

153004



# Mapping Crime in the 21st Century

## Meeting Proceedings

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May 16-17, 1994

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# Mapping Crime in the 21st Century

May 16-17, 1994

Holiday Inn Crowne Plaza, 775 12th St., Washington, DC

## Introduction

On May 16-17, 1994, the National Institute of Justice (NIJ), in accordance with sentiments expressed by the Attorney General's Office, sponsored a two day meeting on computer technology entitled "Mapping Crime in the 21st Century." Its objective was to discuss current applications of computer mapping technology and to explore ideas for Federal-local partnerships to address the issues of sharing information. Approximately 80 people attended the conference from 30 local jurisdictions and several Federal agencies. From each local agency, a chief of police, or designee, attended along with the person in the department most responsible for mapping applications.

In addition to general sessions that covered topics such as "where are we now?" and "where are we going?", there were breakout sessions where local representatives worked with selected researchers to answer questions about specific issues. The analysts conferred on issues of hardware/software and integration of databases while the policymakers discussed the issues of policy and confidentiality with regard to data sharing.

The conference concluded with a discussion of outcomes from the meeting, future directions for mapping programs, methods of linking mapping to the objectives of the Crime Bill, and sources of funding by NIJ in these areas.

This report is a summary of the discussions and outcomes of the meeting. It is arranged in chronological order. Appendix A contains the meeting agenda and Appendix B is a list of attendees.

Monday, May 16, 1994

## Welcome and Introductions

### *Laurie Robinson, Acting Assistant Attorney General, Office of Justice Programs*

Carol Petrie, Acting Director of the National Institute of Justice, welcomed the approximately 80 attendees to the meeting and then introduced Ms. Robinson. Last fall, Ms. Robinson said, Attorney General Janet Reno expressed frustration at the difficulty of obtaining crime data. She expected to be able to get information on gangs, immigration-related crimes, social indicators, and other criminal justice topics, and she wanted the data to be current. That information, Ms. Reno hoped, would help guide federal and local criminal justice policymakers and practitioners in their work.

Mapping, Ms. Robinson said, is a step toward what the attorney general wants. She noted that representatives from the Department of Housing and Urban Development, the National Drug Intelligence Center, and several Department of Justice branches had come to the meeting because crime is related to many government departments. All of these agencies have an interest in computer mapping technologies.

## Overview of Crime Mapping Initiatives

*Craig Uchida, Acting Director, Office of Criminal Justice Research,  
National Institute of Justice*

Craig Uchida described the purposes of the present meeting. The first purpose is to determine the state of the art of mapping in local law enforcement agencies—how mapping was being used and what technology and policy issues were relevant. The second purpose is to explore local and federal needs—what the local law enforcement agencies needed from the federal government and what kinds of hardware, software, and information the federal government should use to be compatible with the local level.

Meeting participants, Mr. Uchida noted, are executives, technologists, and analysts from criminal justice agencies, representatives of PACT (Pull American Cities Together, a Department of Justice Initiative involving states and cities across the country), representatives of federal agencies, researchers, criminologists, and urban geographers.

Mr. Uchida posed a number of questions to attendees:

- Can we develop real-time or near-real-time information systems? If so, we could obtain important information for day-to-day patrol operations quickly.
- Can we overcome the limits imposed by jurisdictional boundaries? Though it would be difficult politically, it might be worthwhile, as drug trafficking and other crimes take place over wide areas.
- Can we integrate local databases? What about combining demographic, public housing, and other data?
- Can we produce usable maps for user-friendly computer systems?

- What will all this data do for us? Although police may know generally where crimes are occurring, better data can help in forming strategies by showing, for example, where exactly the gun markets are.

Mapped crime data has implications, Mr. Uchida noted, for gun legislation, community policing, family violence, and crime prevention in schools, businesses, and public housing. With such data, he noted, we could find out more quickly and efficiently what works, expand the capacity for making informed policy decisions with current data, and provide policymakers and researchers with accurate data. These capabilities, Mr. Uchida observed, would revolutionize our approach to crime.

Mr. Uchida then discussed the Drug Market Analysis Program (DMAP) which was started about 1989 to develop tools that would assist police agencies in combating the drug problem and evaluating narcotics enforcement strategies. NIJ funding for DMAP has totaled \$3.2 million from 1989 to 1992 in five cities. Those test sites—Hartford, Connecticut; Jersey City, New Jersey; Kansas City, Missouri; Pittsburgh, Pennsylvania; and San Diego, California—integrated their databases to include calls for service, drug hot line calls, community surveys, demographic information, census tract information, and other data. DMAP uses hardware and software to apply data in a geo-based system, develops a user-friendly atmosphere for retrieving the information, and demonstrates the purpose, use, and value of crime mapping.

Current uses of DMAP data by local police departments include addressing gun problems, locating drug markets and specific hot spots, tracking gang areas, and targeting areas for specific programs, such as Weed and Seed.

## Mapping at the Department of Justice

*Robert Bratt, Executive Officer, Office of Administration, Criminal Division, U.S. Department of Justice*

Robert Bratt began by noting that before 1988, his office mapped crime by shading plastic overlays that were placed on top of maps. In 1988 his division started to automate the process, but doing so was expensive. However, the required hardware and software have become cheaper and more user-friendly over time. He is currently using the ArcView and ArcInfo programs.

About four months ago, Mr. Bratt said, Attorney General Reno said she wanted to be able to press a button and see what was happening in terms of crime. She was given some data summaries in the form of bar charts and tables, but a graphical, geographical presentation is better, Mr. Bratt noted. He demonstrated the capabilities of computer mapping by displaying, on a computer monitor, a map of the United States. He then zoomed in on a map of Virginia, which showed the state's counties in varying shades of blue, the darker ones being those with higher crime rates. He then brought up a map of Fauquier County, Virginia, showing the county's six census tracts. The map showed higher crime rates as darker areas.

Mr. Bratt then brought up several versions of a map of Warrenton, the largest city in Fauquier County. The first map showed population density by shading. The second map, overlaid on the first, displayed colored dots representing different types of crime. A third map popped up at the click of a mouse pointer, showing the details of the crimes. Mr. Bratt also overlaid housing values and burglary locations on the map to look for possible connections. The data used, he said, were from both the census and commercial sources.

Mr. Bratt also showed a United States map that displayed the various sites of a medical laboratory that is under investigation for overbilling Medicare. By looking at the sites and the amount of suspected fraud on a map, the Justice Department can more easily determine which of its offices will prosecute which cases. The software also helps the Justice Department compare what different labs are charging in the same geographical area.

## Possible Future Directions

*Craig Uchida, Acting Director, Office of Criminal Justice Research,  
National Institute of Justice*

Mr. Uchida began by asking a number of questions about the future of crime mapping and data gathering:

- How feasible would national implementation be? Would larger police departments provide data to the federal government?
- How much would the effort cost? Particularly, how much would it cost criminal justice agencies to upgrade their current systems? It would be preferable, he said, to have uniformity among departments, down to the address level or census tract level.
- What kind of local cooperation is needed to get the information to the federal government?
- What types of data would need to be held in strict confidence? What types could be shared at all?
- What data sources would be integrated? How would the integration be accomplished?
- How uniform and consistent would the data be? How good are the data?

Mr. Uchida listed numerous social indicators that might be helpful in predicting crime and that therefore might be useful in a crime database:

- Census tract information (population, race, age, gender, household income, educational levels)
- Public housing information (density of population, percentage of residents who are elderly)
- City and county data (sales taxes, single-family residences, building permits, land use)

• Public health data

To demonstrate, Mr. Uchida showed transparencies of social-indicator data overlaid on a map of the District of Columbia.

## Local Uses: Community Policing Problem-Solving Drug Market Analysis Site—San Diego, California

*Officer Andrew G. Mills, San Diego, California, Police Department*

Officer Mills stated that he is a big supporter of the Crime Analysis Division of the San Diego Police Department (SDPD) because he can obtain information from it that increases his effectiveness in the field. The data helps him cluster crime events so that he can attack crime in a thoughtful way. He noted, too, that crime analysis and mapping help in the department's quest to be frugal by helping officers operate more effectively.

The SDPD's crime system currently consists of the following components:

- Software: ArcInfo 6.1.1 from ESRI; AIX 3.2 operating system
- Hardware: IBM RISC 6000 system, IBM 6091 monitors, IBM X Station 130, and a token ring network
- Printing capabilities: IBM 6097 Screen Dump, IBM 6180 color desk plotter, Hewlett-Packard Draftmaster II drum plotter, Hewlett-Packard Laserjet IIID, and a Hewlett-Packard Designjet 650C

Sources of the data in SDPD's crime system are:

- ARJIS mainframe (combines data from several cities near San Diego), which contains data on arrests and crime cases
- Drug Information Network, which contains data on citizen complaints, searches, warrants, buy-busts, and patrol intelligence
- Gang data, including home addresses of members and information on drive-by shootings and gang-related assaults
- POP (problem-oriented policing) projects
- Auto thefts and recoveries

Officer Mills elaborated on the Drug Information Network. The network's sources of information, he said, are narcotics section investigations, citizen complaints, Jurisdictions Unified for Drug Gang Enforcement (JUDGE) locations, narcotics-related POP projects, citizen request forms, patrol intelligence, the Narcotics Task Force, and other law enforcement agencies.

The search capabilities of the SDPD crime system are extensive. The system can conduct data searches according to the following parameters:

- Area (police division, police sergeant's area, police beat, community planned area, council district, census tract, address, or user-defined polygons)
- Crime or investigation type (state code, violation code, investigation status, or investigation type)
- Other case information (time of occurrence, point of entry, type of evidence, structure type, unit, drug type, gang, or date of theft)

Cartographic features of the SDPD crime system are extensive. The system shows such map features as arterials and streets, including names, along with boundaries for beats, divisions, census tracts and blocks, council districts, community planned areas, and unique areas. The system can zoom in or zoom out on areas. It can also highlight a radius around an address. Several text options are available, including titles and legends in varying type fonts, sizes, and colors. Numerous report options are available as well.

To illustrate the crime system's capabilities, Officer Mills displayed a map of San Diego with domestic-violence data overlaid on it. He also showed a map of gang boundaries and types of crimes in those areas. Displayed geographically, such data help in problem-solving, he said. For example, a map of recoveries of stripped Toyotas showed a concentration in a certain area. It turned out there was a "chop shop" nearby. Solving such a case is easier once an officer learns that the two stripped Toyotas he found are not the only ones that have been recovered. Officer Mills also showed a map that displayed

robberies in clusters around convenience stores. The crime mapping showed police that convenience-store customers were being followed from the stores and then robbed. The solution was to make the stores unpleasant places for gang members to congregate. The method used was playing country music outside the stores.

Officer Mills described the ways different people in the SDPD use the crime system. Patrol officers use the system to look for crime trends on their beat, to target enforcement, and for POP projects. Detectives use the system to track series investigations, determine crime correlations, and target enforcement. Sergeants use the system to allocate manpower and track crime trends in their division. Captains use the system to outline specialized enforcement communities and for community meeting presentations. The chief uses the system for crime-rate presentations to the city council and for crime briefings with the mayor.

Officer Mills then took questions from the audience:

- *Has crime mapping been successful?* In some cases, definitely. The convenience store instance was very successful.
- *What kind of training do officers receive?* When an officer needs a report, he asks for it from Crime Analysis. But officers are getting training, and SDPD is putting PCs in substations so officers can get the information themselves. Officers make many requests of Crime Analysis.
- *How current is the information?* Data are entered within 48 hours and is available then.
- *How is the data taken?* Mostly on paper, but the department is experimenting with having officers input their data via laptop computers
- *When does a map turn from a confirmation of what you sensed to a revelation?*  
When the officer learns that activity is centering around a site. Maps are very helpful in showing an officer the big picture when the officer might ordinarily only see a part of the problem.

- *How long does it take to obtain a report you request?* Usually a day or two—always less than a week; immediately if the need is urgent.
- *What does an officer receive as a matter of course, and what must he ask for specifically?* The Crime Analysis Unit posts maps weekly. If an officer wants more, he must ask for it.
- *Do you share mapping information with the community?* The SDPD shares everything except what it cannot by law. It sends the information to local libraries and shows maps when department representatives meet with community groups.

## Local Uses: Drug Market Analysis in Pittsburgh

*Sergeant William Bochter, Pittsburgh, Pennsylvania, Police  
Department*

Sergeant Bochter discussed two specific applications derived from the DMAP effort. With the first example, he noted that DMAP started as a drug market program, but there have been many spin-offs—among them, the speed of solving certain crimes. For example, an oriental woman was sexually assaulted in a house robbery. DMAP looked for people nearby who had been arrested for assaults in the past. That search turned up 20 suspects. Excluding those with nonmatching physical descriptions reduced the list to five. Photos were pulled, and one of them was an almost perfect match with the composite drawing of the person who had assaulted the woman. Moreover, the person had been arrested before for sexual assault on an oriental woman. The entire process took only one hour.

A second example of the value of DMAP data occurred when an investigator received a tip that someone was selling automatic weapons. Unfortunately, the investigator had only received an unlisted phone number and a first name, which would not be enough for a search warrant. He consulted the crime analysis unit and found the phone number in police files, as the person had earlier been a victim of car theft. The information search took only 10 to 15 minutes. The investigator then went to the site and found 15 automatic weapons.

*Jacqueline Cohen, Principal Research Scientist, The H. John Heinz  
III School of Public Policy and Management, Carnegie-Mellon University*

Ms. Cohen identified several uses of DMAP in crime analysis. DMAP helps in identifying emerging crime problems and locations. It serves as an early warning system, showing map areas that are very bad or getting bad. DMAP also helps in assessing the impact of enforcement strategies, showing, for example, whether crime dropped or moved after police action. By printing what she called a "change map", it is possible to see whether an area is "heating up" or "cooling down" with respect to the crime or incident type analyzed.

Several types of crime maps are generated for use in the Pittsburgh Police Department: maps with several offense types overlaid on the same geographical area, before and after maps, and time-of-day maps (on which a disk or dot representing a crime location is broken into a pie chart to show when those crimes occurred).

DMAP maps and charts are also used in presentations at the time of liquor license reviews. A map titled "Impact of Nuisance Bars on Drug Activity" showed that the average drug activity in a census tract generated three police calls per month, whereas each additional nuisance bar added 2.5 calls per month. Ms. Cohen displayed other maps that showed correlations between unemployment and drug activity.

*Andreas Olligschlaeger, Research Associate, The H. John Heinz III  
School of Public Policy and Management, Carnegie-Mellon University*

Prior to the DMAP Project, the computer-aided dispatch and public-safety management systems in the Pittsburgh Police Department were incompatible. They had no data linkages, limited investigative and analytical output, and limited computerization. A way

was needed to bring all the data together. In 1990, the department put together data from dispatch, the public-safety management system, and the Pittsburgh Allegheny geographical information system to produce DMAP.

Officers and detectives were involved in the design of the program from the beginning. Program designers wanted the system to match officers' train of thought, so they rode along with officers on the streets, watching how they performed their investigations and handled other duties.

The result is that DMAP has been in operation about three years and is in almost daily use. Mr. Olligschlaeger added that even more data may soon be integrated into the system, which may be adding investigative and community policing information from the county's 135 police departments. Mr. Olligschlaeger explained that the department wants police officers and detectives to be able to get data on anything that happened in the metro area. The department also wants investigators to have access to intelligence that is linked to other data.

*Wilpen Gorr, Professor, The H. John Heinz III School of Public Policy and Management, Carnegie-Mellon University*

Professor Gorr discussed PA-LEMIS (the Pennsylvania Law Enforcement Management Information System). In building PA-LEMIS, he said, the needs identified were as follows:

- Flexibility (the system must attach to existing police systems, have a modular design, and be able to use TIGER files or parcel maps)
- User requirements (what the database and map file standards would be and what hardware and software would be used)
- Make-or-buy study (an examination of what software and hardware were available)

- Commercial system option (if a system was bought, would it be customizable, and what level of price and support could be obtained?)
- Make option (how would the system be made if it was not bought?)

Professor Gorr said it is important that potential users of crime mapping band together to look at the available options.

The representatives of the Pittsburgh DMAP project then took questions from attendees:

- *How can the quality of geo-based information be controlled?* The Pittsburgh system's geo-based information is only about 75 percent accurate. If an address is presented that does not exist, an algorithm moves the address to the nearest real one but still retains the associated data and notes that the new address is "estimated."
- *Are detectives able to make more "multiple" cases using DMAP?* The department cannot yet link modus operandi to mapping but is working on being able to do so.
- *How does the department map information on suspects?* The department obtains information from police reports, which are a matter of public record. Parolees' addresses are not currently in the system, but the department hopes to add that information at some point.

## **Breakout Session with Chief Executives: Policy Issues at the Federal and Local Levels**

### **First Session**

Craig Uchida opened the session by commenting on how data and mapping technology might be used in policymaking at the local, state, and federal levels. Mr. Uchida asked the questions: What is the potential use? What does the federal government need to do to help local law enforcement agencies with this?

Nola Joyce described the situation in Chicago and stated that the government could help by evaluating the best hardware and software for locals to use. Robert Bratt said that the government could help by providing “canned” types of reports and operational procedures that might be useful. He said that agencies at different levels of experience and operations should be treated as different user groups. Ms. Joyce noted that the government can also be a resource for sharing products among local users.

Jacqueline Cohen said the federal government can act as a facilitator by creating a network of users and providing them with technical assistance. Also, the government could monitor local operations and report successes and failures, keeping locals abreast of what works. Ms. Cohen also thought the private sector might be encouraged by the government to develop more systems.

Ken Green said the federal government might play a role in facilitating the use of mapping systems to help agencies work with each other across state lines.

Nancy Goodrich thought the public and private sector working together could push the field ahead in mapping. She noted that the challenge is to cajole the private sector to improve the connectivity of the systems.

Adele Harrell raised the issue of using National Incident Based Reporting System (NIBRS) data for mapping. There was a brief discussion on the state of the art of the NIBRS system.

Mr. Uchida then asked each agency to describe its mapping system. As seen in the following summary, considerable variation exists in the degree to which mapping has been implemented in the agencies:

- Washington, DC: PC-based; MapInfo; looking at GIS citywide; do some sharing with Prince George's County
- Jersey City: PC-based; use dBase; using on POP projects
- Hennepin County, Minn.: CAD but no mapping
- Phoenix: new CAD being installed; PCs in police cars; direct entry of reports by officers
- Chicago: Sun server; MapInfo; 911 CAD ArcInfo
- St. Petersburg: CAD being updated; MapInfo—not integrated with CAD; problems with CAD (company sold four times)
- Omaha: 600 PCs citywide but only 50 in police department; not a consistent networked system; new CAD; ArcInfo
- Kansas City: 100 agencies on regional computer system; 10-year-old CAD; MapInfo and ArcInfo; don't use mapping very much—need specific addresses to do investigations
- Baltimore County: PC in each precinct connected to crime analysis; mapping burglaries and sex cases with MapInfo; trying to share information with Baltimore City

- Denver PACT: five counties/19 cities in PACT; Denver PD has mapping, others don't; have a data integrity committee to provide consistent data for strategic planning; Colorado is a NIBRS state
- Atlanta: mapping in crime analysis with MapInfo; still use pin maps in precincts; goal is to have PC-based mapping tool at precinct level
- Rochester: having some serious problems with data in system; getting new CAD in two weeks; city assessor's office has ArcInfo on a mainframe; data distribution to some PCs; CAD will be run by Office of Emergency Preparedness, which is part of the county
- Charlotte-Mecklenburg: CAD on mainframe; use mapping through dBase; goal is to provide mapping as tool for officers in community policing to be more proactive

Phil Cox from the Washington, DC, police department advised the group that Dr. Robert Maggio and Clay Bassham run the municipal information management system consortium at Texas A&M; they deliver training and systems for city agencies to lay out data to "talk" to each other.

## Second Session

Craig Uchida opened the session by asking the agencies present to describe their mapping capabilities.

- St. Louis: Landtrack connected to police incident reporting system; police need more funds to enhance system
- Dekalb County: use Intergraph; highway department has mapping capabilities to use in planning and managing Olympics in 1996
- Birmingham: city has ArcInfo; there are problems trying to implement it in police department
- Newport News: use ArcInfo; trying to get a LAN system to coordinate with other city agencies

- Metro Dade: use ArcInfo with DEC system; do mapping on sex crimes, robbery, burglary, and auto theft; want to expand; right now money is tight—analysts do data entry
- Dallas: not very active in mapping
- Jersey City: DMAP project moved police into mapping; use MapInfo on data downloaded from CAD to PCs on LAN; using analysis for POP; used MapInfo to identify 120 beats for community policing to meet mayor's call for it
- Pierce County: just starting with mapping; ArcInfo on Unix; planning for new CAD
- Knoxville: use Intergraph and MapInfo; find it difficult to get information from other agencies (e.g., schools)—no one else puts data in system; difficult to get information to officers on the street
- Santa Barbara: Records Management System (RMS) is 15 years old; MapInfo in crime analysis; planning for new CAD
- Las Vegas: City Data Processing is trying to install computer with mapping capabilities; have shared metro database; county creates maps for precincts with ArcInfo; need to get more information to officers in the field
- New York: using manual pin maps to track robberies in the precincts; will soon have manual maps to track Part I crimes and arrests; would like to get two other systems to help trace guns and bullets—Bulletproof and Drugfire

Mr. Uchida then discussed with the group what level of data are needed at the federal level. What is not needed, he said, is address-specific data; instead, data should be aggregated at, for example, the census tract level. The federal government needs some way to get a picture of crime and other social indicators at the local level.

Mr. Uchida asked the group what local police agencies need to get into mapping. He noted that NIJ provided the impetus for Jersey City and San Diego to move in that

direction. NIJ's grants helped the agencies become more adept at viewing problems strategically.

Larry Mock said NIJ could help locals by (1) educating chiefs and elected officials on the necessity for doing mapping, and (2) providing resources. Karen Layne brought up the issue that mapping just reflects the broader issue of technological change in police agencies. She said it is hard to get budget approval for systems analysts. She noted that it is helpful to have a technical assistance resource such as SEARCH, Inc. in California. Gary Cordner noted that to move forward, the field may need to link mapping to community policing—officers cannot be proactive without the data. Jack Maple asked if it would help to demonstrate that crime analyses and data mapping help reduce crime. He said the group should tie mapping into such success stories.

Richard Clark wanted to know if the government could provide free software by putting it on some of the national information services, such as Prodigy. There was a brief discussion of the possible licensing ramifications. Mr. Uchida said the government did not want to create a system with a top-down approach. That would send the wrong message to the locals. He wanted a bottom-up approach with the locals making decisions on what the system and approach would be.

Ms. Layne said the government should serve as a clearinghouse on hardware and software, providing information on what is available and how well it works. She would also like to see the government buy hardware and software en masse and pass the savings along to local law enforcement agencies. Mr. Uchida told the group that NIJ would draft a position paper on the project and send it to the attendees. He also noted that NIJ might reconvene with smaller groups to discuss some issues in more detail.

Mr. Cordner, visiting fellow at NIJ, summarized the first and second policy discussion sessions by noting several impediments to crime mapping:

- Data problems: inaccurate addresses, incidents that occur where there is no address (such as on a freeway)
- System problems: old hardware, different systems in a single department, inflexible software, network problems
- Integration problems
- Resource constraints: some police departments have almost no budget for computer mapping, while others can develop useful maps on computer screens but have no suitable printers; it is difficult to get staff for data entry and analysis

Mr. Cordner observed that some attendees were looking for “top-down” solutions in which the federal government would do the following:

- Provide systems: NIJ could buy a national software site license and give the software to local agencies
- Set data standards: NIJ could establish standard data fields and terminology
- Provide incentives: NIJ could award grants

More attendees seemed to prefer “bottom-up” solutions, in which NIJ would help police agencies (but not run the whole operation) by doing the following:

- Leverage system integration solutions with major computer and software companies
- Provide an information clearinghouse
- Provide technical assistance
- Encourage research and development of new products
- Encourage user groups
- Provide comparative analyses of software
- Promote the value of mapping to police executives, city leaders, and municipal managers, particularly emphasizing the usefulness of crime mapping in community policing and problem-oriented policing programs
- Develop evidence that mapping saves time, helps police identify crime series, and offers other short-term benefits

## **Breakout Session with Chief Executives: Confidentiality Issues**

### **First Session**

Lorraine Green of Rutgers University began by stating that NIJ was interested in aggregate-level data. She asked the group what forms and types of data local police departments could provide.

In Nevada, an attendee stated, calls for public service are not an issue because the calls are public information. However, the information is available as name information only. The confidentiality issue arises when the information is desired at the address level. For NIJ to conduct a successful mapping project, it would need crime information at the address level. The attendee said local departments are concerned that federal analysts could determine name information from the addresses for other uses.

A Pittsburgh representative reported that in that jurisdiction all the information is accessible to the public. The only information that is unavailable is data on juvenile crimes. Within 24 hours, in Pittsburgh, anyone can access a report if it has been signed off.

A San Diego representative explained that that city already shares information with federal agencies. San Diego has one database for all local agencies, and terminals are leased to local federal agencies, which are asked to use the information with discretion.

A major concern throughout the discussion was the accessibility of the data to federal agencies other than NIJ and what those agencies might want with the information. For example, in San Diego the Immigration and Naturalization Service has access to the crime information. Several attendees were disappointed that no representatives from

other federal agencies were present. In addition to other federal agencies obtaining mapping information, several participants were worried about groups like real estate agencies, alarm companies, and others who could “prey on the fears of a population by providing misleading yet accurate information.”

Allen Andrews stated that what NIJ has access to now is incident-based data. What NIJ needs for accurate mapping, he said, is address-level information. Several participants noted the great cost that localities were already bearing just to provide the incident-based information. To provide extra information, the sites wanted to know who would pay for the necessary systems and what format would be requested by NIJ.

Another issue concerned all the “garbage” contained in reports. Whose responsibility would it be to determine what is important and what is throw-away data? That led to a discussion of what local agencies can and do share among themselves. Also, what information, if any, must be protected by the local agency from even the federal agencies? All the sites agreed that NIJ’s intentions with their data were solely research-oriented; the concern was that NIJ could not guarantee that the information would be protected.

There were several potential solutions to the questions raised by the group. One was to establish a pilot study involving 25 or 30 jurisdictions. A uniform reporting system would be implemented, and a uniform manner of accessing data from all of the sites would be established. One attendee responded by saying that his chief would be happy to provide the information if the chief could be apprised of the results of the study and brought in for any follow-up evaluation.

Another suggestion was that NIJ just put up the money each time it needed the information and help establish geo-based systems in those departments that do not already have them. One person posited that NIJ could use census tracts and then there would be no concern about confidentiality of information. However, NIJ wants to study

displacement of crime, and in order to do that it needs address-level information to place X and Y coordinates on a map.

The final suggestion discussed was a coding system for the names and addresses that NIJ used. No one provided a method of how the coding could be done on a national level.

## **Second Session**

Some departments in this group discussed internal confidentiality issues. Sometimes, for example, narcotics officers do not want to share their information with other members of the department. Although it is called a confidentiality issue, some attendees felt it was actually a territorial issue.

Next discussed was the fact that much of the information that might be shared is public knowledge, so why should agencies worry about keeping it confidential? One attendee noted that it is actually a case of policy versus practice. Although the policy may be to provide information to anyone who requests it, the policy may never have been tested. What happens, she inquired, as more requests come in, especially from government agencies that might not reimburse for time or effort? Another officer mentioned that the lure of money from the government is an excellent "carrot" to entice local agencies into sharing with NIJ.

As to confidentiality of information, the Washington, DC, Police Department has established a "pointer system." If someone accesses a record, the system contacts the person responsible for entering the data instead of just providing all the information. It makes mapping difficult, someone noted, but it might be safer than centralized data.

Also raised were the ramifications of "information gone public." For example, in addition to groups such as real estate agencies using the information, victims of sex crimes may not go to a shelter if they think that just anyone will be able to access their

case. In Denver, however, the data on restraining orders from domestic violence is already being shared between jurisdictions to close the gap on protective services.

There was concern about media leaks of information once NIJ had it. The group mentioned coding as a solution to keeping some information confidential.

Another issue brought up was that of social engineering. Maps made by police departments, once they become public information, are going to be subpoenaed for civil suits. Further, there could be a great deal of political interference from city councils who want to use the maps for show and tell. The problem is that most departments only have one or two persons doing mapping. These analysts end up spending days in court and making maps for lawsuits. Recent court rulings, however, may make this easier for police departments. For example, in Maryland, the first hour of work for another agency is gratis, but everything after that is billable as research. Courts are beginning to see maps as research work, not as generated reports.

The final issue brought up was community policing and mapping. The question is how to perform community policing effectively without giving away too much information. Making maps for crime watch groups could be an effective tool in community policing. However, making the maps takes up much time and resources, and the officers need to keep certain information away from citizens who may want the information for other reasons.

Summing up, Allen Andrews, one of the session's moderators, asked a number of questions. Who in the federal government would control the data, both legally and practically? Would this be a one-way information transfer where locals send information to the federal government at great expense but get nothing in return? As for police departments' willingness to share data with the federal government, if the purpose is research, most departments would find that acceptable. If the purpose is police-type operations, most local agencies would not like that. What about political uses? Would

senators, the White House, and special interest groups start using the data in speeches about the police? What about commercial exploitation of the data, such as in “livable cities” lists that condemn cities by looking at uninterpreted data from a city whose conscientious citizens bother to report crimes? Will cities be pressured by civil libertarians not to cooperate in a “massive spy network”? And is such an enormous database actually going to be used much? Would it be cheaper to have the federal government simply pay for specific data sets that it needs? Finally, could the whole goal of data sharing be accomplished simply by adding geo-coding to NIBRS?

## **Breakout Session with Analysts: Integration of Databases**

### **First Session**

Attendees began by describing their current uses of geographic information systems (GISs). Some said they were attempting to bring modus operandi information into their systems. Others noted that their databases included location profiles, enabling them to look up what has happened at a particular address before. The attendees mentioned using Landtrack, MapInfo for Windows, ArcInfo, and maps digitized from aerial photography. They mentioned a desire to integrate more and more data sets into their GISs.

Several site representatives offered additional details about their use of GISs. The Atlanta representative noted that his department wants to make its data available to citizens so that, for example, a neighborhood representative could walk in and obtain crime data. The problem, he said, is getting the software to accept "fuzzy" inquiries. The Washington, DC, representative said his department is loading photos into its computer so that officers can look up what sort of response a particular site or building might require. Political leaders, he said, like mayors and the Attorney General, want to be able to press a button and obtain detailed data and charts. However, a lot of work needs to be done to get to that point.

One of the two session moderators, Bruce Taylor, a statistician with the Bureau of Justice Statistics, noted that he is one of the people involved in getting data into the shape that Attorney General Reno wants. However, he observed, even within the government different regional offices may have separate databases. The question is how to bring them together and how to avoid duplication.

The Jersey City representative observed that to improve the quality of data in the database, people inputting data into the Jersey City system must choose from libraries, or

look-up tables, when inputting information. For example, to input the color of a gun, people must choose from a predefined list of colors. That method ensures uniformity for better data searches and has the added value of ensuring that words are spelled correctly. The Jersey City Police Department wants every officer to know how to get data from the system, he noted, adding that it takes only about 30 minutes to train an officer to do so.

The Pierce County representative reported that his department's system contains dispatch data and crime reports, which are entered into ArcInfo. The system also contains auditor information, utility data, and land use information (with the hope that the system will eventually obtain new building addresses right away). In the future, corrections data and information from the local prosecutor will also be in the system.

Rochester maintains 911 data on one system and criminal records on another. The department's representative said that funding had forced the department to build islands of information to solve specific problems. Over time, money has been allocated to solve specific problems, not to develop an inclusive, department-wide system. A funding problem that must be overcome is that it is appealing to voters and politicians to add police officers but not to fund police infrastructure, such as computers and support staff. Aside from funding, what is also needed, he said, are standards so that information systems can communicate with each other.

The Denver representative noted that his department's crime-mapping system contains data on public housing areas, fire quadrants and response zones, work-release programs and halfway houses, and dispatches. The data are used to look for crime patterns.

Michael Maltz, the other moderator of the session and a professor at the University of Illinois at Chicago, observed that if a GIS program is run purely by a police department, it may be harder to obtain nonpolice data to put into the system. If the program is run by a city or county, it may be able to integrate more types of data. Professor Maltz led the group in developing a list of types of data that are available and that could be put on-line.

Among police department data, the group listed the following categories: dispatch, offense, arrest, traffic, intelligence, accident, case management, court, pawn shops, field interviews, domestic violence, licensed establishments, gun permits, and geo-positioning systems. Other types of data that could be placed on-line included the following: hazardous materials, fire dispatch, building information, assessor data, warrants, and emergency medical services.

The Los Angeles representative said it is possible to get too much data for police uses. The police department should not aim to be the Library of Congress, he observed.

It was noted that different types of data are needed depending on whether one is trying to answer a specific question (little data needed) or brainstorming to find trends and connections (many data sets needed).

The group listed several hurdles to data integration: nonstandard definitions and fields, different updating schedules of different databases, and obtaining good addresses.

## **Second Session**

In this session, attendees listed numerous hurdles to data integration:

- Various desired databases developed at different times with different technologies
- Lack of national standards regarding data format, data transfer, etc.
- Politics of sharing data within a police department, let alone between agencies
- Lack of user input in system design
- Difficulty of getting other data sources to provide updated data routinely over time
- Incentive provided by RICO and asset forfeiture programs for police departments not to give drug data to other agencies lest another agency make the bust and keep the money
- Fear among citizen complainants and informers that their identity will leak out
- File transfer concerns

## **Breakout Session for Analysts: Hardware and Software**

### **First Session**

The first breakout session included representatives from approximately 12 law enforcement agencies and five researchers with backgrounds in geography and police operations. During this session, each person was asked to discuss the status of computer mapping in his or her agency, problems he or she had overcome, and the future plans of the department.

While these introductions took most of the session time, they were informative in regard to the state of the art of computer mapping. Several interesting applications were discussed, including the use of mapping to identify areas of high domestic violence, development of the STAC program in Illinois, use of maps to highlight drug market areas, and identification of boundaries of gangs. The participants noted several problems in developing their applications, including poor geo-base systems, slow microcomputers, and loss of data because of the lack of backups.

### **Second Session**

For the second session, the facilitators continued the discussion of applications and problems. Participants were from larger cities that were generally more advanced in their computer mapping applications. Two participants talked about the capability of their systems to download data to analysts in precincts who, in turn, did analysis of local problems. Others discussed efforts in their regions to exchange data with surrounding jurisdictions. Problems associated with this exchange were the lack of cooperation of other departments and lack of compatibility in record formats. The Newport News representative noted, however, that his area had developed a standard format for crime data and was electronically exchanging information.

A clear conclusion in regard to the 25 agencies represented in these sessions is that they represented a wide range of mapping capabilities. Some agencies are just getting started with their mapping systems and are producing only basic types of maps on crimes and calls for service. Other agencies are very advanced in their applications with integration of several databases to show a more complete picture of community problems. Their databases include standard police information (crime, calls for service, and arrests) along with data from other local agencies (drug treatment, property ownership, and census results).

It was also noted that with only a few exceptions all agencies were using either the MapInfo or ArcInfo mapping programs as the basis for their systems. The MapInfo system is available for microcomputer systems, while the ArcInfo system requires hardware such as a Sun workstation. It was noted that the two systems operate in a similar manner even though they were developed by two different companies.

With regard to future directions, participants in both sessions made comments about providing data to the national level. From a technical viewpoint, they did not foresee significant problems because data transmission has become a common procedure. The primary difficulty lies in determining exactly what data fields are needed at the federal level. Most participants believed that this determination should be a joint effort between federal and local representatives. An alternative suggested by two representatives was to submit data at the census tract level rather than providing individual records.

These groups also felt that greater communication among the participants at the meeting would be beneficial. Two suggestions were made. One was to establish a bulletin board for the specific purpose of facilitating communication. The other was to use a system such as CompuServe or Internet for communication. Several participants, especially university representatives, already have accounts on these systems. Representatives from law enforcement agencies were not as familiar with the Internet system.

Tuesday, May 17, 1994

## Welcome and Summaries of Breakout Sessions

Mr. Uchida welcomed attendees to the second day of the meeting. Next he introduced moderators from the previous day's breakout sessions. The moderators then presented summaries of those sessions. (Summary information is included in preceding coverage of breakout sessions.)

## Department of Justice View of Crime Mapping

Mark Salakey, a policy analyst at the Office of Policy Development, U.S. Department of Justice, described the present meeting as part of an overall research and development effort to learn how to provide the information that the Attorney General has asked DOJ to provide.

He noted that in December 1993, a group called Data 1 was formed to look at what could be done in the long term regarding data coordination and integration. Then along came Data 2, an outreach to identify what can be used as a framework for gathering criminal justice and other socioeconomic data for policy making. Mr. Salakey said DOJ believes geo-mapping has great potential and that the attendees present could tell DOJ what works and what does not. Then DOJ can tell the Attorney General the plusses and minuses and what will have to be done.

## Future Directions

Mr. Uchida described several products of the Drug Market Analysis Program that could be expected soon:

- A cross-site technology study (of hardware and software) on ArcInfo, MapInfo, and other products
- A small study on the use of geo-based systems
- A study on defining drug markets
- Research-in-Briefs on the Pittsburgh DMAP, Kansas City raids, and San Diego and Jersey City

Mr. Uchida noted that those products would be shared with attendees.

Mr. Uchida then described forms of technical assistance that NIJ might provide:

- Consultants (police or researchers)
- Analysts for technical needs
- A clearinghouse
- Regional or national meetings
- A computer bulletin board
- Advisory teams to assist sites on technical, research, and policy needs
- Competitive solicitation for grants that would fund police departments to study hardware and software needs, personnel and staffing needs, and other necessary equipment

Specific outcomes that Mr. Uchida expected from the present meeting included these:

- A white paper to the Attorney General from Mr. Uchida
- Recommendations
- A DOJ briefing
- An understanding of possible links to the Crime Bill, as some funds might be available for mapping work.

- An understanding of links to other federal agencies
- Additional meetings, perhaps in the form of advisory team meetings

Attendees then posed several questions and comments. Among their statements were these:

- GIS is the coming trend for local governments. Many agencies are using GIS for emergency management services.
- If locals share information, then federal agencies such as the DEA, Customs Service, and FBI must share their information, too. Otherwise, police departments will not send their data to the federal government.
- The federal government may be able to encourage state governments to make case disposition data available to local law enforcement agencies for the background checks required by the Brady Bill.
- When devising any data-sharing plan, the federal government must remember that the states already require local law enforcement agencies to supply a tremendous amount of data.
- Geo-data could help chart police corruption, training needs, and other management needs.
- The federal government may be able to help in developing maps cheaply for unmapped or poorly mapped cities by providing satellite images.

Dr. Gorr noted that on the national level, geographic-based data could be used to track crime problems as they work their way from the coasts to the center of the country and from big cities to small ones and to track the speed of the spread.

# Agenda

## MAPPING CRIME IN THE 21ST CENTURY

*May 16-17, 1994*

*Holiday Inn Crowne Plaza  
775 12th Street  
Washington, D.C.*

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**MONDAY, MAY 16, 1994**

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**8:30 AM - 9:00 AM**      **Registration and Coffee Service**

**9:00 AM - 9:15 AM**      **Welcome and Introductions**

**Laurie Robinson**  
*Acting Assistant Attorney General*  
Office of Justice Programs

**Carol Petrie**  
*Acting Director*  
National Institute of Justice

**9:15 AM - 9:45 AM**      **Overview of NIJ Mapping Initiatives**

**Craig Uchida**

**9:45 AM - 10:00 AM**      **Mapping at the Department of Justice**

**Robert K. Bratt**

**10:00 AM - 10:15 AM Description of Possible Future Directions**

**Craig Uchida**

***10:15 AM - 10:30 AM BREAK***

**10:30 AM - 11:00 AM Local Uses: Community Policing Problem-Solving  
Drug Market Analysis Site - San Diego**

**Kimberly Glenn**

**11:00 AM - 11:45 AM Participants' Discussion of Local Uses**

**11:45 AM - 12:15 PM Local Uses: Drug Market Analysis in Pittsburgh**

**Jacqueline Cohen**

**Wilpen Gorr**

**Andreas Oiligschlaeter**

**William Bochter**

***12:15 PM - 1:30 PM LUNCH (ON YOUR OWN)***

**1:30 PM - 3:00 PM Sessions with Chief Executives**

**A. Policy Issues at the Federal and Local Levels**

**Craig Uchida**

**Marlene Beckman**

**Robert K. Bratt**

**B. Confidentiality Issues**

**Shellie Solomon**

**Alan Andrews**

**Lorraine Green**

**Sessions with Analysts**

**A. Integration of Database Issues**

**Bruce Taylor**

**Michael Maltz**

**B. Hardware and Software Issues**

**Robert Stephenson**

**Andreas Olligschlaeter**

**J. Thomas McEwen**

***3:00 PM - 3:15 PM BREAK***

<b>3:15 PM - 4:30 PM</b>	<b>Repeat of Assigned Breakout Sessions</b>
<b>4:30 PM</b>	<b>Chiefs and Analysts Adjourn</b>
<b>4:30 PM - 5:00 PM</b>	<b>Meeting of Breakout Group Leaders Only</b>

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**TUESDAY, MAY 17**

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**9:00 AM - 9:15 AM**      **Welcome**

**Craig Uchida**  
*Acting Director*  
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National Institute of Justice

**9:15 AM - 10:00 AM**      **Summaries of Major Issues Raised in Breakout Sessions**

**10:00 AM - 12:00 PM**      **Moderated Discussion with Participants on Next Steps in Process**

# Mapping Crime in the 21st Century

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