Session 6H:

Overview of the COGO Report Card
GAO Report to Congress
Geospatial Data Act of 2015

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ASPRS 2015 Annual Conference

Imaging & Geospatial Technology Forum (IGTF 2015)

&

Joint Agency Commercial Imagery Evaluation (JACIE) Workshop

Tampa, Florida USA

04 – 08 May 2015

Report Card on the U.S. National Spatial Data Infrastructure (NSDI)

Prepared for the Coalition of Geospatial Organizations (COGO)

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Coalition of Geospatial Organizations (COGO)
Thirteen national nonprofit organizations focused on geospatial technologies

at an early COGO meeting…

"Why don't we create a Report Card for the NSDI Framework Data to draw attention to its shortcomings. We could pattern it after the ASCE Report Card on America's Infrastructure which highlights the problems with the nation's failing infrastructure."

JOHN PALATIELLO – MAPPS

...and the lightbulb went off for all of the organizations.

Work on the Report Card began in 2014 with the selection of the Expert Panel

Dr. David E. Cowen
Vice-Chair

James E. Geringer
Chair

John J. Moeller
Vice-Chair

Susan Carson Lambert

Thomas D. Rust

Dr. John D. Bossler

Robert T. Welch

ASCE Report Card for America's Infrastructure

other factors considered:

- While there have been several efforts, there still are no effective metrics to gauge progress in implementing the NSDI

- This Report Card is the first of a series of periodic Report Cards by COGO

- The Report Card does not include cost estimates for completing the NSDI or for bringing the Framework to a specified level

- The goal of this evaluation and report is to bring attention to the need for current and accurate geospatial data for the United States

the end of the process was the public release of the Report Card on February 6th 2015

GRADE REPORT OF: National Spatial Data Infrastructure (NSDI) **SEMESTER:** Fall 2014

Subject	Dept.	Grade	Subject	Dept.	Grade
CADASTRAL DATA	DOI	D+	CAPACITY	FGDC	C
GEODETIC CONTROL	DOC	B+	CONDITION	FGDC	D
ELEVATION DATA	DOI	C+	FUNDING	Various	D
HYDROGRAPHY DATA	DOI	C	FUTURE NEED	FGDC	D
ORTHOIMAGERY DATA	DOI & USDA	C+	OPERATION & MAINTENANCE	FGDC	C
GOVERNMENT UNITS DATA	DOC	C	PUBLIC USE	FGDC	C
TRANSPORTATION DATA	DOT	D	RESILIENCE	FGDC	C
OVERALL DATA GRADE		C	COMPREHENSIVE GRADE		C -

TO: Federal Geographic Data Committee
590 National Center
Reston, Virginia 20192

FROM: Coalition of Geospatial Organizations (COGO)
http://www.cogo.pro
See the full report for an explanation of each grade.

COALITION OF GEOSPATIAL ORGANIZATIONS

American Society of Civil Engineers (ASCE)
American Society for Photogrammetry and Remote Sensing (ASPRS)
Association of American Geographers (AAG)
Cartography and Geographic Information Society (CaGIS)
Geographic and Land Information Society (GLIS)
Geographic Information Systems Certification Institute (GISCI)
International Association of Assessing Officers (IAAO)
Management Association for Private Photogrammetric Surveyors (MAPPS)
National Society for Professional Surveyors (NSPS)
National States Geographic Information Council (NSGIC)
United States Geospatial Intelligence Foundation (USGIF)
University Consortium for Geographic Information Science (UCGIS)
Urban and Regional Information Systems Association (URISA)

REPORT CARD ON THE U.S. NATIONAL SPATIAL DATA INFRASTRUCTURE

February 6, 2015

Assessment Methodology

- The Panel **graded both the individual Framework Data Themes and the NSDI Framework** as cohesive effort.

- The NSDI Framework was envisioned to be an **integrated data** resource that would **serve as the "data backbone of the NSDI**."

- It was to be a **collaborative effort** to create a widely available source of basic geographic data.

- Its purpose was to **provide the most common geographic data** that users will need, and to **serve as a building block for the NSDI**.

- The Framework was intended to **provide data that were trusted, standardized, described according to a common standard, and publicly available at minimal or no cost to the user**.

- The Expert Panel developed criteria that are modeled on the **criteria used by the American Society of Civil Engineers (ASCE) Report Card for America's Infrastructure**.

Each Framework Layer section includes:

- General Discussion

- Impacts

- Introduction

- Theme Definition

- Lead Agency

- Collaboration and Partnering

- Standards

- Estimate of Completeness

- Accessibility

- Authority, Governance and Management

Grading Criteria

- **A = FIT FOR THE FUTURE** The data theme is generally in excellent condition and meets the needs for the present and the future.

- **B = ADEQUATE FOR NOW** The data theme is in good to excellent condition, but some geographic areas of the nation require attention for significant deficiencies.

- **C = REQUIRES ATTENTION** The data theme is in fair to good condition, but it requires attention for many geographic areas of the nation.

- **D = AT RISK** The data theme is in poor to fair condition and mostly below the goals envisioned for the NSDI.

- **F = UNFIT FOR PURPOSE** The data for this theme is in an unacceptable condition and provides little to no value to users.

Framework Layer Evaluations
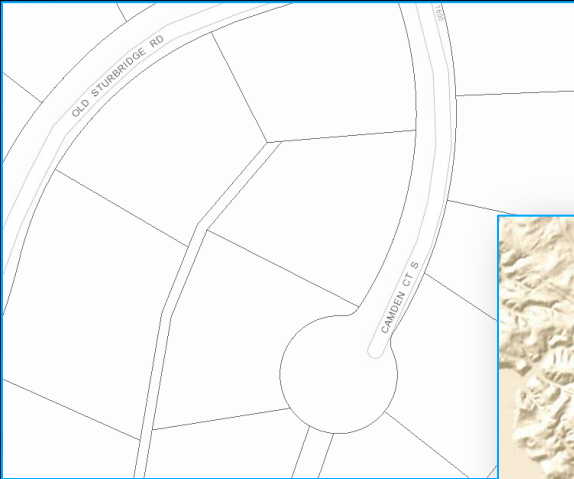
Cadastral Data *D+*
DOI-BLM (land) & BOEM (offshore)
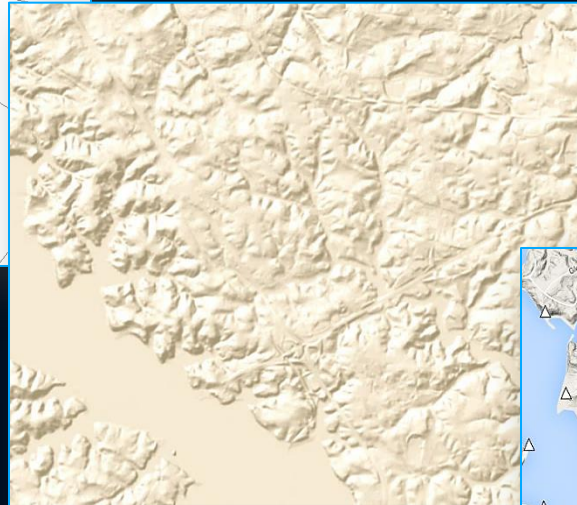
Elevation Data *C+*
DOI – USGS (land)
DOC - NOAA (water)
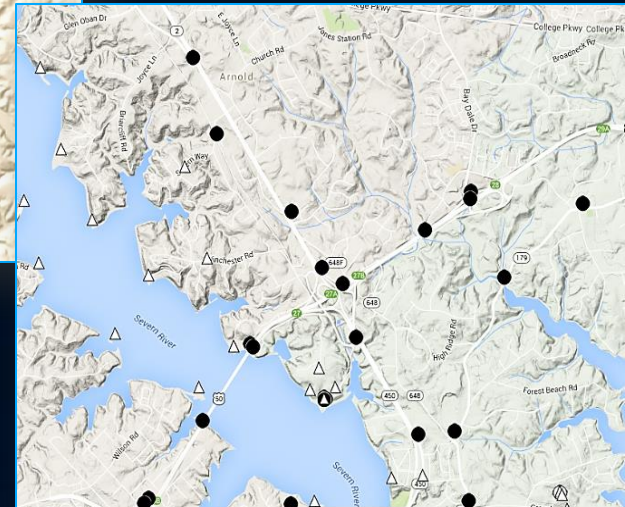
B+ **Geodetic Control**
DOC – NOAA/NGS
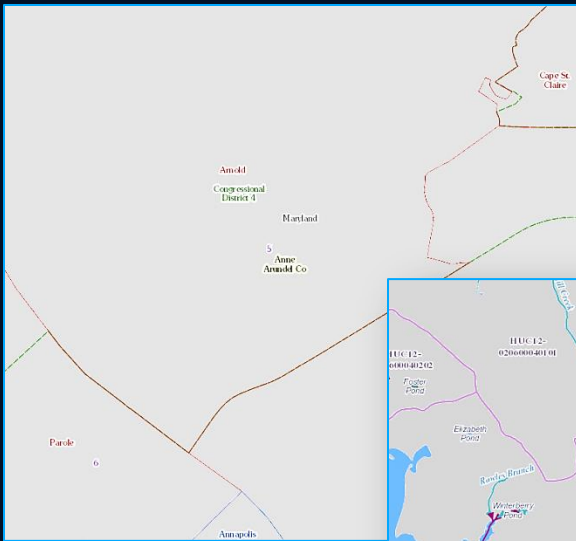
Governmental Units Data *C*
DOC - Census
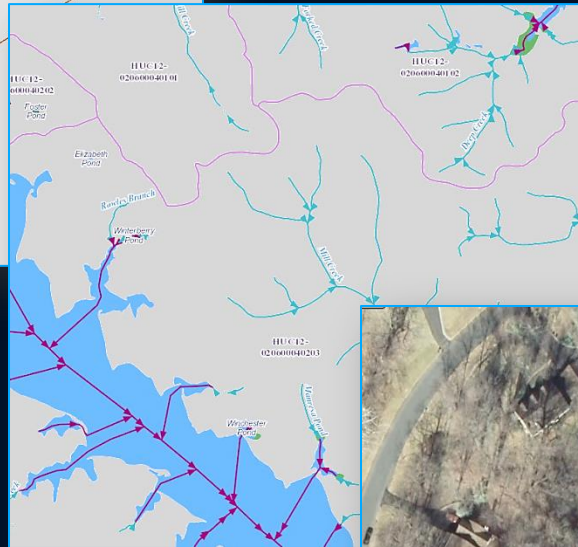
Hydrography Data *C*
DOI - USGS

C+ **Orthoimagery Data**
USDA – FSA (NAIP)
DOI – USGS (leaf-off)

D **Transportation Data**
USDOT - BTS
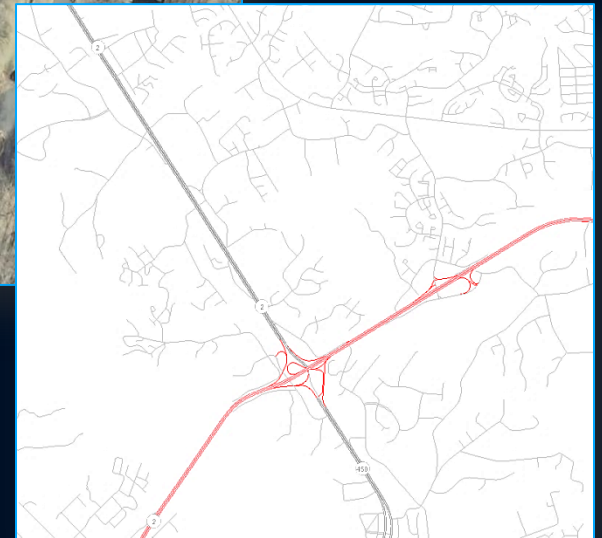
The following elements of the **INFRASTRUCTURE** that support the data were also evaluated:

- Capacity *C*
- Condition *D*
- Funding *D*
- Future Need *D*
- Operation and Maintenance *C*
- Public Use *C*
- Resilience *C*

the result...

GRADE REPORT OF: National Spatial Data Infrastructure (NSDI) **SEMESTER:** Fall 2014

Subject	Dept.	Grade
CADASTRAL DATA	DOI	D+
GEODETIC CONTROL	DOC	B+
ELEVATION DATA	DOI	C+
HYDROGRAPHY DATA	DOI	C
ORTHOIMAGERY DATA	DOI & USDA	C+
GOVERNMENT UNITS DATA	DOC	C
TRANSPORTATION DATA	DOT	D
OVERALL DATA GRADE		C

Subject	Dept.	Grade
CAPACITY	FGDC	C
CONDITION	FGDC	D
FUNDING	Various	D
FUTURE NEED	FGDC	D
OPERATION & MAINTENANCE	FGDC	C
PUBLIC USE	FGDC	C
RESILIENCE	FGDC	C
COMPREHENSIVE GRADE		C~

TO: Federal Geographic Data Committee
590 National Center
Reston, Virginia 20192

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See the full report for an explanation of each grade.

after thinking about the issues...
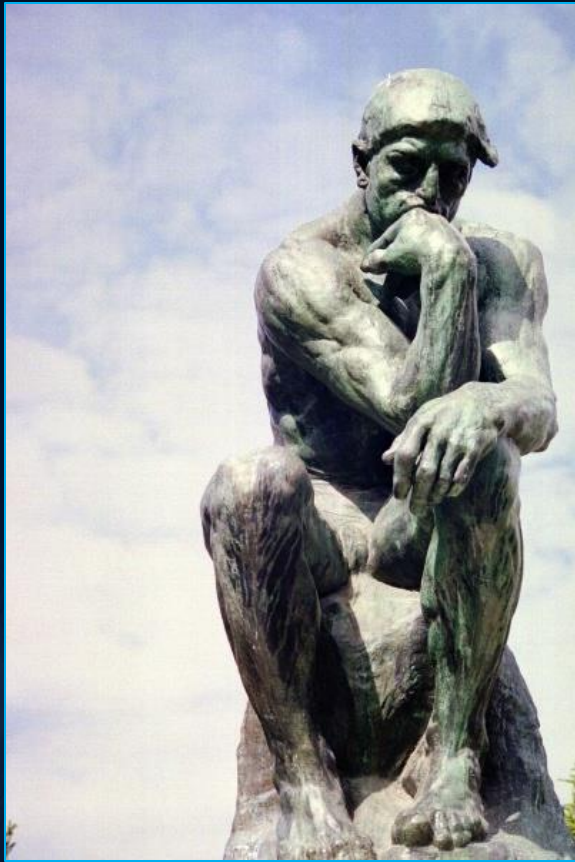
the Expert Panel had the following conclusions and recommendations...

Conclusions

- The Framework requires attention

- There have been many positive actions in the implementation of the NSDI Framework. For example:

  - Individual thematic datasets have been developed.

  - Multiple datasets for each of the themes can be accessed through the National Geospatial Platform

  - Metadata and data standards have been adopted and are generally used by data collectors.

  - Government agencies routinely make their data assets publicly available through data portals and spatial data clearinghouses.

  - The NSDI Framework provides substantial value to users by making large amounts thematic data available to the public.

Conclusions (continued)

- The original vision and the greatest potential value of the NSDI Framework have not yet been fulfilled.
  - Definitive sets of nationally consistent, fully integrated, and reliable data do not exist for the entire nation.
  - Current representations exist as seven separate themes rather than a fully integrated system.

- The Federal Geographic Data Committee (FGDC) decision to reduce its emphasis on the concept of Framework data and move towards portfolio management for a much larger number of data layers raises questions about whether the portfolio management approach can meet the fundamental purposes of a common digital base map available to all users.

Conclusions (continued)

- This assessment suggests that the Federal agencies charged with the stewardship of the seven Framework data layers face serious obstacles in terms of authority and funding.

- The shift in data production from the federal government to the private sector and state and local government calls for new forms of partnership.

Conclusions for Cadastral Data

- There is a critical need for an assessment of user needs and requirements for a modern data system.

- The Federal government does not have the authority to develop and maintain a national cadastral data layer.

- Years of effort have resulted in progress towards a nationally coherent cadastre that will serve multiple purposes, but the prospects for a National Cadastre or NSDI cadastral data layer are dim.

- The results have shown that a collaborative model has not worked in such a complex situation.

- New authority will be needed to bring a National Parcel Dataset to a reality.

Recommendations of the Expert Panel

- The concept of the Framework needs to be reaffirmed.

- A new model for Framework data needs to be adopted, and this new model must acknowledge the importance of local partners.

- This model should be transaction based and emphasize the use of current information technologies, federated, and web-based capabilities; and support web-based services and applications.

Recommendations (continued)

- The Federal Geographic Data Committee (FGDC) needs to emphasize that the Framework is part of its Strategic Plan, and that it will work in collaboration with non-federal and non-governmental partners to build an effective NSDI Framework.

- In today's environment the most accurate and current geospatial data are often collected by local government. A successful NSDI demands that these high resolution data become part of the Infrastructure.

- Budgetary and leadership investments must be made to implement a new model.

Closing Comments

- The Expert Panel created the Report Card and independently assigned the grades

- COGO Member Organizations unanimously approved the content of the Report Card and its public release

- You can obtain a copy at http://www.cogo.pro

Thanks for listening...

...any Questions?

GAO

February 2015

GEOSPATIAL DATA

Progress Needed on Identifying Expenditures, Building and Utilizing a Data Infrastructure, and Reducing Duplicative Efforts

http://www.gao.gov/products/GAO-15-193

On March 18, 2015, this report was reissued to (a) clarify that GSA responded that it did not have comments on a draft of our report, and (b) ensure consistency in reporting that the Department of Transportation has begun to implement procedures for using the Geospatial Platform's Marketplace. These changes had no impact on the conclusions of our report.

Purpose of Study:

- The federal government collects, maintains, and uses geospatial information help support varied missions, including national security and natural resources conservation.

- In 1994 the President issued an executive order to develop a National Spatial Data Infrastructure (NSDI)—a framework for coordination that includes standards, data themes, and a clearinghouse.

- GAO was asked by Congress to review federal and state coordination of geospatial data.

GAO Objectives:

- Describe the geospatial data that selected federal agencies and states use and how much is spent on geospatial data.

- Assess progress in establishing the National Spatial Data Infrastructure.

- Determine whether selected federal agencies and states invest in duplicative geospatial data.

GAO Methods:

- Identified federal and state uses of geospatial data.

- Evaluated available cost data from 2013 to 2015.

- Assessed FGDC's and selected agencies' efforts to establish the infrastructure.

- Analyzed federal and state datasets to identify duplication.

Figure 2: Overview of the National Geospatial Data Asset Portfolio

NSDI Framework Data

- Biota
- Cadastre ←
- Climate and weather
- Cultural resources
- Elevation ←
- Geodetic control ←
- Geology
- Governmental units ←
- Imagery ←
- Land use - land cover
- Real property
- Soils
- Transportation ←
- Utilities
- Water - inland ←
- Water - oceans and coasts

A-16 National Geospatial Data Asset (NGDA) Portfolio

NGDA Theme → NGDA Data Sets

NGDA Theme → NGDA Data Sets

NGDA Theme → NGDA Data Sets

Source: GAO analysis of Federal Geographic Data Committee data. | GA0-15-193

GAO Findings:

- Federal agencies and state governments use a variety of geospatial datasets to support their missions.

- Federal agencies report spending billions of dollars on geospatial investments; however, the estimates are understated.

- The Federal Geographic Data Committee (FGDC) and the Office of Management and Budget (OMB) have started an initiative to have agencies identify and report annually on geospatial-related investments as part of the fiscal year 2017 budget process.

- FGDC and selected federal agencies have made progress in implementing their responsibilities for the National Spatial Data Infrastructure.

- FGDC also initiated plans and activities for coordinating with state governments on the collection of geospatial data.

GAO Findings (con't):

- State officials are generally not satisfied with the committee's efforts to coordinate with them.

- States feel that the committee is focused on a federal perspective rather than a national one, and that state recommendations are often ignored.

- Agencies are not fulfilling their responsibilities in that OMB has not made it a priority to oversee these efforts.

- Vision of improving the coordination of geospatial information and reducing duplicative investments will not be fully realized until OMB ensures that FGDC and federal agencies fully implement their responsibilities.

- Some data are collected multiple times by federal, state, and local entities, resulting in duplication of effort and resources.

- Until there is effective coordination across the National Spatial Data Infrastructure, there will continue to be duplicative efforts to obtain and maintain these data at every level of government.

GAO Recommendations:

- Congress consider assessing statutory limitations on address data to foster progress toward a national address database.

- OMB improve its oversight of FGDC and federal agency initiatives so that FGDC and selected agencies fully implement initiatives.

- OMB guidance calls for agencies to eliminate duplication, avoid redundant expenditures, and improve the efficiency and effectiveness of the sharing and dissemination of geospatial data.

Outcomes:

- Agencies generally agreed with the recommendations.

- Agencies are identifying plans to implement them.

Senators Warner and Hatch Introduce Bipartisan **"Geospatial Data Act of 2015"**

"…To improve the coordination and use of geospatial data…"
https://www.scribd.com/doc/259032993/Geospatial-Data-Reform-Act

New **GAO report** reveals duplication, minimal oversight:
- Federal Government is largest buyer of geospatial data.
- Federal agencies do not consistently track/report geospatial investments.
- Extensive duplication of effort and expenditures by various entities   (federal, state, local, private sector).

Status:
- Introduced March 16, 2015.
- Read twice.
- Referred to the Committee on Commerce, Science, and Transportation.

The Geospatial Data Reform Act would:

- Require federal agencies to report, as part of their annual budget submission to the President, how much they spend on geospatial data and what geospatial information they collect.

- Designate the Director of the Office of Management and Budget and the Secretary of the Interior as Chairperson and Vice Chairperson, respectively, of the Federal Geographic Data Committee (FGDC), an interagency committee established by OMB in 1990 to organize and coordinate the collection and management of geospatial data.

- Require the FGDC to report every two years on each agency's performance regarding geospatial data management.

- Provide a clear definition for geospatial data and metadata.

- Improve government transparency and availability to public information.

Summary

SEC. 1. Short Title

SEC. 2. Definitions

SEC. 3. Federal Geographic Data *Committee* (FGDC)

- act as the lead entity in the executive branch for the development, implementation, and review of policies, practices, and standards relating to geospatial data.

SEC. 4. National Geospatial *Advisory Committee* (NGAC)

- provide advice and recommendations to the Chairperson of the Committee.

SEC. 5. National Spatial Data Infrastructure (NSDI)

- ensure that geospatial data from multiple sources is available and easily integrated to enhance understanding of the physical and cultural world.

SEC. 6. National Geospatial Data Asset (NGDA) Data Themes (n ~ 16)

SEC. 7. Geospatial Data Standards

- establish standards for each NGDA data theme

SEC. 8. GeoPlatform

- operate an electronic service that provides access to geospatial data and metadata for geospatial data, to be known as the GeoPlatform
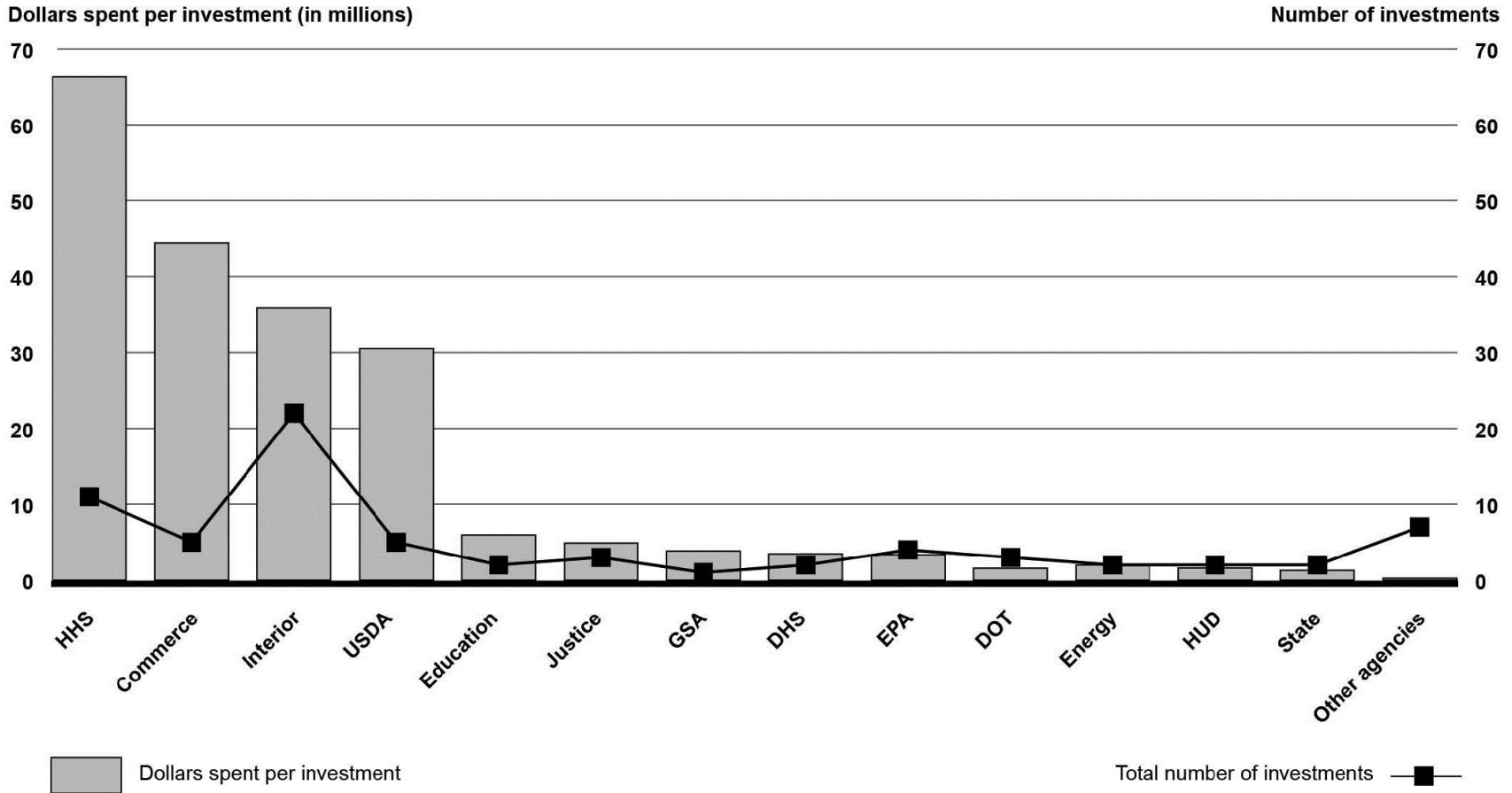
SEC. 9. Covered Agency Responsibilities

SEC. 10. Limitation on Use of Federal Funds

- Funding not available if agencies do not comply with applicable standards established under section 7 as determined by the Committee.

Extra Slides

Figure 14: Government-Wide Average Spending on Geospatial Information Technology Investments from Fiscal Year 2013 to 2015

Acronyms and abbreviations:
HHS (U.S. Department of Health and Human Services), Commerce (U.S. Department of Commerce), Interior (U.S. Department of the Interior), USDA (U.S. Department of Agriculture), Education (U.S. Department of Education), Justice (U.S. Department of Justice), GSA (General Services Administration), DHS (U.S. Department of Homeland Security), EPA (U.S. Environmental Protection Agency), DOT (U.S. Department of Transportation), Energy (U.S. Department of Energy), HUD (U.S. Department of Housing and Urban Development), State (U.S. Department of State)

Source: GAO analysis of exhibit 53 data, as of August 2014. | GAO-15-193

Table 1: Number and Cost of Investments Associated with Geospatial Data That Are Not Categorized as Geospatial, Fiscal Years 2013 to 2015

Agency	Geospatial investments not categorized as geospatial	Average amount spent or planned from fiscal years 2013 to 2015 (in millions)
Department of Agriculture	5	$2.8
Department of Commerce	3	$34.3
Department of Defense	35	$32.3
Department of Energy	1	$0.05
Department of Health and Human Services	1	$13.0
Department of Homeland Security	6	$87.0
Department of the Interior	1	$3.1
Department of Transportation	5	$5.6
General Services Administration	1	$0.05
National Aeronautics and Space Administration	1	$0.1
U.S. Army Corps of Engineers	1	$2.0
Total	**60**	**$180.3**

Source: GAO analysis of exhibit 53 and 300 data, as of August 2014. | GAO-15-193

Note: The IT Dashboard does not collect or display any classified or national security-sensitive information, and thus the totals listed in the table do not reflect any classified or national security-sensitive geospatial investments. In addition, the items in the table do not add up to the total listed due to rounding.

Figure 15: Government-Wide Investments Associated with Geospatial Data, Fiscal Years 2013-2015

$180.3 millon

46%
60 investments

54%
71 investments

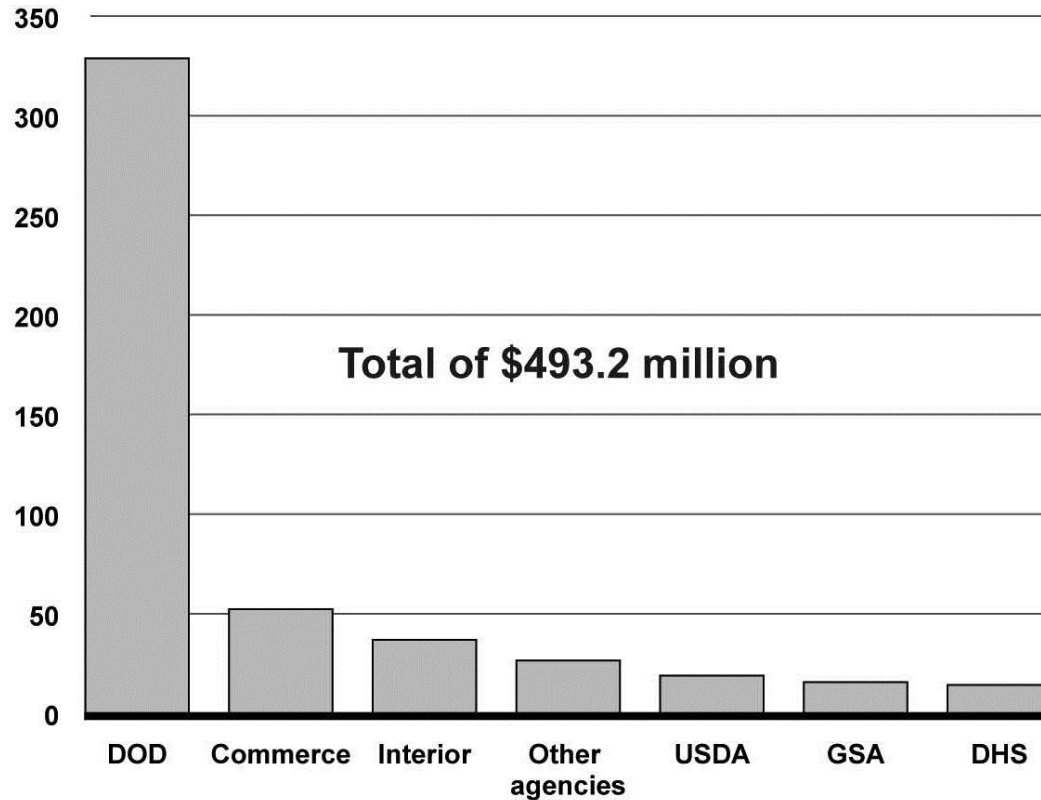**$205.4 millon**
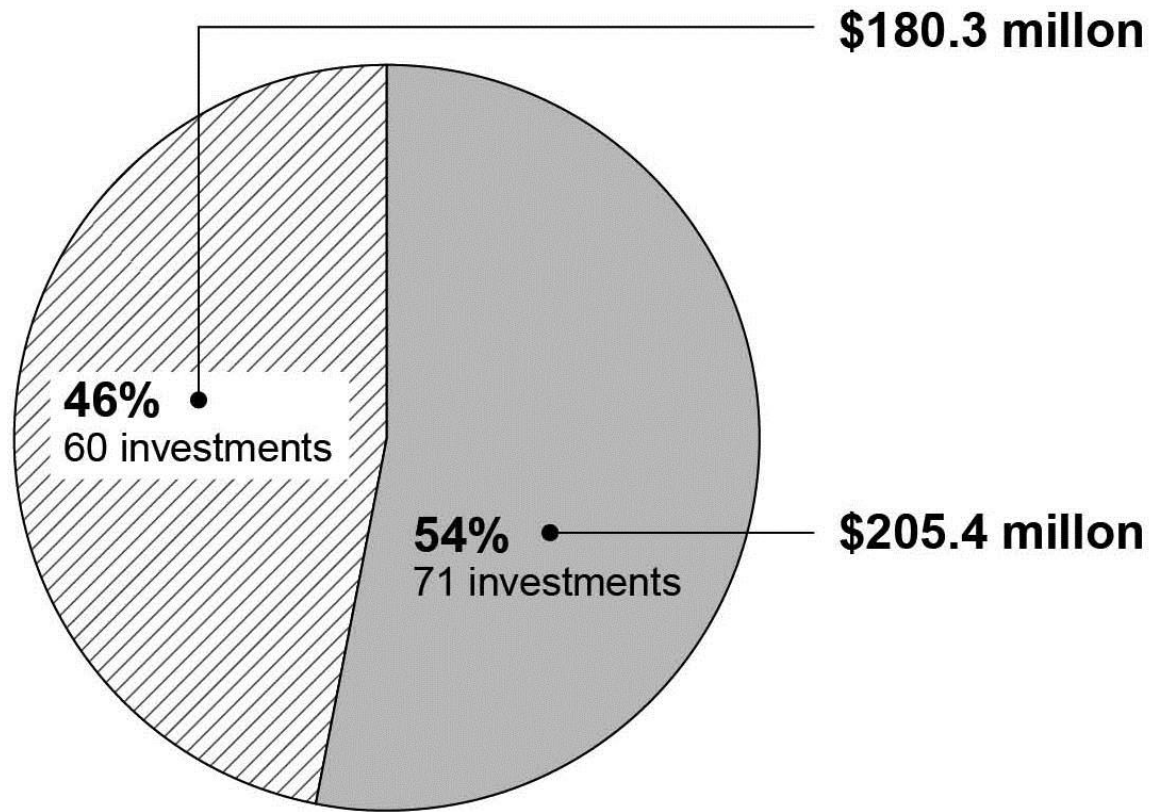
Total of $385.7 millon

Not categorized as geospatial

Categorized as geospatial

Figure 16: Contracting Costs for Geospatial Investments in Fiscal Year 2013

Dollars spent (in millions)

Total of $493.2 million

Bar chart (in millions):
- DOD: ~330
- Commerce: ~53
- Interior: ~38
- Other agencies: ~28
- USDA: ~20
- GSA: ~17
- DHS: ~15

Y-axis: 0, 50, 100, 150, 200, 250, 300, 350

Note: Other agencies include the Departments of Health and Human Services, Housing and Urban Development, Energy, Justice, State, the Treasury, Transportation, Veterans Affairs, the Environmental Protection Agency, Federal Communications Commission, Federal Energy Regulatory Commission, National Aeronautics and Space Administration, Small Business Administration, Smithsonian Institution, and U.S. Agency for International Development.

Table 5: National Spatial Data Infrastructure Responsibilities and Related GAO Recommendations for the Federal Geographic Data Committee

Initiative	Description and related GAO recommendation
Strategic plan	The Federal Geographic Data Committee (FGDC) is to prepare and maintain a strategic plan for the development and implementation of the National Spatial Data Infrastructure (including data themes, standards, metadata, clearinghouse, and partnerships). **GAO recommendation:** In 2012, we recommended that FGDC establish a time frame for creating and updating the strategic plan, and create and implement the plan within the established time frame. We also recommended that the plan address foundational elements of strategic planning as recognized by federal statute and OMB guidance, such as goals, objectives, and performance measures.
Portfolio management of data themes	FGDC is to manage the data themes and their associated key datasets as capital assets using a portfolio management approach, and provide guidance to federal departments on how to implement this management approach internally within their agencies. **GAO recommendation:** In 2012, we recommended that FGDC establish a time frame for completing a plan to facilitate the implementation of OMB's portfolio management guidance, and develop and implement the plan within the established time frame. We also recommended that the plan, at a minimum, include goals and performance measures, and that FGDC report annually to OMB on the progress made on efforts to improve coordination and reduce duplication among themes.
Clearinghouse	FGDC is to • develop a clearinghouse to serve as a centralized geospatial metadata repository that contains geospatial metadata records from federal agencies, state and local governments, and academic and private sector organizations; • provide a search function for the clearinghouse that permits searching of all files intended for public use, display search results in order of relevancy to search criteria; and • use analytics and customer service measurement tools to measure, analyze, and report on the effectiveness of the clearinghouse. **GAO recommendation:** In 2012, we recommended that FGDC develop guidance for federal departments on identifying planned geospatial investments on the clearinghouse.
Partnerships	FGDC is to promote and guide cooperation among federal, state, and local government agencies in the collection, production, sharing and use of geospatial information and the implementation of the National Spatial Data Infrastructure.

Source: GAO analysis of Executive Order 12906, OMB documents, and GAO-13-94. | GAO-15-193

Table 6: National Spatial Data Infrastructure Responsibilities and Related GAO Recommendations for Federal Departments

Initiative	Description and related GAO recommendation
Policy on geospatial metadata	Federal departments are to develop and implement a policy that requires their agencies to make their geospatial metadata available on the clearinghouse. **GAO recommendation:** In 2012, we recommended that the three federal departments in our prior review (Commerce, Interior, and Transportation) develop such a policy.
Procedures for accessing the clearinghouse	Federal departments are to adopt internal procedures to ensure that their agencies access the clearinghouse before they expend funds to collect or produce new geospatial data to determine (1) whether the information has already been collected by others, or (2) whether cooperative efforts to obtain the data are possible. **GAO recommendation:** In 2012, we recommended that the three federal departments in our prior review develop and implement such internal procedures.
Strategy	Federal departments are to prepare, maintain, publish, and implement a strategy for advancing geographic information and related geospatial activities appropriate to their mission. **GAO recommendation:** In 2012, we recommended that the three federal departments in our prior review develop and implement such strategies.
Partnerships	Federal departments are to coordinate and work in partnership with federal, state, and local government agencies, to efficiently and cost-effectively collect, integrate, maintain, disseminate, and preserve spatial data, building upon local data wherever possible.

Source: GAO analysis of Executive Order 12906, OMB documents, and GAO-13-94. | GAO-15-193