

# Advancing the Fifty States Initiative



## Next Steps Recommendations

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## Contract Information

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## Executive Summary

The Federal Geographic Data Committee (FGDC) has been implementing the Fifty States Initiative in association with the National States Geographic Information Council (NSGIC) since 2005. This program aims to foster the development of the National Spatial Data Infrastructure (NSDI) by supporting state efforts to improve geospatial coordination and the construction and maintenance of NSDI framework data sets. This report builds on some of the findings of the recently completed “Measuring Progress of the Fifty States Initiative” report and provides an overview of some of the successes, and known issues and challenges the program faces. Most importantly, the report identifies the “next steps” that the program should pursue in the coming years.

Over the past five years the Fifty States Initiative has been successful in raising the profile of the NSDI with state and local geospatial stakeholders and in catalyzing strategic and business planning. The next steps for the program involve consolidating those gains, supporting the realization of the plans through *implementation*, and beginning the process of measuring where the nation stands on NSDI development.

The thrust of the recommended next steps for the Fifty States Initiative acknowledges that successful statewide strategic planning efforts are winding down and that there needs to be a new focus on assisting states in **actualizing the goals** identified through strategic planning. The report makes seven specific recommendations:

1. **Create measurements of success for NSDI.** Without a measurement regime, there will be continued difficulties in measuring the status of NSDI and the success of the Fifty States Initiative. Thus, it is recommended that the design and implementation of new performance metrics and a system for measuring these metrics be carried out.
2. **Create Best Practices Library of Federal agency and statewide case studies for common issues and opportunities.** There is an increasing body of knowledge and lessons-learned regarding efforts to improve statewide coordination and NSDI framework layer development. This knowledge base should be made readily accessible to those who are planning or justifying new projects.
3. **Fifty States Initiative CAP grant emphasis should shift from *strategic planning* to *business planning*.** As the vast majority of states complete their strategic plans there will be an increasing demand for detailed business plans and business cases that will help to validate the need for funding specific initiatives called for in the strategic plans.
4. **States should be able to use Fifty States Initiative CAP grants to catalyze implementation action on their strategic and business plans.** The Federal government shares an interest in seeing that state strategic plans are carried out. Even modest Federal funding for implementation can be an important catalyst to obtaining broader state funding to carry out the plans.
5. **Fifty States Initiative CAP grants for strategic and business planning should be considered for regional, county and local governments.** Regional and local governments are important allies in constructing and maintaining sound statewide

spatial data infrastructures (SSDI). Providing some grant funding to sub-state entities will serve to improve SSDIs and by extension, the NSDI.

6. **The Fifty States Initiative CAP grant process should be aligned with other Federal grant and funding programs that provide funding to states for geospatial activities.** The CAP grant funding provided to states is tiny compared to other funding that is offered to states by other Federal agencies. If Federal funding provided to states can be better coordinated there is enormous potential to provide *strong incentives* to states to participate in NSDI in an orchestrated and standardized fashion.
7. **Strengthen Fifty States Initiative communications and marketing activities.** Effective communications and strong outreach remain vital components of multi-participant collaborative efforts such as NSDI.

A core challenge of the Fifty States Initiative is that the NSDI is currently more of a “notional concept” than a precisely defined set of products and outcomes. Without a better and more precise definition, it is difficult to describe the current state of the NSDI and it is equally difficult to measure the extent to which the Fifty States Initiative has contributed to NSDI development. At the same time, there is ample evidence that Fifty States Initiative funding has been extremely valuable to states and has led to the type of meaningful statewide coordination improvements that are essential for NSDI development.

# 1 Introduction & Background

## 1.1 Brief History of Fifty States Initiative & NSDI

The Federal Geographic Data Committee (FGDC) sponsored a strategic planning activity in 2004 that was referred to as the “Future Directions Initiative”. It was established to draft a national geospatial strategy and implementation plan to further the development of the NSDI. The larger geospatial community contributed to three overarching actions that provided the context for ensuing goals and objectives that were to be pursued. “Forging Partnerships with Purpose” was one of those three overarching actions and it incorporated five objectives, including: “By 2006, fifty state coordinating councils are in place and routinely contributing to the governance of the NSDI.” These efforts were the origin of the Fifty States Initiative.

The National States Geographic Information Council (NSGIC) was assigned the lead for this initiative and asked to shepherd the production of an action plan that would lead to its implementation. NSGIC assembled a committee that included local, state and Federal government representatives to develop the “Fifty States and Equivalent Entities Involved and Contributing to the NSDI Action Plan<sup>1</sup>” which was published in February 2005. It was the first of the Future Directions action plans forwarded for consideration by the FGDC membership. After discussions by FGDC committees, the plan was modified<sup>2</sup> prior to being presented to the Steering Committee for its approval<sup>3</sup> which occurred on October 3, 2005.

In October 2005, the FGDC issued a 3-year contract to NSGIC to help implement this initiative. The major tasks under this contract included:

- Developing templates for states to use as they engaged in strategic and business plan development. The templates were created under the guidance of a steering committee that included many stakeholder groups.
- Hosting annual workshops for Fifty States Initiative oriented CAP grant recipients (and others) to improve their capacity for developing strategic and business plans.
- Developing marketing/education materials to support the initiative. The materials were created under the guidance of a steering committee of Federal and state staff.
- Participating in FGDC activities. In particular, the contract required active participation in the CAP grant process Fifty States oriented awards.

Beginning in FY 2006, FGDC has provided funding assistance to the states to develop strategic and business plans through CAP Fifty States Initiative grants (i.e. category 3)

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<sup>1</sup> See: [http://www.fgdc.gov/policyandplanning/future-directions/action-plans/FD\\_PART\\_Fifty\\_States\\_Contributing\\_NSDI\\_Final\\_Action\\_Plan\\_v9.pdf](http://www.fgdc.gov/policyandplanning/future-directions/action-plans/FD_PART_Fifty_States_Contributing_NSDI_Final_Action_Plan_v9.pdf)

<sup>2</sup> See: <http://www.fgdc.gov/policyandplanning/future-directions/action-plans/Fifty%20State%20Initiative%20modification.doc>

<sup>3</sup> See <http://www.fgdc.gov/policyandplanning/future-directions/action-plans/50-States%20Resolution.doc>

that are awarded on an annual basis. Since the inception of the initiative, 39 states and equivalent entities have received grants that typically ranged from \$40,000 - \$50,000.00 each. The states were required to fund a 50% cost share that could include in-kind services. In addition to the 39 states that received CAP funding, approximately four additional states (i.e., MA, RI, KS, and NM) used additional cooperative assistance partnership program funding that was not explicitly part of the Fifty States Initiative to complete their strategic plans.

Over the first three years, the Fifty States Initiative has been one of the FGDC's most successful efforts. It empowered these states to develop organized and consistent strategic and business plans while engaging the broader state and federal stakeholder community in the process. This effort helped to remove many of the barriers between stakeholder groups through their inclusion in the process.

## **1.2 Current Fifty States Initiative Activities**

In 2008, the FGDC issued a competitive request for proposals to continue management support of program activities for the Fifty States Initiative. A new contract was awarded to Applied Geographics, Inc. who teamed with NSGIC, Grant Thornton, and Michael Baker Jr., Inc. In FY 2009 the contract provided support for the following activities.

- Updating of the strategic and business plan guidelines<sup>4</sup> to address shortcomings and reflect information gathered over the first three years of the program.
- Continuing the annual strategic and business planning workshops at the NSGIC annual conference
- Conducting a Federal workshop to identify best practices and steps that should be taken to implement completed strategic and business plans.
- Continued assistance with the CAP Fifty States Initiative grant process.
- Development of reports (including this one) to assess the progress that has been made since the initiation of the program and to identify future directions and next steps.

Including the private sector in the management of this initiative has provided new insights that will help shape the program in the coming years. The Fifty States Initiative continues to be one of the FGDC's most successful endeavors. The funding assistance provided by FGDC has allowed the participating states to engage stakeholder communities so that they will become stronger participants in the NSDI.

## **1.3 Context for Evolving the Fifty States Initiative**

Building the NSDI is an incredibly complex effort. It literally requires the cooperation and close coordination of more than 18,000+ municipalities, 3,141 counties, 50 states, and 700+ tribal and regional organizations. Within each of these units of government there is a range of a few to perhaps more than 100 subunits that are stewards for unique spatial data and services. Coordinating this level of activity requires a federated

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<sup>4</sup> See <http://www.fgdc.gov/policyandplanning/revbbsp>

governance structure. This is the reason that the Fifty States Initiative focused on *greater stakeholder involvement* through the statewide GIS coordination councils that are most typically organized by state governments. Another important function of the statewide GIS councils is the “build-out” of their unique statewide spatial data infrastructures (SSDI) which have been acknowledged through this initiative. Over 50 distinct and unique SSDIs will create interesting challenges as the nation works to assemble them into a seamless, functional NSDI that can be kept modern and relevant. The Fifty States Initiative follows the premise that through effective strategic and business planning by states and the Federal agencies, the process can be made more orderly.

With initial planning underway, it is time to embark on more focused and detailed planning effort to determine the best practices for both assembling and maintaining the NSDI. Tools and processes such as common data models, effective extraction and translation systems, and data storage and publication technologies are part of the solution. However, we will continue to struggle with building a *functional* NSDI, without continuing efforts to bring the entire community together to effectively plan a process for its construction and maintenance.

There have been many initial successes in building parts of the NSDI such as the National Hydrography Dataset (NHD) and National Agriculture Imagery Programs (NAIP). The key drivers of these successes have been agency *commitment* and mission, funding, and a planning effort **that involved the broader community** of participants. In some cases, these successes by Federal agencies have had fortuitous spillover benefits, resulting in products that are useful to the entire geospatial community. Regardless of these successes (including diverging viewpoints about the level of success), few would argue that there now exists a clear mandate, adequate process, or the funding required to build the NSDI; nor would many argue that adequate funding is likely to be obtained given the current economic crisis. Building the NSDI in the next decade will only happen through a commitment by all levels of government to work together and share data, the implementation of “painless” methodologies for assembling the “pieces into a whole”, and adequate incentives to encourage ongoing participation.

Now that the majority of states have completed a first round of strategic and business planning for their SSDIs, it is time to establish a clear vision for the NSDI and develop national business plans that provide a logical path to its creation. When these plans are available, the FGDC should issue clear directions to the states for another round of CAP grants that will fund business plan development focused on state SDI improvements and integrating the individual SSDIs with the NSDI. In addition, it is time to implement important and innovative programs that create national framework data such Imagery for the Nation<sup>5</sup> (IFTN). The basic design of such programs should demonstrate that Federal needs can be met while also providing options for state and local governments to improve the characteristics of the data to meet their own business needs and to derive further local benefits. Programs such as IFTN will demonstrate that good planning can lead to

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<sup>5</sup> See <http://www.fgdc.gov/iftn>

implementation, and that with the right incentives, effective partnerships for NSDI framework data development can be built.

## 2 Known Issues & Challenges

### 2.1 Challenges in Measuring NSDI Progress

The recently completed “Measuring Progress of the Fifty States Initiative” report prepared for the FGDC graphically documented that there are significant challenges in measuring the progress of both advancing the NSDI and improving state level geospatial coordination. While there is ample anecdotal evidence and case studies that there have been meaningful improvements, there are neither established metrics nor adequate data to measure these improvements in quantitative terms.

The requirement for improved measurement of NSDI is not a new concept but it is increasingly urgent. As early as 2001, the National Academies document titled National Spatial Data Infrastructure Partnership Programs: Rethinking the Focus recommended that: “the FGDC develop metrics that can be used to monitor long-term progress in the adoption of the principles and programs of the NSDI among agencies at all levels of government, academia, and the private sector.” Developing such metrics and measurement is feasible, and as recommended below, it is now time to proceed towards implementing them.

### 2.2 Meeting the Needs of Federal Stakeholders

States have been empowered by the Fifty States Initiative to develop organized and consistent strategic and business plans while engaging the broader state and federal stakeholder community in the process. As noted earlier, building the NSDI is an incredibly complex effort requiring the cooperation of Federal, State, Regional, and Local government.

The level of cooperation between Federal, State, Regional, and Local government varies widely based on a disparate set of business needs. Consideration of the needs of Federal, State, Regional, and Local government stakeholders starts with the understanding that **there is no single need to be met**: the needs for spatial data vary greatly.

- Geographic *areas of interest* vary from nationwide views to pinpoint views at the local level and *data themes of interest* vary by the business issues to which geographic data provide solutions.
- The *precision and accuracy required* vary from the highly accurate and precise data for spatial referencing systems to coarse kilometer-sized grids for climate data.
- The *intensity of data use* might be as simple as casually looking at a map image for an area, an intermediate level such as geocoding, or as complex as running geospatial analyses that pose demanding requirements for the content, quality and structure of spatial data.

- The *role of geospatial data* is central to the mission of some agencies and is peripheral to the mission of others.

Business practices further complicate this picture. Needs for and use of spatial data change as government entities learn how spatial data can improve the efficiency and effectiveness of program activities. In general, governmental use of geospatial data and technologies continues to grow rapidly. As a result, government institutions are at different levels of maturity of use, and prior investments are both a measurement of maturity and an impediment to future change and adaptation. Rates and depths of adoption vary. Nevertheless, all governmental entities share a common desire to minimize the costs of acquiring, developing, and maintaining geospatial data. This desire leads to interest in sharing costs and data with other agencies, as well as with other levels of government, particularly state and local government.

To further advance, and ultimately realize NSDI, Federal stakeholders and State and Local government need to collectively transition from ‘general support’ for the NSDI to a **targeted list of common objectives and products**. Geospatial **data improvements** start with a common set of geospatial *content* with the NSDI framework data as the target. From comment content, a set of common *accuracy* requirements and agreement on an acceptable update cycle to meet data *currency* needs can be identified.

As Federal Agencies seek to minimize the costs of acquiring, developing, and maintaining geospatial data there is increasing interest in greater sharing of data with other organizations, including state and local government. Local governments have been identified as a potentially rich source of data because their regulatory and service-delivery functions often detect and record such changes. For instance, if a new road is constructed, it is much more likely it will end up on a county map before it will end up on a state or national map. While Federal agencies have a great interest in these data, there are significant challenges to using these potential data sources, including:

- Different data characteristics when data are geared to the local government business needs as opposed the business needs of State and Federal applications
- The technical, financial, and institutional impediments to finding, receiving, and integrating local data
- The large number of local governments from which data would need to be retrieved

By further promoting the move from state strategic plans and business plans to implementation, Federal stakeholders will benefit tremendously. States provide a crucial bridge to working with regional and local government to improve the quality and currency of the framework layers and fostering the “map once and use many times” mentality.

Federal stakeholders share two related requirements for obtaining the data they need from partner agencies and other levels of government. First, there needs to be a **data discovery** mechanism. Second, once data is discovered, there needs to be a **data delivery** mechanism. Currently, data discovery has been facilitated by the FGDC

through a **metadata clearinghouse** approach, currently represented by Geospatial One-Stop (GOS). The metadata standard allows a broad range of entities to voluntarily post their metadata records to GOS in a uniform format. The clearinghouse can then be queried by users seeking to discover data by theme and/or geographic coverage. This capability increases the ease of communicating about data content and can reduce confusion about the availability of data. The clearinghouse provides a way to publish metadata, and to acquire data by using the data delivery mechanisms described in the metadata. Although this strategy is the most egalitarian - with any organization or individual possessing any geospatial data able to participate – the data postings within GOS are not vetted and/or reviewed. As a result, when querying for data (e.g. a query such as “orthophotos for Boston”) one can be overwhelmed by the volume of results, and there are limited tools for assessing the results to determine “the best available” or “recommended” data sets. This greatly limits the overall utility of GOS

While GOS provides some level of data access (i.e. through instructions found in the metadata), Federal stakeholders share a common interest in more direct geospatial **data delivery** from State and Local government. The concept of map once and use many times can be facilitated by the dramatic technology advances of the World Wide Web. The clearinghouse noted above for metadata can also serve as a geospatial **framework data repository** for data download. Data transmission capacity and software advancements now enable one entity to build and maintain geospatial data and provide real-time access through **geospatial web services**.

Increasingly, states are helping to serve this role to aggregate local and regional data to make them available on a statewide basis. Such approaches benefit Federal agencies; however, there are still practical limitations. Even if all 50 states had web services for a framework data set, such as roads (which is collected and updated from local government data), there is considerable overhead in managing projects by attaching to 50 distinct web services (assuming that all 50 services are readily discoverable).

Ultimately, Federal agencies need more than the ability to simply “find” all the data that is out there and then access them “one data source by one data source.” There is great value to be added by identifying and pointing Federal stakeholders to *best available* data sources, and providing efficient, facilitated access to those data sets. Otherwise, multiple Federal agencies will repeat the same challenge of searching vast quantities of metadata in an attempt to identify the best sources, and then accessing those data sets on a piecemeal basis.

Current strategic and business planning efforts aimed at assisting state participation in NSDI should continue to be directly informed by what Federal stakeholder need and would benefit from. As technology and data continue to mature, the Federal stakeholder community should persist in refining and clarifying their *specific requirements* in more precise terms so that state level action can be as mutually beneficial as possible.

## **2.3 Transitioning from Planning to Implementation**

The Fifty States Initiative has been highly successful in catalyzing useful statewide geospatial strategic and business planning in over 40 states and territories. Grant recipients have reported that these planning exercises have been highly productive and have often reinvigorated the connections between the state program and local stakeholders. Indeed, there is now a large national portfolio of statewide strategic visions and a large set of identified projects (i.e., programmatic goals) that are necessary to help realize those visions.

Nevertheless, many states remain challenged in moving forward on their programmatic goals, particularly in the tough fiscal climate of 2009. Indeed, often strategic goals have identified a need for “sustainable funding,” as current GIS budgets are focused on operations and are not equipped to make investments in the kinds of data and/or technical infrastructure called for in the strategic plan. Even “organizationally oriented” strategic plans that call for the creation of a statewide council will have a funding challenge to provide staffing to the council at its outset. At the same time, the strategic plans often do a good job of identifying the general benefits that can be expected from such investments. Thus, if seed and/or matching funding to *initiate implementation* can be identified there is a high likelihood those investments will be productive and will help to secure broader, sustainable funding to expand or complete implementation.

In addition to strategies that involve federal government fiscal support – perhaps, via CAP Fifty States Initiative grants for implementation initiation – there should also be mechanisms to share the best practices that have led to funded implementation programs. Those states that have been successful in initiating implementation have learned important lessons and are in a position to teach. Without some care to seeing that the *implementation* of the strategic plans take root, there’s a risk that the results of these extensive planning efforts will only be a set of good ideas and reports on the shelf. As such, several of the recommendations presented below are targeted at transitioning the Fifty States Initiative from a *planning to implementation* posture.

## **3 Recommendations Going Forward**

### **3.1 Create Measurements of Success for NSDI**

**Why?** The Fifty States Initiative was designed to support the development of NSDI. In order to determine the level of effectiveness of the program it is important to understand whether measurable improvements in NSDI have been made based on Fifty States Initiative activities. Before these measurements can be made, metrics and indicators of success need to be better identified.

To date, progress on the NSDI has defied measurement by any of the metrics available to managers. Instead, fairly simple anecdotes or “status maps” have been used to define progress at the state level. These coarse measures only tell part of the story and don’t

accurately portray progress or allow consistent measurement of progress within a state, between states and over time.

A key element of the problem is that the NSDI is defined in very broad terms as “the technology, policies, standards, human resources, and related activities necessary to acquire, process, distribute, use, maintain, and preserve spatial data<sup>6</sup>.” While these pieces of the puzzle are certainly all required for a robust NSDI, the focus of the NSDI always has been, and always will be on the **data**. When developing business plans, appropriate metrics should be identified for data-related and non-data-related components. For instance, the “data maintenance” component might include a metric for the “minimum data currency” allowed within NSDI. . Further, these metrics should apply to each of the framework layers identified in OMB Circular A-16. It is not enough to develop a status map of hydrography, imagery, or cadastre, unless the data are defined according to published standards, and it is known that they meet the needs of the nation and not just a single state or Federal agency. Ideally, progress can be measured on a consistent, “apples-to-apples” basis.

Measuring “coordination efforts” (i.e., non-data related components) may be an even more difficult and subjective process than measuring NSDI. NSGIC’s nine criteria<sup>7</sup> for statewide GIS coordination efforts appear as straight-forward measures, but as the annual reporting efforts have shown<sup>8</sup>, they are still subjective measures that are “self-assessed”. It can be logically extended that measuring the *impact* of Fifty States Initiative CAP grants is an even more subjective process. To address these challenges, efforts are underway in state and local governments to develop a more accurate and effective measurement system for “geospatial capabilities.” These efforts have been referred to as “score cards” similar those promoted in the Fifty States Initiative training packages and as “maturity assessment models.”

Current efforts by NSGIC members (led by Georgia and Texas) to develop a Geospatial Maturity Assessment Model for state geospatial programs should be supported by FGDC as they may lead to more effective progress measurement metrics. This work is being continued on an ongoing basis by NSGIC’s Geospatial Maturity Assessment Work Group<sup>9</sup>.

First, **critical component** definitions and measurement metrics must be defined and characterized by FGDC. These are the items required at local, state and federal levels to build and maintain the NSDI. Second, clear definitions and metrics for measurement and indicators of progress must be developed for those critical components. In June, 2008, the Georgia Geographic Information Systems Coordinating Committee (GISCC) and the

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<sup>6</sup> Definition is from in OMB Circular A-16

<sup>7</sup> See article on page 1 of: <http://www.nsgic.org/hottopics/fiftystatesinitiativehandout.pdf> titled “NSGIC’s Coordination Criteria”

<sup>8</sup> The “Measuring Progress of the Fifty States Initiative” report graphically demonstrated the limitations of the NSGIC state survey data for quantitative measurement of coordination and NSDI progress.

<sup>9</sup> See: <http://www.nsgic.org/committees1/committee.cfm?cid=113>

Texas GIO produced a document titled the “2007-2008 Georgia Geospatial Maturity Assessment<sup>10</sup>” that provides a strong example of identifying these types of critical components and presenting a scoring system for measuring maturity.

The Georgia document identified 58 separate program measures that were organized into seven categories:

1. Geospatial Coordination and Collaboration
2. Geospatial Data Development
3. GIS Resource Discovery and Access
4. Statewide Partnership Programs
5. Participation in Pertinent National Partnership Programs and Initiatives
6. Geospatial Policies, Standards, Guidelines and Best Practices
7. Training, Education, and Professional Networking Activities

Each of the 58 program measures was scored/graded using a point system with six levels:

1. Fully implemented (1 point)
2. In Progress – fully resourced to complete (.75 points)
3. In Progress – partial resources available (.5 points)
4. Planned – resources assigned (.25 points)
5. Not Planned – no resources assigned (0 points)
6. Not Applicable (0 points)

Then each of the categories received an aggregate score as a percentage titled “Success in Satisfying Needs”. Thus, Georgia was scored to be 27% successful in meeting its needs for “Geospatial Coordination and Collaboration;” 48% successful in “Participation in Pertinent National Partnership Programs and Initiatives;” and so on.

While this system has not yet been perfected it effectively demonstrates a positive evolution from the intentionally simplistic NSGIC 9 Criteria approach. The Geospatial Maturity Assessment successfully demonstrates a richer and more detailed set of components to measure, and it applies a more subtle scoring system than the NSGIC 9 Criteria’s binary system. These characteristics should enable better state to state comparisons, a national compilation and over time should provide better measurement of progress.

While the Georgia approach does not take this tact, “data progress indicators” and an appropriate scoring system could be developed for each framework data layer and they would provide potentially important measures of NSDI progress. Such indicators would nicely fit into Georgia’s scheme under the “Geospatial Data Development” category. Thus, such indicators could be used with other associated measures for items such as staffing, funding, and intergovernmental coordination (that are found within Georgia’s approach).

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<sup>10</sup> See:

[http://www.nsgic.org/events/2008annual\\_presentation/wednesday/04gismaturity/gisccmaturityassessment.doc](http://www.nsgic.org/events/2008annual_presentation/wednesday/04gismaturity/gisccmaturityassessment.doc)

Such measures could provide meaningful insights about what component pieces are working, or are not working. These measures may not be identical on a regional or state-by-state basis, but they should be normalized to ensure uniform reporting and the ability to perform comparisons. It will also be desirable to incorporate “360 degree” measurements that provide for feedback from involved stakeholders, and an alternative to the current “self-assessment” norms. For example, local and Federal agencies should be afforded an opportunity to issue “concurrence statements,” “approval ratings” and/or other forms of measurement critique in response to self evaluations. Ultimately, these measures need to be very public and comments should not be taken anonymously. Transparent measurements and cross state comparison should motivate the laggards to improve while also helping to keep the criticisms honest.

The notion of seeking better measurement for NSDI is not new. In fact, as early as 2005 the Fifty States Initiative Action Plan<sup>11</sup> recommended a series of **benchmark measures for participation and contribution by local, state and tribal governments in the NSDI** (in Section 3.1.9 of that plan). Many of these suggestions remain relevant for designing a more robust performance measurement regime for NSDI, including:

- Percentage of the extents (area coverage) for which framework data meeting appropriate standards is available
- Business plans are available that detail the funding levels required for coordination and clearinghouse activities as well as initial data production and data maintenance.
- State clearinghouse measures, including use of OGC protocols, availability of FGDC standard metadata, ease of use, etc.
- Measures that demonstrate local and tribal government participation in statewide coordination council activities

Ultimately, the FGDC must make a concerted effort to carefully determine what measures of progress are appropriate for new Fifty States Initiative grants. After defining these measures, such as the development of a progress scorecard, it would be reasonable to require that grant recipients report these measures on a mandatory basis. The FGDC should also consider “conditioning” the approval of grant requests to require that states provide current and accurate reports on their maturity and geospatial coordination status. Currently, the best “reporting framework” is NSGIC’s State Summaries, but in the future a more **comprehensive and detailed nationwide reporting system** is recommended. If designed and managed properly, both of these requirements will help generate the data necessary to better measure progress toward completion of the NSDI.

Ideally, any new reporting system would be web-based with the results going into a database. This would be far more efficient than requiring the inclusion of metrics in written reports. A web-based system provides ready access to normalized information,

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<sup>11</sup> See: [http://www.fgdc.gov/policyandplanning/future-directions/action-plans/FD\\_PART\\_Fifty\\_States\\_Contributing\\_NSDI\\_Final\\_Action\\_Plan\\_v9.pdf](http://www.fgdc.gov/policyandplanning/future-directions/action-plans/FD_PART_Fifty_States_Contributing_NSDI_Final_Action_Plan_v9.pdf)

whereas statements included in written reports can be more subject to interpretation and require an ongoing effort to extract the information and make it publicly available. Development of a web-based system for measuring progress of the NSDI should be an FGDC priority.

### **3.2 FGDC Should Create a Best Practices Library of Federal Agency and Statewide Case Studies for Common Issues and Opportunities**

*Why?* Many geospatial stakeholders at all levels of government share the same challenges and have a mutual interest in understanding how to overcome them. With an increasing volume of statewide coordination and framework development projects taking place, there is a hunger for quality, vetted information on lessons learned. Several statewide strategic plans have identified a strong need for the creation of local indexes of case studies on topics such as coordination approaches or return on investment. Thus, creating a Best Practices Library of experiences and lessons-learned will provide a valuable resource for both project planning as well as justifying and advocating for new projects. Ultimately, this resource will help to ensure that such projects – which are essential for improving statewide coordination and building NSDI – will move forward.

The Fifty States Initiative is a partnership between NSGIC and the FGDC that is designed to bring public and private stakeholders together to advance NSDI by, amongst other things, forming effective partnerships and lasting relationships. The Fifty States Initiative aims to promote geospatial coordination on a statewide basis to help eliminate geospatial waste and improve efficiency. Better coordination and improved communication should allow agencies at all levels of government to keep from duplicating geographic data and systems at taxpayers' expense.

As noted in Section 3.3, there is now a large national portfolio of statewide strategic plans that have laid out visions and a set of identified projects that are necessary to help realize those visions. Similarly, there is also an increasing portfolio of case studies that have been created by states and federal agencies that have pursued significant geospatial data and/or coordination projects. As further projects are pursued by other states and additional federal agencies, this body of case studies should be discoverable and available to others to help inform and guide their efforts.

Thus, it is recommended that the Fifty States Initiative consider the development of a **Best Practices Library** that would contain project documentation from both federal agency and statewide projects and initiatives. The concept of compiling nationwide information into a single resource is not new to the FGDC. The FGDC website contains the The Clearinghouse Network<sup>12</sup> which is a community of distributed data providers who publish collections of metadata that describe their map and data resources within

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<sup>12</sup> See: <http://www.fgdc.gov/dataandservices/>

their areas of responsibility, and includes the GeoData.gov portal which provides a nationwide metadata clearinghouse.

Similarly, the NSGIC website<sup>13</sup> is used extensively by private industry, as well as federal, state, regional, and local governments that are interested in state geospatial activities, including information on the Fifty States Initiative. For instance, the strategic and business planning guidelines are posted there. Thus, both FGDC and NSGIC have the audiences and technology platforms to support the deployment of a Best Practices Library.

The concept of a resource containing nationwide “best practices” on common issues and opportunities that NSDI stakeholder face complements the October 2008, NSGIC paper “A Strategic Framework for the National Spatial Data Infrastructure”. This paper recommended actions needed to refocus national efforts to complete the development of NSDI and to devise appropriate processes to maintain its data content. Recommendation #5 was an explicit call to implement a strategy to *communicate* about and advocate for the NSDI including “Provid[ing] an organized way to document quantitative and qualitative successes.” A Best Practices Library organized around the common issues and opportunities that states face would be consistent with addressing this recommendation and would create a valuable knowledge-base for NSDI stakeholders.

Similarly, several state strategic plans (e.g. Kansas, New York) have identified a need for *statewide* resources containing case studies and best practices as a means of fostering “local GIS capacity building efforts”. As more government entities seek to embark on GIS programs there is a need for case studies, lessons learned documentation and return on investment information to help justify the initiatives. Such documents can be crucial for helping local actors “sell” the benefits of geospatial technology to decision makers and funders. The national Best Practices Library that is recommended might provide links to state level resources that publish case study information.

Development of the library would initially involve the collection, review and vetting, organization, and publication of the original set of documents. The organization, review and vetting process would be critical and would help differentiate the library from commercial search engines. Later, there should be a capability for third parties to submit documents for registration and linking through the library. Most likely, the Best Practices Library would be organized around the common issues and opportunities that geospatial stakeholders face. Initial topics that are of interest to federal and state stakeholders include:

- Integration of geospatial technology operations with statewide information technology offices (i.e. CIO office) and statewide IT infrastructure
- Establishment of Geospatial Information Officer (GIO) positions and offices
- Effective statewide, harvestable data clearinghouses

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<sup>13</sup> See: <http://www.nsgic.org>

- Geospatial funding strategies and return on investment data
- Effective state-federal collaborations for both joint projects and routine data partnering
- Framework data development and maintenance strategies (e.g., recurring statewide orthophoto programs; statewide LiDAR development, etc.)
- Linkages to other state or local “case study” resources

A searchable and publicly available Fifty States Initiative Best Practices Library that facilitates document discovery to identify patterns of geospatial success would be hugely beneficial to the geospatial community. In addition, the library and associated marketing of the resource would serve as a means of keeping the Fifty States Initiative in front of the geospatial community.

### **3.3 Fifty States Initiative CAP Grant Emphasis Should Shift from Strategic Planning to Business Planning**

**Why?** Over 40 states have currently received CAP Fifty States Initiative funds for strategic planning. These planning efforts have often created momentum for progress and have identified a large volume of sound proposals for projects that would advance state coordination efforts and/or NSDI framework layer development. The next step in moving these projects towards implementation – especially for the larger and more ambitious projects – is conducting the type of detailed business planning and business case development that can lead to funding. As nationwide strategic planning efforts move towards completion, it is appropriate to shift the emphasis towards business planning that can help ensure that the goals of those plans are realized.

From 2006-2009 the large majority of initial CAP Fifty States Initiative awards for strategic and business planning went to the production of Strategic Plans. This makes sense since many states were either creating their first strategic plans, or in other cases updating strategic plans that were extremely outdated. Good business planning should be set in the context of an overall statewide strategic plan that sets priorities so it is natural that states pursued strategic plans first.

In addition, several states created “joint” strategic and business plans, often titled “Strategic Business Plan”. However, upon closer inspection many of these plans were in essence strategic plans (i.e. they followed the FGDC/NSGIC “strategic plan template<sup>14</sup>”) and did not approach business planning as anticipated in the separate FGDC/NSGIC “business plan template”. In other words, even if completed, many business plans were broad and did not generate a detailed business case for a specific initiative as was anticipated. Still, other states had strategic plans that identified several worthy initiatives, and then only had limited funding to complete a single detailed business plan for a single specific initiative.

<sup>14</sup> Please note that the “strategic and business planning templates” were renamed the “strategic and business planning *guidelines*” in 2009.

The strategic plans very regularly identified a set of worthy initiatives. Such initiatives would benefit from, and would have a higher likelihood of being funded if there was a specific business plan with a compelling business case. Thus, it would be a natural extension of the CAP grant program to provide further support for statewide business planning that is consistent with a previously prepared strategic plan. Indeed, as the CAP program nears completion of the funding of strategic plans for nearly all states, it makes sense to adjust the program to better support targeted framework data and supporting infrastructure business planning that is consistent with the strategic plan.

Providing explicit grants for business planning would provide FGDC the ability to better target the grant funding towards the development specific business cases for specific data and/or infrastructure development initiatives. The aforementioned cloudiness between “strategic” and “business” planning could be eliminated in grants targeted expressly for business planning.

Thus, the next steps for the CAP Fifty States Initiative grants might include:

- A predetermined ratio of grants – perhaps 2/3<sup>rd</sup>s – should be targeted for **business planning** aimed at building *business cases* for initiatives identified in a strategic plan.
- States that are awarded these grants should be required to rigorously follow the FGDC/NSGIC business planning guidelines for assembling a robust **business case**.
- The business plans should document how these specific projects, if implemented, would enhance their state spatial data infrastructures as well as the NSDI.
- States receiving grants should be required to report to FGDC on the status of efforts to *implement* the projects covered by the business plans for a period of three years following the submittal of the business plan to FGDC (or if the plan is executed in less than three years, for the project duration).

It is important that the FGDC support the states that have completed their strategic plans as they have shown that they are ready to move forward with the detailed business planning that is the next step towards implementation. These states are eager to proceed and should be encouraged. While rounding out the portfolio of statewide strategic plans to include all 50+ states and territories should not be precluded, limited effort should be directed at actively recruiting new states as there has been ample time for states to positively affirm their interest.

### **3.4 States Should Be Able to Use Fifty States Initiative CAP Grants to Catalyze Implementation Action on Their Strategic and Business Plans**

**Why?** The quickest way of seeing that strategic and business plans are *implemented* would be to directly provide the funding necessary to carry out those plans. Although the CAP Fifty States Initiative funding pool is not large enough to carry out much implementation work, CAP grants could provide *invaluable seed funding* for important initiatives that would improve statewide coordination efforts and the construction of NSDI framework layers. With state budgets tight, leveraging even modest Federal funding can be a critical success factor in obtaining state funding. Ultimately, the Federal government has a strong interest in seeing states begin implementation of these plans.

Given the momentum that can be built during a strategic planning process and in light of the vagaries of state governmental budgeting (especially within the current fiscal climate), many grant recipients have been frustrated at being stymied in moving forward in implementing good plans. Just as the CAP Fifty States Initiative has proven effective at catalyzing *good planning*, there is a significant opportunity for future CAP Fifty States Initiative funding to *commence implementation*. States should not look to CAP Fifty States Initiative grants to fund entire projects, however, there is the potential for such funds to initiate action and provide critical bridge funding while state resources are lined up.

Similarly, when the CAP Fifty States Initiative funding is not available, the Fifty States Initiative could usefully providing partner funding guidance to state grant recipients. For instance, if a state level business plan is developed for statewide LiDAR, the FGDC could facilitate “matchmaking” by directing states to Federal programs that have an interest in high-quality elevation data (e.g. the FEMA Flood Insurance Rate Mapping program). The FGDC might pursue the development of a “federal partners clearinghouse” that would provide an index of Federal programs that are known to have provided funding to states to support geospatial program. Importantly, in addition to simply listing the program, the index could identify the framework layers that specific programs might be most interested in as well as contact people within those agencies.

With the Federal government potentially participating in funding of early implementation there are opportunities to incentivize state programs to directly improve the NSDI and benefit Federal stakeholders. Such incentives might take the form of grant requirements. It is recommended that the CAP Fifty States Initiative grants criteria should be adjusted to allow states to move out on implementation of projects identified in strategic and/or business plans. Such “strategic/business plan implementation grants” would have the following requirements:

- States must have a strategic or business plan that identifies and justifies the project

- States should be required to provide some level matching *funds* (as opposed to in-kind services) for projects
- States must document how project will benefit the NSDI and Federal stakeholders
- States must measure and report progress consistent with newly created “measurement guidelines” (such as those recommended above in Section 3.1)

### **3.5 FGDC Should Consider CAP Strategic and Business Planning Awards to Regional, County and Local Governments**

**Why?** Local government and regional entities are important allies to the states in assembling strong statewide spatial data infrastructures (SSDI). In some states, regional organizations can help to assemble and keep current the highest quality framework data. As such, these kinds of regional organizations are important elements of an overall NSDI. Innovative efforts for regional governments to work with states to implement strategic and business plans in support of the development of SSDI are worthy targets of investment for the Fifty States Initiative.

During many statewide strategic planning efforts it has become apparent that states face a microcosm of the challenge that the federal government faces in assembling nationwide framework data. Just as the federal government must collect, standardize and integrate data from 50 states to create a “national layer”, most states must collect, standardize and integrate data from numerous counties to produce high quality “statewide layers”.

In some states, regional entities such a “regional planning agencies” (RPA), “metropolitan planning organizations” (MPO), and “councils of governments” (COG) can play an important role in aggregating county-based data into standardized, regional data sets. For example, the Metropolitan Council serves as the primary sponsor of the MetroGIS program that among other things fulfills this function for the seven county Twin Cities region in Minnesota. Increasingly, **regional initiatives can assist states** in assembling the highest quality framework data, particularly by helping to communicate and exchange data with county partners.

As such, the FGDC should consider broadening the eligibility of CAP strategic and business planning funding to appropriate regional, county and/or local entities that want to engage in strategic planning that will assist in the development of their state’s spatial data infrastructures, and by extension the NSDI. Ultimately, sub-state organizations and levels of government will play an increasingly important role in the construction and *maintenance* of the NSDI as they continue to adopt geospatial technologies at an increasing pace. Such grant making would be facilitated since the FGDC/NSGIC strategic planning process and templates were explicitly designed so that they could be used to support non-state strategic and business planning efforts (e.g. for agencies, counties, COGs, etc.).

Thus, FGDC should consider a portion of CAP strategic and/or business planning awards to sub-state levels of government. Guidance for these types of grants might include:

- States housing those regional entities should have existing CAP funded strategic plans. The objectives of the new sub-state plans should be cognizant of, and to the extent possible, consistent with the goals of existing state strategic plans.
- The strategic planning focus should be aimed at fostering *inter-governmental coordination* and *cooperation* for geospatial framework data development and management. This might include a potential emphasis on regional collaboration through COGs and MPOs as “regional clearinghouses” that feed a state clearinghouse.
- The grant program might be coordinated with/advertised via the National Association of Regional Councils (NARC<sup>15</sup>) or other regionally oriented organizations. These types of entities are responding to member requirements and are becoming increasingly involved geospatial issues.

### **3.6 The CAP Fifty States Initiative Grant Process Should be Aligned with Other Federal Grant and Funding Programs Targeted to States**

**Why?** The CAP Fifty States Initiative grant funding stream is extremely small in comparison to other sources of Federal funding that are provided to states and may be used for geospatial activities. If the Federal government could better orchestrate the funding used for geospatial investment that is provided to states there are enormous opportunities to better enlist state cooperation in constructing the NSDI. The overall Federal funding stream is likely adequate to provide enormous incentives for states to actively participate in NSDI in a standard and coordinated manner, in a way not possible with individual program funding provided to states.

The Federal government is an enormously important funding source to state governments. Many agencies provide billions of dollars of funding directly to states and some non-trivial portion of that funding is used to support state geospatial activities. Ultimately, in terms of the Federal budget, the FGDC CAP grant assistance funding is a tiny amount. Nevertheless, this modest direct funding support for geospatial activity is widely recognized and valued by the states. Still, the amount of funding support that is provided by the Fifty States Initiative is dwarfed by the funding provided by larger programs administered by Federal agencies such as Department of Transportation (US-DOT), the Department of Homeland Security (DHS), the Federal Emergency Management Agency (FEMA) and the Department of Agriculture (USDA) via the Farm Service Agency (FSA). In addition, the recent Broadband Mapping Initiative under the auspices of the National Telecommunications Information Administration (NTIA) represents another major Federal program that is allocating money to states that will support geospatial initiatives.

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<sup>15</sup> See: <http://www.narc.org/>

It would be highly desirable to develop a coordinated and overarching funding strategy across Federal agencies that provide funds to states that may be used for geospatial purposes. Such a strategy might identify common goals for advancing the NSDI and then use the funding incentive as a means of “encouraging” states to assist in meeting those goals. The initial focus might be on programs where there is a clear nexus between the Federal agency activity and a framework data layer such as US-DOT and the transportation framework layers. Under this model Federal funding that is used for geospatial activity would come with concomitant requirements and obligations. For instance, states receiving money must:

- Adhere to relevant Federal standards
- Document how Federal resources would be used to achieve objectives that are articulated in a statewide geospatial strategic plan
- Provide the Federal government with copies of metadata as well as the physical data on a regular basis

Such a program would be complex to implement but the rewards would be significant if the 50 individual states could be sufficiently incentivized into coordinated action to advance NSDI. To make such an initiative work, the Federal government would need to carry out several start-up activities, including:

- Completing an inventory of Federal programs that provide funding to states that are used for geospatial activity (even indirectly)
- Providing an intergovernmental forum – perhaps building on FGDC – where different programs can identify their objectives and alignment with NSDI
- Prioritization of NSDI elements to identify the first set of “products” that states might be encouraged to produce
- Ensuring that existing standards are sufficiently robust and are available to states
- Developing a mechanism for obtaining and reviewing submittals from states to ensure conformance to requirements (i.e. enforcement)

While it is recognized that due to the complex nature of the Federal government and intergovernmental collaboration this recommendation may be difficult to implement, it is important to recognize the merits of these concepts so that mechanisms for overcoming these barriers can be identified. Ultimately, absent Federal funding explicitly for NSDI development, leveraging existing Federal funding streams to the states holds the best promise for incentivizing state participation in NSDI in a more orchestrated manner.

### 3.7 Continue and Strengthen Fifty States Initiative Communications and Marketing Activities

**Why?** Given that the NSDI is envisioned to be a *collaborative effort* that spans multiple levels of government, effective communications has always been viewed as an important ingredient of success. In addition to status and activity communication with *current* collaborators there also needs to be outreach and marketing to additional organizations who will become *new* collaborators. Strong, consistent messaging to existing and future participants will be essential for the long term development of the NSDI.

The Fifty States Initiative Action Plan from 2005 identified many marketing and communications actions that should be taken for the full implementation of the initiative, and five years later, many of these suggestions remain sensible. Specifically, Section 3.1.5 of the 2005 Action Plan suggested that **effective promotional materials be developed**. Target audiences were to include the National League of Cities, National Association of Counties (NACo), National Association of State CIO's, National Conference of State Legislatures, National Governor's Association, and Western Governors Association (WGA). The suggested materials included "classic" public relation materials that highlight the value of improved coordination. Two generations of these materials were created, but their effectiveness must be debated since there is no way to objectively measure their impact on the target audiences that were only partially reached due to staffing and resource limitations.

Professional videos, print and web-based materials that could distill the essence of technical (e.g. architecture) and coordination issues (e.g. data consortia) were also suggested to show the importance of these issues to government. These materials are still needed. Other print and web-based materials that highlight service improvements and cost savings from showcase applications were also recommended, and are still needed. It remains important that the Fifty States Initiative have a vibrant and relevant communication strategy with appropriate supporting materials. Good communications and marketing efforts that reflect the current state of the initiative will be an asset in the ongoing advocacy for the next steps implementation of the Fifty States Initiative.

Similarly, Section 3.1.6 of the 2005 Action Plan recommended **engaging statewide coordination councils, appointed and elected officials, and other national organizations** to help advocate for NSDI and improved coordination. The Action Plan suggested several specific outreach activities between the FGDC, NSGIC, and the national associations listed above. Several of these activities remain relevant and should be further carried out, and as necessary expanded as part of the next steps of the Fifty States Initiative, including:

- **Build on positive outreach** to organizations that recognize the value of geospatial technologies, such as WGA and NACo, also **identifying additional partners** who have more recently identified geospatial interests within their

memberships. For example, there is increasing interest in geospatial issues within the National Association of Regional Councils (NARC).

- **Engagement with national organizations** should be made through activities such as participation and presentation at their national conferences and business meetings. When interest is lacking, presentations should seek to introduce the relevancy of geospatial technology. When interest is already present, presentations should seek to highlight partnership and mutual advocacy opportunities.

## 4 Summary & Conclusions

The Fifty States Initiative and particularly the CAP Fifty States Initiative grants have been highly successful in catalyzing serious statewide strategic and business planning efforts. There are now close to 40 quality plans and an even higher number of well defined programmatic initiatives that are identified in these plans. The principal challenge that both grant recipients and the FGDC face is how to actualize those plans and capitalize on the positive momentum created through the planning process.

As identified above, there are two natural evolutions of the CAP Fifty States Initiative grants that would help to achieve this:

1. Begin making a higher proportion of awards for *detailed* business planning that will develop sound business cases that will help get initiatives funded.
2. Begin making awards that provide seed funding to actual implementation of some programmatic initiatives identified in previous plans.

At the same time it will be important for FGDC to begin the process of more precisely defining the NSDI and the specific advances that should be made towards its creation. It is time for the NSDI to be less a notional concept and more of a specific set of outcomes and initiatives. A key component of that will be identifying metrics of progress and then measuring performance and advancement on NSDI construction. Required performance measurement reporting by CAP Fifty States Initiative recipients can be a first step in that direction.

The past five years of the Fifty States Initiative has been successful in raising the profile of the NSDI with state and local geospatial stakeholders and in catalyzing plans. The next steps for the program involve consolidating those gains, supporting the realization of the plans through implementation, and beginning the process of measuring where the nation stands on NSDI development.