2021 – 2024

Geospatial Services Strategic Plan

Department of the Interior

CONTENTS

BACKGROUND

The Department of the Interior(DOI) primarily works toward fulfilling its mission through the DOI bureaus and offices. The DOI's Geospatial Strategic Plan provides strategic direction for DOI's bureaus and offices for compliance with the Geospatial Data Act (GDA), Foundations for Evidence Based Policymaking Act, (or OPEN Government Data Act) and

DOI Vision

The DOI seeks to enhance collaboration and sharing of geospatial information and resources among data centers, programs, and our partners to promote a Department-wide management approach to inform and enhance priority initiatives, natural resource management decisions and related policy formulation. Improvement in each Bureau-level management of geospatial skills, data and technology is required to address local and landscape mission oriented strategic policy development and implementation as well as efficient use of DOI resources.

Federal Geographic Data Committee (FGDC) guidance. The Strategic Plan is developed collaboratively with the bureau and offices' geospatial leaders and the Department's Geospatial Information Officer (GIO) and Senior Agency Official for Geospatial Information (SAOGI). Goals and objectives are largely based on the requirements from the GDA, National Spatial Data Infrastructure (NSDI) Strategic Goals, and the DOI strategic data strategy.

The DOI Geospatial Advisory Council created this plan. The DOI Data Governance Board and the Federal Geographic Data Committee will receive a report on progress against the plan each year.

Geospatial science, data and technology combined with their associated practitioners are an essential component in most of the Department's programs. Leveraging a geographic data as an asset helps the Department accomplish our mission more effectively and in a holistic manner, enabling our programs and stakeholders to more effectively manage and consider the impacts of ecosystem level changes on America's natural resources, cultural history and great outdoors. Unlike many enterprise technologies, geospatial technology is used by a wide range of users with greatly differing skill levels throughout the Department for many different analyses ranging from critical infrastructure, property acquisition, critical habitat designations to law enforcement.

The majority of Bureau's have Geospatial Coordinators, who help manage geospatial service delivery within their organizations. Most of these coordinators are in IT organizations to provide a logical connection to other IT services. These coordinators serve a valuable role in the organization, as bridge builders between the IT community and the programs. This coordination role helps programs leverage the technology while also informing IT service providers of unique requirements posed in maturing Geospatial science across the Department. Coordinators also share best practices, analytical innovations as well as a wealth of information on the Department's data assets and the processes employed to maintain them. Many bureaus have established Geospatial Coordinating Groups or GIS Councils who aid the coordinators to manage geospatial science across the Department.

Central to a geospatial strategy are the GDA and the Open Data Act. These laws require the federal government to modernize its data management practices, expand reporting requirements, formalizes governance, provide policy and guidance, facilitate cooperation between public and private sector, and define OPEN (Pub. L. 115-435, tit. II) data requirements.

GEOSPATIAL PLANNING APPROACH

The Department of the Interior creates and uses a wide variety of data in support of bureau missions. Many data reference location and time and are part of "geospatial data" and a

subset of all data created and maintained in DOI. This plan considers the creation, curation and procurement of geospatial data in support of DOI's many missions.

Specifically, the GDA defines the term "geospatial data" —

(A) means information that is tied to a location on the Earth, including by identifying the geographic location and characteristics of natural or constructed features and boundaries on the Earth, and that is generally represented in vector datasets by points, lines, polygons, or other complex geographic features or phenomena;

(B) may be derived from, among other things, remote sensing, mapping, and surveying technologies;

(C) includes images and raster datasets, aerial photographs, and other forms of geospatial data or datasets in digitized or non-digitized form; and

(D) does not include—

> (i) geospatial data and activities of an Indian tribe not carried out, in whole or in part, using Federal funds, as determined by the tribal government;
>
> (ii) classified national security-related geospatial data and activities of the Department of Defense, unless declassified;
>
> (iii) classified national security-related geospatial data and activities of the Department of Energy, unless declassified;
>
> (iv) geospatial data and activities under chapter 22 of title 10 or section 3045 of title 50;
>
> (v) intelligence geospatial data and activities, as determined by the Director of National Intelligence;
>
> or
>
> (vi) certain declassified national security-related geospatial data and activities of the intelligence community, as determined by the Secretary of Defense, the Secretary of Energy, or the Director of National Intelligence.

National Geospatial Data Asset (NGDA) portfolio

The DOI has responsibilities under the OMB-A-16 National Geospatial Data Asset (NGDA) portfolio. The NGDAs are divided into 18 themes across the government. The DOI has theme leads and dataset management roles for 11 of the NGDA Themes.

NGDA Data Themes – DOI role
1. Biodiversity and Ecosystems - USGS,
2. Cadastre – BLM, BOEM
3. Cultural Resources - NPS
4. Elevation - USGS
5. Geology - BOEM and USGS
6. Imagery - Agriculture and USGS
7. Land Use and Land Cover - USFS and USGS
8. Utilities - Offshore BSEE
9. Water Inland Data Resource - USGS and FWS
10 Governmental Units and Administrative Statistical Boundaries, Commerce, NPS, BLM
11. Water, Oceans and Coasts – BOEM

GeoPlatform

As directed by the GDA, the Department of the Interior maintains the GeoPlatform. The GeoPlatform is an electronic service that provides access to geospatial data and metadata for geospatial data for internal operations as well as to the general public. It is used by many government agencies to fulfill their requirements under the GDA. The GeoPlatform provides access to cloud computing, storage, Authority to Operate, IT security, technical support and development. The Geospatial Data Act requires that all agency geospatial data is registered in the GeoPlatform[1].

Geospatial Software

Many geospatial software are common across the bureaus and offices. To make the best use of value to the government and procurement best practices the DOI has several contract vehicles for software supporting the DOI. These include;

- ESRI
- ENVI
- ERDAS
- Autodesk
- Avanza
- Global Mapper

The DOI also has several non-contract open source software packages in use. Many of these software projects are funded by US government agencies to add additional functionality and improve security. This list is representative of the software use and not a complete list.

[1] 43 USC CH 46: Geospatial Data §2807 (2018)

- QGIS
- GRASS GIS
- GDAL
- Pdal
- Geoserver
- Postgresql/PostGIS
- R Project
- Python

The DOI also has an MOU with the Open Source Geospatial Foundation (OSG) on the use of open formats and sharing of educational resources for open source geospatial software. The DOI's relationship with the OSG provides an opportunity to comment on standards and engage the broader pubic about geospatial data and tools.

Imagery and data sources

Imagery is critical to the DOI mission and operations. In addition to imagery captured by the DOI, other government sources are available through cooperation with the NASA, DoD and USDA. As technology and data availability from the private sector improves, the DOI will make more use of commercial imagery including space-based imagery.

Mobile GIS

Field data collection is critical to the DOI mission and operations. Enabling data collection in a rapidly changing technology world requires collaboration with IT administrators to ensure data collection capability and data transfer for storage and interpretation. Mobile device hardware must meet the needs for field work and meet DOI Mobile Device Management (MDM) policy.

Spatial accuracy with a variety of high-performance/high-precision GNSS receivers that require a diverse set of efforts to ensure data adhere to the National Spatial Reference System. The DOI uses high accuracy receivers to perform cadastral, survey and archaeology work. The DOI represents GNSS interests through the Executive Committee on Positioning, Navigation, and Timing and through participation in the Federal Geospatial Control Subcommittee.

DOI GEOSPATIAL GOALS

Goal 1 -Governance and Reporting

As geospatial data is increasing used across disciplines outside of the mapping community the DOI requires a more formal system for making and implementing decisions. The Geospatial Advisory Committee (GAC) and its associated sub committees are the core discussion and decision-making body for topics that apply across the DOI geospatial community. The membership of the GAC represents the interests of the bureaus and provides review of any data or reports that are prepared for the FGDC. Each year the DOI GAC, lead by the DOI Geospatial information Officer, reports progress against this plan as well as the requirements of the GDA. Each GAC representative will be the coordination point for any bureau specific data questions and responses.

Goal 1 Objectives

1.1. Re-charter the DOI Geospatial Advisory Committee: Currently bureaus and offices have had a mix of volunteers and assigned personnel represent interests to the GAC. As part of the governance process the DOI will require GAC representatives are recognized by bureau and office leadership so they have the authority to speak for the bureau on geospatial matters.

1.2. Improve reporting and coordination within DOI and with the FGDC:
In accordance with the GDA this document will be reviewed and modified as necessary by the GAC. The FGDC sets the schedule for reporting requirements that are relayed to the GAC by the DOI GIO. The monthly GAC meetings provide scheduled time to coordinate individual bureau input to these reports.

1.3 The DOI Geospatial community does not have many Standard Operating Procedures (SOP) to improve standardization and best practices. As coordination and best practices evolve, they are documented into SOPs. Some of the first SOPs to be developed include guidance for onboarding and use of the Geoplatform and metadata development and use.

Goal 2: People: The DOI's geospatial workforce is critical to the overall mission. Cross burau relationships and best practices are critical to advancing the capabilities and efficiencies of the community. Strategic partnerships with internal and external geospatial communities are used to inform the DOI about standards and changes in technology.

Goal 2 Objectives

2.1 Each month the working groups of the GAC meet each month and report to the DOI geospatial community on cross bureau issues (e.g., Civilian Applications Committee, Committee on Positioning, Navigation and Timing) to assist with bureau planning.

2.2 Training the workforce is critical to proper implementation of new technology. New training opportunities need to be found to support new software and techniques. These opportunities can be found among academia, the private sector and professional organizations. Additionally, many bureaus have established training for staff. These opportunities should be made available across the DOI so geospatial practitioners have similar skills no matter what bureau they are in. Open source software is one area of rapid development. Additional effort should be made to incorporate more open source training for the Department of the Interior. The Open Geospatial Consortium is one resource that should be used toward this goal.

2.3 As the DOI applies more geospatial technology against challenges such as climate and ocean needs these requirements should be represented during GAC meetings and in subcommittee work. The flexibility and addition and retirement of subcommittees should be addressed in the GAC charter.

Goal 3: Information and Data: Geospatial data is a subcomponent of all data. The Geospatial Data Act is one of the many recent laws that are driving the change in data and data management. In cooperation with the DOI Data Governance Board the DOI GAC will work to turn spatial data and information into strategic assets by developing and implementing core data standards and facilitating sharing, maintaining and safeguarding of data and information through common technology and approaches.

Goal 3 Objectives

3.1. Through the GAC, the DOI will develop additional geospatial content standards. Standards and SOPs for data will be posted in a common location for all DOI geospatial practitioners to find and reference. Top priorities for additional SOPs are better guidance and support for the development and curation of metadata.

3.2. The FGDC has published metadata guidance. DOI, through the GAC, will develop practical step by step metadata workflows so metadata is more constant and usable.

3.3. Locating and using geospatial data continues to be a challenge. Proper metadata and incorporation of bureau created geospatial data into the GeoPlatform makes these datasets a strategic asset. DOI bureaus and offices will document their geospatial data according to published standards and make it available through the GeoPlatform.

3.4. DOI has been using various geospatial software for decades. The use of open source standards for data products and services is a relatively new concept and now a requirement. Data included in the GeoPlatform is .served to all users in open formats so that the data is used with any geospatial software. Data sets that are not fully open are identified and adjusted as necessary before incorporation into the GeoPlatform.

3.5. More commercially available data are available than ever before. Before data are purchased checks against the GeoPlatform should be made for any suitable sources. The are many reference sources available to help with data purchases. One such source is the American Society for Photogrammetry and Remote Sensing (ASPRS).

Goal 4: Technology:

The DOI supports operational requirements through the hardware and software that supports decision making from the field to headquarters. By providing geospatial capability through the GeoPlatform DOI bureaus develop consistency with their server deployments. Standard Security Technical Implementation Guides (STIG)s are applied to all configurations as part of the GeoPlatform Authority to Operate (ATO). New developments in cloud based containerized deployments and serverless computing provide new opportunities to consolidate many deployments and configurations. DOI continues to use many commercially available software. Many bureaus and offices have established contracts and department wide license agreements that provide a significant advantage and cost savings to multiple purchases. In addition, open source software provide an additional opportunity to use and participate in software development needs of the DOI. Open source software also provides an alternative to existing workflows should commercially available software become more expensive than budgets allow.

Goal 4 Objectives

4.1. DOI bureaus and offices continue to move data and processing to cloud based options. Cloud implementations are developed using existing contact in cooperation with ACIOs that meet operational requirements and new strategies.
4.2. Continue to standardize GeoPlatform deployments to better support the GeoPlatform Authority to Operate (ATO). The current GeoPlatofmr ATO expires in two years and we want to be in a better position to ensure security priorities and controls are clear.
4.3. Expand the use of open source geospatial software across the DOI. The GeoPlatform is based on open source software. Many of these open source projects are funded through the DOD or industry to meet specific requirements and avoid costly licensing fees . The GAC will work to develop policies and SOPs around open source software that removes some of the uncertainty of using these projects.
4.4. Continue to use enterprise contracts for software to provide the best value to the DOI.
4.5. Mobile GIS is integral in supporting DOI's investment in geospatial technology and is the backbone of much of the data going into DOI's enterprise spatial databases. The GAC will maintain representation on the DOI Mobile Device Management team so that mobile GIS requirements are represented.

APPENDIX

List of DOI Bureaus

- Bureau of Indian Affairs
- Bureau of Indian Education
- Bureau of Land Management
- Bureau of Ocean Energy Management
- Bureau of Reclamation
- Bureau of Safety and Environmental Enforcement
- Bureau of Trust Funds Administration
- National Park Service
- Office of Surface Mining Reclamation and Enforcement
- U.S. Fish and Wildlife Service
- U.S. Geological Survey

List of Authorities:

- The Federal Records Act, 1950
- The Privacy Act, 1974
- Federal Acquisition Regulations (FAR), 1974
- The Paperwork Reduction Act (PRA), 1980
- OMB, Circular A-130, Managing Information as a Strategic Resource, 1985
- Robert T. Stafford Disaster Relief and Emergency Assistance Act (The Stafford Act), 1988
- OMB, Circular A-16 2010, Coordination of Geographic Information and related Spatial Data Activities, 1990, 2019 Revision to OMB Circular A-16.
- The Government Performance and Results Act, 1993
- Executive Order 12906, "Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure," 1994
- The National Technology Transfer and Advancement Act, 1995 (see OMB Circular A-119)
- Executive Order 12951, Release of Imagery Acquired by Space-Based National Intelligence Reconnaissance Systems, 1995
- The Freedom of Information Act (FOIA) and the Electronic Freedom of Information Act Amendments of 1996
- The Clinger-Cohen Act, 1996

- Rehabilitation Act, Sec. 508, Electronic and Information Technology, and other relevant statutes, 1998
- The Government Paperwork Elimination Act, 1999
- Information Quality Act (Federal Data Quality Act), 2000
- E-Government Act, 2002
- Confidential Information Protection and Statistical Efficiency Act of 2002 (CIPSEA)
- OMB M–11–03
- OMB M–06–07: Designation of a Senior Agency Official for Geospatial Information - 2006
- OMB M-19-15 Improving Implementation of the Information Quality Act
- OMB M 19-02 Fiscal Year 2018-2019 Guidance on Federal Information Security and Privacy Management Requirements
- OMB M 19-03 Strengthening the Cybersecurity of Federal Agencies by enhancing the High Value Asset Program
- OMB M-19-18 June 4, 2019 Federal Data Strategy – A framework for Consistency - 2019-2020 Federal Data Strategy Action Plan
- Federal Information Security Modernization Act of 2014 (FISMA)
- OMB, Circular A-119, Federal Participation in the Development and Use of Voluntary Consensus Standards and In Conformity Assessment Activities, 2016
- The Geospatial Data Act of 2018
- Foundations for Evidence Based Policymaking Act, 2018
- Open, Public, Electronic, and Necessary (OPEN) Government Data Act, 2018 (OGDA)
- Federal Geographic Data Committee - National Spatial Data Infrastructure Strategic Plan 2021–2024, October 2020.

References

- GDA, Geospatial Data Act of 2018
- OMB, Circular A-16 and the associated Supplemental Guidance
- GAO Report GAO-13-94, Geospatial Information: OMB and Agencies Need to Make Coordination a Priority to Reduce Duplication
- Shared Service Strategy
- Digital Government Strategy
- EOP, PM-ISE, Geospatial Investment Interoperability
- EOP, PM-ISE, National Strategy for Information Sharing and Safeguarding
- Federal Open Data Policy
- Department of the Interior Data Policy
- Federal Information Technology and Acquisition Reform Act (FITARA)
- Foundations for Evidence Based Policymaking Act, (or OPEN Government Data Act)