Crime Mapping News

A Quarterly Newsletter for GIS, Crime Mapping and Policing

POLICE FOUNDATION

Volume 1 Issue 4
Fall 1999

MapInfo or ESRI
The Great Debate

In 1997 the Crime Mapping Research Center (CMRC) of the National Institute of Justice completed a study of mapping technologies in use in police departments across the country. The CMRC survey showed that MapInfo and ESRI's ArcView were the mapping software most commonly used in police departments, with MapInfo slightly in the lead (see Mamalian, Loving, et al. available at ***http://www.ojp.usdoj.gov/nij/rsrcdocs.htm***). Although we don't expect to resolve the debate over whether MapInfo or ESRI offers the most effective product for the law enforcement community, we invited representatives from both companies to submit articles about their software packages in the context of crime mapping for this issue of *Crime Mapping News*. We asked only that the article address their software and what it might lend to crime mapping. Below are the articles that we received from Lew Nelson of ESRI, Inc. and Joe Kelly of MapInfo Corporation (see article on page 5).

Crime Mapping and ESRI

By Lew Nelson, Public Safety Coordinator, ESRI, Inc.

"*Why does it make sense to map crime? Our goals are to reduce and prevent crime, to reduce suffering by victims, to punish the guilty, and to direct our limited resources where they can do the most good. Mapping helps us achieve these goals. Mapping enables us to identify crime-ridden areas to not only direct resources, but ultimately to reduce crime and prevent new crimes from occurring.*"

Attorney General Janet Reno's comments at the Crime Mapping Research Center Conference in December 1998 were the first of many public statements supporting crime mapping technology for law enforcement in the following months by top members of our Executive Branch. Just one month later President Clinton named crime mapping in his State of the Union address as a key technology for making our communities safer places in which to live. Similarly, Vice President Gore has made numerous comments on the value of crime mapping technology as an essential tool for law enforcement in the future.

Clearly, there is a rapidly growing realization of the value of geographic information systems coupled with traditional crime analysis to provide crime maps as a tactical and strategic decision-making tool for law enforcement practitioners worldwide.

In addition, crime analysis has become a much broader issue than simple pin-mapping. In addition to historical, spatial and other more familiar forms of crime analysis, there are analysts actively engaged in crime forecasting, traffic analysis and other areas including:

- Community mapping—looking at the underlying factors that create crime and crime-related problems with a focus on creating strategies for intervention and

(Continued on page 2)

Inside this Issue

Lew Nelson has served as the law enforcement/criminal justice solutions manager for ESRI since his retirement as Chief of Police for Redlands, California in May 1998 after more than 29 years in law enforcement.

(Continued from page 1)

mitigation. This "holistic" look at the community may include housing, recreation, economic, community survey and other demographic data that relate to crime and community health.

- Community policing—focusing on mapping community policing efforts to not only track projects and problems but to relate these efforts to crime and other issues that affect the quality of life in our communities.

Clearly, the growth in interest in crime mapping and the depth of the problems which law enforcement personnel are charged with addressing require a powerful and varied set of tools. Whether it's crime analysis from a single database, intranet or internet map sharing embeddable mapping applications or data creation—there's a tool to help you meet your mission. From San Diego to Philadelphia; Seattle to Fort Lauderdale; Sacramento to Charlotte-Mecklenberg—in cities large and small—ESRI provides these tools. The following is a brief description of ESRI and its tools for the crime analyst.

About ESRI

Founded in 1969, ESRI of Redlands, California, is recognized as the world leader in the field of geographic information systems (GIS). With 1998 sales of $278 million, ESRI continues to deliver the most innovative GIS solutions in the world. ESRI's GIS technology is used by more than 250,000 clients worldwide and ESRI software is the de facto standard for managing geographic information in local government. ESRI works closely with major technology partners such as SAP, Microsoft, Informix, Seagate, Filenet, Sun - Microsystems, IBM, Compaq, Oracle, and others to maintain product compatibility and develop emerging technologies. ESRI's scalable family of products meets the needs of all types of organizations, from the one-person analysis unit to the large metropolitan, state or federal law enforcement agency. Driven by the latest technologies, ESRI is committed to developing mapping software with the latest industry-standard development and data management tools. ESRI provides support to users through regional offices throughout the United States, over 1000 business partners and 75 international distributors.

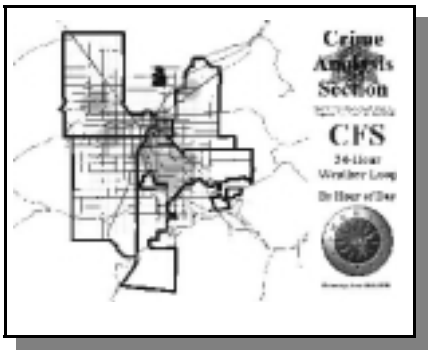
ESRI has also placed a value on developing new applications for law enforcement GIS worldwide. The recently released "Crime Analysis Extension Application" was developed with funding from the National Institute of Justice's Crime Mapping Research Center and is a free downloadable extension to ArcView available from ESRI's law enforcement web pages (***http://www.esri.com/industries/lawenforce/lawenforce.html***). Similarly, the "Community Policing Beatbook", built with MapObjects technology and also funded by NIJ, is available from the same website. This application is an in-vehicle application for use on mobile data computers – a mapping tool for the officer in the field. Another free, downloadable extension is the Spatial Crime Analysis System (SCAS) developed in ArcView and Visual Basic and available from the United States Department of Justice website. SCAS includes a wide variety of functions for mapping and analyzing the resulting data. It has been translated into a number of foreign languages including Spanish and Japanese. Similarly, the Department of Justice (***http://www.usdoj.gov/criminal/gis***) is currently developing the Regional Crime Analysis Geographic Information System (RCAGIS) - another crime analysis program which is discussed in the MapObjects section of this text.

ESRI business partners are also constantly developing new crime analysis products for ArcView, such as

The Omega Group's "CrimeView" (***http://www.theomegagroup.com***), as well as products for beat restructuring, emergency response, traffic management, disaster management, gunfire tracking and a variety of other areas in the law enforcement field.

ArcView and Its Extensions

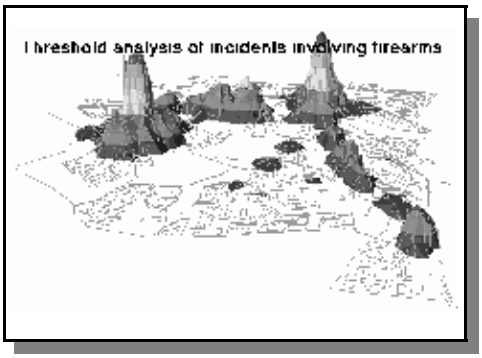
ESRI's ArcView GIS, the world's most popular desktop mapping and geographic information system (GIS) software, is a powerful tool for the management, display, query, and analysis of spatial information. ArcView GIS software's extensible architecture has enabled ESRI to develop optional "plug-in" modules, dramatically extending the software's functional capabilities.



ArcView GIS links traditional data analysis tools (such as spreadsheets) geographically with ArcView GIS, enabling the user to uncover new patterns and gain new insights into crime and other community issues.

- ***ArcView Spatial Analyst*** brings sophisticated raster and vector data analysis to the desktop. It seamlessly integrates raster-based spatial analysis with ArcView GIS software's vector-based mapping and analysis. This powerful combination brings unprecedented power for mapping, visualization, modeling, and analysis to your organization in an affordable desktop package. ArcView Spatial Analyst provides the tools needed to support a broad range of spatial modeling

and application equirements. With ArcView Spatial Analyst you can perform crime analysis, traffic - analysis, demographic analysis, capability modeling, predictive modeling, site suitability modeling, site location analysis, land use analysis, and much more.



- ***The ArcView 3D Analyst*** extension enables users to create, analyze, and display surface data. This surface-modeling package is ideal for novice and advanced users. ArcView 3D Analyst enables users to examine the visual impact of building new structures, visualize crime hazards in your community, and much more. ArcView 3D Analyst includes advanced tools for three-dimensional modeling and analysis such as view-shed and line-of-sight analysis, spot height interpolation, profiling, steepest path determination, and contouring. In addition, users can perform surface area and volumetric calculations, slope, aspect, and hill shade. ArcView 3D Analyst also provides a rich suite of tools for interactive perspective viewing.

- ***ArcView Network Analyst*** enables ArcView GIS users to solve a variety of problems using geographic networks (i.e., streets, highways, rivers, etc.) such as finding the most efficient travel route, generating travel directions, finding the closest facility, or defining service areas based on travel time. The ArcView Network Analyst extension is ArcView GIS software's solution for helping you and your organization utilize networks more efficiently.

- ***ArcView Image Analysis*** brings geographic imaging capabilities to ArcView GIS. ArcView Image Analysis enables ArcView GIS users to go beyond using images as a backdrop for vector maps. Now digital imagery can also be used for data visualization, data extraction/creation, and analysis. ArcView Image Analysis allows you to leverage a broad range of readily available image data types, including popular satellite imagery, aerial photography, ortho-imagery, and other remotely sensed data, supplementing a wide variety of geographic information system (GIS) applications. The results of an ArcView Image Analysis project can be input and output to and from applications that require ArcView Spatial Analyst or ArcView 3D Analyst software.

- ***ArcView Tracking Analyst***, an optional extension for ArcView GIS, enables users to explore, visualize, and analyze information relative to time, motion, and change. It supports direct feed and playback of real-time data from GPS or similar technologies. In addition, ArcView Tracking Analyst allows temporal and spatial analysis of historic and real-time data. Some examples of ArcView Tracking Analyst applications are:

  - Vehicle Tracking
  - Traffic Control
  - Personnel Tracking
  - Historical Event Analysis
  - Law Enforcement
  - Criminal Intelligence
  - Simulation and Modeling
  - Other Law Enforcement Uses

- ***ArcView StreetMap 2000*** is an optional extension for ArcView GIS software that supports nationwide (U.S.) address matching and street map display. ArcView StreetMap 2000 includes a comprehensive database fully optimized for local and national address matching. StreetMap 2000 allows users to automatically create local, regional, or national street maps based on map scale. It also enables users to automatically classify, symbolize, and label map features, making quality maps right out of the box, and to utilize the enclosed extensive data including airports, hospitals, parks, rivers, and lakes, as well as state and county boundaries and over 30 million U.S. road segments.

- ***The ArcView Internet Map Server (IMS)*** extension is an easy-to-use, out-of-the-box solution for publishing dynamic maps on the World Wide Web using ArcView GIS. Adding the rich, compelling, and intuitive visual content of maps to a Web application makes a site more attractive and informative. With ArcView GIS and ArcView IMS, publishing maps on the Web is almost as easy as printing a map. ArcView IMS turns ArcView GIS into a dynamic map server for the Internet. It includes a built-in setup wizard and a ready-to-use Java applet to help put maps on the Web in minutes.

- ***ArcPress*** for ArcView is an optional extension for ArcView GIS that extends the user's ability to efficiently print high-quality maps. Through a process called graphic rasterization, ArcPress for ArcView converts maps into standard raster data formats that can be sent directly to a variety of popular printers. ArcPress for ArcView GIS pays for itself quickly through increased productivity and by eliminating the need for extra memory on the plotter. By converting maps on the computer instead of on the printer, ArcPress for ArcView lets users output larger, more com-

(Continued on page 4)

plex maps directly to existing equipment, often with faster throughput saving both time and money.

MapObjects

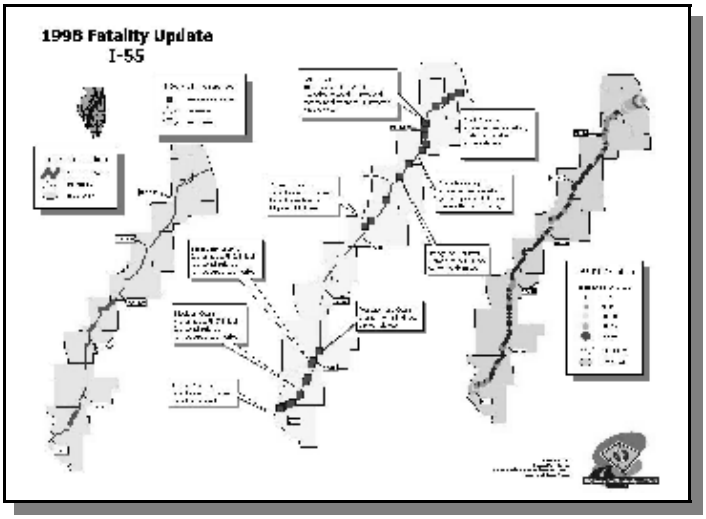
ESRI's MapObjects software is a powerful collection of embeddable mapping and geographic infor-mation system (GIS) components. Developers can use MapObjects to create applications that include dynamic live maps and GIS capabilities. In fact, many computer-aided dispatch providers have developed new map interfaces and applications in MapObjects due to their small footprint and speed. The Regional Crime Analysis Geographic Information System (RCAGIS) has been developed in MapObjects 2.0. RCAGIS is a White House-designated Community Demonstration Project site developed at the Baltimore Police Department in cooperation with Mr. John DeVoe (U.S. Department of Justice), the Baltimore County Police Department, Dr. Ned Levine, and Dr. Keith Harries. Participating agencies include:

- Anne Arundel County, MD
- Baltimore City, MD
- Baltimore County, MD
- Harford County, MD
- Howard County, MD
- Charles County , MD
- Maryland State Police
- Montgomery County, MD
- Prince Georges County, MD
- Washington, DC

MapObjects is an ActiveX Control (OCX) with more than 45 programmable ActiveX Automation objects that can be plugged in to many standard Windows development environments such as Visual Basic, Visual C++, Delphi, and PowerBuilder. MapObjects features include:

- *On-the-fly projection* allows users to combine data from any projection into a common projection for viewing and analysis.
- *Unparalleled data support* offers direct support for a wide variety of native data and image formats.
- *State-of-the-art geocoding engine* allows for fast and accurate address matching capabilities, including support for international addresses and reject processing.
- *Enhanced GPS management* supports tracking for points, lines, and polygons.
- *Improved data handling* provides powerful recordset management capabilities, including spatial and attribute filters to optimize performance.
- *Geometric functions* include a robust spatial geometry library for unions, intersections, and buffers.

MapObjects Internet Map Server (IMS) includes everything you need to quickly create dynamic Web mapping applications for distributing geographic data via intranet or internet. MapObjects IMS is an out-of-the-box solution to author, publish, and view Internet mapping



applications. This versatile tool set is uniquely designed to be both ready-to-use and fully customizable. MapObjects IMS is the only product that lets you leverage your existing investment in geographic information system (GIS) databases by supporting industry-standard GIS formats including ESRI shapefiles and ArcInfo coverages.

Departments such as the Illinois State Police (inset) and Sacramento Police have MapObject-based internet applications while the Munich (Germany) Police have a MapObjects based intranet application for sharing information internally. MapObjects IMS features include Web-based data distribution functionality, wizard-based administration tools, seamless integration with ArcExplorer, and the ability to support vector data transfer.

Spatial Data Engine (SDE)

ESRI's Spatial Database Engine (SDE) is client/server software that allows you to store, manage, and quickly retrieve spatial data from leading commercial database management systems like Oracle, Microsoft SQL Server, Sybase, IBM DB2, and Informix. SDE is a scalable solution, enabling spatial data to be easily integrated with the rest of an organization's data. SDE is integrated with ESRI's family of client applications and leading CAD products like MicroStation and AutoCAD, as well as market-specific solutions from over 30 third party developers. SDE ensures that an organization can develop and deploy spatial data and mapping solutions to any client, from any server, anywhere on the network. With SDE the user can manage very large data sets composed of millions of spatial features. Thanks to its cooperative processing between client and server, SDE is

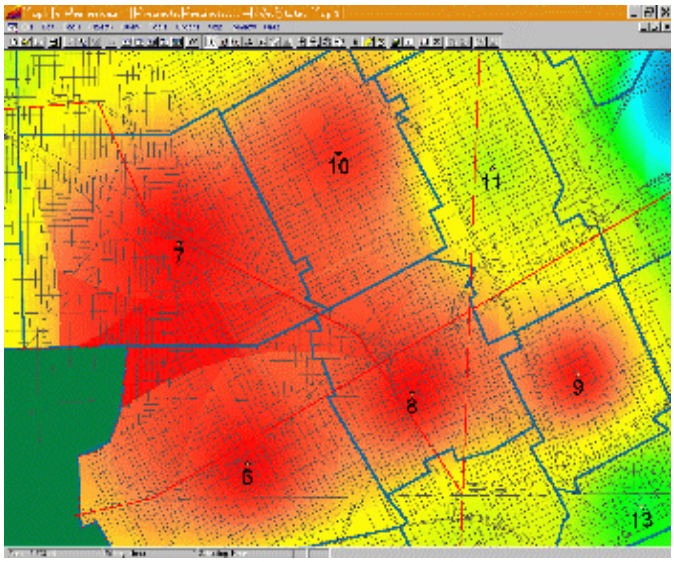
(Continued on page 8)

MapInfo Helps Take a Byte Out of Crime

By Joe Kelly, Public Sector Marketing Manager, MapInfo Corporation

Law enforcement agencies at the federal, state and local level are using technology to see crime in different ways with crime mapping. Crime mapping has become an invaluable crime fighting tool that helps police and law enforcement organizations across the world *fight* crime, not just *respond* to it. With crime mapping, law enforcement professionals access a visual image of crime trends and patterns, which allows officers to strategically position themselves to not only solve cases more quickly but to stop crime before it occurs. MapInfo's crime mapping and law enforcement products harness the power of location, or spatial information, to create a proactive and integral crime fighting weapon.

MapInfo's crime analysis solutions are being used around the world—from the Suffolk County Police Department to the FBI and Scotland Yard—and have resulted in significant crime reduction. With visual mapping, not only are crimes analyzed faster and more easily, other police activities are also enhanced. Law enforcement officials can streamline investigations, determine crime trends, prioritize and track suspects, plan patrols and deployment, and plan for crowd control and disaster preparedness, management and recovery. Crime fighters can also share this information throughout the entire department or agency, as well as access information from other enforcement agencies.



Today, law enforcement sees new value in using technology. "The success of crime mapping is due to law enforcement at all levels recognizing the value of spatial information as an excellent tool to drive law enforcement decision making," said U.S. Attorney General Janet Reno at a 1998 Crime Mapping Research Conference.

Joe Kelly is a market manager for MapInfo Corporation and has been with MapInfo since 1990, starting in spatial information management. Since that time, he has consulted in the design, development, and marketing of mapping solutions primarily focused on government and utilities.

Indeed, crime mapping is a proven success and its popularity continues to grow.

New York Police Department and COMPSTAT

Although many crime mapping programs exist around the world today, many can trace their roots back to the New York City Police Department's (NYPD) highly regarded COMPSTAT (computer comparison statistics) program. COMPSTAT entails four elements:

- accurate, timely intelligence clearly communicated to all;
- rapid resource deployment that is concentrated, synchronized and focused;
- effective tactics and strategies; and
- relentless follow-up and assessment.

With more than 9 million people in its jurisdiction, NYPD has a huge mandate to protect and serve a city that, until recently, was known to have one of the largest crime rates in the world. However, with COMPSTAT, developed with MapInfo technology, New York City has seen an impressive and unparalleled reduction in crime. The statistics speak for themselves: murder is down by more than 68 percent; rape decreased more than 22 percent; robbery dropped more than 54 percent; felony assault fell more than 29 percent; burglary decreased more than 52 percent; grand larceny dropped more than 39 percent; and auto larceny fell more than 60 percent.

With COMPSTAT, NYPD can analyze the extraordinary amount and variety of crime data it accumulates each day, and feed this information throughout the department.

New York State Bureau of Arson

The New York State Bureau of Arson replaced its previous reporting system with MapInfo after realizing the previous system was limited in its query and display power and incapable of communicating with other computer systems. A key element of MapInfo's technology is its full integration with other systems—important to organizations that must access and work with information contained on a multitude of systems. The bureau was able

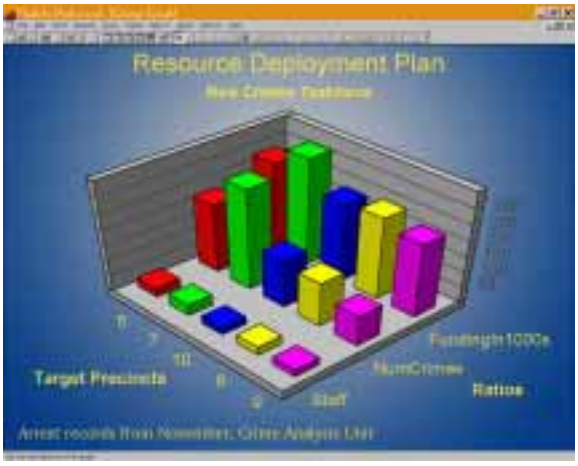
(Continued on page 6)

(Continued from page 5)
to do just that to combat incendiary fires in Utica, NY, that occurred almost daily in 1997. MapInfo software was used to map and analyze the fires in a spatial context. To do so, bureau officials needed to access citywide maps for all fires that occurred during the previous five years.

"Some city officials weren't willing to admit that an arson problem existed until we showed them one year's layer over previous years," said Arson Bureau Deputy Chief Jim Brizzell. "Once the incendiary fires were shown on maps with red flame icons, it was hard to deny a problem. There was hardly a block in the city that wasn't affected by arson."

With the MapInfo analyses in hand, investigators identified geographically at-risk neighborhoods and subsequently designed new police patrol routes and staffing models for fire stations.

The speed with which the bureau was able to analyze the Utica arsons so impressed officials that it acquired additional MapInfo licenses for users throughout the Bureau of Arson and its parent agency, the New York State Office of Fire Prevention and Control.



The ways in which the United States federal agencies use MapInfo technology is as diverse as the agencies themselves—the FBI, FEMA, U.S. Postal Service, U.S. Border Patrol, the Army National Guard, the Navy E2-C, the Coast Guard, the USAF Radar Command, etc.

The U.S. Secret Service uses MapInfo to prepare for large scale protective missions, such as the Republican and Democractic national conventions. With mapping technologies, federal officers coordinate team members, assets, schedules, housing, local emergency services and site-specific data.

The National Center for Missing and Exploited Children employs MapInfo technology to track leads generated from "Have You Seen This Child" posters.

The U.S. Marshals Service uses a MapInfo integrated spatial solution to track and transport some 32,000 pretrial federal prisoners between courtrooms and 1,500 contracted prisons throughout the United States. The Marshals also provide protection for the federal judiciary and administers the federal Witness Protection Program. MapInfo allows the service to effectively and cost-efficiently use its vehicles and personnel and identify and control costs—all on a continual basis.

London's Improved Efficiency

With MapInfo technology, London's New Scotland Yard allocates police forces, identifies crime trends and plans for events requiring crowd control. London's Metropolitan Police is the United Kingdom's largest police force, employing approximately 27,000 serving officers and 16,000 civilians. To effectively deploy this force, London police use MapInfo technology to link ordinance survey maps with local crime database information from Scotland Yard. As a result, the efficiency of the force's crime tracking and investigation efforts has dramatically improved.

"The system has sped up our crime-tracking operations because we can now compare local crime to the addresses of known criminals in the area at the press of a button," said Detective Constable Keith Welland.

First using MapInfo technology to map the sites of traffic accidents, New Scotland Yard has integrated its use of the mapping application to perform such proactive large scale crime fighting operations as Operation Eagle Eye, which visually shows the spatial relationship of street robberies, and Operation Bumblebee, which resulted in 360 burglary arrests.

"Accurately locating the scenes of attack proved extremely important in deciding where to set up surveillance," said Phil Stoneman, New Scotland Yard's technology manager.

Minneapolis Police Department and CODEFOR

Based on the NYPD COMPSTAT, the Minneapolis Police Department developed its own system shaped to its specific needs. Minneapolis' CODEFOR (computer-optimized deployment-focus on results), has been a phenomenal success. In 1998, CODEFOR's first year of operation, serious crime in the city dropped 16 percent from the previous year. Using MapInfo technology and the four basic elements of COMPSTAT, Minneapolis, once known as "murderapolis", implemented aggressive crime fighting measures by using a focused process of analysis, deployment and assessment.

"CODEFOR is a management strategy that the police department uses to deploy resources, respond to emerging crime patterns and reduce crime," said Minneapolis Police Department Lt. Jim Bender. "MapInfo is critical to us because it shows patterns. We can pull up a map with a couple of strokes on a keyboard, and we can find exactly where crimes are occurring. Then we can deploy our resources to prevent future ones from happening."

Reducing Auto Theft in Baltimore

The Baltimore Police Department not only uses MapInfo to track activities in Baltimore, it uses its MapInfo-based geographic information system (GIS) to track criminal activity that crosses county lines. For instance, Baltimore police use its GIS integrated with police reporting and database tools to track vehicular thefts throughout Maryland. With this technology, Baltimore identified a pattern for a string of auto thefts by plotting on a map where and when thefts occurred. Without MapInfo, patterns otherwise may not be seen and time saving is critical. Using the MapInfo system, the Baltimore Police Department conducts analyses in less than one-sixth of the time it would take using traditional tools.

Emergency Response Made Faster

MapInfo knows that in law enforcement every second counts, in fighting crime, assisting victims and responding to emergencies. Emergency response is a key MapInfo law enforcement application.

MapInfo technology was instrumental in recovery efforts in the TWA flight 800 crash off Long Island, NY, in 1996. MapInfo software was integrated into the National Oceanic and Atmospheric Administrationship's, RUDE sonar system to plot the location of the wreckage and then recover debris from the ocean floor. With maps of the wreckage, divers were able to work efficiently in their recovery efforts. As a result, MapInfo software became the de facto GIS standard for several of the TWA 800 investigation teams. Along with recovery, MapInfo technology was used by the National Transportation and Safety Board to help discover the cause of the plane's explosion.

MapInfo Meets Major Event Challenges

The MapInfo law enforcement solutions are also employed to ensure safety. Events, such as major sporting events, are a public safety concern for police across the world. With MapInfo, police can prepare for and monitor crowd patterns during events.

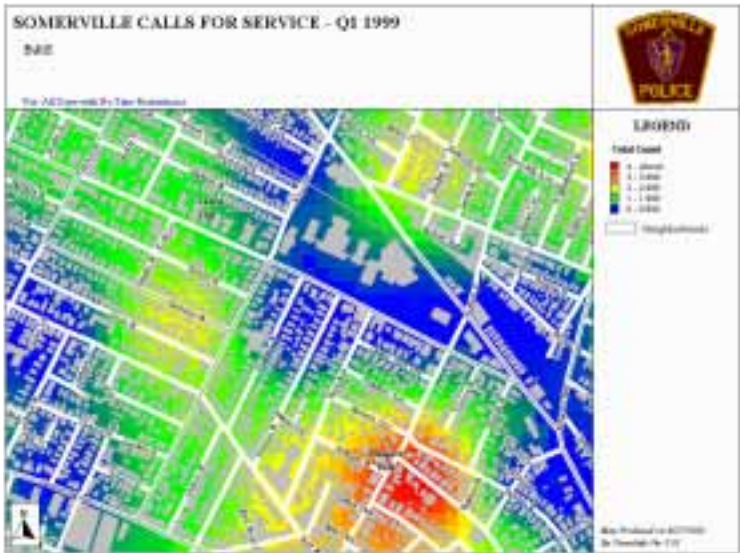
The 2000 Summer Olympics in Sydney, Australia, is being planned now—and the New South Wales Police Force is also planning for the huge crowds that will be on hand to participate in the games. The New South Wales police are using MapInfo technology in COPS (computerized operational policing system) to develop plans for a myriad of potential emergency contingencies. COPS, already used by New South Wales police to graphically display crime statistics held in the COPS database, is analyzing demographic data for emergency preparedness.

The 1996 Summer Olympics in Atlanta, GA attracted 10 million spectators from across the world. To ensure public safety, the Atlanta Commission for the Olympic Games used MapInfo software to plan for traffic flow and crowd control, adequately deploy the Atlanta police force, and to monitor spectators and officers during the games.

For a number of years, the Chicago Police Department has employed MapInfo technology to manage celebrating throngs of Chicago Bulls fans after their NBA championship wins. With real time monitoring of the crowd, Chicago police identify and focus on trouble spots and coordinate personnel. After the 1997 win, Chicago experienced a 14 percent decrease in arrests from 1996, as well as a 29 percent decrease in looting, rioting and other such incidents. "We are able to identify problems sooner and respond more quickly to them now (with MapInfo technology)," said Chicago Police Department Sgt. Jonathon Lewin. "It gives us a better assessment of crime conditions, which allows us to develop strategies to respond to them."

MapInfo Technology Well Suited for Public Sector Use

The dictum, 'information is power' is especially true in law enforcement. And law enforcement personnel need information fast. Accuracy and speed are paramount, especially when a department must respond to an average



of 500 calls a minute as New York City does or 1.7 million annual calls for service as Baltimore does. From crime analysis to disaster and emergency preparedness to public information (mapping used to inform the public, media and other jurisdictions, as well as maps and analyses used to prosecute offenders), MapInfo technology is well suited for public sector use.

For more information on MapInfo products, services and events visit their website at:

http://www.mapinfo.com/

(Continued from page 4)
scalable to the enterprise. SDE provides open data access across networks using TCP/IP protocol and operates in heterogeneous environments that include UNIX and Microsoft Windows clients and servers.

ArcIMS Version 3.0

ArcIMS sets the standard for fast and powerful Internet mapping and geographic information system (GIS) tools. ArcIMS is built on cutting-edge technology from ESRI—the first company to launch GIS on the World Wide Web. ArcIMS features an out-of-the-box solution for creating, designing, and managing Internet sites that incorporate mapping and GIS capabilities. The only software that enables users to integrate local data with Internet data in a simple browser interface, ArcIMS offers powerful GIS capabilities in an easy-to-use framework. ArcIMS supports serving data with maps (i.e., bitmaps) or with intelligent vector streaming.

In addition, ArcIMS facilitates access from multiple servers in your organization or throughout the world. It changes the way users can access and interact with Internet mapping and GIS data at their desktops. ArcIMS is the only Web mapping solution that leverages your existing investments in GIS databases. ArcIMS supports industry-standard GIS formats including ESRI shapefiles, ArcInfo coverages, Spatial Database Engine (SDE) layers, DWG, DXF, DGN, and a variety of graphic images.

The Future is Now

"Now, for the first time on a routine daily basis, computerized crime mapping methods let the police detect patterns of crimes and pathologies of related problems. It enables them to work with multiple layers of information and scenarios, thus far more successfully to identify emerging hot spots of criminal activity and target resources accordingly."

—Jeremy Travis, Director, NIJ
NIJ News—A Monthly Update From NIJ
"Computerized Crime Mapping" January 1999

GIS is about more than maps, it's about making better decisions for the benefit of our communities. ESRI has the GIS tools to help you help your communities.

For more information on ESRI products, services and events visit their website at:

http://www.esri.com/

Notes from the Editor

♦ Correction: In the last edition of *Crime Mapping News* (Volume 1, Issue 3), a line was omitted on page 8 in the article entitled "About the National Institute of Justice Crime Mapping Research Center." The final line of the article should have read "Additional information about the CMRC and online conference registration can be found on the CMRC web site: ***http://www.ojp.usdoj.gov/cmrc/***." We apologize for this error, and ask our readers to bear with us as we work to get the publishing process running smoothly.

♦ *Crime Mapping News* will go on! The Police Foundation has received a renewal of our Mapping Lab grant from the Office of Community Oriented Policing Services, which includes funding for newsletter creation and publication. For more information about this grant, and access to back issues and other materials that we have created about mapping, see the COPS Office Police Foundation Crime Mapping Laboratory web site at: ***http://www.usdoj.gov/cops/cp_resources/ongoing/prog_assesments/paps_tech_pfcml.htm*** (all one line).

♦ The Police Foundation's web site is up and running. Check us out at ***http://www.policefoundation.org/***.

In addition to information about the Police Foundation's work and available publications, this site provides information about a variety of resources including crime mapping and community policing. The extensive set of links offers starting points for a variety of Internet searches, including a list of Web addresses for police departments funded for mapping by the COPS office. If we have somehow missed your agency in this list, let us know!

♦ As always, we welcome your reactions and ideas about this and other issues of *Crime Mapping News.* Contact the mapping lab at the Police Foundation by phone: (202) 721-9797, fax: (202) 296-2012 or email: ***pfmaplab@policefoundation.org***

♦ The Police Foundation intends this publication to be a forum for the exchange of ideas and experiences. To this end, we need to hear from you. What are you doing that has worked? What hurdles have you encountered along the way, and how have you dealt with them? Your experiences may prove useful for someone else in the same situation.

Mapping Mailing Lists

Because this issue of *Crime Mapping News* is devoted to a topic that originated on a mapping mailing list, we have opted to replace the usual web-site review section in this issue with information about the various mapping mailing lists that are available for those interested in sharing in GIS and crime mapping related conversations via email. More detailed directions for subscription to these sites and others are available on the Internet at the sites listed below.

GIS-L

From http://www.geoint.com/gis-l/index.html

To subscribe: Send the one line message: **subscribe GIS-L <your_name>** to LISTSERVER@geoint.com

GIS-L is an all-software-encompassing GIS discussion managed by GeoGraph International. This site generates quite a bit of mail, as users come from multiple disciplines and have various software packages. This makes a lot of email, but also provides interesting information to those who want to expand their horizons. Information about retrieving archived messages and limited monthly archives are available at:

http://www.geoint.com/gis-l/index.html#archives

MapInfo-L

From http://www.directionsmag.com/mapinfo-l/

To subscribe: Send the one line message: **subscribe MapInfo-L** to majordomo@csn.net, and leave the subject field blank.

MapInfo-L is a discussion of issues relating to MapInfo products and the MapBasic programming language. This is a true discussion forum where participants pose and answer questions and offer tips relating to their fields of interest. Archived versions of the messages (in digest format) are available at:

http://www.directionsmag.com/mapinfo-l/IndexMapInfoL.htm

ESRI-L and ArcView-L

From http://www.esri.com/usersupport/support/selfhelp/lists-sub.html

To subscribe: Visit the web page listed above, and enter the appropriate information in the "Subscribe/ Unsubscribe" section.

ARCVIEW-L is a discussion list for subjects concerning ArcView GIS software and related extensions. Common subjects include problems with internet mapping and AVENUE programming. Participants in this list range from seasoned veterans to "newbie" users who have just opened the ArcView box. ESRI-L is a similar list for subjects on all other released ESRI software products. Participants in these lists typically turn to the list to pose software related questions to the general user community, and then provide summaries of the answers that they receive. These lists are less of a discussion than some, because responses are sent directly to the participant who asked the question; with the size of the participating population, this makes the volume of mail more manageable. ESRI-L, ARCVIEW-L and IMAGRS-L are archived at:

http://www.gis.umn.edu/rsgisinfo/lists.html or gopher://gopher.gis.umn.edu/11/rsgis/lists/

CrimeMap ListServ

From http://www.ojp.usdoj.gov/cmrc/faq/welcome.html

To Subscribe: Send the one line message: **subscribe crimemap <Your Name>** to listproc@aspensys.com

CrimeMap is managed by the Crime Mapping Research Center of the National Institute of Justice as a forum for people from all backgrounds to share thoughts and pose questions about crime mapping. Participants in the discussion on this list often include researchers and professionals on the cutting edge of the development of crime mapping techniques. The CMRC also uses this list as a vehicle to announce upcoming conferences and new publications.

There is not currently a CrimeMap archive, though there are efforts underway by the staff of the CMRC to group topics and make them available.

A note for readers not experienced with email discussion lists:

Though discussion forums provide valuable information, they can also be a nuisance to your email "In-Box". These lists generate large volumes of mail which are delivered along with your normal correspondence. Some of these lists offer the option to subscribe in digest format where batches of entries are bundled and sent periodically. This form, or simply browsing archived collections of these discussions, can offer information for those not interested in receiving large quantities of mail. The drawback to this method is the loss of the discussion atmosphere provided by these forums.

In every issue, Crime Mapping News presents an article about the successful implementation of GIS in law enforcement, written by law enforcement personnel involved in the implementation. Overland Park PD presents an outstanding example of the various uses of crime mapping in police departments.

Mapping in Action: Overland Park Police Department

By Gerald G. Tallman, Susan Wernicke and Jamie May
Overland Park Police Department

Overview

Overland Park, the third largest city in Kansas, has an area of approximately 58 square miles with a population of 138,000 residents, though the estimated "daytime" population exceeds 200,000. Overland Park is located on the Kansas side of the Kansas City Metropolitan area. In addition, Overland Park is the new world headquarters for Sprint Corporation. When completed in 2003, Sprint expects to house 15,839 workers on this campus, two-thirds of whom will be relocated from outside the state of Kansas. This information, coupled with the fact that Overland Park is one of the fastest growing cities in America and was recently named as one of the top 5 cities in the nation to live in and raise a family, creates high expectations of the Police Department.

Overland Park is geographically divided into two police patrol divisions (Antioch and Sanders) consisting of a total of 18 patrol districts. The department employs 200 sworn and 75 civilian employees. Crime Analysis, which consists of a manager, two analysts, an alarm coordinator, and five citizen volunteers, is a centralized function operating out of the Sanders Justice Center and serves both patrol divisions, investigations, command staff, specialized units, and citizens. The Crime Analysis Unit was created in 1993 when Deputy Chief (now Chief) John Douglass decided that the goals of the police department could be better and more efficiently met if a Crime Analysis Unit was established.

Getting the Data

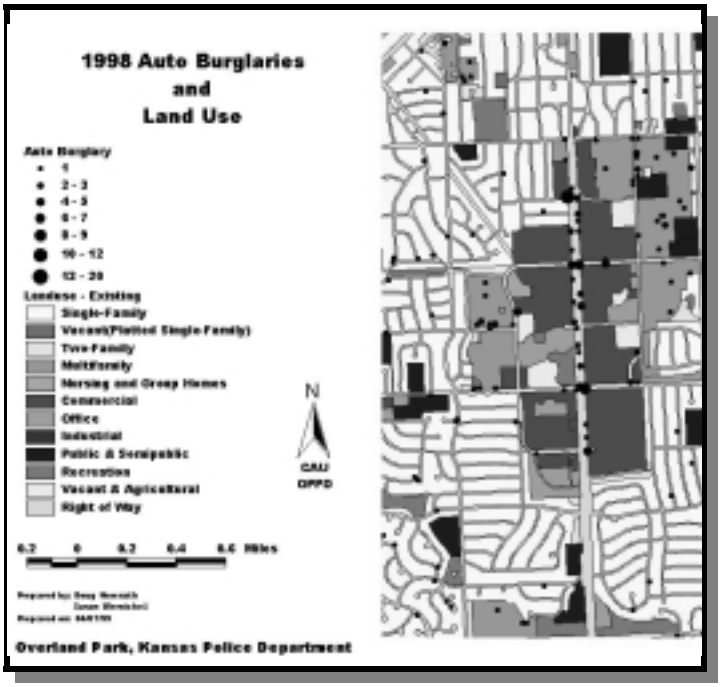
Mainframe data is downloaded daily into a FoxPro database. Analysts read and analyze all reports for "targeted" crimes and use the information to produce bulletins and reports, as well as to answer public and media requests. CAD (Computer Aided Dispatch) data is made available through an Oracle database using Crystal Reports. "Target Crime Analysis", an in-house FoxPro-based program developed by the City's Information Technology Unit under the guidance of Gerald G. Tallman, CAU Manager, was designed to track target crimes, analyze data, and produce reports.

Gerald G. Tallman, *Manager, Crime Analysis Unit*
Susan Wernicke, *Crime Analyst*
Jamie May, *Crime Analyst*

Overland Park, Kansas Police Department
12400 Foster
Overland Park, KS 66213

Mapping Data

For mapping, the unit uses ESRI's ArcView 3.1 and ArcInfo. The planning/GIS Unit has created many customized applications in ArcView for analyst, officer and detective use. The unit has recently received approval for purchase of ESRI Spatial Analyst.



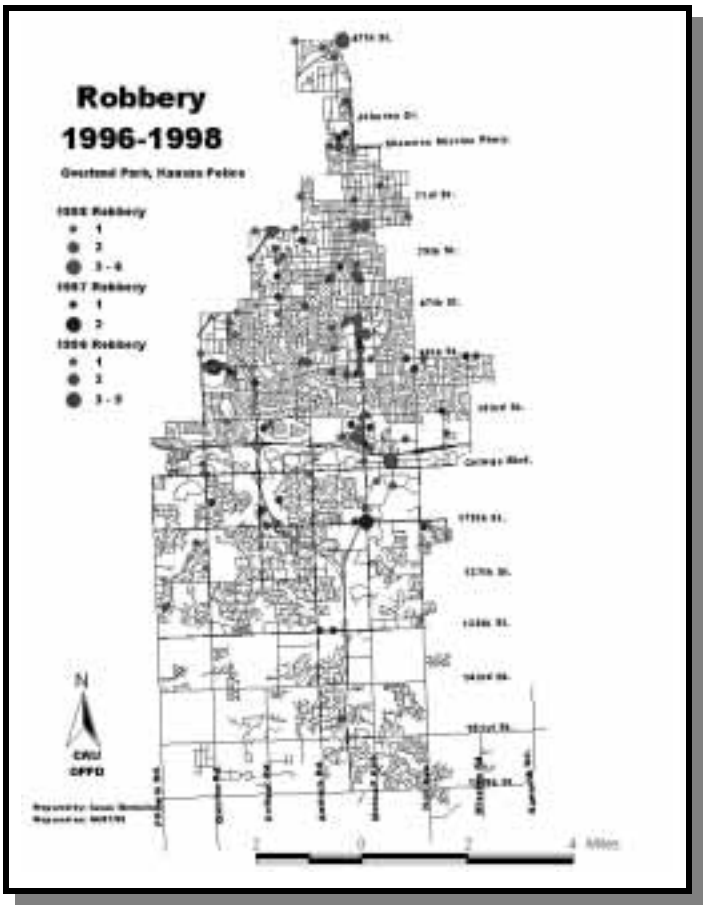
Crime Mapping

Overland Park has been using ArcView for several years and is fortunate to have a very helpful and supportive GIS planning staff at City Hall. They have developed a number of crime mapping applications for the Crime Analysis Unit. The unit also produces a number of custom maps containing both criminal and non-criminal information. These maps can be used for administrative purchases, case prosecutions, and special needs as requested by officers. They can be described as follows:

The Weekly Crime Map is actually 6 maps on one 2'x4' sheet of paper. The three maps on the left show residential burglaries for the previous 7, 30, and 90 days. The three maps on the right show commercial burglaries, auto bur-

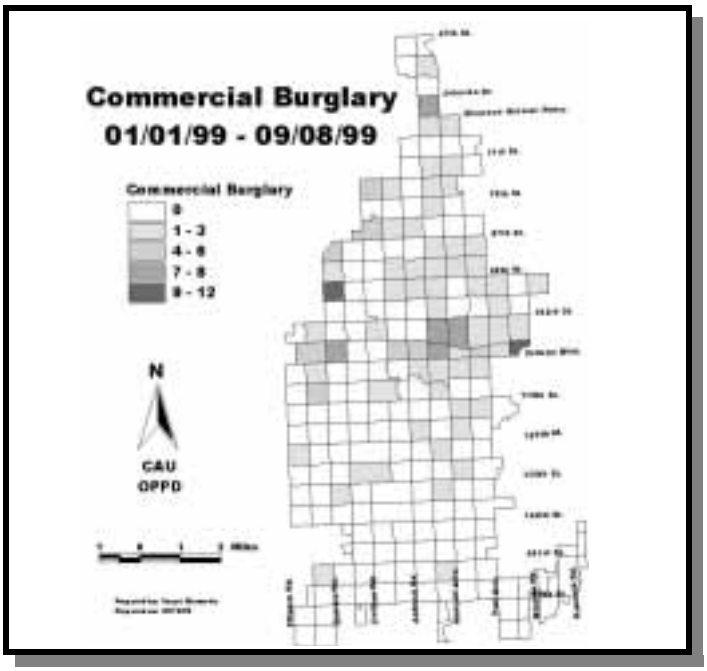
glaries, and auto thefts for the previous 30 days. Down the center is a series of five charts showing premises type, point of entry, entry tool, time of day, and day of week for the 30 day residential burglary map. This map is posted throughout the department (roll calls, Crime Prevention Unit, Investigations, public lobbies, City Council Chambers, and is published in the local newspaper on a monthly basis.

The Weekly Persons Crime Map is laid out in similar fashion to the Weekly Crime Map. The top two maps show robberies and purse snatches. The middle two maps show rapes and window peepers, and the bottom two maps show lewd and lascivious acts and the home address of all registered and "known" sex offenders living in Overland Park. Instead of the charts down the center, this map provides the address of the incident, and the name

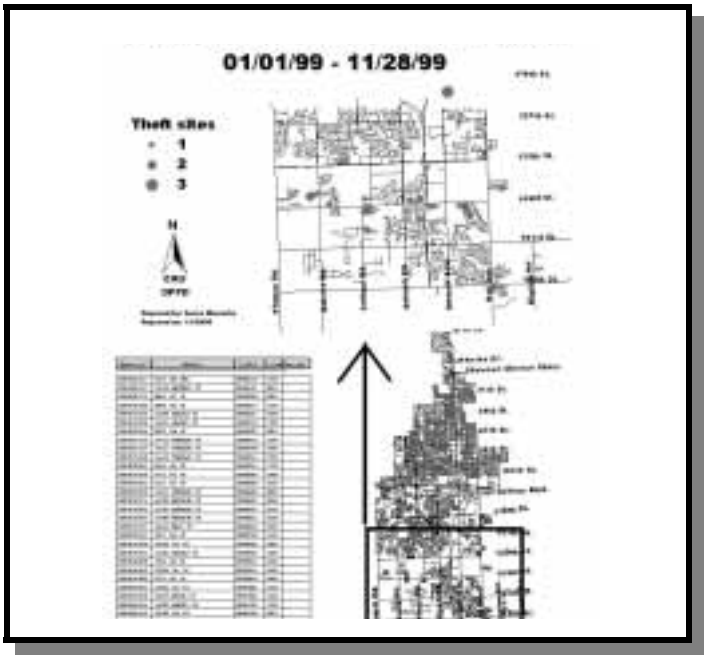


and physical description of the arrestee/suspect and vehicle description. This map, because of its content is only posted in roll calls and Investigations Division. It is not released to the public.

Viewable Daily Patrol Maps. This is actually an ArcView Application that the individual line officer can access from a number of computers. The officer can view and print out a map from any level of detail (division to individual patrol district). The map shows (by different symbols) the location of each "Target" crime for the previous 48 hours. The map is accompanied by a report that depicts the crime type, date/time, address, report number etc., and the name and physical description of the arrestee/suspect and the vehicle description.



Interactive Crime Mapping. This ArcView application allows "interactive" crime mapping. The officer/detective/crime analyst can easily and quickly create a crime map of selected crime types (including various MO factors), areas, date ranges, etc.



Monthly Statistics Maps. CAU staff prepare these maps to depict the locations of that month's residential, auto, and commercial burglaries, auto theft, robberies, and traffic accidents.

CAU Bulletin Maps. CAU staff prepare these maps for inclusion in the numerous weekly crime bulletins. The

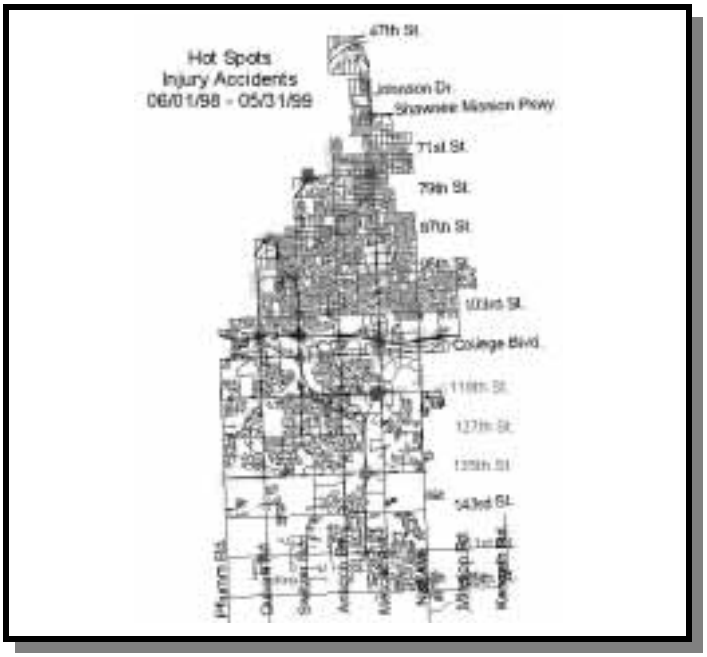
(Continued on page 12)

(Continued from page 11)
maps typically concentrate on one single crime type or trend.

Court Prosecution Maps. CAU staff prepare these "crime scene" maps on a large 3'x4' scale. Detectives then use the maps as a visual aid during their testimony. The CAU staff has received favorable comments from prosecutors and judges.

Miscellaneous Crime Maps. CAU staff prepare a number of maps for various officers or teams of officers in support of their efforts to combat a specific crime problem in their patrol area.

Non Criminal Maps. CAU staff members are frequently asked to prepare "non criminal" maps in support of other PD operations such as a redistricting project in anticipation of the City annexing additional land. The CAU staff has also created maps for presentation at City Council and Public Safety Committee meetings.



Current Projects

The CAU is currently developing a **Monthly Traffic Safety Map**. The project will display five maps (fatality/injury accidents, non-injury accidents, DUI arrests, traffic complaint areas (TCAs), and Smart Trailer request/usage locations), a listing of the top 25 traffic accident locations, and a series of graphs depicting such information as traffic accident causal factors (DUI, inattention, speed), time of day, and day of week. The map that depicts TCAs will also show the number of hours worked and the results (number of tickets written). The map depicting the Smart Trailer usage will show both worked and unworked sites. The Smart Trailer is a trailer-mounted computerized traffic surveillance device, which records traffic volume and speed.

Future Goals

The Crime Analysis Unit has evolved quickly and extensively over the past six years. The unit recently divided to better serve the Persons and Property detectives and the two patrol divisions. One analyst provides primary support to the Persons Crimes detectives and the Sanders Patrol Division while the second analyst provides primary support to the Property/Financial Crime detectives and the Antioch Patrol Division. This division of labor has improved the level of support provided and has generated in each analyst a particular interest in preventing, identifying, predicting, and combating crimes of certain types in certain areas. Thus far, the response from the sworn officers has been very favorable to this type of support system.

The CAU recently received approval to purchase "The Communicator," an automated telephone notification system from Dialogic Communications Corporation (DCC) which will interface with the existing GIS data maintained by the City & Police Department. This interactive system will allow analysts to geographically select an area of the city, program a recorded message and automatically call/notify all the residents and/or businesses in that geographic area about information the department wishes to provide regarding a crime pattern, trend, or notification. The system uses existing telephone lines to contact response personnel and/or communities-at-risk. It notifies persons via telephone, pager and fax, delivers information, and verifies message delivery via touch-tone telephone.

GIS has been a welcome resource to the Unit. It has been used as a primary tool in accomplishing their goal of providing timely, accurate, and useful crime analysis data to patrol officers, detectives, and command staff. It is used as a visual aid in identifying crime trends, patterns, hot spots, and clusters. It has been used to identify crime trends in the past and has allowed the Unit to provide information to officers, thus preventing further incidents. The analysts continue to use crime mapping to aid in the prevention of crime in the city.

We are interested in hearing about your experiences with crime mapping!

For example:

- What difficulties have you encountered in imple- department?
- Have you integrated non-traditional data sources menting mapping in your into your crime mapping packages?
- What are your goals for the future of crime mapping in your department?

For contact information see page 15.

The COPS Internet — Information on COPS and Community Policing is just a CLICK away

WWW.USDOJ.GOV/COPS

Visit the redesigned and easier to use COPS web site at www.usdoj.gov/cops.

Five key channels provide up to date information on COPS and its programs:

News & Information: For the latest grant announcements, press releases, and upcoming events

Grants, Programs, & Activities: For a list of current funding opportunities complete with application kits and comprehensive descriptions on all our grant programs and more, including training and technical assistance, compliance and monitoring, and program assessment and policy support

Grantee Toolbox: Resources for our grantees including contact information, tips, grant owner's manuals, and progress report forms

Community Policing Resources: A respository of excellent community policing resources including COPS funded studies, reports, curriculums, tools, and tips, conference capsules, ongoing assessments, and promising practices from the field

Freedom of Information Act (FOIA): For FOIA contact information and an electronic reading room, including state listings of all COPS grantees

Visit the COPS Site today!

New material is posted to the site daily. Check it often for the latest news on the COPS program.

Upcoming Conference Schedule

December

December 2-3
Internet GIS Seminar: Techniques for Distributing and Accessing GIS Data on the Internet.
Site: Milwaukee, Wisconsin
Contact: Janet Tibbetts
Phone: (414) 229-4016
Fax: (414) 227-3146
Email: tibbetts@uwm.edu
Web: http://www.uwm.edu\universityoutreach

December 6-7
CMT Global Positioning System and GIS Seminar
Site: Corvallis, Oregon
(Same seminar will be held December 5th in Reno, Nevada)
Contact: Joshua Maas, CMT GPS/GIS Solutions, 413 SW Jefferson Avenue, Corvallis, OR 97333
Phone: (541) 752-5456
Email: support @cmtinc.com
Web: http://www.gps-training.com or http://www.cmtinc.com.

December 6-10
14th William T. Pecora Memorial Remote Sensing Symposium and the Land Satellite Information in the Next Decade III Conference.
Site: Denver, Colorado
Contact: Robin Promoff
Phone: (301) 493-0290 ext. 106
Fax: (301) 493-0208
Email: robinp@asprs.org
Web: http://www.asprs.org/asprs

December 11-14
1999 CMRC Conference: Expanding the Boundaries
Site: Renaissance Orlando Resort, Orlando, Florida
Contact: Institute for Law and Justice
Phone: (703) 684-5300
Fax: (703) 739-5533
Email: nijpcs@ilj.org
Web: http://nijpcs.org/upcoming.htm

January

January 10-12
Second International Conference on Geospatial Information in Agriculture and Forestry
Site: Disney's Coronado Springs Resort, Lake Buena Vista, Florida
Contact: ERIM International
Phone: (734) 994-1200 ext. 3234
Fax: (734) 994-5123
Web: http://www.erim-int.com/CONF/conf.html

January 13
Cartography and Map Design
Urban and Regional Information Systems Association (URISA) Certified Workshop 2000 Series
Site: Rosemont, Illinois
Contact: URISA Headquarters
Phone: (847) 824-6300
Fax: (847) 824-6363
Email: info@urisa.org
Web: http://www.urisa.org/pdp.htm

February

February 4-5
7th Annual Trade Show and Conference of Europe, Africa and Middle East Region of the International Map Trade Association
Site: Heidelberg, Germany
Contact: International Map Trade Association
Phone/Fax: +44 (0) 1425 620532
Email: imtaeurope@compuserve.com

February 20-23
Asia Pacific MapWorld 2000 Conference
Site: Sydney, Australia
Contact: Peggy Lecuyer
Phone: +61 2 9437 6255 ext. 229
Fax: +61 2 9439 1773
Email: peggy.lecuyer@mapinfo.com
Web: http://www.mapworld.com.au/

February 26-28
The 9th International Conference On Safe Communities. Sponsored by the Institute of Child and Mother Health (ICMH)
Site: Dhaka, Bangladesh
Contact: Dr. Fazlur Rahman
Phone: +880-2-9122509
Email: fazlur@citechco.net

March

March 1-3
Sixth Annual California GIS Conference
Site: Palm Springs Convention Center, Palm Springs, California
Contact: Doug Abramson
Phone: (949) 855-3691
Email: info@calgis.org
Web: http://www.calgis.org

March 13-16
GIS 2000 Conference
Site: Metro Toronto Convention Centre, Toronto, Ontario, Canada
Contact: Matt Ball
Phone: (303) 544-0594
Email: mball@aip.com

March 27-29
GIS-T 2000
Site: Minneapolis Radisson South, Minneapolis, Minnesota
Contact: Tom Glancy
Email: tom.glancy@dot.state.mn.us
Web: http://www.oim.dot.state.mn.us/gist/symposia/index.html

MapInfo and ESRI User Group Meetings, Seminars, and Training

MapInfo offers a wide variety of opportunities to attend user conferences, tradeshows, regional seminars, user group meetings, training classes and web seminars. Additional information and schedules may be found on the internet at:

MapInfo: http://www.mapinfo.com/events/user_groups/index.html

A multitude of events including training and workshops, seminars, poster sessions and presentations are offered throughout the year at conferences hosted by ESRI Local and Regional User Groups. Schedules and information about these events may be found on the internet at:

http://www.esri.com/events/index.html
http://gis.esri.com/events/seminarlist.cfm

Contacting the Police Foundation Crime Mapping Laboratory:

By Phone: (202) 721-9797
By Fax: (202) 296-2012
By Email: pfmaplab@policefoundation.org
By Mail: 1201 Connecticut Avenue, NW
Suite 200
Washington DC 20036

Also feel free to contact individual Crime Mapping Labratory staff with questions or comments:

Michael Clifton, Director, Crime Mapping Laboratory: meclifton@policefoundation.org

Jennifer Nickisch, Crime Mapping Laboratory: jnickisch@policefoundation.org

Eric Floss, Crime Mapping Laboratory: efloss@policefoundation.org

ABOUT THE POLICE FOUNDATION

The Police Foundation is a private, independent, not-for-profit organization dedicated to supporting innovation and improvement in policing through its research, technical assistance, and communications programs. Established in 1970, the foundation has conducted seminal research in police behavior, policy, and procedure, and works to transfer to local agencies the best new information about practices for dealing effectively with a range of important police operational and administrative concerns. Motivating all of the foundation's efforts is the goal of efficient, humane policing that operates within the framework of democratic principles and the highest ideals of the nation.

OFFICE OF RESEARCH

David Weisburd, PhD
Senior Research Scientist

Rosann Greenspan, PhD
Research Director

Graham Farrell, PhD
Deputy Research Director

Michael Clifton, MA
Director, Crime Mapping Laboratory

Justin Ready, MA
Senior Research Associate

Edwin E. Hamilton, MA
Senior Research Analyst

Research Associates

Erin A. Lane, MPM

Ann Marie McNally, MA

Steven Bailey, MS

Jennifer C. Nickisch, BS

Eric Floss, BA

Research Assistants

Perri Gottlieb, BA

Joan Crocker, BS

Heather Sparks

Wendolyn McKoy
Senior Administrative Assistant

Kelli Edwards
Administrative Assistant

BOARD OF DIRECTORS

Chairman
William G. Milliken

President
Hubert Williams

Freda Adler

Lee P. Brown

William H. Hudnut III

W. Walter Menninger

Victor H. Palmieri

Henry Ruth

Stanley K. Sheinbaum

Alfred A. Slocum

Sally Suchil

Kathryn J. Whitmire

POLICE FOUNDATION

1201 Connecticut Avenue, NW, Suite 200, Washington, DC 20036
(202) 833-1460 ◆ Fax (202) 659-9149 ◆ e-mail: pfinfo@policefoundation.org
www.policefoundation.org

This project was supported by cooperative agreement #97-CK-WX-K004 awarded by the Office of Community Oriented Policing Services, U.S. Department of Justice. Points of view or opinions contained in this document are those of the authors and do not necessarily represent the official position or policies of the U.S. Department of Justice.