

5.0 NSDI AUTHORITIES

5.1 Chronology of NSDI Authority

Since our Nation's founding, the Federal government has been responsible for a wide range of surveying, mapping, and other geographic information functions. Many of these activities are inherent responsibilities of the central government enumerated in the Constitution's Commerce Clause, "To regulate Commerce with foreign nations, and among the several states, and with the Indian Tribes."

Federal mapping and surveying activity enables the central government to carry out its responsibilities. At the Federal level, the central government reserved the right to promote and regulate commerce among the states including river navigation and land transportation. Surveying and mapping was recognized as an essential element to carrying out its responsibilities under the Constitution. In recognition of the Federal government's surveying and mapping role, the Office of Management and Budget, through its Circular A-16, has recognized the need for Federal agencies to coordinate their activities to avoid duplication of effort and redundant cost by the executive branch.

As technology has evolved over the last decade, a number of organizations including the White House, the Executive Office of the President, the National Research Council of the National Academy of Science, the National Academy of Public Administration (NAPA), and the U.S. Congress, have focused on the need to avoid duplication of effort in an information and technology based economy. These various organizations have provided guidance and recommendations to establish an effective national policy in the digital surveying, mapping and geographic information functions. The technology developments within geographic information systems (GIS) changed the coordination landscape. As federal mapping agencies moved from paper and map chart-centric services to geo database driven services, the need for coordination and collaboration became critical for both avoidance of redundancy and for interoperability of the geodata that was being developed by federal agencies. All of these efforts have called for better coordination at the Federal level and the need for 21st century institutions to coordinate Federal spatial data activities with non-Federal organizations.

This Section Addresses

- NSDI Chronology
- The Chronology of Authorities from OMB Circular A-16 to the Government Management, Information and Technology Subcommittee, Committee on Government Reform 's hearing on Geographic Information Systems

Thus, there is much guidance, and many recommendations, on how the Federal government should fulfill its responsibilities in this area.

For example, insurance companies need the geospatial data from several agencies such as NOAA, Census, FEMA, USGS and Army Corps of Engineers to effectively determine insurance risk in our nation's growing coastal communities.

However, building consensus support for policy initiatives to accomplish the goals of the NSDI that **include broad-based private sector participation** have been difficult, and the expectations of significant direct private sector financial support for the NSDI has yet to be realized.

It is the purpose of this study to examine private sector awareness of the National Spatial Data Infrastructure and develop a strategic plan to increase private sector participation in the NSDI effort.

While the NSDI program has not achieved the levels of private sector participation anticipated in the National Performance Review, at the same time, the private sector has contributed significantly to the realization of a National Spatial Data Infrastructure. In fact, the development by the private sector of the information and telecommunications technology that exists today enables the development of the NSDI.

Standards for spatial data interoperability are being addressed by the Open GIS Consortium, an international organization of over 200 participants, through OGC's Web-enabled geospatial browsing test-bed program. Business to consumer (B2C) and business to business (B2B) Internet supply chains are evolving as we speak, changing the way businesses interact with customers and other businesses up and down their supply chains.

The spatial technologies industry is inventing itself in "Internet time." Internet portals facilitate navigating the Internet for specific vertical markets. E-commerce markets are being implemented for industries including aerospace and the global automotive industry.

The Geography Network (<http://www.geography.com>), a private sector initiative, is a global network of geographic information users and providers and includes links to the NSDI Clearinghouse. This organization seeks to provide access to information that is current and readily available. On their Web site, they state that the network is, ". . . a community of organizations and individuals that share a common goal – using geographic information to make better decisions about the things that affect our lives. This community is strengthened by

the generosity of its members sharing their ideas and resources with others."

The Internet is spawning new business models and location-based services are being rapidly integrated into the fabric of our information technology economy. Database companies are incorporating spatial capabilities in their product offerings and m-commerce (mobile commerce) is emerging in the wireless Internet space driven by the Federal mandate to enhance E-911 service. Geospatial readiness is becoming a key criteria for decision support systems as diverse as emergency management and agricultural production.

5.2 Chronology of Events

Since the concept of the NSDI was first discussed in the early 1990's, a number of events have occurred. The following summary of critical events traces the policies, purposes, and programmatic authorities for the development of the National Spatial Data Infrastructure (NSDI) over the past ten years.

5.2.1 OMB Circular A-16

<http://www.whitehouse.gov/OMB/circulars/a016/a016.html>

In 1990, the Office of Management and Budget, Executive Office of the President, issued OMB Circular A-16, replacing an earlier OMB Circular A-16 issued May 6, 1967, directing Federal departments and agencies to coordinate their surveying, mapping and related spatial data activity.

The Circular's major objective is to support the eventual development of a national digital spatial information resource, with involvement of Federal, state, local governments, and the private sector.

The development of this national information resource is intended to support the sharing and efficient transfer of spatial data between producers and users.

Circular A-16 established an interagency coordinating committee known as the Federal Geographic Data Committee (FGDC) to carry out the Circular's objectives. The Committee promotes the coordinated development, use, sharing, and dissemination of surveying, mapping, and related spatial data.

Further, the FGDC is to provide guidance and promote cooperation and coordination among Federal, state, and local government agencies and in the private sector in the collection, production, and sharing of surveying, mapping, and related spatial data. The coordination procedures established under A-16 extend to activities financed in whole or in part by Federal funds. Circular A-16 recognized that through a more coordinated effort:

“Enhanced coordination will build information partnerships among government institutions and the public and private sectors, avoiding

wasteful duplication of effort and ensuring effective and economical management of information resources in meeting essential user requirements.”

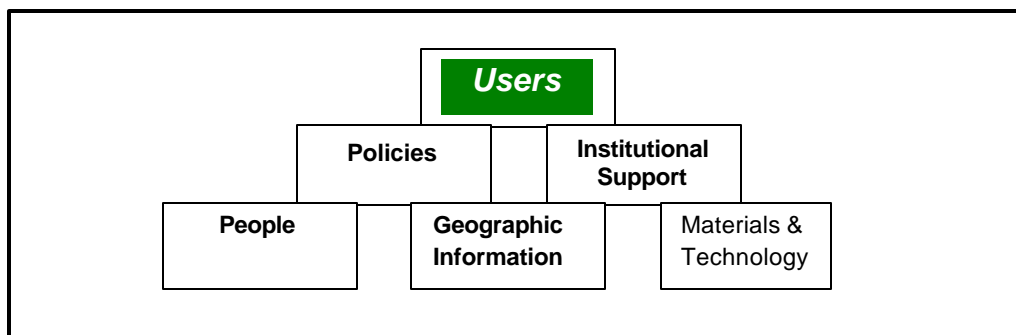
5.2.2 Mapping Sciences Committee, National Research Council, National Academy of Sciences (<http://www.msc.gov>)

The Mapping Sciences Committee serves as a focus for external advice to the Federal agencies on scientific and technical matters related to spatial data handling and analysis. The committee’s purpose is to provide advice on the development of a robust national spatial data infrastructure for making informed decisions at all levels of government and throughout society in general.

In the early 1990’s, the MSC began to examine the need for a coordinated Federal approach to spatial data both at the Federal level, as well as, a national approach to a more efficient and effective way to reduce redundant public sector activities in this area. In the Spring of 1993, MSC issued a report, “Toward a Coordinated Spatial Data infrastructure for the Nation,” articulating its vision of an organizational approach to creating an NSDI. The report defined the elements of the NSDI and provided a conceptual framework for an enhanced spatial data infrastructure for the nation. The MSC recommendations included:

- The need to develop national policies, strategies, and organizational structures at the Federal level, to integrate data collection, use, and distribution.
- Strengthening the FGDC Charter defined in OMB Circular A-16.
- Developing on-line access to information describing spatial data.
- Establishing a spatial data-sharing program to enrich national spatial data coverage, minimizing redundant data collection at all levels, and creating new opportunities for the use of spatial data throughout the nation.

The MSC’s concept of the NSDI, supporting “users” is illustrated below:



The MSC appropriately identified the importance of users in the development, evolution, and success of the NSDI effort. However, identifying and understanding users is extremely difficult in a dynamic market environment when technologies are changing, markets are being redefined in six-month cycles (Internet time), and direct contact with the “end users” is limited. The MSC also noted that the “mechanism for the involvement of state and local governments and the private sector has yet to be established (1994).” This problem was specifically recognized in Executive Order 12906:

The Secretary, under the auspices of the FGDC, and within nine months of the date of this order, shall develop, to the extent permitted by law, strategies for maximizing cooperative participatory effort with state, local, and tribal governments, the private sector, and other non-Federal organizations to share costs and improve efficiencies of acquiring geospatial data consistent with this order.

Issue: Since 1994, and the establishment of the E.O. 12906, private sector participation in the NSDI effort has occurred but not nearly at the desired levels anticipated.

Additionally, the understanding of the requirements of the two subsets of the private sector have not been fully understood (ie. Private sector geospatial industry and the geospatial end-users).

5.2.3 The National Performance Review (<http://www.npr.gov>)

On September 7, 1993 the Vice President published the Report of the National Performance Review, an extensive six-month study of the Federal Government. As part of “Re-engineering Programs to Cut Costs,” a recommendation to develop a National Spatial Data Infrastructure (NSDI) was included. It was envisioned “because of the value of the data, it will be possible to attract private sector funding for its collection, processing, and distribution. The Federal Geographic Data Committee, which operates under the auspices of OMB, plans to raise enough non-Federal funding to pay for at least 50 percent of the project’s cost.”

How this non-Federal funding was to occur has never been addressed.

Issue: Over the past seven years, the private sector contribution of over 50% contribution has not been realized.

5.2.4 Executive Order 12906 (Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure (NSDI)) (<http://www.npr.gov/library/direct/orders/20fa>)

Recognizing the importance of geographic information, the President, in order to implement the recommendations of the National Performance Review, advance the goals of the National Information Infrastructure (NII), and to avoid wasteful duplication of effort and promote effective and economical management of resources by Federal, state, local and tribal governments promulgated E.O. 12906. The National Performance Review recommended that the Executive Branch develop, in cooperation with state, local, tribal governments, and the private sector, applications of geospatial data in such areas as transportation, community development, agriculture, emergency response, environmental management, and information technology.

Further, E.O. 12906 directed the Secretary within nine months of April 11, 1994 to develop strategies for maximizing cooperative participatory efforts with state, local, and tribal governments, the private sector, and other non-Federal organizations to share costs and improve the efficiencies of acquiring geospatial data consistent with the order.

Issue: As was mentioned earlier, It was envisioned “because of the value of the data, it will be possible to attract private sector funding for its collection, processing, and distribution. The Federal Geographic Data Committee, which operates under the auspices of the OMB, plans to raise enough non-Federal funding to pay for at least 50 percent of the project’s cost.” Clearly, this objective has not been met, calling into question the value of the data as a driver to private sector funding of up to 50 percent of the cost of developing the NSDI.

5.2.5 National Academy of Public Administration - Geographic Information for the 21st Century: Building a Strategy for the Nation (<http://www.napawash.org>)

According to the 1998 National Academy of Public Administration (NAPA) Study entitled “Geographic Information for the 21st Century – Building a Strategy for the Nation,” nearly half of the nation’s economic activity has underlying geodata dependencies.

Public sector dependencies include providing for public safety, comprehensive disaster management, supporting our national defense, preserving the nation’s resources for future generations, enhancing the nation’s food supply, and meeting the basic needs of an expanding economy.

The NAPA Panel, co-chaired by Fellows Ed David and Gerry Riso, advocated merging some Federal geographic information activities and creating a new

organization to oversee the creation and maintenance of the National Spatial Data Infrastructure. According to the report, “the Federal government should ensure full and rapid implementation of the NSDI in a cost-effective and cooperative manner.”

The report’s most significant recommendation was that Congress create a new private, nonprofit organization, The National Spatial Data Council (NSDC), as a forum for all organizations engaged in developing and maintaining the NSDI. The NSDC’s charter and activities would complement those of the FGDC, but would better provide for “full participation by all the major parties and interests.” The panel recommended that the FGDC concentrate on coordinating GI functions within the Federal government. The NAPA Report’s goals included:

- Provide a national forum for developing and maintaining the NSDI
- Maintain state-of-the-art knowledge about advances in GI and related technologies
- Help ensure that goals set for the NSDI are actually carried out by serving as a catalyst for implementation
- Build a comprehensive and user friendly clearinghouse for Geographic Information.
- Provide a forum for discussion by all parties on national standards and possibly, over time, assume these responsibilities from the FGDC
- Provide training and education on the utility of and techniques for fostering the NSDI

The report also noted that until the NSDC was established, the FGDC should encourage stronger involvement by the private sector. Achieving stronger involvement by the private sector will be limited until the private sector’s role is better defined and the value proposition for private sector involvement is understood.

Issue: One concern is data pricing and intellectual property rights. Federal data and pricing policies often conflict with state and local government and private-sector interests in generating revenue, a situation that is likely to be exacerbated as more data is digitized and becomes available on line. These practices constrain partnering to the mutual disadvantage of all sectors, but must be recognized and addressed for the private sector to increase its involvement in the NSDI effort.

5.2.6 Government Management, Information and Technology Subcommittee Hearing

<http://www.house.gov/reform/gmit/hearings/testimony/990609h.htm>

The Government Management, Information, and Technology Subcommittee of the House Government Reform Committee conducted a hearing on June 9, 1999 to discuss how Federal, state, regional, and municipal governments were using their geographic information systems to manage programs and services. The Committee wanted to learn how this information was being used by the private sector and how the Federal Government could help improve the compatibility of these networks and databases. In addition, the subcommittee addressed how the Federal Government might assist states, regions, municipalities and the private sector in forming partnerships to provide geographic information systems in a cost-effective manner.

Issues: Many of the witnesses before the committee raised a number of concerns including:

- The failure to establish and employ certain nationally accepted technical standards.
- The lack of coordination between local, regional, state, and federal government to collect, maintain, share, and integrate data.
- The unfamiliarity of public officials and government employees with how to use GIS in the decision making process.

The collection of geographic information is a multibillion-dollar business in the United States. Yet sharing this information is often difficult, because many software applications still cannot communicate with others, requiring public and private organizations to collect duplicate information on the same region.

In addition, there has been no commitment among governments and the private sector to share this information. Data collected by one local government may not be available to Federal and state government planners. Similarly, Federal databases are not always available to state and local government planners – or to the private sector. Millions of dollars are being unnecessarily spent on this duplication.

5.3 Conclusion

From a private sector perspective, the authorities and executive guidance to establish the National Spatial Data Infrastructure appear not to fully understand the commercial spatial technologies industry and how it relates to public sector spatial technologies programs like the NSDI. As the private sector grows, the roles of the public and private sector change. To ensure that public sector policy reflects evolving private sector markets and market demands a mechanism is needed for the private sector to become more directly engaged in with the

Federal Geographic Data Committee. The Spatial Technologies Industry Association is well suited to provide an industry day to address the findings of this report with the FGDC and its federal government participants.