GIS NEWS

HIGHLIGHTS

GIS 101: Put Your Data In GIS Today!

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MEETINGS & EVENTS

January 31
Dakota County GIS Users Group Meeting. Dakota County Western Service Center, Conference Room L139 from 1:00 pm to 3:00 p.m.
Meeting Highlight: Data Privacy with Jay Stassen

The Survey and Land Information Department is pleased to announce a special presentation by Jay Stassen from the Dakota County Attorney's Department. He will be talking about Data Privacy Issues and will address data privacy in regards to use of data with GIS and the public. Mark your calendar to attend this meeting! View the complete agenda at http://dakotanet/survey/events/gisusers.htm. RSVP to Julie.Daugherty@co.dakota.mn.us

Contacts

If you would like to write an article for the Spotlight section of the GIS News newsletter and share how you use GIS in your department, call or email Randy or Julie.

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GIS 101

GIS 101 – Put Your Data In GIS Today!
by Randy Knippel

GIS software has advanced dramatically in the last several years. In the past, anyone who wanted to use the technology required access to high performance computers and sophisticated software. Today, this is still true for only the most advanced GIS analysis; however, basic GIS is available for free using Internet Explorer.

For more than four years, Dakota County's Internet Real Estate Inquiry has been available on the County's website, providing public access to property information through an interactive map. While this application is widely used it required specialized programming and cannot be easily modified to include other data.

Today, we have software that can easily include your data in an interactive map, making it available to a small workgroup, entire department or division, all County employees, specific external customers, or the general public. Creating the map is as easy as preparing your data (or data available from other agencies), configuring the application and including any of the various other layers available in the County's GIS. In some cases, this can be done in a matter of minutes.

The Survey and Land Information Department has created several variations of these applications and can help you select the one that best fits your needs and degree of sophistication required. These variations also allow for selecting the most efficient version depending on

the intended user's computing environment. More sophisticated capabilities can be made available on high speed networks and computers while more basic capabilities can be made available for dial-up networking situations and the general public.

In all cases, the only requirement for these applications is a web browser and a network or Internet connection. No software needs to be purchased or installed and no licensing is required.
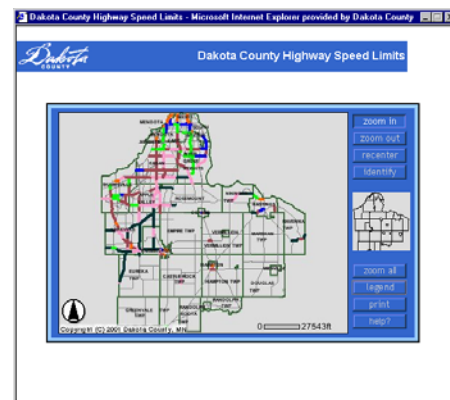
Figure 1 – Transportation Dept.

An example of these applications can be seen in Figure 1. This example was created for the County Transportation Department showing speed limits on County roads. This variation is the easiest to use and most efficient. It includes one layer of active information, which can be selected for further information, and any number of background layers. The buttons on the screen allow you to zoom in, zoom out, and re-center the map. Individual active features can be selected to see details. Buttons for zooming to full extents, displaying a legend, and printing are also available. Due to its simplicity and efficiency, this application is well suited for Internet applications where users generally have relatively slow network connections through a modem.

(continued from page 1)

Figure 2 shows another example created for the Environmental Management Department to display data used by the various work units within the department. In addition to the same basic map functions, you are able to turn layers on and off and select an active layer that can then be identified for further information. More sophisticated map functions are also available for selecting features using multiple methods including selecting using a query statement and using other selected features. Other map functions can be added or removed depending on your needs.
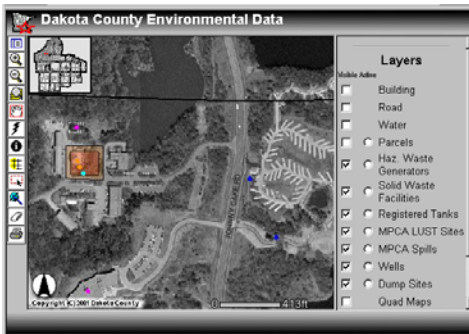
We have also worked with various units in Community Services that involve clients receiving services, case workers, and service providers. Showing these locations and relationships between the locations can be very useful for improving the efficiency and effectiveness of a program. Because this data can be highly sensitive, password protection and encryption are applied to maintain the highest degree of protection for the data.

Similar applications have been provided to law enforcement agencies through the CJIIN project (see Department Spotlight article in this issue). Also, under a GIS support agreement between the County and several cities, we are providing applications to those cities for utilities, signs and parks.

If you would like further information on this exciting GIS application or would like to discuss the potential for putting your data in GIS, contact Randy Knippel at 952-891-7080 or randy.knippel@co.dakota.mn.us. Note that this document contains links to actual applications on the County network. 🕭

Department Spotlight

Department Spotlight: Dakota County CJIIN
**by Mary Hagerman**

A police officer makes a routine traffic stop; perhaps the driver of the vehicle was speeding, or his tabs had expired. The officer runs the license plate number, yet has no idea if the driver of the vehicle is an ordinary citizen, or one of America's most wanted. Without collaboration and data sharing among criminal justice agencies, the officer may not have access to all the information he needs. The officer cites the driver and files a report. Later, a records clerk manually enters the same information. Perhaps previously, in another jurisdiction, an arrest warrant was issued…

The Dakota County Criminal Justice Information Integration Network (CJIIN) hopes to be the solution to problems like these. Dakota County CJIIN is part of a larger statewide system, CriMNet, that not only promotes the sharing of criminal justice data across agencies and jurisdictions, but also pushes for the elimination of redundant data entry and storage. The same information will be available to police officers, judges, and probation officers. In addition, entering the data only in the agency that originates the case or record will eliminate inconsistencies.

Initiative V of the CJIIN implementation plan calls for Geographic Information System (GIS) integration in law enforcement. GIS is a powerful tool that can improve the ability of Dakota County criminal justice agencies to investigate, evaluate, and respond to crime. GIS data provides a spatial element to link crime and geographic data. GIS technology offers enormous potential in enabling a law enforcement agency to improve investigative capabilities and identify crime and accident patterns to guide resource deployment. The CJIIN Crime Analysis Workgroup was formed to look at how GIS is or could be used in local law enforcement agencies, and to educate law enforcement personnel on the capabilities of GIS in law enforcement.

One of the objectives of the Workgroup is to build and maintain a countywide crime incident database. Calls for service data are being collected from the Sheriff's Office and the 11 municipal police departments in the county on a quarterly basis. The data are processed and mapped and sets of standard maps are distributed to the Sheriff and Chiefs of Police.
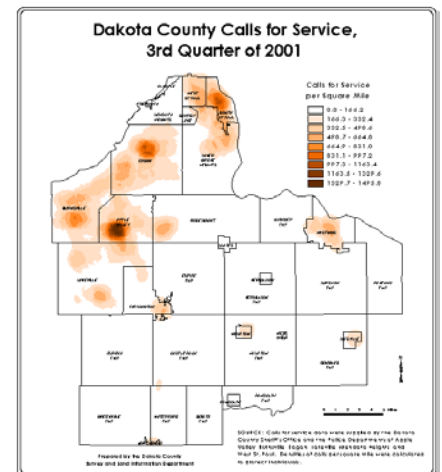
3rd quarter calls for service per sq. mi.

Calls for service data, from the agencies' dispatch systems, do not represent actual crime. Often an incident is called in as one type of activity, and upon arrival, turns out to be something different, or even nothing at all. Calls for service, however, are a good indicator of the demand on an agency for service,

and are useful for long-range planning and resource allocation.

The agencies' records management systems (RMS) are a better source of crime incident data. These data are actual crimes for which a report has been filed, and are useful for investigations and day-to-day problems. The Workgroup is currently working on a pilot program with the Apple Valley Police Department to collect and process RMS data on a weekly basis. These data are being fed into an interactive mapping application that is available to officers 24 hours a day.

Another of the Workgroup's objectives is to build GIS capabilities in local law enforcement agencies. Interactive mapping applications, like the Apple Valley RMS application, have been developed for the participating agencies to provide access to the calls for service data. These web-based interactive mapping applications provide basic map and query capabilities to law enforcement and corrections personnel at no cost. All that is needed is Internet access and a web browser. The applications allow the user to zoom in and out, move around the map, and click on features to get information. Basic query capabilities are provided to allow users to select and get information on incidents/persons that meet specific criteria.

The ultimate goals of the workgroup are to educate law enforcement and corrections personnel in the use of GIS as a tool for crime prevention and analysis, to enable local agencies to make use of those tools in their daily jobs, to integrate GIS technology into law enforcement business processes, and to facilitate information sharing among agencies.
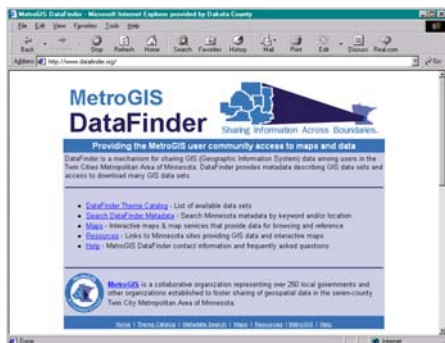
For more information on CJIIN or the GIS Crime Analysis Workgroup visit http://www.co.dakota.mn.us/sheriff/cjiin.

Desktop GIS

Data Sources on the Internet
by Joe Sapletal

Need some data from another metro county? From the State of Minnesota or beyond? Don't know where to find it? There are a variety of Internet sites that offer numerous datasets for numerous locations.

Screenshot of the MetroGIS DataFinder

DataFinder, maintained by MetroGIS, allows you to search and browse through metadata (data about data) of existing datasets. It also allows you to find the appropriate Internet location or contact person for obtaining the dataset. DataFinder also has a list of interactive maps for online browsing of certain datasets. The MetroGIS website also contains links to other data resources for Minnesota; the DNR's Data Deli, the Arrowhead Regional Development Commission and the Land Management Information Center's (LMIC) Minnesota Geographic Data Clearinghouse.

Screenshot of GeoGateway

The Minnesota Geographic Data Clearinghouse features a tool called the GeoGateway, "…a tool to help you quickly search for geographic data about Minnesota and its neighboring regions." "What are those 'neighboring regions'," you ask? The GeoGateway also contains links to the Wisconsin Land Information Clearinghouse, ESRI's ArcData Online Server, the Bureau of the Census, the National Biological Information Infrastructure Metadata Clearinghouse, the USGS, the Bureau of Indian Affairs, NOAA and the US Army Corps of Engineers just to name a few. The GeoGateway allows you to search by keyword(s), location, and even a time period.

Want more? Check out the Geography Network and "Access a World of Information." The Geography Network allows you to search for datasets all over the world - everything from World Snow Cover to Digital Ortho Quarter Quads of Virginia. The Geography Network has listings and searches for free data resources, live data services and Clearinghouses.

You don't need high-powered GIS software like ArcView or ArcMap to view your data. Free tools, like ESRI's ArcExplorer, are available for download. ArcExplorer allows you to view shapefiles and image files and connect to map services that are serving data. ArcExplorer can be downloaded from the ESRI website or found in the software folder on a Dakota County GIS data server.

If you have any further questions about finding GIS data or about GIS software feel free to contact any of the GIS Specialists.

Sites mentioned in this article:

DataFinder
Minnesota Geographic Data Clearinghouse
GeoGateway
Geography Network
ArcExplorer
Data Deli

Tech Talk

Geocoding Made Easy(ier)!
By Todd Lusk

Have you ever found yourself in this situation? You have 5,000 addresses that you need to have geocoded and mapped in one day. You sit down to ArcView and begin a geocoding session. You run the address through in "Batch Mode" and much to your disappointment you end up with 43% of your addresses matched. Be disappointed no longer!

Inspired by a presentation at the annual GIS/LIS Conference put on by the Minnesota GIS/LIS Consortium this fall, the Dakota County Survey & Land Information Department is working on a tool to make address geocoding a much less painful process. The tool, which is basically an automated method of address geocoding, pre-processes address data to make it more easily "geocodable" for ArcView. The pre-processor attempts to standardized the addresses into a format that ArcView "understands".

The original inspiration for this tool came from a product called the "GeoGenie", from Bair Software Inc. The GeoGenie software essentially is a tool that performs a search-and-replace on text strings in address tables. While performing some initial testing of the product we were less than pleased with the speed of the process. In the hopes of improving performance, and rather than spending money on an existing product, we decided to develop a similar tool in-house. The result was the address geocoding pre-processor.

How does it work?

The address geocoding pre-processor requires two fundamental pieces. First, it needs a table of addresses. Second, it requires a "rules" table. The pre-processor uses the rules table to do a "search-and-replace" on various text strings within the address table. The pre-processor was written using ArcView's scripting language, Avenue.

The key piece to the tool is the rules table. Essentially, the rules table requires three fields: one field for defining a query, another for defining a search string, and a third for a replace string. Due to limitations with tables in ArcView the query field has actually been divided into five equal-length fields for queries that run longer than 254 characters in length.

The query field is used to select only certain records from the address table. The search field contains a string that identifies the string to be replaced by Avenue's "Substitute" request. The "replace" field contains the string that will replace the search string when it is located.

Once all of the search-and-replace operations have been performed then addresses are automatically geocoded using ArcView.
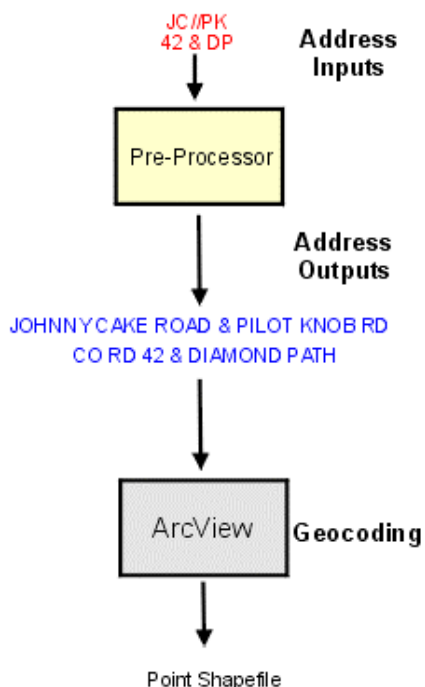
The Geocoding Process Using the Pre-Processor

What's Next?

Thus far, the Survey and Land Information Department has been very pleased with the performance of the address geocoding pre-processor. We have been able to geocode approximately 10,000 addresses in 5-10 minutes. While the tool has been very promising in initial tests it does still need some more refinement.

	1stQtr (w/o pre-processing)	2ndQtr (w/ pre-processing)
Apple Valley	86%	89%
Burnsville	84%	84%
Rosemount	91%	95%
W St Paul	97%	82%
Sheriff	75%	78%

A Before and After Comparison Using the Pre-Processor

Eventually we hope to make the tool into a Dakota County Extension available for all ArcView users. We are also looking to automate the geocoding process. As it stands now, the tool requires input from the user for the address table, the various fields, and the rules table. ✪

Techie Tip:

If you have an ArcView project that you are unable to open, try opening a new instance of ArcView and create a new project. With the project window active, select Project > Import. Import the other project. This may allow you to open a project that could not be opened previously. ✪