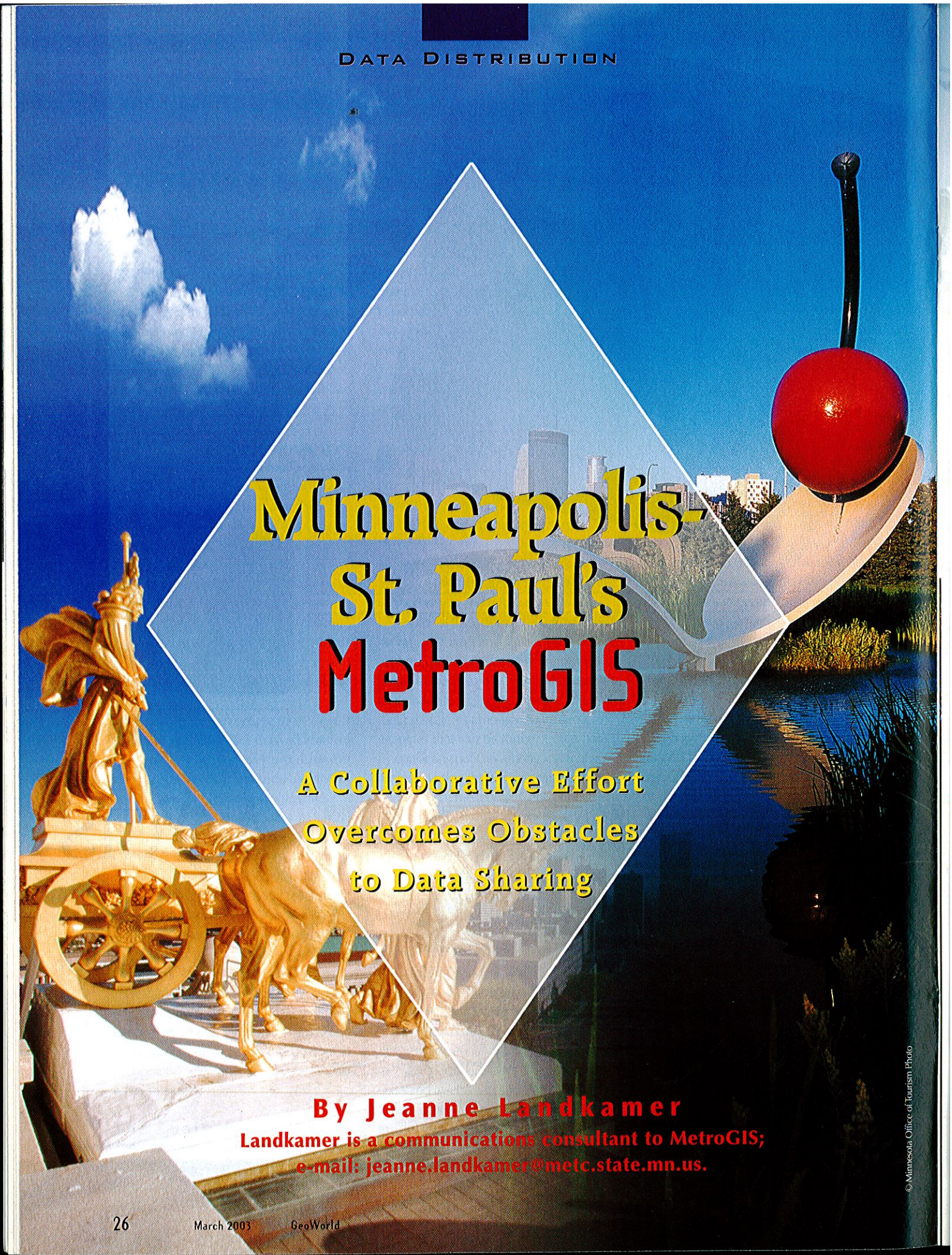


Minneapolis-St. Paul's MetroGIS

A Collaborative Effort Overcomes Obstacles to Data Sharing

By Jeanne Landkamer

Landkamer is a communications consultant to MetroGIS; e-mail: jeanne.landkamer@metc.state.mn.us.

SMALL GROUPS OF ANIMATED CITIZENS CLUSTER AROUND TABLES STUDYING COLORFUL MAPS OF MINNESOTA'S MINNEAPOLIS-ST. PAUL METROPOLITAN AREA. THEY TALK EXCITEDLY ABOUT WHERE TO PRESERVE OPEN SPACE AND WHERE TO EXPAND ROADWAYS. THEY DEBATE ABOUT THE SCALE OF NEIGHBORHOODS. THEN THEY PLACE "CHIPS" REPRESENTING VARIOUS TYPES AND AMOUNTS OF DEVELOPMENT ON THE MAPS TO CREATE SCENARIOS SHOWING HOW AND WHERE TO ACCOMMODATE LARGE HOUSEHOLD AND JOB GROWTH FORECAST FOR THE REGION BY 2030.

The foundation of the innovative planning game—played by hundreds of citizens in the Twin Cities area as part of an initiative called Smart Growth Twin Cities—was a set of beautiful, multicolor base maps. The maps depicted current land use, municipal boundaries, road networks, natural features and other geospatial data about the region. The source of the data was invisible to the players.

But not so to the regional agency (the Metropolitan Council) and its consultants (Calthorpe Associates of Berkeley, Calif.) who spearheaded the planning initiative. Peter Calthorpe, the firm's founder, calls the Twin Cities area's geospatial database "one of the best in the country." The Metropolitan Council relies heavily on the data, and provides major financial support to the organization entrusted to the data's upkeep, expansion and distribution.

That organization is a nationally unique geodata collaborative called MetroGIS. It provides governments in the seven-county Twin Cities area with access to current, regionwide datasets like parcels, future land use and street centerlines. The datasets are interoperable, allowing for seamless layering. Public-sector and academic users may download any self-selected geographic subset of the data and attributes of their choice at no charge from the Internet site at *http://www.datafinder.org*.

"MetroGIS is a great investment for this region," said Dick Carlstrom, GIS specialist with Technology Information and Education Services, a cooperative of 36 Minnesota school districts. According to Carlstrom, data-sharing agreements negotiated by MetroGIS with counties give school districts and other jurisdictions free access to a host of data that would otherwise be cost-prohibitive for many of them. The result is better decisions, better communication with the public, and lower costs for the region's taxpayers.

"The benefits are greater than the particular financial interests of any single jurisdiction," said Roger Williams, the Metropolitan Council's representative on the MetroGIS Policy Board. "With current, easily accessible data, government can make better decisions and communicate better with the public. Data sharing reduces data development and acquisition costs, which results in savings for taxpayers."

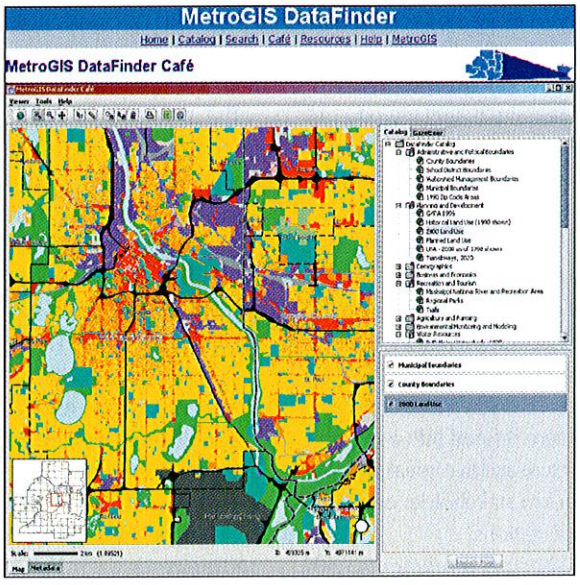
In October 2002, the Urban and Regional Information Systems Association (URISA) recognized MetroGIS with its prestigious Exemplary Systems in Government Award for Enterprise Systems.

Building a Collaborative System

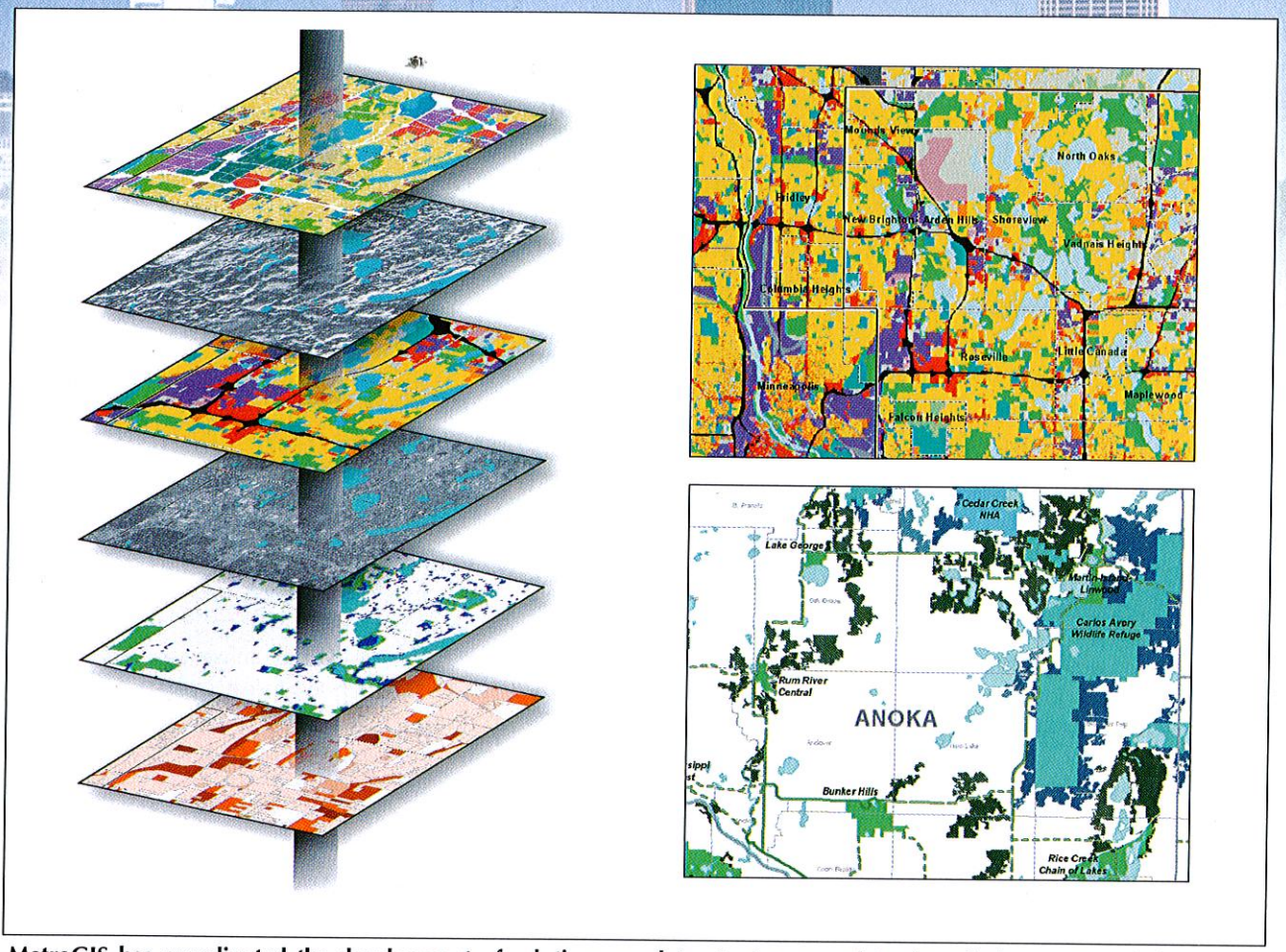
Several factors converged in the 1990s to foster the development of a regional data-sharing organization in the Twin Cities. First, some local governments had already cooperated to develop and use GIS technology. In the early 1980s, for example, Minneapolis and its home county, Hennepin, jointly developed software to capture parcel data—before any similar software existed on the market.

Second, the cost of GIS hardware and software dropped significantly in the early 1990s when PC-based GIS emerged. Consequently, several local governments began to explore the benefits of GIS technology. State and regional government, and several counties in the Twin Cities region, had already made considerable investments. The result was a plethora of conflicting data access policies, inconsistent and time-consuming licensing requirements, and duplication of data development. Small pockets of collaboration emerged as the GIS community became increasingly aware of the duplication of effort and expense that was occurring.

A third factor was that the Metropolitan Council—the regional agency that collects and treats wastewater, operates the regional transit system and oversees land-use planning in the Twin Cities area—recognized that it had a compelling business need for a parcel-based GIS, and parcel data are produced by the counties. The council concluded that the public



The MetroGIS DataFinder Café is a free desktop Java application. Users can install it, and view and download GIS datasets from MetroGIS DataFinder, a Web site that provides easy access to GIS data and metadata about the Twin Cities region and beyond.



MetroGIS has coordinated the development of solutions, or datasets, to respond to the priority common information needs of its more than 250 core stakeholder organizations. The datasets are interoperable, allowing for seamless layering.

interest would be served best if it invested its resources in a collaborative venture with the counties and others to develop a regional GIS rather than attempt to build and maintain a stand-alone system.

In 1995, the council hired a coordinator to begin to lay the groundwork for regionwide data sharing. The council and the Minnesota Land Management Information Center co-hosted informational forums to determine if a regional GIS initiative should be pursued, and if the community would participate if the council provided staff financing and support.

The response was strongly positive. The council sponsored a strategic planning forum that officially launched the regional MetroGIS initiative. It invited representatives of public, nonprofit, and private-sector interests that would be critical to the success of the initiative, including the National Spatial Data Infrastructure (NSDI) framework coordinator.

The group of 22 attendees agreed on strategic issues and statements of intent that within months were refined into a mission statement, an initial organizational structure and five initial projects:

1. Obtain formal endorsement from key stakeholder organizations of MetroGIS' principles and expectations.
2. Execute and administer data-sharing agreements with critical partners.
3. Implement an Internet-based data search and retrieval tool.
4. Identify and address common priority information needs among the stakeholders.
5. Identify a sustainable financing and organizational structure.

A Democratic Vision

The ultimate goal is to improve the efficiency of, and the quality of decisions made by, government in the Twin Cities area through widespread geospatial data sharing. The MetroGIS mission, developed early in 1996, remains the same today:

"Provide an ongoing, stakeholder-governed, metrowide mechanism through which participants easily and equitably share geographically referenced data that are accurate, current, secure, of common benefit and readily usable."

Although the organization has evolved and been streamlined since its inception, its basic structure has changed little:

- A 12-member Policy Board reviews recommendations and sets policy for the organization. It approves agreements, commitments and budgets. Members are elected officials from key local and regional government organizations that have endorsed and are participating in MetroGIS.

• A 25-member Coordinating Committee provides a forum to discuss MetroGIS design, implementation and operations. It defines goals and issues for strategic teams, and makes recommendations to the Policy Board. Members come from federal, state, regional, county and municipal governments; school and watershed districts; nonprofit agencies; the private sector; and academic institutions.

• A Technical Advisory Team is responsible for recommending technical strategies and mechanisms to address issues related to data access, content and standards. Much of the team's work is accomplished through special subgroups.

The organizational structure of MetroGIS is unconventional in that it has no formal legal standing; participation is voluntary. But widespread regional data sharing raises complex technical and political issues, and requires a commitment of time and effort that couldn't be made without top-level support. Twice the Policy Board has evaluated structural options and affirmed that the current ad-hoc structure is the most appropriate to achieve the vision.

An Early Challenge

In December 1995, project staff began meeting with officials from the seven metro area counties and other data producers whose participation is key to a successful regional GIS. The goal was to learn about local GIS program assets that would be valuable to the regional effort and local GIS program needs. Based on the discussions, MetroGIS secured data- and cost-sharing

MetroGIS Development Timeline

1995
- Metropolitan Council co-hosts exploratory forums.
- Strategic planning retreat brings together key stakeholders.

1996
- Council accepts leadership role in creating metrowide GIS.
- Coordinating Committee adopts mission statement, key initiatives.
- Organizational structure approved; four advisory teams begin functioning.
- First data- and cost-sharing agreements executed with counties.
- Public/private partnership pursued for sharing street centerline data.
- MetroGIS Web site, newsletter launched.
- Guiding principles endorsed by key stakeholders.

1997
- Policy Board holds first meeting.
- Board endorses 13 priority common information needs.
- Design under way of Web-based GIS data index and distribution site.
- Street centerline dataset available free to licensed users.

1998
- Web-based DataFinder operational.
- Data- and cost-sharing agreements in place with all counties.
- Policy Board endorses first data standards.
- MetroGIS receives two NSDI grants.
- Custodial agreements approved for two priority information needs.

1999
- Study confirms benefits of MetroGIS to stakeholders.
- MetroGIS develops cost-sharing, organizational model.
- Additional custodial agreements reached.
- Regional parcel data pilot project under way.
- MetroGIS testifies before Congressional subcommittee.

2000
- Pilot regional parcel dataset distributed to users.
- Policies for private access to parcel data approved.
- Four regional datasets completed; five more under way.
- Policy Board adopts first business plan.
- Council agrees to primary financial sponsorship through 2003.
- Enhanced DataFinder Web site launched.

2001
- Parcel data forum identifies needed enhancements.
- Work under way on regional planned land use dataset.
- Policy Board approves performance measures project.
- NSDI makes grant to enhance DataFinder map services.
- DataFinder Transportation Mapping Service wins national award.

2002
- Regional planned land use, census geography datasets available.
- Second-generation regional parcel dataset available.
- DataFinder Café launched.
- Policy Board updates business plan.
- MetroGIS wins URISA's Exemplary Systems in Government Award.

agreements with the counties to provide free access to their parcel, jurisdictional boundary and other data for all governments in the Twin Cities area.

But getting all the counties to agree wasn't easy. Each had its own policies about who and how much they charged for various data. Some cared about the revenue and others didn't. In exchange for the counties' agreement to share data with other governments at no cost, the council—through MetroGIS—has allocated about $740,000 since 1997 to the counties for a variety of GIS projects. MetroGIS negotiated with the counties to spend the funds on projects that met local and regional objectives. Examples include updating and enhancing local databases, building new functionality, and establishing data transfer procedures to overcome institutional and technical obstacles to cross-organization sharing of data.

"Our goal has been to create a culture in which data sharing becomes ingrained into the daily work routine of the core stakeholders," explained MetroGIS Coordinator Randall Johnson. When MetroGIS negotiated the "second generation" of data-sharing agreements for 2002-2003, the cost-sharing was reduced to $75,000 annually. The payments are an incentive for counties to comply with regional specifications and to keep their data current.

As part of the agreements, counties that didn't already have a local user group started one. User group participants learn more about GIS technology and its applications, troubleshoot problems, develop data standards and debate policy issues like data privacy. The groups benefit MetroGIS by helping to build the culture of cooperation and trust. They also produce champions for data sharing who become active in MetroGIS, sharing their expertise on technical and policy matters.

Common Information Needs

Another early challenge was to determine the common information needs of the diverse group of core stakeholders in the Twin Cities area, which comprises 300 local units of government and several regional agencies. In 1997, MetroGIS undertook a year-long project, involving more than 125 people, that resulted in Policy Board endorsement of 13 priority common information needs. State and federal agencies, academic institutions, and a handful of other private and nonprofit groups also participated to encourage better understanding of common needs throughout the entire community.

Each priority need is addressed through a similar process, which involves establishing a lead organization to coordinate technical design, developing a prototype for testing, and determining the roles and responsibilities of a data custodian. The Policy Board sets voluntary regional policy and serves as a political reality check. The entire process has its roots in the "area integrator" concept, promoted as a component of the NSDI vision.

About a year after a regional data solution first becomes available, MetroGIS co-hosts a forum with the regional custodian to evaluate user satisfaction and identify desired enhancements. To date, the available regional datasets include parcels, planned land use, municipal and county boundaries, street addresses and locations (centerlines), census boundaries and land cover. (The process and results are well documented at *http://www.metrogis.org/data/about/index.shtml.*)

Speedy Access

Even the best data aren't useful if access is limited or difficult. One of the most significant achievements of MetroGIS is *http://www.datafinder.org,* an innovative Web-based mechanism that uses Web mapping services to view and distribute geospatial data. The site allows users to search for available geodata and view it online with or without GIS software. In addition, the site's DataFinder Café tool allows users to:

- Define a geographic area of interest, large or small.
- Select the data themes and attributes they want.
- Select the data format in which they want the data delivered, and download the data.

For example, a city planner could use the tool to select parcel data—along with any number of other desired data layers—to create maps that would compare housing stock in similar communities throughout the region. A school district could select parcel and census data for the district or any subset of it to quickly determine where and how school enrollment will be changing in the near future.

"Being able to go to one place to get current, accurate parcel data for multiple jurisdictions saves us a tremendous amount of time and money," said Mark Kill, GIS specialist with the Metropolitan Airports Commission. Previously, staff and consultants to the commission's noise abatement program would spend months acquiring and normalizing the data from individual cities and counties.

DataFinder is also a node of the National Geodata Clearinghouse. Users may simultaneously search the Minnesota GeoGateway and other nodes of the clearinghouse.

Since its inception, MetroGIS has incorporated and tested concepts fostered by the NSDI initiative and are consistent with its goal to promote sharing of geospatial data throughout all levels of government, the private and nonprofit sectors, and the academic community. MetroGIS has received three grants for NSDI-related projects, including measuring the benefits of data sharing and enhancing DataFinder.

Looking Forward

In the future, MetroGIS will continue to develop solutions to the common information needs of its stakeholders. With data sharing a daily practice in the region, the current MetroGIS business plan calls for exploring shared applications and sets new measures to help the organization gauge its effectiveness. MetroGIS is also working with the Minnesota Governor's Council on Geographic Information to help promote statewide data sharing.

"We've overcome some complex technical and political obstacles to achieve our vision," said Victoria Reinhardt, chair of the MetroGIS Policy Board. "Especially in tough economic times, it's great to know that our work is helping government make better decisions and saving taxpayers' money."

Author's Note: *For more information about MetroGIS, go to* http://www.metrogis.org *or contact Randall Johnson, MetroGIS staff coordinator, at* randy.johnson@metc.state.mn.us. **gw**