TRANSPORTATION RESEARCH SYNTHESIS

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Cadastral and Right of Way Data Sharing

This Transportation Research Synthesis (TRS) provides summaries of recent research and implementation efforts on a active at the time of publishing, but may change.

OVERVIEW

Local government agencies create, collect, compile, and store data that also have value to other state agencies, such as the Minnesota Department of Transportation (Mn/DOT). In turn, Mn/DOT also is a keeper of information that has value to local government agencies. Local government and state agencies create and maintain their cadastral and right of way data in varying ways and with different systems, and those differences pose one barrier to the sharing of that information.

A 2002 initiative to develop a statewide parcel map inventory helped set the stage for several projects to improve data sharing of right of way and cadastral information between Mn/DOT and local government agencies.

Recognizing the benefits of easy access to existing data among agencies, Mn/DOT began exploring potential solutions for sharing cadastral data between Mn/DOT and local government agencies. Mn/DOT relies on maps, deeds, and other right of way records from local government agencies when planning right of way options and acquisition needs.

To investigate the potential, Mn/DOT sponsored a 2004 research project, Enhanced Coordination of Cadastral Data. The research evaluated the potential for sharing of cadastral data and outlined considerations for moving forward. In 2006, Mn/DOT launched an implementation pilot project in Mn/DOT Districts 3 and 4, which involved collaborations with local government agencies, technology development, launch of a web-based portal, and training and communication to support use. It also helped demonstrate the possibility for data sharing among state and local government agencies on a broader scale.

This TRS highlights the benefits of improving access to data sharing, describes the implementation and research projects, provides an update on the status of implementation, and outlines next steps.

BENEFITS

Planning, designing, building, and maintaining transportation projects and programs require information and data in many areas.

Determining right of way needs and defining property ownership are important steps in many transportation projects. Public agencies and private firms require detailed data on right of way and land ownership for their projects. Imaged documents, such as deeds, subdivision plats, right of way plats, commissioner's orders, historic maps, and other historic information are critical to the work of different government agencies, as are parcel tax information, land value, and specific locations for Public Land Survey (PLS) section corners.

The cadastral initiative was designed to explore ways to share the cadastral and right of way data that local government agencies and Mn/DOT create and collect.

It recognizes the importance of maintaining data with the one official source of records, whether local government agencies or Mn/DOT, while also recognizing the benefits of sharing data among agencies. It embraces the concept, "build once, use many times," as a cost-effective way to work on behalf of the taxpayers.

Key benefits to promoting data sharing among state and local government agencies include the following:

• Access to a source of data that is maintained by the authorized source
• Economic efficiencies by reducing the need to duplicate work that another agency has created for a different purpose
• Savings in staff time, both for local government agencies whose staff is responsible for assisting Mn/DOT in researching property records and for Mn/DOT staff who in some locations invest travel and research time to find the records
• Enhanced abilities for some local government agencies to view spatial data, imagery, and maps online using only their web browser, to submit documents online to Mn/DOT, such as road plans and weight permit information, and to update bridge query and reporting mechanisms
• Improvement of the quality of data
• Ability to build data in collaborative manner to optimize its value for multiple uses
• Stronger working relationships between local government agencies and Mn/DOT, leading to potential cost savings and other efficiencies

IMPLEMENTATION PROJECT

In July 2007, Mn/DOT began the Cadastral and Right of Way Data Sharing Pilot Project, with the goals of defining data of value to Mn/DOT and local government agencies, strengthening relationships with local government, developing a data sharing mechanism, and supporting the use of that data sharing mechanism in a Mn/DOT district.

This was a groundbreaking project, says Will Craig, associate director of the Center for Urban and Rural Affairs at the University of Minnesota and a member of the project's Technical Advisory Panel (TAP).

"I think this is the first work in the nation on this type of sharing," says Craig, current president of National States Geographic Information Council and a member of the 2007 National Academies Committee on Land Parcel Databases that produced the document, *National Land Parcel Data: A National Vision*. "Other places have required locals to submit their parcel data in a standard format. Here we have accepted it in its original form and translated it into a standard format."

Valuable data
The project's TAP included local government agency representatives from Clay County, Douglas County, Morrison County, and Crow Wing County, from the cities of Moorhead and Shoreview, and from Mn/DOT District 3 and District 4 and Mn/DOT state aid and land management offices.

The project principally explored the sharing of land records and right of way data, and the TAP played an important role in defining the data of value to local government agencies and the data of value to Mn/DOT. TAP members developed the following lists of potential candidates for data sharing.

Valuable data for local government
• Low level and other aerial photography
• Digital evaluation model data
• Data from laser imaging detection and ranging
• District survey records
• Original GLO running notes
• Monument identification
• Digital PLS section corners – electronic exchange of x and y coordinates – end certificates of location of government corner
• Accurate locations of right of way in digital format – electronic exchange of x and y coordinates
• Railroad right of way maps
• Roadway condition information
• Final certificate of filed condemnations
• Old right of way maps

Valuable data for Mn/DOT
• Deeds
• Survey records
• Recorded subdivision plats
• Right of way plats
• Digital parcel map
• Municipal boundary line
• Parcel data on ownership, sales prices, and sales history
• Digital PLS section corners
• Assessor data on parcel attributes and estimated market value
• Zoning boundaries
• Soils maps
• Ditch maps
• Road orders
• Railroad right of way or centerlines

In addition, TAP participants identified other valuable data beyond the right of way data.

For Mn/DOT participants, that data included road inventory information from local government agencies (and in turn the ability to share Mn/DOT road inventory information with local government agencies), as-builts from county road projects, evaluation data collected by local government agencies, aerial photography, wetland information, and utility locations and metadata.

For local government agency participants, that data included bridge hydrology information, water resource data, such as culvert inventory, sign inventory, and traffic counts and other related information.

Relationships

Local government agencies develop their own methods and systems of collecting, storing, and distributing cadastral data, such as recorded documents, tax parcel information, digital parcel data, and other right of way or road information. Any initiative to share cadastral data requires working closely with local government agencies.

"Building relationships was a critical part of this project," says Craig. As a researcher with a focus on geographical information systems, Craig is familiar with national initiatives, such as the movement toward a national land parcel database.

"We learned from previous work that coordination is key to moving forward with data sharing," he says. These statewide efforts support the federal government's efforts to integrate national land parcel data.

The implementation pilot project involved discussions with public officials for each of the 12 counties, four cities, and the White Earth Indian Reservation that comprise District 4. Multiple meetings often took place in participating counties with recorders, assessors, auditors, engineers, GIS staff, IT, county board, and other related areas.

Application and training

Based on the outcomes of those discussions, a plan was developed for data sharing, and work was completed on a web-based portal solution. Training was provided on the web-based portal for Mn/DOT District 4 staff and local government agency staff. The pilot also was expanded to include District 3.

CASE STUDY: DISTRICT 4

As land surveyor in Mn/DOT District 4, Tom Harper was the first to use the web-based portal that offers him and others in District 4 access to property information in several counties, including Clay County, Becker County, Douglas County, and Otter Tail County.

"We needed deeds from Clay County, and we were able to download them," says Harper. The minutes that it took to receive that information saved hours of time that it previously took Harper and others to drive to the county seat for the records.

Harper has used the web-based portal to look at property information that will help in making decisions about right of way acquisition for upcoming transportation projects and in taking the next steps. In the six months since the system debuted and training was completed, Harper has tapped it for more than a half-dozen projects.

"I'm very happy with it," says Harper. "We were able to electronically access property records from the counties that previously we could not. When doing a reconveyance in Parkers Prairie, we were able to access and print all of the deeds we needed, saving a trip to the courthouse in Fergus Falls."

In addition to surveying, other areas of Mn/DOT, such as right of way, planning, and hydraulics, can benefit from the available county data, says Harper.

District 4 right of way staff members have begun to use the web-based portal for access to deeds for property acquisition, to research options for potential projects in the planning phase, and for titles, legal descriptions, appraisals, and other real estate and tax information.

"We have some counties in our district where our travels could take up to two or three hours one way to drive to the courthouse for the information," says Brian Bausman, District 4 right of way supervisor. "It saves us the amount of time that it takes to drive to each location."

Some counties have information available on their web sites, but the web-based portal provides one easily accessible place to go for the data, says Bausman.

Harper and Bausman believe that the use only will increase, which will only multiply the benefits. "We are going to continue to use it," says Bausman. "I consider it a valuable tool for us."

One important piece to is extend the amount of Mn/DOT information being shared with local government agencies, as well as adding more counties. "This is a project that will continue to evolve," says Bausman.

CASE STUDY: DISTRICT 3

Greg Cooley was working on a project in Sherburne County to appraise approximately 18 parcels of land with diverse uses, such as agricultural, residential, commercial, and industrial.

The diverse property use on Cooley's project required analysis of many comparable sales to establish the value of affected parcels, a traditionally time-consuming process. To more efficiently complete the analysis, he turned to the web-based portal.

Cooley works in District 3 as a real estate representative. Mn/DOT extended implementation of the web-based portal to District 3 after piloting its implementation in District 4.

"Though I was initially restricted to raw comparable sales data for agricultural and residential properties, it saved me from having to manually thumb through literally thousands of certificates of value, hoping to find vacant land sales, locating the sales on a map, and collecting assessor and recorder data," says Cooley.

He also later used the web-based portal to identify commercial and industrial sales. "This project has spanned several weeks of effort, but aside from the parcel viewings it only required three to four days of field and county office visits due to the availability of the web site access," says Cooley. "Countless hours of road time, travel expenses, and reproduction costs were saved."

Cooley is using the portal frequently in his work, particularly to assist in the appraisal process for right of way acquisition and reconveyance. Through it, he is able to access available data, whether from interactive GIS maps, real property tax records, or recorded land records, such as deeds.

"The ability to have access to those records by the Internet is immense," says Cooley. "It allows greater focus on the direct time of research versus road time and collection costs for reproduction, and also faster analysis in identifying data quality. Web access provided data resources that can be directly used in my reports – by cut and paste or printed out as necessary file support."

Each county and the departments within that county are unique, says Cooley. While the available data may vary in level of detail, online access to the information remains a valuable asset, he says.

"There are challenges due to different levels of sophistication, non-standard map types, or details offered, but I would not relish going backward."

LOCAL GOVERNMENT PERSPECTIVES

Throughout the years, Clay County has invested in digital records for much of its data. As a result, it was a good candidate for a cadastral-data sharing initiative.

Mark Sloan, GIS coordinator in Clay County, recognized that data sharing of cadastral information offered the county several opportunities, and agreed to take part in the pilot implementation project.

"We recognized that someone on our staff was helping to retrieve records for Mn/DOT staff," says Sloan. With data-sharing abilities, county staff can spend the time it takes to fill Mn/DOT requests on other tasks.

Many counties charge fees for record services. Even taking fee revenue into consideration, the county gains more pluses from digitally sharing its data with Mn/DOT, says Sloan.

"If you charge a state agency, the money still comes from the taxpayer," he says. "With a greater flow of information back and forth between counties and Mn/DOT, that's an example of better government."

Sloan also sees much potential in gaining future access to Mn/DOT data, such as aerial photography, highway easements, and other digital right of way data. "Mn/DOT is well known for its survey work," says Sloan. "We don't have easy access to that information; if we did, we would use it."

Easy access to data also could help improve the accuracy of existing records, as data from one agency may help the other agency update its data.

In Otter Tail County, the pilot project provided a way to explore the feasibility of the technology behind the concept, says Rick West, county engineer.

The distance between the location of county records and Mn/DOT District 4 headquarters in Detroit Lakes means a significant amount of travel time, and a simple and easy-to-use system was clearly more efficient. It also showed other possibilities for collaboration.

"Certainly it has potential to include not just right of way data, but other data as well," says West.

Participating meant gaining support from various county department heads and bringing together representatives from different county offices, says West, and involving those offices up front was important.

Although the project required local government agency time, "it's time well spent and it's an important part of the process," says West. The benefits outweigh the initial investment.

The county's right of way technician uses the portal in working with Mn/DOT, says West. The county also looks forward to future enhancements that allow it to access Mn/DOT data, such as its bridge ratings.

West encourages other counties to consider participating. "There is a lot of value in the pilot project," he says. "It's a good way to do business."

GROUNDWORK PROJECTS
The foundation for the implementation pilot project in Mn/DOT Districts 3 and 4 began with a series of projects in early 2000.

Statewide Parcel Mapping Inventory
Conducted in 2002, the Statewide Parcel Mapping Inventory provided a baseline of information about land records and GIS data in the state. The project resulted in an inventory of the status and accuracy of cadastral information in 87 counties based on local government GIS data, land records, and databases. The most recent update of the Statewide Parcel Mapping Inventory occurred in 2007 and is available at http://www.mngeo.state.mn.us/chouse/SPMI/Reporting/.

The inventory was the first step in the greater sharing of cadastral information. "Completing the inventory opened the door for Mn/DOT to better understand local government data," says Jay Krafthefer, Mn/DOT right of way land survey manager. Understanding more about the advantages to government agencies and the issues involved were important next steps in expanding data sharing.

Enhanced Coordination of Cadastral Information
In 2004, Mn/DOT sponsored a research project to explore the perceptions and barriers to cadastral data sharing.

"We wanted to understand how similar data could be shared," says Francis Harvey, associate professor of geography at the University of Minnesota who conducted the research. "It is not a simple matter of local government agencies saying that they have the data and want to share it. We started by talking to counties to gain a better understanding of the range of issues."

As part of the project, interviews were conducted with county and Mn/DOT staff. Based on the results of the interviews, a survey was developed and sent to a broader pool. A focus group, which delved more deeply into issues, took place after completion of the interviews.

The research identified the most significant barrier to cadastral data sharing as communication. Limited access to information technology, lack of funds, and varying responsibility for cadastral information were also issues.

"We were able to find out that counties have interest in sharing data," says Harvey. Strengthening relationships was an important theme in moving coordination forward. Technical issues were also a concern.

Increased coordination offers the potential for greater economic efficiencies and can help agencies avoid duplication of efforts. For example, they may not need to conduct their own surveying if they are able to access survey data from another agency. "It has huge benefits down the road," he says.

The final report on the project, *2005-36 Enhanced Coordination of Cadastral Information*, is available at http://www.research.dot.state.mn.us/detail.asp?productID=1999.

NEXT STEP
As a next step to continue building on the progress of previous research and implementation projects, a plan has been developed to continue implementation.

The plan involves work to document the requirements and additional resource needs for ongoing coordination with local government agencies. It calls for continued collaborations among local government agency representatives and Mn/DOT, with a focus on improving the access of local government agencies to Mn/DOT data.

In addition, the effort will look at ways to advance further integration of local government agencies in Districts 3 and 4, as well as identify data sharing opportunities and processes between the Office of State Aid at Mn/DOT and local government agencies.

This plan builds on the foundation of the previous work and supports the long-term vision for the future, which involves expanding implementation to remaining Mn/DOT districts.

FOR MORE INFORMATION
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