Improved Policy for Coordinating the Development of the National Spatial Data Infrastructure

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ABSTRACT

Geographic data coordination is a difficult problem. A key policy document for the coordination of spatial data activities in the United States is the Office of Management and Budget (OMB) Circular A-16. In June of 2001, the Steering Committee of Federal Geographic Data Committee (FGDC) endorsed a new version of Circular A-16. The new version reflects needed changes from the current 1990 version of Circular A-16 by incorporating Executive Order 12906 that establishes the National Spatial Data Infrastructure, as well as recommendations by the FGDC design study team. It also reflects renewed interested and a more active role for OMB in spatial data coordination. This paper reviews the lengthy historical of evolution U.S. geographic data coordination, describes the pending development of the new circular including several major changes, and provides current status of the proposed new policy circular. The proposed new circular facilitates new improvements in spatial data coordination that have the potential for great benefits, especially as electronic government advances.

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1. INTRODUCTION

There is a general sense that to improve spatial data coordination, starting with the acquistition of spatial data, then exploiting this data to create geographic information, and finally using this knowledge to make better decision making, that there is need for better policy and as well as organizational structure. The geospatial technology in use today has changed dramatically in the last decade. Satellite positioning is now routine and internet maps are readily available. Unfortunately many organizations donot easily share geogaphic information, these oraginzations remain stovepiped.

This paper examines what is one of the most importatnt policy documents for the coordination of geographic information in the United States, the Office of Management and Budget (OMB) Circular A-16. Currently, January, 2002, Circular A-16 is under consideration for revision by OMB. Furthermore the organization change that is envisioned as part of the E-Government Initiatives that includes the Geospatial Information One-Stop initiative is just emerging. These are significant developments that together have great potential to enhance geographic data coordination while stimulating organizational change. The effort to make progress in this area is a difficult task and should not be underestimated. The remainder of this paper examines the historical evolution of Circular A-16, the proposed revision of Circular A-16, the E-Government initiative Geospatial Infromation One-Stop, and ends with conclusions.

2. BACKGROUND

The need for a coordinated approach to surveying and mapping in the United Staes dates back to the 1840s (NRC, 1981). The evolution of OMB Circular A-16 starts in 1906 when President Theodore Roosevelt signed an Executive Order (EO, 1906) creating the U. S. Geographic Board. The Board was given advisory powers and all Government projects were to be submitted to the Board for advice. The goal of the Board was to avoid duplication of work and improve the standardization of maps.

In 1919, Woodrow Wilson issued an Executive Order (EO, 1919) esablishing a Board of Surveys and Maps. Its purpose was to make recommendations to the President and to Federal agencies to coordinate map making and surveying activities of the Federal government. The advisory powers of the U. S. Geographic Board were transfered to this new Board. A note worthy element of the Order was the provision to invite the ”map using public” to meetings for ”conference and advice.” Another interesting element was the provision for a central

information office that was to furnish all map and survey data information within the government as well as from other sources.

As these two executive orders show the U. S. Governemnt has, for almost 100 years, been interested in coordinating surveying and mapping activities to avoid duplication of effort, to have standardized maps, to have information about maps readily available regardless of its source, and to engage non-governmental sector in the coordination process.

Source	Year	Description
Executive Order	1906	Created U. S. Geographic Board.
Executive Order 3206	1919	Created a new Board of Surveys and Maps that took over the responsibilities of U.S. Geographic Board.
Executive Order 9094	1942	Abolished Board of Surveys and Maps and authorizes Director of OMB to perform the functions of the Board.
OMB Circular A-16	1953	Describes responsibilities of Federal agencies with regard to the coordination of surveying and mapping activities.
Exhibits A,B,C, & D	1953-1964	Attachments to A-16 that outline programming and operations for specific activities (Topographic Mapping, National Atlas, Geodetic Control, International Boundaries). Some Exhibits were revised.
A-16 Revised	1967	Better describes responsibilities of Fedral Agencies to provide leadership and coordination.
OMB Memo 83-12	1983	Establishes coordination of Federal digital cartographic data programs.
A-16 Revised	1990	Establishes Federal Geographic Data Committee and expands circular to include more programs.
Executive Order 12906	1994	Establishes the National Spatial Data Infrastructure (NSDI).
Pending A-16 Revision	2002	Strengthens coordination responsibilities of Federal agencies and incorporates NSDI into the circular.

Table 1. Evolution of OMB Circular A-16

In 1942, the Board of Surveys and Mapps was Abolished and the Director of the Bureau of Budget (now OMB) was given the authority to perform the function of the Board (EO, 1942). Thus, the responsibility to coordinate surveying and mapping within the U. S. Government was transfered to OMB and has remained there.

In 1953, the Bureau of Budget (now OMB) issued the first Circular A-16 to Federal agencies (OMB, 1953). Its simple goal was to ensure that surveying and mapping needs of the Federal, state, and general public were met. Also, that duplication was avoided and that data was provided expeditiously. Futhermore, it correlated the programming of mapping operations with the budegtary process through the use of attached Exhibits. The initial Circular A-16, included an Exhibit A, Procedures for Programing and Coordination of Federal Topographic

Mapping Activities. The Exhibit set forth many details such as each Department was to establishing a liaison with OMB, provide quarterly reports, provide performance and cost reports, and host of other details.

From 1953 through 1964 OMB issued several Exhibits and some revisions to the Exhibits (OMB; 1953A, 1958, 1960, 1961, 1964). In addition to Topographic Mapping, Exhibits were issued to cover National Atlas, Geodetic Control, and International Boundaries. The use of the Exhibits has ended.

Circular A-16 has been revised twice since it was first issued, first in 1967 and again in 1990 (OMB; 1967, 1990). In the 1967 revision one of the significant changes was that agencies were given more responsibility for the coordination of related activities. Agencies are to exercise government wide leadership in coordinating, planning and executing its programs and the activities of other Federal agencies. Further, each agency is to establish standards, proceedures, agreements and whatever else is necessary to carry out its responsibilities under the Circular. It's clear that OMB is devolving the responsibility for coordination to individual agencies.

In 1983, issues concerning the use and coordination of digital spatial data arose. Thus, OMB issued a memorandum (OMB, 1983) providing guidance to Federal agencies and creating the Federal Interagency Coordinating Committee on Digital Cartography (FICCDC). This memo signifies a policy acknowledgement of the transformation from hard copy to soft copy surveying and mapping products and techniques. OMB called on agencies to coordinate digital data activities, to develop standards and specifications, to increase data sharing, to enhance data for multiple use, and to facilitate data use by the private sector. With the emergence of digital technology a renewed need to coordinate emerged.

In part because the OMB memo creating FICCDC had a sunset provision, the need to further revise Circular A-16 came forward and, in 1990, OMB issued another revision to Circular A-16 (OMB, 1990). One of the significant changes in the revision was the establishment of an interagency coordinating committee, the Federal Geographic Data Committee (FGDC). Also, the revised Circular extended coordination to digital spatial data. The Circular calls upon FGDC to promote distributed data base systems that are national in scope, to encourage the development and implementation of standards, to promote cooperation and coordination among all sectors that are collecting , producing, or sharing spatial data. Additional agency programs are referenced in the Circular, more than in the Exhibits. In summary, the Circular continues to place responsibilities on individual agencies, while expanding to include digital spatial data. This 1990 version is the current A-16 Circular.

The Executive Order establishing the National Spatial Data Infrastructure (NSDI) was issued in 1994 (EO, 1994). In short, NSDI includes leadership roles, Clearinghouse and Metadata functions to search for and find geospatial data sets, data standard activities, establishment of a digital geospatial framework, and partnership strategies for data acquisition. These activities are designed to the develop the spatial data infrastructure for the U.S. The FGDC plays a key

role in the development of NSDI, and more importantly NSDI is the prime focus of FGDC activities.

This brief background shows that there is a long history regarding geographic data coordination in the U.S. While technologies have changed, some of the basic policy goals have remained relatively consistent like the need for standards and the need for broad representation from various sectors into the coordination process. Circular A-16 continues to evolve and is under considered for revison by OMB.

3. REVISION TO CIRCULAR A-16

Currently, January, 2002, Circular A-16 is under consideration for revision. A draft of the revised circular was prepared, endorsed, and transmitted to OMB by the FGDC (2001). There are two primary reasons for the revision. First, there is renewed interest in spatial data, particularly in government where it has been estimated that between 80 and 90 percent of all government information has a spatial component. Second, OMB has shown renewed interest spatial data coordination. In July of 2000, OMB, in cooperation with FGDC, held a public roundtable regarding spatial data coordination. This meeting, along with an internal FGDC (2000) report ”Improving Federal Agency Geospatial Data Coordination” that called for improving Circular A-16, stimulated interest in revising the Circular.

To develop a draft version of A-16, FGDC followed an interative process. First a small team met to consider and draft the revision. This draft was then circulated among FGDC stakeholders and members for review and comment. The Draft was revised and circulated again. Most of the comments received were refinements and improvemments to the document. However, some comments needed further discussion, to facilitate this discussion FGDC called a special meeting to review outstanding comments and decide how to proceed. In this meeting numerous issues were discussed and resolved and a final draft version of the Circular was developed.

Within the revision, there are many proposed changes to the A-16 Circular. Some of the key changes are presented next. The draft version of the Circular expands reponsibilities to include more government programs, not just the traditional mapping programs. Language throught the document strongly makes the case that agencies need to coordinate, where as previous language was not as compelling. A new Benefits section has been added. Also, a new section incoporating NSDI is added. Agency responsibilities are broken out more clearly and have been updated. OMB plays a stronger role in the FGDC by serving as the Vice Chair, while Department of Interior remains the Chair. Several appendices have been added. The most significant appendix is the one that breaks out data themes with the responsible agency, so that now there is a clear lead for each data theme (FGDC, 2001). While these changes are not yet final, they do suggest that the new versionof the Circular will be a significant improvement of the current 1990 Circular.

The Draft revision of the Circular was approved, with some minor changes, by the FGDC Steering Committee in June of 2001. Secretary Norton forwarded the draft document to OMB

for their consideration. The Draft Circular is currently under review by OMB. It is annticipated that the Draft Circular will be released by OMB for comment in February or March of 2002.

4. GEOSPATIAL INFORMATION ONE-STOP

In August of 2002, OMB launched a task force to examine E-Government. As a result of the recommendations from this task force, 23 E-Government initiative have been identified and endorsed by the President's Management Council. These initiatives include a Geospatial Information One-Stop initiative. The Geospatial One-Stop will provide a geographic component to E-Government by developing content standards and data models for geospatial data, by providing online access to geospatial data holdings and planned activities using metadata and clearinghouse, and by providing an online access point to geospatial data (FGDC, 2001A).

The immediate goals of the initiative are to focus in on Framework data themes (Geodetic Control, Ortho-imagery, Elevation, Transportation, Hydrography, Cadastral, and Government Units) (FGDC, 1997) and to develop and implement core content standards for each of these themes. To have Federal agencies provide online access to their framework data using open interfaces--web mapping services and web feature services. Lastly, agencies will need to ensure that these services are available 24 hours a day, seven days a week.

FGDC will have a significant roll in Geospatial One-Stop and will work closely with OMB. As part of the initiative, a change management plan is called for. Through this plan, the opportunity to stimulate organizational improvements that will enhance spatial data coordination and further develop the NSDI are possible.

5. CONCLUSIONS

Coordination of geographic data is important. The need for such coordination is well established. The proposed revisions to Circular A-16 will strengthen the policy basis for improving coordination of geospatial data. The Geospatial One-Stop initiative promises to advance the implementation of these policies, which have been well recognized as important. The Geospatial One-Stop has the potential to improve organizational effectiveness of often stovepiped organizational structures within the Federal Government, since it will stimulate the need for cross agency coordination and collaboration. These two efforts, the revision of Circular A-16 and the Geospatial One-Stop compliment each other, and together offer a significant opportunity to improve coordination and foster organizational change that will significantly benefit the development of the NSDI.

Many of the coordination policies that we have today have well established roots. As we apply information technology better through the Geospatial One-Stop initiative, it's clear that many of the goals are the same as in the past including standards, having an authoritative geospatial information source, and having broad participation in the coodination process. New web techonology has great potential to help organizations provide better geospatial

information in a coordinated manner. The development of a new policy circular and the launch of the Geospatial One-stop initiative together offer great potential to better realize geographic data coordination and the NSDI.

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BIOGRAPHICAL NOTES

Milo Robinson is the Framework Coordinator and Cooperating States Coordinator for the Federal Geographic Data Committee, USGS, Department of the Interior. He works on improving coordination and liaison necessary for realizing a national digital geospatial framework for the National Spatial Data Infrastructure. Recently, his work efforts have expanded to include the e-government initiative Geospatial One-Stop.

Mr. Robinson was NOAA's Geodetic Advisor to the State Vermont from 1990 till 1999. He worked in cooperation with the Vermont Agency of Transportation to conduct geodetic surveys for mapping and engineering projects. This work includes technology transfer on the Global Positioning System and Geographic Information Systems. In Vermont, Mr. Robinson worked using highest accuracy GPS techniques to improve Vermont's Orthophoto Mapping Program.

He has taken advanced courses in Spatial Information Science and Engineering at the University of Maine (1995). He holds a Masters Degree in Geodesy from the Ohio State University (1985) and a B. S. in Surveying Engineering from the University of Maine (1981).