Center for Technology in Government

New Models of Collaboration
A Guide for Managers

New York State GIS Coordination Program

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Introduction

Geographic Information Systems (GIS) are powerful tools to understand and solve problems associated with place and geography. GIS spatial analysis and display capacities allow a holistically organized view of a community and its citizens because they provide the ability to overlay and analyze interrelationships among disparate kinds data. GIS is used by local, state, and federal governments, as well as businesses, in a wide range of domains including economic development, environmental management, education, health, public safety, human services, infrastructure management, planning, zoning, real property records management, elections and redistricting, and disaster preparedness and response.

The features and analytical capabilities of GIS technologies continue to improve, while their costs have steadily declined. The most expensive part of a GIS program, however, is the creation of spatial data. Experts estimate that as much as 80% of the cost of any application is attributable to the expenses associated with acquiring and geo-coding information. Unfortunately, the most valuable and beneficial data sets (i.e., those created at the highest spatial resolutions) are the most costly to create and maintain. Therefore, only a relatively small number of government agencies make significant spatial data development investments. Agencies with smaller budgets, especially in local government, are generally the least able to undertake significant investment although they are in great need of spatial data for many service areas.

Since the information needs of different GIS applications overlap and data created by one organization can often be used by others, data sharing can help reduce costs for GIS application development and yield considerable benefits and efficiencies. Partnerships are needed to share in the creation and coordinated use of GIS data sets between governments and private entities at all levels. To achieve this purpose, the State of New York has implemented a NYS GIS Coordination Program, an innovative model for data sharing and partnerships.

Project Environment

Strategic Vision

The founders and advocates of the NYS GIS Coordination Program envisioned a future where existing spatial data sets would be cataloged and described in a comprehensive and standard way; where potential users could easily contact and negotiate with the data custodians to re-use that data; where costly but highly beneficial projects to develop new spatial data resources would be undertaken by groups of organizations working together to create a shared asset; where GIS practitioners could readily share their problems, questions, and experiences with one another; and where GIS analyses of many kinds would contribute to improved environmental management, health care, social policy, education, land use planning and commerce. In the early 1990s, New York State lagged behind most other states in term of GIS coordination. Nearly every other state already had a mechanism to support GIS coordination. In 1994, only four states

were without a formal or ad-hoc coordinating body[1]. However, New York State benefited from many geographic data resources, deep pockets of GIS expertise, and a number of localized coordination efforts. The value of these resources needed to be substantially leveraged by a policy-driven coordination effort at the State level. The central issue facing NY 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.

Preliminary Studies

The GIS Coordination Program in New York emerged in 1996 from the convergence of several parallel efforts that had been developing for several years. Historically, New York State had an active community of GIS practitioners and a vast array of geographic data resources, but no formal mechanism to support GIS coordination. There were significant barriers to GIS data sharing in NYS which were identified in a 1995 study conducted by the Center for Technology in Government (CTG):

- Lack of awareness of existing data sets: the major barrier to GIS information sharing was the lack of information about data sets held by state and local agencies. Duplication and development of existing data sets which could have been shared was a common practice. At the local level, counties and smaller jurisdictions declined to start GIS projects for lack of funds to create the needed spatial data.
- Lack of or inadequate metadata: being aware of the existence of data sets is irrelevant without descriptive metadata. Indeed, for a user to determine the suitability of a particular data set for a particular purpose, specific information about its characteristics is necessary.
- Lack of uniform policies on access, cost recovery, revenue generation, and pricing: the absence of clear statewide policies on data dissemination was a major problem in NYS. It resulted in great inconsistency in the way agencies were dealing with dissemination of their data. Some offered open public access, others provided data sets at a premium price, at cost, or free of charge depending on the requester.
- Lack of uniform policies on data ownership, maintenance and liability: ownership of transferred data was another problem. When one agency obtains a data set from another agency and modifies it, thereby adding value to it, the ownership of the new data set becomes ambiguous. Consequently, liability issues become more complex. Since New York State had no clear policies on this question, many agencies were reluctant to share their data freely.
- Lack of incentives, tools, and guidelines for sharing: while there were clear costs and possible liabilities associated with data sharing, New York offered no tangible incentives such as enhanced funding or helpful tools such as model data sharing agreements to encourage agencies to make their data available for use by others.
- Absence of state-level leadership: each state agency and local government involved in GIS use acted independently of the others. Coordinated action could take place only on the margins when a few organizations saw cooperation as a means to reach their individual

[1] National States Geographic Information Council (NSGIC), 1994

goals. The lack to statewide leadership also prevented New York from participating in and influencing a national movement to create a spatial data infrastructure. This situation put New York State at a competitive disadvantage with other states.

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. The same year, the State Archives and Records Administration (SARA) entered into a contract with the National Center for Geographic Information and Analysis at the State University of New York at Buffalo and the Erie County Water Authority to assist in improving records management practices for GIS in local government. This project developed procedures and guidelines to assist local governments in planning their GIS activities.

Institutional and Legal Foundations

The State Legislature, persuaded by a series of studies and recommendations dating back to the 1980s, enacted Chapter 564 of the Laws of 1994 establishing a temporary state GIS coordinating council. This temporary council was charged with reporting to the Governor and the Legislature recommendations for improved coordination of GIS in New York State. The Council, comprising 57 members named by 28 separate appointing authorities, was chaired by the NYS Division of the Budget. It began its deliberations in the fall of 1995 and, drawing upon both the CTG and SARA projects in addition to the expertise of its members, made its recommendations in March 1996. The Council's highest priority recommendations included these: create a permanent GIS coordinating body with specific goals, duties and structure; establish a clearinghouse for spatial information; enact license agreement authority for local and state government; amend the Freedom of Information Law (FOIL) to authorize local and State agencies to set fees for commercial use of GIS data, and to use those fees to defray GIS costs and expand public access to GIS information; limit liability for spatial data providers.

A second concurrent development was the creation of the Governor's Task Force on Information Resource Management, New York's first central information technology agency, launched in January 1996 and charged with a policy-making and coordination role for all information resources in State government. The Task Force was subsequently created in law as the NYS Office for Technology (OFT). The Task Force requested that a Statewide GIS Coordination Plan be produced based on the conclusions of the Temporary Council Report. A Special Purpose Subcommittee on GIS, chaired by the Office of Real Property Services (ORPS), lead the establishment of a statewide integrated GIS initiative. To ensure that the plan represented the interests of all major GIS stakeholders, an advisory group was created which featured federal, state and local organizations as well as private and academic sectors. The Subcommittee delivered the Statewide GIS Coordination Plan in May 1996. It recommended that a GIS Coordinating Body be created as a standing subcommittee of the Task Force to set policy on GIS data sharing in NYS and that a spatial metadata and informational clearinghouse be established at the State Library, based on the prototype developed by CTG.

Project Development

Establishment of the Coordination Program

The first statewide policy on GIS was issued by OFT in September 1996. Technology Policy 96-18 established a framework for the development of a statewide GIS Coordination Program and created a broadly representative GIS Coordinating Body drawn from state and local government and the private sector. Attempting to address concerns of all parties having an interest in the GIS data sharing effort, the Coordinating Body appointed seven working groups to reflect upon, make recommendations, and develop sharable resources in the following areas: the clearinghouse, communications, data coordination and standards, education, finance, legal issues, and digital orthoimagery. Each sector and level of government is represented in the work groups. (see organization chart).

Creation of the NYS GIS Clearinghouse

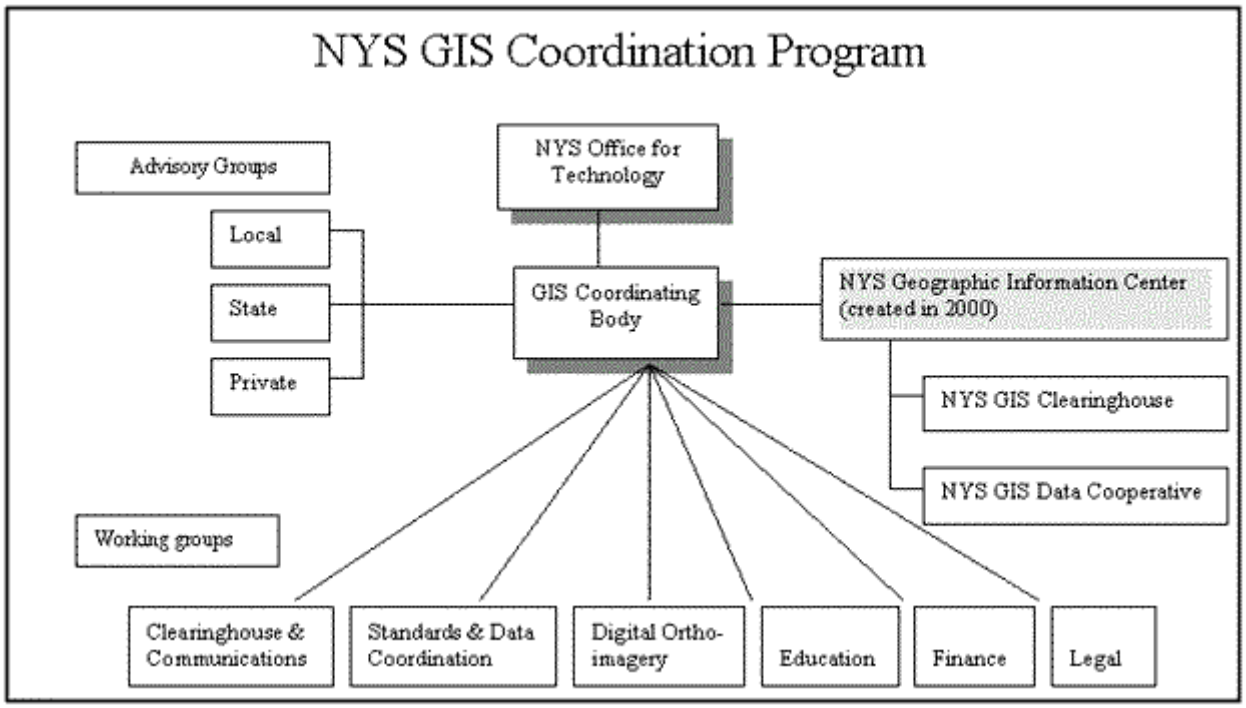
The Coordinating Body sponsored several initiatives that would put the new state GIS policy into action. The most visible of these efforts is the NYS GIS Clearinghouse. The NYS GIS Clearinghouse was created and established on the World Wide Web (http://www.nysgis.state.ny.us) by the New York State Library. It includes a publicly available metadata repository describing GIS data sets held by many different organizations within NYS and around the world, as well as information about how to obtain the data. It also has extensive information about New York's GIS Data Sharing Coordination Program; information on and links to GIS education and training opportunities; other state and federal GIS resources; GIS user groups throughout New York; and GIS-related listservs. In addition, users can have direct access to selected data sets from many state agencies. The Department of Transportation (DOT), the Office of Real Property Services (ORPS), and the Adirondack Park Agency (APA) were among the first ones to post their data on the site.

The Metadata Repository was created to allow producers of geographic data to describe the data sets they have available so that potential users can identify existing data before they attempt to create new data sets. Data producers describe their data sets using a simplified version of the Federal Geographic Data Committee Standard for Digital Geospatial Metadata. It includes information about who produced the data, the geographic area covered, the data set category or theme, scale, accuracy information, and how to obtain the data sets. Users access metadata by doing a search online. A list of data sets is returned as the result of a search and the complete metadata record for each of these data sets can be viewed to determine the relevance of the data to the user's need. Users then contact the data "owners" to obtain the data they want. A formal Data Sharing Cooperative (described below) gives special privileges to those who sign a data sharing agreement.

Initial IT and Human Resources: Voluntarism at Work

The initial costs of the GIS Coordination Program were minimal in terms of dollars and dedicated human resources. The equivalent of two full time employees were devoted to the Clearinghouse. In addition, the Project Director at OFT dedicated 50% of his time, supported by

50% of an additional staff member. There was also the equivalent of about six full time employees spread across the organizations participating in the Coordinating Body, Advisory Committees, and Working Groups. In addition, individual participants contributed bursts of effort at various times as issues they were concerned with came to the forefront. For example, people involved in the Legal Working Group gave many days of service in the development of data sharing agreements and legislative proposals, and members of the Data Coordination Working Group invested extraordinary effort in the development of the Data Sharing Cooperative. In dollar terms, the initial technology costs were insignificant. In order to establish the GIS Clearinghouse, a server and software already owned by the Library were reused. Disk space was borrowed or bought and some low-cost web tools were purchased.



Participants

State Involvement and Leadership

State-level leadership was initiated by the Project Director of the NYS Office for Technology (OFT), who provided guidance and direction to all government agencies involved in GIS activities. OFT, organizationally located in the Office of the Governor, was established to coordinate NYS information policies and resources. OFT successfully provided the state-level leadership necessary to implement the GIS Coordination Program by designating a leader who acted as a steadfast champion for the cause of cooperation. By pursuing a strategy of incremental gains, practical goals with challenging deadlines, and wide consultation within the GIS community, a great deal was accomplished in a short time. It is important to understand, as well, that OFT was a new agency linked to the Governor. As such, it had no "history" to

overcome, and state agencies, local governments, and private businesses alike perceived the GIS initiative to have the commitment of the State's top elected leader.

State leadership was also exercised by several state agencies that are the acknowledged leaders in the use of GIS: the Departments of Transportation and Environmental Conservation (DOT and DEC), and the Office of Real Property Services (ORPS). The early involvement of these agencies in the GIS program was crucial in order to convince other agencies to become active in the coordination effort and to join the formal data sharing cooperative. Many state agencies needed to see the state GIS leaders demonstrate commitment before they would join the effort. DOT, in particular, was a critical player as it had a historical policy and practice of selling its GIS data, even to other government agencies. New leadership within DOT became committed to the cooperative program and put its key data sets on the Clearinghouse for free use. DOT also led the effort to create and advocate for formal Data Sharing Agreements . ORPS engaged with DOT in a successful experiment in making data from both agencies available over the Internet. DEC, an early advocate of data sharing, was among the first agencies to develop complete metadata for its data holdings and to encourage their use. While many other agencies advocated for cooperation, and actively contributed to the effort, these three agencies provided essential leadership and credibility for the project.

Local Government Participation and Concerns

Many local governments are enthusiastic participants in the Working Groups, particularly those devoted to education (which is chaired by a local official) and to data standards and coordination. In addition, The Local Government Advisory Group involves about 50 members from around the state. By the end of 2001, 50% of the participants in the Data Sharing Cooperative are local governments (185 of 372 member organizations), although this figure represents a minor share of all local governments and includes many that do not have data of their own to share.

Local participation in the data sharing cooperative, has developed slowly for several reasons. First, local officials and legal authorities must understand and approve the agreements. Many times the GIS staff are very enthusiastic about the cooperative but the legal department or other administrative unit, which has not been involved in the development of the cooperative concept, needs considerable time to become familiar with the idea and to review the agreement. Ironically, some express skepticism because there is no cost to participants and they fear hidden costs lie under the surface. In order to overcome these barriers, OFT developed an agreement which is very user-oriented, with no cost and low risk to join, and an easy termination clause for those who may wish to withdraw.

Second, a major concern with the State's Freedom of Information Law (FOIL) has prevented many local governments from joining the formal Data Sharing Cooperative or listing their data sets in the Clearinghouse. FOIL was originally developed to guarantee citizen access to public records as a means of improving government accountability. However, it does not distinguish between information requested for accountability purposes and information requested for commercial purposes. Thus, new businesses addressing the "information age" market can acquire GIS data sets from public agencies through FOIL, then repackage and sell them at a

profit, even to other public agencies. Some government agencies are therefore strongly opposed to advertising the availability of their costly data sets on the Clearinghouse, fearing commercial entities will obtain and profit from them without cost through FOIL

In order to solve this long-standing problem, the Temporary GIS Council had recommended that the Freedom of Information Law be amended to allow local governments and state agencies to charge fees for data to be used for commercial purposes. The proposed amendment to FOIL would allow the licensing of geographic information system records and enable primary custodians to license a GIS record prescribing the conditions under which the recipient of the record may use, distribute, duplicate, sell, or resell it. It would also allow local governments and state agencies to charge a reasonable fee, not to exceed the fair market value of the record, when commercial use is intended. The revenue gained through these fees was expected to help local governments and state agencies defray the costs of GIS development and maintenance, as well as provide for expanded and enhanced public access to government information. This amendment is very controversial and has not yet been enacted. Not surprisingly, there is serious opposition by the private sector.

Other Participants

Commercial businesses interested in GIS comprise a wide array of organizations offering GIS-related services including consulting, database development, training, and application development; organizations offering GIS products for sale such as software, hardware and data; and direct or indirect end-user organizations such as engineering and construction firms. These organizations may not join the formal Data Sharing Cooperative, but they can benefit from several other aspects of the Coordination Program. For example, the public Clearinghouse organizes and describes GIS data sets for the benefit of all potential users. In addition, the overall Coordination Program fosters education; promotion, communication, and enforcement of standards related to the development and use of GIS software and data; and improvement of communications and coordination regarding GIS activities in the State. Having so many different interests in the coordination of GIS activity in NYS, the private sector is represented in a specialized Private Sector Advisory Committee and private companies are involved in the finance, data sharing, and legal working groups.

Participation from the private sector is still quite limited and it will likely take some time before private organizations have a major role to play. As the private sector is composed of very diverse entities, it is difficult to find the right mix and level of participation and focus. The Private Sector Advisory Committee has not been very active in recent years currently has no official chair.

In general, volunteerism and enthusiasm, which were very strong in the first year, declined as the program became more formally established. By 1999, participants relied more and more on the OFT Project Director and the State Library staff who had proved knowledgeable and reliable. As these staff members became more comfortable with doing things directly, they began to accept more of the responsibilities that had formerly been on the agendas of the working groups. While the data coordination working group continued to be very active, some other working groups were not able to sustain their initial enthusiasm and some became dormant after their

initial charges were satisfied. As a result, the very small staff became overloaded with some tasks, and a major effort was made to secure stable state funding to support ongoing operations and growth of the program.

Collaboration Process

Formal Collaboration

In order to ensure collaboration from the largest and most diverse number of participants, the Coordinating Body designed multi-agency work groups with leaders who encouraged the participants to recognize their own self-interest was served by investing in the "greater good." The Standards and Data CoordinationWorking Group, for example, comprises about 30 core members of which 60% are from the state, 25% from local government and 15% from the private sector. The members work on ways to make data development easier and more collaborative by reducing data duplication and waste, and on developing or adopting data standards. The specific issues to which the group devotes its attention are usually assigned to it by the Coordinating Body (about 80% of the group's work) and a few are self-generated. The spontaneously generated work tends to be "low hanging fruit" that can be done quickly with a good payoff. The Coordinating Body assignments are more significant and difficult but very crucial. The working group usually divides in subgroups that have particular interest for specific issues. The group meets monthly and tries to draw participation from a large number of agencies by using video-conferencing. Meeting notes are also distributed to over 75 people from different levels of government, universities and the private sector that have an interest in the work group undertakings.

In addition to these working groups, the Coordinating Body also created three advisory committees representing local government, state government and the private sector. The Local Government Advisory Committee, for example, functions as advisor to the Coordinating Body from a local perspective. Standards, financial assistance, and technical assistance were early themes for this group. Today, the Local Advisory Committee seeks to set goals and develop programs to assist local government in integrating GIS in decision making, and develops and comments on policies of the Coordinating Body. The Local Advisory Committee also comments on the work of other work groups, especially the data standards and coordination group. Given the very wide diversity of local jurisdictions, no one member of the advisory group is willing to speak broadly on behalf of local government. However, each person does speak with a local government voice and the chairman uses formal facilitation techniques to try to reach consensus and incorporate all opinions. These techniques provide opportunity for input, prevent a few from dominating the conversation, and do not allow discomfort with large groups or lack of certain expertise to prevent people from speaking. Meetings have a participation section and a presentation section so there is always a chance to discuss ideas and then something to learn. At first there were 12-15 members, then 20, now about 50-60 people participate at meetings.

The most formal collaborative mechanism created by the program is the Data Sharing Cooperative. The Data Coordination Working Group developed an overall Data Sharing Policy for GIS which was issued as Technology Policy 97-6. This policy directs that a NYS GIS Data

Sharing Cooperative be established in order to provide an organized mechanism to share GIS data easily. It further directs that all NYS agencies join the Cooperative by signing the *NYS GIS Cooperative Data Sharing Agreement,* created by the Legal Working Group. Through the Cooperative, member organizations gain access to GIS data of all other members at virtually no cost. Agencies do not need to have GIS data of their own to join the Cooperative; however, as Cooperative members, they are obligated to contribute corrections and enhancements that they make to any data set obtained through the Cooperative. State agencies signed the Data Sharing Agreement beginning October 1997. A comparable data sharing agreement for local governments and not-for-profit organizations was released in February 1998 and all local governments were invited to join. Agreements with federal government agencies have also been signed. Data sharing agreements between public agencies and consultants are currently under development.

The Data Sharing Agreement defines two levels of custodianship. A Primary Custodian is a member that developed or "owns" a data set made available for sharing. A Secondary Custodian is a member of the Cooperative in possession of data acquired from a Primary Custodian. Each data set has only one Primary Custodian designated by the Coordinating Body. The designated agencies are responsible for the maintenance of these data sets as well as their distribution to other agencies needing to use them. The intent is to eliminate duplication of GIS data sets across agencies.

Informal Collaboration

While work groups and advisory committees provide an official framework where agreement among the different stakeholders involved in the program can be reached, the development of interpersonal relationships and the recognition of a "need to succeed" provided much of the incentive that led to successful collaboration. As experts met regularly, personal relationships were forged and trust developed. It became clear to the community of practice that none of their goals would materialize unless they cooperated in both formal and informal ways to make significant progress. As they developed trust and respect as individuals, collaboration became easier. The ability of the participants to put aside individual goals or predisposition for the good of the whole effort has been a major characteristic of the work groups. The difference of interests related to levels of government or sectors of activity are not an obstacle to collaboration because participants have recognized they share the common goal of achieving a program that can provide benefits to all. For example, the Local Government Advisory Committee rapidly discovered that collaboration between state and local government and among local jurisdictions would help draw state dollars to GIS needs, something the State could not achieve alone, and that local governments also needed.

Some of the most effective instruments of the Coordination Program were developed very informally due to the synergy in the work groups. For example, the Legal Working Group was one of the first to be established to look at recommendations of the Temporary Council. About 10 people participated from the public and nonprofit sectors. Its first focus was on the idea of data licensing agreements. One member drafted three different agreements: a state-state license, a state-local license, and a state-private license. After discussing these, it seemed to the group that many one-to-one custom agreements would be needed. Another member suggested the

possibility of one standard agreement for "people who want to be inside the circle." It was an insightful moment and led the group quickly to develop the basic outlines of the Data Sharing Cooperative. Once the concept and language for the Data Sharing Agreement was developed, OFT issued them as an official NYS Technology Policy, requiring all state agencies to join and encouraging local governments to do the same.

The leadership style of the OFT Director and Coordinating Body Chair accounts for a large part of the success of the collaboration. Instead of trying to impose an agenda, he consistently tried to find consensus. For example, in the Coordinating Body, there is no formal process for decision making. The Coordinating Body uses an ad hoc and informal approach. When faced with difficult decisions, the chair usually polls the group to determine who is in favor or opposed and why. When the group is divided, no immediate action is taken. Instead, the issue is referred to a working group to do research and bring the issue back for discussion. Unanimity is not required but there is always an effort to get as close as possible to full agreement, while every concern is heard and respected. Moreover, the program has had a single leaders since the beginning, representing not only the top level commitment of State government, but also continuity and persistence, as a champion for the entire effort.

Creation of the Center for GIS at OFT: Formalization of the GIS Program

In 2000, after several years of advocacy by the GIS coordination community, a major State budget appropriation was made to institutionalize the program and to create a formal, professional GIS Center within OFT. Today, it is building a sizable professional staff, and launching several statewide data development programs such as digital orthophotography that will benefit all users. It has also taken on full operation of the Clearinghouse and the Data Sharing Cooperative. The staff was built by transferring the experts who built the Clearinghouse at the State Library, others who led GIS efforts at the Department of Transportation, as well as new hires. The Coordinating Body and working groups remain as advisors to the staff. Most participants view this as a very positive development, although they acknowledge that it will change the relationships that have brought the program to its present status and adjustments will need to be made to shift from an all-volunteer effort to one that is more formal. Some work groups view the Center as very beneficial to them because the Center will be able to dedicate resources that were difficult to find before. Therefore, they expect to see their recommendations implemented sooner. Others perceive it as a possible threat and feel their role will be diminished. They fear the representative Coordinating Body may no longer set the agenda, but only approve what the GIS Center wants to achieve.

Performance

Service Performance

The New York State GIS Coordination Program was designed to overcome barriers to GIS information sharing and provide a wide array of benefits to participants. As of 2001, the following has been achieved:

- Catalog of existing data sets: it is becoming increasingly easy for government agencies, citizens and commercial entities to determine what GIS data sets are available and who is the primary custodian by visiting the Metadata Repository on the GIS Clearinghouse. The GIS Clearinghouse allows easy searching for data sets of interest, thereby minimizing missed opportunities to use existing data sets.

- Clarity about data ownership: each data set has a designated Primary Custodian, the agency which originated the data and remains responsible for its quality.

- Improved data quality: as use of Cooperative members' data sets increases, users are passing updates, corrections, and revisions back to the Primary Custodians. The result is increasing data quality. All Data Sharing Cooperative members, as well as other public and private sector users of the data, benefit from these improvements in data quality.

- Standards and consistent practices: the use of a standardized data sharing agreement makes the rules for sharing within the Cooperative consistent. All members of the Cooperative agree to comply over time with standards for metadata, data exchange formats, and other characteristics.

- Savings: Data Sharing Cooperative members have access to all other members'data sets at no cost. Therefore, duplication of effort and investment in creating data sets already available from other agencies are minimized.

- Community building: the Coordination Program and the Clearinghouse encourage members of the GIS community to share information about their projects, education programs, conferences, and experiences. The Work Groups and Advisory Committees provide a venue for long-lasting professional relationships built around common interests and mutual goals.

- National presence: the emergence of the NYS GIS Coordination Program has made it possible for New York to participate actively in national efforts to create and promote a national spatial data infrastructure. It has allowed New York to apply for and receive federal funds to enhance the program and created opportunities to work with and learn from other states on issues of mutual concern.

Project Performance

By most measures, the NYS GIS Data Coordination Program is a success. Its focus, philosophy, and practical results reflect widespread participation by local governments, state agencies, and the private sector in policy discussions, educational programs, and advocacy for a state-level GIS program.

The publicly available GIS Clearinghouse contains 1600 Web pages and 31,000 links. The New York State GIS Clearinghouse has received awards and recognition from the Urban and Regional Information Systems Association (URISA), the National Association of State Chief Information Officers (NASCIO), and the Federal Geographic Data Committee (FGDC).

The Data Sharing Cooperative currently comprises more than 350 members who in 2000 exchanged more than 300,000 data sets representing a fair market value of over $12 million.

New York State's program in GIS Data Sharing Program has been widely recognized as successful and innovative. Some of its methods, such as the formal Data Sharing Agreement, are copied by other states. The Program also received a grant from FGDC to assist in the development of metadata for the Clearinghouse.

However, challenges still lie ahead. The GIS Clearinghouse does not yet represent all the data available in the State of New York. State agencies need to update their data inventories and more local participation has to be reached. However, without the FOIL amendments they desire, local participation in broad data sharing or in the formal Data Sharing Cooperative is unlikely to grow substantially. Perhaps most important, the program must complete its transition from a mostly voluntary community of practice, to a formal program in which a professional state-level center takes on a larger operational and leadership role.

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