GIS NEWS

HIGHLIGHTS

GIS 101: Dakota County Web Mapper

Department Spotlight: GIS in the Sheriff's Department

Desktop GIS: Introducing ArcCatalog

Tech Talk: Utilizing Stored Queries with ArcMap

MEETINGS & EVENTS

July 29, 2003
Dakota County GIS Users Group Meeting. Dakota County Western Service Center, Conference Room L139 from 1:00 p.m. to 3:00 p.m. View the complete agenda at **http://dakotanet/gis/events/gisusers.htm**. RSVP to **Todd.Lusk@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 Joe.

Randy Knippel
952.891.7080
Randy.Knippel@co.dakota.mn.us

Joe Sapletal
952.891.7096
Joe.Sapletal@co.dakota.mn.us

## GIS NEWS is Produced Quarterly by GIS Staff

Randy Knippel
Mary Hagerman
Scott Laursen
Todd Lusk
Joe Sapletal
Kent Tupper

GIS 101

Dakota County Web Mapper: GIS for Everyone
by Joe Sapletal

Recently, the Dakota County Office of GIS released a simple to use, interactive web map for use by all Dakota County staff. Dakota County Web Mapper includes some of our most popular layers in an easy to use format and is accessible on DakotaNet.

You can find Dakota County Web Mapper by going to DakotaNet, clicking on Applications, and choosing County Web Mapper from the list. Once you have clicked on Start you will be able to browse the available layers. Use the zoom in tool 🔍 to zoom in to an area on the map. As you do, more layers will become available, including the parcel layer. If you make the parcel layer the active layer (see image) you will be able to select the identify tool ⓘ and click on any parcel on the map to open a small window containing information about that parcel.
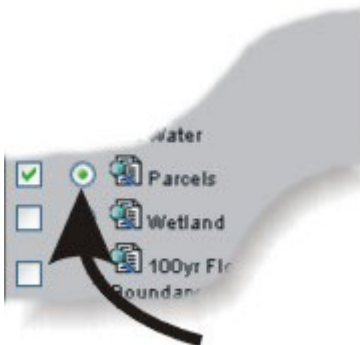
Click to make layer active.

County staff can browse various other layers such as street names, lot dimensions, 2000 aerial photography and the recently released 2002 color aerial photography. Users of Web Mapper can make their own site maps of any area in Dakota County with the easy to use tools. A brief yet comprehensive help page is available by clicking on the blue question mark ❓ in the menu to the left of the map, if you need help with any of the tools.

The help page and Layers list also includes metadata. Metadata is data about data. When you view the metadata for the layers in Web Mapper you will see a brief description of each of the layers or the origin of the data. All you need to do is click on the icon that looks like a little piece of paper and a magnifying glass 🔍 that is next to the name of the layer you want more information about and a web page will open that has the associated metadata.

If you find that Dakota County Web Mapper is useful, and would like to see some of your own data in an interactive web map, call or email one of the GIS staff. We would be happy to create an interactive web map for your department or work unit. We have created many variations of Web Mapper for Dakota County departments and are capable of keeping your confidential data secure. 🕹️

Department Spotlight

Computer-Aided Dispatch (CAD) Using GIS in the Sheriff's Department
by Capt. Jeff Schwartz, Dakota County Sheriff's Department and Kent Tupper, Office of GIS

A 911 call is received at the Dakota County Sheriff Dispatch Center. The moment this call is received the Street Address of the caller and the appropriate Ambulance, Fire or Police Department responder is displayed on a screen in front of the dispatcher. The dispatcher determines what needs to be done based on information received from the caller and dispatches the

Continued from page 1

needed help. The time and the address of the call are automatically logged, as is any additional information entered by the dispatcher about the incident. This is Computer Aided Dispatch (CAD). It originated in the 1970's and today is an essential part of providing Emergency Services.


CAD gives dispatchers access to critical information.

The Dakota County Sheriff's Department is migrating from its existing CAD system, which is based on information stored in database tables, to one that can utilize Geographic Information - in other words, a GIS. There are many advantages to this migration. Locations for the addresses can be found and recorded. These locations can be displayed on an interactive map combined with other various Geographic data such as street centerlines, building footprints, property lines, and even aerial photography. Real time automatic vehicle locations (AVL) can also be displayed with the aid of Global Positioning System (GPS) information. These maps can be displayed at the dispatch center or even sent to the Patrol officer's car. Shortest path routing can also be displayed to help the officer reach the location of the incident quickly. These are features of Advanced Tactical Mapping (ATM).
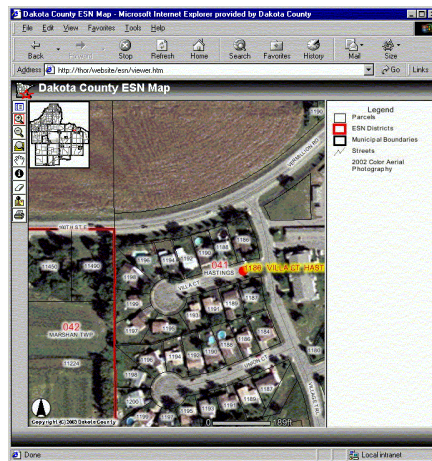
Advanced Tactical Mapping

The stored incident information (i.e. burglaries, traffic accidents, speeding violations) can be queried at a later time and mapped to help with analysis, displaying pattern detection that previously would have been difficult if not impossible to find. This analysis is an invaluable tool that can help determine areas of concern and aid with decisions on the distribution of limited resources.
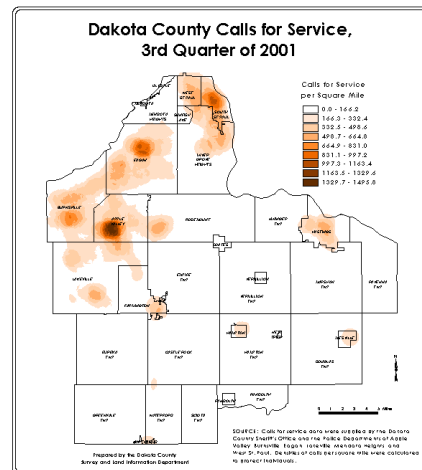
GIS analysis

Printrak's Premier CAD™ was chosen by Dakota County and various other metro-area counties and municipalities as their new dispatch system. Premier CAD™ uses a coordinate-based geofile created and maintained using map-based data formats and tools from ESRI. As a result, the Dakota County Sheriff's Department can utilize existing GIS databases containing street centerlines with address location, tax parcel locations and associated information, political boundaries, physical features and imagery from aerial photography, to name a few.

New GIS datasets are easily created to delineate areas of responsibility (beats) or incident reporting districts. The GIS is then able to feed this information to the CAD system. Future updates can be made from the GIS as well. This adds efficiency as these datasets are already being maintained as part of the County's GIS program.

Let GIS help manage your data!🌐

Desktop GIS

Introducing ArcCatalog
by Scott Laursen

The new ArcGIS software suite from ESRI consists of three different components. ArcMap is the new and renamed version of ArcView 3.2. Another component in the suite, ArcToolbox, is a set of wizards and tools that enable high-end users to manipulate data in various manners. Most users have no need for it, and in fact may not even have access to it. The third product, ArcCatalog, is similar to Windows Explorer for geographic data and can be very useful to users because it allows them to browse for their data and review their files before opening them in ArcMap. This article will introduce you to ArcCatalog.

ArcCatalog is a stand-alone piece of software that can be run separately from ArcMap. It can also be started from within ArcMap by using the shortcut found on the "Tools" toolbar. The icon for ArcCatalog looks like an open filing cabinet. When you start ArcCatalog, a window will open that looks something like Figure 1.
(on page three)
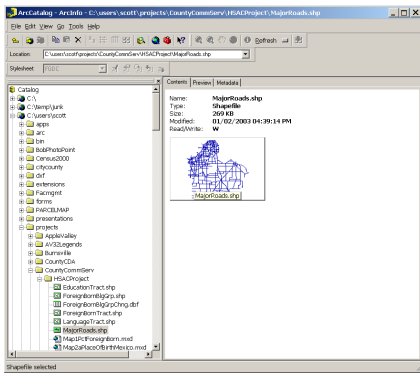
Continued from page 2

Figure 1. *The ArcCatalog window.*

Directories, folders and files are listed in a tree on the left-hand side, much as they appear in Windows Explorer. One major difference is that icons appear next to the files in the tree. The different icons are used to represent different file types and also to distinguish between different types of geographical data. The right-hand side has three tabs that reveal different types of information about the file you have selected from the tree on the left. The first tab, Contents, gives a brief listing of information about the file you have selected (see Figure 1). The appearance of the information in the Contents tab can be changed using the buttons in the Standard toolbar. Users can choose between large icons, a list, a detailed list, and thumbnails of the different files.

The Preview tab allows the user to look at both the geography of a given shapefile and also the attribute table attached to it. When the Preview tab is selected, a drop-down box appears at the bottom of the screen. Choosing "Geography" from the drop-down list allows the user to see what the geography of the shapefile looks like (see Figure 2).
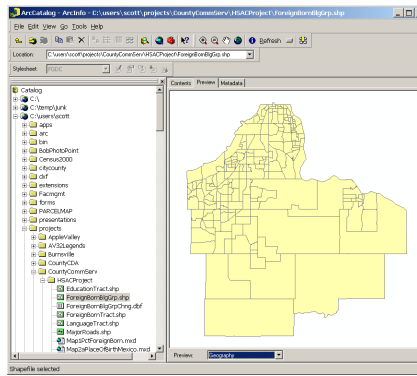

Figure 2. *"Previewing" the geography of a selected polygon shapefile.*

Using the tools available on the Geography toolbar, the user can zoom in or out, pan the view, or open up a window that gives all of the attributes of a particular feature by using the Identify tool.

Choosing "Table" from the drop-down list allows the user to preview the shapefile's attribute table (see Figure 3).
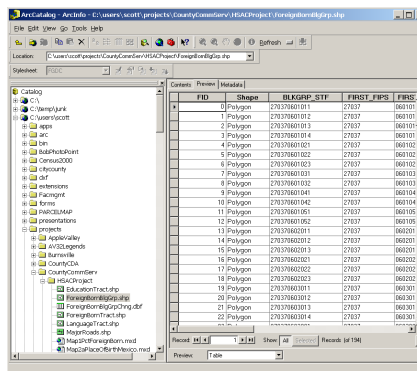

Figure 3. *"Previewing" the table attached to a shapefile with ArcCatalog.*

By right clicking on a column header users can sort their data, calculate statistics, and even delete the column. Users can also search the table for a particular piece of information within the table.

The final tab is the Metadata tab, which allows the user to view and edit any metadata that may have been created for the file. Information regarding who created the file and what coordinate system was used can be found here along with other background information as well. A metadata editor is included, so users can create their own metadata if they so choose.

ArcCatalog allows the user to manage data files in much the same way that Windows Explorer does. The user can delete files, rename them, copy them into different folder locations, and even create new folders to store data in. If you need to create a brand new shapefile, you will want to do it in ArcCatalog, not in ArcMap.

Once you have selected the files that you wish to use, you can add them to your display in ArcMap simply by dragging and dropping them onto your ArcMap table of contents. This is a fast way to add files to your ArcMap data frame. In fact, if you have several files to add to your data frame, it is faster to open ArcCatalog and drag the different shapefiles and tables into your data frame than it is to hit the Add Data button every time.

This article has only served as an introduction to ArcCatalog. There are many other management tools available to users in this application. Take some time to play around with it and learn about them on your own – it will be worth the effort! 🌐

Tech Talk
Utilizing Stored Queries with ArcMap
### By Todd Lusk

The scenario: You have worked all day long (or at least for the last few hours) putting together a complex query and you are finally ready to hit the "OK" button to run it. As soon as you do, ArcView 3.2 comes back with that dreaded "Syntax Error" message and closes your query window. Now, you no longer have the complex query. It's gone. That is, unless you happened to write it down on a piece of paper. Even then you would have to retype the query

Continued from page 3

into the query window.

Has this ever happened to you? Have you ever been frustrated when it does? Have you ever asked yourself, "Why isn't there a way I can save my queries?" Now you can - in ArcMap.

A new feature in ArcMap (Version 8.02 and higher) allows you to save queries, field calculations and labeling expressions in a file on your computer or network location. These files can then be opened and used again at a later date. They can also be accessed by your co-workers and e-mailed or copied to other people.
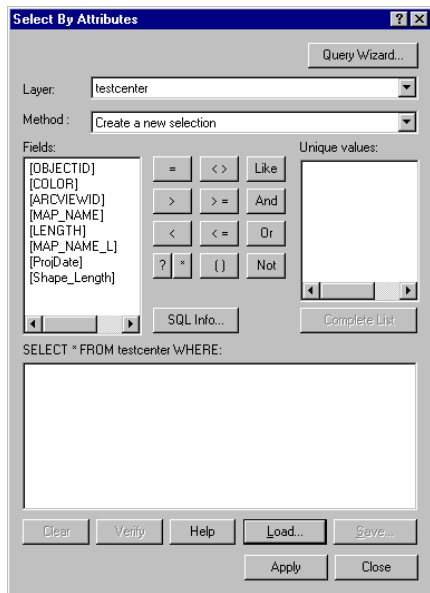
The ArcMap Query Dialog Window allows users to load saved query files from a hard drive or network location.

Outside suppliers of these tasks can be also be utilized. Searching the ArcScripts portion of the ESRI Online Support can yield several useful queries, labeling expressions or field calculations. While most of the "macros" (as they are called in ArcGIS) focus on field calculations, there are some of other types, such as labeling expressions, available as well.

Probably one of the most useful sets of macros the Office of GIS has

found to date is a set of macros collectively called "EasyCalculate". As of March 23, 2003 this collection contained sixty-eight different field calculation expressions. They perform tasks ranging from computing the area of polygons to calculating the "X" and "Y" values of point data. The macros come in an easy-to-download WinZip file that contains an HTML-formatted help file with a description for each calculator expression.

Let's walk through an example of how this feature can be used. We will use a saved field calculator expression file to compute the area of the polygons in a polygon shapefile.

First, start ArcMap and load some polygon data. Next, we need to make sure that our data contains a field suitable for storing area data. In this case we probably want a "double" field type with at least six decimal places.

Once we have determined the area field we want to calculate, simply open the attributes of the shapefile, right-click on the field header of that field and choose "Calculate Values…" from the menu. This should open the Field Calculator window. Now we are ready to load the calculator expression.

In the Field Calculator window, click on the "Load…" button. This should open a standard Windows file dialog window.
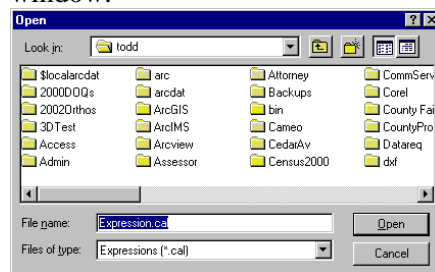

Searching for field calculator files with the file dialog window.

If you look in the "Files of type:" box you may notice that Windows is looking for "*.cal" files. This is the

format Field Calculator expressions are stored in.

Next, navigate to the location of the stored calculator file. In our example we would be looking for the polygon_Return_Area.cal file. Once you find the file, select it and hit "Open". This will load the field calculator expression into the Field Calculator window.
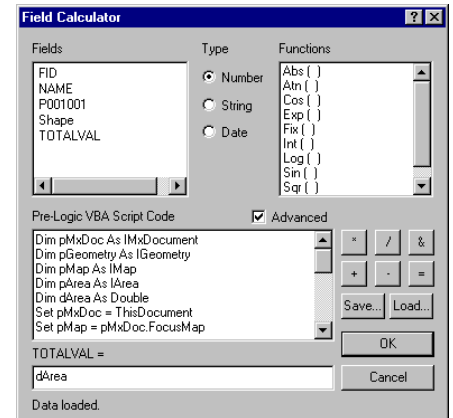
A field calculation loaded into the field calculator window.

You should now be ready to compute the area for the polygons. Hit "OK" and the process should begin. It's just that simple.

This new feature in ArcMap can help save you a lot of headaches that could not be avoided in ArcView. It allows you to save queries, field calculations and labeling expressions for use at a later time and also allows you to share them with others.

For more information on EasyCalculate, visit ESRI's ArcScripts page (http://arcscripts.esri.com/) and do a search for "EasyCalculate". For more information on taking advantage of this new feature in ArcMap, contact any GIS Specialist in the Office of GIS.

The main number for the Office of GIS is 952.891.7081.