Geospatial Technologies from the Ground Up: The State Perspective

Department of Energy

Geospatial Technology Summit

August 16, 2011

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State GIS Coordinator/Enterprise GIS Services Mgr, State of Colorado Office of Information Technology

What is NSGIC? (www.nsgic.org)

- Small 501 (c) 6 nonprofit organization (~579 members)
- Formed in 1991
- We Promote
  - Effective and efficient government through the prudent adoption of geospatial technologies
  - Statewide GIS coordination efforts
- We serve as the voice of States for geospatial issues
- Actively engaged with many Federal organizations
  - Especially focused on the FGDC and the National Spatial Data Infrastructure
- Each State has a single vote on advocacy and business issues
- We Educate and Advocate

Geospatial Collaboration

- Geospatial data often built from ground up
- Data, data, data -> Services, services, services
- Data discovery, access -> services discovery/shared services
  - Portals, GOS -> Service “brokers” (ArcGIS.com)
- Spatial Data Infrastructure
  - NSDI
  - SSDI
- NSDI -> Geospatial Platform
- For the Nation
- Data governance, stewardship

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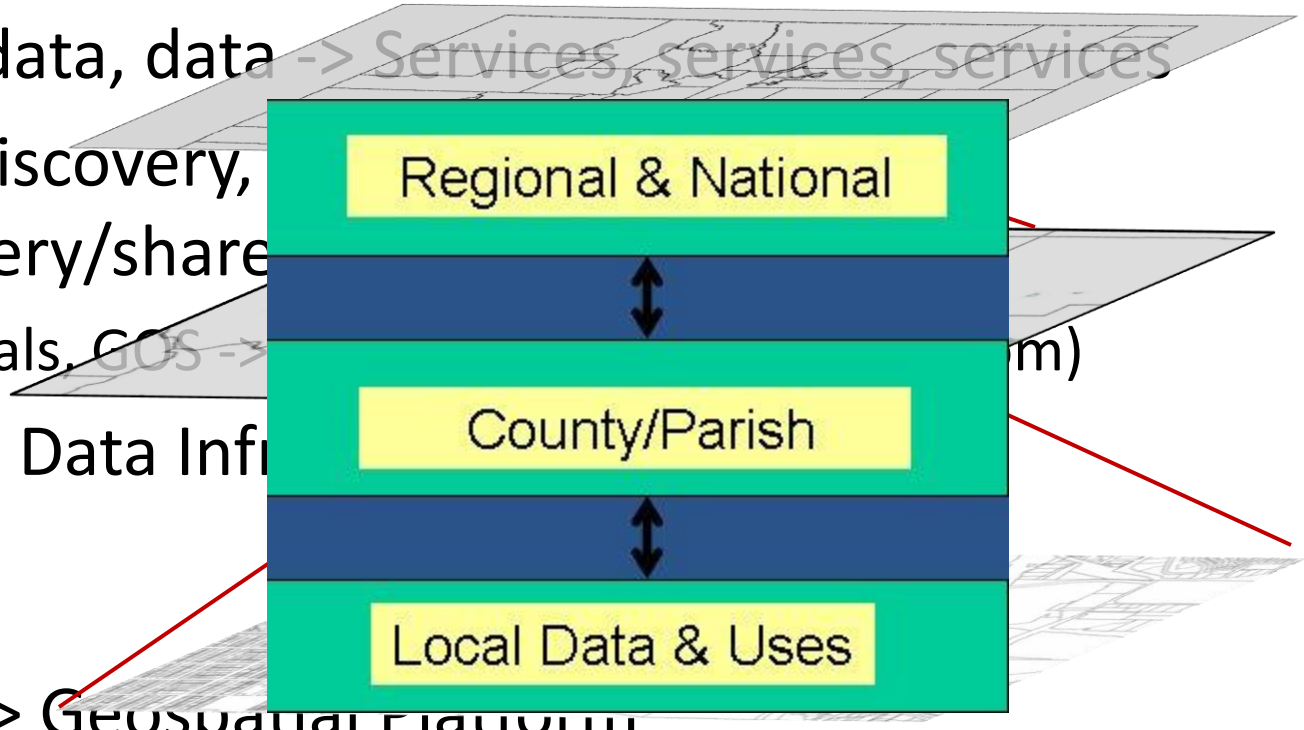

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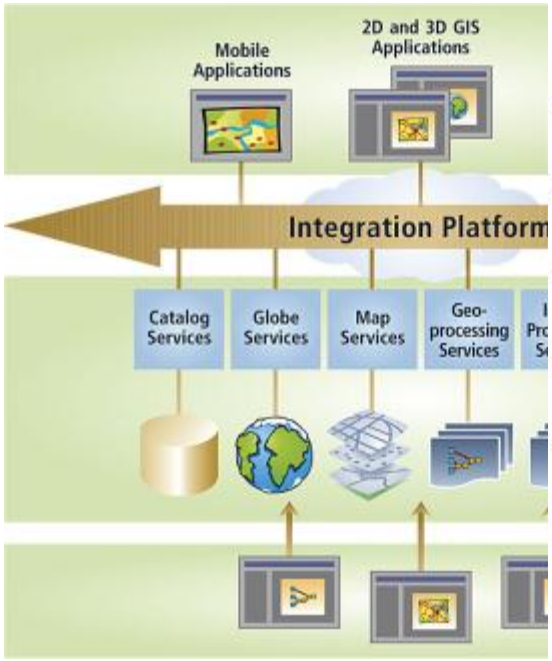

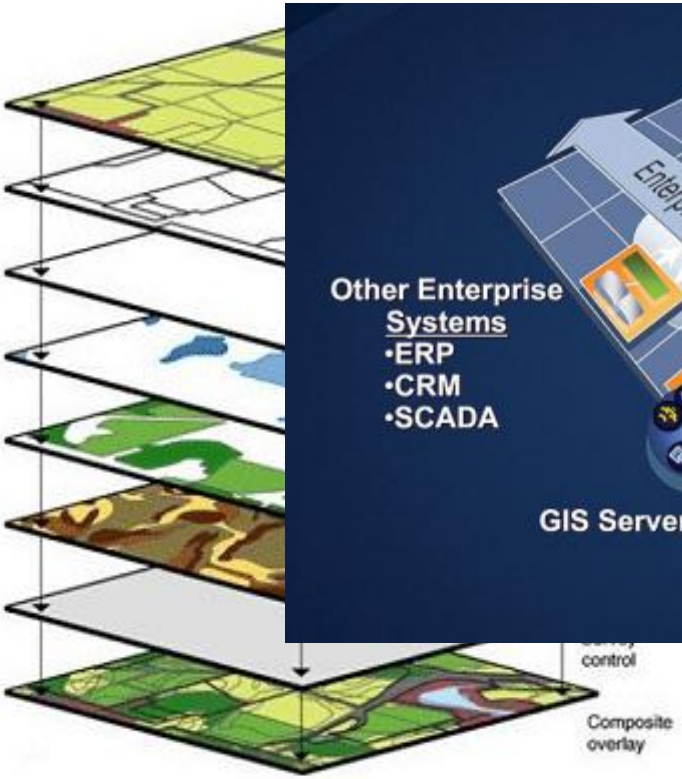

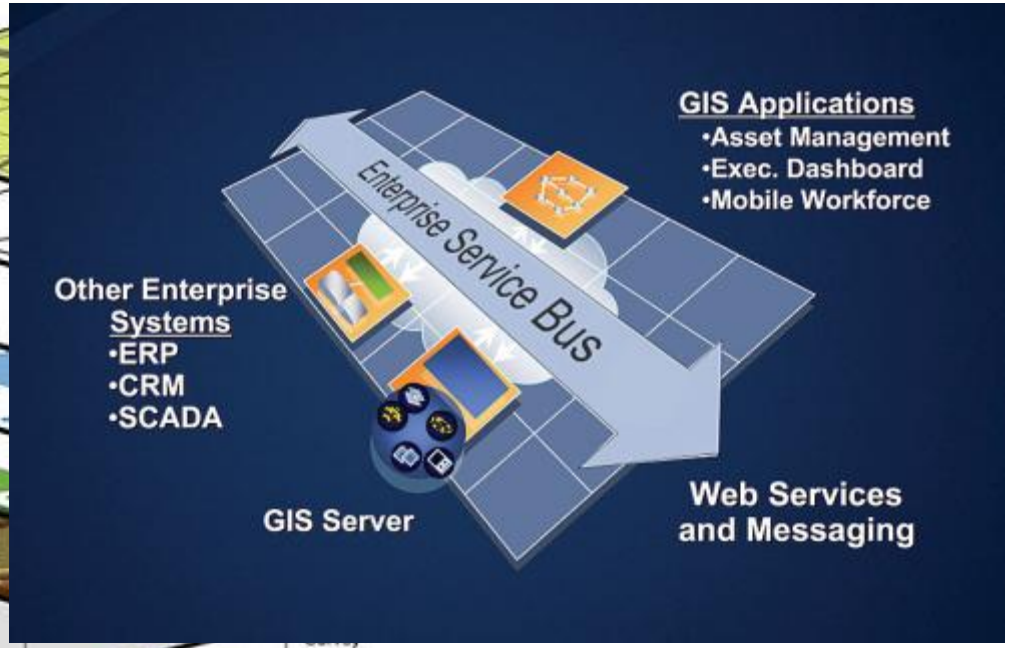

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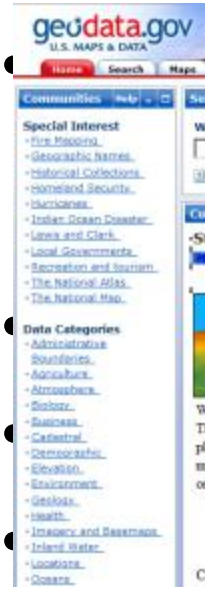

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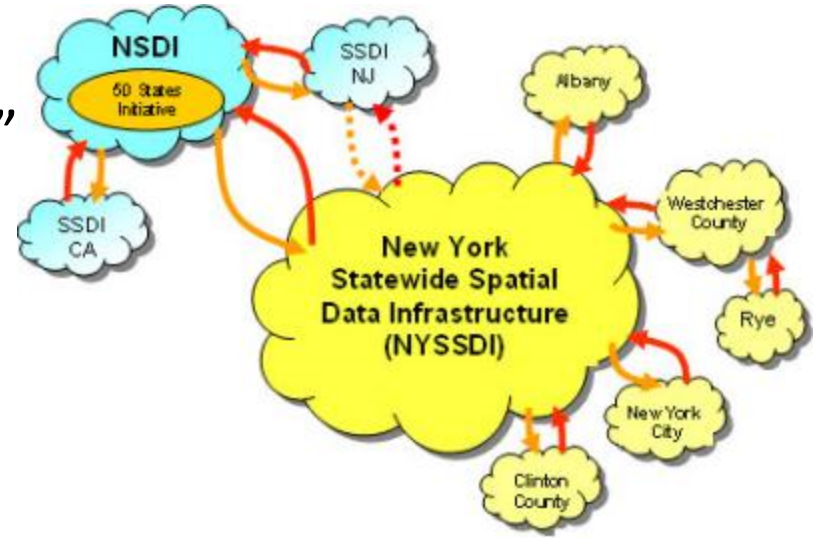

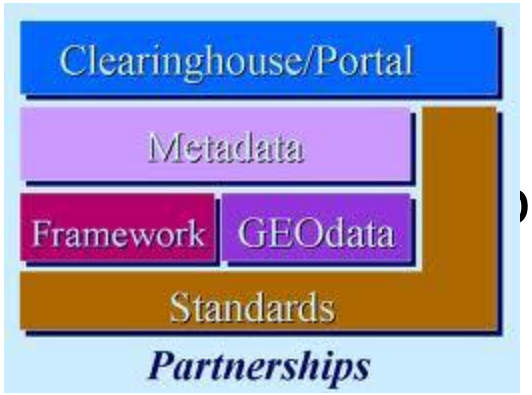

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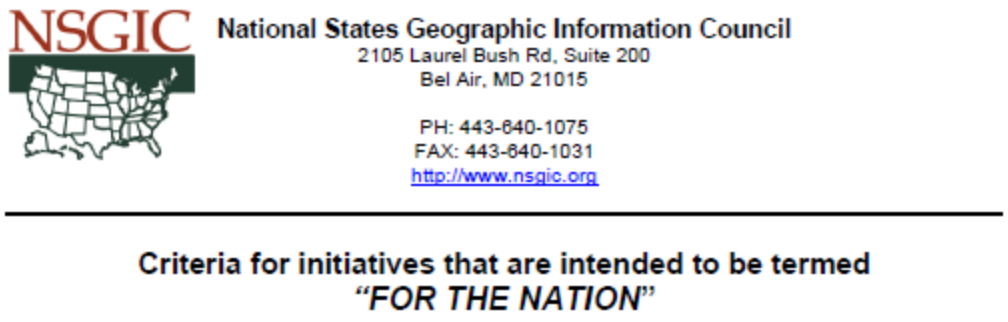

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- …
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- For the N…
- Data gove…

OIT
Office of Information Technology

Geospatial Data Governance Plan
GIS Project

Prepared by: State Geospatial Data Governance Work Group
Department: OIT
Co-authors: Chris Brown, Division of Water Resources; Jon Gottsegen, OIT; William Johnson, Department of Transportation; Mike Rigrossi, Department of Agriculture; Bob Sacco, OIT/Division of Wildlife; Mary Sullivan, Historical Society
Date: November 16, 2010

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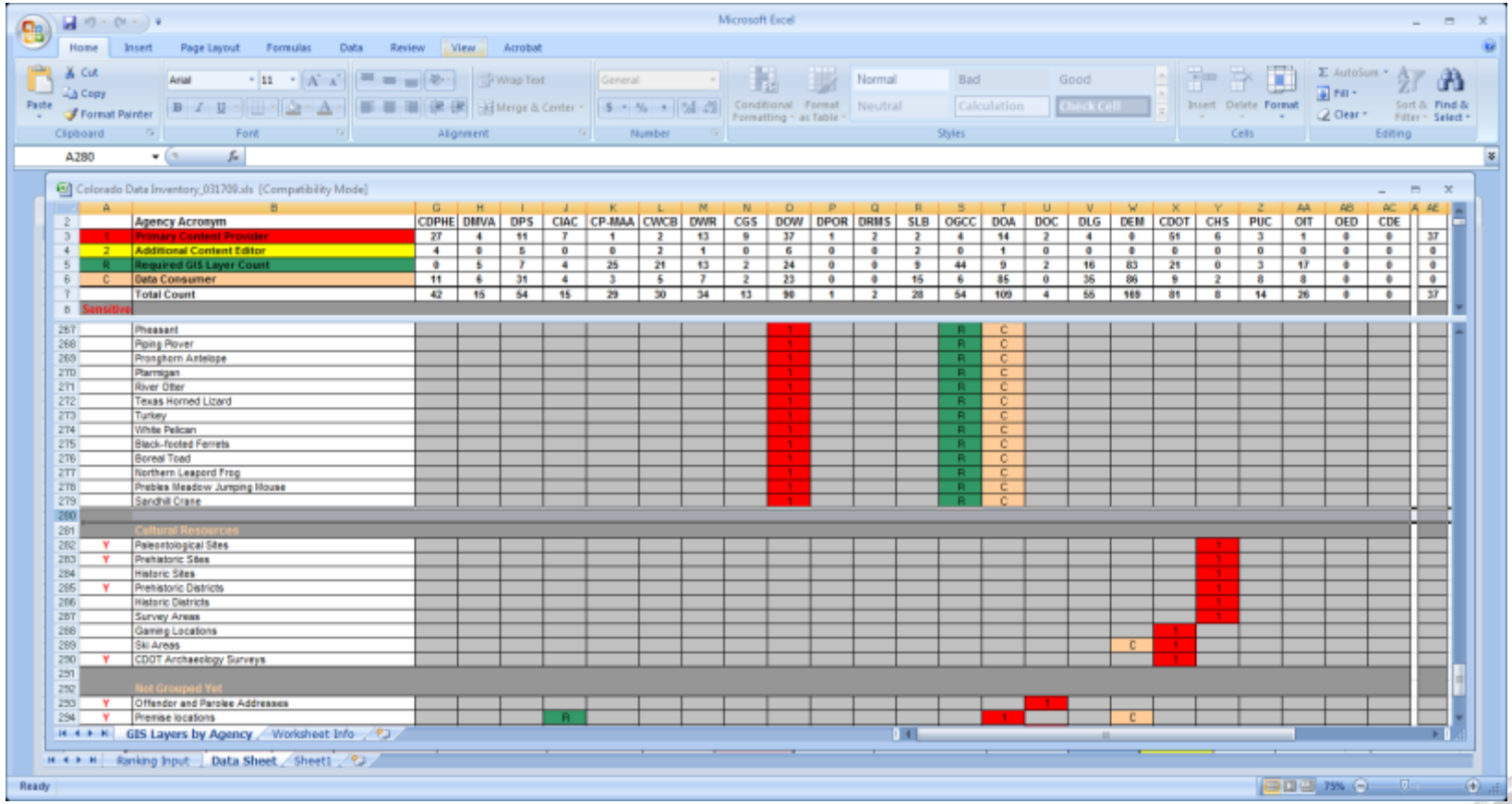

Geospatial Collaboration

- Data governance, stewardship

GIS Layer	# Depts Maintaining Data	# Depts Additonally Editing Content	# Data Consumers	# Depts Requiring Data	Total # Requiring & Consuming	Priority
Local Roads	1	1	10	4	14	H
Major Roads	1	1	9	5	14	H
Highways	1	1	9	4	13	H
National Hydrography Dataset	1	3	12	0	12	H
	0	0	1	6	7	H
PLSS	0	0	1	6	7	H
NAIP	0	0	3	9	12	H
	2	0	4	7	11	H
Census Blocks	1	0	5	5	10	H
Municipal Boundaries	2	0	2	7	9	H
Elevation	0	0	4	4	8	M
Populated Places (Derived)	1	0	2	6	8	M
Ortho-imagery	0	0	6	1	7	M
Topography	0	0	3	4	7	M
Flood Zones	1	0	5	1	6	M
Government Areas/Units	2	1	3	2	5	M
Land Use	0	0	3	1	4	M
Wetlands	0	0	2	2	4	M
and Air strips	1	1	2	2	4	M
Soils	1	0	2	2	4	M
Police Stations	0	0	1	3	4	M

GIS Layer	Steward
Local Roads	CDOT
Major Roads	CDOT
Highways	CDOT
National Hydrography Dataset	DNR
	DNR (DNR is taking on the role of coordinating this data for state agencies. There has not been official agreement as to their stewardship role. They will be assisted by OIT)
PLSS	
NAIP	OIT
	CDOT (CDOT is a *de facto* stewards of this data set for the state as they update it annually, and most GIS users in the state use CDOT's data. DOLA is a likely candidate to steward the data given their statutory responsibility to maintain a record of changes to county and municipal boundaries, but they do not have the resources to dedicate to this stewardship. CDOT may consider their role as steward with coordination assistance from OIT).
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Census Blocks	DOLA
Police Stations	CDPS (along with fire stations and other public safety facilities)
Elevation	
Populated Places (Derived)	
Ortho-imagery	
Topography	
Flood Zones	
Government Areas/Units	
Land Use	
Wetlands	
and Air strips	
Soils	

Geospatial Collaboration

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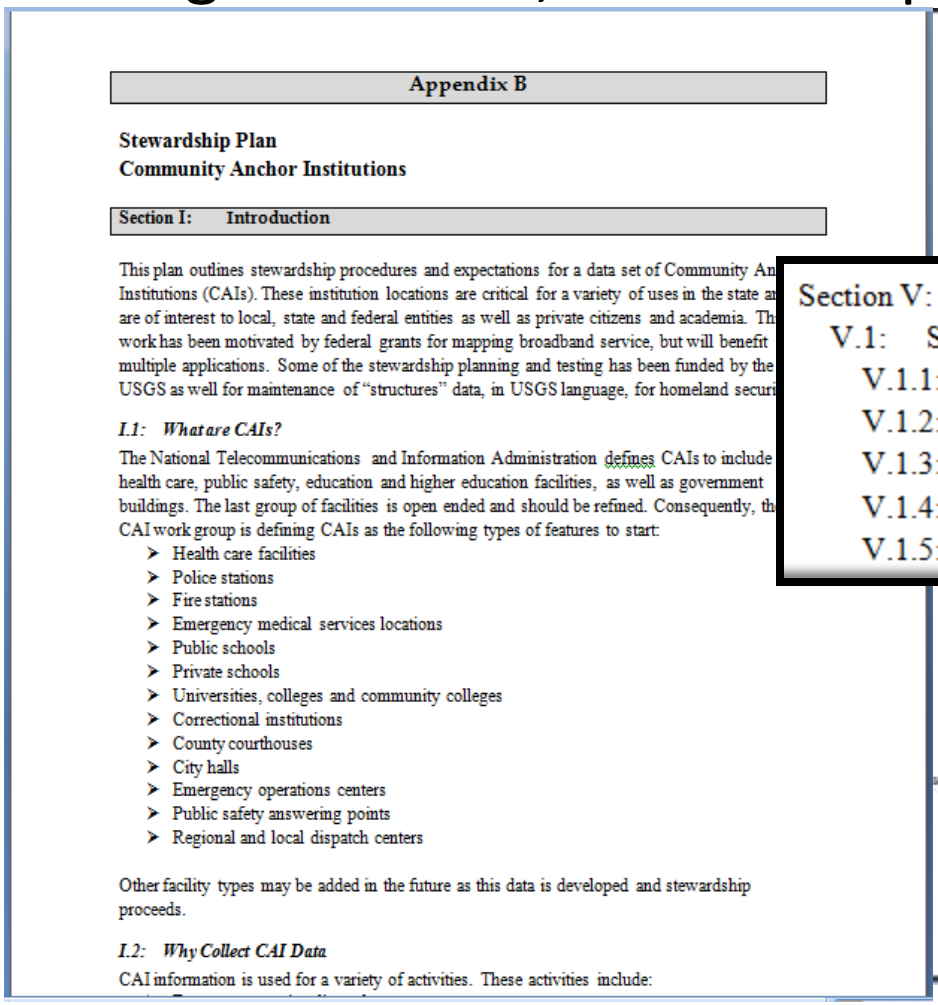

Appendix B

Stewardship Plan
Community Anchor Institutions

Section I: Introduction

This plan outlines stewardship procedures and expectations for a data set of Community An
Institutions (CAIs). These institution locations are critical for a variety of uses in the state a
are of interest to local, state and federal entities as well as private citizens and academia. Th
work has been motivated by federal grants for mapping broadband service, but will benefit
multiple applications. Some of the stewardship planning and testing has been funded by the
USGS as well for maintenance of "structures" data, in USGS language, for homeland securi

I.1: What are CAIs?

The National Telecommunications and Information Administration defines CAIs to include
health care, public safety, education and higher education facilities, as well as government
buildings. The last group of facilities is open ended and should be refined. Consequently, th
CAI work group is defining CAIs as the following types of features to start:

- Health care facilities
- Police stations
- Fire stations
- Emergency medical services locations
- Public schools
- Private schools
- Universities, colleges and community colleges
- Correctional institutions
- County courthouses
- City halls
- Emergency operations centers
- Public safety answering points
- Regional and local dispatch centers

Other facility types may be added in the future as this data is developed and stewardship proceeds.

I.2: Why Collect CAI Data

CAI information is used for a variety of activities. These activities include:

OIT
Office of Information Technology

Section V: Governance Process and Structure
V.1: Stewardship Process
V.1.1: Needs Assessment
V.1.2: Establishing and Maintaining a Team
V.1.3: Data Compilation/Maintenance
V.1.4: Distribution
V.1.5: Data Governance and Standards Process

Prepared by: State Geospatial Data Governance Work Group
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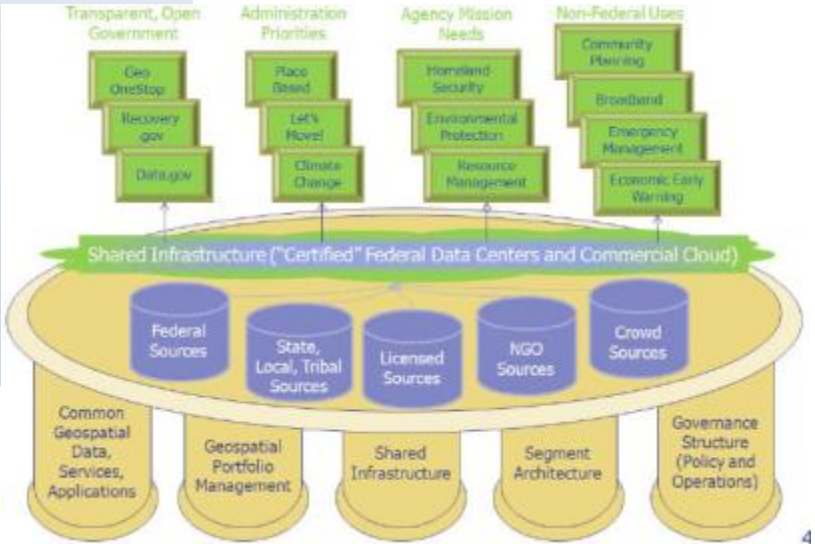
NSGIC

A National Infrastructure

NSDI



NSGIC

For the Nation

- Standard lifecycle
- Imagery
- Transportation
- Addresses?
- Parcels?

	NSGIC "For the Nation" Lifecycle Milestones	Imagery	Transportation	Parcels	Elevation	Control	Hydrography	Boundaries
Concept Stage (Proposal)	A custodial organization and key individuals have been identified to serve as the point of contact.	X						
	The proposal is clearly defined, including a vision statement.	X						
	The proposal ensures national coverage at full implementation.	X						
	The proposal is designed to meet the business needs of all levels of government.	X						
	Stakeholder communities affected by the proposal are involved in developing the concept.	X						
	Strategic and communications plans are available and were developed with stakeholders.	X						
Development Stage (Initiative)	Each structural component of the initiative is clearly identified and defined.	X						
	The initiative includes "buy-up" options that increase flexibility to meet business needs.	X						
	Specifications meet the highest functional requirements of the broad community.	X						
	Technical specs allow for multiple technological solutions and future technologies.	X						
	A maintenance plan and process flow are available.	X						
	Dedicated, capable, and willing long-term custodians or data stewards are identified.	X						
	Public domain data distribution and archive mechanisms are identified.	X						
	A cost-benefit analysis is available to demonstrate the value of the initiative and review alternatives.	X						
	A complete business plan is available.	X						
	A sustainable funding plan is available.	D						
on Stage m)	Waiting / Implement / Redefine / Defer / Abandon	W						
	Governance mechanisms and adjudicatory processes allow for reasonable variations in implementation steps and technical specifications.	D						

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Criteria for initiatives that are intended to be termed *"FOR THE NATION"*

Geospatial Collaboration

- For the Nation

6” products meet local, state and Federal needs

Highly detailed 3” imagery (below) is a buy-up option

Geospatial Collaboration

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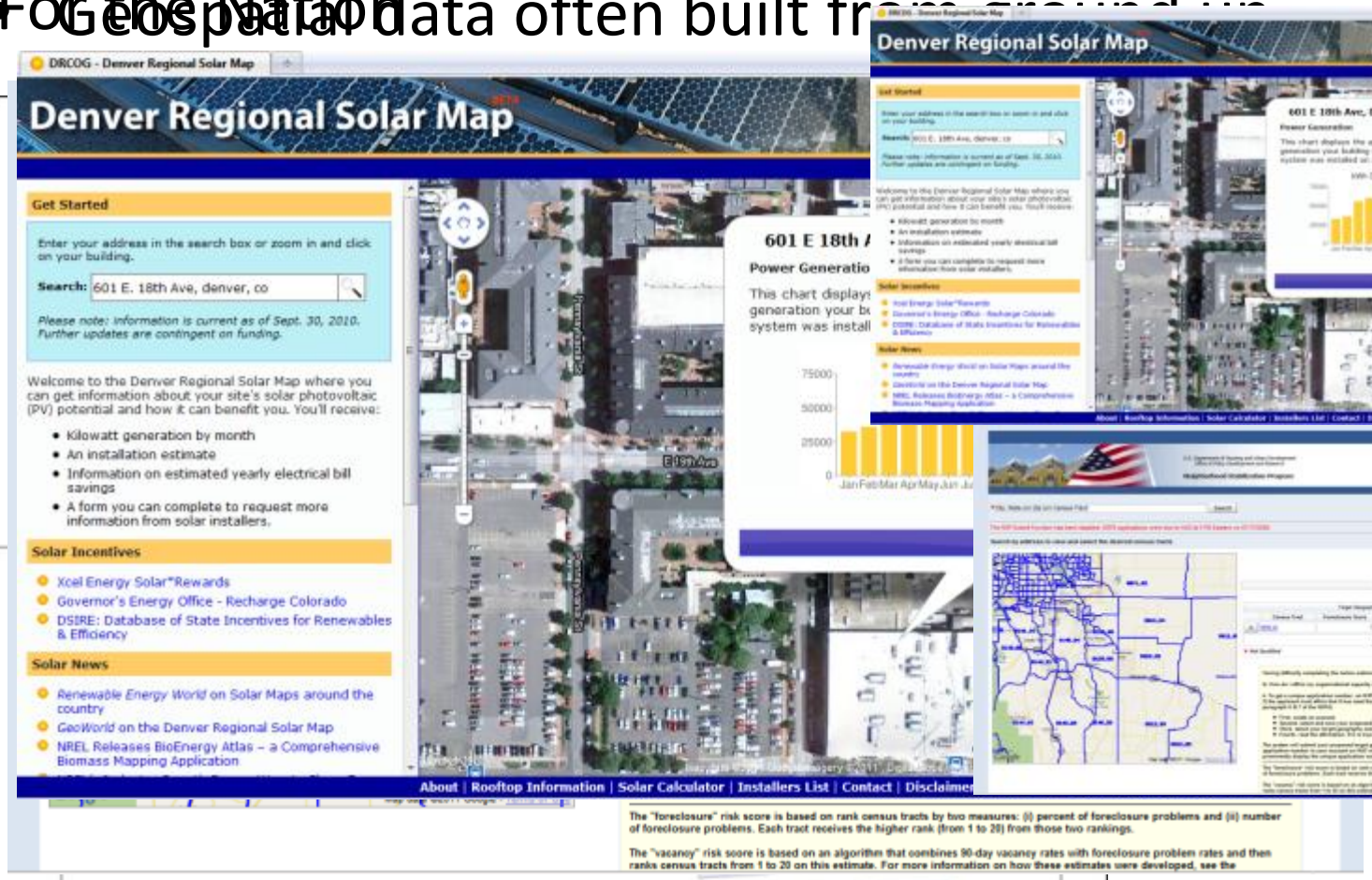

- Data governance, stewardship

Geospatial Collaboration

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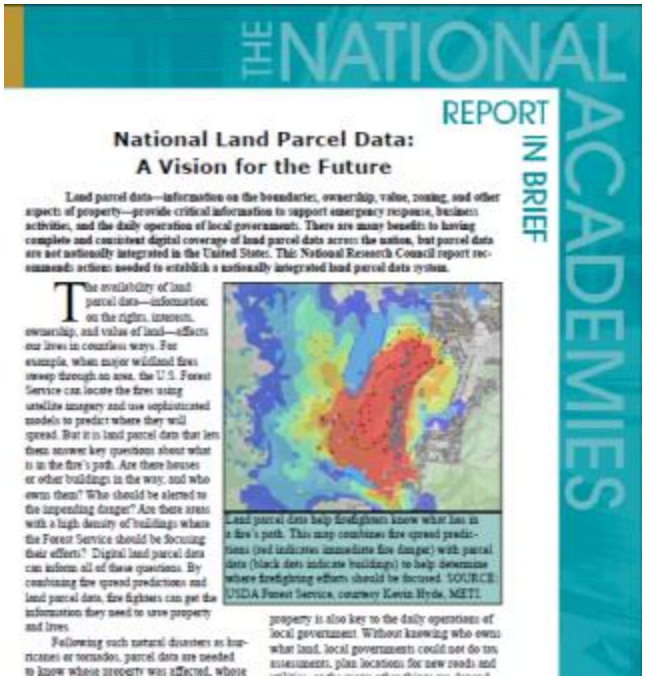

THE NATIONAL ACADEMIES

REPORT IN BRIEF

National Land Parcel Data: A Vision for the Future

Land parcel data—information on the boundaries, ownership, value, zoning, and other aspects of property—provide critical information to support emergency response, business activities, and the daily operation of local government. There are many benefits to having complete and consistent digital coverage of land parcel data across the nation, but parcel data are not nationally integrated in the United States. This National Research Council report recommends actions needed to establish a nationally integrated land parcel data system.

The availability of land parcel data—information on the rights, interests, ownership, and value of land—affects our lives in countless ways. For example, when major wildland fires sweep through an area, the U.S. Forest Service can locate the fires using satellite imagery and use sophisticated models to predict where they will spread. But it is land parcel data that lets them answer key questions about what is in the fire's path. Are there houses or other buildings in the way, and who owns them? Who should be alerted to the impending danger? Are there areas with a high density of buildings where the Forest Service should be focusing their efforts? Digital land parcel data can inform all of these questions. By combining fire spread predictions and land parcel data, fire fighters can get the information they need to save property and lives.

Land parcel data help firefighters know what lies in a fire's path. This map combines fire spread predictions (red indicates immediate fire danger) with parcel data (black dots indicate buildings) to help determine where firefighting efforts should be focused. SOURCE: USDA Forest Service, courtesy Kevin Hyde, MITL

Following such natural disasters as hurricanes or tornados, parcel data are needed to know whose property was affected, whose property is also key to the daily operations of local government. Without knowing who owns what land, local governments could not do tax assessments, plan locations for new roads and

Advocacy

NSGIC

2011 Advocacy Agenda

approved September 16, 2010

Address Data for Public Safety & Economic Health

Addresses are the most commonly used and well known locators of people, places and events, but no consistent national address file is publicly available. To better understand problems like the foreclosure crisis and access to health care, comprehensive lists of addresses must be available and converted to digital points on map that facilitate thorough analyses and the development of appropriate mitigation strategies. Sharing and managing address data helps to support many of the business requirements of all levels of government, including enabling emergency responders to be more effective. To advance development of a consistent national address file, NSGIC will continue to advocate for the following actions:

- Public release of the 2010 address points collected by the Census Bureau at a cost of $444 million. These addresses are currently protected as confidential information.
- Education of its membership about overlaps with other address sources (e.g. U.S. Post Office & National Telecommunications Information Administration Broadband Mapping).
- Development of effective statewide address programs. Address data can be funded by state 911 funds or by federal grants for broadband mapping.
- Exposure of new technologies for address collection such as crowd sourcing (e.g. OpenAddress).

This issue overlaps the "*For the Nation*" initiatives and public domain data sharing. From an economic standpoint, building a national address file is completely feasible and could return well over $1 billion in value to the national economy.

For the Nation Data Programs to Share Costs & Sustain Jobs

Our Nation needs comprehensive programs to coordinate the acquisition of accurate geospatial data to meet the business needs of government (all levels). Instituting such programs will increase the availability of products to underserved areas, reduce duplication of effort, result in cost avoidance and take advantage of large-area contracting mechanisms that significantly reduce the costs for everyone. The resulting data will "fuel" high technology jobs in the private sector and benefit the general public that should have free access to these products.

Nationwide data programs meet government business requirements, serve as a public resource, enable efficient and effective government and spur development of business applications that improve and stimulate the economy. They also provide a unified digital map of America for future generations to maintain.

National geospatial data programs should serve as the common base map component of all government GIS efforts. The base map layers should be stewarded by individual authorities and maintained by all levels of government on a routine cycle to support government business needs.

NSGIC has outlined a systematic process for obtaining high quality geospatial data *For the Nation* in its data lifecycle proposal. Data layers such as Imagery, Transportation, Address Points and Parcels have received significant attention over past five years with visible progress when measured against NSGIC's lifecycle model.

There are no technical issues to prevent these initiatives, nor are there any concerns about the capacity of the industry to create the required products. We simply need to find effective ways to encourage government agencies to work together on coordinated mapping programs and to identify appropriate funding models.

Foremost among these initiatives are ***Imagery for the Nation*** and ***Transportation for the Nation***. We are encouraged by the success of these initiatives to date, and NSGIC will continue to promote them, monitor their progress against the lifecycle model and communicate their progress to the geospatial community.

The National States Geographic Information Council (NSGIC) is a nonpartisan 501 (c) 6 organization committed to efficient and effective government through the prudent adoption of geospatial technologies. Established in 1991, NSGIC voting members include senior state geographic information officers, coordinators, managers, and Councils.

NSGIC

Outreach

- COGO
- NDOP & NDEP
- NAPSG
- HIFLD
- AAG
- UCGIS
- NGAC

Gene Trobia
Tony Spicci

- FGDC
- NOAA
- Census
- FCC
- NTIA
- DoT
- EPA
- DoE
- HUD
- USDA

State Perspective

- Spectrum of capabilities, org. structures maturity, etc.
- NSGIC state survey
- 50 States Initiative
- Assemble data from locals into statewide data
- Work with federal agencies in variety of ways

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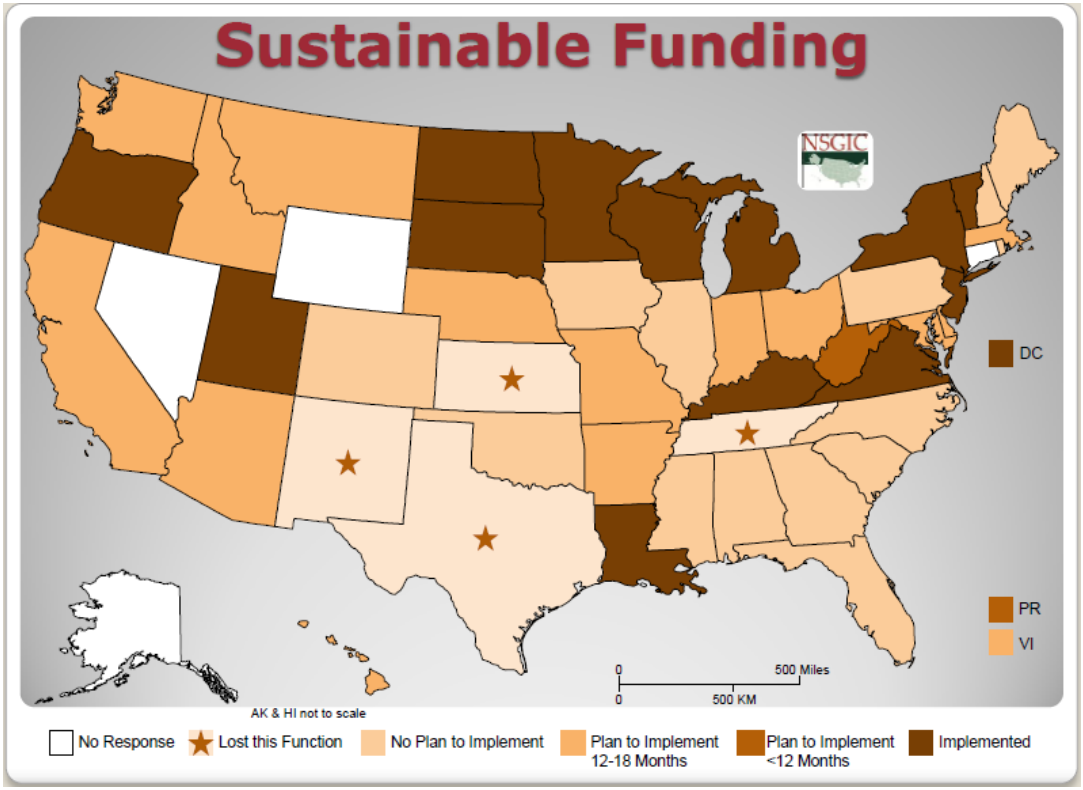
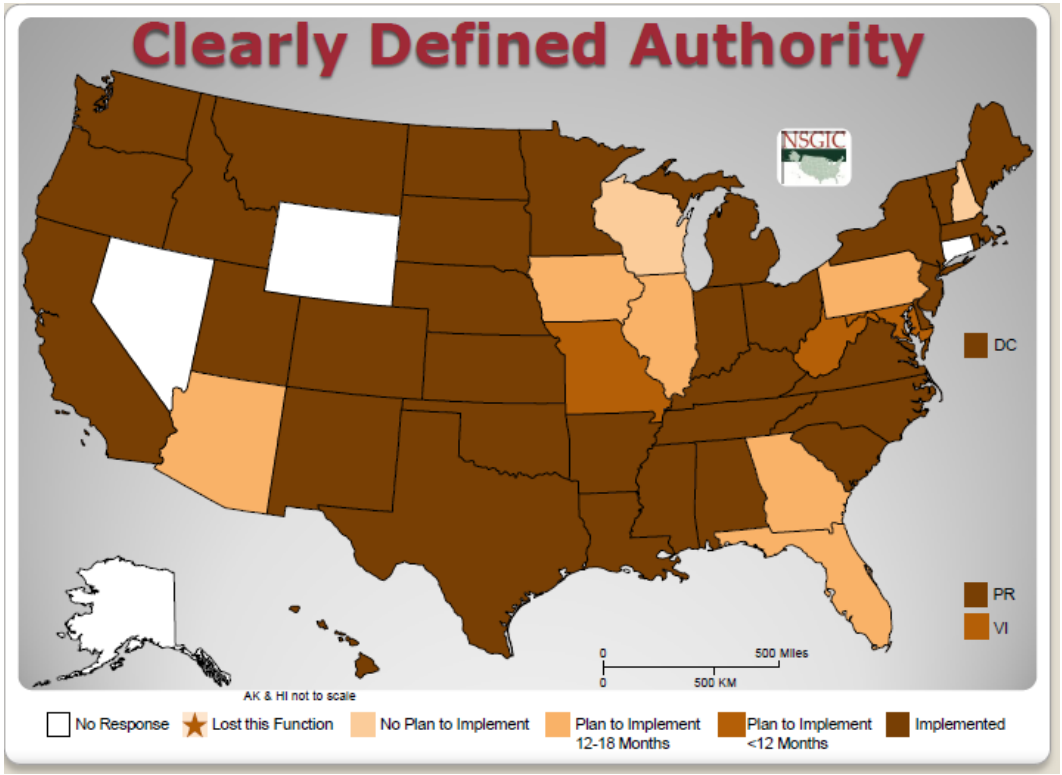


State Perspective

- NSGIC state survey



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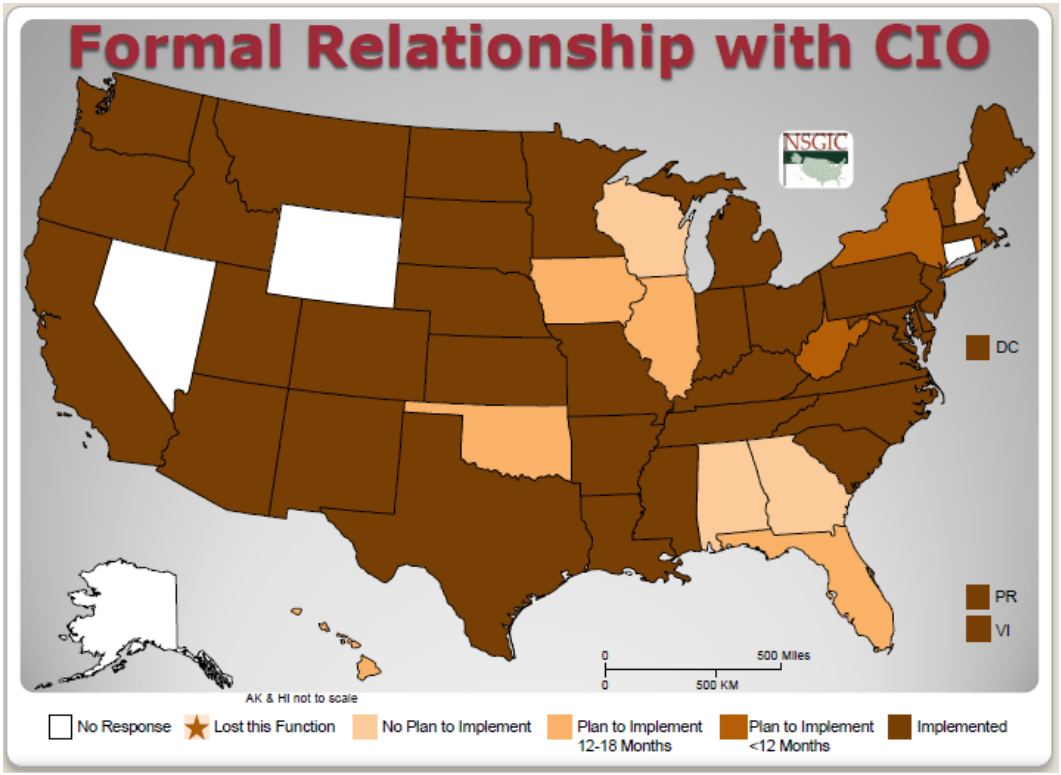

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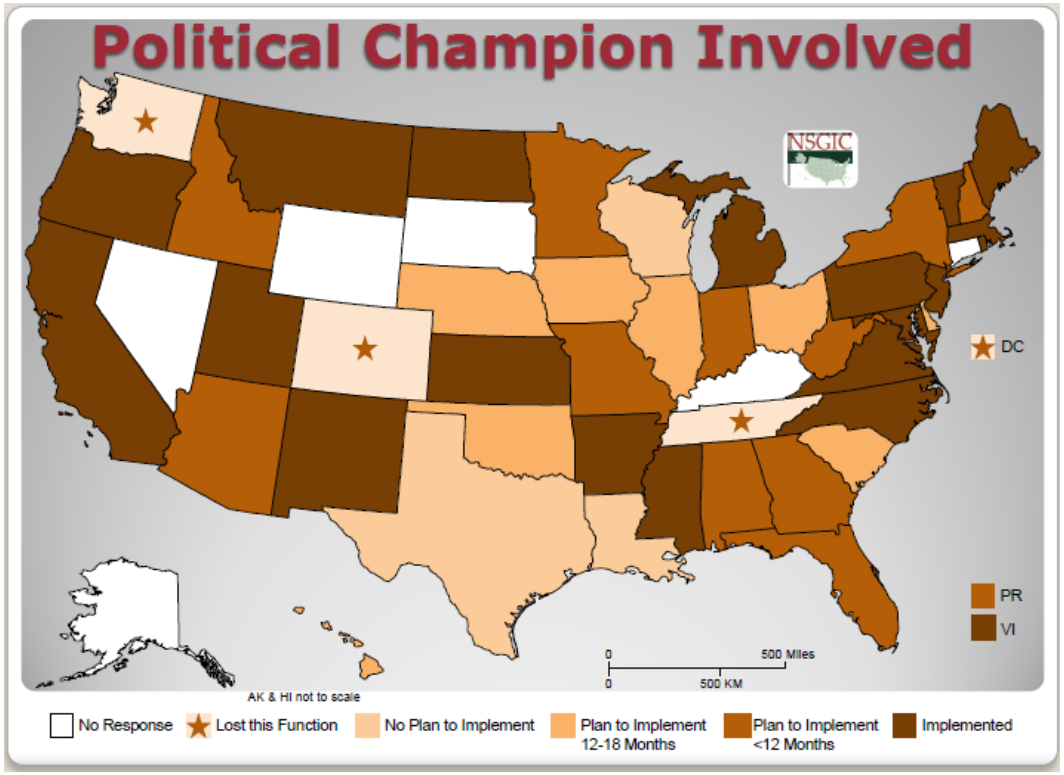

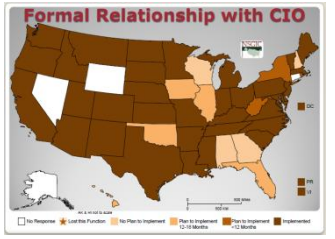

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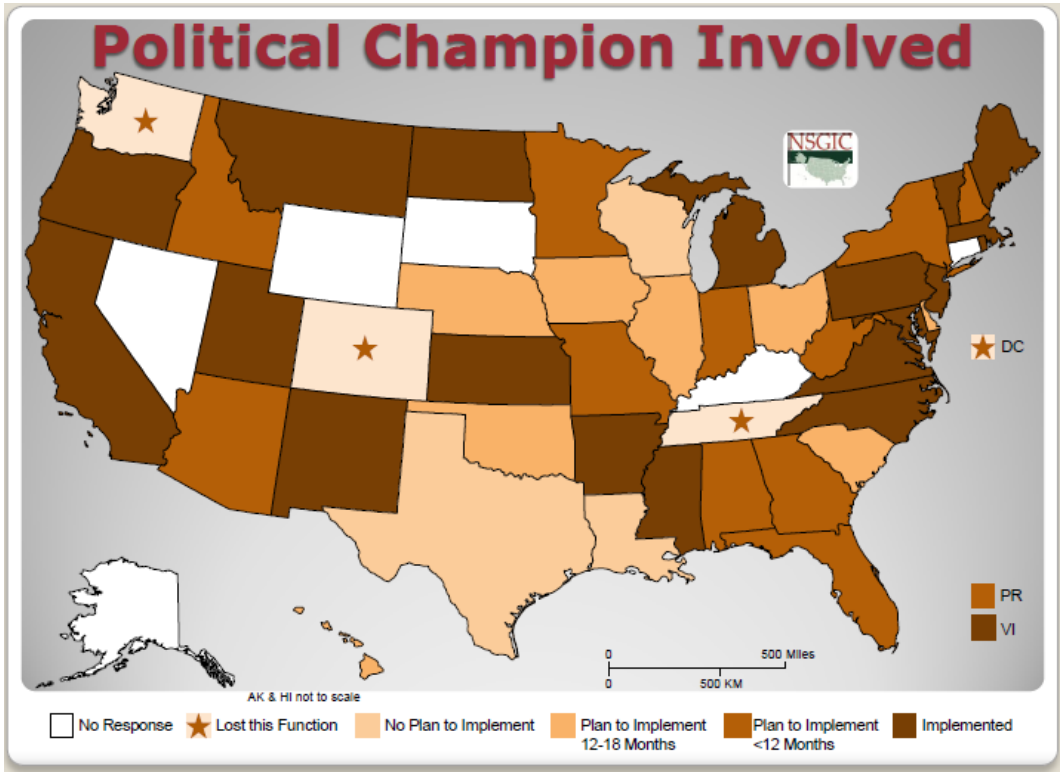

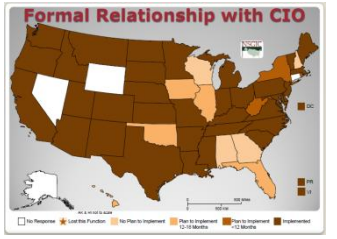

State Perspective

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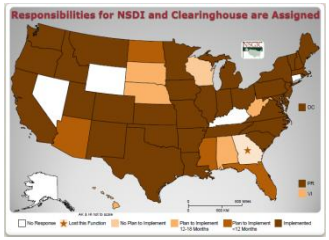

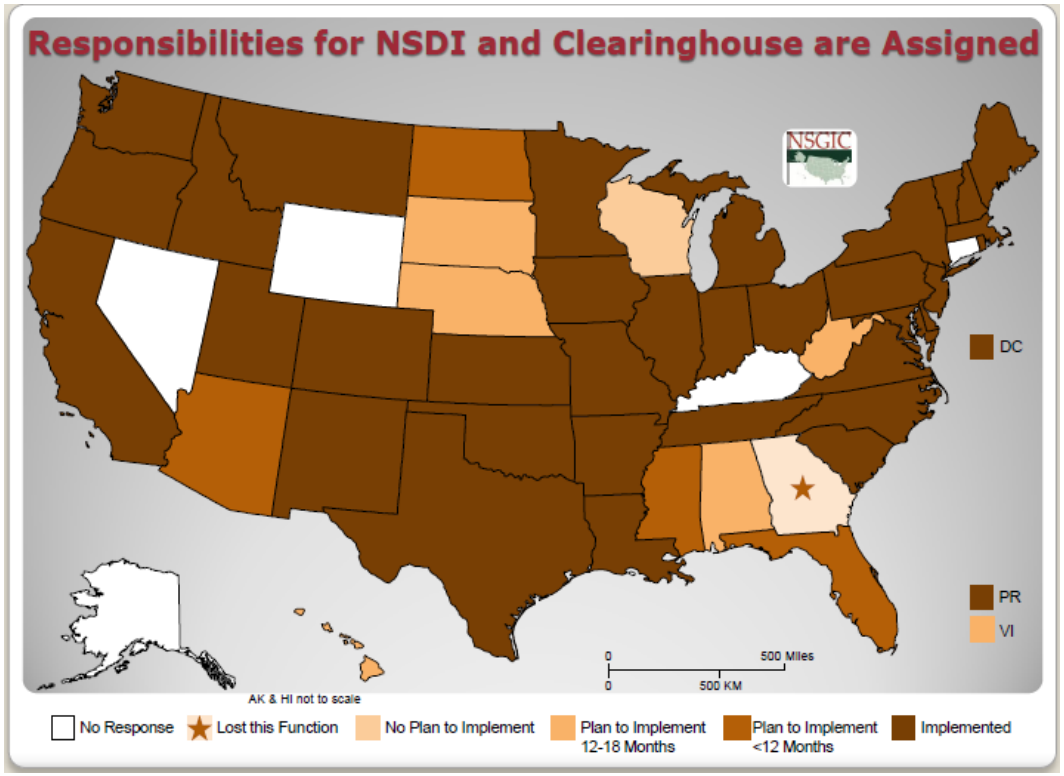

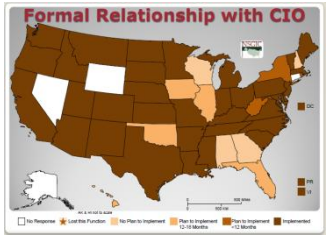

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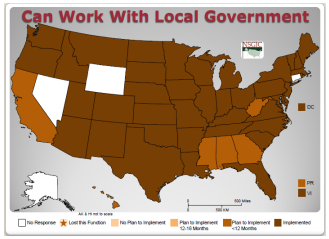
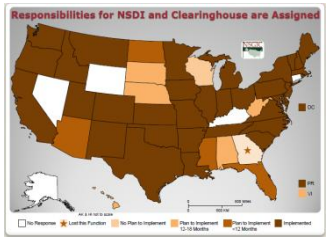
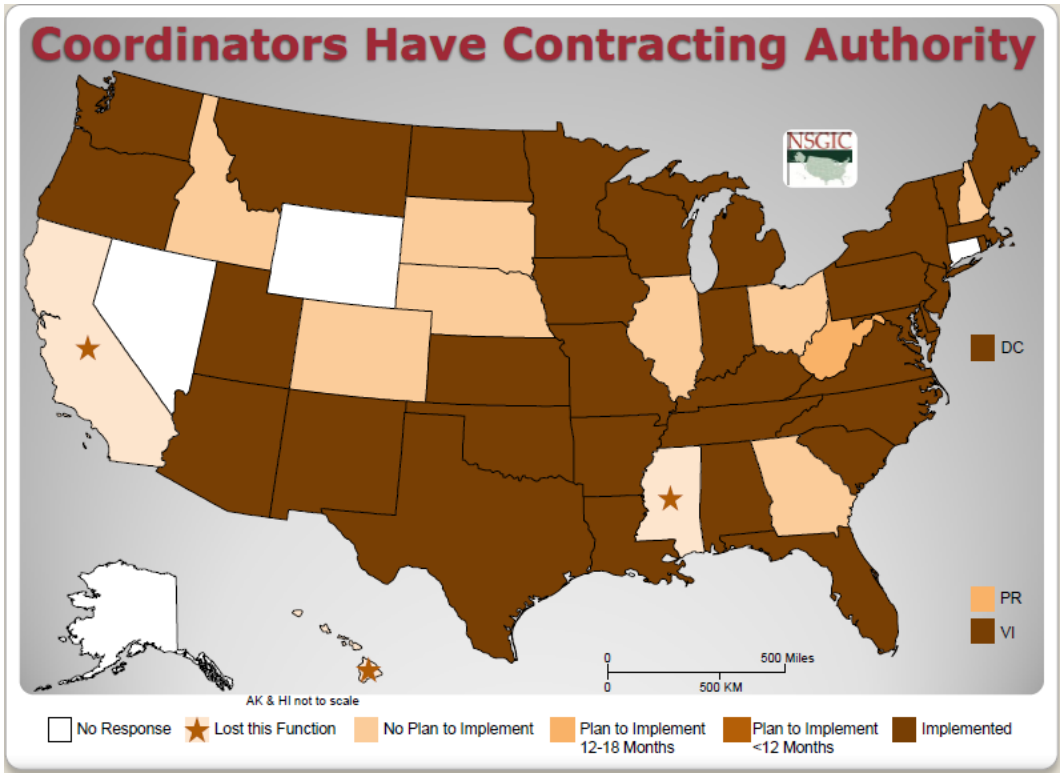
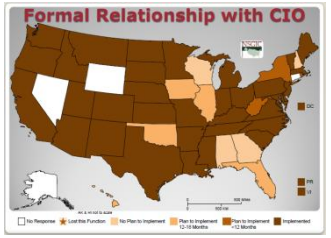


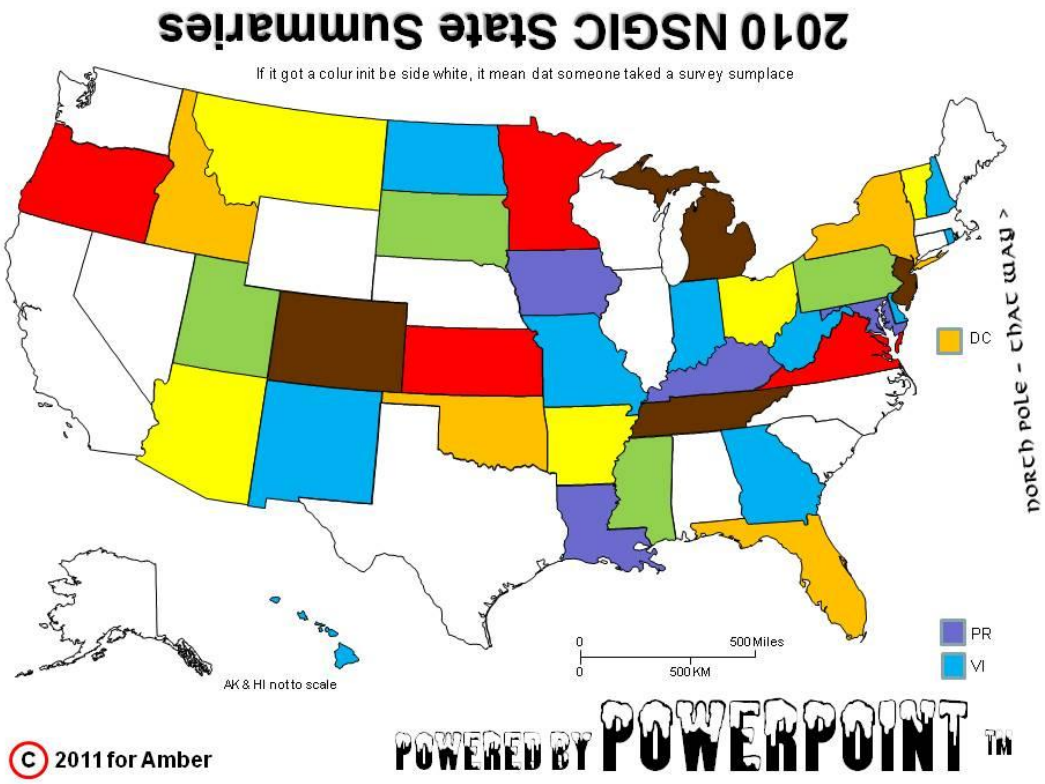




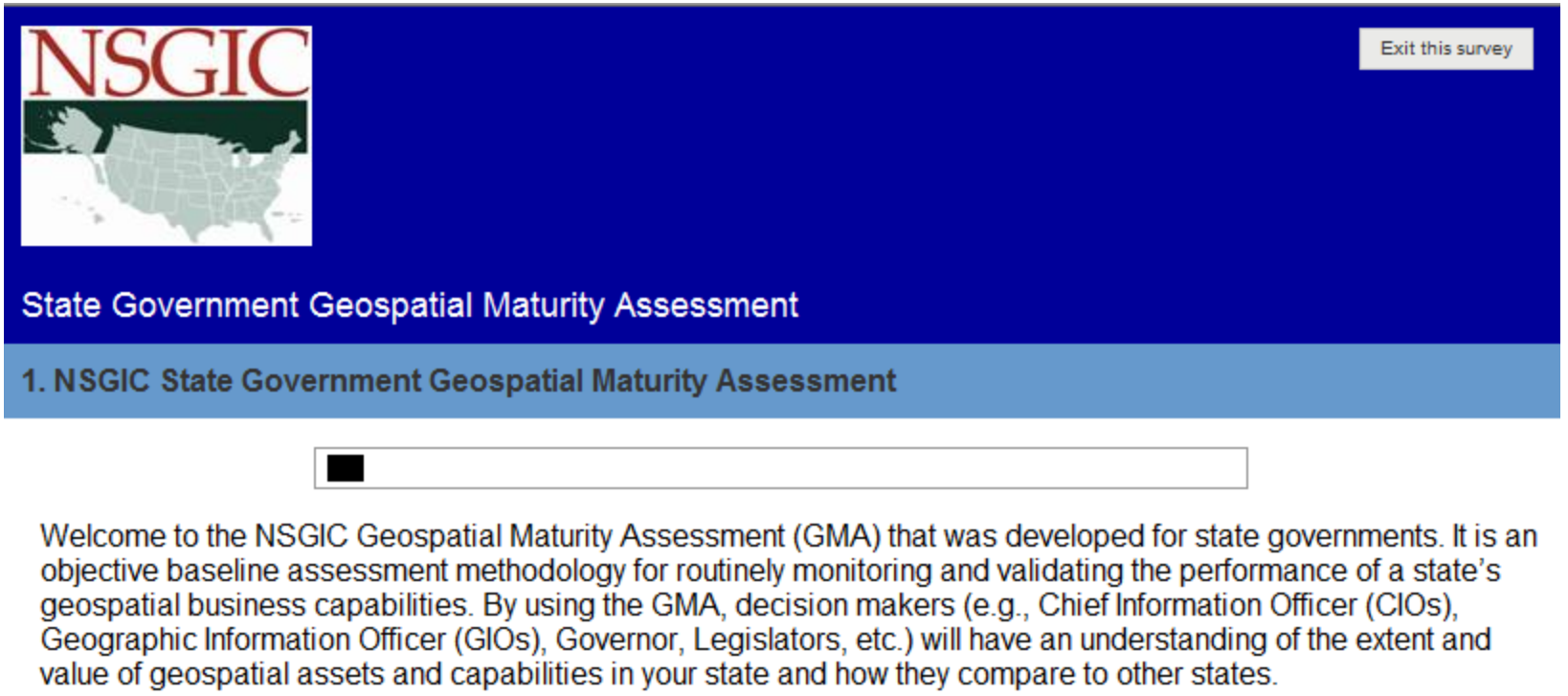


State Perspective

- NSGIC state survey



State Perspective



Successful Collaborative Activities

- Broadband
- NAIP
- EPA Exchange Network
- Digital Coast
- HSIP
- NGAC

Broadband Grant
Model for Successful Fed-State Collaboration

- National Telecommunications and Information Administration manages grant program
- Every state received funds
- Service area data from broadband providers
  - Nondisclosure agreements
- Various formats -> census block geography
  - Census block based data delivered to NTIA
- National broadband map

From the Beginning

- NTIA grant program officers worked with states to help structure grants in most efficient way
- Programs had to deliver specific products while providing benefits to states
- Open to building state capacity

Evolutionary Process

- Collaborative process
- NTIA and FCC looked to states' experience refine goals, specs, etc
  - Solicited input
  - Feasibility check
  - Ensures business needs are be met
- Open, regular communications to and from states
- NSGIC working group

Successful Interaction

- 0 to nationwide data set in 1 year!
- Lessons and Keys to Success:
  - Funding
  - Clear goals
  - Good, open communication and collaboration
  - Simple model to start, with continuing evolution
  - Clear, direct business case
- Model for other information types like addresses
- States can do good things when given adequate funding, guidance and a collaborative environment

Conclusions

- Collaboration is only way we'll build national data sets and services
- Create once, use many times
- Collaboration is a decision more than a technology
- Support for geospatial developments increasingly from the question-askers (e.g., DoE, HUD) rather than the data developers (USGS)
- Question: How do your activities support or impede coordinated approach?

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