The Internet, the State Library and the Implementation of Statewide Information Policy: The Case of the NYS GIS Clearinghouse

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Geographic Information Systems (GIS) are used by government, researchers and businesses in a wide range of domains including economic development, environmental management, education, health, human services, infrastructure management, and disaster response. Most experts agree that the most expensive part of a GIS program is the creation of spatial data. Some estimate that as much as 80 percent of the cost of any application is attributable to the expenses of acquiring and geo-coding information (Thapa and Bosler, 1992). Often the information needs of different GIS applications overlap and data created by one organization can be used by others. Data sharing can therefore help reduce costs of GIS application development and yield considerable benefits and efficiencies. To achieve this purpose, the State of New York has implemented a GIS Coordination Program which features an Internet-based GIS Clearinghouse operated by the New York State Library (Dawes and Eglene, 1998). In this program, the Library acts as a critical implementer and value-added facilitator of an important new state information policy that has influence over spatial data development, exchange, and use at all levels of government and in the private and not-for-profit sectors. The Clearinghouse provides the conceptual framework and operational platform for a fully functioning data cooperative which is the heart of the New York State GIS Data Sharing Policy. The Library-based Clearinghouse has become the essential portal to many newly identified information resources. It organizes the data descriptions, provides a publicly available and easy-to-use means of access, promotes sharing, points the way to education and other services, and generally makes possible the vision of a living data resource.

Libraries and GIS Information Resources

Library services related to GIS are a recent development and have been the subject of some research and much experimentation during the 1990s, mostly as an extension of traditional library functions. Much of the literature focuses on providing GIS services directly to library patrons (see for example, Boisse and Larsgaard, 1995; Abbot and Argentati, 1997). Soete (1995) notes key decisions that library planners must make about GIS services: what kind of service, how to build collections, staffing, learning and education programs, partnerships, data storage methods, and costs. In making these decisions, libraries need to attend to both general public (Gluck, 1995) and non-traditional (Argentati, 1995) user needs, to building relationships with other GIS experts (Cobb, 1995), and to providing convenient means of access to spatially referenced information, as well as primary and secondary literature on GIS (Longstreth, 1995). Others emphasize the shift that GIS represents from “documents” to “datasets,” and discuss the importance of collecting, describing, and accessing spatial data (Lamont, 1997; Hunt & Joselyn, 1995) through use of the national standards for geo-spatial metadata.

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Very recently, the Internet has become a major factor in the provision of spatial data and software to library patrons. A variety of Internet-based tools now offer both access to remote data and interactive analysis (Bergen, 1995; English and Margulies). The advent of interconnected networks also makes libraries a player in the development of the National Information Infrastructure (NII) (Lutz, 1995). Three major examples of NII-type GIS resources are the National Spatial Data Clearinghouse operated by the Federal Geographic Data Committee (Domartz, 1995), the federal Government Information Locator Service (Moen, 1995) and cooperative efforts between libraries and government agencies in the U.S. Global Change Data project (Hill, 1995).

In 1997, The Journal of Academic Librarianship published a special issue devoted to the questions and choices libraries now face (Hernon, 1997). These include the level of staff expertise in GIS, the geographic and temporal coverage of library GIS holdings, and the range and depth of service to patrons. Emerging networks of relationships and information sources pose an interesting choice for libraries: should they focus on direct provision of GIS information and services or should they serve as guides to information housed elsewhere? (Stephens, 1997) The effort described here shows how libraries might do both. It builds on the traditions of librarianship, but also illustrates how a non-traditional role for the library can add considerable value to the entire infrastructure of publicly available information.

**Evolution of the New York State (NYS) GIS Coordination Program**

In the early 1990s, New York State lagged behind most other states in term of GIS coordination and was one of only four states without a formal or ad hoc coordinating body (Healy, 1994). However, New York State benefited from many geographic data resources, deep pockets of GIS expertise, and a number of localized coordination efforts. The central issue facing New York was how to organize and sustain a collaborative effort across all levels of government and with the private sector that would take advantage of the analytical power of GIS to improve government services, drive down costs, and stimulate economic development. Significant barriers to GIS data sharing in NYS were identified in a 1995 study by the Center for Technology in Government (CTG) (Kelly et al., 1995: 29-36):

- Lack of awareness of existing data sets led to duplicate data development and failure to pursue projects for which agencies did not have their own data.
- Lack of or inadequate metadata did not allow potential users to easily determine the suitability of a particular data set for a particular purpose.
- Lack of uniform policies on access, cost recovery, revenue generation, and pricing resulted in an inconsistent mixture of free access and fee-based pricing.
- Lack of uniform policies on data ownership, maintenance, and liability made agencies reluctant to share their data freely.
- Lack of incentives, tools, and guidelines for sharing left agencies to reinvent the rules for each new sharing project.
- Absence of state-level leadership prevented New York from leveraging a considerable array of uncoordinated assets, and from participating in the national movement to create a spatial data infrastructure.

To demonstrate some possibilities for addressing these problems, CTG, in cooperation with many state and local agencies, produced an Internet-based prototype spatial data clearinghouse that contained a metadata repository and search capability. Selected spatial data sets maintained by a variety of state and local agencies were described using portions of the Federal Geographic Metadata Standard and loaded into the prototype database. By using the search and query capabilities of the prototype clearinghouse, a user identified a dataset of interest, and linked to the full metadata document to obtain a fuller understanding of its properties. The distribution section of the metadata contained instructions for obtaining the dataset. Those instructions, supplied by the metadata provider, could include online file transfers, electronic order forms, or instructions for ordering by phone or mail. The prototype clearinghouse was well received within the GIS community. Experience in building and using it led to specific recommendations (DiCaterino, 1995) for building a permanent system.

In a parallel development, the State Legislature established a temporary state GIS coordinating council charged with reporting to the Governor and the Legislature recommendations for improved coordination of GIS in New York State. Among the Council’s highest priority recommendations was the creation of a permanent GIS coordinating body and the establishment of a clearinghouse for spatial information (Temporary GIS Council, 1996). Accordingly, the NYS GIS Coordination Body was established as a standing program of the newly established New York State Office for Technology (OFT) and charged with a host of policy-oriented goals — and the development of a spatial metadata and information clearinghouse at the New York State Library.

The first statewide policy on GIS was issued by OFT in September 1996 (NYSG OFT, 1996). It established a framework for the development of a statewide GIS Program and created a broadly representative GIS Coordinating Body drawn from state and local government and the private sector. Working Groups and Advisory Committees were initiated to focus sustained attention on such issues as data sharing, education, communication, and private sector concerns.

**The Data Sharing Policy and Cooperative**

The Data Coordination Working Group of the Coordinating Body developed an overall Data Sharing Policy for GIS (NYSG OFT, 1997). This policy directs that a NYS GIS Data Sharing Cooperative be established in order to provide...