

Federal Land and Geographic Information System Activities

SIGNIFICANT STEPS TOWARD COORDINATION of digital spatial data by the Federal Government were made in the last year. Both the executive and legislative branches have recognized the need for improvements in the management and use of land and geographic information systems (LIS/GIS). Recently released draft reports cover topics such as coordination of LIS/GIS among federal agencies, coordination between federal and state/local agencies, data communication and data quality standards and procedures, integration and cataloging of spatial databases, and LIS/GIS research and technology transfer.

In the summer of 1988, Congress passed Public Law 100-409 (see *PE&RS* 54(12), page 1765). Section 8(b) called for a study of land information systems and associated activities. A draft report was released in July, 1989. The report was prepared by a Core Team representing federal agencies under the leadership of the Bureau of Land Management. Local, private, and professional interests were represented through the advisory Ad Hoc Committee on Land Information, coordinated by ACSM/ASPRS (see *PE&RS* 55(4), page 410).

In February, 1989, the President's Office of Management and Budget asked the Federal Interagency Coordinating Committee on Digital Cartography (FICCDC) to prepare a report on how it could expand its role in coordinating Federal use of digital spatial data and what revisions were needed in OMB Circular A-16, concerning the coordination of federal mapping activities, to reflect the growing use of automated systems. The findings of their analysis were presented to a forum of federal agencies in December, 1989, with final recommendations due to OMB in March, 1990.

These activities are a good start toward better use of land and geographic information resources. But it will take the active involvement of everyone who produces or uses geographic data to make these recommendations a reality. First, the Office of Management and Budget and/or Congress must be convinced to act upon the recommendations. Then, the recommendations need to be funded and fully implemented. In particular, the FICCDC proposal falls short on providing mechanisms for enforcement or action in the areas of research, technology transfer, and coordination of federal activities with state and local agencies. Finally, it will be up to the producers and users of geographic data to test, report, refine, and in other ways make the recommendations work.

Below are excerpts from the "background" and "recommendations" sections of two working documents now filtering through bureaucratic channels. They are presented both to inform you of these activities, and to encourage you to become involved in the process. The opportunity to refine and revise these recommendations is now, before they are implemented. In particular, if Congress considers acting on these recommendations in the coming years, your voice will be needed. You can get more information about the proposals from

A Study of Land Information (PL100-409, Section 8(b) report):

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Excerpts from *A Study of Land Information*, prepared in accordance with Public Law 100-409 by the Section 8(b) Study Team for the Secretary of the Interior (Draft Executive Summary, November 1989)

Introduction. The Federal Land Exchange Facilitation Act of 1988, Public Law 100-409, was signed into law in August 1988 to facilitate and expedite land exchanges involving lands managed by the Departments of the Interior and Agriculture. Legislative testimony also recognized that in order to assure orderly land exchanges, all parties to the exchange must have accurate land data, including surveys and maps. Section 8 of the Act called for a study and report concerning possible improvements in the handling (collection, storage, use, and dissemination) of information related to Federal and other lands.

The Department of the Interior was given the responsibility to conduct the study mandated in Section 8. The Bureau of Land Management (BLM) was assigned the leadership role in the completion of this study. The United States Geological Survey (USGS) worked closely with the BLM in coordinating the required study efforts. In developing the strategy for this study,

the Department of the Interior guidance emphasized that this study focus on the collection and maintenance of land data, on land information systems at various levels of government, and on improvements in surveying and mapping activities.

Recommendations

Based on a review of previous study recommendations and ongoing activities at all levels of government as well as the private sector, the Section 8(b) study team found that there is no overall organizational responsibility for the coordination of land information systems in this country. Therefore, there is a need for a focal point that would provide oversight for development of a comprehensive, consistent, nationwide network of compatible land information for use by the Federal, State, and local levels of government as well as the private sector.

While land information is gathered at the national or State level, the prevalent opinion at the county, municipal, or town levels is that State and Federal land information often is too general or inappropriate in scale and resolution to be useful for local decision-making. Therefore, there should be a national strategy for the aggregation of land information that is collected locally to meet local requirements.

Federal and State agencies should assume a larger share of responsibility for the components of land information systems involving common data sources, standards, and multi-State integration. Recommendations to fulfill and support the needs identified in this study are made in five general areas: (1) land information network concept; (2) coordination; (3) guidelines/standards; (4) funding; and (5) education.

1. Land Information Network Concept.

To provide a framework for establishing a common approach to land information management, there must be a unified LIS concept. **Therefore, compatible land information systems should be developed at the local, State and Federal levels of government in cooperation with the private sector.**

1-A. It is recommended that the concept of a nationwide integrated land information management system be adopted.

1-B. The components that all land information systems should contain are:

- Geodetic control in the form of geographical or rectangular coordinates;
- Basic map information, including roads, hydrography, and cultural features;
- Property boundaries, including a unique identifier for land parcels;
- Land attributes, including legal rights, and land use information as needed by the particular jurisdiction.

2. Coordination.

There are at least four areas in which coordination should be improved:

First, Federal agencies should develop a coordinated land information management process that includes long-term budget provisions.

Second, It is essential that State responsibility be defined and implemented to ensure land information coordination and management. This process should accommodate the needs, schedules, and data resolution requirements of State and local governments as well as the private sector.

Third, Federal and State agencies should pay closer attention to data being generated and used by county and local governments as well as the private sector. Many of these data are of higher resolution than needed at the State or national level, but with modern LIS technology these data can be generalized to provide a more efficient information source than can be obtained from separate original collection processes.

Fourth, coordination mechanisms should be put in place to continually revise and update land information. Land information is seldom static, and its value deteriorates with age.

2-A. A National LIS Commission should be established to pro-

vide oversight and leadership for LIS activities at all levels of government.

The LIS Commission would not take away from the current missions of agencies and departments. Rather, it would implement the functions of coordinating LIS activities that are not assigned to anyone at this time. This chartered Commission would promote adherence to basic standards needed for the coordinated use of land information, would speak with authority for the national interest, would be provided with an operating budget, and would include a provision for limited incentives for State and local involvement in the coordinated LIS network.

The LIS Commission should include representatives from Federal, State, and local government agencies, as well as the non-government public and private groups such as utilities and professional associations. The Commission should be balanced to provide an objective overview and a broad geographical representation.

2-B. The OMB should revise Circular A-16, Coordination of Surveying and Mapping Activities, last revised in 1967, to include LIS and GIS coordination responsibilities, cadastral surveying coordination, and digital cartographic data coordination, in addition to the geodetic surveying and national mapping coordination activities currently covered.

2-C. Responsibility for the coordination of LIS activities should be assigned to an individual organization at State and local levels of government.

2-D. A process should be established for providing technical assistance to State and local governments.

3. Guidelines/Standards.

The development and implementation of guidelines and standards will help ensure that the land information systems of different levels of government, or of different agencies of one level of government, are indeed compatible.

3-A. Current activities should continue regarding standards that relate to all aspects of an LIS. Particular emphasis should be placed on:

- adoption of and adherence to already established standards;
- development and implementation of data exchange standards;
- identification of areas that need new standards.

3-B. A commonly understood data model should be developed that would establish logical relationships among land entities (parcels, subdivisions, etc.).

3-C. LIS guidelines should be established that include data quality and accuracy.

3-D. Standard definitions should be developed for the data components of an LIS that specify content, quality, and accuracy so that the compatibility of data can be judged for data sharing, and so that decisionmakers have an objective basis for deciding what level of data is most appropriate for the purposes of an LIS within their budgetary constraints.

4. Funding.

A funding strategy should address: (1) existing sources of funding and current expenditures in government and in the private sector; (2) funding of the LIS coordination organizations; (3) incentives for sharing data between government agencies and

the private sector, such as utilities; (4) a commitment to long-term progress and investment; and (5) the distribution of costs among LIS users.

4-A. Funding sources should be identified at the Federal, State, and local levels, such as an addition to specific user fees, that could be used for redistribution to units of government and organizations that meet approved criteria.

5. Education.

Land information systems are complex, interacting with all aspects of society. They will have a wide range of potential impacts, many of which may not presently be identified. Applied research on managerial, institutional, economic, legal, and technical issues will be required. There is also a vital need for man-
Excerpts from U.S. Department of Interior Memorandum, 5 December 1989

To: Participants, Federal Interagency Coordinating Committee on Digital Cartography (FICCDC) Governmentwide Forum

From: Chairman, FICCDC (Lowell Starr)

COORDINATION OF SURVEYING, MAPPING, AND RELATED SPATIAL DATA ACTIVITIES

Introduction and Background

On February 28, 1989 the Director of the Office of Management and Budget (OMB) issued a memorandum renewing the charter of the Federal Interagency Coordinating Committee on Digital Cartography (FICCDC) until March 15, 1992. In addition to continuing present committee activities, the FICCDC was specifically tasked to prepare a report to OMB containing the following:

- an analysis evaluating the FICCDC mission as it relates to an expanded role in coordinating Federal use of digital spatial data,
- recommendations for appropriate FICCDC activities beyond its current charter, and
- a review of and recommendations for potential revisions to OMB Circular A-16, coordination of surveying and mapping activities, to incorporate Federal activities relating to digital spatial data.

This report is to be completed in conjunction with the committee's 1989 annual report to OMB and is due no later than March 15, 1990.

Currently, the focus of the FICCDC is to recommend procedures and programs that will (1) facilitate the coordination of Federal agencies' digital cartographic and geographic information system (GIS) activities, and (2) establish and promulgate standards and specifications for the production of digital cartographic data. The FICCDC consists of a Steering Committee with representatives from 12 departments and independent agencies, and 5 working groups: Requirements, Standards, Technology Exchange, User Applications, and Reports—all with multiagency representation.

OMB Circular A-16 describes the responsibilities of Federal agencies with respect to coordination of all surveying and mapping activities financed in whole or in part by Federal funds which:

A. Can contribute to the National Topographic Map Series of the United States and outlying areas of sovereignty and jurisdiction, the National Atlas of the United States of America, the National Networks of Geodetic Control, or such other national geodetic control and topographic mapping programs as may be established; or

agers and users of land information to be knowledgeable if the information is to be used effectively in decisionmaking.

5-A. In order to improve the overall knowledge and capabilities of LIS personnel, a procedure should be developed for personnel exchanges across all levels of government, the private sector, and geographic regions. Models should be developed for an ongoing training program for State, local, and private sector practitioners.

5-B. A mechanism should be established for continuing curriculum development to foster long-term orientations to land information management. Doing so would provide for a wide variety of media for training delivery to reach the vast number of individuals working in land information related professions.

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B. Result in cartographic representation of international boundaries other than those of the United States with Canada or Mexico.

OMB Circular A-16 was originally issued on January 16, 1953, and was last revised in May 1967.

Proposed Expanded FICCDC Mission and OMB Circular A-16 Revision

The FICCDC Steering Committee recommends that: (1) the breadth of coordination carried out by the committee be increased by the addition of other types of spatial data, such as cadastral survey, geologic, resource (soils, wetlands, vegetation, etc.), cultural, and demographic data; (2) the name of the committee be changed to reflect this broader coordination responsibility; and (3) the new committee and its responsibilities be incorporated within a revised and expanded OMB Circular A-16.

Under the FICCDC proposal, the current FICCDC will be superseded by a new interagency coordination committee mandated by a revised OMB Circular A-16 with the primary objective to promote the coordinated development, use, and sharing of surveying, mapping, and related spatial data. The committee will support domestic surveying and mapping activities, geographic information systems use, and assist land managers, technical support organizations, and other users in meeting their program objectives through:

1. Promoting the development, maintenance, and management of distributed data base systems that are national in scope for surveying, mapping, and related spatial data.
2. Encouraging the development of standards, specifications, procedures, and guidelines.
3. Promoting technology development, transfer, and exchange.
4. Providing guidance and promoting cooperation and coordination between Federal, State and local government agencies, and the private sector in the collection, production, and sharing of surveying, mapping, and related spatial data.
5. Publishing periodic technical and management articles and reports.
6. Performing special studies and providing special reports and

briefings to OMB on major initiatives to facilitate understanding of the relationships of spatial data technologies with agency programs.

7. Reporting annually to the OMB on committee activities.

The new interagency coordination committee will include representatives of each department identified in the proposed revised Circular A-16 as a coordinating agency (i.e., Departments of Agriculture, Commerce, State, and Interior), and will be chaired by the Department of the Interior. Other Federal departments and independent agencies with activities or interest in surveying, mapping, or related spatial data should be represented and may request membership by writing to the Secretary of the Interior. For example, it is expected that the remaining eight departments and independent agencies that are currently members of the FICCDC steering committee will request representation on the new committee and will identify policy level decisionmakers to participate in the new process.

The Committee will establish, in consultation with other concerned Federal agencies, such standards, procedures, interagency agreements, and other mechanisms as are necessary to carry out its governmentwide coordinating responsibilities and to add, revise, or replace, where required, Exhibits of Circular A-16. Subcommittees and/or working groups may be convened to support specific needs as identified by the coordinating committee and will report directly to the committee. For example, it is envisioned that for each spatial data category (e.g., soils, wetlands, geologic, geodetic, etc.), a subcommittee will be identified to coordinate activities related to that category. These activities will include identifying standards of accuracy, content,

and format; facilitating exchange of information and transfer of data; and coordinating collection of spatial data to minimize duplication of effort where practicable and economical.

Each subcommittee will be chaired by the lead agency identified for the category. Membership will include, at a minimum, all agencies that have program needs involving that category. There may be further subdivisions of these groups to handle specific issues. As additional spatial data categories are identified, lead agencies will be designated and subcommittees established to develop standards and coordinate activities. It is also envisioned that working groups will be established dealing with crosscutting issues common to all spatial data categories such as standards, technology exchange, and liaison with State and local governments, academia, and the private sector. The new subcommittee and working group structure will build upon the existing Circular A-16 coordinating mechanisms and FICCDC working groups.

Implementation and management of the new interagency coordinating committee, subcommittees, and working groups will require a small dedicated staff and modest funding (i.e., 4-6 FTE and \$1-2 million). These resources will be used to provide: (1) staff support to the committee, including preparation of the annual report to OMB; and (2) funding for subcommittee and working group activities, e.g., pilot studies and publications.

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