

# Regional Crime Mapping: Breaking Jurisdictional Barriers



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The Department of Justice, Criminal Division, has developed an ESRI MapObjects® based spatial crime analysis system. The application, known as RCAGIS (Regional Crime Analysis GIS), was specifically developed to assist police departments in analyzing crime on a regional basis. Police departments have historically restricted their analysis of crime to their own jurisdictions and have been very slow to share crime data with other police departments, primarily because of either technical or political barriers. This close-to-the-vest mindset regarding crime incident data can make the analysis of crime across jurisdictional boundaries exceedingly difficult. A police department's crime analysis staff may have no information regarding a string of burglaries occurring blocks away from its border because it can't get access to that data.

## HISTORY

In 1994, a string of related crimes occurring across several police jurisdictions in Maryland prompted a coalition of counties and cities in Maryland to agree to share crime incident data in a central repository that is accessible to all members of the group. Figure 1 is a map of the participant counties. The group, known as the RCAS (Regional Crime Analysis System), made the crucial decision to develop a centralized, standardized crime incident database



Figure 1: RCAS Members

to be used for all shared crime data. The group also developed a data-entry application to assist entering data into the new database. The new database improved communication among the police departments and lowered the response time for identifying crime trends.

Access to data is only part of the problem, however. Software capable of analyzing this vast amount of crime data had to be made available to all members of the RCAS group. It was clear from the outset that GIS capabilities would be the focus of the new software for the RCAS

group, as GIS tools are becoming critical to the daily operations of police departments nationwide. GIS is valuable to police departments in many ways, including: identifying problem areas, coordinating resources, linking incidents to known offenders, helping to identify social indicators of crime, producing and distributing maps and reports to officers and the community, coordinating strategies to reduce crime, and assessing the effectiveness of police activity.

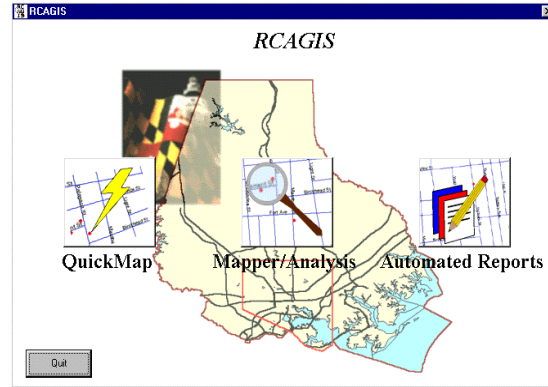
Phil Canter, the Chief Statistician at the Baltimore County Police Department, responsible for leading the effort to build the GIS application for the RCAS group, turned to the Department of Justice, Criminal Division GIS Staff for help. Mr. Canter knew that the Criminal Division's GIS Staff, headed by John De Voe, had developed a crime analysis application being used by the Montgomery County Police Department in Maryland. This was an ESRI ArcView® based application called SCAS (Spatial Crime Analysis System), which had many of the capabilities Mr. Canter was seeking for the RCAS group. After a series of demonstrations and meetings, it was agreed that the Criminal Division GIS Staff (with application development support from INDUS Corporation) would provide programming support and technical assistance for the development of a spatial crime analysis application for the RCAS group.

## **ABOUT THE APPLICATION**

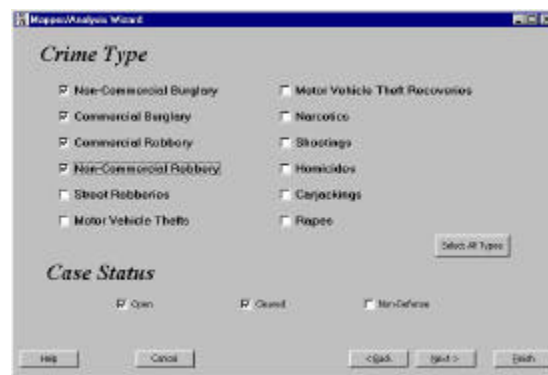
The requirements for the new application, christened RCAGIS (Regional Crime Analysis GIS), were straightforward. In addition to possessing all of the analysis tools of SCAS, it had to be fast, cheap, and easy to use. The initial intent of modifying SCAS for use by the RCAS group had to be abandoned due to cost. Since SCAS's intended user base was essentially only crime analysts, police departments were required to purchase relatively few ArcView (with Spatial Analyst) licenses. The new application being developed for the RCAS group was targeted from the outset to be used by nearly all personnel at a police department, from beat officers all the way up to senior management. Notoriously budget-minded police departments could not afford the expense of having to purchase potentially hundreds of ArcView licenses. It soon became clear that a MapObjects based application would be the ideal solution to the problem. Since a MapObjects application could be delivered with a \$100 per seat license fee, the cost to police departments would be relatively low.

The RCAGIS application was designed for ease of use by police personnel with minimal (or no) training, yet sophisticated enough to

satisfy the needs of professional crime analysts. To accomplish this, RCAGIS was designed with three basic entry points, 'QuickMap', 'Mapper/Analyst', and 'Automated Reports' from a kiosk-style main screen (Figure 2). QuickMap, designed with police officers in mind, guides the user through a query wizard designed to easily collect the specific information the user is interested in: crime types, geographic area, date ranges, and so forth. Figure 3 is a sample screen from the query wizard. Upon completion of the wizard, RCAGIS constructs a SQL query, passes it to the incident database and returns with a selected set of records which are symbolized and displayed on a map in the RCAGIS Viewer. The viewer provides basic GIS interface tools such as pan, zoom, identify, print, and report generation. Figure 4 is the RCAGIS Map Viewer.

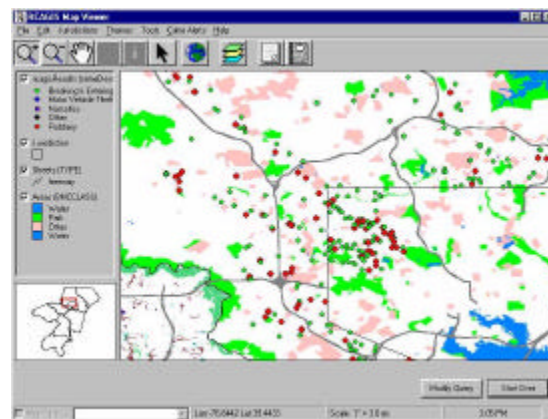


**Figure 2: Initial RCAGIS Screen**



**Figure 3: Crime-Type Selection from the RCAGIS Query Wizard**

The second mode, Mapper/Analyst was designed for use by crime analysts or personnel with substantial training in the operation of the tools. The initial incident query is very similar to that of the QuickMap, though the query wizard has more detailed options for refining the query. Once the query is finished, though, an entire suite of sophisticated crime analysis tools becomes available. Auto theft locations can be linked with recovery locations, known



**Figure 4: The RCAGIS Map Viewer**



The RCAGIS application is, at this writing, being tested at police departments throughout Maryland. The final release is expected at the end of the summer. Upon final release, the RCAGIS source code will be made available to law enforcement agencies.

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