Shared geospatial capabilities (hosting, services, analytical tools, etc.) for Federal agencies that do not have the financial or human resources to leverage geospatial tools to help them fulfill their mission requirements with little or no additional cost.
- The tools and infrastructure to enable decision makers to quickly and efficiently determine what geospatial data, services, and application assets can be brought to bear to address priorities, solve problems, and identify solutions.
- The opportunity to leverage complementary efforts such as Data.gov and the Federal cloud computing initiative.
- The means to implement the Federal Geospatial Portfolio Management processes described in the November 2010 Office of Management and Budget (OMB) *Circular A-16 Supplemental Guidance.*
- A set of user-friendly tools to support key initiatives such as the Administration's Open Government Initiative and Place-Based Policies Initiative.

Why is the Geospatial Platform Needed?

To Address Issues of National Importance: The Geospatial Platform can effectively support problem solving and policy formulation for the complex issues facing our Nation. Assessing and solving issues and events that affect the economy, employment, the environment, public health and welfare, security, and quality of life will benefit from the decision support tools, shared applications, visualization, and trusted geospatial data made available through the Geospatial Platform. Best practices from organizations across the United States can be brought to bear through the Geospatial Platform capabilities as agencies address local and national issues.

To Support Decision Making: Federal agencies and their partners invest significant resources in geospatial data, services, technology, and expertise to support their business operations. Data and information resources are among the most valuable assets any agency possesses. However, policymakers and executive managers alike observe that oftentimes the data and tools they need to make decisions are not readily available in useful or intuitive forms. This can result in delayed responses, lost opportunities, and higher costs. In addition, current practices have not yielded consistent data publishing methods, leading to gaps in the availability of current and relevant geospatial data for informed decision making.

To Meet Common Business Needs: Geospatial data and tools inform day-to-day Federal agency management activities, including administering grant programs, regulatory oversight, emergency

preparedness and response preparations, environmental impacts analysis, facilities and asset management, human resource management, financial and performance management, and others. Data and tools to support these cross-government functions frequently exist within multiple agencies, when they should be shared across agencies and levels of government, thereby saving money and promoting consistent approaches. The Geospatial Platform will provide a framework by which agencies can connect publically available data and resources, and it will leverage existing investments and avoid unnecessary costs associated with duplication of efforts.

How Will the Geospatial Platform Promote Effective Management of Federal Geospatial Assets?

OMB *Circular A-16 Supplemental Guidance* [1] directs Federal agencies to adopt a Portfolio Management approach for geospatial information and defines the Portfolio Management process. The Geospatial Platform will use Portfolio Management to ensure the quality of data assets delivered through the Geospatial Platform. Federal Geospatial Portfolio Management is the management and monitoring of geospatial data assets and investments to most effectively and efficiently utilize geospatial data to meet and address the business needs and priorities of the Nation. An effective portfolio is achieved by inventorying, evaluating, and monitoring assets, and aligning geospatial asset investments in order to ensure that the right data, for the right place, at the right time is part of the portfolio. The Geospatial Platform will function as the service and delivery mechanism for the Federal Geospatial Portfolio and provide the tools required to inventory, track, and report on its assets.

The Portfolio Management approach provides:

- An accurate and accountable inventory of Federal Geospatial Portfolio assets.
- Improved government accountability and transparency, by assessing existing assets and investments to reduce duplication.
- Improved data quality through lifecycle evaluations for content quality and fitness for use.
- Data management practices to ensure national data is high quality, dependable, consistent, and available to agencies.
- Increased return on existing geospatial investments by promoting the reuse of data, applications, and tools.

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[1] The complete text of OMB Circular A-16 Supplemental Guidance(2010)can be found at
http://www.whitehouse.gov/sites/default/files/omb/memoranda/2011/m11-03.pdf

Timeline / Next Steps

Geospatial Platform – High-Level Timeline

FY 2010/11
- Modernization Roadmap Development
- National Geospatial Advisory Committee Feedback
- Public Outreach

June-Oct. 2011
- Development of Value Proposition/Use Cases
- Roll-out of Platform Version 1
- Migration of Geodata.gov to Data.gov

FY 2012
- Development of Business Plan and Business Case/Funding Plan
- Continued development of Platform content and capabilities

Appendix A: Geospatial Platform Use Cases

Making data, tools, or services available through the Geospatial Platform provides new users to the Geospatial Platform, both those with geospatial expertise and novices, access to information and resources that can help them address similar issues within their own agencies, organizations, or communities. Agencies and organizations leveraging the open standards and cloud computing capabilities of the Geospatial Platform can manage data and create tools once and then readily share them with other users, thereby reducing redundancy and the costs associated with multiple parties collecting and managing the same data or developing the same tools and services. The following Use Cases demonstrate the potential value of the Geospatial Platform to support mission needs and will be the focus of Version 1 of the Geospatial Platform.

Use Case 1: Ensuring Food Safety (USDA)

Background

Each year approximately 76 million cases of acute foodborne illnesses occur in the United States, resulting in 325,000 hospitalizations and 5,000 deaths. It is estimated that the annual cost of all food-related illnesses is $1.4 trillion. Despite a substantial investment at the Federal and State levels, research from U.S. Department of Agriculture (USDA)'s Economic Research Service suggests that government mandated and regulated processes and performance standards account for only one-third of the reduction in the risk of contamination in the poultry, cattle, hog, and ground beef industries. The other two-thirds of risk reduction is the result of management actions, including decisions to invest in workers, infrastructure, food safety technologies, or organizational changes that improve safety, such as contractual agreements obligating suppliers to use safer processes and practices.

Addressing the Issue

Established in 1977, the Food Safety Inspection Service (FSIS) is tasked with inspecting meat and poultry products from the Animal and Plant Health Inspection Service (APHIS). As the USDA's public health agency, the essential mission of the FSIS is to ensure that the Nation's supply of meat, poultry, and egg products is safe, secure, and nutritious.

By sharing information and providing opportunities for people to exchange knowledge about food safety with the USDA and other Federal agency officials, the Federal Government has a unique opportunity to engage a wide range of stakeholders, including constituents, interest groups, and

State and local governments, on the pressing public policy issue of food safety. Increasing transparency surrounding inspections, plant performance, potential disease outbreaks, and the management of food risks will engender confidence and trust in agencies, and enable FSIS to carry out its mission in a more effective and collaborative manner, thus reducing the frequency of illnesses and deaths associated with contaminated food.

## Value Added by the Geospatial Platform

The Geospatial Platform enables direct public participation in preemptive and emergent responses to food safety events and/or risks. Early spatial sensors and agent engagement in a common environment provide improved conceptual modeling, problem visibility and definition, tracking, pattern identification, solutions management, and knowledge retention. Through managed access to agency data, search tools, integration tools, etc., public local knowledge can be leveraged with available Federal data and information to form precise coordinated responses.

Moreover, representatives from other agencies and disciplines may participate and integrate their insights, data, and service models in the development of cross-discipline solutions used to extend food safety workflows, data analytics, collaboration, and capabilities. For example, collaborative partnerships, alliances, and coalitions with Federal agencies such as the Food and Drug Administration, Centers for Disease Control, Health and Human Services, Indian Health Organization, Department of Homeland Security, Department of Education, and so forth, would have explicit returns on investment relative to coordination, reuse, and repurposing food safety best practices and data.

Visualizing geographically clustered gaps in compliance, using a dashboard tied to performance standards, can help agency officials and third parties identify facilities in need of advanced inspections. The visual geospatial display of plant inspection data, combined with social networking tools, can help agency officials more efficiently enforce performance standards in a number of ways. For example, FSIS can target its inspections more effectively with feedback about firm performance from stakeholders, such as plant employees, plant neighbors, customers, and suppliers. In addition, new data consumers can benefit from the Geospatial Platform's provisioning of reference metadata and linkages to service applications. As a result of the Geospatial Platform, the group of food safety data consumers will expand to include search engine providers, news media, academic institutions, research laboratories, local/municipal public safety organizations, non-governmental organizations, application developers, and a variety of combined services.

Geospatial Platform business solutions also serve to drive quantitative savings, such as reduced transaction costs, data and service hosting, application maintenance, and cost avoidance. A unified, community approach to geospatial servicing in support of food safety allows developers to create innovative applications for improved food safety while alleviating duplicative independent

development and operations expenses. Furthermore, responsibility for food safety data lifecycle management is distributed and federated in the Geospatial Platform environment where ownership and data quality can be managed at the source, thereby ensuring elimination of rework, errors, and other costly data management issues.
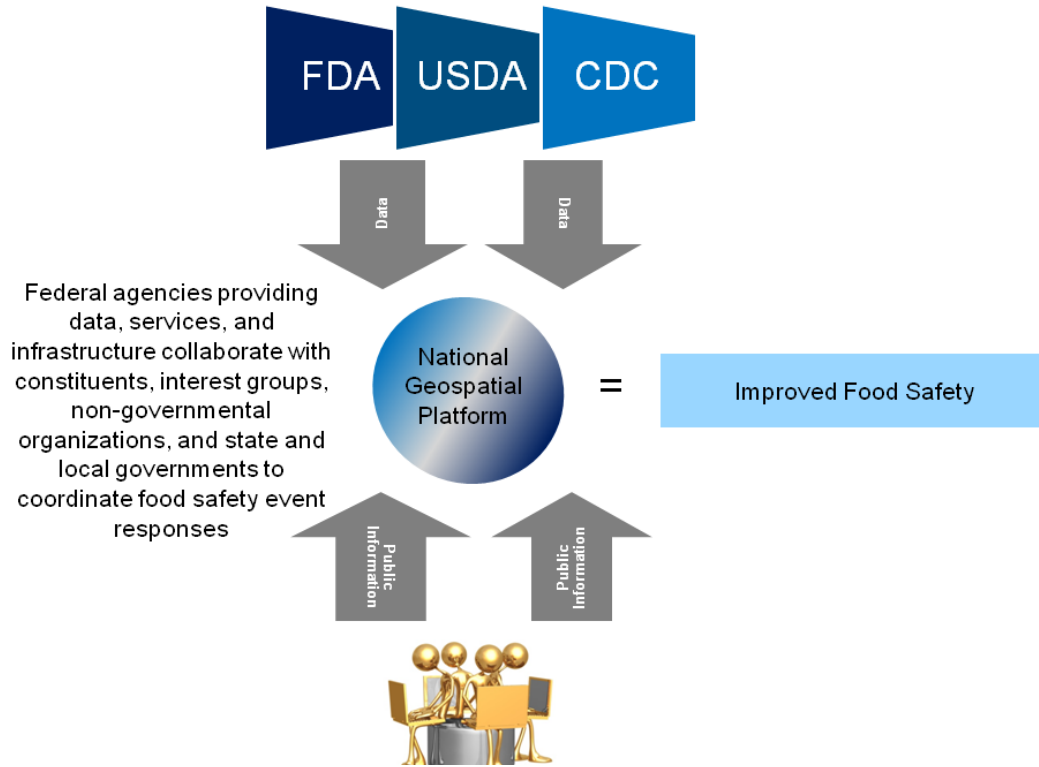
Figure 1. Combining Policy and Crowd-Sourcing (Leveraging Federal Data and Public Knowledge)

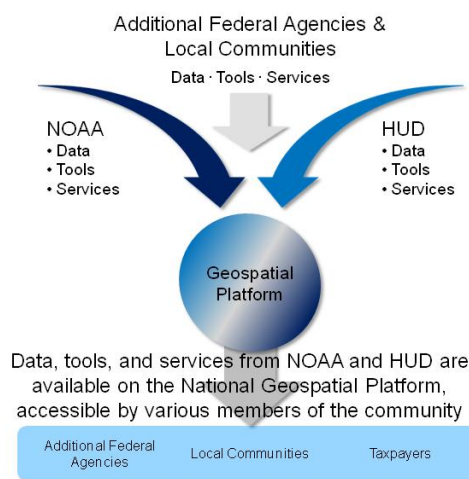|	
Department /Agency	U.S. Department of Agriculture, Food Safety Inspection Service (FSIS)
Point of Contact	Stephen Lowe, USDA Geospatial Information Officer (Stephen.lowe@ocio.usda.gov)

Use Case 2: Assessing Impacts of Sea Level Rise and Coastal Flooding (NOAA/HUD)

Background

The U.S. coastal zone comprises 17% of the Nation's contiguous land area, yet is home to more than 53% of its population. Furthermore, this region serves as a major economic engine, generating 57% of our gross domestic product (GDP). Continued growth in these low-lying coastal areas makes them particularly vulnerable to climate change, subjecting an ever-increasing population to a greater risk from rising sea levels and more intense coastal storms. As a result, coastal communities are under pressure to adapt to a changing climate and its effects on populations, infrastructure, economy, and the natural environment. Climate change adaptation is inherently place-based: reliant on geospatial information at various scales to allow communities to examine their exposure to coastal risks, determine where they are most vulnerable, and develop strategies to respond.

Addressing the Issue

The National Oceanic and Atmospheric Administration (NOAA)'s Coastal Services Center and the Department of Housing and Urban Development (HUD) Office of Policy Development and Research have developed a partnership to leverage HUD's local-level knowledge with NOAA's geospatial and climate science expertise. This relationship will result in the development of data, tools, and best practices that will facilitate the use and application of geospatial information to local-level adaptation planning decisions (Figure 2). Collaboratively, NOAA and HUD have developed a prototype visualization tool for the Galveston, Texas, area to visualize geospatial information related to community vulnerability, resilience, and sustainability. This Coastal Inundation Viewer (Figure 3) leverages trusted, authoritative sources of geospatial data from the Environmental Protection Agency, Federal Emergency Management Agency, NOAA, HUD, and the local community to equip officials with the planning tools to make their communities more

Figure 2. Leveraging shared data, tools, and services through the Geospatial Platform.

resilient to coastal inundation. The tools help answer mission essential questions such as "Where am I most vulnerable to climate change?" along with business questions such as "How can I plan for a more sustainable, economically viable future?" Developed in 2008 as a demonstration product, several of the visualization capabilities of the Coastal Inundation Viewer have been integrated into

additional tools, such as the NOAA-led Sea Level Rise and the Coastal Inundation Viewer (http://www.csc.noaa.gov/slr).
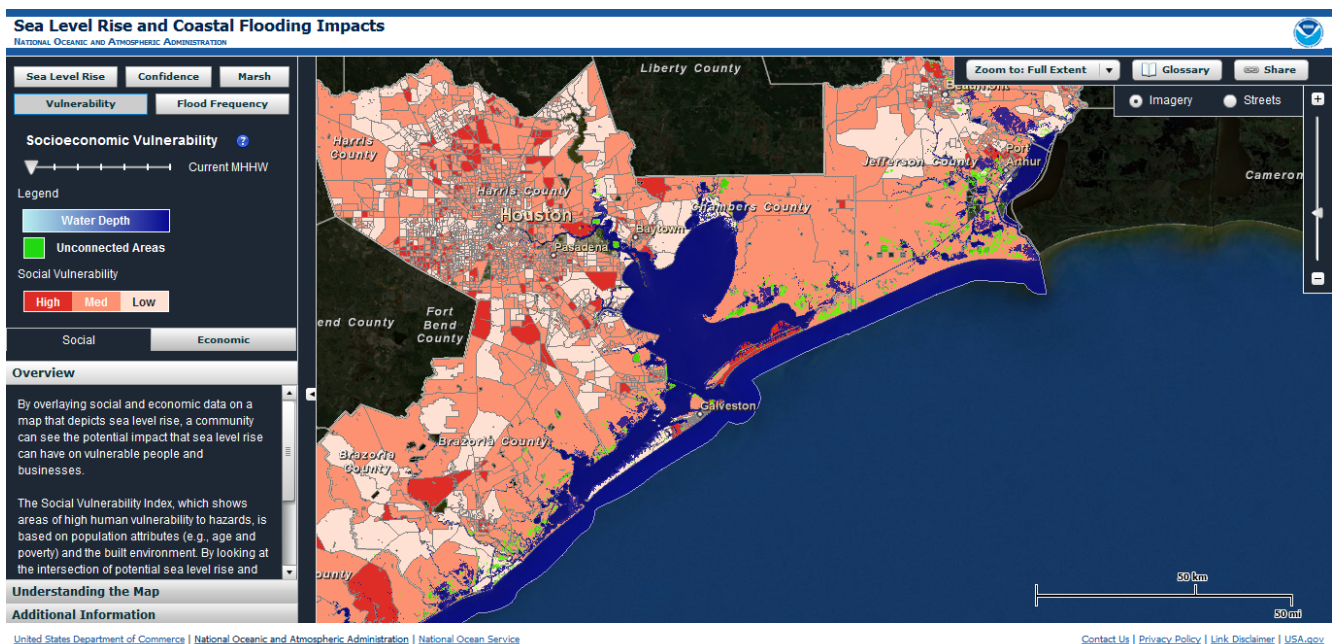

Figure 3. Coastal Inundation Viewer prototype mapping application for Galveston, Texas.

Value Added by the Geospatial Platform

The Coastal Inundation Viewer prototype illustrates one potential outcome of the NOAA/HUD partnership. However, additional value will be realized through the consolidation of the underlying community risk and vulnerability datasets into a single location, exposed as Web services through the Geospatial Platform. NOAA will be able to leverage these services to provide illustrative maps for their community-focused "Roadmap for Adapting to Coastal Risks" workshops. HUD will be able to use this information to develop an agency-wide assessment of climate change vulnerabilities. Both agencies will be able to leverage this data to support existing tool development efforts, such as the aforementioned Sea Level Rise and Coastal Flooding Impacts Viewer, HUD's Community Planning and Development (CPD) Maps application (http://egis.hud.gov/cpdmaps/), or the potential collaborative expansion of the "Coastal Inundation Viewer" prototype. More importantly, this data would be provided through the Geospatial Platform as a mapping service that communities themselves can leverage to help with resource planning and vulnerability assessments, without the need to procure their own assets or collect their own data. This will result in significant time and cost savings at the local level.

As the effort expands to new areas, other agencies and communities will be able to contribute tools and data to the Geospatial Platform, expanding its capability to provide adaptation-planning

information in support of their specific interests. The U.S. Department of Transportation could leverage the risk and vulnerability data from the Geospatial Platform to develop site suitability tools for infrastructure projects that minimize the risk of damages from coastal storms and inundation. Additionally, the General Services Administration could use this same base information to perform risk and vulnerability assessments of government owned and managed buildings in the coastal zone. As a result, longer-term solutions for sustainable growth and development along our Nation's coasts will be implemented, promoting healthy, resilient coastal communities.

Department /Agency   U.S. Department of Commerce\National Oceanic and
                               Atmospheric Administration (NOAA) and U.S. Department of
                               Housing and Urban Development (HUD)
Point of Contact   Joshua Murphy, NOAA Geospatial Program Analyst
                               (Joshua.Murphy@noaa.gov)

Appendix B: Benefits of the Geospatial Platform

The following is a summary of the anticipated benefits and operational efficiencies that can be realized through the implementation of the Geospatial Platform.

Increasing Return on Existing Investments

- Increases the return on government investment in geospatial data, applications, services, and shared infrastructure by enabling discovery, access, and multiple uses of existing assets.
- Decreases the cost of geospatial data and services to agencies by leveraging large scale purchasing.
- Increases the utility of administrative and statistical data by putting it into a spatial context where additional analyses can be performed quickly at little or no additional cost.
- Decreases the time required to get information on existing geospatial assets to decision makers for determining an appropriate course of action.

Increasing Government Efficiency

- Decreases the time required to determine the data, tools, services, and infrastructure available to address and understand national issues and events.
- Increases agency resources that can be refocused on core mission requirements by reducing duplicative datasets in multiple agencies.
- Increases the tools and analysis techniques available to decision makers with little to no new investment in hardware, software, or staff.
- Increases the amount of useful information available to decision makers.
- Decreases the resources and time spent by agencies on data calls, data discovery, data reformatting and processing.

Reducing Redundancy

- Increases the ability of Federal programs to provide their geospatial data, services, and applications for use and reuse by other agencies.
- Increases the ability of agencies to make the data and or services available by reducing their costs and management requirements through use of open standards and cloud computing.
- Increases the discoverability of assets available to address agency mission requirements.
- Decreases government expenditures on duplicative data creation and management efforts.

Increasing Service Delivery

- Increases the government's ability to utilize high-value geospatial tools, data, services, and applications to support agencies and decision makers.
- Increases the Federal government's ability to interact with and leverage the high-value data assets of State, Tribal, regional, local, and non-governmental organizations.
- Decreases the time and resources required to locate, obtain, and use data managed and available from non-Federal agencies.
- Decreases the cost of service management to agencies through shared services and infrastructure.
- Decreases the time required to leverage existing data and investments to solve problems, answer questions, and respond to the public.

Decreasing Development and Management Costs

- Reduces application and services investments by making existing services available for reuse while avoiding duplicative development.
- Reduces time-to-market by reducing service and application development cycles.
- Increases usability by enabling deployment in a cloud computing environment designed to handle surges in use without requiring additional hardware investments.
- Decreases the cost and burden to agencies to host services or build infrastructure.
- Reduces the cost to agencies to meet the Federal Information Security Management Act (FISMA) and the National Institute of Standards and Technology (NIST) Certification and Accreditation (C&A) requirements while ensuring appropriate security protocols are enforced.

Increasing Quality

- Increases transparency of available data, enhancing their value and authority.
- Increases the consistency, reliability, and certainty of information and analysis accessibility to by enabling efficient access and use of validated data sources.

Increasing Usability

- Increases usability of data by making it available beyond a single agency or program.
- Increases usability of data by making it available within a number of shared mapping and analytical tools designed to meet specific mission requirements.
- Increases data consistency, usability, and clarity by providing single format, validated data sources.

- Decreases the complexities of using shared data and tools by enabling discovery and use through a single Web portal.
- Increases access to geospatial applications and services to agencies that cannot afford to manage geospatial programs or data development efforts.